

Ryoichi Arai

Fish Karyotypes

A CHECK LIST

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Library of Congress Control Number: 2010936627

ISBN: 978-4-431-53876-9 Springer Tokyo Berlin Heidelberg New York

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Printed in Japan

Printed on acid-free paper

Springer is a part of Springer Science+Business Media
springer.com

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Introduction

In many vertebrate groups, the study of karyotypes and genome size has contributed along with analyses of mitochondrial and nuclear gene sequences to the resolution of challenges in biology systematics and evolution. However, in fishes—the most diverse of all vertebrate groups—higher taxa traditionally have been classified largely by morphology and paleontology, with a much smaller input of cytogenetic information. In part, this is because karyotypes can be obtained only from living specimens, tissues, or cells, which makes it challenging to study the karyotypes of fishes that are difficult to collect alive (e.g., deep-sea fishes). Of course, even fresh material provides no guarantee that reliable chromosome figures can be obtained easily.

DNA sequence data are exerting an increasingly strong influence in modern fish systematics, for example, by leading to proposed challenges in the classification of numerous higher taxa ranging from genera to orders. However, the most fruitful approach is certain to be one that involves synthetic analyses of morphology, molecular phylogenetics, comparative karyology, and genome size, rather than focusing on only one or a few of these sources of data. For example, although it may be very difficult to establish homology of karyotypes analyzed by Giemsa staining and several banding methods among taxa, the polarity of karyotype states nonetheless can still be inferred by analysis of Robertsonian fusion/fission, tandem fusion, pericentric inversion, paracentric inversion, aneuploidy, or polyploidy in any monophyletic taxon, even when the polarity of DNA sequences is unclear. The role of cytogenetic data is likely to increase further because powerful new methods such as fluorescence in situ hybridization (FISH) (Phillips 2007: P-53) are implemented in fishes beyond model species (e.g., zebrafish, medaka, sticklebacks, and pufferfish). Given their limited scope, FISH data are not included here, but their future importance is clearly acknowledged.

The purpose of this book is to facilitate the implementation of an integrative approach to fish systematics by providing karyotype information for 3,425 species/subspecies of extant jawless, cartilaginous, actinopterygian, and lobe-finned fishes. This presentation fills an important need, as fish karyotypes tend to be published not only in well-known and easily accessible journals, but also in museum journals of more regional significance or in other venues that are difficult to obtain. Several books on fish chromosomes have been published in the past (Denton 1973: D-7; Chiarelli and Capanna 1973: C-1; Ojima 1983: O-73; Vasiliev 1985: V-72; Klinkhardt et al. 1995: K-114), but this volume represents the first in nearly 15 years and is the most comprehensive. Such an update is clearly warranted, given the historical growth in the numbers of karyotyped species/subspecies listed in Table 1.

Table 1 Historical transition of the numbers of karyotyped species/subspecies

Author(s)	Denton 1973	Park 1974	Ojima et al. 1976	Sola et al. 1981	Ojima 1983	Vasiliev 1985	Klinkhardt et al. 1995	Arai This book
Year	1973	1974	1976	1981	1983	1985	1995	
Reference no.	D-7	P-6	O-22	S-88	O-73	V-72	K-114	
Myxini	4	2	3	0	3	5	0	8
Petromyzontida	7	6	8	0	7	13	14	14
Chondrichthyes								
Holocephali	1	2	0	0	2	2	2	2
Elasmobranchii	15	8	4	0	13	17	52	68
Actinopterygii								
Cladistia	2	2	2	4	7	6	7	7
Chondrostei	1	4	0	5	7	12	12	21
Neopterygii								
Holostei	2	2	2	2	3	1	3	3
Teleostei	446	505	417	798	1,035*	1,258	2,182*	3,296
Sarcopterygii	3	1	0	1	2	5	5	6
Total	481	532	436	810	1,079*	1,318	2,277*	3,425

*Synonymous species were counted as different species.

Substantial revisions to the species names and higher taxonomy of many fishes in the intervening years also make an updated compendium necessary. In this book, synonymies are circumvented by providing both the name reported in the original karyotype papers and currently recognized names. In particular, the classification of taxa above the species level follows Nelson (2006: N-68), and species names conform to the up-to-date list in the *Catalogue of Fishes* by Eschmeyer (<http://research.calacademy.org/redirect?url=http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>, E-13). The classification of chromosomes followed Levan et al. (1964: L-25): chromosomes were classified to metacentrics (M), submetacentrics (SM), subtelocentrics (ST), and acrocentrics (A). As shown in Table 1 (Levan et al. 1964), M, m, sm, st, t, and T do not denote chromosomes but rather centromeric position; e.g., acrocentrics is characterized by t. Levan et al. (1964) do not propose abbreviations for chromosomes. Two kinds of abbreviations for chromosomes, M-SM-ST-A and m-sm-st-t(-T), have been adopted in karyotypes. I adopt M-SM-ST-A because chromosome classification can be differentiated from centromeric position by these abbreviations and thus the problematic treatment of T in the other system can be avoided. In addition to providing data for extant fishes, ancestral chromosome numbers (ACN = NAN sensu Arai and Nagaiwa 1976: A-64) are proposed in this book.

To date, karyotype data have been made available for 53 orders (84% of the known total) and 269 families (52% of total). In addition, genome size has been reported in 52 orders (83%) and 264 families (51%), which are available in standardized form as part of the Animal Genome Size Database (<http://www.genomesize.com>, G-85). As a result, it is possible to compare these two characters, at least at the family level (Tables 2, 3).

In some cases, a given karyotype consists of chromosomes that cannot easily be distinguished as either SM or ST, such that different authors may report different information. For example, the arm number (NF₁) of *Oncorhynchus keta* ($2n = 74$) is reported as 100 in Sasaki et al. (1968: S-14) versus 102 in Ueda (1985: U-72), and the NF₂ of *Alburnus alburnus* ($2n = 50$) is given as 92 in Cataudella et al. (1977: C-34) versus 86 in Hafez et al. (1978: H-3). These different reports on karyotypes between conspecific populations were included in the database (Tables 4–7) without comment, although it should be noted that these differences may derive from artifacts of preparation technique or taxonomic problems, rather than representing real polymorphisms. If so, then it will be important to resolve these discrepancies before meaningful comparisons can be made. Similarly, there may be issues relating to differences in reported karyotypes resulting from different degrees of chromosome condensation, to the lack of a uniform terminology among authors, or even to some miscalculations (number of arms, NOR position, etc.). Some examples of these sources of error were detected when examining the literature; e.g., the same researcher(s) have at times defined M/SM as two-arm chromosomes in some taxa, but M/SM/ST as two-arm chromosomes in other taxa. To prevent such confusion, these two-arm definitions were differentiated in the present book; i.e., NF₁ means M/SM as two-arm chromosomes and NF₂ means M/SM/ST as two-arm chromosomes.

There are several fundamental questions that remain to be answered with regard to phylogenetic karyology in fishes. For example: (1) Why is polyploidy in teleost fishes only observed in freshwater species and not in marine species? (2) What is the phylogenetic significance of differences in the number and location of NORs as shown by different banding methods (especially by the FISH method with 18S rDNA and 5S rDNA probes)? (3) In cases in which both large and small B chromosomes have been reported, are both, neither, or only the large B chromosomes to be counted in the diploid chromosome number? Or should this be considered on a case-by-case basis? (4) What is the biological significance of microchromosomes, and what is their relationship (if any) with B chromosomes? (5) Can sex chromosomes be differentiated in more species by using FISH methods with probes of genes specific to sex chromosomes?

Many individuals helped me in various ways with the preparation of this book. For papers on karyotypes, I would like to thank Ana Lucia Dias, Eliana Feldberg, Pedro Manoel Galetti, Jr., John R. Gold, Anisur Rahman Khuda-Bukhsh, Naresh Sahebrao Nagpure, Claudio de Oliveira, Gento Shinohara, Akihiko Shinomiya, Akinori Takai, Toru Taniuchi, Takayoshi Ueda, Han-lin Wu, and

numerous researchers who sent kindly me copies of their paper(s). I also wish to express my sincere gratitude to Petr Ráb, who plowed through the whole manuscript and gave me valuable comments, and to T. Ryan Gregory for improving the English text.

Availability of Fish Karyotypes

Karyotypes have been reported for 3,425 species/subspecies of fishes (including jawless, cartilaginous, ray-finned, and lobe-finned fishes) (see Table 1). This total represents a coverage of about 12.2% of extant fish diversity (62 orders, 515 families, and 27,977 species); however, these are not sampled evenly from among fish groups and instead are biased toward freshwater taxa such as the Cypriniformes, Characiformes, Siluriformes, Cyprinodontiformes, and Cichlidae in the Perciformes. Specifically, numbers of karyotyped species/subspecies are 747 (21.8%) in Cypriniformes, 341 (10.0%) in Characiformes, 362 (10.6%) in Siluriformes, 345 (10.1%) in Cyprinodontiformes, and 130 (3.8%) in Cichlidae (Perciformes). On the other hand, 4 orders (Orectolobiformes, Echionorhiniformes, Pristiophoriformes, and Pristiformes) and 30 families in cartilaginous fishes and 5 orders (Albuliformes, Saccopharyngiformes, Ateleopodiformes, Lampriformes, and Polymixiiformes) and 216 families in actinopterygian fishes currently lack any karyotype data. Of course, relative coverage depends on the number of recognized taxa, which has been updated significantly in recent times consequent to molecular analyses that may or may not reflect undue inflation (Nelson 2006: N-68; Kottelat and Freyhof 2007: K-130).

Fish Vouchering and Identification

To verify the identification of fishes included in karyotype studies, voucher specimens should be deposited in a museum, curated university collection, or another appropriate institute. Unfortunately, vouchered specimens are not available for most species for which karyotypes have been reported, meaning that their initial identification cannot be confirmed. Moreover, there are many papers in which the localities of material fishes purchased from fish dealers were not described, which further increases the prospect of taxonomic errors. This problem is especially relevant when the classification of a taxon in question has been revised, making it difficult to link old and new names. For example, two different karyotypes were reported in a labrid, *Pseudolabrus japonicus* (Arai and Koike 1980: A-75; Ojima and Kashiwagi 1979: O-27). Thereafter, *Pseudolabrus japonicus* was separated to two different species, *P. eostinus* and *P. sieboldi* by revisional study of *P. japonicus* (Mabuchi and Nakabo 1997: M-1). By examination of *P. japonicus* material deposited at a museum, it was known that the two karyotypes corresponded to these two different species (Mabuchi et al. 2002: M-2).

Classification of Extant Fishes

Fish systematics has developed greatly during the past 10 years, mainly based on molecular phylogenetic studies. Although results in molecular phylogenetics are not always agreed upon by all researchers, it is necessary that a consistent taxonomic system be used in a database such as this. In this regard, the higher taxonomic classification proposed by Nelson (2006: N-68) has been used with the following updates:

Orders Batrachoidiformes and Lophiiformes were changed from the superorder Paracanthopterygii to the superorder Acanthopterygii (Miya et al. 2003, 2005: M-138, 139).

Although polyphyly of the order Gasterosteiformes and the suborder Labroidei (order Perciformes) has been reported (Kawahara et al. 2008: K-105; Mabuchi et al. 2007: M-17) and

Stylephoriformes (Miya et al. 2007: M-140), close relationship between Alepocephaliformes and Otocephala (Lavoué et al. 2008: L-24), and Gobiiformes (Thacker 2009: T-63) were proposed, these hypotheses were treated as pending problems in this book.

The higher-level classification used here is as follows:

Class Myxini	8, 28
Order Myxiniformes	8, 28
Class Petromyzontida	8, 29
Order Petromyzontiformes	8, 29
Class Chondrichthyes	9, 30
Subclass Holocephali	9
Order Chimaeriformes	9, 30
Subclass Elasmobranchii	9
Order Heterodontiformes	9, 30
Order Orectolobiformes	9
Order Lamniformes	9, 30
Order Carcharhiniformes	9, 31
Order Hexanchiformes	9, 32
Order Echinorhiniformes	9
Order Squaliformes	10, 32
Order Squatiniformes	10, 32
Order Pristiophoriformes	10
Order Torpediniformes	10, 33
Order Pristiformes	10
Order Rajiformes	10, 33
Order Myliobatiformes	10, 34
Class Actinopterygii	11, 36
Subclass Cladistia	11
Order Polypteriformes	11, 36
Subclass Chondrostei	11
Order Acipenseriformes	11, 37
Subclass Neopterygii	11
Division Holostei	11
Order Lepisosteiformes	11, 38
Order Amiiformes	11, 38
Division Teleostei	11
Subdivision Osteoglossomorpha	11
Order Hiodontiformes	11, 38
Order Osteoglossiformes	11, 39
Subdivision Elopomorpha	11
Order Elopiformes	11, 40
Order Albuliformes	11
Order Anguilliformes	11, 40
Order Saccopharyngiformes	12
Subdivision Otocephala (= Ostarioclupemorpha)	12
Superorder Clupeomorpha	
Order Clupeiformes	12, 43
Superorder Ostariophys	
Order Gonorynchiformes	12, 44

Order Cypriniformes	12, 45
Order Characiformes	13, 78
Order Siluriformes	14, 96
Order Gymnotiformes	15, 117
Subdivision Euteleostei	15
Superorder Protacanthopterygii	
Order Argentiniformes	15, 119
Order Osmeriformes	15, 120
Order Salmoniformes	15, 121
Order Esociformes	15, 128
Superorder Stenopterygii	
Order Stomiiformes	15, 128
Superorder Ateleopodomorpha	
Order Ateleopodiformes	16
Superorder Cycloformata	
Order Aulopiformes	16, 129
Superorder Scopelomorpha	
Order Myctophiformes	16, 130
Superorder Lampriomorpha	
Order Lampriformes	16
Superorder Polymixiomorpha	
Order Polymixiiformes	16
Superorder Paracanthopterygii	16
Order Percopsiformes	16, 131
Order Gadiformes	16, 131
Order Ophidiiformes	17, 132
Superorder Acanthopterygii	17
Series Mugilomorpha	
Order Mugiliformes	17, 133
Series Atherinomorpha	
Order Atheriniformes	17, 134
Order Beloniformes	17, 135
Order Cyprinodontiformes	17, 137
Series Percomorpha	
Order Stephanoberyciformes	18, 152
Order Beryciformes	18, 152
Order Zeiformes	18, 153
Order Gasterosteiformes	18, 154
Order Batrachoidiformes	18, 155
Order Synbranchiformes	18, 155
Order Scorpaeniformes	19, 157
Order Perciformes	19, 163
Order Pleuronectiformes	23, 209
Order Lophiiformes	23, 212
Order Tetraodontiformes	23, 212
Class Sarcopterygii	24, 215
Subclass Coelacanthimorpha	24
Order Coelacanthiformes	24, 215
Subclass Dipnotetrapodomorpha	24
Order Ceratodontiformes	24, 215

Genus- and species-level designations given here are those presented by Eschmeyer (2009: E-13). Again, there have been many suggested changes to fish taxonomy at this level as well. For example, in European cyprinid fishes, many species previously placed in *Leuciscus* are now in the genera *Squalius*, *Telestes*, and *Petroleuciscus*, and many species previously placed in *Chondrostoma* are now in the genera *Protochondrostoma*, *Pseudochondrostoma*, *Parachondrostoma*, *Achondrostoma*, and *Iberochondrostoma* (Kottelat and Freyhof 2007: K-130). Changes such as these are noted in the karyotype database (Tables 4–7).

Historical Transition of Numbers of Karyotyped Species/Subspecies

The number of karyotyped species/subspecies has increased rapidly since the early 1970s. For example, in 1973 karyotypes were available for 481 species/subspecies; in 1985, 1,318 species/subspecies had been karyotyped; and at the time of this writing, data exist for 3,425 species/subspecies (see Table 1). Since the last compendium in 1995 (K-114), the number of karyotyped taxa in Elasmobranchii, Chondrostei, and Teleostei increased but that in Petromyzontida, Holocephali, Cladistia, and Holostei did not increase. In some cases, an increase in the number of karyotyped taxa in Elasmobranchii and Teleostei has been caused by the erection of numerous additional taxa and through revised techniques for chromosome preparation (Klinkhardt 1991: K-79).

Relationship Between Karyotype and Genome Size

Relationships between karyotypes and genome size in families were also explored (see Tables 2, 3). Sources of karyotypes and genome size were usually different. Data of karyotypes and genome size were extracted from Tables 4–7 and the up-to-date list of Gregory (www.genomesize.com, G-85).

As with karyotype data, there are significant gaps in the fish genome size dataset.

Two orders (Echinorhiniformes and Pristiophoriformes) and 21 families in cartilaginous fishes and eight orders (Albuliformes, Saccopharyngiformes, Gonorynchiformes, Ateleopodiformes, Lampriformes, Polymixiiformes, Percopsiformes, and Stephanoberyciformes) and 230 families in actinopterygian fishes have no information on genome size. Two orders (Echinorhiniformes and Pristiophoriformes) and 19 families in cartilaginous fishes and five orders (Albuliformes, Saccopharyngiformes, Ateleopodiformes, Lampriformes, Polymixiiformes) and 181 families in actinopterygian fishes have neither information on karyotypes nor information on genome size.

As for jawless fishes, karyotypes and genome size in the Myxiniformes differ from those in the Petromyzontiformes, i.e., $2n \leq 36$ and genome size >5.0 pg/cell in Myxiniformes versus $2n = 76$ or >140 and genome size <4.3 pg/cell in Petromyzontiformes. Myxiniformes exhibits different chromosome numbers and DNA amounts between somatic cells and spermatogonia, i.e., $2n = 14\text{--}36$ in somatic cells versus $2n = 16\text{--}96$ in spermatogonia. B chromosomes have been reported in spermatogonia in Myxiniformes (Nakai et al. 1995: N-62; Kojima et al. 2010: K-140).

As for jawed fishes, diploid chromosome numbers and genome size in cartilaginous fishes except Chimaeriformes are larger than those in actinopterygian fishes. The Polypteriformes and the Coelacanthiformes possess about 7.0–9.0 pg/cell. The Ceratodontiformes has extraordinary large genome sizes (more than 80.0 pg/cell).

Acipenseriformes is of special interest among Actinopterygii in their possession of 105 to 372 chromosomes and 2.4 to 13.8 pg/cell. Ploidy levels including diploidy (2X), tetraploidy (4X), and hexaploidy (6X) have been inferred in this order. However, the high number of chromosomes suggests another possible series, i.e., tetraploidy, octaploidy, and dodecaploidy (Fontana et al. 2007: F-61).

Diploid chromosome numbers and genome size in Neopterygii except the Lepisosteiformes, Osteoglossiformes, Characiformes, Siluriformes, Osmeriformes, and Salmoniformes are usually 48 or 50 and lower than 3.0 pg/cell, respectively. However, more than 3.0 pg/cell in Neopterygii has been reported in Anguilliformes, Cypriniformes, Characiformes, Siluriformes, Argentini-formes, Esociformes, Myctophiformes, Gasterosteiformes, Batrachoidiformes, Synbranchiformes, and Perciformes, i.e., Muraenidae, Cyprinidae (Cyprininae, part of Gobioninae, part of Leuciscinae, part of Rasborinae, Schizothoracinae, and polyploid species in Barbinae), polyploid species of Cobitidae, Catostomidae, part of Characidae, Curimatidae, Prochilodontidae, Ariidae, part of Callichthyidae, Doradidae, part of Loricariidae, Plotosidae, Microstomatidae, part of Umbridae, Myc-tophidae, part of Syngnathidae, Batrachoididae, part of Synbranchidae, Scaridae, Artedidraconidae, and Channichthyidae.

Among taxa described above, freshwater fishes such as part of Cypriniformes (Catostomidae, part of Cyprinidae, part of Cobitidae), and part of Siluriformes (part of Callichthyidae) may be of polyploid origin (Allendorf and Thorgaard 1984: A-16; Ferris 1984: F-23).

Complex relationships between ploidy and genome size have been reported in the Cobitoidea. In one example, the Leptobotiinae-Balitoridae exhibit $2n = 48\text{--}50$ and genome size about 1.0 pg/cell, whereas the Botiinae possess $2n = 98\text{--}100$ and genome size about 2.0 pg/cell. A second example is provided by comparing *Cobitis* species with $2n = 48\text{--}50$ and about 4.0 pg/cell versus those with $2n = 96\text{--}100$ and about 7.0 pg/cell. A third example comes from non-*Cobitis* cobitids with $2n = 48\text{--}50$ with about 2.0 pg/cell versus those with $2n = 96\text{--}100$ and about 4.5 pg/cell (Suzuki 1996: S-143).

The diploid chromosome number in marine neopterygian fishes, which have various genome sizes (0.8–4.4 pg/cell), was generally 46, 48, or 50 with the exception of $2n = 56$ in Osmeriformes and did not show polyploidy, although triploidy was exceptionally reported in the Zoarcidae (Perciformes) (Morescalchi et al. 1996: M-89). In other words, it is difficult to infer polyploidy in marine fishes from genome size.

In Teleostei, genome size is relatively conserved in families, with the important exception of those including recent or ancient polyploids. Diploid chromosome numbers have been thought to vary across taxa above the family level, but when they were analyzed in terms of Robertsonian translocation and tandem fusion, they were found to be more conservative in each family. On the other hand, there are several problems in karyological analysis. The finding of B chromosomes might cause change of $2n$, NF, and ancestral chromosome number (ACN) in taxa that have been reported to possess no B chromosomes. It is likely that many more species, when analyzed with sufficient intensity, will be found to possess B chromosomes (Camacho et al. 2000: C-2). B chromosomes have been studied actively in Characiformes and neotropical Siluriformes (Carvalho et al. 2008: C-98), but there have been very few data on B chromosomes in the other taxa.

Table 2 Numbers of karyotyped genera and species/subspecies (sp/ssp), diploid chromosome number (2n) and genome size in families of jawless fishes

FCM = flow cytometry, FD = Feulgen densitometry, BFA = bulk fluorometric assay, SCF = static cell fluorometry.

Order/family/subfamily	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)				
	total	studied	total	studied		FCM	FD	BFA	SCF	
PHYLUM CHORDATA										
Subphylum Craniata										
Superclass Myxinocephali										
Class MYXINI										
MYXINIFORMES										
Myxinidae										
Myxininae	4	2	25	4	14, 28, 34, 36				6.9–9.2	
Eptatretinae	3	1	45	4	34, 36	5.4	5.5	5.6	4.6–6.9	
Superclass Petromyzontomorpha										
Class PETROMYZONTIDA										
PETROMYZONTIFORMES										
Petromyzontidae	8	5	34	11	142–168	2.6, 4.2	2.6–2.9, 4.2	3.2		
Geotriidae	1	1	1	1	ca. 180		3.1			
Mordaciidae	1	1	3	2	76		2.8			

Table 3 Numbers of karyotyped genera and species/subspecies (sp/ssp), diploid chromosome number (2n) and genome size in families of jawed fishes

FCM = flow cytometry, FD = Feulgen densitometry, FIA = Feulgen image analysis densitometry, BFA = bulk fluorometric assay.

Table 3.1 Class CHONDRICHTHYES

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)				
	total	studied	total	studied		FCM	FD	FIA	BFA	
Superclass Gnathostomata										
Grade Chondrichthiomorphi										
Class CHONDRICHTHYES										
Subclass Holocephali										
CHIMAERIFORMES										
Callorhinchidae	1	0	3	0					3.9	
Rhinochimaeridae	3	0	8	0					3.2	
Chimaeridae	2	2	22	2	58, 86			3.0	4.0	
									3.2	
Subclass Elasmobranchii										
Subdivision Selachii										
HETERODONTIFORMES										
Heterodontidae	1	1	8	2	102	17.5	14.5, 29.6		13.6	
ORECTOLOBIFORMES										
Brachaeluridae	2	0	2	0						
Ginglymostomatidae	3	0	3	0		7.6, 11.4	10.9	8.5	8.0	
Hemiscylliidae	2	0	12	0				9.1–11.0		
Orectolobidae	3	0	6	0				10.1		
Parascylliidae	2	0	7	0						
Rhincodontidae	1	0	1	0						
Stegostomatidae	1	0	1	0						
LAMNIIFORMES										
Alopiidae	1	0	3	0						
Cetorhinidae	1	0	1	0						
Lamnidae	1	1	5	1	82	12.9	13.4	10.0		
Megachasmidae	1	0	1	0						
Mitsukurinidae	1	0	1	0						
Odontaspidae	2	1	3	1	ca. 84	10.9				
Pseudocarchariidae	1	0	1	0						
CARCHARHINIFORMES										
Carcharhinidae	12	4	50	7	74–90	6.7–8.3	5.5–13.1	5.7–9.9	6.8–8.6	
Hemigaleidae	4	0	7	0						
Leptochariidae	1	0	1	0						
Proscylliidae	3	0	5	0						
Pseudotriakidae	2	0	2	0						
Scyliorhinidae	16	2	113	5	62, 64, 72	18.1	11.3–14.7		15.4	
Sphyrnidae	2	1	8	1	78–86	6.6	8.9	6.1	7.0, 7.8	
Triakidae				4						
Galeorhininae	6	0	10	0				17.3		
Triakinae	3	2	28	4	68, 72, 80		8.6–9.8		9.0–12.8	
HEXANCHIFORMES										
Chlamydoselachidae	1	1	1	1	ca. 100			9.2		
Heptranchiidae	1	1	1	1	72					
Hexanchidae	1	0	2	0				10.7		
Notorynchidae	1	1	1	1	104	8.8				
ECHINORHINIFORMES										
Echinorhinidae	1	0	2	0						

Table 3.1 Class CHONDRICHTHYES (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
SQUALIFORMES				4					
Centrophoridae	2	0	14	0			13.1–14.2	14.5	
Dalatiidae	7	0	10	0			18.2		
Etmopteridae	5	1	41	2	86	16.2	32.3	23.8–25.4	
Oxynotidae	1	1	5	1	62		34.1	25.0	
Somniidae	7	0	17	0			16.4–26.0	19.5–23.2	
Squalidae	2	1	10	1	58–60, 78	14.0	13.7–14.4	11.6	12.0
SQUATINIFORMES				1					
Squatinaidae	1	1	15	1	88		32.8	18.6–19.6	
PRISTIOPHORIFORMES				0					
Pristiophoridae	2	0	5	0					
Subdivision Batoidea									
TORPEDINIFORMES				6					
Narcinidae	9	2	37	2			14.7, 24.1	21.0–24.0	8.4
<i>Narcine</i>					28				8.4
<i>Narke</i>					54		21.0–24.0		
Torpedinidae	2	1	22	4	66, 82, 86	14.1	14.0–15.0		14.6
PRISTIFORMES				0					
Pristidae	2	0	7	0					5.6
RAJIFORMES				11					
Rajidae	26	3	238	7	58, 96–98	5.8–7.2	5.4–8.1	5.5–6.9	5.6–7.2
Rhinidae	1	0	1	0					
Rhinobatidae	4	1	42	4	59–64, 84, 92	4.9–8.0	5.9–8.3	6.0	8.0
Rhynchobatidae	1	0	4	0					
MYLIOBATIFORMES				22					
Suborder Platyrhinoidei				1					
Platyrhinidae	2	1	3	1	64	9.0, 15.5			15.4
Suborder Zanobatoidei				0					
Zanobatidae	1	0	2	0			11.7		
Suborder Myliobatoidei				21					
Dasyatidae	6	2	68	8	58, 64–78	7.8–10.1	8.5–13.7	6.8–13.4	9.4
Gymnuridae	2	1	11	2	56	10.0, 11.4			16.2
Hexatrygonidae	1	0	1	0		10.0			
Myliobatidae				6					
Mobulinae	2	1	10	1	66	9.6–10.2	9.4		
Myliobatinae	4	1	20	4	52–54	10.4–11.9	8.7–10.8		9.8
Rhinopterinae	1	1	7	1	64	10.0–10.2			10.4
Plesiobatidae	1	0	1	0					
Potamotrygonidae	3	2	20	3	66, 90				
Urolophidae	2	1	24	2	52, 72	15.5	13.1		13.0
Urotrygonidae	2	0	16	0					

Table 3.2 Class ACTINOPTERYGII. Part 1 Cladistia and Chondrostei

Order/family	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)				
	total	studied	total	studied		FCM	FD	FIA	BFA	
Grade Teleostomi (OSTEICHTHYES)										
Class ACTINOPTERYGII										
Subclass Cladistia										
POLYPTERIFORMES										
Polypteridae	2	2	16	7	36, 38		9.1–14.5	7.4	9.4–9.8	
Subclass Chondrostei										
ACIPENSERIFORMES										
Acipenseridae	4	4	25	20	105–372					
(2X)					105–120	2.4–4.7	3.2–3.6	4.4		
(4X)					240–260	8.8–9.5	6.1–9.1			
(6X)					372	13.1		13.8		
Polyodontidae	2	1	2	1	120	3.2–4.9				

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)				
	total	studied	total	studied		FCM	FD	FIA	BFA	
Subclass Neopterygii										
Division Holostei										
LEPISOSTEIFORMES										
Lepisosteidae	2	1	7	2	56, ca. 68	2.8	2.9	2.8	2.4	
AMIIIFORMES										
Amiidae	1	1	1	1	46		2.3–2.5	2.3		
Division Teleostei										
Subdivision Osteoglossomorpha										
HIODONTIFORMES										
Hiodontidae	1	1	2	2	50		1.2			
OSTEOGLOSSIFORMES										
Osteoglossidae	4	4	7	7	40–56		1.6–1.8	2.0		
Pantodontidae	1	1	1	1	48			1.5		
Mormyridae	18	2	201	2	48			2.0–2.4		
Notopteridae	4	4	8	4	34, 42	2.2			2.6	
Gymnarchidae	1	0	1	0						
Subdivision Elopomorpha										
ELOPIFORMES										
Elopidae	1	1	6	1	48			2.4		
Megalopidae	1	1	2	2	46, 50–52		2.0			
ALBULIFORMES										
Suborder Albuloidei										
Albulidae	1	0	3	0						
Suborder Notacanthoidei										
Halosauridae	3	0	15	0						
Notacanthidae	3	0	10	0						
ANGUILLIFORMES										
Suborder Anguilloidei										
Anguillidae	1	1	15	5	38	2.2		2.0	2.8–3.3	
Heterenchelyidae	2	0	4	0						
Moringuidae	2	1	6	1	50					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Muraenoidei				12					
Chlopsidae	8	0	18	0				3.9	
Muraenidae	15	3	185	12	36, 42	4.6		3.8	4.4–5.1
Myrocongridae	1	0	4	0					
Suborder Congroidei				15					
Colocongridae	1	0	5	0					
Congridae	22	2	160	5	34, 38	2.4–3.6			
Derichthyidae	2	0	3	0					
Muraenesocidae	4	1	8	1	38			2.3	
Nemichthyidae	3	0	9	0					
Nettastomatidae	6	0	38	0					
Ophichthidae	52	7	290	8	38–48				
Serrivomeridae	2	0	10	0					
Synaphobranchidae	10	1	32	1	26			3.2	
SACCOPHARYNGIFORMES				0					
Suborder Cyematoidei				0					
Cyematidae	2	0	2	0					
Suborder Saccopharyngoidae				0					
Eurypharyngidae	1	0	1	0					
Monognathidae	1	0	15	0					
Saccopharyngidae	1	0	10	0					
Subdivision Otocephala (= Ostarioclupomorpha)									
CLUPEIFORMES				30					
Suborder Denticipoidei				0					
Denticipitidae	1	0	1	0					
Suborder Clupeoidei				30					
Pristigasteridae	9	0	34	0					
Chirocentridae	1	0	2	0				1.6	
Clupeidae				23					
Alosinae	7	3	31	9	46, 48		2.0		2.2–2.8
Clupeinae	16	6	72	9	28, 44–48, 50–54		2.0–2.7	1.8–2.1	1.5
Dorosomatinae	6	4	22	5	48	2.0		1.8	
Pellonulinae	23	0	44	0				2.2	
Engraulidae	16	4	139	7	42, 44, 48	2.9	3.0		3.8
GONORYNCHIFORMES				2					
Suborder Chanoidei				1					
Chanidae	1	1	1	1	32				
Suborder Gonorynchoidei				0					
Gonorynchidae	1	0	5	0					
Suborder Knerioidei				1					
Kneriidae	4	0	30	0					
Phractolaemidae	1	1	1	1	28				
CYPRINIFORMES				747					
Superfamily Cyprinoidea				630					
Cyprinidae	220	180	2420	628					
Acheilognathinae	3	3	50	34	42–48	2.1–2.3	1.8–2.1		
Barbinae	?	30	?	154	48–150				
(2X)		16		75	48–50	1.5–2.2	1.4–2.5		1.9–2.4
(4X)		9		57	96–100	2.7–3.7	3.4–3.5, 4.6		
(6X)		5		22	150				
Cultrinae	?	15	?	30	48	2.6	1.8–2.4		
Cyprininae	6	4	25	22	100–162				
(4X)		4		22	100	3.4–4.5	3.1–3.8, 4.8	3.4	
(6X)		1		3	150–162	5.4	4.6–4.8, 6.1		

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Gobiobotinae	?	2	?	7	50				
Gobioninae	?	21	?	65	50	2.4–3.7	2.8–3.3		
Hypophthalmichthyinae	2	2	3	2	48		1.9–2.1		
Labeoninae	?	12	?	50	44, 48, 50		2.8	2.2–2.5	2.2–2.6
Leuciscinae	?	68	?	200	48, 50	2.0–3.7	1.8–3.2	2.5–2.8	
Rasborinae (= Danioninae)	?	18	?	46	48–78				
(2X)		16		41	48–52	2.2, 3.4–4.6	1.8–2.9, 4.4	2.8	3.2, 3.6–4.4
(2X)		3		5	70–78	2.3	3.3		
Schizothoracinae	?	12	?	29	90–148, >400				
(4X)		11		22	90–92, 98–100		3.0–3.1, 4.9		
(6X)		1		6	148		6.5–7.0		
(18X)		1		1	417–470		17.2		
Squaliobarbinae	?	3	?	3	48	2.0	2.0–2.2		
Tincinae	1	1	1	1	48	2.3	1.7–2.1		
Xenocyprinae	4	4	?	7	48		2.1–2.8		
Psilorhynchidae	2	1	6	2	50				
Superfamily Cobitoidea					117				
Gyrinocheilidae	1	1	3	1	48	1.2	1.0	1.3	1.3
Catostomidae	13	9	72	15	96–100	3.7–5.5	4.0	4.2–5.1	
Cobitidae	26	19	177	76					
Botiinae	5	5	?	20	98–100	1.6–2.1	1.8–1.9		1.7
Leptobotiinae	2	2	?	11	50–52		1.1		
Cobitinae	19	12	130	45	48–100				
<i>Cobitis</i> (2X)				16	48, 50	2.8–4.0	4.3		
<i>Cobitis</i> (3X)				1	74–75	6.0			
<i>Cobitis</i> (4X)				3	96–98, 100	6.8–7.6	7.2		
non- <i>Cobitis</i> (2X)				27	48, 50		2.0–2.2		2.4–2.8
non- <i>Cobitis</i> (4X)				3	100		4.5–4.6		
Balitoridae	59	13	590	24					
Nemacheilinae	29	8	420	19	44–50, 75		1.0–1.1, 2.2		
Balitorinae	29	5	170	5	48, 50		0.9		
Vaillantellidae	1	1	1	1	50				
CHARACIFORMES				341					
Suborder Citharinoidae				0					
Citharinidae	3	0	8	0					
Distichodontidae	17	0	90	0					
Suborder Characoidei				341					
Acestrorhynchidae	1	1	15	3	50		1.7, 3.1		
Alestiidae (Alestidae)	18	1	110	1	56			2.4	
Anostomidae	12	7	137	39	54		2.6–3.5		2.8–3.4
Characidae				194					
Aphyocharacinae	2	2	10	4	50		2.5–2.7		3.4
Bryconinae	3	2	43	12	50		2.4		
Chalceinae	1	1	2	1	52, 54		2.2		2.2
Characinae	12	6	70	13	46, 50, 52		2.2–3.1		3.4
Cheirodontinae	15	9	46	16	32, 42, 50, 52		3.7		
Glandulocaudinae	19	2	50	5	52		2.5, 3.1		
Iguanodectinae	2	1	2	1	50		2.4		
Paragoniatinae	7	1	8	1	52				
Serrasalminae	15	11	80	35	54, 58, 60–64		3.2–3.6	3.0	3.2–3.4
Stethaprioninae	4	3	12	4			3.5		
Tetragonopterinae	?	20	?	91	36, 38, 46–54	2.5–4.0	2.1–4.2		3.2–4.2
Triporthinae	?	1	?	11	50, 52		2.7, 3.5		
Chilodontidae	2	2	7	2	54				
Crenuchidae	12	1	74	9	50				
Ctenoluciidae	2	2	7	2	36				
Curimatidae	8	7	95	37	46, 54, 56, 102		2.8–3.8		
Cynodontidae	4	0	14	0			2.0–2.1		

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Erythrinidae	3	3	14	11	39–42, 48–54		2.3		2.8
Gasteropelecidae	3	3	9	5	48, 52, 54		2.2–2.6		2.8
Hemiodontidae	6	3	28	7	54				
Hepsetidae	1	0	1	0					
Lebiasinidae	7	4	61	11	22–46		2.0		2.4
Parodontidae	3	2	21	8	54		2.0–2.5		
Prochilodontidae	3	2	21	12	54		3.1–3.7		
SILURIFORMES						362			
Akysidae	4	0	42	0					
Amblycipitidae	3	2	26	9	20–42				
Amphiliidae	2	0	26	0					
Ariidae	21	9	150	15	52–56	4.5		4.9	4.8–5.0
Aspredinidae	12	1	36	1	50				
Astroblepidae	1	0	54	0					
Auchenipteridae	20	4	94	5	56, 58				
Auchenoglanididae	6	0	28	0					
Austroglanididae	1	0	3	0					
Bagridae	18	10	170	33	44, 48–60	1.8	1.9–2.1		1.8–2.2
Callichthyidae				48					
Callichthyinae	5	4	13	7	56–64				
<i>Dianema, Hoplosternum</i>				5	60–62		1.2–1.4		
<i>Callichthys</i>				1	56–58		1.9		3.4
<i>Megalechis</i>				1	64	3.2			
Corydoradinae	4	4	164	41	40–134				
<i>Corydoras</i> (2X)				12	56–62, 74		1.3–3.6	3.2	
<i>Corydoras</i> (2X)				8	40–50, 56		4.5–4.9		4.6–6.0
<i>Corydoras</i> (4X)				5	92, 120–134	8.4	6.3–8.8	6.4	8.4–8.8
Cetopsidae	7	0	23	0					
Chacidae	1	0	3	0					
Clariidae	14	2	90	8	50–56, 100		1.8		2.4
Claroteidae	7	0	59	0					
Cranoglanididae	1	1	3	1	74				
Diplomystidae	2	2	6	3	56		2.6		
Doradidae	30	11	72	13	56, 58, 66		3.5		3.2
Erethistidae	6	1	14	1	50				
Heptapteridae	25	6	175	20	46, 52–58, 87		1.8–2.2		
Heteropneustidae	1	1	3	1	56				
Ictaluridae	7	5	46	33	40–62	2.0	1.9–2.1		2.4
Loricariidae				74					
Ancistrinae	27	5	217	10	38–40, 48–52			3.6	
Hypoptopomatinae	16	8	79	12	54, 58, 72		1.8, 2.7		4.2
Hypostominae	?	6	?	23	52–54, 64–80		3.2–4.5	3.2–3.4	4.2
Lithogeneinae	1	0	2	0					
Loricariinae	31	7	209	18	36–74		3.0		3.2
Neoplecostominae	?	5	?	10	54		2.3		
Upsilodinae	?	1	?	1	96				
Malapteruridae	2	0	19	0				2.0	
Mochokidae	11	2	179	9	54, 56		1.9, 2.8	2.2–2.4	
Nematogenyidae	1	0	1	0					
Pangasiidae	3	2	28	5	58, 60				
Pimelodidae	31	14	85	30	50, 54, 56		1.1, 2.0–2.8		2.4
Plotosidae	10	1	35	2	36–38, 48			3.5	
Pseudopimelodidae	5	5	26	6	54		2.2–2.5		
Schilbeidae	15	4	56	4	58, 66				2.0
Scolopacidae	1	1	4	1	50				
Siluridae	11	4	97	13	42, 54–60, 86	2.3	1.7–2.9		1.8

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Sisoridae					9				
Sisorinae	6	2	23	2	42, 46–48				
Glyptosterninae	11	4	89	7	36, 42, 50–56				
Trichomycteridae	41	6	201	18	32, 54, 81		2.3–2.6		
GYMNOTIFORMES					17				
Suborder Gymnoidei					6				
Gymnotidae	2	2	33	6	40–48, 52–54				2.0
Suborder Sternopygoidei					11				
Apteronotidae	13	2	45	3	22, 24, 52				1.4
Hypopomidae	7	3	16	4	36–38, 42, 50				
Rhamphichthyidae	3	1	12	1	52		1.9		
Sternopygidae	5	2	28	3	28–40, 46–48				2.0
Subdivision Euteleosteoi									
ARGENTINIFORMES					5				
Suborder Argentinoidei					5				
Argentinidae	2	1	23	1	44		1.7		
Microstomatidae	11	4	38	4	36, 54, 60, 62		3.4, 6.3		
Opisthoproctidae	6	0	11	0					
Suborder Alepocephaloidei					0				
Alepocephalidae	23	0	90	0					
Bathylaconidae	2	0	3	0					
Platytoctidae	13	0	37	0					
OSMERIFORMES					19				
Galaxiidae	8	2	52	10	22, 30–44		1.8–2.1		
Osmeridae					9				
Hypomesinae	1	1	6	3	56				
Osmerinae	4	3	8	3	54, 56	1.2	1.5–1.7	1.4	
Plecoglossinae	1	1	1	1	56				
Salanginae	5	2	16	2	56				
Retropinnidae	3	0	5	0					
SALMONIFORMES					85				
Salmonidae					85				
Coregoninae	3	3	32	27	60–64, 72–86	6.0–7.1	5.1–6.9	4.0–4.9	
Thymallinae	1	1	5	3	98–110	4.3		4.0	
Salmoninae	7	7	73	55	52–92				
<i>Brachymystax</i>					1	90–92			
<i>Hucho</i>					2	82–84			
<i>Parahucho</i>					1	62			
<i>Oncorhynchus</i>					21	52, 58–70, 74	4.9–6.4	4.1–6.6	4.7–5.0
<i>Salmo</i>					12	54–58, 78–84	5.2–6.4	5.5–5.8	6.5
<i>Salvelinus</i>					18	78–84	5.7	7.4–7.5	5.8–6.7
<i>Dallia</i>									7.0
<i>Novumbräa</i>									
<i>Umbra</i>									
ESOCIFORMES					11				
Esocidae	1	1	6	6	50	2.3	2.2–2.7	1.8–2.3	
Umbridae	3	3	7	5	22, 44, 48, 78				
<i>Dallia</i>					1	78		2.5	
<i>Novumbräa</i>					1	48		2.1	
<i>Umbra</i>					3	44, 22		4.8–5.0	5.1
<i>Umbra</i>									5.4
STOMIIFORMES					7				
Diplophidae	3	0	8	0					
Suborder Gonostomatoidei					7				
Gonostomatidae	5	3	23	3	12, 48				
Sternopychidae	10	2	67	4	35, 48–52				

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Phosichthyoidei				0					
Phosichthyidae	7	0	20	0					
Stomiidae	28	0	273	0					2.6
ATELEOPODIFORMES				0					
Ateleopodidae	4	0	12	0					
AULOPIFORMES				9					
Suborder Synodontoidei				7					
Aulopidae	2	0	10	0					
Paraulopidae	1	0	10	0					
Pseudotrichonotidae	1	0	1	0					
Synodontidae	4	3	57	7	26–27, 48	2.2–2.9	1.6–2.5	2.7, 3.1	2.4
Suborder Chlorophthalmoidei				2					
Bathysauroidae	1	0	1	0					
Bathysauropsidae	1	0	3	0					
Chlorophthalmidae	2	1	19	2	24, 36				
Ipnopidae	5	0	29	0					
Notosudidae	3	0	19	0					
Suborder Alepisauroidei				0					
Alepisauridae	2	0	3	0					
Evermannellidae	3	0	7	0					
Paralepididae	13	0	56	0					
Scopelarchidae	4	0	17	0					
Suborder Giganturoidei				0					
Bathysauridae	1	0	2	0					
Giganturidae	1	0	2	0					
MYCTOPHIFORMES				28					
Neoscopelidae	3	1	6	1	48	2.6	5.0		
Myctophidae	32	16	240	27	44, 48	3.8–4.0			
LAMPRIFORMES				0					
Lampridae (= Lamprididae)	1	0	2	0					
Lophotidae	2	0	3	0					
Radiicephalidae	1	0	1	0					
Regalecidae	2	0	2	0					
Stylephoridae	1	0	1	0					
Trachipteridae	3	0	10	0					
Veliferidae	2	0	2	0					
POLYMIIXIIFORMES				0					
Polymixiidae	1	0	10	0					
Superorder Paracanthopterygii									
PERCOPSIFORMES				1					
Amblyopsidae	5	0	6	0					
Aphredoderidae	1	1	1	1	48				
Percopsidae	1	0	2	0					
GADIFORMES				15					
Bregmacerotidae	1	0	15	0					
Euclichthyidae	1	0	1	0					
Gadidae				12					
Gadinae	12	6	25	10	26, 38–48			1.7–1.9	1.8
Lotinae	3	1	5	1	48				
Ranicipitinae	1	1	1	1	48				
Macrouridae	27	0	350	0				1.5–1.9	
Melanonidae	1	0	2	0					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Merlucciidae	1	0	13	0				1.7–1.9	1.9–2.0
Moridae	18	0	105	0				1.5, 1.9	
Muraenolepididae	1	1	4	1	48				
Phycidae	5	2	25	2	28, 48			1.7	
OPHIDIIFORMES				3					
Suborder Ophidioidei				3					
Carapidae	7	1	31	1	36				
Ophidiidae	48	2	222	2	43, 44			1.2–1.3	1.4, 1.7
Suborder Bythitoidei				0					
Aphyonidae	6	0	22	0					
Bythitidae	16	0	62	0					
Parabrotulidae	2	0	3	0					
Superorder Acanthopterygii									
MUGILIFORMES				18					
Mugilidae	17	8	72	18	24, 28, 48	1.6	1.4	1.6–2.0	2.0
ATHERINIFORMES				21					
Suborder Atherinopsoidei				12					
Atherinopsidae	11	6	108	12	44, 46, 48			1.3	2.2
Suborder Atherinoidei				9					
Atherinidae	12	2	60	2	48			2.1	
Atherionidae	1	1	3	1	48				
Melanotearniidae	17	3	113	6	46, 48			2.6	
Notocheiridae	2	0	6	0					
Phallostethidae	5	0	22	0					
BELONIFORMES				26					
Suborder Adrianichthyoidei				13					
Adrianichthyidae				13					
Adrianichthynae	2	0	5	0					
Horaichthynae	1	0	1	0					
Oryziinae	1	1	22	13	28–42, 46, 48	2.1–2.2	1.5–1.9		2.2
Suborder Belonoidei				13					
Belonidae	10	4	34	7	48, 50, 54	2.3	2.2	2.0	2.2–2.4
Exocoetidae	8	1	52	1	48	1.9			
Hemiramphidae	12	4	109	4	40, 46, 48, 52	2.0	1.5	1.9–2.4	1.5–2.2
Scomberesocidae	2	1	4	1	42				
CYPRINODONTIFORMES				346					
Suborder Aplocheiloidei				205					
Aplocheilidae	2	2	7	6	38, 48			1.5	1.5
Nothobranchiidae	?	10	250	155	16–42, 46–50				2.4
Rivulidae	28	12	236	44	20, 34–48, 54				3.0
Suborder Cyprinodontoidei				141					
Anablepidae	3	1	15	1	46				
Cyprinodontidae	9	6	104	35	48, 50, 52				3.2
Fundulidae	4	2	50	24	32–34, 40–48	2.7–3.0		2.6	2.8–3.0
Goodeidae	16	16	36	36	24–30, 42, 48				
Poeciliidae				44					
Aplocheilichthynae	1	1	?	2	48				
Procatopodinae	9	3	78	4	48				
Poeciliinae	27	8	225	38	42–48 (69, 72)	1.3–2.0	1.3–2.1	2.8	1.7–1.9
Profundulidae	1	0	5	0					
Valenciidae	1	1	2	1	48				

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
STEPHANOBERYCIFORMES									5
Barbourisiidae	1	0	1	0					
Cetomimidae	9	0	20	0					
Gibberichthyidae	1	0	2	0					
Hispidoberyidae	1	0	1	0					
Megalomycteridae	4	0	5	0					
Melamphaidae	5	4	36	5	42, 46–50, 58				
Mirapinnidae	3	0	5	0					
Rondeletiidae	1	0	2	0					
Stephanoberyidae	3	0	3	0					
BERYCIFORMES									9
Suborder Trachichthyoidei									5
Anomalopidae	6	0	8	0					
Anoplogastridae	1	1	2	1	48				
Diretmidae	3	1	4	2	44–46, 70				2.9
Monocentridae	2	1	4	1	48				
Trachichthyidae	7	1	39	1	48				1.3
Suborder Berycoidei									1
Berycidae	2	1	9	1	48	1.7			2.0
Suborder Holocentroidei									3
Holocentridae	8	3	78	3	48, 50	2.0	1.3	1.5–1.7	1.8
ZEIFORMES									2
Suborder Cyttoidei									0
Cyttidae	1	0	3	0					1.5
Suborder Zeioidei									2
Grammicolepididae	3	0	3	0					
Oreosomatidae	4	1	10	1	42				2.5–2.6
Parazenidae	3	0	4	0					
Zeidae	2	1	5	1	42–44				2.5
Zeniontidae	3	0	7	0					
GASTEROSTEIFORMES									19
Suborder Gasterosteoidae									10
Aulorhynchidae	2	0	2	0					
Gasterosteidae	5	4	10	10	42, 46	1.2			1.3
Hypoptychidae	1	0	1	0					
Indostomidae	1	0	3	0					
Suborder Syngnathoidei									9
Aulostomidae	1	0	3	0					1.4
Centriscidae	2	0	4	0					0.9–1.1
Fistulariidae	1	0	4	0		1.5–1.8			1.4
Macroramphosidae	3	1	11	2	48				1.1
Pegasidae	2	0	5	0					
Solenostomidae	1	0	5	0					
Syngnathidae	52	4	232	7	36, 44, 48, 58				1.1–2.7
<i>Hippocampus, Syngnathus</i>									4
<i>Nerophis</i>									58
<i>0.9–2.1</i>									1.3
<i>3.6–3.9</i>									
BATRACHOIDIFORMES									9
Batrachoididae	22	5	78	9	44, 46, 48				3.4–6.0
SYNBRANCHIFORMES									8
Suborder Mastacembeloidei									4
Chaudhuriidae	6	0	9	0					
Mastacembelidae	5	3	73	4	48		1.6		1.5

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Synbranchoidei				4					
Synbranchidae	4	3	17	4					
<i>Monopterus</i>				2	24, 42			1.2–1.6	
<i>Synbranchus</i>				1	42–46			5.6–8.5	
SCORPAENIFORMES			101						
Suborder Dactylopteroidei			1						
Dactylopteridae	2	1	7	1	48				
Suborder Scorpaenoidei			36						
Scorpaenidae	56	12	418	36					
Sebastinae	7	4	133	18	46, 48	1.8–1.9		1.9–2.0	1.9–2.2
Scorpaeninae	20	5	185	16	34–48				
<i>Scorpaena</i>				2	34–36, 40–48	2.8	1.8	2.9	2.8
<i>Pterois</i>				1	48			2.0	
Apistinae	3	0	3	0					
Tetraoginae	11	2	38	2	47–48, 50	2.1			
Synanceiinae	9	1	35	1	48	1.2, 1.8			
Caracanthidae	1	0	4	0					
Aploactinidae	17	0	38	0					
Pataecidae	3	0	3	0					
Gnathanacanthidae	1	0	1	0					
Congiopodidae	4	0	9	0					
Suborder Platyccephaloidei			9						
Triglidae	10	3	105	3	47–48			1.6	1.6, 2.0
Peristediidae	4	0	36	0					
Bembridae	5	0	10	0					
Platycephalidae	18	4	65	6	48			1.4–1.8	
Hoplichthyidae	1	0	10	0					
Suborder Anoplopomatoidei			1						
Anoplopomatidae	2	1	2	1	30			1.4	1.7
Suborder Hexagrammoidei			5						
Hexagrammidae	5	2	12	5	48	1.7	1.5	1.4–1.9	1.8–1.9
Suborder Normanichthyoidei			0						
Normanichthidae	1	0	1	0					
Suborder Cottoidei			49						
Rhamphocottidae	1	0	1	0				2.2	
Ereuniidae	2	0	3	0					
Cottidae	70	16	275	34	32, 37–48, 52		1.5	1.4–1.9	1.8–1.9
Comephoridae	1	1	2	2	48				
Abyssocottidae	7	6	23	10	48				
Hemitripteridae	3	1	8	1	46			1.8–2.0	1.9
Agonidae	22	1	47	1	48			1.5	
Psychrolutidae	8	0	35	0				1.8–2.0	
Bathylutichthysidae	1	0	1	0					
Cyclopteridae	6	1	28	1	50			1.7–1.9	
Liparidae	29	0	334	0				1.5–1.8	
PERCIFORMES			867						
Suborder Percoidae			314						
Acropomatidae	8	0	31	0					
Ambassidae	9	3	46	4	40, 44, 48			1.1	
Aplodactylidae	1	0	5	0					
Apogonidae	23	4	273	13	34–38, 46	2.9		1.6–2.6	
Arridae	1	0	4	0				1.4	
Banjosidae	1	0	1	0					
Bathyclupeidae	1	0	5	0					
Bramidae	7	1	22	1	54				
Caesionidae	4	0	20	0				2.2–2.3	
Callanthiidae	2	0	12	0					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Carangidae	32	13	140	26	46–50, 56	1.7	1.2–1.4	1.2–1.8	1.4–1.7
Caristiidae	2	0	5	0					
Centracanthidae	2	1	8	1	44–48				
Centrarchidae	8	8	31	23	40, 46, 48	1.9–2.1	1.9–2.2	1.5–2.3	
Centrogeniidae	1	0	1	0					
Centropomidae	1	1	12	1	48				
Cepolidae	4	0	19	0					
Chaetodontidae	11	2	122	11	48	1.5–1.6	1.1	1.4–1.7	1.7
Cheilodactylidae	5	0	22	0				1.3–1.5	
Chironemidae	2	0	5	0					
Cirrhitidae	12	0	33	0		1.5			
Coryphaenidae	1	0	2	0				1.2	
Dichistidae	1	0	2	0					
Dinolestidae	1	0	1	0					
Dinopercidae	2	0	2	0					
Drepaneidae	1	0	3	0				1.4	
Echeneidae	4	1	8	1	42			1.4	1.4
Emmelichthyidae	3	0	15	0		2.1		1.5	
Enoplosidae	1	0	1	0					
Epigonidae	6	0	25	0					
Gerreidae	8	4	44	8	48	1.4	0.9	1.2	1.6
Glaukosomatidae	1	0	4	0					
Grammatidae	2	0	12	0					
Haemulidae	17	6	145	17	48	1.6	1.2–1.5	1.7	1.7–2.0
Inermiidae	2	0	2	0					
Kuhliidae	1	1	10	2	48				
Kyphosidae	16	4	45	7	48	1.8		1.8, 2.1	1.6, 2.2
Lactariidae	1	0	1	0					
Latidae	2	2	9	2	48			1.4	
Latridae	3	0	8	0					
Leiognathidae	4	3	30	3	48			1.0–1.4	
Leptobramidae	1	0	1	0					
Lethrinidae	5	1	39	2	48	2.8–3.2		2.2–2.5	
Lobotidae	2	1	5	1	48				
Lutjanidae	7	3	105	18	47–48	2.9	2.0–2.2	1.4–2.7	1.9, 2.6
Malacanthidae	5	0	40	0					2.0
Menidae	1	0	1	0					
Monodactylidae	2	1	5	2	48				1.8
Moronidae	3	3	8	6	48	1.6		1.9	1.8
Mullidae	6	4	62	6	44, 48	1.2–1.3	1.0	1.1–1.3	
Nandidae	4	3	21	4	46, 48				
Nematistiidae	1	0	1	0					
Nemipteridae	5	0	64	0		2.2		1.5–1.7	
Notograptidae	1	0	3	0					
Opistognathidae	3	0	78	0				2.1	
Oplegnathidae	1	1	7	2	48	1.9			
Ostracoberycidae	1	0	3	0					
Pempheridae	2	1	26	1	48	1.4			
Pentacerotidae	7	0	12	0		1.6		1.4–1.5	
Percichthyidae	11	2	34	8	48	1.9		1.7	
Percidae	10	8	201	25	48	2.3–2.4		1.8–2.1	2.4
Perciliidae	1	0	2	0					
Plesiopidae	11	1	46	1	48				
Polycentridae	4	1	4	1	46				
Polynemidae	8	1	41	1	48				
Polyprionidae	2	0	5	0				1.5–1.8	
Pomacanthidae	8	3	82	14	48, 52			1.4	
Pomatomidae	1	1	1	1	48			1.6	1.9
Priacanthidae	4	1	18	1	52	1.5		1.7–1.8	2.2

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Pseudochromidae	20	0	119	0				1.4–1.9	
Rachycentridae	1	0	1	0				1.5	
Sciaenidae	70	25	270	38	46, 48	1.3, 1.9	1.2–1.6	1.3–1.5	1.5–2.0
Scombridae	1	0	3	0					
Serranidae	64	8	475	29	48	2.1–2.7	1.8–2.2	1.3–2.5	2.4–2.6
Sillaginidae	3	1	31	1	48			1.3	
Sparidae	33	14	115	28	48	1.9	1.0–1.7	1.3–1.5	1.9–2.0
Symphisanodontidae	1	0	6	0					
Terapontidae	16	2	48	4	48	1.7		1.3–1.6	
Toxotidae	1	0	6	0		1.5			
Suborder Elassomatoidei				1					
Elassomatidae	1	1	6	1	48				
Suborder Labroidei				241					
Cichlidae	112	54	? 130						
American cichlids	?	32	? 82	38–52, 60	2.0–2.5	2.4		2.0–2.4	
Asian cichlids	1	1	3 2	46, 48					
African cichlids	?	21	? 46	38–48	1.9	1.6–2.4		2.0–2.4	
Embiotocidae	13	3	23 3	48				1.5–2.0	
Pomacentridae	28	12	348 46						
Amphiprioninae	1	1	27 3	48	2.3–2.4		1.6–2.1		
Chrominae	5	2	? 10	28–48	2.1	2.6	1.7–2.1	2.2	
Lepidozyginae	1	0	1 0						
Pomacentrinae	21	10	? 33	36, 42, 48	2.3–3.4	1.5–1.7	1.4–2.1		
Labridae	68	21	453 58	22, 32–48	1.5–3.5	1.6–2.9	1.3–2.8	1.8–2.0	
Odacidae	4	0	12 0						
Scaridae	10	4	88 4	46, 48	4.2	2.5–2.8	2.9–3.2	3.8–4.6	
Suborder Zoarcoidae			13						
Bathymasteridae	3	1	7 1	26				1.9	
Zoarcidae	46	3	230 4	48, 72		2.9–3.2	1.6–2.2		
Stichaeidae	37	6	76 6	28, 46–48, 56				1.6	
Cryptacanthodidae	1	0	4 0						
Pholidae	3	1	15 2	26, 46					
Anarhichadidae	2	0	5 0						
Ptilichthyidae	1	0	1 0						
Zaproridae	1	0	1 0						
Scytalinidae	1	0	1 0						
Suborder Notothenioidei			63						
Artedidraconidae	4	3	25 9	46		4.1			
Bathydraconidae	11	7	16 7	20, 36–38, 44–48		2.8			
Bovichtidae	3	2	11 4	48					
Channichthyidae	11	10	15 13	47–48		3.7–4.4			
Eleginopidae	1	1	1 1	48					
Harpagiferidae	1	1	6 1	48					
Nototheniidae	14	11	50 27	22–32, 46–50, 58		2.0–3.6			
Pseudaphritidae	1	1	1 1	48					
Suborder Trachinoidei			8						
Ammodytidae	8	1	23 1	46					
Champsodontidae	1	0	13 0						
Cheimarrhichthyidae	1	0	1 0						
Chiasmodontidae	4	0	15 0						
Creediidae	7	0	16 0						
Leptoscopidae	3	0	5 0						
Percophidae	11	0	44 0						
Pinguipedidae	5	1	54 3	26, 42, 48		1.1–1.2			
Trachinidae	2	2	6 2	48					
Trichodontidae	2	1	2 1	48					
Trichonotidae	1	0	8 0						
Uranoscopidae	8	1	50 1	26–32	1.5		1.4		

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Suborder Pholidichthyoidei				0					
Pholidichthyidae	1	0	2	0					
Suborder Blennioidei				27					
Blenniidae	56	13	360	25	40–48	1.6	1.2–2.4	1.0–1.7	1.7–1.9
Chaenopsidae	13	0	86	0					
Clinidae	4	1	12	1	48				
Dactyloscopidae	9	0	43	0					
Labrisomidae	15	1	105	1	48				2.0
Tripterygiidae	23	0	150	0		1.7–2.6		1.7	
Suborder Icosteoidei				0					
Icosteidae	1	0	1	0					
Suborder Gobiesocoidei				5					
Gobiesocidae	36	4	140	5	42, 46, 48				
Suborder Callionymoidei				5					
Callionymidae	13	2	182	5	32, 36–38, 42	1.2, 1.6			1.4, 2.0
Draconettidae	2	0	12	0					
Suborder Gobioidei				125					
Rhyacichthyidae	1	0	2	0					
Odontobutidae	5	3	15	4	44	2.2–2.4		2.5	
Eleotridae	35	10	155	14					
Butinae	13	3	?	5	46, 48				2.5
Eleotrinae	22	5	?	9	46, 48				
Ptereleotridae	5	1	36	1	46				1.2
Xenisthmidae	6	0	12	0					
Kraemeriidae	2	0	8	0					
Gobiidae	210	49	1950	106					
Gobiinae	130	21	?	52	30, 38–50, 52	0.8–2.0	1.7–3.4		
Gobionellinae	56	15	?	37	34, 40–48, 52	2.4–3.0	2.5	2.4–2.8	
Sicydiinae	7	1	?	1	44				
Oxudercinae	10	8	?	14	38, 42–48			1.9	
Amblyopinae	10	2	?	2	38, 44, 46				
Microdesmidae (= Cerdalidae)	5	0	30	0					
Schindleriidae	1	0	3	0					
Suborder Kurtioidei				1					
Kurtidae	1	1	2	1	44				
Suborder Acanthuroidei				12					
Acanthuridae	6	3	80	6	34, 36, 48	1.6–1.7	1.4	1.3–2.0	
Ephippidae	8	1	16	1	48			1.5–1.6	1.9
Luvaridae	1	0	1	0					
Scatophagidae	2	2	4	2	48			1.4	1.5
Siganidae	1	1	27	3	42, 48	1.2–1.4		1.2–1.4	
Zanclidae	1	0	1	0					
Suborder Scombrolabracoidae				0					
Scombrolabracidae	1	0	1	0					
Suborder Scombroidei				10					
Sphyraenidae	1	1	21	1	48	1.2	1.4	1.1–1.3	1.7, 2.4
Gempylidae	16	0	24	0				1.6	
Trichiuridae	10	0	39	0				1.8	
Scombridae	15	4	51	9	48	1.7		1.6–1.8	1.8–2.2
Xiphiidae	1	0	1	0				1.3	1.8
Istiophoridae	3	0	11	0				1.3	
Suborder Stromateoidei				0					
Amarsipidae	1	0	1	0					
Centrolophidae	7	0	28	0				1.4–1.6	
Nomeidae	3	0	16	0					
Ariommataidae	1	0	7	0					
Tetragonuridae	1	0	3	0					
Stromateidae	3	0	15	0				1.6	
Suborder Anabantoidei (Labyrinthici, in part)				30					

Table 3.3 Class ACTINOPTERYGII. Part 2 Neopterygii (continued)

Order/family/subfamily/genus	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)			
	total	studied	total	studied		FCM	FD	FIA	BFA
Anabantidae	4	3	33	9	46, 48				
Helostomatidae	1	1	1	1	48				1.8
Osphronemidae	14	8	86	20	16, 42, 46, 48	1.1–1.9		1.3	1.2–1.6
Suborder Channoidei				11					
Channidae	2	2	29	11	32–48, 66, 104		1.3–1.9		2
Suborder Caproidei				1					
Caproidae	2	1	11	1	42–46				
PLEURONECTIFORMES				62					
Suborder Psettodoidei				0					
Psettodidae	1	0	3	0				1.4	
Suborder Pleuronectoidei				62					
Citharidae	5	0	6	0					
Scophthalmidae	4	2	8	3	40, 44			1.3, 1.7	
Paralichthyidae	16	6	105	14	28, 38, 46, 48	1.4	1.6	1.0–1.1	1.5–2.0
Pleuronectidae	23	12	60	21	44, 46, 48	1.2–1.3	1.3–1.5	1.1–1.7	1.3–1.9
Bothidae	20	2	140	3	38, 44	1.2			
Paralichthodidae	1	0	1	0					
Poecilopsettidae	3	0	20	0					
Rhomboseleidae	9	0	19	0					
Achiropsettidae	4	0	6	0					
Samaridae	3	0	20	0					
Achiridae	7	5	33	7	34–42			1.3	
Soleidae	35	5	130	7	30, 42, 46–48	1.5		1.5–2.1	
Cynoglossidae	3	3	127	7	34, 38–42, 46	1.5		1.2	2.2
LOPHIIFORMES				4					
Antennariidae	12	2	42	3	46, 48			1.6	
Lophiidae	4	1	25	1	46			2.1	2.0
Tetrabrachiidae	1	0	1	0				1.5	
Lophichthyidae	1	0	1	0					
Brachionichthyidae	1	0	4	0					
Chaunacidae	2	0	14	0					
Ogcocephalidae	10	0	68	0				1.5	
Caulophrynidiae	2	0	5	0					
Neoceratiidae	1	0	1	0					
Melanocetidae	1	0	5	0					
Himantophidae	1	0	18	0					
Diceratiidae	2	0	6	0					
Oneirodidae	16	0	62	0			2.0		
Thaumatichthyidae	2	0	7	0					
Centrophrynidiae	1	0	1	0					
Ceratiidae	2	0	4	0					
Gigantactinidae	2	0	22	0					
Linophrynidiae	5	0	27	0					
TETRAODONTIFORMES				65					
Suborder Triacanthodoidei				0					
Triacanthodidae	11	0	21	0					
Suborder Balistoidei				31					
Triacanthidae	4	2	7	2	48			1.0	
Balistidae	11	8	40	14	40–46	1.4–1.5	1.1	1.2–1.3	1.4
Monacanthidae	32	7	102	10	33–40	1.1–1.2		0.9–1.3, 1.6	1.3–1.4
Ostraciidae	14	2	33	5	34–36, 48–50	2.0–2.2	1.9		1.7, 2.2
Suborder Tetraodontoidei				34					
Tridontidae	1	0	1	0					
Tetraodontidae	19	7	130	29	28, 34–46	0.8–0.9		0.8–1.0	0.8–1.0
Diodontidae	6	2	19	4	46, 52	1.6–1.7			1.8
Molidae	3	1	4	1	46	1.7–1.9			

Table 3.4 Class SARCOPTERYGII

Order/family/species	No. of genera		No. of sp/ssp		2n	Genome size (pg/cell)				
	total	studied	total	studied		FCM	FD	FIA	BFA	
Class SARCOPTERYGII										
Subclass Coelacanthimorpha										
COELACANTHIFORMES					1					
Latimeriidae	1	1	2	1	48=32+16MC			7.2		
Subclass Dipnotetrapodomorpha										
CERATODONTIFORMES					5					
Suborder Ceratodontoidei					1					
Ceratodontidae	1	1	1	1	54=34+20MC	106.0	150.0	109.0		
Suborder Lepidosirenoidei					4					
Lepidosirenidae	1	1	1	1	38	161.0	226.0–248.0			
Protopteridae	1	1	4	3	34, 68	125.0–131.0	80.0–266.0			
<i>Protopterus annectens</i>					34		81.0			
<i>Protopterus dolloi</i>					68		163.0			

Cytogenetic Approach to Fish Systematics

To clarify interrelationships of fishes cytogenetically, genome size has been studied in fishes (Hindegardner and Rosen 1972: H-13; Ojima and Yamamoto 1990: O-48; Hardie and Hebert 2004: H-40; Pie et al. 2007: P-61; Smith and Gregory 2009: S-191). However, the question of the C-value enigma has been a puzzle for almost half a century, which suggests that a simple comparison of taxa and their genome size may be insufficient for the study of genome evolution in fishes. Concerning genome size, the transposable elements, the spectrum of size and frequency of small spontaneous nucleotide insertions and deletions, and genome duplication are the important parameters in the long-term evolution of genome size (Petrov 2001: P-5; Gregory 2005: G-22).

As inferred by gene mapping analysis, inter- and intra-chromosomal rearrangements by Robertsonian translocation, tandem fusion, pericentric- and paracentric-inversion have occurred in fishes and a higher rate of chromosomal rearrangements in teleosts compared to other vertebrates has been hypothesized based on a comparison of the medaka genome with the zebrafish, pufferfish, and human genomes (Ravi and Venkatesh 2008: R-117). Therefore, synthetic analyses of karyotypes, genome sizes, and DNA sequences, and stepwise study inferring the karyotype and genome size of the latest common ancestor in monophly from lower to higher taxa, may be necessary to clarify fish systematics.

Recently, the early fish proto-karyotype has been studied (Jaillon et al. 2004: J-21; Naruse et al. 2004: N-77; Woods et al. 2005: W-37; Kohn et al. 2006: K-141; Nakatani et al. 2007: N-75). According to Sato and Nishida (2010: S-205), whole-genome duplication (WGD), which generates many thousands of duplicate genes, is believed to be one of the major evolutionary events that shaped the genomes of vertebrates including fishes and tetrapods. Interestingly, the analysis of teleost fish genomes has revealed that teleosts experienced an additional WGD (3R-WGD), whereas tetrapods experienced only 1R- and 2R-WGD; exceptionally, some lineages of amphibians and reptiles have experienced an additional WGD. The chromosomal distribution of the homologous genes can be compared between tetrapods and teleosts by whole-genome sequence analysis, and this information can then be used to infer the karyotype of the osteichthyan ancestor. Nakatani et al. (2007: N-75) hypothesized the following karyotype evolution model in fishes based on reconstruction of the vertebrate ancestral genome. Before the first round of WGD, the vertebrate ancestor karyotype was $2n = 20-26$, and the subsequent 2R-WGD and some genome rearrangements yielded the jawed vertebrate ancestor of $2n = 80$. After the divergence of Osteichthyes and Chondrichthyes, genome rearrangements reduced the number of chromosomes in the osteichthyan ancestor to $2n = 62$. After the divergence of ray-finned and lobe-finned fishes, in the lineage of ray-finned fishes (Actinopterygii), chromosome fusions reduced the number of chromosomes and produced the teleost ancestor with $2n = 26$. Subsequently, the whole-genome duplication (3R-WGD) in the teleost ancestor doubled the number of chromosomes to $2n = 52$. The number of chromosomes in the teleost lineage has remained nearly unchanged during evolution, and the chromosome numbers of extant teleost species peak at $2n = 48$ or 50.

Database of Karyotypes: How to Use the Database

The database of fish karyotypes (Tables 4–7) is organized in the form of tables subdivided into 12 columns (A to L) as follows.

1. Column A contains current scientific names of karyotyped taxon. Classification of species, as a rule, followed Eschmeyer's *Catalogue of Fishes* (E-13). Classification of higher taxa than species, as a rule, followed Nelson (N-68). Hybrids were not included. Synonymy of species/subspecies followed, as a rule, Eschmeyer (E-13).
2. Column B includes the names used in the original karyotype papers in cases in which these differ from currently accepted classification.
3. Column C shows the sex of fishes studied. The majority of fishes reproduce bisexually. However, sex chromosome systems unequivocally identified by karyotypes are known only in a limited number of species. Datasets for such heterosomes were given separately for both sexes and were marked with 'F' for females and 'M' for males. For possible further items, see also column J.
4. Column D contains diploid chromosome number ($2n$), marked with an asterisk when inferred from a haploid number. B chromosomes, as a rule, were excluded from diploid chromosome number.
5. Column E includes the karyotype. Classification of chromosomes followed Levan et al. (L-25): M, metacentrics, SM, submetacentrics, ST, subtelocentrics, A, acrocentrics. When these could not be clearly derived from source publications, classification was as follows: meta- and/or submetacentric (M/SM), submeta- and/or subtelocentric (SM/ST), and subtelo- and/or acrocentric (ST/A). Difference in the karyotype could be attributed to different degrees of chromosome condensation, leading to differences in chromosome classification among authors. In karyotypes of cartilaginous fishes and ancient fishes such as lobe-finned, acipenseriform, and lepisosteiform fishes, small dot-like microchromosomes (MC) have been observed. They are so small that they could not be identified to any type of chromosomes defined by Levan et al. (1964: L-25) at present. It is unknown whether MC is different from M, SM, ST, and A. In this book, MC was added as an additional type to M, SM, ST, and A. As for papers in which the description of karyotype disagrees with the figures, karyotypes based on the figures, as a rule, were adopted.
6. Column F (NF_1) shows fundamental arm number, when M and SM are counted as two-armed.
7. Column G (NF_2) contains fundamental arm number, when M, SM, and ST are counted as two-armed. The arm number by Scheel (1972: S-24) differs from NF_2 . As Scheel counted all chromosomes with a short arm as two-arms, acrocentrics with short arms were counted as two-arms, i.e., NF sensu Scheel $\geq NF_2$. Therefore, Scheel's arm number is shown in parentheses.
8. Column H includes the number of Ag-NORs. The number and position of NORs can differ by different methods such as chromomycin A₃ and silver staining. Silver staining is the method specific to NORs and studied widely. The number of Ag-NORs in the embryo tends to be larger than that of adults. Recently, 18S rDNA and 5S rDNA, which are components of NORs, have been examined by fluorescence in situ hybridization (FISH). However, the number of species for which NORs have been studied by FISH is limited.
9. Column I shows genome size (pg/cell). Following Gregory (G-85), the methods used to estimate genome size were listed in five categories: flow cytometry (FCM), Feulgen densitometry (FD), Feulgen image analysis densitometry (FIA), bulk fluorometric assay (BFA), and static cell fluorometry (SCF). To facilitate comparison of genome size (pg/cell), the genome sizes of standard species were updated according to Gregory (G-85): *Acipenser ruthenus* (3.8 pg), *Carassius auratus* (3.5 pg), *Cyprinus carpio* (3.4 pg), *Gallus domesticus*

(2.5 pg), *Homo sapiens* (7.0 pg), *Myxine garmani* (9.2 pg), *Mus musculus* (6.5 pg), *Oncorhynchus mykiss* (5.2 pg), *Salmo salar* (6.0 pg), *Scyliorhinus canicula* (11.4 pg), *Thymallus thymallus* (4.3 pg), and *Tinca tinca* (2.0 pg). Therefore, genome size by Ojima and Yamamoto (O-48) was revised to be 76% of their genome size in this book. The revised genome size was marked with an asterisk. Genome size, which is difficult to specify to one of different karyotypes in a given species, was shown in parentheses.

10. Column J contains cytogenetic information on sex chromosomes, ploidy, B chromosomes, and diploid chromosome number of the latest common ancestor (ACN, ancestral chromosome number) and others: B, B chromosomes; ploidy, 2X, 3X, 6X. ACN was inferred based on $2n$ and the number of large chromosomes (LC), which were inferred to be formed by Robertsonian fusion, being $2n + \text{number of LC}$. The definition of ACN is the same as NAN sensu Arai and Nagaiwa (1976: A-64).
11. Column K includes the locality of fish analyzed in the karyotype papers. If the locality was not provided in the original source, known distributions for the species appear in parentheses.
12. Column L shows references numbered as provided in the References.

Table 4 Jawless fishes

Table 4.1 Class MYXINI. Order MYXINIFORMES

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Myxinidae											
Eptatretinae											
<i>Eptatretus burgeri</i>		F, M	36	(spermatogonia 2n=52)			6.0 SCF		B in spermatogonia	Japan (Kanagawa, Ibaraki) N-6, N-62	
<i>Eptatretus burgeri</i>	<i>burgeriare</i>	F	36	36A	36	36				Japan (Kanagawa)	K-66, K-67
<i>Eptatretus cirrhatus</i>	Type A	F, M	34	(spermatogonia 2n=72)			4.6 SCF		B in spermatogonia	New Zealand	N-62
<i>Eptatretus cirrhatus</i>	Type B	M	34	(spermatogonia 2n=80)					B in spermatogonia	New Zealand	N-62
<i>Eptatretus okinoseanus</i>		F, M	34	(spermatogonia 2n=54)			5.4 SCF		B in spermatogonia	Japan (Kanagawa, Ibaraki) N-6, N-62	
<i>Eptatretus stoutii</i>		M	34	(spermatogonia 2n=48-54)			5.6 SCF, (5.5 FD)		B in spermatogonia	Canada (off Bamfield)	N-62, A-106
<i>Eptatretus stoutii</i>							5.4 FCM, (5.6 BFA)			N. Pacific	T-28, T-73, H-37
Myxininae											
<i>Myxine garmani</i>		F, M	14	(spermatogonia 2n=16)			9.2 SCF			Japan (Kanagawa, Ibaraki) N-6, N-62	
<i>Myxine glutinosa</i>		F, M	28	(germ cells 2n=42-44)	28	28				Sweden (Gullmaren Fjord) N-47	
<i>Myxine glutinosa</i>		F, M	28	(spermatogonia 2n=44)			8.6 SCF			Sweden (Baltic)	N-62
<i>Paramyxine atami</i>		F, M	34	(spermatogonia 2n=48)			6.9 SCF		B in spermatogonia	Japan (Kanagawa, Ibaraki) N-6, N-62	
<i>Paramyxine atami</i>		F	36	36A	36	36				Japan (Kanagawa)	K-66, K-67
<i>Paramyxine atami</i>		F	34	34A	34	34				Japan (Kanagawa)	K-66, K-67
<i>Paramyxine sheni</i>		M	34	(spermatogonia 2n=66-96)					B in spermatogonia	Taiwan (Taitung)	S-68, K-140

Table 4.2 Class PETROMYZONTIDA. Order PETROMYZONTIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Petromyzontidae											
<i>Eudontomyzon</i> <i>mariae</i>				168					Europe		H-44
<i>Ichthyomyzon</i> <i>fossor</i>				166 (mode)			2.7* FD		USA (Great lakes)		R-85, R-116
<i>Ichthyomyzon</i> <i>gager</i>				164 (mode) 164 ST/A	164		2.6* FD		USA (AL)		H-35, R-116
<i>Lampetra</i> <i>aepyptera</i>				161–168 all ST/A	161–168			ammocoetes	USA (AL)		H-25
<i>Lampetra</i> <i>fluvialis</i>				164 (mode)			2.6 FCM, 2.9* FD		UK		R-85, R-116, V-86
<i>Lampetra</i> <i>lamottei</i>	<i>lamottenii</i>			166 (mode)			2.8* FD		USA (Great lakes)		R-85, R-116
<i>Lampetra</i> <i>planeri</i>				164 (mode)			2.7, 2.8* FD		UK		R-85, R-116, A-106
<i>Lampetra</i> <i>zanandreai</i>				142					Europe		Z-40
<i>Lethenteron</i> <i>camtschatica</i>	<i>Entosphenus japonicus</i>			144–162					Japan (Hokkaido)		K-67
<i>Lethenteron</i> <i>reissneri</i>	<i>Entosphenus</i>	F, M		165–174					Japan (Hokkaido)		S-13
<i>Petromyzon</i> <i>marinus</i>				168 168 M/SM/ST/A			4.2 FCM, 4.2* FD		UK (England)		P-60, T-73, R-116
<i>Petromyzon</i> <i>marinus</i>							3.2 BFA				H-37
Geotriidae											
<i>Geotria</i> <i>australis</i>				180			3.1* FD		S. W. Australia		R-86, R-116
Mordaciidae											
<i>Mordacia</i> <i>mordax</i>				76	numerous M/SM		2.8* FD		S. E. Australia		P-59, R-116
<i>Mordacia</i> <i>praecox</i>			M	76					Australia (N.S.W.)		R-84

Table 5 Class CHONDRICHTHYES**Table 5.1 Order CHIMAERIFORMES**

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Chimaeridae											
<i>Chimaera</i> <i>monstrosa</i>			86	86 ST/A/MC	86				Sweden		N-46
<i>Hydrolagus</i> <i>colliei</i>		F	ca. 58	all A/MC	ca. 58			3.0 FD, 3.2 BFA	USA (Los Angeles)		O-7, H-37

Table 5.2 Order HETERODONTIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Heterodontidae											
<i>Heterodontus</i> <i>francisci</i>		F	102	26 non-A + 76A	128			17.5 FCM, 14.5 FD, 13.6 BFA	(E. Pacific)		S-40, S-185, H-37
<i>Heterodontus</i> <i>japonicus</i>		M	102	10 M/SM + 92 ST/A	112			27.2, 31.9 FD	Japan (Sagami Bay)		I-6

Table 5.3 Order LAMNIIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Lamnidae											
<i>Carcharodon</i> <i>carcharias</i>		M	82	48 non-A + 34A	130			12.9 FCM	XY?	Atlantic	S-40, M-114
Odontaspididae											
<i>Carcharias</i> <i>taurus</i>			ca. 84					10.9 FCM	(global)		S-41

Table 5.4 Order CARCHARHINIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Carcharhinidae											
<i>Carcharhinus acronotus</i>		M	84	32 non-A + 52A		116		6.7 FCM, 6.8 BFA		USA (NC)	S-41, H-37
<i>Carcharhinus limbatus</i>		M	ca. 86	ca. 50 A and others		ca. 120		7.8 FCM, 7.4 BFA		USA (NC)	S-41, H-37
<i>Carcharhinus limbatus</i>			86	33 M/SM + 53A	119			8.2 FD		Mediterranean	S-115
<i>Carcharhinus obscurus</i>			ca. 78	ca. 20 M/SM + others	ca. 98			5.5, 6.0 FD		Japan (Chiba)	A-105, M-133
<i>Carcharhinus plumbeus</i>			ca. 74	ca. 18 M/SM + others	ca. 92			6.0 FD		Japan (Ogasawara)	A-105
<i>Galeocerdo cuvieri</i>		F, M	86	38 non-A + 48A		124		8.3 FCM		USA (NC)	S-40, M-114
<i>Galeocerdo cuvieri</i>			86	40 M/SM + 46A	126	126		(7.6* FCM)		Mediterranean	S-115, O-48
<i>Prionace glauca</i>		F, M	86	30 M/SM + 56 ST/A	116			8.6 FD		Japan (off Sanriku)	A-105
<i>Prionace glauca</i>			78	28 M/SM + 50 ST/A	106			8.6 FD		(global)	A-102
<i>Prionace glauca</i>		M	78	4M + 6SM + 20 ST/A and others				(8.6 BFA)		N. Pacific	Y-4, H-37
<i>Rhizoprionodon terraenovae</i>		M	80	44 non-A + 36A		124		7.2 FCM	sex chrom?	USA (NC)	S-40, M-114
<i>Rhizoprionodon terraenovae</i>			90	32 M/SM + 58A	122	122					S-115
Scyliorhinidae											
<i>Cephaloscyllium umbratile</i>		M	64	34 M/SM + 30 ST/A	98			14.7 FD		Japan (Suruga Bay)	A-101
<i>Cephaloscyllium ventriosum</i>			64	46 non-A + 18A		110		18.1 FCM, 15.4 BFA		(E. Pacific)	S-40, H-37
<i>Scyliorhinus canicula</i>			62	18M + 24SM + 20 A/MC	104	2	11.3 FD			Italy	S-111, R-87
<i>Scyliorhinus stellaris</i>			72	30M + 20SM + 22 MC	122	2	12.3 FD			Italy	S-111, R-87
<i>Scyliorhinus torazame</i>		M	64	26 M/SM + 38 ST/A	90			13.2 FD		Japan (Shimokita)	A-101
Sphyrnidae											
<i>Sphyrna lewini</i>		F	86	20 M/SM + 66 ST/A	106			(6.1 FIA)		Japan (Ogasawara)	A-105, H-40
<i>Sphyrna lewini</i>			78	18 non-A + 60A		96		6.6 FCM, (7.0 BFA)		(global)	S-40, H-37
Triakidae											
<i>Mustelus canis</i>			80	44 M/SM + 36A	124	124		9.6 FD, 9.2 BFA		(W. Atlantic)	S-115, H-37
<i>Mustelus manazo</i>		F	68	44 M/SM + 24 ST/A	112			9.3 FD		Japan (Chiba)	A-102
<i>Triakis scyllia</i>		M	72	36 M/SM + 36 ST/A	108			9.8 FD		Japan, Pacific	A-102
<i>Triakis semifasciata</i>			72	52 non-A + 20 A		124		9.6 BFA	XY?	(E. Pacific)	S-40, M-114, H-37

Table 5.5 Order HEXANCHIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Chlamydoselachidae											
<i>Chlamydoselachus anguineus</i>		M	100	12 M/SM + 88 ST/A	112			9.2 FD		Japan (Suruga Bay)	I-6
Heptanchiidae											
<i>Heptranchias perlo</i>			ca. 72	6M + 66 ST/A	78					(global)	I-3
Notorynchidae											
<i>Notorynchus cepedianus</i>	<i>maculatus</i>	F	104	4 non-A + 100A		108		8.8 FCM		(global)	S-40, M-114

Table 5.6 Order SQUALIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Etmopteridae											
<i>Etmopterus pusillus</i>			86					16.1* FCM		(global)	O-48
<i>Etmopterus spinax</i>	Squalidae	M	86	86 A/MC	86			32.3 FD		Atlantic	N-46, S-112
Oxynotidae											
<i>Oxynotus centrina</i>			62	56 M/SM + 6A	118	118		34.0 FD		(Mediterranean)	S-113, S-185, O-74
Squalidae											
<i>Squalus acanthias</i>		M	78	38 M/SM + 40 ST/A	116					Sweden	N-46
<i>Squalus acanthias</i>		M	60	60 non-A		120		12.0 BFA		USA (off NC)	S-40, H-37
<i>Squalus acanthias</i>		F	64	32 M/SM + 32 ST/A	96			14.0 FCM	ACN=66	USA (off NC)	M-114
<i>Squalus acanthias</i>			58	56 M/SM + 2A	114	114		(11.6 FIA)			P-50, H-40

Table 5.7 Order SQUATINIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Squatatinidae											
<i>Squatina californica</i>			88	26 non-A + 62A	114			18.6 BFA	XY/XX	(E. Pacific)	S-40, M-114, H-37

Table 5.8 Order TORPEDINIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Narcinidae											
<i>Narcine</i> <i>brasiliensis</i>	Rajiformes	F, M	28	18M + 4SM + 6ST	50	56	8.4 BFA			Gulf of Mexico	D-17, H-37
<i>Narke</i> <i>japonica</i>		F	54	28 M/SM + 26 ST/A	82		24.0 FD			Japan (Izu)	I-5
Torpedinidae											
<i>Torpedo</i> <i>californica</i>		F	82	4 M/SM + 78 ST/A	86		14.6 BFA			Japan (Iwate)	I-5, H-37
<i>Torpedo</i> <i>marmorata</i>			86	86 ST/A	86		14.0 FD			Italy	O-74, S-111
<i>Torpedo</i> <i>marmorata</i>		F, M	86	66A + 20 MC	86		3			Italy (Tyrrhenian Sea)	S-114
<i>Torpedo</i> <i>tokionis</i>		M	86	86A	86	86				Japan (Suruga Bay)	A-103
<i>Torpedo</i> <i>torpedo</i>	<i>ocellata</i>	F, M	66	12 M/SM + 14A + 40 MC	78	3	15.0 FD			Italy (Tyrrhenian Sea)	O-74, S-111, S-114

Table 5.9 Order RAJIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Rajidae											
<i>Amblyraja</i> <i>radiata</i>	<i>Raja</i>		98							Sweden	N-43
<i>Dipturus</i> <i>batis</i>	<i>Raja</i>	M	98	6 M/SM + 92A	104		6.2 FD			Sweden	N-43, N-46, S-111
<i>Raja</i> <i>asterias</i>			98	6 M/SM + 92A	104	8	7.0 FD			Italy	O-74, R-118, S-113
<i>Raja</i> <i>clavata</i>		M	98	4 M/SM + 94 ST/A/MC	102		6.3 FD			Sweden	N-43, N-46, S-112
<i>Raja</i> <i>eglantaria</i>	F, M	58	30 non-A + 28A		88	6.5 FCM		ACN=60		USA (NC)	S-40, M-114
<i>Raja</i> <i>montagui</i>		M	96	18 M/SM + 16ST + 62A	114	130	12	6.9 FD		Italy (near Naples)	R-88, R-118, S-111
<i>Raja</i> <i>polystigma</i>	F, M	96	18 M/SM + 16ST + 62A	114	130					Italy (near Naples)	R-112
Rhinobatidae											
<i>Rhinobatos</i> <i>hynnicephalus</i>		F	60	26M + 25SM + 6ST + 3A	111	117	4	7.6* FCM		Japan (Osaka)	K-49, O-48
<i>Rhinobatos</i> <i>hynnicephalus</i>		M	59	26M + 24SM + 6ST + 3A	109	115	4			Japan (Osaka)	K-49
<i>Rhinobatos</i> <i>lentiginosus</i>		F	84							Gulf of Mexico	D-17
<i>Rhinobatos</i> <i>productus</i>	F, M	92	44 non-A + 48A		136		8.0 FCM, 8.0 BFA		XY/XX	(E. Pacific)	S-40, M-114, H-37
<i>Rhinobatos</i> <i>schlegelii</i>		F	64	55 M/SM + 9 ST/A	119		5.9 FD		ACN=70	Japan	A-110
<i>Rhinobatos</i> <i>schlegelii</i>	M	63	54 M/SM + 9 ST/A	117		4.9 FCM, 5.9 FD		ACN=69		Japan	A-110, C-100

Table 5.10 Order MYLIOBATIFORMES

A Current scientific name of taxon Suborder/family/subfamily/specie	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Platyrhinoidei											
Platyrhinidae											
<i>Platyrhinoidis</i>	<i>triseriata</i>		F, M	64	32 non-A + 32A		96	15.5 FCM, 15.4 BFA	XY/XX	(E. Pacific)	S-40, M-114, H-37
Suborder Myliobatoidei											
Dasyatidae											
<i>Dasyatis</i>	<i>akajei</i>		F	72	34 M/SM + 38 ST/A	106		8.0, 8.4* FCM, 8.3 FD		Japan (Chiba)	A-100, C-100, O-48
<i>Dasyatis</i>	<i>americana</i>		F	78	9 M/SM + 69A	87	87	9.3 FCM, 11.1 FD		USA (NC)	M-114, S-115, S-185
<i>Dasyatis</i>	<i>kuhlii</i>			64				9.9* FCM		(Indo-West Pacific)	O-48, S-115
<i>Dasyatis</i>	<i>matsubarai</i>		M	64	40 M/SM + 24 ST/A	104		9.6 FD		Japan (Shimokita)	A-103
<i>Dasyatis</i>	<i>sabina</i>	Rajiformes	F, M	68	28 M/SM + 40 ST/A	96		10.1 FCM		Gulf of Mexico	D-17, T-73
<i>Dasyatis</i>	<i>sayi</i>	Rajiformes	F	68	34 M/SM + 34 ST/A	102		9.4 BFA		Gulf of Mexico	D-17, H-37
<i>Dasyatis</i>	<i>violacea</i>			58	46 M/SM + 12A	104	104	13.7 FD		Italy	O-74, S-113, S-115
<i>Dasyatis</i>	<i>violacea</i>		M					9.6 FD		Pacific	A-103
<i>Taeniura</i>	<i>lymma</i>		M	64	38 M/SM/ST + 26A	102	4	13.4 FIA		Bali	R-87, R-118, H-40
Gymnuridae											
<i>Gymnura</i>	<i>japonica</i>			56	32 M/SM + 24 ST/A	88				Japan	A-104
<i>Gymnura</i>	<i>micrura</i>			56	44 non-A + 12A		100	11.4 FCM, 16.2 BFA		(W. Atlantic)	S-40, H-37

Table 5.10 Order MYLIOBATIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/specie	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Myliobatidae											
Mobulinae											
<i>Mobula</i>	<i>japonica</i>		F	66	26M + 12SM + 28 ST/A	104		9.3 FD, 9.6 FCM		Japan (Sanriku)	A-104, C-100
<i>Mobula</i>	<i>japonica</i>		M	66	26M + 11SM + 29 ST/A	103		9.4 FD		Japan (Sanriku)	A-104
Myliobatinae											
<i>Myliobatis</i>	<i>aquila</i>			52	32 M/SM + 20A	84	84	10.8 FD		(Atlantic to Indian)	S-113
<i>Myliobatis</i>	<i>californica</i>		F	52	50 non-A + 2A		102	10.4 FCM, 9.8 BFA		(E. Pacific)	S-40, M-114, H-37
<i>Myliobatis</i>	<i>freminvillii</i>		M	52	50 non-A + 2A		102	10.6 FCM, 9.8 BFA	XY?	USA (NC)	S-40, M-114, H-37
<i>Myliobatis</i>	<i>tobijei</i>		M	54	40 M/SM + 14 ST/A	94		8.7 FD, 10.7 FCM		Japan (Misaki)	A-100, C-100
Rhinopterinae											
<i>Rhinoptera</i>	<i>bonasus</i>			64	42 non-A + 22A		106	10.0 FCM		(W. Atlantic)	S-40
Potamotrygonidae											
<i>Paratrygon</i>	<i>aiereba</i>		F, M	90	4M + 2SM + 10ST + 74A	96	106	3		ACN=92	Brazil (AM)
<i>Potamotrygon</i>	<i>motoro</i>		F, M	66	18M + 12SM + 10ST + 26A	96	106	7		ACN=92	Brazil (AM)
<i>Potamotrygon</i>	<i>orbignyi</i>		F	66	22M + 10SM + 8ST + 26A	98	106	8		ACN=92	Brazil (AM)
Urolophidae											
<i>Urolophus</i>	<i>aurantiacus</i>		F	52	44 M/SM + 8 ST/A	96		15.5 FCM, 13.1 FD		Japan	A-100, C-100
<i>Urolophus</i>	<i>halleri</i>			72	20 M/SM + 52A	92		13.0 BFA		(E. Pacific)	S-40, H-37

Table 6 Class ACTINOPTERYGII (OSTEICHTHYES)**Table 6.1 Order POLYPTERIFORMES**

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Polypteridae											
<i>Erpetoichthys</i>	<i>calabaricus</i>	<i>Calamoichthys</i>		36 28M + 6SM + 2ST	70	72	2		(Africa)	S-131, S-132	
<i>Erpetoichthys</i>	<i>calabaricus</i>	<i>Calamoichthys</i>	M	36 32M + 4ST	68	72		ACN=46	(Africa)	C-13	
<i>Erpetoichthys</i>	<i>calabaricus</i>	<i>Calamoichthys</i>	F, M	36 30M + 6SM	72	72			(Africa)	D-8	
<i>Erpetoichthys</i>	<i>calabaricus</i>	<i>Calamoichthys</i>	F, M	36 36 M/SM	72	72	(9.1 FD, 9.8 BFA)	ACN=46	Cameroon	V-37, G-85, H-37	
<i>Polypterus</i>	<i>delhezi</i>		F	36 26M + 10SM	72	72			(Africa)	U-52	
<i>Polypterus</i>	<i>delhezi</i>		F, M	36 36 M/SM	72	72	9.7 FD	ACN=46	Zaire	V-37	
<i>Polypterus</i>	<i>delhezi</i>		F	36 32M + 4SM	72	72		ACN=46	Africa (Zaire R.)	C-92	
<i>Polypterus</i>	<i>endlicheri</i>	<i>endlicheri congicus</i>	F, M	36 32M + 4SM	72	72		ACN=46	Africa (Zaire R.)	C-92	
<i>Polypterus</i>	<i>ornatipinnis</i>			36 26M + 10SM	72	72			(Africa)	U-52	
<i>Polypterus</i>	<i>ornatipinnis</i>		F, M	36 36 M/SM	72	72	9.6 FD	ACN=46	(Africa)	V-37	
<i>Polypterus</i>	<i>palmas</i>		F, M	36 24M + 12SM	72	72			(W. Africa)	D-8	
<i>Polypterus</i>	<i>palmas</i>			36 26M + 10SM	72	72		ACN=46	(W. Africa)	U-52	
<i>Polypterus</i>	<i>palmas</i>		F	36 32M + 4SM	72	72		ACN=46	Africa (Zaire R.)	C-92	
<i>Polypterus</i>	<i>palmas</i>		F, M	36 36 M/SM	72	72	8.9 FD, (7.4 FIA)	ACN=46	(Africa)	V-37, H-41	
<i>Polypterus</i>	<i>senegalus</i>			36 28M + 8SM	72	72	2		(Africa)	S-131, S-132	
<i>Polypterus</i>	<i>senegalus</i>		F, M	36 26M + 10SM	72	72	2	ACN=46	Nigeria	M-127, U-52	
<i>Polypterus</i>	<i>weeksii</i>		F, M	38 34 M/SM + 4A	72	72	9.8 FD	ACN=46	(Africa)	V-37	

Table 6.2 Order ACIPENSERIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Acipenseridae											
<i>Acipenser baeri</i>			ca. 248				8	8.3 FCM	4X	Russia (Siberia)	V-9, V-10, B-68, F-70
<i>Acipenser brevirostrum</i>			372	178 M/SM + 194 ST/A	550		10	13.1 FCM, 13.8 FIA	6X	USA (FL)	K-54, B-69, H-41
<i>Acipenser brevirostrum</i>								18.6 FIA		N. America	H-41
<i>Acipenser fulvescens</i>		F	264	134 M/SM + 70 ST/A + 60 MC	398			8.9 FCM	4X	USA (WI)	B-69, F-62
<i>Acipenser gueldenstaedtii</i>			250	92 M/SM + 158 A/MC	342		6-8	7.9 FCM	4X	Russia (Volga R.)	B-37, B-68, V-72
<i>Acipenser medirostris</i>			249					8.8 FCM	4X	N. America	B-69, V-110
<i>Acipenser mikadoi</i>	<i>medirostris</i>							14.3 FCM	6X	Far East	B-68, L-78
<i>Acipenser naccarii</i>			ca. 239		390		8	6.3 FD	4X	Italy	F-58, F-61, F-70
<i>Acipenser nudiventris</i>			118	54M + 5A + 59 A/MC	172			3.9 FCM	2X	Russia (Black Sea)	A-88, B-68
<i>Acipenser oxyrinchus</i>			122	78 M/SM + 44 A/MC	200			(4.4 FIA)	2X	(Atlantic)	F-63, H-41
<i>Acipenser oxyrinchus</i>	<i>oxyrinchus desotoi</i>							4.6 FCM		N. America	B-69
<i>Acipenser persicus</i>			262	134 M/SM + 128 A/MC	396				4X	Iran	N-38
<i>Acipenser ruthenus</i>			118	82 M/SM + 36 A/MC	200		2-3	3.7 FCM	2X	Russia (Volga R.)	V-72, B-37, B-68
<i>Acipenser ruthenus</i>			118	58M + 4A + 56 MC	176				2X	Danube R.	R-10
<i>Acipenser schrenckii</i>			240					6.1 FD	4X	Amur R.	F-61
<i>Acipenser sinensis</i>			264	78M + 20SM + 26 ST/A + 140 MC	362				4X	China (Hubei)	Y-15
<i>Acipenser sinensis</i>		F, M	240	76M + 80SM + 20 ST/A + 64 MC	396			9.1 FD	4X	China (Hubei)	X-2
<i>Acipenser stellatus</i>			118	70 M/SM + 48 A/MC	188		2-3	3.7, 4.7 FCM	2X	Caspian Sea	V-72, B-37, B-68, L-78
<i>Acipenser sturio</i>			ca. 116		ca. 186			3.2 FD	2X	(Atlantic)	F-58, M-133
<i>Acipenser transmontanus</i>		M	ca. 248				8	9.5 FCM	4X	N. America	B-69, F-61, F-70, V-110
<i>Huso dauricus</i>			120					3.8 FCM	2X	Amur R.	B-68
<i>Huso huso</i>			118	60 M/SM + 58 A/MC	178		2-3	2.4 FCM	2X	Russia (Volga R.)	B-37, B-68, V-72
<i>Huso huso</i>			118	84 M/SM + 34 A/MC	202		4	3.6 FD	2X	(E. Europe)	F-32, F-61
<i>Pseudoscaphirhynchus kaufmanni</i>								3.5 FCM		Amu Darya R.	B-68
<i>Scaphirhynchus platorynchus</i>	<i>platorynchus</i>	<i>platorynchus</i>	M	112	50 M/SM + 14A + 48 MC	162		3.5 FD	2X	USA (Great Lakes)	O-7
<i>Scaphirhynchus platorynchus</i>								4.7 FCM		N. America	B-69
Polyodontidae											
<i>Polyodon spathula</i>		M	120	32M + 8SM + 8A + 72 MC	160		4	3.2, 3.9 FCM	2X	USA (AL)	D-14, B-68, T-73
<i>Polyodon spathula</i>								4.9 FCM		N. America	B-69

Table 6.3 Order LEPISOSTEIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Lepisosteidae											
<i>Lepisosteus</i>	<i>osseus</i>		F, M	56	22M + 12SM + 6ST + 16 MC	90	2		USA (Mississippi R.)	R-120	
<i>Lepisosteus</i>	<i>osseus</i>			56	12M + 22SM + 22 ST/A	90	4		(N. America)	O-32	
<i>Lepisosteus</i>	<i>oculatus</i>	<i>productus</i>	F	68	28 M/SM + 14A + 26 MC	96		2.8* FCM, 2.9 FD, 2.8 FIA	USA (Great Lakes)	O-7, O-48, H-40	

Table 6.4 Order AMIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Amiidae											
<i>Amia</i>	<i>calva</i>		F	46	20 M/SM + 26 ST/A	66		2.6 FD, 2.3 FIA	ACN=56	USA (Great Lakes)	O-7, H-40
<i>Amia</i>	<i>calva</i>		F	46	2M + 24 SM/ST + 20A	72	2	2.0 FD		(USA)	S-135

Table 6.5 Order HIODONTIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Hiodontidae											
<i>Hiodon</i>	<i>alosoides</i>	Osteoglossiformes	50	40 M/SM + 10ST	90	100		1.2 FD	ACN=56?	USA, Canada	U-68, B-14
<i>Hiodon</i>	<i>tergisus</i>	Osteoglossiformes	50	42 M/SM + 8 ST/A	92			1.2 FD	ACN=56	Canada (Manitoba)	B-14

Table 6.6 Order OSTEOGLOSSIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
Osteoglossidae												
<i>Arapaima</i> <i>gigas</i>			56	4M + 12 SM/ST + 40A		72		(1.6 FIA, 2.0 BFA)	ACN=56	(S. America)	U-51, H-13, H-40	
<i>Arapaima</i> <i>gigas</i>		F, M	56	28 M/SM + 28 ST/A	84		2		ACN=56	Brazil (MT)	M-147	
<i>Heterotis</i> <i>niloticus</i>			40	26M + 10SM + 2ST + 2A	76	78	2	2.0 FD	ACN=56	(W. Africa)	H-14	
<i>Osteoglossum</i> <i>bicirrhosum</i>		F	56	1SM + 1ST + 54A	57	58		1.8 FIA, 2.0 BFA	ACN=56	(S. America)	U-68, H-13, H-40	
<i>Osteoglossum</i> <i>bicirrhosum</i>			56	3ST + 53A	56	59			ACN=56	(S. America)	S-125	
<i>Osteoglossum</i> <i>ferreirai</i>			54	2M + 4SM + 14ST + 34A	60	74			ACN=56	(S. America)	S-125	
<i>Scleropages</i> <i>formosus</i>			50	4 M/SM + 10ST + 36A	54	64		1.9 FD	ACN=56	(SE Asia)	U-51, H-14	
<i>Scleropages</i> <i>jardini</i>			48	16M + 6SM + 26A	70	70	2	2.0 FD	ACN=56	(New Guinea)	H-14	
<i>Scleropages</i> <i>leichardti</i>			44	16M + 8SM + 6ST + 14A	68	74	2	2.0 FD	ACN=56	(N. Australia)	H-14	
Pantodontidae												
<i>Pantodon</i> <i>buchholzi</i>	<i>buchholzi</i>		48	12M + 12 SM/ST + 24A		72		1.5 BFA	ACN=56?	(W. Africa)	U-68, H-13	
Mormyridae												
<i>Gnathonema</i> <i>petersii</i>			48	10M + 6SM + 32A	64	64		2.4 BFA	ACN=56	Africa	U-68, H-13	
<i>Marcusenius</i> <i>brachistius</i>			48	1M + 4SM + 2ST + 41A	53	55				Africa	U-68	
Notopteridae												
<i>Chitala</i> <i>chitala</i>		<i>Notopterus</i>	42	42A		42	42	2	2.1* FCM	ACN=50	(Asia)	U-68, T-22, O-48
<i>Notopterus</i> <i>notopterus</i>		F, M	42	42A	42	42	2			India (Haryana, WB)	R-60, R-72, K-42	
<i>Papyrocranus</i> <i>afer</i>			34	4SM + 30A	38	38			ACN=46	Africa	U-68	
<i>Xenomystus</i> <i>nigri</i>			42	42A	42	42		2.6 BFA	ACN=50	Africa	U-68, H-13	

Table 6.7 Order ELOPIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Elopidae											
<i>Elops</i>	<i>saurus</i>		F, M	48	6 M/SM + 42 ST/A	54		2.4 BFA	ACN=54	USA (LA)	D-26, H-13
Megalopidae											
<i>Megalops</i>	<i>atlanticus</i>			50	50A	50	50		ACN=54	USA (Atlantic)	D-23
<i>Megalops</i>	<i>cyprinoides</i>	<i>cundingga</i>		46	46A	46	46			India (WB)	K-46
<i>Megalops</i>	<i>cyprinoides</i>		F	52	52A	52	52	(2.0 FIA)		India (Bombay)	R-66, H-40

Table 6.8 Order ANGUILLIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Anguilloidei											
Anguillidae											
<i>Anguilla</i>	<i>anguilla</i>		F	38	12M + 10SM + 16A	60	60		ZW, ACN=53	Poland (Krakow)	P-13, P-14
<i>Anguilla</i>	<i>anguilla</i>		M	38	12M + 10SM + 16A	60	60		ZZ, ACN=54	Poland (Krakow)	P-13, P-14
<i>Anguilla</i>	<i>anguilla</i>		F	38	12M + 10SM + 16A	60	60		ZW, ACN=53	Germany	P-10
<i>Anguilla</i>	<i>anguilla</i>		M	38	12M + 10SM + 16A	60	60		ZZ, ACN=54	Germany	P-10
<i>Anguilla</i>	<i>anguilla</i>		F, M	38	22 M/SM + 16A	60	60	2	(3.2 BFA)	Italy	S-87, H-13
<i>Anguilla</i>	<i>anguilla</i>	Type I		38	20 M/SM + 18A	58	58		ACN=52	(Europe)	K-88
<i>Anguilla</i>	<i>anguilla</i>	Type II		38	21 M/SM + 17A	59	59		ACN=53	(Europe)	K-88
<i>Anguilla</i>	<i>australis</i>		F, M	38	22 M/SM + 16A	60				New Zealand	S-87
<i>Anguilla</i>	<i>australis</i>			38	20 M/SM + 18A	58				(New Zealand)	N-28
<i>Anguilla</i>	<i>japonica</i>			38	20 M/SM + 18A	58			ACN=54	Japan	N-28, K-88
<i>Anguilla</i>	<i>japonica</i>		F, M	38	10M + 10SM + 18A	58	58			China (Wuhan)	Y-15
<i>Anguilla</i>	<i>japonica</i>		F	38	12M + 8SM + 18A	58	58		ZW, ACN=53	Korea (Han R.)	P-7, P-9
<i>Anguilla</i>	<i>japonica</i>		M	38	12M + 8SM + 18A	58	58		ZZ, ACN=54	Korea (Han R.)	P-9
<i>Anguilla</i>	<i>marmorata</i>			38	20 M/SM + 18A	58	58		ACN=54	Japan (Amami-oshima)	K-93
<i>Anguilla</i>	<i>rostrata</i>		F	38	12M + 10SM + 16A	60	60		ZW, ACN=53	USA (Philadelphia)	P-10
<i>Anguilla</i>	<i>rostrata</i>		M	38	12M + 10SM + 16A	60	60		ZZ, ACN=54	USA (Philadelphia)	P-10
<i>Anguilla</i>	<i>rostrata</i>		F, M	38	22 M/SM + 16A	60	60	2	(2.8 BFA)	USA (Boston Bay)	S-87, H-13
<i>Anguilla</i>	<i>rostrata</i>			38	14M + 6SM + 18A	58				USA (FL)	O-10
<i>Anguilla</i>	<i>rostrata</i>		F	38	10M + 10SM + 18A	58	58	(2.0 FIA)	ZW, ACN=53	USA (ME)	P-14, H-41

Table 6.8 Order ANGUILLIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
Moringuidae												
<i>Moringua</i>	<i>linearis</i>			50						India (Porto Novo)	S-118	
Suborder Muraenoidei												
Muraenidae												
<i>Enchelycore</i>	<i>nigricans</i>	<i>Muraena</i>	F, M	42	6M + 8SM + 12ST + 16A	56	68	2		ACN=54	Brazil (Atlantic)	
<i>Enchelycore</i>	<i>pardalis</i>			42	8M + 2SM + 32A	52	52	2	4.6* FCM	ACN=52	Japan (Wakayama)	
<i>Gymnothorax</i>	<i>eurostus</i>	<i>Sideria picta</i>	F, M	42	12 M/SM + 30A	54	54	2		XX/XY, ACN=52	Japan (Okinawa)	
<i>Gymnothorax</i>	<i>kidako</i>			36	16M + 8SM + 12A	60	60	2		ACN=52	Japan (Wakayama)	
<i>Gymnothorax</i>	<i>miliaris</i>	<i>Sideria picta</i>	F	42	14M + 18SM + 10ST	74	84	2		ACN=54	Brazil (Bahia)	
<i>Gymnothorax</i>	<i>ocellatus</i>		F, M	42	16M + 18SM + 8A	76	76	2		ACN=54	Brazil (SP)	
<i>Gymnothorax</i>	<i>pictus</i>	<i>Sideria picta</i>		42	14M + 14SM + 14A	70	70		3.8 FIA		India (WB)	
<i>Gymnothorax</i>	<i>pictus</i>			42	42 ST/A	42					India (Andaman Is.)	
<i>Gymnothorax</i>	<i>reevesi</i>	<i>Sideria picta</i>	F, M	42	34 M/SM + 8A	76	76				China (Guangdong)	
<i>Gymnothorax</i>	<i>unicolor</i>		F, M	42	12 M/SM + 30A	54	54	2	4.4 BFA	ACN=54	Italy	
<i>Gymnothorax</i>	<i>viginus</i>	<i>Sideria picta</i>		42	8M + 6SM + 28A	56	56	2		ACN=54	Brazil (RN)	
<i>Muraena</i>	<i>helena</i>		F, M	42	18 M/SM + 24A	60	60	2	5.1 BFA	ACN=54	Mediterranean	
<i>Muraena</i>	<i>pavonina</i>	<i>Alloconger</i>	F	42	6M + 4SM + 32A	52	52	2		ACN=54	Brazil (Atlantic)	
Suborder Congroidei												
Congridae												
<i>Ariosoma</i>	<i>anagooides</i>	<i>Anago</i>	F	34	10M + 8SM + 6ST + 10A	52	58			ACN=54	Japan (Wakayama)	
<i>Ariosoma</i>	<i>anago</i>			38	18 M/SM + 20A	56	56	2	3.6* FCM		Japan (Kobe)	
<i>Conger</i>	<i>conger</i>	<i>Astroconger</i>	F, M	38	8M + 4SM + 26 ST/A	50		2	3.3 FCM	ACN=48	Mediterranean	
<i>Conger</i>	<i>conger</i>			38	12 M/SM + 26 ST/A	50		2			Spain (Malaga)	
<i>Conger</i>	<i>japonicus</i>	<i>Astroconger</i>	F	38	10M + 10SM + 18A	58	58		2.4* FCM	ACN=52	Japan (Wakayama)	
<i>Conger</i>	<i>myriaster</i>		F	38	12M + 8 SM + 18A	58	58			ZW, ACN=53	Korea (Yellow Sea)	
<i>Conger</i>	<i>myriaster</i>	<i>Astroconger</i>	M	38	12M + 8 SM + 18A	58	58			ZZ, ACN=54	Korea (Yellow Sea)	
<i>Conger</i>	<i>myriaster</i>		F	38	14M + 4SM + 20A	56	56			ACN=54	Japan (Yamaguchi)	
<i>Conger</i>	<i>myriaster</i>	<i>Astroconger</i>	F, M	38	8M + 10SM + 20A	56	56		2.4* FCM	ZW/ZZ, ACN=54	Japan (Kobe)	
<i>Conger</i>	<i>myriaster</i>			38	8M + 10SM + 20A	56	56				China (Shandong)	
											Y-20	

Table 6.8 Order ANGUILLIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Muraenesocidae											
<i>Muraenesox</i>	<i>cinereus</i>		38	12M + 4SM + 6ST + 16A	54	60		(2.3 FIA)		China	Z-23, H-41
Ophichthidae											
Myrophinae											
<i>Muraenichthys</i>	<i>gymnotus</i>		F	48	4ST + 44A	48	52		X ₁ X ₂ X ₂ , ACN=48	Japan (Suruga Bay)	M-108
<i>Muraenichthys</i>	<i>gymnotus</i>		M	47	1M + 4ST + 42A	48	52		X ₁ X ₂ Y, ACN=48	Japan (Suruga Bay)	M-108
Ophichthinae											
<i>Dalophis</i>	<i>imberbis</i>		F	46	2M + 6SM + 5ST + 33A	54	59	3-4	ZW, ACN=53	Italy (Sardinia)	S-182
<i>Dalophis</i>	<i>imberbis</i>		M	46	2M + 6SM + 6ST + 32A	54	60	3-4	ZZ, ACN=54	Italy (Sardinia)	S-182
<i>Echelus</i>	<i>myrus</i>			38	20 M/SM + 18 ST/A	58		2		Spain (Malaga)	A-46
<i>Myrichthys</i>	<i>ocellatus</i>			38	8M + 14SM + 10ST + 6A	60	70	2	ACN=54	Brazil (RN)	V-106
<i>Ophichthus</i>	<i>altipennis</i>	<i>Pisoödonophis zophistius</i>		38	10M + 16SM + 4ST + 8A	64	68		ACN=54	Japan (Yamaguchi)	N-32
<i>Ophisurus</i>	<i>macrorhynchus</i>		F	38	20M + 14SM + 4ST	72	76		ACN=54	Japan (Yamaguchi)	N-32
<i>Ophisurus</i>	<i>serpens</i>	<i>Ophysurus</i>		38	16M + 20ST + 2A	54	74	2		Spain (Malaga)	T-35
<i>Pisodonophis</i>	<i>boro</i>			38	18M + 4SM + 4ST + 12A	60	64			India (WB)	K-42
<i>Pisodonophis</i>	<i>boro</i>		M	40						India (Portonovo)	N-13
Synaphobranchidae											
<i>Synaphobranchus</i>	<i>kaupi</i>		F	26	22 M/SM + 2ST + 2A	48	50			Japan (Hokkaido)	I-13

Table 6.9 Order CLUPEIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Clupeoidei											
Clupeidae											
Alosinae											
<i>Alosa</i>	<i>kessleri pontica</i>		48	2ST + 46A	48	50				former USSR	V-72
<i>Alosa</i>	<i>pseudoharengus</i>	F, M	48	48A	48	48	2.8 BFA	ACN=48	USA (ME, MA, NY)	M-53, H-13	
<i>Brevoortia</i>	<i>aurea</i>	F	46	2M + 2SM + 42A	50	50	2		X ₁ X ₂ X ₂	Brasil (RJ)	B-55
<i>Brevoortia</i>	<i>aurea</i>	M	45	3M + 2SM + 40A	50	50	2		X ₁ X ₂ Y, ACN=48	Brasil (RJ)	B-55
<i>Brevoortia</i>	<i>patronus</i>	F, M	46	2M + 2SM + 42A	50	50		ACN=48	USA (Atlantic)	D-23	
<i>Brevoortia</i>	<i>pectinata</i>		46	2M + 2SM + 42A	50	50	2			Brazil	B-86
<i>Brevoortia</i>	<i>smithi</i>	F, M	46	2M + 2SM + 42A	50	50		ACN=48	USA (Atlantic)	D-23	
<i>Brevoortia</i>	<i>tyrannus</i>	F, M	46	2M + 2SM + 42A	50	50		ACN=48	USA (Atlantic)	D-23	
<i>Gudusia</i>	<i>chapra</i>	<i>Gadusia</i>	M	46	46			ACN=46	India (WB)	K-31	
<i>Gudusia</i>	<i>variegata</i>	<i>Gadusia</i>		46A	46	46		ACN=46	(Myanmar)	M-162	
Clupeinae											
<i>Clupea</i>	<i>harengus</i>		52						USA (ME)	R-82	
<i>Clupea</i>	<i>harengus</i>	F, M	52	6M + 2ST + 44A	58	60	2	ACN=52	N. Europe	K-81, K-82	
<i>Clupea</i>	<i>harengus</i>	F, M	52	6M + 2ST + 44A	58	60	2		Russia (White Sea)	K-81, K-82	
<i>Clupea</i>	<i>harengus</i>		52	8M + 4ST + 40A	60	64	2		Norwegian Sea	K-81, K-82	
<i>Clupea</i>	<i>harengus</i>	F, M	50	6M + 2ST + 42A	56	58	2		Germany (Baltic Sea)	K-81, K-82	
<i>Clupea</i>	<i>harengus harengus</i>		54	12-16 M/SM + 42-38 ST/A	66-70				Russia (Baltic Sea)	S-72	
<i>Clupea</i>	<i>pallasi</i>	F, M	52	6 M/SM + 46 ST/A	58		1.9 FD	ACN=52	Japan	I-8	
<i>Clupea</i>	<i>harengus pallasi</i>		52	8 M/SM + 44 ST/A	60		(1.8 FIA, 1.5 BFA)		Russia (White Sea)	S-72, H-13, H-40	
<i>Clupea</i>	<i>pallasi marisalbi</i>		52	6M + 2SM + 44A	60	60		ACN=52	Russia (White Sea)	L-86	
<i>Clupea</i>	<i>pallasi marisalbi</i>		51	7M + 2SM + 42A	60	60		ACN=52	Russia (White Sea)	L-86	
<i>Clupea</i>	<i>pallasi marisalbi</i>		50	8M + 2SM + 40A	60	60		ACN=52	Russia (White Sea)	L-86	
<i>Corica</i>	<i>soborna</i>		56	16M + 20SM + 20A	92	92			India (WB)	K-46	
<i>Harengula</i>	<i>clupeola</i>		28	22M + 2SM + 2ST + 2A	52	54		ACN=50	USA (Atlantic)	D-23	
<i>Herklotischthys</i>	<i>quadrimaculatus</i>		48	48A	48	48	1.5* FCM		Japan	O-48	
<i>Sardinella</i>	<i>melanura</i>		44	8 M/SM + 36 ST/A	52				India (Andaman Is.)	R-45	
<i>Sardinella</i>	<i>zunasi</i>	F, M	48	48 ST/A	48		2.3 FD	ACN=48	Japan (Tokyo Bay)	I-8	
<i>Sardinella</i>	<i>zunasi</i>		48	48A	48	48		ACN=48	China (Shandong)	W-7	
<i>Sardinops</i>	<i>sagax</i>	<i>melanostictus</i>	F, M	48 ST/A	48		2.7 FD	ACN=48	Japan (Iwate)	I-8	

Table 6.9 Order CLUPEIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Dorosomatinae											
<i>Clupanodon punctatus</i>			48	2M + 46A	50	50			ACN=48	China (Shandong)	W-7
<i>Dorosoma cepedianum</i>		F, M	48	2SM + 4ST + 42A	50	54	2.0 FCM		ACN=50	USA (LA)	F-26, G-85
<i>Dorosoma petenense</i>		F, M	48	2SM + 2ST + 44A	50	52			ACN=50	USA (LA)	F-26
<i>Gonialosa manmina</i>			38	38A	38	38				(India)	M-162
<i>Konosirus punctatus</i>			48	48A	48	48	1.6 FCM		ACN=48	Korea (Busan)	K-125
Engraulidae											
Coiliinae											
<i>Coilia nasus</i>	<i>brachygynathus</i>	F	47	47A	47	47	2		ZO, ACN=47	China (Hubei)	H-21, Y-15
<i>Coilia nasus</i>	<i>brachygynathus</i>	M	48	48A	48	48	2		ZZ, ACN=48	China (Hubei)	H-21, Y-15
<i>Thryssa baelama</i>	<i>Thrissina</i>		42	42 ST/A	42					India (Andaman Is.)	R-45
Engraulinae											
<i>Anchoa mitchilli</i>		F, M	48	48A	48	48			ACN=48	Atlantic	D-23
<i>Engraulis compressa</i>	<i>Anchoa</i>		48		48					USA (CA)	C-46
<i>Engraulis encrasicholus ponticus</i>			44							Russia	I-20
<i>Engraulis japonicus</i>			48	48A	48	48	2.8* FCM			Japan	O-48
<i>Engraulis mordax</i>			48	48A	48	48	3.0 FD, 3.8 BFA		ACN=48	(E. Pacific)	O-6, O-8, H-13

Table 6.10 Order GONORYNCHIFORMES

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Chanoidei											
Chanidae											
<i>Chanos chanos</i>			32	14M + 4SM + 14 ST/A	50				ACN=50	Taiwan	A-63
Suborder Knerioidei											
Phractolaemidae											
<i>Phractolaemus ansorgei spinosus</i>		F, M	28	24M + 2SM + 2A	54		3.0 FD			Zaire	V-34

Table 6.11 Order CYPRINIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Superfamily Cyprinoidea											
Cyprinidae											
Acheilognathinae											
<i>Acheilognathus</i> <i>chankaensis</i>	<i>Acanthorhodeus</i>	F, M	44	14M + 14SM + 16 ST/A	72			1.8* FD	ACN=50	China (Hubei)	H-19, Y-15, C-83
<i>Acheilognathus</i> <i>chankaensis?</i>	<i>Acanthorhodeus gracilis</i>	F, M	44	24 M/SM + 20 ST/A	68				ACN=50	Korea (Sam-rye)	L-9, L-11
<i>Acheilognathus</i> <i>cyanostigma</i>		F, M	44	28 M/SM + 16 ST/A	72	2			ACN=50	Japan (Lake Biwa)	O-20, T-6, T-11
<i>Acheilognathus</i> <i>gracilis</i>		F, M	42	16M + 12SM + 14ST	70	84			ACN=50	China (Wuhan)	H-23, Y-15
<i>Acheilognathus</i> <i>imberbis</i>	<i>Paracheilognathus</i>	F, M	44	14M + 18SM + 12 ST/A	76				ACN=50	China (Wuhan)	H-19, Y-15
<i>Acheilognathus</i> <i>longipinnis</i>		F, M	44	28 M/SM + 16 ST/A	72				ACN=50	Japan (Yodo R.)	O-20
<i>Acheilognathus</i> <i>macropterus</i>	<i>Acanthorhodeus asmussi</i>	F, M	44	24 M/SM + 20 ST/A	68				ACN=50	Korea (Eui-ryeong)	L-9, L-11
<i>Acheilognathus</i> <i>macropterus</i>	<i>Acanthorhodeus</i>	F, M	44	14M + 18SM + 12 ST/A	76				ACN=50	China (Wuhan)	H-19, Y-15
<i>Acheilognathus</i> <i>macropterus</i>				44 14M + 16SM + 14ST	74	88	8 in embryo		ACN=50	China (Amur R.)	U-24
<i>Acheilognathus</i> <i>melanogaster</i>	<i>moriokae</i>	M	44	28 M/SM + 16 ST/A	72				ACN=50	Japan (Ibaraki)	O-20
<i>Acheilognathus</i> <i>peihoensis</i>	<i>Acanthorhodeus</i>	F, M	44	14M + 12SM + 8ST + 10A	70	78			ACN=50	China (Guilin)	Y-15
<i>Acheilognathus</i> <i>rhombeus</i>	<i>rhombea</i>	F, M	44	28 M/SM + 16 ST/A	72				ACN=50	Korea (Ma-ryeong)	L-9, L-11
<i>Acheilognathus</i> <i>rhombeus</i>		F, M	44	10M + 20 SM/ST + 14A	74				ACN=50	Korea (Geum R.)	U-33
<i>Acheilognathus</i> <i>rhombeus</i>		F, M	44	14M + 16SM + 14ST	74	88			ACN=50	South Korea	U-80, U-81
<i>Acheilognathus</i> <i>rhombeus</i>		F, M	45	29 M/SM + 16ST	74	90			ACN=50	South Korea	U-80, U-81
<i>Acheilognathus</i> <i>rhombeus</i>				46 28 M/SM + 18ST	74	92			ACN=50	South Korea	U-80, U-81
<i>Acheilognathus</i> <i>rhombeus</i>				47 27 M/SM + 20ST	74	94			ACN=50	South Korea	U-80, U-81
<i>Acheilognathus</i> <i>rhombeus</i>	<i>rhombea</i>	F, M	44	14M + 14SM + 16 ST/A	72	2	(2.3* FCM, 2.0 FD)		ACN=50	Japan (Lake Biwa)	O-20, O-48, T-6, T-11
<i>Acheilognathus</i> <i>rhombeus</i>	<i>rhombea</i>	F, M	44	12M + 20 SM/ST + 12A	76				ACN=50	Japan (Lake Biwa)	O-18
<i>Acheilognathus</i> <i>tabira erythropterus</i>	<i>Akahire-tabira</i>	M	44	28 M/SM + 16 ST/A	72		(1.9 FD)		ACN=50	Japan (Ibaraki)	O-20, S-141
<i>Acheilognathus</i> <i>tabira nakamurae</i>	<i>Seboshi-tabira</i>	F, M	44	28 M/SM + 16 ST/A	72				ACN=50	Japan (Fukuoka)	O-20
<i>Acheilognathus</i> <i>tabira tabira</i>		F, M	44	14M + 14SM + 16 ST/A	72	2			ACN=50	Japan (Yodo R., Yoshii R.)	O-20, O-48, T-6, T-11
<i>Acheilognathus</i> <i>tabira tabira</i>		F, M	44	12M + 20 SM/ST + 12A	76				ACN=50	Japan (Lake Biwa)	O-18
<i>Acheilognathus</i> <i>tonkinensis</i>	<i>Acanthorhodeus</i>	F, M	44	14M + 14SM + 16 ST/A	72				ACN=50	China (Guilin)	Y-15
<i>Acheilognathus</i> <i>tonkinensis</i>		M	44	14M + 14SM + 8ST + 8A	72	80			ACN=50	(China)	A-85
<i>Acheilognathus</i> <i>tonkinensis</i>		F	44							China (Wuhan)	H-19
<i>Acheilognathus</i> <i>yamatsutae</i>				44 12M + 16SM + 16 ST/A	72				ACN=50	Korea	L-9
<i>Acheilognathus</i> <i>yamatsutae</i>		M	44	24 M/SM + 20 ST/A	68				ACN=50	Korea (Eui-ryeong)	L-9, L-11
<i>Acheilognathus</i> <i>yamatsutae</i>	<i>cyanostigma</i>	F	44	12M + 16SM + 16 ST/A	72				ACN=50	Korea (Go-san)	L-9, L-10
<i>Acheilognathus</i> <i>typus</i>	<i>Pseudoperilampus</i>	M	44	28 M/SM + 16 ST/A	72		1.9 FD		ACN=50	Japan (Chiba)	O-20, S-141
<i>Rhodeus</i> <i>atremius atremius</i>	<i>atremius</i>	F, M	46	4 SM + 42 ST/A	50				ACN=50	Japan (Fukuoka)	O-20
<i>Rhodeus</i> <i>fangi</i>	<i>atremius fangi</i>		46	4SM + 42ST	50	92	15 in embryo		ACN=50	China (Fujian)	U-24
<i>Rhodeus</i> <i>fangi</i>	<i>atremius</i>	F, M	46	4 M/SM + 42 ST/A	50		2 (6 in embryo)		ACN=50	China (Zhejiang)	U-18
<i>Rhodeus</i> <i>atremius suigensis</i>	<i>suigensis</i>	F, M	46	4SM + 42 ST/A	50				ACN=50	Japan (Yoshii R.)	O-20
<i>Rhodeus</i> <i>notatus</i>	<i>atremius suigensis</i>		46	4SM + 42ST	50	92	8 in embryo		ACN=50	China (Liaoning)	U-80, U-81
<i>Rhodeus</i> <i>notatus</i>	<i>suigensis</i>	F	46	4 M/SM + 42 ST/A	50				ACN=50	Korea (Go-san)	L-9, L-11

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Rhodeus notatus</i>		F, M	46	4SM + 42 ST/A	50				ACN=50	Korea (Go-san)	L-9, L-10
<i>Rhodeus ocellatus</i>		F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Korea (Jang-heung)	L-9, L-11
<i>Rhodeus ocellatus</i>		F, M	48	10M + 24SM + 14ST	82	96			ACN=50	China (Hubei)	H-19, Y-15
<i>Rhodeus ocellatus kurumeus</i>	<i>ocellatus smithii</i>	F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Japan (Fukuoka)	O-20
<i>Rhodeus ocellatus kurumeus</i>			48	18M + 10SM + 20ST	76	96	2		ACN=50	Japan (Osaka)	K-22
<i>Rhodeus ocellatus kurumeus</i>			48	14M + 14SM + 20ST	76	96	2		ACN=50	Japan (Yanagawa)	K-22
<i>Rhodeus ocellatus kurumeus</i>			48	8M + 20SM + 20ST	76	96	1-2		ACN=50	Japan (Saga)	S-93
<i>Rhodeus ocellatus ocellatus</i>		F, M	48	8M + 20SM + 20A	76	76	2	(2.2* FCM)	ACN=50	Japan (Kobe, Lake Biwa)	O-20, O-48, T-4, T-11
<i>Rhodeus ocellatus ocellatus</i>		F, M	48	8M + 20 SM/ST + 20A	76				ACN=50	Japan (Osaka)	O-18
<i>Rhodeus ocellatus ocellatus</i>			48	8M + 20SM + 20A	76	76	2 (2 in embryo)		ACN=50	China, Korea (Gyonggi)	U-24
<i>Rhodeus pseudosericeus</i>			48	8M + 20SM + 20ST	76	96			ACN=50	Korea (Gangwon-do)	A-86
<i>Rhodeus sericeus amarus</i>	<i>amarus</i>		48	14M + 24 SM/ST + 10A	86			2.1 FD	ACN=50	France	H-2, H-4
<i>Rhodeus sericeus amarus</i>			48	6M + 26SM + 4ST + 12A	80	84			ACN=50	Hungary	B-54
<i>Rhodeus sericeus amarus</i>			48	6M + 26SM + 16A	80				ACN=50	Hungary	M-64
<i>Rhodeus sericeus amarus</i>		F, M	48	34 M/SM + 14 ST/A	82				ACN=50	Bosnia-Herzegovina	S-77
<i>Rhodeus sericeus amarus</i>		F, M	48	14M + 12SM + 12ST + 10A	74	86				Russia (Don R.)	R-22
<i>Rhodeus sericeus sericeus</i>	<i>sericeus</i>	F	48							China (Hubei)	H-19
<i>Rhodeus sinensis</i>			48	8M + 20SM + 20ST	76	96	8 (15 in embryo)		ACN=50	China (Amur R.), Korea	U-24
<i>Rhodeus sinensis</i>	<i>Pseudoperilampus lighti</i>	F, M	48	12M + 22SM + 8ST + 6A	82	90			ACN=50	China (Sichuan)	Y-15
<i>Rhodeus sinensis</i>		F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Korea (Go-san)	L-9, L-10
<i>Rhodeus sp.</i>	<i>sinensis</i>		48	14M + 28SM + 6 ST/A	90				ACN=50	China (Kunming)	L-38
<i>Rhodeus sp.</i>	<i>sinensis</i>	F, M	48	12M + 28SM + 8 ST/A	88				ACN=50	China (Shandong)	W-34
<i>Rhodeus sp.</i>	<i>sinensis</i>	M	48							China (Wuhan)	H-19
<i>Tanakia himantegus chii</i>	<i>himantegus</i>		48	8M + 20SM + 18ST + 2A	76	94			ACN=50	China (Shanghai)	U-22
<i>Tanakia himantegus chii</i>			48	8M + 20SM + 18ST + 2A	76	94	2-3		ACN=50	China (Shanghai)	U-71
<i>Tanakia himantegus himantegus</i>			48	8M + 20SM + 18ST + 2A	76	94	2-3		ACN=50	Taiwan	U-71
<i>Tanakia himantegus himantegus</i>	<i>Paracheilognathus himantegus</i>	F, M	48	10M + 18SM + 6ST + 14A	76	82			ACN=50	(Taiwan)	A-83
<i>Tanakia intermedia intermedia</i>	<i>Acheilognathus</i>	F, M	48	24 M/SM + 24 ST/A	72				ACN=50	Korea (Jang-heung)	L-9, L-11
<i>Tanakia intermedia</i> subsp.	<i>Acheilognathus</i>	F, M	48	28 M/SM + 20 ST/A	76				ACN=50	Korea (Gong-ju)	L-9, L-11
<i>Tanakia koreensis</i>			48	8M + 20SM + 20ST	76	96	4		ACN=50	Korea (Gyeongsangbuk-do)	U-24
<i>Tanakia koreensis</i>	<i>Acheilognathus limbata</i>		48	8M + 20SM + 20ST	76	96			ACN=50	Korea (Go-san)	L-9, L-10
<i>Tanakia lanceolata</i>	<i>Acheilognathus</i>	F, M	48	10M + 18SM + 20 ST/A	76		2	(2.1* FCM, 2.1FD)	ACN=50	Japan (Lake Biwa, Fukuoka)	O-20, O-48, T-6, T-11
<i>Tanakia lanceolata</i>	<i>Acheilognathus</i>		48	8M + 20 SM/ST + 20A	76				ACN=50	Japan (Lake Biwa)	O-18
<i>Tanakia limbata</i>	<i>Acheilognathus</i>	F, M	48	10M + 18SM + 20 ST/A	76		2		ACN=50	Japan (Fukuoka, Hyogo)	O-20, O-48, T-6, T-11
<i>Tanakia limbata</i>	<i>Acheilognathus</i>	F, M	48	28 M/SM + 20 ST/A	76		4		ACN=50	Japan	U-13
<i>Tanakia limbata</i>			48	8M + 20SM + 20ST	76	96	1-3		ACN=50	Japan (Mie)	S-93
<i>Tanakia signifer</i>			48	8M + 20SM + 16ST + 4A	76	92	2		ACN=50	Korea (Gangwon-do)	U-24
<i>Tanakia signifer</i>	<i>Acheilognathus</i>		48	8M + 12SM + 28ST	68	96			ACN=50	Korea	L-15
<i>Tanakia somjinensis</i>			48	8M + 20SM + 20ST	76	96	2-4		ACN=50	Korea	U-71

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Tanakia</i>	<i>tanago</i>		F, M	48 28 M/SM + 20 ST/A	76				ACN=50	Japan (Chiba)	O-20
Barbinae											
<i>Acrossocheilus</i>	<i>wenchowensis beijiangensis</i>		F, M	50 14M + 16SM + 14ST + 6A	80	94			ACN=50	China (Guangdong)	G-69, Y-15
<i>Acrossocheilus</i>	<i>deauratus</i>			50 10M + 12SM + 28A	72				ACN=50	N.E. Thailand	A-84
<i>Acrossocheilus</i>	<i>fasciatus</i>		F, M	50 14M + 16SM + 10ST + 10A	80	90			ACN=50	China (Guangdong)	G-69, Y-15
<i>Acrossocheilus</i>	<i>hemispinus hemispinus</i>		F, M	50 10M + 16SM + 8ST + 16A	76	84			ACN=50	China (Guangxi)	Y-15
<i>Acrossocheilus</i>	<i>iridescent zhuijiangensis</i>		F, M	50 14M + 16SM + 10ST + 10A	80	90			ACN=50	China (Guangdong)	G-69, Y-15
<i>Acrossocheilus</i>	<i>labiatus</i>			50 16M + 12SM + 4ST + 18A	78	82			ACN=50	Taiwan	A-78
<i>Acrossocheilus</i>	<i>parallellens</i>		F, M	50 14M + 16SM + 14ST + 6A	80	94			ACN=50	China (Guangdong)	G-69, Y-15
<i>Acrossocheilus</i>	<i>yunnanensis</i>			50 18M + 16SM + 16 ST/A	84		2.5 FD			China (Yunnan)	Z-5, Z-8
<i>Acrossocheilus</i>	<i>yunnanensis</i>		F	50 10M + 18SM + 12ST + 10A	78	90			ACN=50	China (Sichuan)	L-43, Y-15
<i>Aulopyge</i>	<i>huegeli</i>			100 48 M/SM + 52 ST/A	148				4X, ACN=100	Bosnia	B-20
<i>Balantiocheilos</i>	<i>melanopterus</i>			50 10M + 12SM + 28A	72		2.1* FCM			(S.E. Asia)	O-48
<i>Balantiocheilos</i>	<i>melanopterus</i>		F, M	50 6M + 18SM + 16ST + 10A	74	90	2		ACN=50	(S.E. Asia)	K-136
<i>Barbodes</i>	<i>carnaticus</i>			100 22M + 40SM + 22ST + 16A	162	184	6		4X, ACN=100	India (W. Ghats)	N-55
<i>Barbonymus</i>	<i>altus</i>	<i>Puntius</i>		50 10M + 24SM + 4ST + 12A	84	88			ACN=50	Thailand (Ayuthaya)	M-9
<i>Barbonymus</i>	<i>gonionotus</i>	<i>Puntius</i>		50 2M + 20SM + 4ST + 24A	72	76	(2.2 FD)		ACN=50	Thailand (Ayuthaya)	M-9, S-141
<i>Barbonymus</i>	<i>gonionotus</i>	<i>Puntius</i>	F, M	50 12M + 12SM + 4ST + 22A	74	78			ACN=50	Thailand	W-31
<i>Barbonymus</i>	<i>schwanenfeldii</i>	<i>Puntius</i>		50 6M + 28 SM/ST + 16A	84		2.2 BFA		ACN=50	(Asia)	T-60, H-13
<i>Barbus</i>	<i>ablabes</i>		F	50 18M + 30SM + 2 ST/A	98		2			Guinea, Africa	R-21
<i>Barbus</i>	<i>amatolicus</i>			48 22 M/SM + 26 ST/A	70					S. Africa	S-193
<i>Barbus</i>	<i>andrewi</i>			100 34 M/SM + 66 ST/A	134				4X, ACN=100	S. Africa	T-55
<i>Barbus</i>	<i>anema</i>			50 42 M/SM + 8A	92	92			ACN=50	Ethiopia (Alvero R.)	G-47
<i>Barbus</i>	<i>anoplus</i>			48 30 M/SM + 18 ST/A	78		2			S. Africa	S-193
<i>Barbus</i>	<i>anoplus</i>			50						S. Africa	T-59
<i>Barbus</i>	<i>argenteus</i>			50 44 M/SM + 6 ST/A	94		2			S. Africa	S-193
<i>Barbus</i>	<i>barbus</i>			100 12M + 48 SM/ST + 40A		160		3.5 FD	4X, ACN=100	France	H-2, H-4
<i>Barbus</i>	<i>bigornei</i>		F, M	48 18M + 30SM	96	96	2		ACN=50	Guinea	R-21
<i>Barbus</i>	<i>brevipinnis</i>			48 40 M/SM + 8 ST/A	88		2			S. Africa	S-193
<i>Barbus</i>	<i>bynni</i>		F, M	150 70 M/SM + 80 ST/A	220				6X, ACN=150	Ethiopia (L. Abaya)	G-47
<i>Barbus</i>	<i>bynni bynni</i>			150 50 M/SM + 100A	200				6X	Ethiopia (Baro R.)	K-108
<i>Barbus</i>	<i>bynni bynni</i>			150 70 M/SM + 80A	220				6X	Ethiopia (L. Abaya)	K-108
<i>Barbus</i>	<i>bynni occidentalis</i>		F	148					6X	W. Africa, Guinea	G-66
<i>Barbus</i>	<i>bynni waldroni</i>			150					6X	W. Africa	G-84
<i>Barbus</i>	<i>calidus</i>			100		126			6X	S. Africa	S-193
<i>Barbus</i>	<i>callensis</i>	<i>setivimensis</i>		100					4X	Africa	G-84
<i>Barbus</i>	<i>canis</i>			150 76M + 24ST + 50A	226	250			6X	Israel (Jordan R.)	G-59
<i>Barbus</i>	<i>cyclolepis</i>		F, M	100 26M + 16SM + 36ST + 22A	142	178	4		4X	Macedonia	R-24
<i>Barbus</i>	<i>erubescens</i>			100					4X	Africa	D-27

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Barbus ethiopicus</i>		M	150	40 M/SM + 110 ST/A	190				6X	Ethiopia (Meki R.)	G-47
<i>Barbus eutaenia</i>			48		82.84					S. Africa	S-193
<i>Barbus fasciolatus</i>	<i>barilooides</i>		48	32M + 16SM	96	96			ACN=48	(Africa)	R-4
<i>Barbus goktschaicus</i>		F, M	100	6M + 18SM + 76 ST/A	124				4X	Armenia (Lake Sevan)	K-109
<i>Barbus gurneyi</i>			50	26 M/SM + 24 ST/A	76	2				S. Africa	S-193
<i>Barbus holotaenia</i>		F, M	50	24M + 26 SM/ST		100			ACN=50	(Africa)	R-4
<i>Barbus hospes</i>			96	46 M/SM + 50 ST/A	142	2			4X	S. Africa	S-193
<i>Barbus intermedius</i>			150	90M + 60A	240				6X	Ethiopia	G-47
<i>Barbus intermedius</i>			150	66M + 84A	216				6X	Ethiopia	G-47
<i>Barbus issenensis</i>			100						4X	N. Africa	G-84
<i>Barbus kerstenii</i>		F	50	34 M/SM + 16A	84				ACN=50	Ethiopia (Lake Abaya)	G-47
<i>Barbus ksibi</i>			100						4X	NW. Africa	G-84
<i>Barbus kubanicus</i>	<i>tauricus kubanicus</i>		100						4X	(Russia)	V-72
<i>Barbus macrops</i>			50	14M + 28SM + 8 ST/A	92	2			ACN=50	Guinea	R-21
<i>Barbus massaensis</i>			100						4X	N. Africa	G-84
<i>Barbus meridionalis</i>		M	100	22M + 20SM + 12ST + 46A	142	154			4X	Italy	C-34
<i>Barbus motobensis</i>			50	24 M/SM + 26 ST/A	74	2			4X	S. Africa	S-193
<i>Barbus moulouyensis</i>			100						4X	NW. Africa	G-84
<i>Barbus nasus</i>			100						4X	N. Africa	G-84
<i>Barbus paludinosus</i>			50	46 M/SM + 4A	96	96			ACN=50	Ethiopia (Bulbula R.)	G-47
<i>Barbus paludinosus</i>	developed dorsal spine		50	44 M/SM + 6 ST/A	94				ACN=50	Ethiopia (Omo R.)	G-49
<i>Barbus paludinosus</i>		reduced dorsal spine	50	44 M/SM + 6 ST/A	94				ACN=50	Ethiopia (Omo R.)	G-49
<i>Barbus paludinosus</i>			50	30 M/SM + 20 ST/A	80	2				S. Africa	S-193
<i>Barbus parawaldroni</i>			150						6X	W. Africa	G-84
<i>Barbus peloponnesius petenyi</i>	<i>meridionalis petenyi</i>	F, M	100	50 M/SM + 50 ST/A	150				4X	Bosnia-Herzegovina	S-76
<i>Barbus petitjeani</i>		F, M	150	36M + 90 SM/ST + 24A		276			6X	W. Africa, Guinea	G-66
<i>Barbus plebejus</i>	<i>barbus plebejus</i>	F, M	100	26M + 18SM + 18ST + 38A	144	162			4X	Italy	C-34
<i>Barbus pleurogramma</i>			50	44 M/SM + 6 ST/A	94				ACN=50	Ethiopia (Lake Tana)	G-49
<i>Barbus sacratus</i>			150						6X	W. Africa	G-84
<i>Barbus serra</i>			100						4X	S. Africa	T-55
<i>Barbus trevelyanii</i>			100		128				4X	S. Africa	T-55
<i>Barbus trevelyanii</i>			96	32 M/SM + 64 ST/A	128	4			4X	S. Africa	S-193
<i>Barbus trimaculatus</i>			48	30 M/SM + 18 ST/A	78	2				S. Africa	S-193
<i>Barbus wurtzi</i>		F, M	150						6X	W. Africa, Guinea	G-84
<i>Barbus sp. 1</i>			50	44 M/SM + 6A	94	94			ACN=50	Ethiopia (Alvero R.)	G-47
<i>Barbus sp. 2</i>		F, M	50	44 M/SM + 6A	94	94			ACN=50	Ethiopia (Lake Abaya)	G-47
<i>Barbus sp. 3</i>		F, M	50	48 M/SM + 2A	98	98			ACN=50	Ethiopia (Hare R.)	G-47
<i>Caecobarbus geertsii</i>		F, M	50	12M + 28SM + 10ST	90	100			ACN=50	Zaire	V-36
<i>Capoeta capoeta</i>			150	24M + 60SM + 14ST + 52A	234	248			6X	Iran (Roudbar)	S-1

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Capoeta capoeta</i>			150	24M + 56SM + 14ST + 56A	230	244			6X	Iran (Golestan Natn. Park)	S-1
<i>Capoeta capoeta sevangi</i>	<i>Varicorhinus</i>	M	150	10M + 30SM + 110A	190	190			6X	Armenia (Lake Sevan)	K-109
<i>Capoeta capoeta umbla</i>		F, M	150	86 M/SM + 64 ST/A	236				6X	Turkey (Tigris R.)	K-51
<i>Capoeta damascina</i>			148	78 M/SM + 32ST + 38A	226	258			6X	Jordan	G-59
<i>Capoeta trutta</i>		F, M	150	70 M/SM + 80 ST/A	220				6X	Turkey (Tigris R.)	K-51
<i>Carasobarbus canis</i>	<i>Barbus</i>		150	76 M/SM + 24ST + 50A	226	250			6X	Middle East	G-59
<i>Catla catla</i>		F, M	50	8M + 16SM + 14ST + 12A	74	88			ACN=50	India (WB)	M-27
<i>Catla catla</i>			50	4M + 12SM + 34A	66	66	4		ACN=50	India	L-2
<i>Catla catla</i>			50	10M + 16SM + 8ST + 16A	76	84	4		ACN=50	India (near Lucknow)	N-4
<i>Catlocarpio siamensis</i>			98	18M + 54 SM/ST + 26A		170		3.5 FID	4X, ACN=98	(Asia)	S-127
<i>Chagunius chagunio</i>		F	50	16M + 28SM + 6A	94	94			ACN=50	India (Assam)	K-46, C-108
<i>Cyclocheilichthys apogon</i>			50	12M + 8SM + 6ST + 24A	70	76			ACN=50	Thailand (Ayuthaya)	M-9
<i>Cyclocheilichthys enoplos</i>			50	10M + 30SM + 4ST + 6A	90	94	4		ACN=50	Thailand (Uthai Thani)	M-12
<i>Cyprinion macrostomus</i>		F, M	50	6M + 24SM + 12ST + 8A	80	92	4		ACN=50	Turkey	Y-24
<i>Folifer brevifilis brevifilis</i>	<i>Tor (Folifer)</i>	F, M	50	14M + 14SM + 16ST + 6A	78	94			ACN=50	China (Guangdong)	G-69, Y-15
<i>Folifer brevifilis brevifilis</i>	<i>Tor (Folifer)</i>		50	14M + 16SM + 20 ST/A	80				ACN=50	China	Z-8
<i>Hypselobarbus curmuca</i>	<i>Gonoproktopterus</i>		100	18M + 38SM + 28ST + 16A	156	184	6		4X, ACN=100	India (W. Ghats)	N-55
<i>Hypsibarbus wetmorei</i>	<i>Puntius darpani</i>		50	12M + 8SM + 6ST + 24A	70	76			ACN=50	Thailand (Ayuthaya)	M-9
<i>Labeobarbus aeneus</i>	<i>Barbus</i>		148	48 M/SM + 100 ST/A	196				6X	S. Africa (Ciskei)	O-2
<i>Labeobarbus capensis</i>	<i>Barbus</i>		150	58 M/SM + 92 ST/A	208				6X	S. Africa (S.W. Cape)	O-2
<i>Labeobarbus capensis</i>		M	150	16M + 58SM + 42ST + 34A	224	266			6X	S. Africa (Rondegat R.)	N-67
<i>Labeobarbus intermedius</i>	<i>Barbus</i>	F, M	150	66 M/SM + 84 ST/A	216				6X	Ethiopia (L. Tana, Kulfo R.)	G-47, K-108
<i>Labeobarbus intermedius</i>	<i>Barbus</i>	F, M	150	90 M/SM + 60 ST/A	240				6X	Ethiopia (Awash R.)	G-47
<i>Labeobarbus kimberleyensis</i>	<i>Barbus</i>		148	56 M/SM + 92 ST/A	204				6X	S. Africa	O-2
<i>Labeobarbus marequensis</i>		F, M	150	26M + 44SM + 42ST + 38A	220	262			6X	S. Africa (Marico R.)	N-67
<i>Labeobarbus natalensis</i>	<i>Barbus</i>		150	50 M/SM + 100 ST/A	200				6X	S. Africa (Mgeni R.)	O-2
<i>Labeobarbus polylepis</i>	<i>Barbus</i>		150	56 M/SM + 94 ST/A	206				6X	S. Africa	O-2
<i>Labeobarbus polylepis</i>		F	150	18M + 60SM + 42ST + 30A	228	270			6X, ACN=150	S. Africa (Elands R.)	N-67
<i>Labeobarbus polylepis</i>	<i>Barbus</i>		148	62 M/SM + 86 ST/A	210		4		6X	S. Africa	S-193
<i>Leptobarbus hoevenii</i>			50	10M + 34 SM/ST + 6A		94			ACN=50	(Asia)	S-126
<i>Leptobarbus hoevenii</i>			50	16M + 30SM + 2ST + 2A		96	98			(India, Thailand)	Z-29
<i>Luciobarbus bocagei</i>	<i>Barbus</i>	F, M	100	64 M/SM + 36A	164			3.8 FCM	4X	Portugal	O-72, C-75
<i>Luciobarbus brachycephalus</i>	<i>Barbus</i>		100	24M + 46 SM/ST + 30A		170			4X	(Caspian Sea)	V-72
<i>Luciobarbus cornizo</i>	<i>Barbus</i>	F, M	100	12M + 60SM + 28 ST/A	172			2.7 FCM	4X	Portugal	C-72, C-75
<i>Luciobarbus microcephalus</i>	<i>Barbus</i>	F, M	100	18M + 50SM + 32 ST/A	168			3.7 FCM	4X	Portugal	C-72, C-75
<i>Luciobarbus sclateri</i>	<i>Barbus</i>	F, M	100	10M + 44SM + 46 ST/A	154			3.7 FCM	4X	Portugal	C-72, C-75
<i>Luciobarbus steindachneri</i>	<i>Barbus</i>	F, M	100	10M + 48SM + 42 ST/A	158			3.6 FCM	4X	Portugal	C-72, C-75
<i>Mystacoleucus marginatus</i>			50	16M + 10SM + 24A	76	76			ACN=50	C. Thailand	A-84
<i>Neolissochilus dukai</i>	<i>Barbus</i>		100	26M + 50 SM + 6ST + 18A	176	182			4X	India (Assam)	K-46

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Neolissochilus hexagonolepis</i>	<i>Acrossocheilus</i>		100	16M + 26SM + 58 ST/A	142				4X	Nepal	M-48
<i>Neolissochilus hexagonolepis</i>			100	32M + 16SM + 6ST + 46A	148	154			4X	India (A.P.)	S-173
<i>Neolissochilus hexagonolepis</i>			100	20M + 18SM + 14ST + 48A	138	152	4		4X	India (Meghalaya)	M-160
<i>Neolissochilus sumatranus</i>	<i>Acrossocheilus</i>		98	8M + 36SM + 16ST + 38A	142	158			4X	(Asia)	S-123
<i>Neolissochilus</i> sp.	<i>Barbus</i>		100	44M + 12SM + 44A	156	156			4X	India	K-46
<i>Onychostoma elongatus</i>	<i>Varicorhinus</i>	F, M	50	12M + 12SM + 14ST + 12A	74	88			ACN=52	China (Guangdong)	G-69, Y-15
<i>Onychostoma gerlachi</i>	<i>Varicorhinus</i>	F, M	50	12M + 12SM + 14ST + 12A	74	88			ACN=52	China (Guangdong)	G-69, Y-15
<i>Onychostoma sima</i>	<i>Varicorhinus simus</i>	F, M	50	10M + 16SM + 16ST + 8A	76	92			ACN=52	China (Sichuan)	L-43, Y-15
<i>Percocyparis pingi pingi</i>			98	42M + 30SM + 26 ST/A	170			4.6 FD	4X, ACN=98	China (Yunnan)	Z-5, Z-8
<i>Percocyparis pingi regani</i>			98	40M + 18SM + 40 ST/A	156				4X, ACN=98	China (Yunnan)	Z-8
<i>Poropuntius sinensis</i>	<i>Barbodes daliensis</i>		50	10M + 22SM + 18 ST/A	82				ACN=50	China (Yunnan)	Z-5
<i>Poropuntius chonglingchungi</i>	<i>Barbodes lacustris</i>		50	12M + 18SM + 20 ST/A	80			2.3 FD	ACN=50	China (Yunnan)	Z-5, Z-8
<i>Probarbus jullieni</i>			98	18M + 28 SM/ST + 52A	144				4X	(Asia)	S-126
<i>Pseudobarbus afer</i>			F, M	100	12M + 40SM + 38ST + 10A	152	190		4X	S. Africa	N-63, T-55
<i>Pseudobarbus afer</i>			F, M	100	12M + 42SM + 36ST + 10A	154	190	3	4X	S. Africa (Blindekloof)	N-63
<i>Pseudobarbus asper</i>			F, M	100	14M + 46SM + 32ST + 8A	160	192		4X	S. Africa (Groot R.)	N-63
<i>Pseudobarbus burchelli</i>	B type		F, M	100	10M + 42SM + 34ST + 14A	152	186		4X	S. Africa (Bainskloof)	N-63
<i>Pseudobarbus burchelli</i>	S type		F, M	100	10M + 40SM + 36ST + 14A	150	186	3	4X, ACN=100	S. Africa (Wolvekloof)	N-63
<i>Pseudobarbusburgi</i>			F, M	100	14M + 36SM + 38ST + 12A	150	188		4X	S. Africa (Wemmers R.)	N-63
<i>Pseudobarbus phlegethon</i>			F, M	100	14M + 40SM + 38ST + 8A	154	192	4	4X	S. Africa (Thee R.)	N-63
<i>Pseudobarbus quathlambae</i>				100					4X	S. Africa	O-2
<i>Pseudobarbus tenuis</i>			F, M	100	14M + 40SM + 32ST + 14A	154	186	4	4X	S. Africa (Grobbelaars R.)	N-63
<i>Puntioplites proctozysron</i>				50	16M + 10SM + 24A	76	76		ACN=50	Thailand (Uthai Thani)	M-12
<i>Puntius arulius</i>				50	6M + 26 SM/ST + 18A	82			ACN=50	(Asia)	T-61
<i>Puntius binotatus</i>				50	8M + 34 SM/ST + 8A	92			ACN=50	(Asia)	T-60
<i>Puntius brevis</i>	<i>japonicus</i>	M, F	50	6M + 14SM + 8ST + 22A	70	78				(Asia)	K-27
<i>Puntius chola</i>				50	2M + 4 SM/ST + 44A	56			ACN=50	(Asia)	T-61
<i>Puntius chola</i>				50	2M + 2SM + 46A	54				India (A.P.)	S-173
<i>Puntius chola</i>	<i>tetrarupagus</i>	M	50	2M + 2SM + 4ST + 42A	54	58			ACN=50	India (J & K)	T-52
<i>Puntius conchonius</i>			M	50	16M + 24SM + 2ST + 8A	90	92	(2.0* FCM)		India (Simlipal Hills)	K-41, O-48
<i>Puntius conchonius</i>				50	6M + 38 SM/ST + 6A	94		(1.9 BFA)	ACN=50	(Asia)	T-61, H-13
<i>Puntius conchonius</i>				50	4M + 40SM + 6A	94	94			(Asia)	T-12
<i>Puntius conchonius</i>				50				(1.7 FCM)		(Asia)	V-72, V-86
<i>Puntius conchonius</i>		F, M	48	10M + 20SM + 10ST + 8A	78	88			ACN=50	India (J & K)	S-49
<i>Puntius cumingi</i>				50	18M + 26 SM/ST + 6A	94			ACN=50	(Asia)	T-61
<i>Puntius denisonii</i>				50	4M + 20SM + 18ST + 8A	74	92	8	ACN=50	India (Kerala)	N-57
<i>Puntius everetti</i>				50	6M + 30 SM/ST + 14A	86			ACN=50	(Asia)	T-60, V-86, H-13
<i>Puntius fasciatus</i>				50	6M + 26 SM/ST + 18A	82			ACN=50	(Asia)	T-60
<i>Puntius fasciatus</i>	<i>Barbus</i>	M	50	30 M/SM + 4ST + 16A	80	84		1.5 FD	2B	(Asia)	O-5

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Puntius</i> <i>filamentosus</i>			50	8M + 26 SM/ST + 16A		84			ACN=50	(Asia)	T-61
<i>Puntius</i> <i>filamentosus</i>			50	12M + 16SM + 12ST + 10A	78	90	8		ACN=50	India (Kerala)	N-56
<i>Puntius</i> <i>lateristriga</i>			50	6M + 32 SM/ST + 12A		88			ACN=50	(Asia)	T-60
<i>Puntius</i> <i>manipurensis</i>		F, M	50	22M + 14SM + 6ST + 8A	86	92			ACN=50	India (Manipur)	S-74
<i>Puntius</i> <i>melanampyx</i>			50	12M + 12SM + 14ST + 12A	74	86			ACN=50	India (Tamil Nadu)	K-41
<i>Puntius</i> <i>nigrofasciatus</i>			50	16M + 34 SM/ST		100			ACN=50	(Asia)	T-61
<i>Puntius</i> <i>oligolepis</i>			50	8M + 30 SM/ST + 12A		88			ACN=50	(Asia)	T-60
<i>Puntius</i> <i>orphoides</i>			50	14M + 16SM + 4ST + 16A	80	84			ACN=50	N. Thailand	A-84
<i>Puntius</i> <i>orphoides</i>			50	6M + 36 SM/ST + 8A		92		1.5 FD	ACN=50	(Asia)	T-60, S-127
<i>Puntius</i> <i>partipentazona</i>			50	6M + 34 SM/ST + 10A		90			ACN=50	(Asia)	T-60
<i>Puntius</i> <i>pentazona</i>			50	22M + 26 SM/ST + 2A		98			ACN=50	(Asia)	T-60
<i>Puntius</i> <i>sarana</i>		M	50	12M + 14SM + 12ST + 12A	76	88				India (Haryana)	R-55
<i>Puntius</i> <i>sarana subnasutus</i>			50	12M + 26SM + 8ST + 4A	88	96	8		ACN=50	India (Kerala)	N-57
<i>Puntius</i> <i>semifasciolatus</i>	<i>Capoeta semifasciolata</i>	F, M	50	12M + 14SM + 14ST + 10A	76	90			ACN=50	China (Guangdong)	G-69, Y-15
<i>Puntius</i> <i>semifasciolatus</i>			50	8M + 18 SM/ST + 24A		76		(1.7 FCM)	ACN=50	(Asia)	S-136, V-86
<i>Puntius</i> <i>sophore</i>		F	50	2M + 4SM + 44A	56	56			ACN=50	India (Tamil Nadu)	K-41
<i>Puntius</i> <i>sophore</i>		F, M	48	2M + 4SM + 42A	54	54				India (Haryana)	R-51
<i>Puntius</i> <i>sophore</i>		F, M	48	4M + 2ST + 42A	52	54				India (Haryana)	R-75
<i>Puntius</i> <i>sophore</i>	<i>chrysopterus</i>	F	48	4M + 6ST + 38A	52	58			ACN=50	India (J & K)	T-52
<i>Puntius</i> <i>sophore</i>		F, M	48	4M + 2SM + 42A	54	54				India (WB)	K-42
<i>Puntius</i> <i>sophore</i>		F, M	48	2M + 2 SM/ST + 44A		52				India (Haryana)	R-46
<i>Puntius</i> <i>sophoroides</i>			50	2M + 2SM + 46A	54	54			ACN=50	Thailand (Ayuthaya)	M-9
<i>Puntius</i> <i>stoliczkanus</i>			50	22M + 22SM + 4ST + 2A	94	98			ACN=50	Thailand (Mae Hong Son)	M-9
<i>Puntius</i> <i>tetrazona</i>	<i>Barbus</i>	M	50	34 M/SM + 6ST + 10A	84	90		1.4 FD		(Asia)	O-5
<i>Puntius</i> <i>tetrazona</i>			50					(1.5 FCM)		India	K-102, V-86
<i>Puntius</i> <i>tetrazona</i>			50	6M + 28 SM/ST + 16A		84		2.0 FD, (1.9 BFA)	ACN=50	(Asia)	T-60, S-141, H-13
<i>Puntius</i> <i>tetrazona partipentazona</i>	<i>partipentazona</i>		50	6M + 34 SM/ST + 10A		90			ACN=50	(Asia)	T-60
<i>Puntius</i> <i>ticto</i>		F, M	50	20M + 12SM + 10ST + 8A	82	92		(1.8 FCM)		India (Jammu)	S-58, V-86
<i>Puntius</i> <i>ticto</i>			50	28M + 22 SM/ST		100			ACN=50	(Asia)	T-61
<i>Puntius</i> <i>ticto</i>			50	28M + 16SM + 6ST	94	100				India (A.P.)	S-173
<i>Puntius</i> <i>titteya</i>			50	20M + 28 SM/ST + 2A		98		2.4 BFA	ACN=50	(Asia)	T-61, H-13
<i>Sinocyclocheilus</i> <i>grahami grahami</i>			96	22M + 36SM + 38 ST/A	154				4X	China (Kunming)	L-38
<i>Sinocyclocheilus</i> <i>grahami tingi</i>			96	20M + 32SM + 44 ST/A	148				4X	China (Yunnan)	L-38
<i>Sinocyclocheilus</i> <i>grahami tingi</i>			96	18M + 34SM + 44 ST/A	148			4.6 FD	4X	China (Yunnan)	Z-5, Z-7, Z-8
<i>Sinocyclocheilus</i> <i>grahami tingi</i>			96	14M + 34SM + 48ST/A	144					China (Yunnan)	Z-5
<i>Sinocyclocheilus</i> <i>maculatus</i>			96	18M + 32SM + 46 ST/A	146			4.6 FD	4X	China (Yunnan)	Z-5, Z-7, Z-8
<i>Spinibarbus</i> <i>hollandi</i>	<i>Barbodes caldwelli</i>	F, M	100	18M + 32SM + 26ST + 24A	150	176			4X, ACN=100	China (Guangdong)	G-68, Y-15
<i>Spinibarbus</i> <i>denticulatus denticulatus</i>	<i>Barbodes</i>	F, M	100	18M + 32SM + 26ST + 24A	150	176			4X, ACN=100	China (Guangdong)	G-68, Y-15
<i>Spinibarbus</i> <i>sinensis</i>	<i>Barbodes</i>	F, M	100	18M + 32SM + 26ST + 24A	150	176			4X, ACN=100	China (Wuhan)	G-68, Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Tor <i>chelynoides</i>			100	20M + 30SM + 24ST + 26A	150	174	4		4X, ACN=100	India (Uttarakhand)	S-189, M-160
Tor <i>douronensis</i>			100	22M + 30SM + 48 ST/A	152				4X, ACN=100	China	Z-8
Tor <i>khudree</i>		F, M	100	16M + 28SM + 6ST + 50A	144	150			4X, ACN=100	India (Jammu)	K-36
Tor <i>khudree</i>			100	16M + 16SM + 8ST + 60A	132	140			4X, ACN=100	India (Maharashtra)	L-4
Tor <i>khudree</i>			100	18M + 16SM + 44ST + 22A	134	178	10		4X, ACN=100	India (Maharashtra)	K-111
Tor <i>khudree</i>			100	20M + 14SM + 22ST + 44A	134	156	4		4X, ACN=100	India (Karnataka)	M-160
Tor <i>mussullah</i>			100	22M + 24SM + 24ST + 30A	146	170	4		4X, ACN=100	India (Maharashtra)	K-111, M-160
Tor <i>progeneius</i>			100	20M + 20SM + 20ST + 40A	140	160	4		4X, ACN=100	India (Assam)	S-189, M-160
Tor <i>putitora</i>		F, M	100	10M + 24SM + 14ST + 52A	134	148			4X, ACN=100	India (U.P.)	K-33
Tor <i>putitora</i>			100	32M + 16ST + 52A	132	148			4X, ACN=100	India (U.P.)	L-4
Tor <i>putitora</i>			100	12M + 18SM + 70 ST/A	130				4X, ACN=100	India (U.P.)	R-71
Tor <i>putitora</i>			100	12M + 22SM + 14ST + 52A	134	148	4		4X, ACN=100	India (Uttarakhand)	S-189, M-160
Tor <i>sinensis</i>			100	18M + 30SM + 52 ST/A	148				4X, ACN=100	China	Z-8
Tor <i>soro</i>			100	24M + 20SM + 6ST + 50A	144	150			4X, ACN=100	Thailand (Kanchana Buri)	M-12
Tor <i>tor</i>	<i>mosal mahanadicus</i>		100	44M + 14SM + 42 ST/A	158				4X, ACN=100	India (Orissa)	K-41
Tor <i>tor</i>			100	10M + 30SM + 60 ST/A	140				4X, ACN=100	India (Haryana)	R-71
Tor <i>tor</i>		F, M	100	24M + 24SM + 6ST + 46A	148	154			4X, ACN=100	India (U.P.)	K-36
Tor <i>tor</i>		M	100	26M + 18ST + 56A	126	144			4X, ACN=100	India (U.P.)	L-4
Tor <i>tor</i>			100	20M + 24SM + 24ST + 32A	144	168	8		4X, ACN=100	India (Madhya Pradesh)	S-189, M-160
Varicorhinus <i>beso</i>		F, M	150	66 M/SM + 84 ST/A	216				6X, ACN=150	Ethiopia (Blue Nile, L. Tana)	G-47, K-108
Varicorhinus <i>nelspruitensis</i>			ca. 150						6X	S. Africa	O-2
Cultrinae											
Anabarilius <i>alburnops</i>			48	12M + 24SM + 12ST	84	96			ACN=50	China (Kunming Lake)	Z-3
Anabarilius <i>alburnops</i>			48	14M + 20SM + 14ST	82	96			ACN=50	China (Qilu Lake)	Z-3
Anabarilius <i>andersoni</i>			48	12M + 24SM + 12ST	84	96			ACN=50	China (Kunming)	Z-3
Anabarilius <i>grahami</i>			48	14M + 20SM + 14ST	82	96			ACN=50	China (Yunnan)	Z-3
Anabarilius <i>macrolepis</i>			48	12M + 24SM + 12ST	84	96			ACN=50	China (Yunnan)	Z-3
Ancherythroculter <i>kurematsui</i>		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Sichuan)	Y-15
Ancherythroculter <i>nigrocauda</i>		F, M	48	20M + 24SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
Ancherythroculter <i>wangi</i>		F, M	48	18M + 26SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
Aphyocyparis <i>chinensis</i>		M	48	16M + 26SM + 6ST	90	96		(2.3 FD)		Japan (Kyushu)	M-50, S-141
Aphyocyparis <i>chinensis</i>		F, M	48	16M + 26SM + 6 ST/A	90					Korea (Yesan-gun)	K-55, L-12
Chanodichthys <i>dabryi</i>	<i>Erythroculter</i>	F, M	48	16M + 28SM + 4ST	92	96	7		ACN=50	China (Hubei)	L-40, R-43
Chanodichthys <i>dabryi</i>	<i>Erythroculter hypselonotus</i>	F, M	48	16M + 24SM + 8ST	88	96			ACN=50	China (Guangdong)	L-32
Chanodichthys <i>erythropterus</i>	<i>Culter</i>	F, M	48	16M + 26SM + 6ST	90	96	6	2.1* FD	ACN=50	China (Hubei)	L-40, R-42, C-83
Chanodichthys <i>erythropterus</i>	<i>Erythroculter ilishaformis</i>	F, M	48	16M + 26SM + 6ST	90	96	6	1.6* FD	ACN=50	China (Hubei)	L-40, R-43, R-105, C-83
Chanodichthys <i>erythropterus</i>	<i>Erythroculter ilishaformis</i>		48	20M + 28 SM/ST		96			ACN=50	(Hubei, China)	L-53
Chanodichthys <i>mongolicus</i>	<i>Erythroculter</i>	F, M	48	14M + 28SM + 6ST	90	96		2.0* FD	ACN=50	China (Hubei)	L-40, Y-15, C-83
Chanodichthys <i>mongolicus</i>	<i>Erythroculter</i>		48	20M + 28 SM/ST		96			ACN=50	(Hubei, China)	L-53

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Culter oxycephaloides</i>	<i>Erythroculter</i>	F, M	48	20M + 24SM + 4ST	92	96			ACN=50	China (Hubei)	L-40
<i>Hemiculter bleekeri bleekeri</i>		M	48	16M + 26SM + 6ST	90	96			ACN=50	China (Hubei)	L-40, Y-15
<i>Hemiculter eigenmanni</i>			48		90				ACN=50	USSR	V-3
<i>Hemiculter leucisculus</i>		F, M	48	16M + 26SM + 6ST	90	96	2.2* FD		ACN=50	China (Hubei, Guangdong)	L-40, Y-15, C-83
<i>Hemiculter nigromarginis</i>		F, M	48	18M + 26SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15
<i>Hemiculterella sauvagei</i>		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Sichuan)	L-32, Y-15
<i>Hemiculterella sp.</i>		F	48							China (Pearl R.)	C-85
<i>Ischikauia steenackeri</i>		F, M	48	10M + 38 SM/ST	96	6	2.6* FCM		ACN=50	Japan (Osaka, Kobe)	T-4, O-48
<i>Megalobrama amblycephala</i>		F, M	48	18M + 26SM + 4ST	92	96	4		ACN=50	China (Hubei)	L-40, R-43, R-105, Z-1
<i>Megalobrama amblycephala</i>		F, M	48	16M + 24SM + 6ST + 2 special			(2.4, 2.0* FD)		ACN=50	China (Hubei)	L-41, L-73, C-83
<i>Megalobrama amblycephala</i>			48	20M + 24SM + 4ST	92	96			ACN=50	China (Hubei)	Z-1
<i>Megalobrama amblycephala</i>			48	26M + 22SM	96	96	4	(2.9* FCM)	ACN=50	China (Shashi)	Z-22, F-5
<i>Megalobrama amblycephala</i>			48	16M + 20SM + 12ST	84	96			ACN=50	China (Beijing)	Y-11
<i>Megalobrama terminalis</i>			48	18M + 22SM + 8ST	88	96			ACN=50	China (Hunan)	L-63
<i>Megalobrama terminalis</i>		F, M	48	14M + 26SM + 8ST	88	96			ACN=50	China (Hubei)	L-40, Y-15
<i>Osteobrama belangeri</i>			50	6M + 16SM + 12ST + 16A	72	84	2-4		ACN=50	India (Manipur)	K-137
<i>Osteobrama cotio</i>	<i>Rohtee</i>	F	48	22M + 14SM + 8ST + 4A	84	92			ACN=50	India (WB)	M-27
<i>Osteobrama cotio</i>		F	48	18M + 24SM + 6A	90	90			ACN=50	India (Jammu)	S-56
<i>Osteobrama cotio cotio</i>			48	24M + 14SM + 8ST + 2A	86	94			ACN=50	India (WB)	K-46
<i>Parabramis pekinensis</i>		F, M	48	14M + 26SM + 8ST	88	96	4	1.7* FD	ACN=50	China (Hubei)	L-40, R-43, C-83
<i>Parapercus argenteus</i>		F, M	48	18M + 22SM + 8ST	88	96			ACN=50	China (Sichuan)	Y-15
<i>Parapelecus engraulis</i>		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Sichuan)	L-32, Y-15
<i>Pseudohemiculter dispar</i>		F, M	48	18M + 24SM + 6ST	90	96			ACN=50	China (Guangdong)	L-32, Y-15
<i>Pseudolaubuca sinensis</i>			48				2.4* FD			China (Wuhan)	C-83
<i>Sinibrama changi</i>		F, M	48	14M + 26SM + 8ST	88	96			ACN=50	China (Sichuan)	L-32
<i>Sinibrama macrops</i>		F, M	48	22M + 20SM + 6ST	90	96			ACN=50	China (Guangxi)	Y-15
<i>Sinibrama melrosei</i>		F, M	48	20M + 24SM + 4ST	92	96			ACN=50	China (Guangdong)	L-32
Cyprininae											
<i>Carassiodoides cantonensis</i>		F, M	100	18M + 32SM + 18ST + 32A	150	168			4X, ACN=100	China (Guangdong)	G-68, Y-15
<i>Carassius auratus</i>	<i>goldfish</i>	F, M	100	24M + 30SM + 46 ST/A	154				4X, ACN=100	China (Beijing)	W-1
<i>Carassius auratus auratus</i>		goldfish	100	20M + 40 SM/ST + 40A	160		(4.1* FCM)		4X, ACN=100	Japan	K-115, O-48
<i>Carassius auratus auratus</i>	<i>carassius auratus, goldfish</i>	100	20M + 28 SM/ST + 52A	148		3.7 FD		4X, ACN=100	France	H-2, H-4	
<i>Carassius auratus</i>		100	22M + 30SM + 48 ST/A	152		3.2 FD		XX/XY	China (Yunnan)	Z-2, Z-8	
<i>Carassius auratus</i>			104	20M + 84 SM/ST/A					4X, ACN=100	Italy	C-60
<i>Carassius auratus auratus</i>		F, M	100	12M + 36SM + 52 ST/A	148	2			4X, ACN=100	China	O-29
<i>Carassius auratus auratus</i>		F, M	100	22m + 34SM + 22ST + 22A	156	178		(3.5 FCM)	4X, ACN=100	China	Y-14, R-105, V-86
<i>Carassius auratus auratus</i>			100	30M + 34SM + 36 ST/A	164		(3.4 FIA, 4.0 BFA)		4X, ACN=100	China (Amur)	S-62, S-64, H-13, H-41
<i>Carassius auratus auratus</i>			100	52 M/SM + 48 ST/A	152		1-3		4X, ACN=100	Croatia	A-23, M-54
<i>Carassius auratus</i>	var. Dongtingking		100	30M + 20SM + 26ST + 24A	150	176			4X, ACN=100	China (Lake Dongting)	Y-25

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Carassius auratus</i>	back-low type	F, M	100	22M + 30SM + 48 ST/A	152	4	3.2 FD		XX/XY	China (Kunming Lake)	W-10, Z-4, Z-8
<i>Carassius auratus</i>	back-high type		156	30M + 46SM + 80 ST/A	232	6			6X, ACN=150	China (Yunnan)	W-10
<i>Carassius auratus</i>	back-high type		162	36M + 56SM + 70 ST/A	254	6			6X	China (Yunnan, Er hai Lake)	W-11
<i>Carassius auratus</i>	back-high type	F	162	33M + 53SM + 76 ST/A	248		4.6 FD		6X	China (Kunming Lake)	Z-4, Z-8
<i>Carassius auratus</i>	Xiji colour-crucian carp		100	24M + 30SM + 46 ST/A	154				4X, ACN=100	China (Xiji)	W-2
<i>Carassius auratus auratus</i>	Chinese crucian carp		100	12M + 36SM + 52 ST/A	148	2			4X, ACN=100	China	O-30, T-18
<i>Carassius auratus auratus</i>	Hibuna	F	100	12M + 36SM + 52 ST/A	148	2			4X, ACN=100	Japan (Hokkaido)	O-45
<i>Carassius auratus auratus</i>	Hibuna	F	151						3B, 6X	Japan (Hokkaido)	O-45
<i>Carassius auratus auratus</i>	Wakin	F, M	100	20M + 40 SM/ST + 40A		160	2		4X, ACN=100	Japan (Tokyo)	K-115
<i>Carassius auratus auratus</i>	Wakin	F, M	100	12M + 36SM + 52 ST/A	148	2			4X, ACN=100	Japan	O-12, O-30
<i>Carassius auratus auratus</i>	Ryukin	F, M	100	12M + 36SM + 52 ST/A	148				4X, ACN=100	Japan	O-12
<i>Carassius auratus auratus</i>	Comet	F, M	100	12M + 36SM + 52 ST/A	148				XX/XY	Japan	O-26, O-37
<i>Carassius auratus auratus</i>	Shubunkin	F, M	100	12M + 36SM + 52 ST/A	148				XX/XY	Japan	O-26, O-37
<i>Carassius auratus auratus</i>	Kuro-demekin		100	16M + 84 SM/ST/A					4X, ACN=100	Japan (Tokyo)	A-70
<i>Carassius auratus auratus</i>	Ranchuu		100	16M + 42SM + 42 ST/A	158				4X, ACN=100	Japan (Tokyo)	A-70
<i>Carassius auratus auratus</i>	Sanshiki-demekin		100	16M + 40SM + 44 ST/A	156				4X, ACN=100	Japan (Tokyo)	A-70
<i>Carassius auratus auratus</i>	Tetsugyo	F, M	100						4X, ACN=100	Japan (Niigata)	S-156
<i>Carassius auratus auratus</i>	Tetsugyo	F	153						6X, ACN=150	Japan (Niigata)	S-156
<i>Carassius auratus buergeri</i>	Nagabuna	F	100	12M + 36SM + 52 ST/A	148	2			4X, ACN=100	Japan (Lake Suwa)	O-30
<i>Carassius auratus gibelio</i>			162	34M + 58SM + 42ST + 28A	254				6X, ACN=150	China	Y-14, Y-15
<i>Carassius auratus gibelio</i>			150				(5.5* FD)		6X	China (Wuhan)	C-83
<i>Carassius auratus gibelio</i>		F, M	156	42M + 74SM + 40 ST/A	272				6X, ACN=150	China (Amur)	S-62
<i>Carassius auratus gibelio</i>		F, M	156	44M + 64SM + 48 ST/A	264				6X, ACN=150	China (Amur, Mishan)	S-64
<i>Carassius auratus gibelio</i>		F, M	156	42M + 74SM + 40 ST/A	272				6X, ACN=150	China (Amur, Fangzheng)	S-64
<i>Carassius auratus gibelio</i>		F, M	162	48M + 56SM + 18ST + 40A	266	284		(6.6* FCM)	6X	China (Amur, Fangzheng)	S-46, F-5
<i>Carassius auratus gibelio</i>		F	156	50M + 64SM + 42 ST/A	270				6X, ACN=150	China (Amur, Dedou)	S-64
<i>Carassius auratus gibelio</i>			162	32M + 52SM + 78 ST/A	246	4			6X	China (Amur, Fangzheng)	W-10
<i>Carassius auratus gibelio</i>		M	100	20M + 40SM + 40 ST/A	160				4X, ACN=100	Russia (Amur R.)	K-85, K-94
<i>Carassius auratus gibelio</i>		F	156	34M + 62SM + 60 ST/A	252				6X, ACN=150	Russia (Amur R.)	K-85, K-94
<i>Carassius auratus gibelio</i>		F	150						6X, ACN=150	Bosnia	S-80
<i>Carassius auratus gibelio</i>			98	48 M/SM/ST + 50A		146			4X, ACN=100	Rumania (Danube plaine)	R-36
<i>Carassius auratus gibelio</i>		F	160	46M + 82 SM/ST + 32A	288			(5.5 FCM)	6X	Czech	P-22, G-85
<i>Carassius auratus gibelio</i>		F, M	100	14M + 24SM + 10ST + 52A	138	148	1-4	(3.7 FCM)	4X, ACN=100	Poland	B-50, G-85
<i>Carassius auratus gibelio</i>		F	150	26M + 50SM + 20ST + 54A	226	246	2-8		6X, ACN=150	Poland	B-50
<i>Carassius auratus gibelio</i>	clone A		150	36M + 54SM + 36ST + 24A	240	276			6B, 6X	N. China	Z-36
<i>Carassius auratus gibelio</i>	clone P		150	36M + 54SM + 36ST + 24A	240	276			6B, 6X	China (Jiangxi)	Z-36
<i>Carassius auratus gibelio</i>	clone D		156	42M + 54SM + 36ST + 24A	252	288			6B, 6X	N. China	Z-36
<i>Carassius auratus grandoculis</i>	Nigorobuna	F, M	100	12M + 36SM + 52 ST/A	148	2		2.7-4.1 FD	4X, ACN=100	Japan (Lake Biwa)	M-96, O-30, S-141
<i>Carassius auratus grandoculis</i>	Nigorobuna	F, M	100	20M + 40SM + 40 ST/A	160				4X, ACN=100	Japan (Lake Biwa)	K-86

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Carassius auratus langsdorffii</i>	Ginbuna	F	150	28M + 56SM + 66 ST/A	234	8	(5.4* FCM)	6B, 6X	Japan (Lake Biwa)	O-30, O-48	
<i>Carassius auratus langsdorffii</i>	Ginbuna	F	150	18M + 66SM + 66 ST/A	234			4B, 6X	Japan (Lake Biwa)	T-15	
<i>Carassius auratus langsdorffii</i>	Ginbuna	F, M	100	20M + 40 SM/ST + 40A		160	(4.1* FCM, 3.4 FD)	4X, ACN=100	Japan, Taiwan, Russia	K-94, K-115, O-48, S-141	
<i>Carassius auratus langsdorffii</i>	Ginbuna	F	156	34M + 62 SM/ST + 60A		252		6X, ACN=150	Japan, Taiwan, Russia	K-94, K-115	
<i>Carassius auratus langsdorffii</i>	Ginbuna	F	206	44M + 82 SM/ST + 80A		332		8X, ACN=200	Japan (Kanto District)	K-94, K-115	
<i>Carassius auratus langsdorffii</i>	Ginbuna	F, M	100	20M + 40SM + 40A	160	160		4X, ACN=100	Japan (Hokkaido, Honshu)	M-96	
<i>Carassius auratus langsdorffii</i>	Ginbuna	F, M	ca. 150					6X, ACN=150	Japan (Hokkaido, Honshu)	M-96	
<i>Carassius auratus buergeri</i>	Ookinbuna		100	12M + 36SM + 52 ST/A	148			4X, ACN=100	Japan (Okayama)	T-15	
<i>Carassius auratus</i> subsp. 2	Kinbuna		100	12M + 36SM + 52 ST/A	148	2	3.8* FCM	XX/XY	Japan (Lake Jonuma)	O-30, O-37, O-48, U-1	
<i>Carassius auratus</i> subsp. 2	Kinbuna	F, M	100	20M + 40 SM/ST + 40A		160	2	4X, ACN=100	Japan (Ibaraki)	K-115	
<i>Carassius auratus</i> subsp. 1	<i>buergeri</i> , Nagabuna	F, M	100	20M + 40 SM/ST + 40A		160		4X, ACN=100	Japan (Lake Suwa)	K-86, K-117	
<i>Carassius auratus</i> subsp. 1	<i>buergeri</i> , Nagabuna	F	156	34M + 62 MS/ST + 60A		252		6X, ACN=150	Japan (Hokkaido)	K-86	
<i>Carassius auratus</i> subsp.		M	100	12M + 36SM + 52 ST/A	148			4X, ACN=100	Japan (Ishigaki Is.)	T-13	
<i>Carassius auratus</i>	white crucian carp	F	100	20M + 28SM + 38ST + 14A	148	186		4X, ACN=100	China (Jiangsu)	Z-18	
<i>Carassius carassius</i>		F, M	100	20M + 40SM/ST + 40A		160	1-3	4X, ACN=100	Netherlands	K-115, M-54	
<i>Carassius carassius</i>				100 48 M/SM + 52 ST/A	148			4X, ACN=100	Russia	V-72, V-86	
<i>Carassius carassius</i>				50 20M + 12SM + 10ST + 8A	82	92			2X	Romania (Danube plaine)	R-36
<i>Carassius carassius</i>				100 52 M/SM + 48 ST/A	152			4X, ACN=100	Bosnia	S-80	
<i>Carassius carassius</i>				100 20M + 44 SM/ST + 36A		164	3.8 FD	4X, ACN=100	France	H-2, H-4	
<i>Carassius cuvieri</i>	Gengorobuna	F, M	100	12M + 36SM + 52 ST/A	148	2	4.4* FCM, 4.8 FD	4X, ACN=100	Japan (Lake Biwa)	O-12, O-30, O-48, S-141	
<i>Carassius cuvieri</i>	<i>auratus cuvieri</i>	F, M	100	20M + 40SM + 40A	160	160		4X, ACN=100	Japan (Lake Biwa)	M-96	
<i>Cyprinus carpio</i>				104			(3.4 FCM), 3.4 BFA	4X, ACN=100		T-73, H-13	
<i>Cyprinus carpio</i>				F, M 100 12M + 36SM + 52 ST/A	148	2	4.1* FCM	4X, ACN=100	Japan	T-14, O-13, O-48	
<i>Cyprinus carpio</i>				100 20M + 32 SM/ST + 48A		152	3.6 FD	4X, ACN=100	France	H-2	
<i>Cyprinus carpio</i>	mirror carp		100	34 M/SM + 30ST + 36A	134	164	2	4X, ACN=100	Germany	A-51	
<i>Cyprinus carpio</i>				98 50 M/SM + 48 ST/A	148			4X, ACN=100	former Yugoslavia	A-27, A-28	
<i>Cyprinus carpio</i>				F, M 100 24M + 24 SM/ST + 52A		148		4X, ACN=100	Rumania, Hungary, Ukraina	R-33	
<i>Cyprinus carpio</i>				98 54 M/SM + 44 ST/A	152			4X, ACN=100	Croatia	A-24	
<i>Cyprinus carpio</i>				100			2.9*, 3.5 FD		China (Hubei)	L-41, C-83	
<i>Cyprinus carpio carpio</i>		F, M	100	22M + 34SM + 22ST + 22A	156	178		4X, ACN=100	China	Y-14, R-105	
<i>Cyprinus carpio carpio</i>	Hebao carp		100	28M + 22SM + 50 ST/A	150	2	4.1* FCM	4X, ACN=100	China (Jiangxi)	W-9, F-5	
<i>Cyprinus carpio carpio</i>	Xinguo red carp		100	28M + 22SM + 50 ST/A	150	2	4.1* FCM	4X, ACN=100	China (Jiangxi)	W-9, F-5	
<i>Cyprinus carpio carpio</i>	Pili carp		100	28M + 22SM + 50 ST/A	150	2		4X, ACN=100	China (Jiangxi)	W-9	
<i>Cyprinus carpio carpio</i>	Blue carp		100	28M + 22SM + 50 ST/A	150	2		4X, ACN=100	China (Jiangxi)	W-9	
<i>Cyprinus carpio</i>	Scattered mirror carp	M	100	20M + 26SM + 30ST + 24A	146	176	4.1* FCM	4X, ACN=100	China (Jiangsu)	Z-18, F-5	
<i>Cyprinus carpio</i>	Ogon	F	99	12M + 35 SM + 52 ST/A	146		ACN=100	4X, ACN=100	Japan	O-35	
<i>Cyprinus carpio</i>	Ogon	M	99	12M + 35 SM + 52 ST/A	146		1B, ACN=100	4X, ACN=100	Japan	O-35	
<i>Cyprinus carpio</i>	Kohaku	F, M	99	12M + 35 SM + 52 ST/A	146		1B, ACN=100	4X, ACN=100	Japan	O-35	
<i>Cyprinus carpio</i>	Kohaku	M	99	12M + 35 SM + 52 ST/A	146		2B, ACN=100	4X, ACN=100	Japan	O-35	

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Cyprinus carpio</i>	Sanshoku	F	99	12M + 35 SM + 52 ST/A	146			1B, ACN=100	4X, ACN=100	Japan	O-35
<i>Cyprinus carpio</i>	Sanshoku	M	99	12M + 35 SM + 52 ST/A	146			2-3 B, ACN=100	4X, ACN=100	Japan	O-35
<i>Cyprinus carpio chilia</i>			100	22M + 30SM + 48 ST/A	152		2	3.3 FD	4X, ACN=100	China (Yunnan)	W-9, Z-3, Z-8
<i>Cyprinus carpio chilia</i>			150	28M + 52SM + 70 ST/A	230				6X, ACN=150	China (Yunnan)	Z-8
<i>Cyprinus carpio communis</i>		M	100	24M + 24SM + 52A	148				4X, ACN=100	India (WB)	K-42
<i>Cyprinus carpio haematopterus</i>		M	100	20M + 30SM + 50 ST/A	150				XY, 4X	China	Z-8
<i>Cyprinus carpio haematopterus</i>		F, M	100	22M + 34SM + 22ST + 22A	156	178			4X, ACN=100	China (Wuhan)	Y-15
<i>Cyprinus carpio haematopterus</i>		F, M	100	28M + 38SM + 22ST + 12A	166	188	2		4X, ACN=100	USSR (Amur R.)	R-14
<i>Cyprinus carpio rubrofuscus</i>			100	22M + 30SM + 48 ST/A	152			3.4 FD	XX/XY, 4X	China	Z-2, Z-8
<i>Cyprinus carpio rubrofuscus</i>			100	26M + 36SM + 38 ST/A	162				4X, ACN=100	China	S-67
<i>Cyprinus daliensis</i>	<i>yunnanensis daliensis</i>		100	22M + 30SM + 48 ST/A	152			3.1 FD	XX/XY, 4X	China (Yunnan)	Z-7, Z-8
<i>Cyprinus longipectoralis</i>			100	22M + 30SM + 48 ST/A	152		2	3.7 FD	XX/XY, 4X	China (Yunnan)	W-9, Z-3, Z-8
<i>Cyprinus megalophthalmus</i>			100	22M + 30SM + 48 ST/A	152				XX/XY, 4X	China (Yunnan)	Z-3
<i>Cyprinus micristius fuxianensis</i>			100	22M + 30SM + 48 ST/A	152				XX/XY, 4X	China (Yunnan)	Z-3
<i>Cyprinus pellegrini barbus</i>			100	22M + 30SM + 48 ST/A	152			3.5 FD	XX/XY, 4X	China (Yunnan)	Z-3, Z-8
<i>Cyprinus pellegrini pellegrini</i>			100	22M + 30SM + 48 ST/A	152				XX/XY, 4X	China (Yunnan)	Z-7, Z-8
<i>Procypris rabaudi</i>		F, M	100	22M + 26SM + 22ST + 30A	148	170			4X, ACN=100	China (Nanchong)	Y-14, Y-15
Gobiobotinae											
<i>Gobiobotia abbreviata</i>		F, M	50	22M + 22SM + 6ST	94	100	2		ACN=50	China (Sichuan)	L-45, Y-15, R-43
<i>Gobiobotia boulegeri</i>		M	50	24M + 14SM + 12 ST/A	88		2		ACN=50	China (Sichuan)	L-38, R-43
<i>Gobiobotia boulegeri</i>		F, M	50	14M + 26SM + 10ST	90	100			ACN=52	China (Sichuan)	L-45, Y-14, Y-15
<i>Gobiobotia brevibarba</i>		M	50	12M + 30 SM/ST + 8A		92			ACN=50	Korea (Han R.)	U-33
<i>Gobiobotia ichangensis</i>			50	32M + 12SM + 6 ST/A	94				ACN=50	China (Sichuan)	L-38
<i>Gobiobotia longibarba meridionalis</i>		F, M	50	22M + 18SM + 10ST	90	100			ACN=50	China (Guangdong)	L-45, Y-15
<i>Microphysogobio longidorsalis</i>		M	50	18M + 32 SM/ST		100			ACN=50	Korea (Han R.)	U-33
<i>Microphysogobio longidorsalis</i>			50	18M + 32SM	100	100			ACN=50	Korea	L-15
<i>Microphysogobio yaluensis</i>		M	50	18M + 32 SM/ST		100			ACN=50	Korea (Geum R.)	U-33
<i>Microphysogobio yaluensis</i>			50	16M + 32SM + 2ST	98	100			ACN=50	Korea	L-15
Gobioninae											
<i>Abbottina kiatingensis</i>		M	50							China (Pearl R.)	C-85
<i>Abbottina labeoides</i>		M	50	24M + 24SM + 2ST	98	100			ACN=52	China (Guangxi, Guangdong)	Y-15
<i>Abbottina rivularis</i>		F	50	24M + 24SM + 2ST	98	100		2.7* FD	ACN=50	China (Hubei)	L-29, Y-15, C-83
<i>Abbottina rivularis</i>		F, M	50	22M + 24SM + 4ST	96	100			ACN=50	China (Amur)	W-14
<i>Abbottina rivularis</i>			50	12M + 32SM + 6ST	94	100			ACN=50	Korea	L-15
<i>Belligobio nummifer</i>		F, M	50	18M + 20SM + 10ST + 2A	88	98			ACN=52	China (Sichuan)	L-43, Y-15
<i>Coreius guichenoti</i>		F, M	50	16M + 22SM + 10ST + 2A	88	98			ACN=50	China (Wuhan)	L-29, Y-15
<i>Coreius heterodon</i>		F, M	50	16M + 22SM + 10ST + 2A	88	98			ACN=50	China (Hubei)	L-29, Y-15
<i>Coreoleuciscus splendidus</i>		F, M	50	12M + 30SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
<i>Coreoleuciscus splendidus</i>		M	50	14M + 30 SM/ST + 6A		94			ACN=50	Korea (Han R.)	U-33

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Coreoleuciscus</i> <i>splendidus</i>		F, M	100	36M + 64 SM/ST		200			4X, ACN=100	Korea (Geum R.)	K-10
<i>Gnathopogon</i> <i>caerulescens</i>			50	12M + 24SM + 14 ST/A	86	4			ACN=50	Japan (Lake Biwa)	T-17
<i>Gnathopogon</i> <i>caerulescens</i>		F, M	50	14M + 36 SM/ST		100	4		ACN=50	Japan (Lake Biwa)	U-40
<i>Gnathopogon</i> <i>caerulescens</i>	<i>elongatus caerulescens</i>		50	12M + 26SM + 12 ST?A	88	2			ACN=50	Japan (Kobe, Lake Biwa)	T-4
<i>Gnathopogon</i> <i>elongatus</i>			50	12M + 24SM + 14 ST/A	86	4	2.4* FCM		ACN=50	Japan (Kobe)	T-17, O-48
<i>Gnathopogon</i> <i>elongatus</i>		F, M	50	14M + 36 SM/ST		100	4		ACN=50	Japan (Shiga)	U-40
<i>Gnathopogon</i> <i>elongatus elongatus</i>		F, M	50	12M + 32 SM/ST + 6A		94			ACN=50	Japan (Gifu)	O-18
<i>Gnathopogon</i> <i>imberbis</i>		F, M	50	22M + 24SM + 4ST	96	100			ACN=52	China (Sichuan)	L-43, Y-15
<i>Gnathopogon</i> <i>strigatus</i>		F, M	50	14M + 30SM + 6 ST/A	94				ACN=50	Korea (Ko-san)	L-77
<i>Gobio</i> <i>delyamurei</i>			50	22M + 22SM + 6 ST/A	94				ACN=50	Ukraine (Crimea)	V-82
<i>Gobio</i> <i>gobio</i>			50	22M + 26 SM/ST + 2A		98		2.8 FD	ACN=50	France	H-2, H-4
<i>Gobio</i> <i>gobio</i>			50	22M + 24SM + 2ST + 2A	96	98	(3.3 FCM)		ACN=50	Rumania (Bucharest)	R-34, C-75
<i>Gobio</i> <i>gobio</i>		F, M	50	38 M/SM + 12 ST/A	88				ACN=50	former Yugoslavia	S-78
<i>Gobio</i> <i>gobio</i>			50	20M + 26SM + 2ST + 2A	96	98			ACN=50	former Yugoslavia	V-83
<i>Gobio</i> <i>gobio</i>			50	24M + 24SM + 2 ST/A	98				ACN=50	Russia (Volga basin)	V-83
<i>Gobio</i> <i>kubanicus</i>			50	20M + 28SM + 2 ST/A	98				ACN=52	Russia (Kuban R.)	V-83
<i>Gobio</i> <i>soldatovi</i>		F, M	50	18M + 26SM + 4ST + 2A	94	98			ACN=50	China (Amur)	W-14
<i>Gobio</i> <i>tenuicorpus</i>		F, M	50	18M + 26SM + 4ST + 2A	94	98			ACN=50	China (Amur)	W-14
<i>Hemibarbus</i> <i>barbus</i>			50	16M + 26 SM + 8 ST/A	92	4	(2.5* FCM)		ACN=50	Japan (Kobe)	T-17, O-48
<i>Hemibarbus</i> <i>barbus</i>		F, M	50	14M + 28 SM/ST + 8A		92			ACN=50	Japan (Lake Biwa)	O-18
<i>Hemibarbus</i> <i>labeo</i>		F, M	50	18M + 22 SM/ST + 10A		90		2.1 FD	ACN=50	Korea (Han R.)	K-4
<i>Hemibarbus</i> <i>labeo</i>		F, M	50	16M + 16SM + 14ST + 4A	82	96		2.1* FD	ACN=50	China (Guangdong)	L-29, Y-15, C-83
<i>Hemibarbus</i> <i>labeo</i>			50							China (Amur)	W-14
<i>Hemibarbus</i> <i>longirostris</i>		F, M	50	18M + 18SM + 10ST + 4A	86	96			ACN=50	China (Guangdong)	L-29, Y-15
<i>Hemibarbus</i> <i>longirostris</i>		M	50	14M + 28SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
<i>Hemibarbus</i> <i>longirostris</i>		F, M	50	14M + 28 SM/ST + 8A		92		2.2 FD	ACN=50	Korea (Han R.)	K-4
<i>Hemibarbus</i> <i>longirostris</i>		F, M	50	16M + 28 SM/ST + 6A		94			ACN=50	Korea (Geum R.)	U-33
<i>Hemibarbus</i> <i>maculatus</i>		F, M	50	16M + 14SM + 16ST + 4A	80	96	2	2.1* FD	ACN=50	China (Wuhan)	L-29, R-43, C-83
<i>Hemibarbus</i> <i>maculatus</i>			50							China (Amur)	W-14
<i>Hemibarbus</i> <i>mylodon</i>	<i>Gonoproktopterus</i>		50	12M + 28 SM/ST + 10A		90			ACN=50	Korea (Han R.)	U-33
<i>Huiogobio</i> <i>chenhsienensis</i>		F, M	50	24M + 24SM + 2ST	98	100			ACN=50	China (Guangdong)	H-22, Y-15
<i>Paracanthobrama</i> <i>guichenoti</i>		F, M	50	18M + 20SM + 10ST + 2A	88	98	4	2.6 FD	ACN=50	China (Hubei)	L-29, L-41, R-43, Z-25
<i>Paracanthobrama</i> <i>umbrifer</i>		F, M	50	20M + 12SM + 4ST + 14A	82	86			ACN=50	China (Guilin)	Y-15
<i>Paraleucogobio</i> <i>strigatus</i>		F, M	50	14M + 16SM + 20ST	80	100			ACN=52	China (Amur)	W-14
<i>Paraleucogobio</i> <i>strigatus</i>			50	14M + 30SM + 6 ST/A	94				ACN=50	Korea	L-77
<i>Platysmacheilus</i> <i>exiguus</i>		F, M	50	24M + 14SM + 12ST	88	100			ACN=50	China (Guangxi)	Y-15
<i>Pseudogobio</i> <i>esocinus</i>		F, M	50	16M + 28 SM/ST + 6A		94	2	3.1* FCM, 3.3 FD	ACN=50	Japan (Lake Biwa, Kobe)	T-4, O-18, O-48, S-141
<i>Pseudogobio</i> <i>esocinus</i>		F, M	50	16M + 28SM + 6A	94				ACN=52	Korea (Ko-san)	L-77
<i>Pseudogobio</i> <i>vallanti guilinensis</i>		F, M	50	18M + 18SM + 12ST + 2A	86	98	2		ACN=50	China (Guilin)	L-43, Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Pseudogobio</i> <i>vaillanti</i> <i>vaillanti</i>		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Guangdong)	H-22, Y-15
<i>Pseudopungtungia</i> <i>nigra</i>		F, M	50	14M + 36 SM/ST		100			ACN=50	Korea (Kum R.)	K-59
<i>Pseudopungtungia</i> <i>tenuicorpus</i>		M	50	20M + 30 SM/ST		100			ACN=50	Korea (Han R.)	K-59
<i>Pseudorasbora</i> <i>parva</i>			50	16M + 22SM + 12 ST/A	88	4	3.1* FCM		ACN=50	Japan (Kobe)	T-17, O-48
<i>Pseudorasbora</i> <i>parva</i>		F, M	50	14M + 36 SM/ST		100			ACN=50	Japan (Lake Biwa)	O-18
<i>Pseudorasbora</i> <i>parva</i>			50	14M + 36SM	100	100			ACN=50	Korea	L-15
<i>Pseudorasbora</i> <i>parva</i>		F, M	50	18M + 22SM + 10ST	90	100	2	2.6* FD	ACN=50	China (Hubei)	L-29, R-43, C-83
<i>Pseudorasbora</i> <i>parva</i>			50					2.5 FD		China (Hubei)	L-41
<i>Pseudorasbora</i> <i>parva</i>			50	20M + 26SM + 4ST	96	100			ACN=50	China (Kunming)	L-38
<i>Pseudorasbora</i> <i>parva</i>		F, M	50	18M + 22SM + 10 ST/A	90				ACN=50	China (Amur)	W-14
<i>Pseudorasbora</i> <i>pumila</i> <i>pumila</i>			50	26M + 20SM + 4ST	96	100			ACN=50	Japan (Akita)	A-78
<i>Pseudorasbora</i> <i>pumila</i> subsp.		F, M	50	14M + 36 SM/ST		100			ACN=50	Japan	M-49
<i>Pungtungia</i> <i>helzi</i>			50	18M + 18SM + 14 ST/A	86	4	3.0* FCM		ACN=50	Japan (Kobe)	T-17, O-48
<i>Pungtungia</i> <i>helzi</i>		F, M	50	20M + 30 SM/ST		100			ACN=50	Japan (Lake Biwa)	O-18, K-10
<i>Pungtungia</i> <i>helzi</i>		F, M	50	16M + 26SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
<i>Pungtungia</i> <i>helzi</i>			50	16M + 22SM + 6ST + 6A	88	94			ACN=50	Korea	L-15
<i>Rhinogobio</i> <i>cylindricus</i>		F, M	50	14M + 22SM + 12ST + 2A	86	98			ACN=50	China (Wuhan)	H-22, Y-15
<i>Rhinogobio</i> <i>typus</i>		F, M	50	14M + 22SM + 12ST + 2A	86	98			ACN=50	China (Wuhan)	H-22, Y-15
<i>Rhinogobio</i> <i>ventralis</i>		F, M	50	12M + 24SM + 12ST + 2A	86	98			ACN=50	China (Sichuan)	L-43, Y-15
<i>Romanogobio</i> <i>banaticus</i>	<i>Gobio kessleri banaticus</i>		50	24M + 20SM + 4ST + 2A	94	98			ACN=50	Rumania (Uliuc village)	R-34
<i>Romanogobio</i> <i>kessleri</i>	<i>Gobio</i>		50	30M + 18 SM/ST + 2A		98		3.7 FCM	ACN=50	Czech	J-12, G-85
<i>Romanogobio</i> <i>uranoscopus</i>	<i>Gobio</i>		52	24M + 12SM + 12ST + 4A	88	100				Rumania (Buda village)	R-34
<i>Romanogobio</i> <i>uranoscopus</i>	<i>Gobio</i>	F, M	50	30M + 18SM + 2ST	98	100			ACN=50	Slovakia	R-22
<i>Romanogobio</i> <i>vladykovi</i>	<i>Gobio albipinnatus vladykovi</i>		50	28M + 20SM + 2A	98			3.4 FCM	ACN=50	Rumania (Uliuc village)	R-34, G-85
<i>Rostrogobio</i> <i>amurensis</i>			50	18M + 24SM + 6ST + 2A	92	98			ACN=50	China (Amur)	W-14
<i>Sarcocheilichthys</i> <i>biwaensis</i>			50	12M + 30SM + 8A	92				ACN=52	Japan (Lake Biwa)	K-12
<i>Sarcocheilichthys</i> <i>czerskii</i>		M	50	18M + 32 SM/ST		100			ACN=52	Korea (Geum R.)	U-33
<i>Sarcocheilichthys</i> <i>kiangsiensis</i>		M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Guangdong)	H-22, Y-15
<i>Sarcocheilichthys</i> <i>lacustris</i>		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Amur)	W-14
<i>Sarcocheilichthys</i> <i>nigripinnis czerskii</i>		F, M	50	18M + 22SM + 10ST	90	100			ACN=52	China (Amur)	W-14
<i>Sarcocheilichthys</i> <i>nigripinnis morii</i>		F, M	50	16M + 26SM + 8 ST/A	92				ACN=52	Korea (Ko-san)	L-77
<i>Sarcocheilichthys</i> <i>nigripinnis nigripinnis</i>		F, M	50	18M + 22SM + 10ST	90	100	2	2.6 FD	ACN=52	China (Hubei)	H-22, R-43, R-105, Z-28
<i>Sarcocheilichthys</i> <i>nigripinnis nigripinnis</i>			50					2.5, 2.8* FD		China (Hubei)	L-41, C-83
<i>Sarcocheilichthys</i> <i>parvus</i>		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Guangdong)	H-22, Y-15
<i>Sarcocheilichthys</i> <i>sinensis sinensis</i>		F, M	50	18M + 22SM + 8ST + 2A	90	98			ACN=52	China (Wuhan)	H-22, Y-15
<i>Sarcocheilichthys</i> <i>variegatus microculus</i>	<i>variegatus</i>	F, M	50	12M + 30 SM/ST + 8A	92	4	2.8* FCM, 2.4 FD		ACN=52	Japan (Lake Biwa)	T-4, T-12, O-18, O-48
<i>Sarcocheilichthys</i> <i>variegatus variegatus</i>	<i>variegatus</i>	M	50	18M + 32 SM/ST		100			ACN=52	Japan (Okayama)	U-33
<i>Saurogobio</i> <i>dabryi</i>		F, M	50	18M + 26SM + 6ST	94	100			ACN=50	China (Wuhan)	H-22, Y-15
<i>Saurogobio</i> <i>dumerili</i>		F, M	50	18M + 26SM + 6ST	94	100			ACN=50	China (Wuhan)	H-22, Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Saurogobio gymnocheilus</i>		F, M	50	18M + 24SM + 8ST	92	100			ACN=50	China (Wuhan)	H-22, Y-15
<i>Squalidus argentatus</i>	<i>Gnathopogon</i>	F, M	50	22M + 26SM + 2ST	98	100			ACN=50	China (Wuhan)	K-29, Y-15
<i>Squalidus biwae</i>			50	16M + 34SM	100	100	2		ACN=50	Japan (Yodo R.)	T-17
<i>Squalidus chankaensis</i>	<i>Gnathopogon</i>	F, M	50	22M + 24SM + 4ST	96	100			ACN=52	China (Amur)	W-14
<i>Squalidus chankaensis biwae</i>		F, M	50	20M + 30 SM/ST	100	2			ACN=50	Japan (Lake Biwa)	U-40
<i>Squalidus chankaensis</i> subsp.		F, M	50	20M + 30 SM/ST	100	2			ACN=50	Japan (Hyogo, Okayama)	U-40
<i>Squalidus gracilis gracilis</i>	<i>gracilis</i>		50	16M + 34SM	100	100			ACN=50	Japan (Lake Biwa)	K-14
<i>Squalidus gracilis gracilis</i>		F, M	50	20M + 30 SM/ST	100	2	(2.5 FD)		ACN=50	Japan (Shiga, Okayama)	U-40, S-141
<i>Squalidus gracilis majimae</i>		F, M	50	14M + 28SM + 8 ST/A	92				ACN=50	Korea (Ko-san)	L-77
<i>Squalidus japonicus japonicus</i>		F, M	50	20M + 30 SM/ST	100	2			ACN=50	Japan (Lake Biwa)	U-40
<i>Squalidus nitens</i>	<i>Gnathopogon sihuensis</i>	F	50	22M + 24SM + 4ST	96	100			ACN=52	China (Hubei)	L-29, Y-15
Hypophthalmichthyinae											
<i>Aristichthys nobilis</i>			48	26M + 20SM + 2ST	94	96	6		ACN=48	China (Beijing)	L-59, R-43
<i>Aristichthys nobilis</i>		F, M	48	18M + 22SM + 8ST	88	96		1.8* FD	ACN=48	China (Wuhan)	R-105, Y-15, C-83
<i>Aristichthys nobilis</i>			48	14M + 24SM + 10 ST/A	86			(2.3* FCM), 2.1 FD	ACN=48	China	Z-2, Z-8, F-5
<i>Aristichthys nobilis</i>	<i>Hypophthalmichthys</i>		48	18M + 20SM + 10ST	86	96				Hungary	B-54
<i>Hypophthalmichthys molitrix</i>			48	24M + 16SM + 8ST	88	96			ACN=48	China (Beijing)	L-60
<i>Hypophthalmichthys molitrix</i>			48	14M + 24SM + 10A	86	86		(2.4* FCM), 2.0 FD	ACN=48	China	Z-2, Z-8, F-5
<i>Hypophthalmichthys molitrix</i>		F, M	48	18M + 22SM + 8ST	88	96		1.8*, 2.0 FD	ACN=48	China (Wuhan)	R-105, L-41, C-83
<i>Hypophthalmichthys molitrix</i>	<i>moritrix</i>	F, M	48	18M + 22SM + 8ST	88	96			ACN=48	China (Wuhan)	Z-26
<i>Hypophthalmichthys molitrix</i>		F, M	48	20M + 12SM + 6ST + 10A	80	86				India (WB)	M-27
Labeoninae											
<i>Cirrhinus jullieni</i>			50	26M + 14SM + 4ST + 6A	90	94	2		ACN=50	Thailand (Uthai Thani)	M-12
<i>Cirrhinus molitorella</i>		F	50	20M + 26SM + 2ST + 2A	96	98			ACN=50	China (Guangxi, Guangdong)	Z-16
<i>Cirrhinus molitorella</i>		F, M	50	16M + 24SM + 10ST	90	100	4		ACN=50	China (Guangdong)	G-69, R-43, R-105, Y-15
<i>Cirrhinus mrigala</i>			50	10M + 12SM + 10ST + 18A	72	82	2		ACN=50	Thailand (Ayuthaya)	M-12
<i>Cirrhinus mrigala</i>			50	4M + 18SM + 28ST	72	100			ACN=50	India	L-2
<i>Cirrhinus mrigala</i>	<i>Cirrhina</i>	F, M	50	8M + 6SM + 14ST + 22A	64	78			ACN=50	India (Haryana)	R-55
<i>Cirrhinus mrigala</i>			50	12M + 18SM + 6ST + 14A	80	86	2		ACN=50	India (near Lucknow)	N-4
<i>Cirrhinus reba</i>	<i>Cirrhina</i>		50	6M + 8SM + 14ST + 22A	64	78			ACN=50	India (Haryana)	R-55
<i>Cirrhinus reba</i>		M	48	18M + 20SM + 6ST + 4A	86	92			ACN=50	India	M-27
<i>Crossocheilus latius latius</i>		F	50	12M + 28SM + 10A	90	90			ACN=50	India (Assam)	K-46, C-108
<i>Crossocheilus latius latius</i>		F	50	8M + 12SM + 12ST + 18A	70	82			ACN=50	India (J & K)	T-52
<i>Crossocheilus latius punjabensis</i>			48	12M + 36A	60					India	L-1
<i>Discogobio tetrabarbatus</i>		F, M	50	10M + 18SM + 12ST + 10A	78	90			ACN=50	China (Guangdong)	G-69, R-43, Y-15
<i>Garra cambodgigensis</i>	<i>taeniata</i>		50	8M + 18 SM/ST + 24A	76			2.2 BFA	ACN=50	(Asia)	S-141, H-13
<i>Garra dembeensis</i>			50	14M + 18SM + 18A	82	82			ACN=52	Ethiopia	K-107
<i>Garra gotyla gotyla</i>		F	50	14M + 10SM + 10ST + 16A	74	84			ACN=50	India (Jammu)	K-38
<i>Garra gotyla gotyla</i>		F, M	50	14M + 26SM + 10A	90	90			ACN=50	India (Tamilnadu)	K-42

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
<i>Garra</i> <i>gotyla</i> <i>gotyla</i>			50	12M + 8SM + 8ST + 22A	70	78			ACN=50	India (A.P.)	S-171	
<i>Garra</i> <i>kempi</i>			50	14M + 14SM + 10ST + 12A	78	88			ACN=50	India (A.P.)	S-171	
<i>Garra</i> <i>lamta</i>		F, M	50	12M + 24SM + 2ST + 12A	86	88			ZW/ZZ	India (Bihar)	K-41	
<i>Garra</i> <i>lamta</i>		M	50	6M + 18SM + 12ST + 14A	74	86			ACN=50	India (Bihar)	K-32	
<i>Garra</i> <i>lissorhynchus</i>			50	16M + 16SM + 6ST + 12A	82	88			ACN=50	India (A.P.)	S-171	
<i>Garra</i> <i>makiensis</i>			50	14M + 20SM + 16A	84	84			ACN=52	Ethiopia	K-107	
<i>Garra</i> <i>mullya</i>			50	18M + 14SM + 10ST + 8A	82	92	2		ACN=50	India (Kerala)	N-73	
<i>Garra</i> <i>orientalis</i>		F, M	50	16M + 12SM + 14ST + 8A	78	92			ACN=50	China (Guangdong)	G-69, R-43, Y-15	
<i>Garra</i> <i>ornata</i>			50							W.C. Africa	G-84	
<i>Garra</i> <i>imberba</i>	<i>pingi pingi</i>		50	18M + 20SM + 12 ST/A	88				ACN=50	China (Yunnan)	Z-5	
<i>Garra</i> <i>imberba</i>	<i>pingi pingi</i>	F, M	50	14M + 20SM + 12ST + 4A	84	96			ACN=50	China (Sichuan)	L-43, Y-15	
<i>Garra</i> <i>quadrimaculata</i>			50	16M + 22SM + 12A	88	88			ACN=52	Ethiopia	K-107	
<i>Garra</i> <i>rufa obtusa</i>			44-52							Middle East	D-27	
<i>Garra</i> <i>rufa rufa</i>			44-52							Middle East	D-27	
<i>Garra</i> <i>rufa</i>			44	22M + 20SM + 2A	86					Turky	S-171	
<i>Garra</i> <i>surendranathani</i>			50	14M + 20SM + 8ST + 8A	84	92			ACN=52	India (W. Ghats)	N-72	
<i>Garra</i> <i>variabilis</i>			74							3X	Middle East	D-27
<i>Labeo</i> <i>alluaudi</i>			50							W. Africa	G-84	
<i>Labeo</i> <i>bata</i>			50	18M + 12SM + 8ST + 12A	80	88	2		ACN=50	India (Allahabad)	J-10	
<i>Labeo</i> <i>bata</i>		F, M	50	6M + 18SM + 16ST + 10A	74	90			ACN=50	India (WB)	M-27	
<i>Labeo</i> <i>behri</i>			50	12M + 8SM + 2ST + 28A	70	72			ACN=50	N.E. Thailand	A-84	
<i>Labeo</i> <i>calbasu</i>			50	10M + 10SM + 14ST + 16A	70	84	2		ACN=50	India (Allahabad)	J-10	
<i>Labeo</i> <i>calbasu</i>		F, M	50	6M + 8SM + 22ST + 14A	64	86			ACN=50	India (WB)	M-27	
<i>Labeo</i> <i>calbasu</i>		F, M	50	8M + 22 SM/ST + 20A	80	2			ACN=50	India (Haryana)	R-75, R-101	
<i>Labeo</i> <i>caeruleus</i>	<i>cerulaeus</i>	F, M	48	12M + 6SM + 6ST + 24A	66	72			ACN=48	India (Haryana)	R-55	
<i>Labeo</i> <i>coubie</i>			50							Mali, W. Africa	P-18	
<i>Labeo</i> <i>dero</i>		M	50	26M + 12SM + 2ST + 10A	88	90			ACN=50	India (Assam)	K-43	
<i>Labeo</i> <i>dero</i>		F, M	48	12M + 16SM + 20 ST/A	76				ACN=50	India (U.P.)	R-73	
<i>Labeo</i> <i>diplostomus</i>		F	50	10M + 6SM + 8ST + 26A	66	74			ACN=50	India (Jammu)	K-38	
<i>Labeo</i> <i>dussumieri</i>			50	12M + 12SM + 10ST + 16A	74	84	4		ACN=50	India (Kerala)	N-56	
<i>Labeo</i> <i>gonius</i>			54	54A	54	2				India	L-1	
<i>Labeo</i> <i>pangasius</i>		M	50	6M + 12SM + 16ST + 16A	68	84			ACN=50	India (J & K)	T-52	
<i>Labeo</i> <i>parvus</i>			50							WC. Africa	G-84	
<i>Labeo</i> <i>parvus</i>	<i>obscurus</i>		50							WC. Africa	G-84	
<i>Labeo</i> <i>rohita</i>			50	14M + 16SM + 8ST + 12A	80	88	2		ACN=50	Thailand (Ayuthaya)	M-12	
<i>Labeo</i> <i>rohita</i>			50	10M + 14SM + 6ST + 20A	74	80	2		ACN=50	India (Allahabad)	J-10	
<i>Labeo</i> <i>rohita</i>			50	10M + 20SM + 20A	80	80			ACN=50	India	L-2	
<i>Labeo</i> <i>rohita</i>			50	8M + 12SM + 6ST + 24A	70	76			ACN=50	India (Haryana)	R-67	
<i>Labeo</i> <i>rohita</i>			50	10M + 14SM + 8ST + 18A	74	82	4		ACN=50	India (near Lucknow)	N-4	

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Labeo</i> <i>rohita</i>		F, M	50	10M + 16SM + 12ST + 12A	76	88			ACN=50	China (Guangdong)	G-69, R-43, Y-15
<i>Labeo</i> <i>roseopunctatus</i>			50							Mali, W. Africa	P-18
<i>Labeo</i> <i>rouaneti</i>			50							Guinea	G-84
<i>Labeo</i> <i>senegalensis</i>			50							Mali, W. Africa	P-18
<i>Labiobarbus</i> <i>lineatus</i>			50	20M + 10SM + 20A	80	80			ACN=50	Thailand (Ayuthaya)	M-10
<i>Morulius</i> <i>chrysophekadion</i>	<i>Labeo</i>		50	14 M/SM + 18ST + 18A	64	82	2.8 FD, 2.2 FIA, 2.4 BFA		ACN=50	(Asia)	M-91, H-13, H-41
<i>Osteochilichthys</i> <i>longidorsalis</i>			100	24M + 26SM + 22ST + 28A	150	172	2		4X, ACN=100	India (W. Ghats)	N-55
<i>Osteochilus</i> <i>hasselti</i>			50	30M + 14SM + 6ST	94	100			ACN=50	Thailand (Ayuthaya)	M-10
<i>Osteochilus</i> <i>vittatus</i>			50	16M + 30SM + 4ST	96	100			ACN=50	Thailand (Ayuthaya)	M-10
<i>Osteochilus</i> <i>waandersi</i>			50	18M + 24SM + 4ST + 4A	92	96	2		ACN=50	Thailand (Kanchana Buri)	M-12
<i>Parasinilabeo</i> <i>assimilis</i>		F, M	50	16M + 12SM + 18ST + 4A	78	96			ACN=50	China (Guangdong)	G-69, Y-15
<i>Semilabeo</i> <i>notabilis</i>		F, M	50	8M + 10SM + 12ST + 20A	68	80			ACN=50	China (Guangdong)	G-69, Y-15
<i>Semilabeo</i> <i>prochilus</i>		F	50	16M + 18SM + 14ST + 2A	84	98			ACN=52	China (Sichuan)	L-43, Y-15
<i>Semilabeo</i> <i>prochilus</i>		F	50	16M + 20SM + 14ST	86	100	7		ACN=50	China (Yunnan)	W-12
<i>Sinilabeo</i> <i>decoratus decoratus</i>	<i>decorus decorus</i>	F, M	50	10M + 18SM + 10ST + 12A	78	88			ACN=50	China (Guangdong)	G-69, Y-15
<i>Sinilabeo</i> <i>decoratus tungting</i>		M	50	12M + 16SM + 10ST + 12A	78	88			ACN=50	China (Hunan)	Z-16
<i>Sinilabeo</i> <i>rendahli rendahli</i>		F, M	50	10M + 14SM + 18ST + 8A	74	92			ACN=52	China (Sichuan)	L-43, Y-15
Leuciscinae											
Eurasian Leuciscinae											
<i>Abramis</i> <i>brama</i>			50	16M + 14SM + 12ST + 8A	80	92		2.7 FCM	ACN=50	Russia	A-118, V-86
<i>Abramis</i> <i>brama</i>		M	52	30 M/SM + 22 ST/A	82				ACN=52	Sweden	N-50
<i>Abramis</i> <i>brama</i>		F, M	50	16M + 18SM + 16A	84	84	2		ACN=50	Poland	J-2
<i>Abramis</i> <i>brama</i>			50	12M + 18 SM/ST + 20A	80			2.5 FD	ACN=50	France	H-2, H-4
<i>Acanthobrama</i> <i>marmid</i>		F, M	50	16M + 26SM + 8 ST/A	92	4			ACN=50	Turkey (Dam Lake)	G-79
<i>Achondrostoma</i> <i>arcasii</i>	<i>Rutilus</i>	F, M	50	16M + 30 SM/ST + 4A	96			2.8 FCM	ACN=50	Portugal	C-69, C-75
<i>Achondrostoma</i> <i>oligolepis</i>			50	12M + 32SM + 6 ST/A	94	4			ACN=50	Portugal	P-76
<i>Alburnoides</i> <i>bipunctatus</i>		F, M	50	38 M/SM + 12 ST/A	88				ACN=50	Bosnia-Herzegovina	S-82
<i>Alburnus</i> <i>albidus</i>			50	16M + 26SM + 8 ST/A	92	2			ACN=50	Italy	B-36
<i>Alburnus</i> <i>arborella</i>	<i>albidus arborella</i>		50	12M + 25SM + 13 ST/A	87				ACN=50	(Europe)	F-30
<i>Alburnus</i> <i>alburnus</i>	<i>alburnus arborella</i>	F	50	16M + 10SM + 16ST + 8A	76	92		(2.6 FCM)	ACN=50	Italy	C-34, G-85
<i>Alburnus</i> <i>alburnus</i>			50	16M + 20 SM/ST + 14A	86			2.7 FD	0-2 B	France	H-3, H-4, H-5
<i>Alburnus</i> <i>alburnus</i>		F, M	50	14M + 14SM + 14ST + 8A	78	92		3.1 FCM	0-2 B	Germany	S-164, L-82
<i>Alburnus</i> <i>alburnus</i>		F, M	50	32 M/SM + 18 ST/A	82				ACN=50	Bosnia-Herzegovina	S-82
<i>Alburnus</i> <i>filippii</i>		F, M	50	16M + 16SM + 18A	82				ACN=50	Turkey	G-80
<i>Anaecypris</i> <i>hispanica</i>		F, M	50	10M + 36 SM/ST + 4A	96			2.5 FCM	ACN=50	Portugal	C-69, C-75
<i>Aspius</i> <i>aspius</i>		F, M	50	14M + 28SM + 8 ST/A	92	2		(2.5 FCM)	ACN=50	Danube R., Don R.	R-16, G-85
<i>Aspius</i> <i>aspius</i>		F, M	52	42 M/SM + 10 ST/A	94				ACN=52	Sweden	N-50
<i>Ballerus</i> <i>ballerus</i>	<i>Abramis</i>	F, M	50	16M + 20SM + 6ST + 8A	86	92		(2.3 FCM)	ACN=50	Russia	A-118, G-85
<i>Ballerus</i> <i>ballerus</i>	<i>Abramis</i>		50	14M + 28 SM/ST + 8A	92				ACN=50	Russia	V-72

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
<i>Ballerus ballerus</i>	<i>Abramis</i>		52		70					Sweden	N-50	
<i>Ballerus sapa</i>	<i>Abramis</i>	F, M	50	10M + 22SM + 10ST + 8A	82	92		2.2 FCM	ACN=50	Russia	A-118, G-85	
<i>Blicca bjoerkna</i>			50	14M + 26 SM/ST + 10A		90		(2.5 FCM)	ACN=50	Europe	V-72, G-85	
<i>Blicca bjoerkna</i>			50	12M + 14SM + 12ST + 12A	76	88				(Europe)	S-194	
<i>Chalcalburnus mossulensis</i>			48	12M + 20SM + 16A	80					Turkey	G-71	
<i>Chalcalburnus mossulensis</i>			50	12M + 16SM + 10ST + 12A	78	88	4		ACN=50	Turkey	Y-23	
<i>Chondrostoma kneri</i>			50	30 M/SM + 20 ST/A	80				ACN=50	former Yugoslavia	B-17	
<i>Chondrostoma nasus</i>			50	38 M/SM + 12A	88	88		(2.8 FCM)	ACN=50	Bosnia	S-85, G-85	
<i>Chondrostoma nasus</i>			50	15M + 15SM + 12ST + 8A	80	92				(Europe)	S-194	
<i>Chondrostoma phoxinus</i>			50	36 M/SM + 14 ST/A	86				ACN=50	former Yugoslavia	B-17	
<i>Chondrostoma soetta</i>		F, M	50	16M + 14SM + 14ST + 6A	80	94			ACN=50	Italy	C-34	
<i>Delminichthys adspersus</i>	<i>Paraphoxinus</i>	F, M	50	38 M/SM + 12A	88	88			ACN=50	Croatia, Bosnia	B-19	
<i>Delminichthys ghelaldi</i>	<i>Paraphoxinus pstrassii</i>	F, M	50	30 M/SM + 20 ST/A	80				ACN=50	former Yugoslavia	S-75, B-19	
<i>Elopichthys bambusa</i>		F, M	48	10M + 24SM + 12ST + 2A	82	94	4		ACN=50	China (Hubei)	Z-25, Z-28, L-42, Y-15	
<i>Eupallasella perenurus</i>		F, M	50	8M + 32SM + 10 ST/A	90		2		ACN=50	Poland	B-62	
<i>Iberochondrostoma almacai</i>			50	14M + 30 SM/ST + 6A	94	2		2.6 FCM	ACN=50	Portugal	M-141	
<i>Iberochondrostoma lemmingii</i>	<i>Chondrostoma</i>		50	12M + 32 SM/ST + 6A	94			2.8 FCM	ACN=50	Iberia	C-69, C-75	
<i>Iberochondrostoma lusitanicum</i>	<i>Chondrostoma</i>	F, M	50	16M + 28 SM/ST + 6A	94			2.8 FCM	ACN=50	Portugal	C-68, C-75	
<i>Iberochondrostoma lusitanicum</i>			50	14M + 30 SM/ST + 6A	94	1-4		2.9 FCM	ACN=50	Portugal	M-141	
<i>Iberocypris alburnoides</i>	<i>Rutilus</i>	F, M	50	12M + 34 SM/ST + 4A	96			2.4 FCM	ACN=50	Portugal	C-75, C-102	
<i>Iberocypris alburnoides</i>	<i>Rutilus</i>		75	18M + 51 SM/ST + 6A	144					3X	Portugal	C-102
<i>Iberocypris alburnoides</i>	<i>Tropidophoxinellus</i>		50, 75							2X, 3X	Portugal	M-45
<i>Iberocypris alburnoides</i>	<i>Tropidophoxinellus</i>	F, M	50						ACN=50	Portugal	A-111	
<i>Iberocypris alburnoides</i>	<i>Tropidophoxinellus</i>	F, M	75							3X	Portugal	A-111
<i>Iberocypris alburnoides</i>	<i>Tropidophoxinellus</i>	F, M	100							4X	Portugal	A-111
<i>Iberocypris palaciosi</i>			50						ACN=50	Spain	E-8	
<i>Iberocypris palaciosi</i>			75							3X	Spain	E-8
<i>Iberocypris palaciosi</i>			100							4X	Spain	E-8
<i>Leucaspis delineatus</i>			50	14M + 30 SM/ST + 6A		94	2		ACN=50	Russia	V-72	
<i>Leucaspis delineatus</i>		F, M	50	16M + 26SM + 8 ST/A	92				ACN=50	Elbe R.	R-22	
<i>Leucaspis delineatus</i>		F, M	50	16M + 26 SM/ST + 8A		92	2		ACN=50	Elbe R., Danube R.	M-54	
<i>Leuciscus bergi</i>			50	18M + 22SM + 10A	90				ACN=50	Kyrgyzstan	M-58	
<i>Leuciscus idus</i>		F, M	50	32M + 6SM + 10ST + 2A	88	98		2.6 FCM, 3.0 BFA	ACN=50	Bosnia-Herzegovina	S-79, G-85, H-13	
<i>Leuciscus idus</i>		F, M	50	10M + 26SM + 6ST + 8A	86	92	2		ACN=50	Poland	B-66	
<i>Leuciscus leuciscus</i>		F, M	50	20M + 20SM + 8ST + 2A	90	98			ACN=50	Bosnia-Herzegovina	S-79	
<i>Leuciscus leuciscus</i>			50	16M + 22 SM/ST + 12A		88		2.6 FD	ACN=50	France	H-2, H-4	
<i>Leuciscus leuciscus</i>		F, M	50	12M + 24SM + 8ST + 6A	86	94	1-4		ACN=50	Poland	B-66	
<i>Leuciscus leuciscus baicalensis</i>	<i>leuciscus kirgisorum</i>		50	18M + 22SM + 10A	90				ACN=50	Kyrgyzstan	M-58	
<i>Leuciscus schmidti</i>			50	16M + 24SM + 10A	90				ACN=50	Kyrgyzstan	M-58	

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Leuciscus waleckii</i>		F	50	18M + 20SM + 6ST + 6A	88	94	2		ACN=50	China (Nei Mongol, Gansu)	Z-17, R-42
<i>Luciobrama macrocephalus</i>		M	48	12M + 22SM + 12ST + 2A	82	94			ACN=50	China (Hubei)	Z-28, L-42, Y-15
<i>Ochetobius elongatus</i>		F, M	48	10M + 16SM + 22ST	74	96		1.9* FD	ACN=50	China (Hubei)	Z-28, L-42, C-83
<i>Pachychilon macedonicum</i>		F	50	8M + 34SM + 8 ST/A	92		2		ACN=50	Macedonia	R-25
<i>Pachychilon pictum</i>			50	8M + 22SM + 20A	80				ACN=50	(S.E. Europe)	K-133
<i>Pachychilon pictum</i>			50							former Yugoslavia	B-19
<i>Parachondrostoma arrigonis</i>		F, M	50	14M + 30SM + 6 ST/A	94		2		ACN=50	Spain (Valencia)	K-119
<i>Parachondrostoma toxostoma</i>	<i>Chondrostoma</i>	F, M	50	16M + 14SM + 14ST + 6A	80	94			ACN=50	Italy	C-34
<i>Parachondrostoma toxostoma</i>	<i>Chondrostoma</i>		50	16M + 24 SM/ST + 10A	90			2.6 FD	ACN=50	France	H-2, H-4
<i>Pelecus cultratus</i>			50	16M + 30 SM/ST + 4A	96				ACN=50	Russia	V-72
<i>Petroleuciscus borysthenicus</i>	<i>Leuciscus</i>	M	50	16M + 28 SM/ST + 6A	94				ACN=50	Greece	R-23
<i>Petroleuciscus persidis</i>			50	29M + 18SM + 3ST	97	100			ACN=50	Iran (Fars)	E-7
<i>Phoxinellus alepidotus</i>	<i>Paraphoxinus</i>		50	26 M/SM + 24 ST/A	76				ACN=50	Bosnia-Herzegovina	B-16
<i>Phoxinus keumkang</i>	<i>Moroco keumgang</i>	F, M	50	12M + 28SM + 10 ST/A	90				ACN=50	Korea (Muju, Togu-ri)	K-55, L-12
<i>Phoxinus lagowskii steindachneri</i>	<i>Moroco steindachneri</i>	F, M	50	12M + 28SM + 10 ST/A	90			2.4* FCM	ACN=50	Korea (Gangreung)	K-55, L-12, P-69
<i>Phoxinus lagowskii steindachneri</i>	<i>Moroco steindachneri</i>		50	14M + 22SM + 8ST + 6A	86	94			ACN=50	Japan	O-22
<i>Phoxinus oxycephalus</i>	<i>Moroco</i>	F, M	50	12M + 28SM + 10 ST/A	90			(2.2 FD)	ACN=50	Korea (Ochon-gun)	K-4, K-5, K-55, L-12
<i>Phoxinus oxycephalus</i>	<i>Moroco</i>	M	50	12M + 28SM + 10 ST/A	90			2.5* FCM	ACN=50	Korea (Imjin R.)	L-13, P-69
<i>Phoxinus oxycephalus</i>	<i>Moroco</i>	F	50	16M + 26SM + 8 ST/A	92				ACN=50	Korea (Taejong R.)	L-13
<i>Phoxinus oxycephalus jouyi</i>	<i>Moroco jouyi</i>	F, M	50	10M + 34 SM/ST + 6A	94				ACN=50	Japan (Kumamoto)	U-33
<i>Phoxinus oxycephalus jouyi</i>	<i>Moroco jouyi</i>		50	14M + 26SM + 10A	90	4		3.1* FCM	ACN=50	Japan (Lake Biwa, Kobe)	T-4, O-48
<i>Phoxinus oxycephalus jouyi</i>	<i>Moroco jouyi</i>	F, M	50	18M + 24SM + 8 ST/A	92				ACN=50	Japan (Sagami R.)	L-13
<i>Phoxinus oxycephalus jouyi</i>	<i>Moroco jouyi</i>	F, M	50	12M + 26SM + 12 ST/A	88				ACN=50	Japan (Ihara R.)	L-13
<i>Phoxinus oxycephalus jouyi</i>	<i>Moroco jouyi</i>	F, M	50	12M + 30SM + 8 ST/A	92				ACN=50	Japan (Kanagawa)	L-13
<i>Phoxinus phoxinus</i>		F, M	50	16M + 22SM + 12 ST/A	88				ACN=50	Korea (Chongson-gun)	K-55, L-12
<i>Phoxinus phoxinus</i>		F, M	50	10M + 34 SM/ST + 6A	94				ACN=50	Korea (Han R.)	U-33
<i>Phoxinus phoxinus</i>		F, M	50	8M + 32SM + 10 ST/A	90				ACN=50	Poland	B-62
<i>Phoxinus phoxinus</i>			50	14M + 26 SM/ST + 10A	90			2.3 FD	ACN=50	France	H-2, H-4
<i>Phoxinus phoxinus</i>		F	50	14M + 12SM + 16ST + 8A	76	92			ACN=50	Italy	C-34
<i>Phoxinus phoxinus</i>		F, M	50	32 M/SM + 18 ST/A	82				ACN=50	Bosnia-Herzegovina	B-21
<i>Pseudaspis leptoccephalus</i>		F	50	14M + 26SM + 10 ST/A	90				ACN=50	Mongolia	R-20
<i>Pseudochondrostoma duriense</i>	<i>Chondrostoma</i>		50					2.7 FCM		Iberia	C-75
<i>Pseudochondrostoma duriense</i>			50	14M + 30SM + 6 ST/A	94	2			ACN=50	Portugal	P-76
<i>Pseudochondrostoma polylepis</i>			50	14M + 30SM + 6 ST/A	94	2			ACN=50	Portugal	P-76
<i>Pseudochondrostoma willkommii</i>	<i>Chondrostoma</i>		50					2.7 FCM		Iberia	C-75
<i>Rhynchosyris lagowskii</i>	<i>Moroco</i>	F, M	50	12M + 28SM + 10 ST/A	90			2.0 FD	ACN=50	Korea (Mt. Sorak)	K-4, K-5, L-13
<i>Rhynchosyris percunurus</i>	<i>Eupallasella perenurus</i>		50	8M + 32SM + 10ST	90	100	4		ACN=50	Poland	B-62
<i>Rutilus aula</i>			50	16M + 26SM + 8 ST/A	92		2		ACN=50	Italy	B-36
<i>Rutilus aula</i>	<i>Leuciscus</i>		50	15M + 23SM + 12 ST/A	88				ACN=50	(Europe)	F-30

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
<i>Rutilus frisii kutum</i>			50	32 M/SM + 18 ST/A	82				ACN=50	(Russia)	V-72	
<i>Rutilus macrolepidotus</i>		F, M	50	14M + 32 SM/ST + 4A		96		2.8 FCM	ACN=50	Portugal	C-69, C-75	
<i>Rutilus pigus virgo</i>		F	50	16M + 24SM + 10 ST/A	90	2			ACN=50	Danube R.	R-15	
<i>Rutilus prespensis</i>			50	16M + 26SM + 8 ST/A	92				ACN=50	Greece	B-36	
<i>Rutilus rubilio</i>			50	16M + 26SM + 8 ST/A	92	2			ACN=50	Italy	B-36	
<i>Rutilus rubilio</i>		F, M	50	18M + 10SM + 16ST + 6A	78	94			ACN=50	Italy	C-34	
<i>Rutilus rutilus</i>		F, M	50	16M + 28SM + 6 ST/A	94	2	(2.6 FCM)		ACN=50	Danube R., Elbe R.	R-15, V-86	
<i>Rutilus rutilus</i>			50	16M + 28SM + 6 ST/A	94				0-1 B	Danube R.	R-13	
<i>Rutilus rutilus</i>			50	14M + 18SM/ST + 18A		82		1.9 FD	ACN=50	France	H-3, H-4	
<i>Rutilus rutilus</i>			50	26 M/SM + 24 ST/A	76				ACN=50	Sweden	N-50	
<i>Rutilus rutilus</i>		F, M	50	16M + 16SM + 10ST + 8A	82	92			ACN=50	Germany (Baltic Sea side)	K-76	
<i>Rutilus rutilus</i>		F, M	51	16M + 18SM + 10ST + 7A	85	95				Germany (Baltic Sea side)	K-76	
<i>Rutilus rutilus</i>		F, M	52	16M + 16SM + 11ST + 9A	84	95				Germany (Baltic Sea side)	K-76	
<i>Rutilus rutilus caspicus</i>			50	14M + 18SM + 12ST + 6A	82	94			ACN=50	(Caspian Sea basin)	V-72	
<i>Rutilus ylikensis</i>			50	16M + 26SM + 8 ST/A	92	2			ACN=50	Greece	B-36	
<i>Scardinius acamanicus</i>			50	16M + 26SM + 8 ST/A	92	2			ACN=50	Greece	B-36	
<i>Scardinius erythrophthalmus</i>			50	16M + 26SM + 8 ST/A	92	2	(2.8 FCM)		ACN=50	Italy	B-36, G-85	
<i>Scardinius erythrophthalmus</i>			50	14M + 24SM + 8ST + 4A	88	96			ACN=50	(Europe)	V-72	
<i>Scardinius erythrophthalmus</i>		erythrophthalmus	48	13M + 35 ST/A	61					(Europe)	F-30	
<i>Scardinius erythrophthalmus</i>			48	22 M/SM + 20ST + 6A	70	90			ACN=50	Sweden	N-50	
<i>Scardinius erythrophthalmus</i>			F, M	50	20M + 12SM + 12ST + 6A	82	94			ACN=50	Italy	C-34
<i>Scardinius erythrophthalmus</i>				50	14M + 20 SM/ST + 16A		84	2.0 FD	ACN=50	France	H-2, H-4	
<i>Scardinius erythrophthalmus</i>				F, M	50	16M + 26 SM/ST + 8A	92	2	ACN=50	Elbe R., Danube R.	M-54	
<i>Scardinius erythrophthalmus</i>				F, M	50	30 M/SM + 20 ST/A	80		ACN=50	Bosnia	S-84	
<i>Scardinius graecus</i>				F, M	50	16M + 26SM + 8 ST/A	92	2	ACN=50	Greece	B-36	
<i>Scardinius scardafa</i>					50	16M + 26SM + 8 ST/A	92	2	ACN=50	Italy	B-36	
<i>Squalius albus</i>	<i>Leuciscus cephalus albus</i>		50	28M + 8SM + 14A	86				ACN=50	Bosnia-Herzegovina	S-79	
<i>Squalius aradensis</i>	<i>Leuciscus</i>		50					2.4 FCM		Portugal	C-75	
<i>Squalius carolitertii</i>	<i>Leuciscus</i>		50					2.4 FCM		Iberia	C-75	
<i>Squalius cephalus</i>	<i>Leuciscus</i>		50	18M + 20 SM/ST + 12A		88		2.7 FD	ACN=50	France	H-2, H-4	
<i>Squalius cephalus</i>	<i>Leuciscus</i>	F, M	50	10M + 22SM + 10ST + 8A	82	92	2		ACN=50	Poland	B-66	
<i>Squalius cephalus</i>	<i>Leuciscus</i>		50	16M + 26SM + 8 ST/A	92	2			ACN=50	Italy	B-36	
<i>Squalius cephalus</i>	<i>Leuciscus</i>		50	34 M/SM + 16 ST/A	84				ACN=50	Croatia	A-27, A-28	
<i>Squalius cephalus cephalus</i>	<i>Leuciscus cephalus</i>	F, M	50	22M + 14SM + 14A	86				ACN=50	Bosnia-Herzegovina	S-79	
<i>Squalius keadicus</i>	<i>Leuciscus</i>		50	14M + 12SM + 10ST + 14A	76	86			ACN=50	Greece	T-54	
<i>Squalius pyrenaicus</i>	<i>Leuciscus</i>		50					2.4 FCM		Iberia	C-75	
<i>Squalius squalus</i>	<i>Leuciscus cephalus cabeda</i>		50	16M + 12SM + 12ST + 10A	78	90			ACN=50	Portugal	C-71	
<i>Squalius squalus</i>	<i>Leuciscus cephalus cabeda</i>	F, M	50	16M + 12SM + 12ST + 10A	78	90			ACN=50	Italy	C-34	
<i>Squalius svallize</i>	<i>Leuciscus svallize svallize</i>	F, M	50	20M + 12SM + 16ST + 2A	82	98			ACN=50	Bosnia-Herzegovina	S-79	

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Squalius</i> <i>tenellus</i>	<i>Leuciscus turskyi tenellus</i>	F, M	50	18M + 16SM + 8ST + 8A	84	92			ACN=50	Bosnia-Herzegovina	S-79
<i>Telestes</i> <i>croaticus</i>	<i>Paraphoxinus</i>	F, M	50	36 M/SM + 14A	86				ACN=50	Croatia	B-19
<i>Telestes</i> <i>metohiensis</i>	<i>Paraphoxinus</i>	F, M	50	32 M/SM + 18A	82				ACN=50	Bosnia-Herzegovina	B-19
<i>Telestes</i> <i>muticellus</i>	<i>Leuciscus souffia muticellus</i>	M	50	20M + 12SM + 8ST + 10A	82	90			ACN=50	Italy	C-34
<i>Telestes</i> <i>polylepis</i>	<i>Chondrostoma</i>		50				2.7 FCM			Croatia	C-71, C-75
<i>Telestes</i> <i>souffia</i>	<i>Leuciscus souffia agassizi</i>		50	20M + 22SM + 2ST + 6A	92	94			ACN=50	Bosnia-Herzegovina	S-79
<i>Tribolodon</i> <i>ezoe</i>		F, M	50	10M + 20SM + 12ST + 8A	80	92			ACN=50	Japan (Hokkaido)	I-17
<i>Tribolodon</i> <i>ezoe</i>			50	14M + 22SM + 8ST + 6A	86	94			ACN=50	Japan	O-22
<i>Tribolodon</i> <i>hakonensis</i>		F, M	50	10M + 20SM + 12ST + 8A	80	92			ACN=50	Japan (Hokkaido)	I-17
<i>Tribolodon</i> <i>hakonensis</i>			50	14M + 26SM + 10A	90	4	1.8 FD		ACN=50	Japan	T-4, S-141
<i>Tribolodon</i> <i>hakonensis</i>		M	50	14M + 30SM + 6 ST/A	94				ACN=50	Korea (Hadong-gun)	K-55, L-12
<i>Vimba</i> <i>elongatus</i>	<i>vimba natio carinata</i>	F	50	14M + 20SM + 16 ST/A	84				XX, ACN=50	Poland (Baltic Sea basin)	R-95
<i>Vimba</i> <i>elongatus</i>	<i>vimba natio carinata</i>	M	50	13M + 20SM + 17 ST/A	83				XY, ACN=50	Poland (Baltic Sea basin)	R-95
<i>Vimba</i> <i>vimba</i>		F, M	52	24-28 M/SM + 28-24 ST/A	76-80				ACN=50	Russia	S-70
<i>Vimba</i> <i>vimba vimba</i>		F	50	14M + 20SM + 16 ST/A	84				XX, ACN=50	Poland (Baltic Sea basin)	R-95
<i>Vimba</i> <i>vimba vimba</i>		M	50	13M + 20SM + 17 ST/A	83				XY, ACN=50	Poland (Baltic Sea basin)	R-95
North American Leuciscinae											
<i>Acrocheilus</i> <i>alutaceus</i>			50			8				USA (OR)	J-6
<i>Campostoma</i> <i>anomalum</i>		F, M	50	12M + 16SM + 18ST + 4A	78	96	6	2.3 FD	ACN=50	USA (TX)	G-28, G-35, G-36, G-48
<i>Couesius</i> <i>plumbeus</i>	<i>Hybopsis plumbea</i>		50							Canada (Quebec)	L-16
<i>Chrosomus</i> <i>cumberlandensis</i>	<i>Phoxinus</i>	F, M	50	14M + 24SM + 12 ST/A	88				ACN=50	USA (KY)	J-11
<i>Chrosomus</i> <i>eos</i>			50				2.8 FCM			Canada (Quebec)	L-16, G-88
<i>Chrosomus</i> <i>erythrogaster</i>			50	10M + 36SM + 4A	96		2.6 FD		ACN=50	USA (IL)	G-38, G-60
<i>Chrosomus</i> <i>neogaeus</i>	<i>Phoxinus</i>	F, M	50	12M + 24SM + 14 ST/A	86		3.1 FCM, 2.8 FIA		ACN=50	USA (MI, WY)	J-11, G-88, H-41
<i>Chrosomus</i> <i>oreas</i>	<i>Phoxinus</i>	F, M	50	14M + 24SM + 12 ST/A	88		2.5 FCM		ACN=50	USA (VA)	J-11, G-88
<i>Cyprinella</i> <i>callistia</i>	<i>Notropis callistius</i>		50	24 M/SM + 26 ST/A	74		2.1 FD		ACN=50	USA (AL)	D-6, G-87
<i>Cyprinella</i> <i>camura</i>	<i>Notropis camurus</i>		50	18M + 28 SM/ST + 4A	96				ACN=50	USA (LA)	G-33
<i>Cyprinella</i> <i>camura</i>	<i>Notropis camurus</i>		50	10M + 26SM + 14 ST/A	86	2	2.4 FD		ACN=50	USA (LA)	G-43, G-87
<i>Cyprinella</i> <i>formosa</i>			50	10M + 32SM + 8ST	92	2			ACN=50	USA (NM)	G-39
<i>Cyprinella</i> <i>galactura</i>	<i>Notropis galacturus</i>		50	20M + 28SM + 2 ST/A	98	2			ACN=50	USA (AR)	G-43
<i>Cyprinella</i> <i>gibbsi</i>			50	10M + 34SM + 6ST	94	100	2		ACN=50	USA (AL)	G-39
<i>Cyprinella</i> <i>leptidea</i>	<i>Notropis lutrensis lepidus</i>		50		94	2	2.5 FD			USA (TX)	A-39, A-40, G-87
<i>Cyprinella</i> <i>lutrensis</i>	<i>Notropis</i>		50	50 M/SM	100	100	2	2.4 FD	ACN=50	USA (TX)	G-31, G-35, G-48
<i>Cyprinella</i> <i>lutrensis</i>	<i>Notropis</i>	F, M	50	10M + 32 SM/ST + 8A		92			ACN=50	USA (TX)	L-50
<i>Cyprinella</i> <i>lutrensis</i>	<i>Notropis</i>		50	10M + 34SM + 6A	94	94	2		ACN=50	USA	G-36
<i>Cyprinella</i> <i>proserpina</i>	<i>Notropis proserpinus</i>	F, M	50	12M + 24SM + 14 ST/A	86	2	2.9 FD		ACN=50	USA (TX)	A-40, G-43, G-87
<i>Cyprinella</i> <i>spiloptera</i>	<i>Notropis spilopterus</i>		50	8M + 38SM + 4 ST/A	96	2			ACN=50	USA (OH)	G-43
<i>Cyprinella</i> <i>venusta</i>	<i>Notropis</i>		50	48 M/SM + 2 ST/A	98	2	2.4 FD		ACN=50	USA (TX)	G-31, G-35, G-48
<i>Cyprinella</i> <i>venusta</i>	<i>Notropis venustus</i>	F, M	50	2M + 38SM + 10A	90				ACN=50	USA (TX)	C-6

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Cyprinella</i> <i>whipplei</i>	<i>Notropis</i>		50	22M + 26SM + 2 ST/A	98	2	2.5 FD	ACN=50	USA (AR)		G-38, G-43
<i>Dionda</i> <i>argentosa</i>			50			2	2.1 FCM	ACN=50	USA (TX)		G-86
<i>Dionda</i> <i>diaboli</i>			50			2	2.0 FCM	ACN=50	USA (TX)		G-86
<i>Dionda</i> <i>episcopa</i>			50			2	2.1 FCM, 2.1 FD	ACN=50	USA (TX, NM)		G-33, G-86
<i>Dionda</i> <i>serena</i>			50			2	2.0 FCM	ACN=50	USA (TX)		G-86
<i>Dionda</i> sp.			50			2	2.0 FCM	ACN=50	USA (TX)		G-86
<i>Exoglossum</i> <i>maxillingua</i>			48						Canada (Quebec)		L-16
<i>Gila</i> <i>bicolor</i>			50	44 M/SM + 6 ST/A	94			ACN=50	USA (CA)		G-27
<i>Gila</i> <i>elegans</i>			50			4			USA (NM)		J-6
<i>Gila</i> <i>nigrescens</i>			50			4			USA (NM)		J-6
<i>Gila</i> <i>orcutti</i>			50	14M + 24ST + 12A	88	4		ACN=50	USA (CA)		G-61, J-6
<i>Gila</i> <i>pandora</i>			50			4			USA (NM)		J-6
<i>Gila</i> <i>purpurea</i>			50			4			USA (AZ)		J-6
<i>Hemitremia</i> <i>flammea</i>			50		96	2	2.4 FD		USA (AL)		A-39, A-40, G-87
<i>Hesperoleucus</i> <i>symmetricus</i>			50	44 M/SM + 6 ST/A	94			ACN=50	USA (CA)		G-27
<i>Hesperoleucus</i> <i>symmetricus</i>			50	20M + 20SM + 10A	90			ACN=50	USA (CA)		G-61
<i>Hybognathus</i> <i>hayi</i>		F, M	50	10M + 36SM + 4 ST/A	96			ACN=50	USA (TX)		G-28
<i>Hybognathus</i> <i>nuchalis</i>			50						USA (LA)		G-33
<i>Hybognathus</i> <i>placitus</i>			50	6M + 32SM + 12 ST/A	88	2	2.8 FD	ACN=50	USA (TX)		G-36, G-87, A-39
<i>Hybopsis</i> <i>amblops</i>	<i>Notropis (Hybopsis)</i>		50	16M + 30SM + 4A	96	96		ACN=50	USA (LA)		G-33
<i>Lavinia</i> <i>exilicauda</i>			50	42 M/SM + 8 ST/A	92	4	2.5 FCM	ACN=50	USA (CA)		G-27, G-44, G-45, J-6
<i>Lepidomeda</i> <i>albivallis</i>			50	12M + 32 SM/ST + 6A	94			ACN=50	USA (NV)		U-69
<i>Lepidomeda</i> <i>mollispinis</i>			50	12M + 30 SM/ST + 8A	92			ACN=50	USA (AZ)		U-69
<i>Lepidomeda</i> <i>vittata</i>			50	14M + 32 SM/ST + 4A	96			ACN=50	USA (AZ)		U-69
<i>Luxilus</i> <i>albeolus</i>			50	8M + 32SM + 10 ST/A	90	4		ACN=50	USA (VA)		P-47
<i>Luxilus</i> <i>cardinalis</i>			50	12M + 34SM + 4 ST/A	96	2		ACN=50	USA (AR)		P-47
<i>Luxilus</i> <i>cerasinus</i>			50	8M + 28SM + 14 ST/A	86	2		ACN=50	USA (VA)		P-47
<i>Luxilus</i> <i>chryscephalus</i>	<i>Notropis</i>		50	48 M/SM + 2 ST/A	98	4	2.3 FD	ACN=50	USA (LA)		G-31, G-38
<i>Luxilus</i> <i>chryscephalus chryscephalus</i>			50	6M + 40SM + 4 ST/A	96	4		ACN=50	USA (AR)		P-47
<i>Luxilus</i> <i>chryscephalus isolepis</i>			50	10M + 28SM + 12 ST/A	88	4		ACN=50	USA (AL, LA, MS)		P-47
<i>Luxilus</i> <i>chryscephalus isolepis</i>			50	10M + 28SM + 12 ST/A	88	2		ACN=50	USA (OK)		P-47
<i>Luxilus</i> <i>coccogenis</i>			50	12M + 30SM + 8 ST/A	92	4		ACN=50	USA (VA)		P-47
<i>Luxilus</i> <i>cornutus</i>	<i>Notropis</i>		50	6M + 40SM + 4A	96	4		ACN=50	USA (IL, MI)		G-60, P-47
<i>Luxilus</i> <i>pilsbryi</i>	<i>Notropis</i>		50	14M + 34SM + 2 ST/A	98	2	2.5 FD	ACN=50	USA (MS, AR)		G-43, G-38, P-47
<i>Luxilus</i> <i>zonatus</i>			50	6M + 34SM + 10 ST/A	90	2		ACN=50	USA (AR)		P-47
<i>Luxilus</i> <i>zonistius</i>			50	12M + 30SM + 8 ST/A	92	2		ACN=50	USA (AL)		P-47
<i>Lythrurus</i> <i>ardens</i>	<i>Notropis</i>	F, M	50	8M + 36SM + 6 ST/A	94	4	2.5 FD	ACN=50	USA (AL)		G-36, G-87, A-39
<i>Lythrurus</i> <i>bellus</i>	<i>Notropis</i>		50		92		2.6 FD		USA (AL)		A-39, G-87
<i>Lythrurus</i> <i>fumeus</i>	<i>Notropis</i>		50	48 M/SM + 2 ST/A	98			ACN=50	USA (TX)		G-31

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Lythrurus roseipinnis</i>	<i>Notropis</i>		50	48 M/SM + 2 ST/A	98				ACN=50	USA (LA)	G-31
<i>Lythrurus umbratilis</i>	<i>Notropis</i>		50	50 M/SM	100	4	2.7 FD		ACN=50	USA (TX, OK)	A-40, G-31, G-38
<i>Macrhybopsis aestivalis</i>	<i>Hybopsis</i>	F, M	50	6M + 16SM + 22ST + 6A	72	94	4	2.5 FD	ACN=50	USA (AL, TX)	G-28, G-36, G-87
<i>Margariscus margarita</i>	<i>Semotilus</i>		50							Canada (Quebec)	L-16
<i>Meda fulgida</i>			50	18M + 24 SM/ST + 8A		92			ACN=50	USA (AR)	U-69
<i>Mylopharodon conocephalus</i>			50	44 M/SM + 6 ST/A	94	4	2.7 FCM		ACN=50	USA (CA)	G-27, G-44, G-45, J-6
<i>Nocomis leptolepis</i>			50	14M + 28SM + 8A	92	92	4	2.5 FD	ACN=50	USA (LA)	A-40, G-33, G-87
<i>Nocomis micropogon</i>			50							USA (WV)	M-90
<i>Notemigonus crysoleucus</i>		F, M	50	16M + 24 SM/ST + 10A		90			ACN=50	USA (TX)	L-50
<i>Notemigonus crysoleucus</i>			50	12M + 24SM + 8ST + 6A	86	94	2	2.3 FD	ACN=50	USA (CA)	G-27, G-35, G-36, G-38, G-48
<i>Notropis amabilis</i>			50	14M + 34SM + 2 ST/A	98	2	2.5 FD		ACN=50	USA (TX)	A-40, G-33, G-87
<i>Notropis atherinoides</i>			50	16M + 32SM + 2 ST/A	98			2.4 FD	ACN=50	USA (TX)	G-33, G-87
<i>Notropis atrocaudalis</i>			50	10M + 36SM + 4A	96			2.9 FD	ACN=50	USA (TX)	G-33, G-87
<i>Notropis baileyi</i>			50	4M + 28SM + 18ST	82	100	2	2.8 FD	ACN=50	USA (MS)	G-43, G-87
<i>Notropis boops</i>			50	6M + 32SM + 12ST	88	100	2	2.2 FD	ACN=50	USA (OK)	G-38, G-39, C-75
<i>Notropis braytoni</i>		F, M	50	14M + 20 SM + 10ST + 6A	84	94	2	2.6 FD		USA (TX)	G-36, G-87, A-39
<i>Notropis buccatus</i>	<i>Ericympba buccata</i>		50					2.3 FD		USA (LA)	G-33, G-87
<i>Notropis buchanani</i>			50	8M + 36SM + 6 ST/A	94	2			ACN=50	USA (TX)	A-41
<i>Notropis chrosomus</i>			50	42 M/SM + 8A	92	92		2.5 FD	ACN=50	USA (AL)	A-39, G-87
<i>Notropis dorsalis</i>			50	10M + 32SM + 8ST	92	100	2		ACN=50	USA (IL)	G-39
<i>Notropis jemezanus</i>			50	42 M/SM + 8A	92	92	2		ACN=50	USA (TX)	A-39, A-40
<i>Notropis longirostris</i>			50	10M + 28SM + 12ST	88	100	2		ACN=50	USA (LA)	G-31, G-36
<i>Notropis cf longirostris</i>			50	8M + 30SM + 4ST + 8A	88	92	2		ACN=50	USA (AL)	G-36, A-39
<i>Notropis maculatus</i>			50	10M + 34SM + 6 ST/A	94	2			ACN=50	USA (LA)	A-41
<i>Notropis nubilus</i>			50	16M + 30SM + 4 ST/A	96	2		2.4 FD	ACN=50	USA (AR)	G-38, G-43
<i>Notropis oxyrhynchus</i>			50	48 M/SM + 2A	98	98	2	2.1 FD	ACN=50	USA (TX)	A-40, G-31, G-87
<i>Notropis petersoni</i>			50	8M + 30SM + 12ST	88	100	4		ACN=50	USA (FL)	G-39
<i>Notropis potteri</i>			50	12M + 34SM + 2ST + 2A	96	98	2	2.4 FD	ACN=50	USA (TX)	G-33, G-36, G-87
<i>Notropis sabinae</i>			50	50 M/SM	100	100	4		ACN=50	USA (TX)	G-31, G-39
<i>Notropis shumardi</i>			50	14M + 34SM + 2 ST/A	98	2		2.7 FD	ACN=50	USA (TX)	G-31, G-36, G-38
<i>Notropis stilbius</i>			50					2.5 FD		USA (AL)	D-6, G-87
<i>Notropis stramineus</i>			50	8M + 34SM + 8 ST/A	92	2		2.5 FD	ACN=50	USA (TX, OK)	A-41, G-38
<i>Notropis stramineus</i>			50	16M + 34SM	100	100			ACN=50	USA (TX)	G-33
<i>Notropis texanus</i>			50	48 M/SM + 2A	98	98	2	(2.7 FD)	ACN=50	USA (TX)	A-40, G-31, G-87
<i>Notropis texanus</i>		F, M	50	2M + 42SM + 6A	94	94			ACN=50	USA (TX)	C-6
<i>Notropis volucellus</i>			50	14M + 28SM + 8 ST/A	92	2		2.5 FD	ACN=50	USA (TX, AL)	A-41, G-87
<i>Notropis volucellus</i>			50	46 M/SM + 4 ST/A	96				ACN=50	USA (TX)	G-31
<i>Opsopoeodus emiliae</i>	<i>Notropis</i>	F, M	48	2M + 30SM + 16A	80				ACN=50	USA (TX)	C-6
<i>Opsopoeodus emiliae</i>			50	8M + 20SM + 16ST + 6A	78	94	2	2.1 FD	ACN=50	USA (LA)	G-35, G-36, A-39

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Orthodon</i> <i>microlepidotus</i>			50	44 M/SM + 6 ST/A	94	4			ACN=50	USA (CA)	G-27, J-6
<i>Phenacobius</i> <i>mirabilis</i>			50	18M + 28SM + 4 ST/A	96	6	3.2 FD		ACN=50	USA (TX, IL)	G-28, G-39, G-87
<i>Pimephales</i> <i>notatus</i>			50	46 M/SM + 4 ST/A	96	2	2.2 FD			USA (OK)	A-39, A-40, L-46, G-38
<i>Pimephales</i> <i>notatus</i>			52							Canada (Quebec)	L-16
<i>Pimephales</i> <i>promelas</i>			50	14M + 34SM + 2A	98	98	4	2.2 FD	ACN=50	USA (TX)	G-33, G-38, L-46
<i>Pimephales</i> <i>vigilax</i>		F, M	50	8M + 24SM + 16ST + 2A	82	98	2	2.2 FD	ACN=50	USA (TX)	G-28, G-35, G-36, G-38, G-48
<i>Plagopterus</i> <i>argentissimus</i>			50	18M + 26 SM/ST + 6A		94	4		ACN=50	USA (AZ, NM)	U-69, J-6
<i>Pogonichthys</i> <i>macrolepidotus</i>			50	44 M/SM + 6 ST/A	94				ACN=50	USA (CA)	G-27
<i>Pteronotropis</i> <i>hubbsi</i>			50	22M + 22SM + 6ST	94	100	2		ACN=50	USA (TX)	A-41
<i>Pteronotropis</i> <i>signipinnis</i>			50	22M + 22SM + 6 ST/A	94	4			ACN=50	USA (LA)	A-41
<i>Pteronotropis</i> <i>welaka</i>			50	22M + 22SM + 6 ST/A	94	4			ACN=50	USA (LA)	A-41
<i>Ptychocheilus</i> <i>grandis</i>			50	42 M/SM + 8 ST/A	92	4	2.6 FCM		ACN=50	USA (CA)	G-27, G-44, J-6
<i>Ptychocheilus</i> <i>lucius</i>			50			4	2.5 FCM			USA (NM)	G-44, J-6
<i>Ptychocheilus</i> <i>oregonensis</i>			50			4	2.8 FCM			USA (OR)	G-44, J-6
<i>Ptychocheilus</i> <i>umpquae</i>			50			4	2.5-2.8 FCM			USA (OR)	G-44, J-6
<i>Ptychocheilus</i> cf. <i>umpquae</i>			50			4				USA (OR)	J-6
<i>Rhinichthys</i> <i>atratulus</i>			50	16M + 28SM + 2ST + 4A	94	96		2.6 FD	ACN=50	USA (NY, AL)	H-30, K-73, G-87
<i>Rhinichthys</i> <i>cataractae</i>			50	16M + 28SM + 2ST + 4A	94	96	4		ACN=50	USA (NY, NM)	H-30, J-6
<i>Rhinichthys</i> <i>cataractae</i>			50							USA (WV)	M-90
<i>Rhinichthys</i> <i>cobitis</i>	<i>cobitus</i>		50				6			USA (AZ)	J-6
<i>Rhinichthys</i> <i>evermanni</i>			50							N. America	M-61
<i>Rhinichthys</i> <i>osculus</i>			50			6				USA (AZ)	J-6
<i>Rhinichthys</i> cf. <i>osculus</i>			50			6				USA (OR)	J-6
<i>Richardsonius</i> <i>balteatus</i>			50			8	2.5 FCM			USA (OR)	G-45, J-6
<i>Richardsonius</i> <i>egregius</i>			50	36 M/SM + 14 ST/A	86	6	2.7 FCM		ACN=50	USA (CA)	G-27, G-45
<i>Semotilus</i> <i>atromaculatus</i>			50	22M + 24SM + 4A	96	4	2.5 FD		ACN=50	USA (TX, MS, IL)	G-33, G-38, G-39
<i>Semotilus</i> <i>atromaculatus</i>			52							Canada (Quebec)	L-16
<i>Semotilus</i> <i>corporalis</i>			52				2.5 FIA			Canada (Quebec)	L-16, H-41
<i>Rasborinae (= Danioninae)</i>											
<i>Amblypharyngodon</i> <i>microlepis</i>		F, M	50	12M + 14SM + 6ST + 18A	76	82	2		ACN=50	India (WB)	K-136
<i>Amblypharyngodon</i> <i>mola</i>		F	50	12M + 20SM + 8ST + 10A	82	90			ACN=50	India (WB)	M-27
<i>Aspidoparia</i> <i>morar</i>		F	50	8M + 18SM + 14ST + 10A	76	90			ACN=50	India (J & K)	T-52
<i>Aspidoparia</i> <i>morar</i>		F	48	8M + 6SM + 34A	62					India (Bihar)	K-42
<i>Aspidoparia</i> <i>morar</i>		M	48	14M + 28SM + 6A	90	90				India (Assam)	C-108
<i>Barilius</i> <i>bakeri</i>			50	24M + 14SM + 6ST + 6A	88	94	2		ACN=50	India (W. Ghats)	N-73
<i>Barilius</i> <i>barila</i>		F	50	8M + 20SM + 8ST + 14A	78	86			ACN=50	India (Bihar)	K-35
<i>Barilius</i> <i>barna</i>		F	50	8M + 16SM + 12ST + 14A	74	86			ACN=50	India (WB)	K-45
<i>Barilius</i> <i>bendelisis</i>		F, M	50	6M + 6SM + 10 ST + 28A	62	72			ACN=50	India (Bihar)	K-30
<i>Barilius</i> <i>bendelisis</i>		F, M	50	6M + 18SM + 20ST + 6A	74	94			ACN=50	India (Jammu)	S-50

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Barilius bendelisis</i>	<i>bendelisis</i> var. <i>chedra</i>		50	24M + 4SM + 22A	78	78			ACN=50	India (Assam)	K-41
<i>Barilius bendelisis</i>	<i>bendelisis</i> var. <i>cocksa</i>		50							India (Tamil Nadu)	K-41
<i>Barilius gatensis</i>			50	18M + 16SM + 10ST + 6A	84	94	2		ACN=50	India (W. Ghats)	N-72
<i>Barilius naseeri</i>			50	24M + 24SM + 2A	98	98			ACN=50	Pakistan (Punjab)	R-31
<i>Barilius pakistanicus</i>			50	12M + 32SM + 6A	94	94			ACN=50	Pakistan (Punjab)	R-31
<i>Barilius shacula</i>		F	52	22M + 24SM + 6A	98	98				India (WB)	K-45
<i>Barilius shacula</i>		M	52	22M + 23SM + 7A	97	97			XY	India (Assam)	K-45
<i>Barilius tileo</i>		M	50	12M + 32SM + 6A	94	94			ACN=50	India (Assam)	K-45
<i>Barilius vagra</i>		M	50	27M + 17SM + 6 ST/A	94				ACN=50	India (U.P.)	R-74
<i>Barilius vagra</i>			50	22M + 22SM + 6A	94	94			ACN=50	Pakistan (Punjab)	R-31
<i>Cheila cachius</i>	<i>Perilampus atpar</i>	F	70	16M + 6SM + 16ST + 32A	92	108			ACN=72	India (J & K)	T-52
<i>Cheila caeruleostigmata</i>	<i>mouhoti</i>		48					3.2 BFA		(Asia)	H-13
<i>Cheila laubuca</i>			50							India	L-1
<i>Cheilaethiops bibie</i>			50							E. Africa	G-84
<i>Danio albolineatus</i>			50	10M + 39SM + 1A	99	99		2.8 FD	ACN=50	(Asia)	F-30, S-141
<i>Danio rerio</i>			50	10M + 39SM + 1A	99	99		(3.4-3.6, 4.6 FCM)	ACN=50	(Asia)	F-30, V-86, G-85
<i>Danio rerio</i>		F, M	50	10M + 16 SM/ST + 24A		76			ACN=50	(India)	R-51
<i>Danio rerio</i>			50	12M + 26SM + 12ST	88	100	4		ACN=50	(Asia)	P-35
<i>Danio rerio</i>	<i>Brachydanio frankei</i>		50							S. China	W-32
<i>Devario aequipinnatus</i>	<i>Danio</i>		50	14M + 32SM + 4A	96	96				India (Assam)	K-41
<i>Devario aequipinnatus</i>	<i>Danio</i>		50	8M + 28SM + 10ST + 4A	86	96			ACN=50	Thailand (Nakhonphanom)	M-166
<i>Devario devario</i>	<i>Danio</i>		50	12M + 24SM + 10ST + 4A	86	96			ACN=50	India (Orissa)	K-41
<i>Devario devario</i>	<i>Danio</i>		50	10M + 40 ST/A	60				ACN=50	(Asia)	F-30
<i>Devario malabaricus</i>	<i>Danio</i>		50	10M + 40ST	60	100		2.8 FIA, 4.4 BFA	ACN=50	(Asia)	F-30, H-13, H-40
<i>Esomus danrica</i>	<i>danricus</i>	F, M	50	12M + 16SM + 10ST + 12A	78	88			ACN=50	India (WB)	M-27
<i>Esomus danrica</i>	<i>danricus</i>		50	10M + 18SM + 18ST + 4A	78	96			ACN=50	India (Jammu)	S-56
<i>Hemigrammocyparis rasborella</i>			48	10M + 38 SM/ST		96		1.8 FD		Japan	S-141
<i>Leptocypris niloticus</i>			50							Africa	G-84
<i>Opsariichthys bidens</i>		F, M	76	4M + 6SM + 4ST + 62A	86	90			ACN=76	China (Guangdong)	L-42
<i>Opsariichthys bidens</i>		F, M	74	6M + 6SM + 4ST + 58A	86	90			ACN=74	China (Sichuan)	L-44
<i>Opsariichthys bidens</i>			76	4M + 72A	80				ACN=76	Korea	L-15
<i>Opsariichthys uncirostris amurensis</i>		F	76	4M + 4SM + 68A	84				ACN=76	Korea (Pongdong)	K-55, L-12
<i>Opsariichthys uncirostris bidens</i>			74	6M + 6SM + 4ST + 58A	86	90			ACN=74	China	Y-14
<i>Opsariichthys uncirostris</i>		F, M	78	4M + 4SM + 70A	86	4		2.3* FCM, 3.3 FD	ACN=78	Japan (Osaka, Kobe)	T-4, O-18, O-48
<i>Raiamas bola</i>	<i>Barilius</i>		50	6M + 14SM + 10ST + 20A	70	80			ACN=50	India (Bihar)	K-35
<i>Raiamas nigeriensis</i>			50							W. Africa	G-84
<i>Raiamas senegalensis</i>			50							W. Africa	G-84
<i>Raiamas steindachneri</i>			50	16M + 30SM + 4ST	96	100	2		ACN=50	Guinea	R-26
<i>Rasbora argyrotaenia</i>			50	24M + 22SM + 4 ST/A	96				ACN=50	Thailand	M-166

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Rasbora</i> <i>aurotaenia</i>			50	28M + 16SM + 4ST + 2A	94	98			ACN=50	Thailand (Chi Nat)	M-166
<i>Rasbora</i> <i>daniconius</i>		F	50	18M + 6SM + 6ST + 20A	74	80			ACN=50	India (U.P.)	K-30
<i>Rasbora</i> <i>rasbora</i>	<i>buchananii</i>	F	50	30M + 18SM + 2ST	98	100			ACN=50	India (WB)	M-27
<i>Rasbora</i> <i>sumatrana</i>			50	22M + 18SM + 6ST + 4A	90	96			ACN=50	Thailand (Khanchanaburi)	M-166
<i>Rasbora</i> <i>trilineata</i>			50	24M + 14SM + 12 ST/A	88				ACN=50	Thailand (Chi Nat)	M-166
<i>Salmostoma</i> <i>bacaila</i>	<i>Chela</i>	F, M	50	10M + 12SM + 10ST + 18A	72	82			ACN=50	India (WB)	M-27
<i>Securicula</i> <i>gora</i>			50	20M + 8SM + 22A	78				ACN=50	India	L-1
<i>Tanichthys</i> <i>albonubes albonubes</i>	White cloud mountain type	F, M	50	24M + 14SM + 12 ST/A	88				ACN=50	China	A-81
<i>Tanichthys</i> <i>albonubes</i> subsp.	Hong Kong type	F, M	50	22M + 22SM + 6 ST/A	94				ACN=50	China	A-81
<i>Trigonostigma</i> <i>espei</i>	<i>Rasbora</i>		50	14M + 6SM + 30A	70	70			ACN=50	Thailand (Narativat)	M-166
<i>Zacco</i> <i>platypus</i>		F, M	48	18M + 22 SM/ST + 8A	88	4	2.2* FCM, 2.2 FD		ACN=48	Japan (Osaka, Kobe)	T-4, O-18, O-48
<i>Zacco</i> <i>platypus</i>		F, M	48	18M + 22SM + 8A	88	88			ACN=48	Korea (Yesan Pongdeng)	K-55, L-12
<i>Zacco</i> <i>platypus</i>		F, M	78	4M + 4SM + 4ST + 66A	86	90			ACN=78	China (Guangdong)	L-42, C-85
<i>Zacco</i> <i>sieboldi</i>	<i>Zacco</i> sp. type A	F, M	48	22M + 20SM + 6 ST/A	90				ACN=48	Japan (Yamaguchi)	N-54
<i>Zacco</i> <i>temmincki</i>	<i>Zacco</i> sp. type B	F, M	48	18M + 18SM + 12 ST/A	84				ACN=48	Japan (Yamaguchi)	N-54
<i>Zacco</i> <i>temminckii</i>			48	12M + 22SM + 14A	82	82	8	2.3* FCM		Japan	T-4, O-48
<i>Zacco</i> <i>temminckii</i>		F, M	48	18M + 22 SM/ST + 8A	88			2.9 FD		Japan (Osaka)	O-18
<i>Zacco</i> <i>temminckii</i>		F, M	48	18M + 22SM + 8A	88	88			ACN=48	Korea (Yemgye-gun)	K-55, L-12
Schizothoracinae											
<i>Chuanchia</i> <i>labiosa</i>	<i>labioza</i>	F, M	92	32M + 26SM + 18ST + 16A	150	168			4X	China (Heihe R.)	Y-16
<i>Diptychus</i> <i>maculatus</i>	<i>gymnogaster microcephalus</i>	F, M	100	70 M/SM + 30 ST/A	170				4X, ACN=100	Kirghiz Tan	M-60
<i>Diptychus</i> <i>maculatus</i>	<i>gymnogaster oschanini</i>		100	80 M/SM + 20 ST/A	180				4X, ACN=100	Kirghiz Tan	M-60
<i>Diptychus</i> <i>micromaculatus</i>		F, M	98	62 M/SM + 36 ST/A	160				4X	Kirghiz Tan	M-60
<i>Diptychus</i> <i>sewerzowi</i>		F, M	98	80 M/SM + 18 ST/A	178				4X, ACN=98	Kirghiz Tan	M-60
<i>Diptychus</i> sp.		F, M	98	28M + 32SM + 38 ST/A	158		4.9 FD		4X	China (Yunnan)	Z-6, Z-8
<i>Gymnocypris</i> <i>eckloni</i>		F, M	94	26M + 28SM + 22ST + 18A	148	170	4		4X, ACN=100	China (Heihe R.)	Y-16, R-42
<i>Gymnodiptychus</i> <i>dybowskii</i>	<i>Diptychus</i>		98	54 M/SM + 4-6 ST + 40-38 A	152	156-158			4X	Kirghiz Tan	M-60
<i>Gymnodiptychus</i> <i>dybowskii lansdelli</i>	<i>Diptychus</i>	F, M	98	54 M/SM + 4ST + 40A	152	156			4X	Kirghiz Tan	M-60
<i>Gymnodiptychus</i> <i>pachycheilus</i>			90-98						4X	(China)	C-74
<i>Oxygymnocypris</i> <i>stewarti</i>		F, M	92	26M + 30SM + 22ST + 14A	148	170			ACN=98	China (Central Asia)	Y-16
<i>Platypharodon</i> <i>extremus</i>		F, M	90	24M + 30SM + 20ST + 16A	144	164	2.7* FD		4X	China (Heihe R.)	Y-16, C-83
<i>Ptychobarbus</i> <i>dipogon</i>	<i>Diptychus</i>	F, M	417-470				17.2* FD		18X	China (Tibet)	Y-17, C-83
<i>Schizocypris</i> <i>oconnori</i>	<i>Schizothorax</i>	F, M	92	30M + 26SM + 20ST + 16A	148	168	2.7* FD		ACN=96	China (Central Asia)	Y-16, C-83
<i>Schizopyge</i> <i>curvifrons</i>	<i>Schizothorax intermedius</i>		98-100						4X	(C. Asia)	C-74
<i>Schizopygopsis</i> <i>pylzovi</i>		F, M	92	32M + 26SM + 20ST + 14A	150	170			4X, ACN=98	China (Heihe R.)	Y-16
<i>Schizopygopsis</i> <i>younghusbandi younghusbandi</i>		F, M	90	26M + 28SM + 20ST + 16A	144	164			4X, ACN=98	China (Central Asia)	Y-16
<i>Schizothoracichthys</i> <i>kumaonensis</i>	<i>Schizothorax</i>	F, M	98	24M + 6SM + 68 ST/A	128				4X	India (U.P.)	R-74
<i>Schizothoracichthys</i> <i>niger</i>	<i>Schizothorax</i>	F, M	98	22M + 26SM + 8ST + 42A	146	154			4X	India (Kashmir)	K-37
<i>Schizothoracichthys</i> <i>progastus</i>		F, M	98	16M + 20SM + 12ST + 50A	134	146			4X	India (Haryana)	R-62

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Schizothoracichthys richardsonii</i>	<i>Schizothorax</i>		98	24M + 28SM + 24ST + 22A	150	174	2		4X, ACN=100	India (Beas R.)	B-5
<i>Schizothoracichthys richardsonii</i>	<i>Schizothorax</i>		98	24M + 28SM + 24ST + 22A	150	174	4		4X, ACN=100	India (Kosi R.)	B-5
<i>Schizothoracichthys richardsonii</i>	<i>Schizothorax</i>		98	66M + 16SM + 6ST + 10A	180	186			4X	India (Jammu)	B-5
<i>Schizothorax argentatus</i>			98–150						4X, 6X	(Asia)	D-27
<i>Schizothorax davidi</i>		F, M	98	20M + 34SM + 24ST + 20A	152	176			4X, ACN=104	China (Sichuan)	L-45, Y-14
<i>Schizothorax grahami</i>		F, M	148	52M + 30SM + 66 ST/A	230		6.5 FD		6X	China (Yunnan)	Z-6, Z-7, Z-8
<i>Schizothorax lissolabiatus</i>			148	38M + 32SM + 78 ST/A	218				6X	China (Yunnan)	Z-8
<i>Schizothorax macropogon</i>			90–98						4X	(C. Asia)	C-74
<i>Schizothorax prenanti</i>		F, M	148	28M + 40SM + 36ST + 44A	216	252			6X, ACN=156	China (Sichuan)	L-45, Y-14
<i>Schizothorax pseudoaoksaensis issykkulii</i>			98–100						4X	Kazakhstan	C-74
<i>Schizothorax taliensis</i>	<i>daliensis</i>	M	148	48M + 30SM + 70 ST/A	226		6.9 FD		6X	China (Yunnan)	Z-6, Z-7, Z-8
<i>Schizothorax taliensis</i>	<i>yunnanensis daliensis</i>		148	48M + 28SM + 72 ST/A	224				6X	China (Yunnan)	Z-8
<i>Schizothorax waltoni</i>		F, M	92	26M + 28SM + 22ST + 16A	146	168			4X	China (Central Asia)	Y-16
<i>Schizothorax</i> sp. 1			148	50M + 28SM + 70 ST/A	226		7.0 FD		6X	China (Yunnan)	Z-6, Z-7, Z-8
<i>Schizothorax</i> sp. 2			148	48M + 30SM + 70 ST/A	226				6X	China (Yunnan)	Z-8
Squaliobarbinae											
<i>Ctenopharyngodon idellus</i>			48	16M + 20SM + 12ST	84	96	(2.4* FCM)		ACN=50	China (Beijing)	Y-11, F-5
<i>Ctenopharyngodon idellus</i>			48	20M + 20SM + 8ST	88	96				China (Hunan)	L-63
<i>Ctenopharyngodon idellus</i>		F, M	48	18M + 24SM + 6ST	90	96	6	2.1 FD	ACN=50	China (Hubei)	L-42, G-70, R-42, R-105
<i>Ctenopharyngodon idellus</i>			48	18M + 22SM + 8 ST/A	88			2.0 FD	ACN=50	China (Yunnan)	Z-1, Z-8
<i>Ctenopharyngodon idellus</i>			48	16M + 32SM	96	96		(2.0 FCM)		China (Beijing)	L-58, T-74
<i>Ctenopharyngodon idellus</i>			48	18M + 20SM + 10ST	86	96	4	(1.9* FD)	ACN=50	China (Shashi)	Z-22, C-83
<i>Ctenopharyngodon idellus</i>			48	14M + 24SM + 10 ST/A	86					Japan	O-16
<i>Ctenopharyngodon idellus</i>			48	16M + 20 SM/ST + 12A		84		2.1 FD		Japan (Osaka)	O-18
<i>Ctenopharyngodon idellus</i>		F, M	48	14M + 20SM + 8ST + 6A	82	90				India (WB)	M-27
<i>Ctenopharyngodon idellus</i>			48	32 M/SM + 16 ST/A	80					former Yugoslavia	A-28
<i>Ctenopharyngodon idellus</i>			48	28M + 20SM	96	96				Hungary	B-54
<i>Mylopharyngodon piceus</i>			48	24M + 20SM + 4ST	92	96	4	(2.4* FCM)	ACN=50	China (Shashi)	Z-22, F-5
<i>Mylopharyngodon piceus</i>			48	14M + 34 SM/ST		96			ACN=50	China (Shashi)	Z-27
<i>Mylopharyngodon piceus</i>			48	16M + 28SM + 4ST	92	96				China (Shanghai)	L-68
<i>Mylopharyngodon piceus</i>		M	48	18M + 24SM + 6ST	90	96		(1.9* FD)	ACN=50	China (Wuhan)	G-70, C-83
<i>Squaliobarbus curriculus</i>		F, M	48	14M + 30SM + 4ST	92	96			ACN=50	China (Wuhan)	L-42, Y-15
Tincinae											
<i>Tinca tinca</i>			48	14M + 12SM + 22ST	74	96				Bulgaria	P-37
<i>Tinca tinca</i>			48	30 M/SM + 18 ST/A	78					Croatia	A-28
<i>Tinca tinca</i>		F, M	48	36 M/SM + 12 ST/A	84				ACN=50	Bosnia-Herzegovina	B-23
<i>Tinca tinca</i>			48	6M + 28SM + 14 ST/A	82			2.3 FCM		(Europe)	C-75, F-30
<i>Tinca tinca</i>		M	48	8M + 12SM + 10ST + 18A	68	78			ACN=50	Italy	C-34
<i>Tinca tinca</i>			48	20 M/SM + 16ST + 12A	68	84			ACN=50	Sweden	N-50

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
<i>Tinca</i>	<i>tinca</i>		F, M	48 16M + 26 SM/ST + 6A		90	2			Elbe R., Danube R.	M-54	
<i>Tinca</i>	<i>tinca</i>			48 18M + 18SM + 6ST + 6A	84	90				Hungary	B-54	
<i>Tinca</i>	<i>tinca</i>			48 14M + 24 SM/ST + 10A		86		2.1 FD	ACN=50	France	H-2, H-4	
Xenocyprinae												
<i>Distoechodon</i>	<i>tumirostris</i>		F, M	48 18M + 26SM + 4ST	92	96			ACN=50	China (Sichuan)	L-32, Y-15	
<i>Plagiognathops</i>	<i>microlepis</i>		F, M	48 18M + 26SM + 4ST	92	96	4	1.8* FD	ACN=50	China (Hubei)	L-28, Z-25, C-83	
<i>Pseudobrama</i>	<i>simoni</i>	<i>Acanthobrama</i>	F, M	48 18M + 26SM + 4ST	92	96			ACN=50	China (Hubei)	L-28, Y-15	
<i>Xenocyparis</i>	<i>argentea</i>		F, M	48 20M + 26SM + 2ST	94	96	4		ACN=50	China (Hubei)	L-28, Y-15, Z-25	
<i>Xenocyparis</i>	<i>davidi</i>		F, M	48 18M + 26SM + 4ST	92	96	4	2.5* FD	ACN=50	China (Hubei)	L-28, Z-25, C-83	
<i>Xenocyparis</i>	<i>fangi</i>		F, M	48 16M + 28SM + 4ST	92	96	4		ACN=50	China (Sichuan)	Z-25, Y-15	
<i>Xenocyparis</i>	<i>sechuanensis</i>		F, M	48 18M + 26SM + 4ST	92	96	4		ACN=50	China (Sichuan)	Z-25, Y-15	
Psilorhynchidae												
<i>Psilorhynchus</i>	<i>balitora</i>	<i>Psilorhynchus bolitora</i>		50 24M + 16SM + 10A	90				ACN=50	India (Assam)	K-41	
<i>Psilorhynchus</i>	<i>sucatio</i>		M	50 22M + 18SM + 10A	90				ACN=50	India (Assam)	K-43	
Superfamily Cobitoidea												
Gyrinocheilidae												
<i>Gyrinocheilus</i>	<i>aymonieri</i>			48 4M + 4SM + 4ST + 36A	56	60	2	1.2* FCM, 1.0 FD, 1.3 FIA	ACN=50	S.E. Asia	A-82, O-48, H-41	
Catostomidae												
<i>Carpioles</i>	<i>carpio</i>			96-100					4X	USA (KS)	U-66	
<i>Carpioles</i>	<i>cyprinus</i>			100					4.5 FCM	4X, ACN=100	USA	F-23
<i>Catostomus</i>	<i>catostomus</i>			98 8M + 6SM + 84 ST/A	112			4.2 FIA	4X	Canada (Ont.)	B-11, H-41	
<i>Catostomus</i>	<i>clarki</i>			96-100					4X	USA (AZ)	U-66	
<i>Catostomus</i>	<i>commersoni</i>			98 12M + 14SM + 72 ST/A	124			(5.5 FCM)	4X	Canada (Ont.)	B-11, F-23	
<i>Catostomus</i>	<i>commersoni</i>			96-98				(5.1 FIA)	4X	USA (MI)	U-66, H-41	
<i>Catostomus</i>	<i>commersoni</i>		F, M	100 24 M/SM + 76 ST/A	124				4X, ACN=100	USA (ME)	B-64	
<i>Catostomus</i>	<i>discobolus</i>			96-100					4X	USA (CO)	U-66	
<i>Catostomus</i>	<i>latipinnis</i>			96-100					4X	USA (UT)	U-66	
<i>Cycloleptus</i>	<i>elongatus</i>			96-100					4X	USA (MO)	U-66	
<i>Erimyzon</i>	<i>sucetta</i>			96-100					4X	USA (MI)	U-66	
<i>Hypentelium</i>	<i>nigricans</i>			96-100					4X	USA (MI)	U-66	
<i>Ictiobus</i>	sp.			96-100					4X	USA (MO)	U-66	
<i>Minytrema</i>	<i>melanops</i>			<96					4X	USA (MI)	U-66	
<i>Moxostoma</i>	<i>duquesnei</i>			96-100					4X	USA (MI)	U-66	
<i>Moxostoma</i>	<i>erythrurum</i>			96-100				4.3 FCM	4X	USA (MI)	U-66, F-23	
<i>Moxostoma</i>	<i>macrolepidotum</i>			96-100					4X	USA (MI)	U-66	
<i>Myxocyprinus</i>	<i>asiaticus</i>		F, M	100 18 M/SM + 82 ST/A	118				4X, ACN=100	China (Sichuan)	L-37	

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Myxocyprinus</i>	<i>asiaticus</i>		100	6M + 8SM + 86 ST/A	114				4X, ACN=100 (China)		U-37
<i>Myxocyprinus</i>	<i>asiaticus</i>		100	4M + 14 SM/ST + 82A		118		4.0 FD	4X, ACN=100 (China)		S-138
Cobitidae											
Botiinae											
<i>Botia</i>	<i>almorhae</i>		100						4X, ACN=100 (Asia)		S-157
<i>Botia</i>	<i>birdi</i>	M	98	14M + 18SM + 4ST + 62A	130	134			4X (India (Kashmir))		K-37
<i>Botia</i>	<i>dario</i>		98	32M + 6SM + 60A	136	136			4X (India (Assam))		K-41
<i>Botia</i>	<i>dario</i>		90	12M + 2SM + 76A	104				4X (India (Assam))		R-65
<i>Botia</i>	<i>dayi</i>	F, M	98						4X (India (U.P.))		R-74
<i>Botia</i>	<i>histrionica</i>		100						4X (Asia)		S-157
<i>Botia</i>	<i>lohachata</i>		100	28M + 26 SM/ST + 46A	154			1.9 FD	4X, ACN=100 (Asia)		S-144
<i>Botia</i>	<i>lohachata</i>	F, M	98	16M + 20SM + 62 ST/A	134				4X (India (U.P.))		R-74
<i>Botia</i>	<i>rostrata</i>		98	22M + 8SM + 2ST + 66A	128	130			4X (India (WB))		K-46
<i>Botia</i>	<i>striata</i>		100	20M + 26 SM/ST + 54A		146			4X, ACN=100 (Asia)		S-144
<i>Chromobotia</i>	<i>macracantha</i>	<i>Botia</i>	100	16M + 20 SM/ST + 64A		136		1.9 FD	4X, ACN=100 (Sumatra, Borneo)		S-144
<i>Chromobotia</i>	<i>macracantha</i>	<i>Botia</i>	98	28 M/SM + 70A	126			1.9 FD	4X (Asia)		M-91
<i>Sinibotia</i>	<i>pulchra</i>	<i>Botia</i>	100	12M + 40 SM/ST + 48A		152			4X, ACN=100 (Asia)		S-144
<i>Sinibotia</i>	<i>pulchra</i>	<i>Botia</i>	F	100 10M + 12SM + 14ST + 64A	122	136			4X, ACN=100 (China (Guilin))		Y-15
<i>Syncrossus</i>	<i>berdmorei</i>	<i>Botia</i>	100	8M + 14 SM/ST + 78A		122		2.0 FD	4X, ACN=100 (Myanmar)		S-144
<i>Syncrossus</i>	<i>helodes</i>	<i>Botia</i>	100	8M + 12 SM/ST + 80A		120		1.7 FD	4X, ACN=100 (Cambodia)		S-144
<i>Syncrossus</i>	<i>hymenophysa</i>	<i>Botia</i>	100	8M + 12 SM/ST + 80A		120			4X, ACN=100 (Asia)		S-144
<i>Syncrossus</i>	<i>hymenophysa</i>	<i>Botia</i>	F	90 4M + 86A	94				4X (India (Manipur))		R-65
<i>Syncrossus</i>	<i>reversa</i>		100						4X (Indonesia)		S-157
<i>Yasuhikotakia</i>	<i>eos</i>		100						4X (Laos)		S-157
<i>Yasuhikotakia</i>	<i>lecontei</i>	<i>Botia</i>	100	10M + 20 SM/ST + 70A		130			4X, ACN=100 (Thailand)		S-144
<i>Yasuhikotakia</i>	<i>modesta</i>	<i>Botia</i>	100	14M + 14 SM/ST + 72A		128		1.6* FCM, 1.2 FD	4X, ACN=100 (Thailand)		S-144, O-48
<i>Yasuhikotakia</i>	<i>morleti</i>	<i>Botia</i>	100	14M + 12 SM/ST + 74A		126		1.5 FD	4X, ACN=100 (Cambodia, Thailand)		S-144
<i>Yasuhikotakia</i>	<i>nigrolineata</i>		100						4X (China, Yunnan)		S-157
<i>Yasuhikotakia</i>	<i>sidthimunki</i>	<i>Botia</i>	100	12M + 12 SM/ST + 76A		124			4X, ACN=100 (Thailand)		S-144
Leptobotiinae											
<i>Leptobotia</i>	<i>curta</i>		50	8M + 10SM + 32 ST/A	68	2		1.1 FD	ACN=50 (Japan (Okayama))		S-17, S-144
<i>Leptobotia</i>	<i>elongata</i>	F, M	50	6M + 12SM + 18ST + 14A	68	86			ACN=50 (China (Leshan))		Y-15
<i>Leptobotia</i>	<i>guilinensis</i>		F, M	50 6M + 8SM + 8ST + 28A	64	72			ACN=50 (China (Guilin))		Y-15
<i>Leptobotia</i>	<i>pellegrini</i>	F, M	50	8M + 8SM + 12ST + 22A	66	78			ACN=50 (China (Guilin))		Y-15
<i>Leptobotia</i>	<i>pellegrini</i>		50	6M + 22 SM/ST + 22A		78			ACN=50 (China)		S-144
<i>Leptobotia</i>	<i>taeniops</i>	F	50	6M + 10SM + 12ST + 22A	66	78			ACN=50 (China (Nanchong))		Y-15
<i>Leptobotia</i>	<i>zebra</i>	F, M	50	6M + 10SM + 10ST + 24A	66	76			ACN=50 (China (Guilin))		Y-15
<i>Parabotia</i>	<i>banarescui</i>		50	6M + 14 SM/ST + 30A		72		1.1 FD	2B, ACN=50 (China)		S-137

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Parabotia fasciata</i>		F, M	50	10M + 8SM + 14ST + 18A	68	82			ACN=50	China (Guangdong)	Y-15
<i>Parabotia kwangsiensis</i>	<i>Botia</i>	F, M	50	10M + 6SM + 4ST + 30A	66	70			ACN=50	China (Guilin)	Y-15
<i>Parabotia lijiangensis</i>		F, M	50	8M + 8SM + 10ST + 24A	66	76			ACN=50	China (Guilin)	Y-15
<i>Parabotia maculosa</i>		F, M	50	8M + 8SM + 14ST + 20A	66	80			ACN=50	China (Guilin)	Y-15
Cobitinae											
<i>Acanthopsis choiriorhynchos</i>			50	16M + 30 SM/ST + 4A		96			ACN=50	(Asia)	S-137
<i>Acanthopsis</i> sp. 2			50	22M + 18SM + 4ST + 6A	90	94			ACN=50	Thailand	D-28
<i>Canthophrys gongota</i>	<i>Somileptes</i>		50	8M + 4SM + 2ST + 36A	62	64			ACN=50	India (WB)	K-46
<i>Cobitis biwae</i>		F, M	48	18M + 30SM	96	96			2X	Japan	K-61, K-91
<i>Cobitis biwae</i>			48	20M + 24SM + 4A	92	92			2X	Japan (Tochigi)	U-30
<i>Cobitis biwae</i>			46	20M + 22SM + 4A	88	88			2X	Japan (Toyama)	U-30
<i>Cobitis biwae</i>		F, M	48	42 M/SM + 6 ST/A	90				2X	Japan (Shiga)	T-1
<i>Cobitis biwae</i>			48	18M + 26 SM/ST + 4A	92		4.3 FD		2X	Japan (Okayama)	S-137
<i>Cobitis biwae</i>			48	20M + 22 SM/ST + 6A	90				2X	Japan (Shiga)	U-27, U-29
<i>Cobitis biwae</i>			48	16M + 24 SM/ST + 8A	88				2X	Japan (Kochi)	U-29
<i>Cobitis biwae</i>			48	16M + 22 SM/ST + 10A	86	2			2X	Japan (Shimane)	U-29
<i>Cobitis biwae</i>			96	32M + 54 SM/ST + 10A	182		(6.7* FCM)		4X	W. Japan	U-27, U-29, O-48
<i>Cobitis biwae</i>		F, M	96	36M + 52SM + 8ST	184	192			4X	W. Japan	K-61, K-91
<i>Cobitis biwae</i>		F, M	96	58 M/SM + 38 ST/A	154				4X	Japan (Hyogo)	H-16, O-14
<i>Cobitis biwae</i>			96	34M + 50 SM/ST + 12A		180	7.2 FD		4X	Japan (Okayama)	S-137
<i>Cobitis calderoni</i>		F, M	50	6M + 14SM + 30A	70				ACN=50	Portugal, Spain	M-4
<i>Cobitis calderoni</i>			50	6M + 12SM + 32 ST/A	68				ACN=50	Portugal	V-25
<i>Cobitis hankugensis</i>	<i>taenia taenia</i>		48	14M + 4SM + 30 ST/A	66				2X	Korea	K-56
<i>Cobitis hankugensis</i>	<i>sinensis</i>		48	14M + 4SM + 30 ST/A	66		(2.8 FCM)		2X	Korea (Nagdong R.)	K-116, V-102
<i>Cobitis koreensis pumilus</i>			50	10M + 12SM + 28A	72				ACN=50	Korea	K-56
<i>Cobitis cf. laosensis</i>			48	14M + 4SM + 30 ST/A	66				2X	Korea	K-129
<i>Cobitis lutheri</i>	<i>taenia lutheri</i>		50	10M + 6SM + 34 ST/A	66				ACN=50	Korea (Yongjin)	K-56
<i>Cobitis lutheri</i>	<i>taenia lutheri</i>		49	11M + 6SM + 32A	66				2X	Korea (Tamjin R.)	K-129
<i>Cobitis lutheri</i>	<i>taenia lutheri</i>		51	9M + 6SM + 36A	66				2X	Korea (Tamjin R.)	K-129
<i>Cobitis lutheri</i>	<i>taenia lutheri</i>		50	12M + 4SM + 34A	66				2X, ACN=50	Korea (Han R.)	U-35
<i>Cobitis lutheri</i>			50	12M + 8SM + 30 ST/A	70		3.5, 3.9 FCM		2X, ACN=50	Russia (Amur basin)	V-86, V-98, V-102
<i>Cobitis maroccana</i>		F, M	50	6M + 12SM + 32A	68	68	2		ACN=50	Portugal, Spain	M-4, V-73
<i>Cobitis melanoleuca</i>			50	8M + 16SM + 26 ST/A	74				2X, ACN=50	Mongolia	V-98
<i>Cobitis melanoleuca</i>			50	6M + 16SM + 28 ST/A	72		(3.1 FCM)		2X, ACN=50	Russia (Amur basin)	V-86, V-98
<i>Cobitis melanoleuca gladkovi</i>	<i>granoei</i>		50	8M + 18SM + 24 ST/A	76				2X, ACN=50	Russia	V-24, V-98
<i>Cobitis melanoleuca gladkovi</i>			50	8M + 18SM + 24 ST/A	76				2X, ACN=50	Russia (Don basin)	V-98
<i>Cobitis pacifica</i>	<i>taenia granoei</i>		50	24 M/SM + 26 ST/A	74				2X, ACN=50	Korea	K-128
<i>Cobitis pacifica</i>	<i>granoei</i>		50	6M + 24SM + 20ST	80	100			2X, ACN=50	Korea	L-15
<i>Cobitis sinensis</i>		F	40	20M + 8SM + 4ST + 8A	68	72			2X	China (Guilin)	Y-15

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Cobitis sinensis</i>		F	90	26M + 18SM + 16ST + 30A	134	150			4X	China (Guilin)	Y-15
<i>Cobitis taenia</i>		F, M	48	12M + 18SM + 18 ST/A	78	2			2X	Poland	B-48, B-52
<i>Cobitis taenia</i>		F	74	21M + 30SM + 23 ST/A	125				3X	Poland	B-48, B-52
<i>Cobitis taenia</i>			50	8M + 16SM + 6ST + 20A	74	80			2X, ACN=50	Russia (Volga R.)	V-15
<i>Cobitis taenia</i>			48	12M + 12SM + 10ST + 14A	72	82			2X	Russia (Volga R.)	V-15
<i>Cobitis taenia</i>									3X, 4X, 5X	Russia (Volga R.)	V-15
<i>Cobitis taenia</i>			48	10M + 18SM + 20 ST/A	76		(3.5 FCM)		ACN=50	Russia	V-24, V-102
<i>Cobitis taenia</i>		F, M	50	12M + 6SM + 16ST + 16A	68	84			2X, ACN=50	Italy	C-34
<i>Cobitis</i>			49	9M + 24SM + 16 ST/A	82				2X	Russia (Dnepr R.)	V-19
<i>Cobitis</i>			50	8M + 24SM + 18 ST/A	82				2X, ACN=50	Russia (Dnepr R.)	V-19
<i>Cobitis</i>			74	23M + 25SM + 26 ST/A	122		6.0 FCM		3X	Russia (Dnepr R.)	V-19, V-102
<i>Cobitis</i>			98				7.6 FCM		4X	Russia	V-102
<i>Cobitis</i>			50						2X	(Asia)	V-72
<i>Cobitis taenia satunini</i>									X ₁ X ₁ X ₂ X ₂	Japan (Okayama)	S-3, S-4
<i>Cobitis taenia striata</i>	small race	F	50	16 M/SM + 34 ST/A	66				X ₁ X ₂ Y, ACN=50	Japan (Okayama)	S-3, S-4
<i>Cobitis taenia striata</i>	small race	M	49	17 M/SM + 32 ST/A	66				2X, ACN=50	Japan (Okayama)	S-3
<i>Cobitis taenia striata</i>	middle race	F, M	50	16 M/SM + 34A	66				4X	Japan (Lake Biwa)	S-3
<i>Cobitis taenia striata</i>	large race	F, M	98	42 M/SM + 56A	140				2X, ACN=50	Japan (Yodo R.)	T-1
<i>Cobitis taenia striata</i>		F	50	16 M/SM + 34 ST/A	66				2X, ACN=50	W. Japan	U-27, U-29, O-48
<i>Cobitis taenia striata</i>			50	12M + 4SM + 34A	66	66	(3.9* FCM)		4X	Japan (Shiga)	U-27, U-29
<i>Cobitis taenia taenia</i>			98	20M + 22 SM/ST + 56A		140			2X, ACN=50	Japan (Fukuoka)	U-29
<i>Cobitis taenia taenia</i>			50	12M + 4SM + 34 ST/A	66					Japan (Fukuoka, Nagasaki)	U-29
<i>Cobitis taenia taenia</i>			86	32M + 32 SM/ST + 22A		150	2		4X	Japan (Fukuoka, Oita)	U-29
<i>Cobitis taenia taenia</i>			94	26M + 32 SM/ST + 36A		152	2				
<i>Cobitis taenia taenia</i>		M	50	38 M/SM + 12 ST/A	88				2X, ACN=50	Bosnia	S-81
<i>Cobitis taenia taenia</i>		F	75	57 M/SM + 18 ST/A	132				3X	Bosnia	S-81
<i>Cobitis taenia taenia</i>		F, M	86	64 M/SM + 22 ST/A	150					Japan (Saga)	T-1
<i>Cobitis takatsuensis</i>			48	12M + 18 SM/ST + 18A		78			2X	W. Japan	K-60
<i>Cobitis takatsuensis</i>			48	12M + 12SM + 24A	72				2X	Japan	K-117
<i>Cobitis tetralineata</i>	<i>taenia striata</i>		50	10M + 6SM + 34 ST/A	66				2X, ACN=50	Korea	K-56
<i>Cobitis vardarensis</i>			50	26M + 20SM + 4ST	96	100			2X, ACN=50	Macedonia	R-104
<i>Iksookimia choir</i>			50	18 M/SM + 32 ST/A	68				2X, ACN=50	Korea	K-127
<i>Iksookimia choir</i>	<i>Cobitis</i>		50	8M + 10SM + 8ST + 24A	68	76			2X, ACN=50	Amur basin	V-98
<i>Iksookimia hugowolfeldi</i>			50	24 M/SM + 26 ST/A	74				2X, ACN=50	Korea	K-128
<i>Iksookimia koreensis</i>	<i>Cobitis</i>		50	12M + 8SM + 30 ST/A	70				2X, ACN=50	Korea (Han R., Geum R.)	U-35
<i>Iksookimia koreensis</i>	<i>Cobitis</i>		50	10M + 12SM + 28A	72				2X, ACN=50	Korea (Mankyong R.)	K-56
<i>Iksookimia longicorpa</i>	<i>Cobitis longicorpus</i>		50	14M + 6SM + 30 ST/A	70				2X, ACN=50	Korea (Nakton R.)	K-116
<i>Iksookimia longicorpa</i>	<i>Cobitis longicorpus</i>	F, M	50	12M + 8SM + 30 ST/A	70				2X, ACN=50	Korea (Nakton R.)	K-56, U-35
<i>Iksookimia pumilla</i>		F	50	22 M/SM + 28 ST/A	72				2X, ACN=50	Korea	V-98
<i>Iksookimia yongdokensis</i>			100	44 M/SM + 56 ST/A	144				4X	Korea (Kyongsangbuk-do)	K-127

Table 6.11 Order CYPRINIFORMES (continued)

A Current scientific name of taxon Superfamily/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Kichulchoia brevifasciata</i>					64				2X, ACN=48	Korea (Jeollanam-do)	K-128
<i>Koreocobitis rotundicaudata</i>	<i>Cobitis</i>		50	10M + 4SM + 36 ST/A	64				2X, ACN=50	Korea (Han R.)	U-35
<i>Lepidocephalichthys berdmori</i>		M	62	24 M/SM + 38A	86					India (Portonovo)	N-13
<i>Lepidocephalichthys guntea</i>		F	50	18M + 18SM + 10ST + 4A	86	96	2		1B, 2X, ACN=50	India (Jammu)	S-57, K-136
<i>Lepidocephalichthys guntea</i>		M	50	18M + 18SM + 10ST + 4A	86	96	2		2B, 2X, ACN=50	India (Jammu)	S-57, K-136
<i>Lepidocephalichthys guntea</i> var. <i>balgara</i>		F, M	50	22M + 14SM + 2ST + 12A	86	88			2X, ACN=50	India (WB)	B-4
<i>Misgurnus anguillicaudatus</i>		F, M	50	14 M/SM + 36 ST/A	64			(2.8 BFA)	2X, ACN=50	Japan (Hokkaido)	H-13, H-15, H-16, O-14
<i>Misgurnus anguillicaudatus</i>		F, M	50	10M + 4SM + 36 ST/A	64				ACN=50	Japan	O-28, I-15
<i>Misgurnus anguillicaudatus</i>			48	12M + 4SM + 32 ST/A	64				ACN=50	Japan (Shiga)	O-28
<i>Misgurnus anguillicaudatus</i>		F	75	15M + 6SM + 54 ST/A	96				3X	Japan (Shiga)	O-28
<i>Misgurnus anguillicaudatus</i>		F, M	100	20M + 8SM + 72 ST/A	128				4X	Japan (Shiga)	O-28
<i>Misgurnus anguillicaudatus</i>			50	8M + 6 SM/ST + 36A	64			3.7 FD	2X, ACN=50	Japan	S-137
<i>Misgurnus anguillicaudatus</i>			50					2.4 FCM	2X	S. Korea	L-15, P-70
<i>Misgurnus anguillicaudatus</i>			50	10M + 4SM + 36 ST/A	64				2X, ACN=50	N. Korea	V-28
<i>Misgurnus anguillicaudatus</i>		F	50	8M + 6SM + 36A	64	64			2X, ACN=50	China (Sichuan)	L-44, Y-15
<i>Misgurnus anguillicaudatus</i>		F, M	100	16M + 12SM + 72A	128	128		4.6, 4.0* FD	4X	China (Hubei)	L-27, L-41, Y-15, C-83
<i>Misgurnus bufoensis</i>			48	10M + 2SM + 36 ST/A	60					N. Korea	V-98
<i>Misgurnus fossilis</i>			100	36 M/SM/ST + 64A		136			4X	Rumania	R-32
<i>Misgurnus mohoitry</i>			50							Russia (Amur basin)	V-98
<i>Misgurnus nikolskyi</i>			50	8M + 6SM + 36 ST/A	64				2X, ACN=50	Russia (Far East)	V-28
<i>Misgurnus nikolskyi</i>			50	10M + 4SM + 36 ST/A	64				ACN=50	Russia (Amur basin)	V-98
<i>Niwaella delicata</i>	<i>Cobitis</i>	F, M	50	18 M/SM + 32 ST/A	68				2X, ACN=50	Japan (Shiga, Gifu)	O-14, T-1, H-16
<i>Niwaella delicata</i>		F, M	50	6M + 14 SM/ST + 30A		70			2X, ACN=50	W. Japan	K-60
<i>Niwaella multifasciata</i>			50	38 M/SM + 12 ST/A	88				2X, ACN=50	Korea	K-128
<i>Pangio borneensis</i>	<i>Acanthopthalmus</i>		50	10M + 18 SM/ST + 22A	78			2.0 FD	2X, ACN=50	(Asia)	S-137
<i>Pangio khulii</i>	<i>Acanthopthalmus</i>	F	50	14 M/SM + 12ST + 24A	64	76		2.0 FD	2X, ACN=50	(Asia)	M-91
<i>Pangio khulii</i>	<i>Acanthopthalmus</i>		50	14M + 4ST + 32A	64	68		(2.4 BFA)	2X, ACN=50	Thailand	D-20, H-13
<i>Pangio pangia</i>	<i>Acanthopthalmus</i>		50	16M + 10SM + 24A	76	76				India	L-1
<i>Paramisgurnus dabryanus</i>		F, M	48	12M + 4SM + 32A	64			2.2, 2.0* FD	0-1 B, ACN=50	China (Hubei)	L-27, L-41, Y-15, C-83
<i>Paramisgurnus dabryanus</i>	<i>Misgurnus mizolepis</i>		48	12M + 4SM + 32 ST/A	64				2X, ACN=50	Korea (Geum R.)	U-35
<i>Sabanejewia balcanica</i>	<i>aurata balcanica</i>	F, M	50	4M + 12SM + 34 ST/A	66		2		2X, ACN=50	Slovakia	R-19, V-26
<i>Sabanejewia caspia</i>			50	4M + 6SM + 22ST + 18A	60	82			2X		V-72
<i>Sabanejewia caspia</i>			50	4M + 18SM + 28 ST/A	72				2X	(Caspian Sea basin)	V-108
<i>Sabanejewia kubanica</i>	<i>aurata kubanica</i>		50	6M + 14SM + 30 ST/A	70				2X, ACN=50	Russia (Kuban R.)	V-25
<i>Sabanejewia kubanica?</i>	<i>aurata</i>		50	6M + 14SM + 30 ST/A	70				2X, ACN=50		V-72
<i>Sabanejewia larvata</i>		F, M	50	4M + 6SM + 22ST + 18A	60	82			2X, ACN=50	Italy (near Torino)	L-65

Table 6.11 Order CYPRINIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Superfamily/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Balitoridae (= Homalopteridae)											
Nemacheilinae											
<i>Acanthocobitis botia</i>	<i>Nemacheilus</i>	F, M	50	20M + 16 SM/ST + 14A		86			ACN=50	(India)	R-51
<i>Acanthocobitis botia</i>	<i>Nemacheilus aureus</i>		50	28M + 4SM + 18A	82	82			ACN=50	India (Orissa)	K-41
<i>Barbatula barbatula</i>	<i>Nemacheilus barbatulus</i>	F, M	50	8M + 20SM + 22A	78	78	2		ACN=50	Swiss, Spain	M-4
<i>Barbatula barbatula</i>	<i>Nemacheilus barbatulus</i>	F, M	50	8M + 20SM + 22 ST/A	78		2		ACN=50	Poland	B-51
<i>Barbatula barbatula</i>	<i>Nemacheilus barbatulus</i>	F, M	50	20 M/SM + 30 ST/A	70				ACN=50	Bosnia-Herzegovina	S-83
<i>Barbatula barbatula</i>	<i>Nemacheilus barbatulus</i>		50	8M + 20 SM/ST + 22A	78				ACN=50	Slovakia	C-73
<i>Barbatula barbatula</i>	<i>Nemacheilus barbatulus</i>		75	12M + 30 SM/ST + 33A	117			3X	Slovakia	C-73	
<i>Barbatula barbatula</i>	<i>Nemacheilus barbatulus</i>		50	6M + 12 SM/ST + 32A	68				ACN=50		V-72
<i>Barbatula toni</i>		F, M	50	16 M/SM + 34 ST/A	66				ACN=50	Japan (Hokkaido)	H-16
<i>Barbatula toni</i>			50	6M + 24 SM/ST + 20A	80			1.1 FD	ACN=50	Japan (Hokkaido)	S-137
<i>Barbatula toni</i>	<i>Nemacheilus</i>	M	50	8M + 12SM + 30 ST/A	70				ACN=50	Korea (Han R., Nakton R.)	K-58
<i>Barbatula toni</i>	<i>Nemacheilus</i>	F	50	8M + 6SM + 36 ST/A	64				ACN=50	Korea (Maeubchon R.)	K-58
<i>Lefua costata</i>		M	50	6M + 4SM + 40 ST/A	60				ACN=50	Korea	K-58
<i>Lefua echigonia</i>			50	4M + 8 SM/ST + 38A	62			1.0 FD	ACN=50	Japan (Kanagawa)	S-124, S-137
<i>Lefua echigonia</i>			50	4M + 8SM + 38 ST/A	62				ACN=50	(Japan)	U-30
<i>Lefua nikkonis</i>		F, M	50	12 M/SM + 38 ST/A	62				ACN=50	Japan (Hokkaido)	H-16
<i>Lefua nikkonis</i>			50	4M + 24 SM/ST + 22A	78	2		0.9 FD	ACN=50	Japan (Hokkaido)	S-145
<i>Micronemacheilus pulcher</i>		F, M	50	10M + 12SM + 12ST + 16A	72	84			ACN=50	China (Guilin)	Y-15
<i>Micronemacheilus pulcher</i>			50	8M + 30 SM/ST + 12A	88	2			ACN=50	(China)	S-145
<i>Nemacheilus mooreh</i>	<i>sinuatus</i>	M	50	24M + 22SM + 4A	96	96			ACN=50	India (Assam)	K-46
<i>Nemacheilus selangoricus</i>			40	6M + 2SM + 32A	48	48			ACN=42	(Asia)	S-137
<i>Paracobitis potanini</i>	<i>Nemacheilus</i>	F, M	48	14M + 26SM + 6ST + 2A	88	94			ACN=48	China (Ya'an, Sichuan)	Y-15
<i>Schistura fasciolata</i>	<i>Nemacheilus fasciolatus</i>	M	44	10M + 8SM + 10ST + 16A	62	72			ACN=48	China (Guilin)	Y-15
<i>Schistura fasciolata</i>	<i>Nemacheilus fasciolatus</i>	F, M	50	12M + 14SM + 14ST + 10A	76	90			ACN=50	China (Guilin)	Y-15
<i>Schistura incerta</i>	<i>Nemacheilus incertus</i>	F, M	50	8M + 8SM + 4ST + 30A	66	70			ACN=50	China (Guilin)	Y-15
<i>Schistura prashadi</i>	<i>Nemacheilus</i>		50	10M + 10SM + 4ST + 26A	70	74			ACN=50	India	L-1
<i>Schistura rupecula</i>	<i>Nemacheilus rupicola</i>	F, M	50	20M + 8SM + 22 ST/A	78				ACN=50	India (U.P.)	R-74
<i>Schistura savona</i>	<i>Nemacheilus</i>	F, M	36	20M + 6SM + 2ST + 8A	62	64				India (Bihar)	K-41
<i>Triphlophysa kungessana</i>	<i>Nemacheilus dorsalis</i>		50	16 M/SM + 34 ST/A	66			2.0* FD	ACN=50	Central Asia	M-57
<i>Triphlophysa siluroides</i>			48							Tibet	O-83
<i>Triphlophysa stoliczkai</i>	<i>Nemacheilus</i>		50	12 M/SM + 38 ST/A	62				ACN=50	Central Asia	M-57
<i>Triphlophysa strachuii</i>	<i>Nemacheilus</i>		50	18 M/SM + 32 ST/A	68				ACN=50	Central Asia	M-57
Balitorinae											
<i>Beaufortia kweichowensis kweichowensis</i>			48	10M + 26 SM/ST + 12A	84	2				China	S-145
<i>Jinshaia abbreviata</i>	<i>Hemimyzon abbreviata</i>		50							China	Y-15
<i>Pseudogastromyzon myersi</i>			50	6M + 16 SM/ST + 28A	72		0.9 FD		ACN=50	(Asia)	S-139
<i>Sinohomaloptera kwangsiensis</i>	<i>Homaloptera hoffmanni</i>		50	6M + 18 SM/ST + 26A	74		0.9 FD		ACN=50	(Asia)	S-139
<i>Vanmanenia pingchowensis</i>		F, M	50	8M + 6SM + 6ST + 30A	64	70			ACN=50	China (Guilin)	Y-15
Vaillantellidae											
<i>Vaillantella maassi</i>			50	26 M/SM + 24ST	76	100	2		ACN=50	Thailand	B-72

Table 6.12 Order CHARACIFORMES

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-	I Genome size NORs	J Comments	K Locality	L Reference
Suborder Characoidei											
Acestrorhynchidae											
<i>Acestrorhynchus altus</i>		F	50	8M + 22SM + 14ST + 6A	80	94			ACN=52	Brazil (MS)	F-2
<i>Acestrorhynchus lacustris</i>		F, M	50	12M + 32SM + 4ST + 2A	94	98			ACN=52	Brazil (SP)	F-2
<i>Acestrorhynchus pantaneiro</i>			50	36 M/SM + 14 ST/A	86			1.7 FD		Argentina	F-20, C-94
Alestiidae											
<i>Arnoldichthys spilopterus</i>			56					2.4 BFA		(Africa)	H-13
Anostomidae											
<i>Abramites hypselonotus</i>			54	30M + 22SM + 2ST	106	108				Argentina	F-20, O-50
<i>Abramites hypselonotus</i>	<i>solarii</i>	F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44
<i>Anostomus anostomus?</i>	<i>anostomus</i>		54	54 M/SM	108	108		2.8 BFA		(S. America)	O-22, H-13
<i>Anostomus ternetzi</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44, O-50
<i>Leporellus vittatus</i>		F, M	54	30M + 24SM	108	108	2		ACN=56	Brazil (SP)	G-2, G-4
<i>Leporinus acutidens</i>			54	28M + 26SM	108	108				Argentina	F-20
<i>Leporinus affinis</i>			54	54 M/SM	108	108				(Brazil)	P-88
<i>Leporinus amblyrhynchus</i>			54	54 M/SM	108	108				(S. America)	A-92
<i>Leporinus brunneus</i>			54	54 M/SM	108	108				(Brazil, Venezuela)	A-92
<i>Leporinus conirostris</i>		F	54	52 M/SM + 1SM + 1ST	107	108	2		ZW, ACN=54	Brazil (SP)	G-10
<i>Leporinus conirostris</i>		M	54	52 M/SM + 2SM	108	108	2		ZZ, ACN=54	Brazil (SP)	G-10
<i>Leporinus copelandii</i>			54	26M + 28SM	108	108				Brazil (SP)	B-32
<i>Leporinus cylindriformis</i>			54	26M + 28SM	108	108				(Brazil)	A-92
<i>Leporinus desmotes</i>		F	54	54 M/SM	108	108	2		ACN=56	Brazil (TO)	M-155

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Leporinus</i> sp		F	54	32M + 21SM + 1ST	107	108	2		ZW, ACN=56	Brazil (MS)	G-91, K-135
<i>Leporinus</i> sp		M	54	32M + 22SM	108	108	2		ZZ, ACN=56	Brazil (MS)	G-91
<i>Pseudanos</i> <i>trimaculatus</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44
<i>Rhytiodus</i> <i>microlepis</i>			54							Brazil (AM)	B-32
<i>Schizodon</i> <i>altoparanae</i>			54	54 M/SM	108	108	2		ACN=56	Brazil (SP)	M-43
<i>Schizodon</i> <i>borellii</i>			54	54 M/SM	108	108				Argentina	F-20
<i>Schizodon</i> <i>borellii</i>			54	32M + 22SM	108	108		(3.0 FD)		Brazil (SP)	B-32, C-94
<i>Schizodon</i> <i>borellii</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (Paraguay R.)	M-154
<i>Schizodon</i> <i>fasciatus</i>			54	54 M/SM	108	108				Brazil	O-50
<i>Schizodon</i> <i>fasciatus</i>			54	28M + 26SM	108	108	2			Brazil	P-88
<i>Schizodon</i> <i>intermedius</i>		F, M	54	54 M/SM	108	108	2	2.9 FD	ACN=56	Brazil (SP)	M-43, C-93
<i>Schizodon</i> <i>isognathus</i>	<i>isognathum</i>		54	54 M/SM	108	108	2		ACN=56	Brazil (Paraguay R.)	M-154
<i>Schizodon</i> <i>knerii</i>			54	54 M/SM	108	108	2		ACN=56	Brazil (MG)	M-43
<i>Schizodon</i> <i>nasutus</i>		F, M	54	32M + 22SM	108	108	2		ACN=56	Brazil (SP)	G-2, G-4, M-43, C-93
<i>Schizodon</i> <i>nasutus</i>			54	32M + 22SM	108	108	2		0-1 B	Argentina	P-81, M-43, F-20, C-98
<i>Schizodon</i> <i>platae</i>			54	54 M/SM	108	108				Argentina	F-20
<i>Schizodon</i> <i>vittatus</i>			54	54 M/SM	108	108	2		ACN=56	Brazil (MT)	M-43
Characidae											
Aphyocharacinae											
<i>Aphyocharax</i> <i>alburnus</i>				50*					ACN=50	(S. America)	S-29
<i>Aphyocharax</i> <i>anisitsi</i>	<i>rubropinnis</i>			50*				2.7 FD, 3.4 BFA	ACN=50	(S. America)	S-29, C-94, H-13
<i>Aphyocharax</i> <i>dentatus</i>	<i>difficilis</i>	F, M	50	2M + 2SM + 2ST + 44A	54	56	4	(2.5 FD)	ACN=50	Brazil (Parana R.)	S-98, C-94
<i>Inpaichthys</i> <i>kerri</i>		M	52	12M + 26SM + 14ST	90	104			ACN=54	(Brazil)	A-91
Bryconinae											
<i>Brycon</i> <i>cephalus</i>		F, M	50	24M + 20SM + 6ST	94	100	2		ACN=52	Brazil (AM)	M-37
<i>Brycon</i> cf. <i>cephalus</i>		F, M	50	24M + 26 SM/ST	100	2			ACN=52	Brazil (AM)	A-22
<i>Brycon</i> cf. <i>cephalus</i>			50	20M + 22SM + 8ST	92	100	2			Brazil (AM)	P-88
<i>Brycon</i> cf. <i>cephalus</i>	<i>erythropterum</i>		50	20M + 22SM + 8ST	92	100	2			Brazil (AM)	P-88
<i>Brycon</i> <i>falcatus</i>	<i>brevicauda</i>	F, M	50	20M + 24SM + 6ST	94	100	2		ACN=52	Brazil (MT)	M-37
<i>Brycon</i> <i>hilarii</i>	<i>microlepis</i>	F, M	50	20M + 24SM + 6ST	94	100	2	2.4 FD	ACN=52	Brazil (MT)	M-37, M-151, C-94
<i>Brycon</i> <i>insignis</i>		F, M	50	22M + 20SM + 8ST	92	100	2		ACN=52	Brazil (SP)	M-37
<i>Brycon</i> <i>insignis</i>		F, M	50	26M + 24 SM/ST	100	2			ACN=52	Brazil (SP)	A-22
<i>Brycon</i> cf. <i>nattereri</i>	<i>reinhardtii</i>	M	50	22M + 28 SM/ST	100	2			ACN=52	Brazil (SP)	A-22
<i>Brycon</i> <i>orbignyanus</i>		F, M	50	24M + 22SM + 4ST	96	100	2		ACN=52	Brazil (PR)	M-37

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Leporinus</i> sp		F	54	32M + 21SM + 1ST	107	108	2		ZW, ACN=56	Brazil (MS)	G-91, K-135
<i>Leporinus</i> sp		M	54	32M + 22SM	108	108	2		ZZ, ACN=56	Brazil (MS)	G-91
<i>Pseudanos</i> <i>trimaculatus</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM)	M-44
<i>Rhytiodus</i> <i>microlepis</i>			54							Brazil (AM)	B-32
<i>Schizodon</i> <i>altoparanae</i>			54	54 M/SM	108	108	2		ACN=56	Brazil (SP)	M-43
<i>Schizodon</i> <i>borellii</i>			54	54 M/SM	108	108				Argentina	F-20
<i>Schizodon</i> <i>borellii</i>			54	32M + 22SM	108	108		(3.0 FD)		Brazil (SP)	B-32, C-94
<i>Schizodon</i> <i>borellii</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (Paraguay R.)	M-154
<i>Schizodon</i> <i>fasciatus</i>			54	54 M/SM	108	108				Brazil	O-50
<i>Schizodon</i> <i>fasciatus</i>			54	28M + 26SM	108	108	2			Brazil	P-88
<i>Schizodon</i> <i>intermedius</i>		F, M	54	54 M/SM	108	108	2	2.9 FD	ACN=56	Brazil (SP)	M-43, C-93
<i>Schizodon</i> <i>isognathus</i>	<i>isognathum</i>		54	54 M/SM	108	108	2		ACN=56	Brazil (Paraguay R.)	M-154
<i>Schizodon</i> <i>knerii</i>			54	54 M/SM	108	108	2		ACN=56	Brazil (MG)	M-43
<i>Schizodon</i> <i>nasutus</i>		F, M	54	32M + 22SM	108	108	2		ACN=56	Brazil (SP)	G-2, G-4, M-43, C-93
<i>Schizodon</i> <i>nasutus</i>			54	32M + 22SM	108	108	2		0-1 B	Argentina	P-81, M-43, F-20, C-98
<i>Schizodon</i> <i>platae</i>			54	54 M/SM	108	108				Argentina	F-20
<i>Schizodon</i> <i>vittatus</i>			54	54 M/SM	108	108	2		ACN=56	Brazil (MT)	M-43
Characidae											
Aphyocharacinae											
<i>Aphyocharax</i> <i>alburnus</i>				50*					ACN=50	(S. America)	S-29
<i>Aphyocharax</i> <i>anisitsi</i>	<i>rubropinnis</i>			50*				2.7 FD, 3.4 BFA	ACN=50	(S. America)	S-29, C-94, H-13
<i>Aphyocharax</i> <i>dentatus</i>	<i>difficilis</i>	F, M	50	2M + 2SM + 2ST + 44A	54	56	4	(2.5 FD)	ACN=50	Brazil (Parana R.)	S-98, C-94
<i>Inpaichthys</i> <i>kerri</i>		M	52	12M + 26SM + 14ST	90	104			ACN=54	(Brazil)	A-91
Bryconinae											
<i>Brycon</i> <i>cephalus</i>		F, M	50	24M + 20SM + 6ST	94	100	2		ACN=52	Brazil (AM)	M-37
<i>Brycon</i> cf. <i>cephalus</i>		F, M	50	24M + 26 SM/ST	100	2			ACN=52	Brazil (AM)	A-22
<i>Brycon</i> cf. <i>cephalus</i>			50	20M + 22SM + 8ST	92	100	2			Brazil (AM)	P-88
<i>Brycon</i> cf. <i>cephalus</i>	<i>erythropterum</i>		50	20M + 22SM + 8ST	92	100	2			Brazil (AM)	P-88
<i>Brycon</i> <i>falcatus</i>	<i>brevicauda</i>	F, M	50	20M + 24SM + 6ST	94	100	2		ACN=52	Brazil (MT)	M-37
<i>Brycon</i> <i>hilarii</i>	<i>microlepis</i>	F, M	50	20M + 24SM + 6ST	94	100	2	2.4 FD	ACN=52	Brazil (MT)	M-37, M-151, C-94
<i>Brycon</i> <i>insignis</i>		F, M	50	22M + 20SM + 8ST	92	100	2		ACN=52	Brazil (SP)	M-37
<i>Brycon</i> <i>insignis</i>		F, M	50	26M + 24 SM/ST	100	2			ACN=52	Brazil (SP)	A-22
<i>Brycon</i> cf. <i>nattereri</i>	<i>reinhardtii</i>	M	50	22M + 28 SM/ST	100	2			ACN=52	Brazil (SP)	A-22
<i>Brycon</i> <i>orbignyanus</i>		F, M	50	24M + 22SM + 4ST	96	100	2		ACN=52	Brazil (PR)	M-37

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
<i>Brycon</i>	<i>orthotaenia</i>											
	<i>lundii</i>											
		F, M	50	22M + 24SM + 4ST	96	100	2		ACN=52	Brazil (MG) (Brazil)	M-37, M-151 P-88	
<i>Brycon</i>	<i>cf. pesu</i>				50	20M + 22SM + 8ST	92	100	2			
<i>Brycon</i>	sp.				F	50	20M + 22SM + 8ST	92	100	2	ACN=52	
<i>Brycon</i>	sp.					50				Brazil (MT)	M-37	
<i>Salminus</i>	<i>brasiliensis</i>				F, M	50	14M + 30SM + 6ST	94	100	2		Brazil (AM) Brazil (SP)
<i>Salminus</i>	<i>hilarii</i>				F, M	50	14M + 30SM + 6ST	94	100	2	(2.6 FD)	Brazil (SP)
<i>Salminus</i>	<i>hilarii</i>				F, M	50	12M + 18SM + 20ST	80	100			ACN=52
<i>Chalceinae</i>										Brazil (SP)	M-151	
<i>Chalceus</i>	<i>macrolepidotus</i>	Characidae			54	32 M/SM + 22ST	86	108	2.1 FD	ACN=56	(S. America)	
<i>Chalceus</i>	<i>macrolepidotus</i>				52	44 M/SM + 8ST	96	104	(2.2 BFA)		(S. America)	
<i>Characinae</i>												
<i>Charax</i>	<i>leticiae</i>				52			2.9 FD		(S. America)	C-25, C-94	
<i>Charax</i>	sp.				F	52	22 M/SM + 30 ST/A	74	2		Brazil (Acre)	
<i>Cynopotamus</i>	<i>cf. kincaidi</i>					52	30 M/SM + 22 ST/A	82			Argentina	
<i>Exodon</i>	<i>paradoxus</i>				F	52	2M + 4SM + 10ST + 36A	58	68	(3.4 BFA)	ACN=52	
<i>Exodon</i>	<i>paradoxus</i>					52*		(74)		ACN=52	(S. America)	
<i>Galeocharax</i>	<i>gulo</i>				F, M	52	6M + 24SM + 22ST	82	104	2		ACN=52
<i>Galeocharax</i>	<i>humeralis</i>					52	36 M/SM + 16 ST/A	88			Brazil (MT)	
<i>Galeocharax</i>	<i>knerii</i>				F, M	52	6M + 26SM + 20ST	84	104	3.2 FD		ACN=52
<i>Phenacogaster</i>	<i>aff. microstictus</i>	cytotype A				52*					Brazil (SP, MG)	
<i>Phenacogaster</i>	<i>aff. microstictus</i>	cytotype B				50*					(S. America)	
<i>Phenacogaster</i>	<i>cf. pectinatus</i>				M	46	12M + 2ST + 32A	58	60	2		ACN=52
<i>Roeboides</i>	<i>descalvadensis</i>	<i>paranensis</i>				52	4M + 20SM + 8ST + 20A	76	84	2		Parana R.
<i>Roeboides</i>	<i>microlepis</i>	<i>bonariensis</i>				52	34 M/SM + 18 ST/A	86		2.2 FD		Argentina
<i>Roeboides</i>	<i>xenodon</i>				F, M	52	4M + 28SM + 16ST + 4A	84	100	2		ACN=52
<i>Roeboides</i>	sp.				F, M	52	6M + 20SM + 12ST + 14A	78	90	2		ACN=52
<i>Cheirodontinae</i>										Brazil (MG)	V-32	
<i>Cheirodon</i>	sp.					52				(Brazil)	V-32	
<i>Grundulus</i>	<i>bogotensis</i>				F, M	50	10M + 28SM + 12ST	88	100			Colombia
<i>Microschromobrycon</i>	<i>casiquiare</i>					42*						
<i>Nematobrycon</i>	<i>palmeri</i>					50				(S. America)	S-30	
<i>Nematobrycon</i>	<i>palmeri</i>				F, M	50	8 M/SM + 10ST + 32A	58	68			(Colombia)
<i>Odontostilbe</i>	<i>claudiae</i>					52				(Colombia)	S-152	
<i>Odontostilbe</i>	<i>paranensis</i>				F	52	36 M/SM + 13ST + 3A	88	101			Parana
<i>Odontostilbe</i>	<i>paranensis</i>				M	52	36 M/SM + 12ST + 4A	88	100	ZW, ACN=52	Brazil (SP)	
									ZZ, ACN=52	Brazil (SP)	W-19	

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Odontostilbe stenodon</i>	<i>Cheirodon stenodon</i>		52					3.7 FD		(Brazil, PR)	C-93
<i>Paracheirodon axelrodi</i>	<i>Cheirodon</i>		52		(54)				ACN=52	(S. America)	S-153
<i>Paracheirodon innesi</i>			32			(64)			ACN=52	(S. America)	S-153
<i>Paracheirodon innesi</i>	<i>Hypseobrycon</i>	M	36							Brazil, Colombia, Peru	L-75
<i>Paracheirodon simulans</i>	<i>Hypseobrycon</i>		50		(96)				ACN=52	(Amazon R., Orinoco R.)	S-152
<i>Pristella maxillaris</i>	<i>riddlei</i>		52*			(74)			ACN=52	(S. America)	S-152
<i>Probolodus heterostomus</i>			50							Brazil (SP)	O-50
<i>Serrapinnus heterodon</i>	<i>Holoshestes</i>	F	52	37 M/SM + 12ST + 3A	89	101			ZW, ACN=52	Brazil (SP)	W-19
<i>Serrapinnus heterodon</i>			52	16M + 20SM + 14ST + 2A	88	102	2			Brazil (Sao Francisco R.)	P-77
<i>Serrapinnus heterodon</i>			52	15M + 20SM + 14ST + 3A	87	101				Brazil (Sao Francisco R.)	P-77
<i>Serrapinnus heterodon</i>			52	17M + 20SM + 14ST + 1A	89	103				Brazil (Sao Francisco R.)	P-77
<i>Serrapinnus notomelas</i>	<i>Cheirodon</i>		52					ZW/ZZ		(Brazil)	W-19
<i>Serrapinnus notomelas</i>		F	52	16M + 23SM + 10ST + 3A	91	101	2		ZW, ACN=52	Brazil (SP)	S-201
<i>Serrapinnus notomelas</i>		M	52	16M + 22SM + 10ST + 4A	90	100	2		ZZ, ACN=52	Brazil (SP)	S-201
<i>Serrapinnus piaba</i>			52	16M + 20SM + 14ST + 2A	88	102	3			Brazil (Sao Francisco R.)	P-77
<i>Serrapinnus</i> sp. 1		F	52	8M + 15SM + 4ST + 25A	75	79		ZW		Paraná R.	S-201
<i>Serrapinnus</i> sp. 1		M	52	8M + 16SM + 4ST + 24A	76	80	3	ZZ, ACN=52		Paraná R.	S-201
Glandulocaudinae											
<i>Gephyrocharax caucanus</i>			52*							(Colombia)	S-30
<i>Gephyrocharax valencia</i>			52*							(Venezuela)	S-30
<i>Glandulocauda melanogenys</i>			52	4M + 12SM + 22ST + 14A	68	90				Brazil (SP)	T-71
<i>Glandulocauda melanopleura</i>			54	8M + 18SM + 14ST + 14A	80	94				Brazil (PR)	T-71
<i>Mimagoniates lateralis</i>			52	6M + 20SM + 16ST + 10A	78	94				Brazil (SP)	T-71
<i>Mimagoniates microlepis</i>			52	6M + 20SM + 18ST + 8A	78	96		3.1 FD		Brazil (SP)	T-71, C-94
<i>Mimagoniates microlepis</i>		F, M	52	12M + 18SM + 14ST + 8A	82	96	2		ACN=52	Brazil (PR)	T-71
Iguanodectinae											
<i>Iguanodectes spilurus</i>			50*							(S. America)	S-30
Paragoniatinae											
<i>Prionobrama filigera</i>			52	12 M/SM + 40 ST/A	64				ACN=54	(S. America)	A-93
Serrasalminae											
<i>Catoprion mento</i>			60							(Brazil)	P-88
<i>Colossoma macropomum</i>		F, M	54	20M + 34SM	108	108		(3.0 FIA)	ACN=54	Brazil	A-129, H-41
<i>Colossoma macropomum</i>			54	18M + 36SM	108	108				S. America	K-113
<i>Colossoma macropomum</i>			54	28M + 26SM	108	108	4		ACN=54	Venezuela	N-25
<i>Metynnis argenteus</i>			62*							(Brazil)	S-30

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Metynnis</i> <i>hypsauchen</i>	<i>schreitmulleri</i>		62	60 M/SM + 2A	122	122		3.4 BFA		(S. America)	O-22, H-13
<i>Metynnis</i> <i>lippincottianus</i>		F, M	62	30M + 30 SM/ST + 2A	122			(3.4 BFA)		(Brazil, French Guiana)	A-91, A-92, H-13
<i>Metynnis</i> <i>lippincottianus</i>			62	30M + 24SM + 6ST + ZW	116	122			0-2 B	Brazil (AM)	C-98
<i>Metynnis</i> <i>lippincottianus</i>	<i>cf. roosevelti</i>		62	26M + 20SM + 14ST + 2A	108	122				Brazil	M-167
<i>Metynnis</i> <i>maculatus</i>			62	32M + 22SM + 4ST + 4A	116	120			1B	Brazil (SP)	C-98
<i>Metynnis</i> <i>mola</i>			62	60 M/SM + 2A	122	122				Brazil	J-19
<i>Mylesinus</i> <i>paraschomburgkii</i>			58				6-12			Brazil (Amazon R.)	P-88
<i>Mylesinus</i> <i>schomburgkii</i>	<i>Myleus</i>		58	42 M/SM + 16 ST/A	100		5-8			(Guyana, Venezuela)	P-88
<i>Myleus</i> <i>arnoldi</i>	<i>Myloplus</i>		58	34 M/SM + 24 ST/A	92					(Brazil)	O-22
<i>Myleus</i> <i>micans</i>		F, M	58	26M + 18SM + 8ST + 6A	102	110	4			Brazil (São Francisco R.)	A-128
<i>Myleus</i> <i>pacu</i>			58	40 M/SM + 18 ST/A	98		5-9			(Guyana)	P-88
<i>Myleus</i> <i>tiete</i>			58							Argentina	F-20
<i>Myloplus</i> <i>rubripinnis</i>			58				5-8			(Guyana)	P-88
<i>Mylossoma</i> <i>aureum</i>			54	54 M/SM	108	108	6-14			(Brazil)	P-88
<i>Mylossoma</i> <i>duriventre</i>	<i>duriventris</i>		54	54 M/SM	108	108	6-14			(S. America)	P-88
<i>Mylossoma</i> <i>duriventre</i>	<i>duriventris</i>		54	18M + 34SM + 2A	106	106				(S. America)	K-113
<i>Mylossoma</i> <i>duriventre</i>	<i>duriventris</i>		54	50 M/SM + 4A	104	104				(S. America)	O-22
<i>Mylossoma</i> <i>duriventre</i>	<i>duriventris</i>		54							Argentina	F-20
<i>Mylossoma</i> <i>duriventre</i>	<i>paraguayensis</i>		54					2.9 FD		Brazil (Miranda R., MG)	C-94
<i>Piaractus</i> <i>brachypomus</i>			54	28M + 26SM	108	108	2		ACN=54	Venezuela	N-25
<i>Piaractus</i> <i>mesopotamicus</i>			54							Argentina	F-20
<i>Piaractus</i> <i>mesopotamicus</i>	<i>Colossoma mitrei</i>	F, M	54	20M + 34SM	108	108			ACN=54	Brazil	A-129
<i>Pristobrycon</i> <i>striolatus</i>			62	46 M/SM + 16 ST/A	108					(S. America)	P-88
<i>Pygocentrus</i> <i>nattereri</i>			60	50 M/SM + 10A	110					(S. America)	P-84
<i>Pygocentrus</i> <i>nattereri</i>	<i>Serrasalmus</i>		60							Argentina	F-20
<i>Pygocentrus</i> <i>piraya</i>			60	48 M/SM + 12A	108	108				(Brazil, São Francisco R.)	P-84
<i>Serrasalmus</i> <i>altispinis</i>			60	24M + 20SM + 6ST + 10A	104	110	9		ACN=60	Brazil (Amazon basin)	N-8
<i>Serrasalmus</i> <i>altispinis</i>		F, M	60	20M + 28SM + 2ST + 10A	108	110	5-12		ACN=60	Brazil (Amazon basin)	N-71
<i>Serrasalmus</i> <i>altuvei</i>			60	46 M/SM + 14 ST/A	106					(Venezuela)	P-88
<i>Serrasalmus</i> <i>brandtii</i>		F, M	60	18M + 24SM + 8ST + 10A	102	110	10	(3.3 FD)	ACN=60	Brazil (MG)	C-87, C-94
<i>Serrasalmus</i> <i>compressus</i>		F, M	60	18M + 30SM + 2ST + 10A	108	110	5-12			Brazil (Amazon basin)	N-71
<i>Serrasalmus</i> <i>eigenmanni</i>	<i>Pristobrycon</i>		60	44 M/SM + 16 ST/A	104					(S. America)	P-88
<i>Serrasalmus</i> <i>elongatus</i>		F, M	60	22M + 22SM + 4ST + 12A	104	108	5-12			Brazil (Amazon basin)	N-71
<i>Serrasalmus</i> <i>gouldingi</i>			60	22M + 22SM + 6ST + 10A	104	110	8		ACN=60	Brazil (Amazon basin)	N-8
<i>Serrasalmus</i> <i>hollandi</i>	<i>Characinaeidae</i>	M	64	30 M/SM + 16ST + 18A	94	110		3.4 FD		(Brazil, Guyana)	M-91

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
<i>Serrasalmus</i> <i>humeralis</i>			60	16M + 26SM + 6ST + 12A	102	108				Brazil (Amazon basin)	N-71	
<i>Serrasalmus</i> <i>manueli</i>		F, M	60	22M + 24SM + 6ST + 8A	106	112	5-12			Brazil (Amazon basin)	N-71	
<i>Serrasalmus</i> <i>marginatus</i>		F, M	60	16M + 26SM + 8ST + 10A	102	110	8		ACN=60	Brazil (Paraguay R.)	C-87	
<i>Serrasalmus</i> <i>marginatus</i>			60	18M + 26SM + 4ST + 12A	104	108				Argentina	F-20	
<i>Serrasalmus</i> <i>rhombeus</i>		F, M	60	30M + 16SM + 4ST + 10A	106	110	8		ACN=60	Venezuela (Bolivar)	N-60	
<i>Serrasalmus</i> <i>rhombeus</i>	cytotype 1	F, M	60	20M + 24SM + 6ST + 10A	104	110	5-12		ACN=60	Brazil (Amazon basin)	N-9	
<i>Serrasalmus</i> <i>rhombeus</i>	cytotype 2		58	22M + 24SM + 2ST + 10A	104	106	5-12		ACN=60	Brazil (Amazon basin)	N-9	
<i>Serrasalmus</i> <i>serrulatus</i>			60	20M + 22SM + 8ST + 10A	102	110	12		ACN=60	Brazil (Amazon basin)	N-8	
<i>Serrasalmus</i> <i>serrulatus</i>	<i>Pristobrycon</i>		60	44 M/SM + 16 ST/A	104		6-10			(S. America)	P-88	
<i>Serrasalmus</i> <i>spilopleura</i>		F, M	60	50 M/SM + 10A	110	110	5-10	(2.9 FD)		Brazil (SP)	G-90, C-93	
<i>Serrasalmus</i> <i>spilopleura</i>	cytotype A	F, M	60	24M + 20SM + 4ST + 12A	104	108	5-12	(3.2 FD)	ACN=60	Brazil (Amazon basin)	C-94, C-103, N-71	
<i>Serrasalmus</i> <i>spilopleura</i>	cytotype C		60	23M + 21SM + 4ST + 12A	104	108			ACN=60	Brazil (Central Amazon)	C-103	
<i>Serrasalmus</i> <i>spilopleura</i>	cytotype D		60	24M + 20SM + 4ST + 12A	104	108			ACN=60	Brazil (Central Amazon)	C-103	
<i>Serrasalmus</i> <i>spilopleura</i>	cytotype a	F, M	60	20M + 26SM + 4ST + 10A	106	110	10		ACN=60	Upper Parana	C-41	
<i>Serrasalmus</i> <i>spilopleura</i>	cytotype b	F, M	60	18M + 26SM + 4ST + 12A	104	108	12		ACN=60	Paraguay	C-41, F-20	
<i>Serrasalmus</i> <i>spilopleura</i>	cytotype c	F, M	60	19M + 26SM + 4ST + 11A	105	109	11		ACN=60	Lower Parana, Argentina	C-41, F-20	
Stethaprioninae												
<i>Brachychalcinus</i> <i>copei</i>			F, M	50	42 M/SM + 8A	92	92	2	3.5 FD	ACN=52	Brazil (Acre)	C-25, C-94
<i>Orthopinusp</i> <i>franciscensis</i>				50	10M + 32SM + 8A	92	92	2		ACN=52	Brazil (MG)	P-25
<i>Orthopinusp</i> <i>franciscensis</i>				50	22M + 20SM + 2ST + 6A	92	94	2		ACN=52	Brazil (Sao Francisco R.)	A-122
<i>Poptella</i> <i>compressa</i>				50*							(Argentina)	F-20, S-30
<i>Poptella</i> <i>paraguayensis</i>		F, M	50	10M + 26SM + 8ST + 6A	86	94	2	3.5 FD	ACN=52	Brazil (MS, MT)	F-39, C-94	
Tetragonopterinae												
<i>Astyanax</i> <i>abramis</i>				50				3.2 FD			Brazil (Miranda R., MG)	C-94
<i>Astyanax</i> <i>altiparanae</i>	cytotype 1		50	10M + 26SM + 4ST + 10A	86	90	1-4		ACN=52	Brazil (PR)	P-1	
<i>Astyanax</i> <i>altiparanae</i>	cytotype 2		50	10M + 24SM + 4ST + 12A	84	88	1-4		ACN=52	Brazil (PR)	P-1	
<i>Astyanax</i> <i>altiparanae</i>	cytotype 3		50	10M + 22SM + 4ST + 14A	82	86	1-4		ACN=52	Brazil (PR)	P-1	
<i>Astyanax</i> <i>altiparanae</i>			50	6M + 28SM + 8ST + 8A	84	92	4		ACN=52	Brazil (Tibagi, PR)	D-29	
<i>Astyanax</i> <i>altiparanae</i>			50	6M + 30SM + 8ST + 6A	86	94	2		ACN=52	Brazil (Iguacu, PR)	D-29	
<i>Astyanax</i> <i>altiparanae</i>			50					1B		Brazil (SP)	C-98	
<i>Astyanax</i> <i>asuncionensis</i>			50				2.4 FD			Brazil (Miranda R., MG)	C-94	
<i>Astyanax</i> <i>bimaculatus</i>		F, M	50	6M + 22SM + 12ST + 10A	78	90		(2.1 FD)	ACN=52	Brazil (SP)	M-86, C-93	
<i>Astyanax</i> <i>bimaculatus</i>		F, M	50	10M + 18SM + 12ST + 10A	78	90	6		ACN=52	Argentina	A-14, F-20	
<i>Astyanax</i> <i>bimaculatus</i>			50	28 M/SM + 22 ST/A	78		2			Brazil (PR)	T-80	

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Astyanax bimaculatus</i>			50	34 M/SM + 16 ST/A	84	2			Brazil (PR)	T-80	
<i>Astyanax bimaculatus</i>			50	40 M/SM + 10 ST/A	90	2			Brazil (PR)	T-80	
<i>Astyanax bimaculatus</i>			50*			(96)			(Brazil)	S-152	
<i>Astyanax bimaculatus lacustris</i>			50				2.9 FD		Brazil (MG)	C-94	
<i>Astyanax bockmanni</i>		F, M	50	10M + 12SM + 12ST + 16A	72	84	1-4		ACN=52	Brazil	K-126
<i>Astyanax eigenmanniorum</i>		F, M	50	6M + 20SM + 8ST + 16A	76	84			ACN=52	Brazil (MG)	F-6
<i>Astyanax eigenmanniorum</i>		F, M	75	9M + 30SM + 12ST + 24A	114	126		3X	Brazil (MG)	F-6	
<i>Astyanax eigenmanniorum</i>		F, M	48	14M + 20SM + 4ST + 10A	82	86	5		0-1 B, ACN=50	Brazil (MG)	T-77, C-98
<i>Astyanax fasciatus</i>		F, M	46	6M + 24SM + 8ST + 8A	76	84		(3.5 FD)	0-1 B	Brazil (MG)	M-85, C-93
<i>Astyanax fasciatus</i>		F, M	48	8M + 22SM + 12ST + 6A	78	90			ACN=52	Brazil (SP)	C-39
<i>Astyanax fasciatus</i>			48	8M + 22SM + 12ST + 6A	78	90	2		ACN=52	Brazil (SP)	P-79
<i>Astyanax fasciatus</i>			46	12M + 20SM + 10ST + 4A	78	88	2, 4		0-1 B, ACN=52	Brazil (SP)	P-79, P-80, C-98
<i>Astyanax fasciatus</i>			45	12M + 20SM + 10ST + 3A	77	87	2		ACN=52	Brazil (SP)	P-79
<i>Astyanax fasciatus</i>			47	12M + 19SM + 10ST + 6A	78	88	2		ACN=52	Brazil (SP)	P-79
<i>Astyanax fasciatus</i>			47	12M + 21SM + 10ST + 4A	80	90	2		ACN=52	Brazil (SP)	P-79
<i>Astyanax fasciatus</i>			47	12M + 20SM + 10ST + 5A	79	89	2		ACN=52	Brazil (SP)	P-79
<i>Astyanax fasciatus</i>		F, M	46	8M + 26SM + 10ST + 2A	80	90				Brazil (SP)	M-86
<i>Astyanax fasciatus</i>		F, M	48	8M + 24SM + 14ST + 2A	80	94				Brazil (Juquia R., SP)	M-86
<i>Astyanax fasciatus</i>		F, M	48	8M + 20SM + 16ST + 4A	76	92	2	(2.8 FD)	ACN=52	Brazil (MG)	P-91, C-94
<i>Astyanax fasciatus</i>		F, M	48	8M + 20SM + 16ST + 4A	76	92	2-5		ACN=52	Brazil (Piumhi R.)	P-91
<i>Astyanax giton</i>		F, M	50	6M + 8SM + 8ST + 28A	64	72	3			Brazil (RJ)	K-19
<i>Astyanax hastatus</i>			50	4M + 8SM + 10ST + 28A	62	72	3		ACN=52	Brazil (RJ)	K-121
<i>Astyanax hastatus</i>			50	8M + 10SM + 14ST + 18A	68	82	3		ACN=52	Brazil (RJ)	K-121
<i>Astyanax hastatus</i>			50	6M + 8SM + 4ST + 32A	64	68	2		ACN=52	Brazil (RJ)	K-121
<i>Astyanax intermedius</i>		F, M	50	6M + 8SM + 4ST + 32A	64	68	6			Brazil (RJ)	K-19
<i>Astyanax janeiroensis</i>		F, M	50	6M + 14SM + 14ST + 16A	70	84	6		ACN=52	Brazil (SP)	C-26, C-94
<i>Astyanax jordani</i>	<i>Anoptichthys</i>	F, M	50	40 M/SM + 10ST	90	100			ACN=52	(Mexico)	K-63
<i>Astyanax jordani</i>	<i>Anoptichthys</i>		50*			(92)				(S. America)	S-152
<i>Astyanax mexicanus</i>		F, M	50	40 M/SM + 10ST	90	100			ACN=52	USA (TX)	K-63
<i>Astyanax aff. mexicanus</i>			50	8M + 18SM + 12ST + 12A	76	88		0-2 B	Mexico	C-98	
<i>Astyanax parahybae</i>		F, M	48	8M + 18SM + 12ST + 10A	74	86	6		ACN=52	Brazil (Paraiba basin)	C-39, K-19
<i>Astyanax scabripinnis</i>		F, M	50	6M + 8SM + 36A	64		4-12		0-4 B	Brazil (ES)	S-106
<i>Astyanax scabripinnis</i>		F	50	8M + 20SM + 6ST + 16A	78	84	3		ACN=52	Brazil (MG)	B-70
<i>Astyanax scabripinnis</i>		F, M	50	6M + 28SM + 6ST + 10A	84	90	3		ACN=52	Brazil (MG)	B-70
<i>Astyanax scabripinnis</i>		F, M	50	6M + 24SM + 8ST + 12A	80	88	5		ACN=52	Brazil (MG)	B-70

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 22SM + 10ST + 12A	78	88		(3.7 FD)	0-2 B	Brazil (SP)	F-6, S-8, M-85, C-93
<i>Astyanax</i> <i>scabripinnis</i>		F	75	9M + 33SM + 15ST + 18A	117	132			0-2 B, 3X	Brazil (SP)	F-6
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 22SM + 10ST + 12A	78	88			0-2 B, ACN=52	Brazil (SP, 1720m alt.)	V-39
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 22SM + 10ST + 12A	78	88			0-2 B	Brazil (SP, 1920m alt.)	N-20
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 22SM + 10ST + 12A	78	88			0-1 B	Brazil (SP, 1800m alt.)	N-20
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 22SM + 10ST + 12A	78	88			0 B	Brazil (SP, 700m alt.)	N-20
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 24SM + 6ST + 14A	80	86	2		0-1 B, ACN=52	Brazil (SP, 1800m alt.)	S-99
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	4M + 10SM + 6ST + 30A	64	70	8		0 B, ACN=52	Brazil (SP, 780m alt.)	S-99
<i>Astyanax</i> <i>scabripinnis</i>	cytotype I	F, M	50	4M + 26SM + 4ST + 16A	80	84	1-6		ACN=52	Brazil (SP)	S-100, S-101, S-174
<i>Astyanax</i> <i>scabripinnis</i>	cytotype II	F, M	48	6M + 22SM + 8ST + 12A	76	84			ACN=52	Brazil (SP)	S-100
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 30SM + 4ST + 10A	86	90	1-3		0-1 B, ACN=52	Brazil (PR, Ivai basin)	M-75, M-76
<i>Astyanax</i> <i>scabripinnis</i>		F, M	50	6M + 28SM + 16A	84	84	1-4		0-2 B, ACN=52	Brazil (PR, Parana basin)	M-75, M-76
<i>Astyanax</i> <i>scabripinnis</i>		F, M	48	10M + 20SM + 8ST + 10A	78	86	3		ACN=50	Brazil (PR)	A-33
<i>Astyanax</i> <i>scabripinnis</i>		F, M	48	10M + 24SM + 6ST + 8A	82	88	7		ACN=50	Brazil (PR)	A-33
<i>Astyanax</i> <i>scabripinnis</i>		F, M	48	8M + 24SM + 4ST + 12A	80	84	8		ACN=50	Brazil (PR, Ivai basin)	F-21
<i>Astyanax</i> <i>scabripinnis</i>		F, M	48	8M + 20SM + 6ST + 14A	76	82	6		ACN=50	Brazil (PR, Ivai basin)	F-21
<i>Astyanax</i> <i>scabripinnis</i>	cytotype I	F, M	50	6M + 22SM + 6ST + 16A	78	84			1B, ACN=52	Brazil (PR, Ivai basin)	F-22
<i>Astyanax</i> <i>scabripinnis</i>	cytotype II	F, M	48	8M + 26SM + 6ST + 8A	82	88			3B, ACN=52	Brazil (PR, Ivai basin)	F-22
<i>Astyanax</i> <i>scabripinnis</i>	cytotype III	F, M	46	8M + 22SM + 6ST + 10A	76	82			2B, ACN=50	Brazil (PR, Ivai basin)	F-22
<i>Astyanax</i> <i>scabripinnis paranae</i>		F, M	50	8M + 20SM + 12ST + 10A	78	90			ACN=52	Brazil (SP)	M-86
<i>Astyanax</i> <i>scabripinnis paranae</i>			50	8M + 22SM + 10ST + 10A	80	90			0-1 B	Brazil (SP)	P-82, C-98
<i>Astyanax</i> <i>scabripinnis paranae</i>		F, M	50	4M + 30SM + 4ST + 12A	84	88	4		0-1 B, ACN=52	Brazil (SP)	M-135
<i>Astyanax</i> <i>aff. scabripinnis</i>		F, M	48	6M + 22SM + 4ST + 16A	76	80			ACN=50	Brazil (PR)	C-79
<i>Astyanax</i> <i>aff. scabripinnis</i>		F	72	9M + 33SM + 6ST + 24A	114	120	4		3X, ACN=75	Brazil (PR)	C-79
<i>Astyanax</i> <i>schubarti</i>		F, M	36	16M + 14SM + 4ST + 2A	66	70			ACN=52	Brazil (SP)	M-86, M-87
<i>Astyanax</i> <i>schubarti</i>			54	24M + 21SM + 6ST + 3A	99	105			3X	Brazil (SP)	M-87
<i>Astyanax</i> <i>schubarti</i>		F, M	36	12M + 14SM + 10ST	62	72			0-1 B, ACN=52	Argentina	M-85
<i>Astyanax</i> <i>schubarti</i>		F	36	14M + 14SM + 6ST + 2A	64	70	2		ACN=52	Argentina (Paraná)	A-14
<i>Astyanax</i> <i>taeniatus</i>			50	12M + 2SM + 24ST + 12A	64	88				Brazil	S-192
<i>Astyanax</i> sp. B		F, M	50	6M + 24SM + 6ST + 14A	80	86			0-2 B, ACN=52	Brazil (PR)	F-7
<i>Astyanax</i> sp. C		F, M	50	4M + 22SM + 8ST + 16A	76	84	2, 4		ACN=52	Brazil (PR)	K-7
<i>Astyanax</i> sp.		F, M	48	6M + 18SM + 14ST + 10A	72	86	2, 4		ACN=50	Brazil (PR, sinkhole)	M-47
<i>Astyanax</i> sp.			50							Argentina	F-20
<i>Bryconamericus</i> <i>aff. exodon</i>	cytotype I	F, M	52	16M + 12SM + 6ST + 18A	80	86			ACN=52	Brazil (PR)	P-2
<i>Bryconamericus</i> <i>aff. exodon</i>	cytotype II	F, M	52	10M + 24SM + 6ST + 12A	86	92			ACN=52	Brazil (PR)	P-2

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Bryconamericus</i>	aff. <i>iheringii</i>	cytotype I	F, M	52	12M + 18SM + 8ST + 14A	82	90	4	ACN=54	Brazil (PR)	C-27, P-65
<i>Bryconamericus</i>	aff. <i>iheringii</i>	cytotype II	F, M	52	8M + 28SM + 6ST + 10A	88	94	4	ACN=54	Brazil (PR)	C-27, P-65
<i>Bryconamericus</i>	aff. <i>iheringii</i>	cytotype III	F, M	52	8M + 20SM + 8ST + 16A	80	88	2	ACN=54	Brazil (Ivai R. basin)	C-27
<i>Bryconamericus</i>	aff. <i>iheringii</i>		F, M	52	8M + 28SM + 6ST + 10A	88	94		ACN=54	Brazil (PR)	P-65
<i>Bryconamericus</i>	aff. <i>iheringii</i>		F, M	52	8M + 22SM + 10ST + 12A	82	92	2	ACN=54	Brazil (PR)	P-90
<i>Bryconamericus</i>	<i>stramineus</i>		F	52	26 M/SM + 26 ST/A	78		3.3 FD	ACN=52	Brazil (SP)	P-38, C-93
<i>Bryconamericus</i>	sp. A		F	52	6M + 30SM + 6ST + 10A	88	94	2-3	ACN=54	Brazil (SP)	W-17, W-18
<i>Bryconamericus</i>	sp. B		F, M	52	6M + 10SM + 20ST + 16A	68	88	3	ACN=54	Brazil (SP)	W-17, W-18
<i>Bryconamericus</i>	sp. C		F, M	52	6M + 18SM + 14ST + 14A	76	90	4	ACN=54	Brazil (PR)	W-17, W-18
<i>Bryconamericus</i>	sp. D		F	52	8M + 14SM + 16ST + 14A	74	90	4	ACN=54	Brazil (MG)	W-17, W-18
<i>Bryconamericus</i>	sp. E		F, M	54	10M + 16SM + 22ST + 6A	80	102		ACN=54	Brazil (MG)	W-17
<i>Bryconella</i>	<i>pallidifrons</i>	<i>palifrons</i>		50*						(Brazil, Peru)	S-30
<i>Bryconops</i>	<i>humeralis</i>	<i>Cynopotamus</i>		50						Brazil	O-50
<i>Ctenobrycon</i>	<i>hauxwellianus</i>		F, M	50	10M + 6SM + 34ST	66	100	2	ACN=52	Brazil (Acre)	C-26
<i>Deuterodon</i>	<i>pedri</i>		F, M	50	14 M/SM + 36 ST/A	64			ACN=52	Brazil (SP)	P-38
<i>Gymnocorymbus</i>	<i>ternetzi</i>		F, M	50	14M + 12SM + 6ST + 18A	76	82	3.7 FCM, 4.2 BFA	ACN=52	Argentina	A-14, V-86, H-13
<i>Gymnocorymbus</i>	<i>ternetzi</i>			50			(60)		ACN=52	(S. America)	S-152
<i>Hasemania</i>	<i>nana</i>	<i>marginata</i>	F, M	50	12M + 18SM + 10ST + 10A	80	90		ACN=52	(Brazil, Sao Francisco R.)	A-93
<i>Hasemania</i>	<i>nana</i>	<i>marginata</i>		50*			(100)		ACN=52	(Brazil, Sao Francisco R.)	S-152
<i>Hasemania</i>	<i>nana</i>			50	8M + 42SM	100	100	2	ACN=52	Brazil, Sao Francisco R.	A-122
<i>Hemigrammus</i>	<i>analis</i>			54*			(82)			(S. America)	S-152
<i>Hemigrammus</i>	<i>bellottii</i>	<i>Hyphessobrycon</i>		48*						(S. America)	S-30
<i>Hemigrammus</i>	<i>erythrozonus</i>		F	48	2SM + 46 ST/A	50		(4.0* FCM)		(Guyana)	L-75, O-48
<i>Hemigrammus</i>	<i>erythrozonus</i>			52*			(56)		ACN=52	(Guyana)	S-152
<i>Hemigrammus</i>	<i>hyanuary</i>		F, M	52	22 M/SM + 30 ST/A	74				(Brazil, Peru)	A-93
<i>Hemigrammus</i>	<i>hyanuary</i>			54*			(70)			(Brazil, Peru)	S-152
<i>Hemigrammus</i>	<i>marginatus</i>		F, M	50	10M + 34SM + 6A	94	94	2	ACN=52	Brazil (PR)	P-39
<i>Hemigrammus</i>	<i>marginatus</i>			50*			(100)		ACN=52	(S. America)	S-152
<i>Hemigrammus</i>	<i>mateei</i>	<i>mattei</i>		36			(70)			(Argentina)	S-152
<i>Hemigrammus</i>	<i>micropterus</i>			52*						(Venezuela)	S-30
<i>Hemigrammus</i>	<i>ocellifer</i>			38*			3.0 FCM, 3.4 BFA			(Amazon R.)	S-152, V-86, H-13
<i>Hemigrammus</i>	<i>pulcher</i>			50*						(Peru)	S-30
<i>Hemigrammus</i>	<i>rhodostomus</i>			50*			(98)		ACN=52	(Lower Amazon R.)	S-152
<i>Hemigrammus</i>	<i>rodwayi</i>	<i>Hyphessobrycon</i>		50*					ACN=50	(S. America)	S-29
<i>Hemigrammus</i>	aff. <i>schmardae</i>			52			(88)		ACN=52	(Amazon R.)	S-152

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Hemigrammus</i> <i>stictus</i>	<i>Hypessobrycon</i>		50		(100)				ACN=52	(Amazon R., Orinoco R.)	S-152
<i>Hemigrammus</i> <i>aff. ulreyi</i>			52*		(76)				ACN=52	(Argentina, Brazil)	S-152
<i>Hemigrammus</i> <i>unilineatus</i>			52*							(northern S. America)	S-30
<i>Hemigrammus</i> <i>vorderwinkleri</i>			48*							(Brazil, Negro R.)	S-30
<i>Hollandichthys</i> <i>multifasciatus</i>		F, M	50	10M + 12SM + 28ST	72	100	2		ACN=52	Brazil (SP)	C-26
<i>Hypessobrycon</i> <i>aff. agulha</i>			50*							(Brazil)	S-30
<i>Hypessobrycon</i> <i>anisitsi</i>		F, M	50	6M + 16SM + 12ST + 16A	72	84	0-4		ACN=52	Brazil (SP)	C-40
<i>Hypessobrycon</i> <i>anisitsi</i>	<i>Hemigrammus caudovittatus</i>		50	2M + 32SM + 16 ST/A	84			(3.8 FCM)	ACN=52	(S. America)	F-30, V-86
<i>Hypessobrycon</i> <i>anisitsi</i>	<i>Hemigrammus caudovittatus</i>		50*			(98)		(3.4 BFA)	ACN=52	(S. America)	S-152, H-13
<i>Hypessobrycon</i> <i>bentosi</i>			52*			(66)			ACN=52	(Amazon R.)	S-152
<i>Hypessobrycon</i> <i>bentosi</i>	<i>robertsi</i>		52*			(52)			ACN=52	(Amazon R.)	S-152
<i>Hypessobrycon</i> <i>bifasciatus</i>			50*			(98)			ACN=52	(Argentina, Brazil)	S-152
<i>Hypessobrycon</i> <i>copelandi</i>			52*			(100)			ACN=52	(Brazil)	S-152
<i>Hypessobrycon</i> <i>aff. eos</i>			48*							(S. America)	S-30
<i>Hypessobrycon</i> <i>eques</i>	<i>callistus</i>		52*			(90)		3.3 FCM	ACN=52	(S. America)	S-152, V-86
<i>Hypessobrycon</i> <i>eques</i>	<i>serpae</i>		52*			(82)			ACN=52	(S. America)	S-152
<i>Hypessobrycon</i> <i>erythrostigma</i>	<i>rubrostigma</i>		52*			(76)				(S. America)	S-152
<i>Hypessobrycon</i> <i>flammeus</i>		F, M	52	18 M/SM + 32ST + 2A	70	102		(2.5 FCM)		(Brazil)	A-93, V-86
<i>Hypessobrycon</i> <i>flammeus</i>			50*			(100)			ACN=52	(Brazil)	S-152
<i>Hypessobrycon</i> <i>griemi</i>			50*			(100)			ACN=52	(Brazil)	S-152
<i>Hypessobrycon</i> <i>griemi</i>			48					2.6 FD		Brazil (SP)	C-94
<i>Hypessobrycon</i> <i>herbertaxelrodi</i>			52	10 M/SM + 42 ST/A	62					(Brazil)	A-93
<i>Hypessobrycon</i> <i>herbertaxelrodi</i>			52*			(76)			ACN=52	(Brazil)	S-152
<i>Hypessobrycon</i> <i>heterorhabdus</i>			48*							(Brazil)	S-30
<i>Hypessobrycon</i> <i>megalopterus</i>	<i>Megalampodus melanopterus</i>		52*			(94)			ACN=52	(Brazil, Bolivia)	S-152
<i>Hypessobrycon</i> <i>minimus</i>			52*							(Guyana)	S-30
<i>Hypessobrycon</i> <i>minor</i>	<i>'minor'</i>		52	14M + 12SM + 26 ST/A	78					(Guyana)	A-91
<i>Hypessobrycon</i> <i>peruvianus</i>			50*						ACN=50	(Amazon R., Peru)	S-29
<i>Hypessobrycon</i> <i>pulchripinnis</i>			50*			(82)		3.7 FCM	ACN=52	(Brazil)	S-152, V-86
<i>Hypessobrycon</i> <i>reticulatus</i>		F, M	50	14M + 20SM + 16ST	84	100		2.3 FD		Brazil (SP)	C-26, C-94
<i>Hypessobrycon</i> <i>rosaceus</i>	<i>ornatus</i>		52*							(Guyana, Suriname)	S-152
<i>Hypessobrycon</i> <i>rosaceus</i>	<i>Cheirodon troemneri</i>		50*						ACN=50	(Guyana, Suriname)	S-29, S-152, S-153
<i>Hypessobrycon</i> <i>santae</i>			50*			(90)			ACN=52	(Brazil, Sao Francisco R.)	S-152
<i>Hypessobrycon</i> <i>scholzei</i>		F, M	50	8M + 20SM + 8ST + 14A	78	86				(Lower Amazon R.)	A-93
<i>Hypessobrycon</i> <i>scholzei</i>			50*			(86)			ACN=52	(S. America)	S-152

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-	Genome size NORs (pg/cell)	Comments	Locality	Reference
<i>Hyphessobrycon</i> <i>simulatus</i>	<i>Pseudopristella simulata</i>		52*		(74)				ACN=52	(French Guiana)	S-152
<i>Hyphessobrycon</i> <i>sweglesi</i>	<i>Megalamphodus</i>		52*		(98)				ACN=52	(Colombia)	S-152
<i>Hyphessobrycon</i> <i>tropis</i>			46*							(Rio Negro)	S-30
<i>Knodus</i> <i>aff. beta</i>			52*		(102)					(Colombia)	S-152
<i>Markiana</i> <i>nigripinnis</i>		M	52					2.2 FD		Brazil (Miranda R.)	C-94
<i>Moenkhausia</i> <i>colletti</i>			50*		(94)				ACN=52	(S. America)	S-152
<i>Moenkhausia</i> <i>costae</i>		F	50	50 M/SM	100	100	1-2		ACN=52	Brazil (MG)	P-38
<i>Moenkhausia</i> <i>dichroura</i>			50	32M + 14SM + 4ST	96	100		2.0 FD		Brazil (MT)	P-39, C-94
<i>Moenkhausia</i> <i>gracilima</i>	cytotype A		50	14M + 26SM + 6ST + 4A	90	96				Brazil (AM)	P-39
<i>Moenkhausia</i> <i>gracilima</i>	cytotype B		48	4M + 24SM + 12ST + 8A	76	88				Brazil (AM)	P-39
<i>Moenkhausia</i> <i>intermedia</i>		F, M	50	50 M/SM	100	100	1-2		0-1 B, ACN=52	Brazil (SP)	P-38
<i>Moenkhausia</i> <i>intermedia</i>		F, M	50	16M + 34SM	100	100	2		ACN=52	Brazil (PR)	P-39
<i>Moenkhausia</i> <i>intermedia</i>		F, M	50	16M + 34SM	100	100	2		0 B, ACN=52	Brazil (SP)	D-31
<i>Moenkhausia</i> <i>oligolepis</i>			50*		(100)			3.2 BFA	ACN=52	(Brazil, Venezuela)	S-152, H-13
<i>Moenkhausia</i> <i>pittieri</i>			50*		(92)				ACN=52	(Venezuela)	S-152
<i>Moenkhausia</i> <i>pittieri</i>			50	4M + 40 SM/ST + 6A	94					(Venezuela)	A-91
<i>Moenkhausia</i> <i>pittieri</i>			49	4M + 39 SM/ST + 6A	92					(Venezuela)	A-91
<i>Moenkhausia</i> <i>sanctaefilomenae</i>		F, M	50	48 M/SM + 2 ST/A	98				0-3 B, ACN=52	Argentina	A-14
<i>Moenkhausia</i> <i>sanctaefilomenae</i>		F, M	50	48 M/SM + 2A	98	98		(2.4 FD)	1-8 B, ACN=52	Brazil (SP)	F-35, C-94
<i>Moenkhausia</i> <i>sanctaefilomenae</i>		F, M	50	12M + 36SM + 2ST	98	100	3	(2.8 FD)	0-6 B, ACN=52	Brazil (SP)	D-31, C-93
<i>Moenkhausia</i> <i>sanctaefilomenae</i>		F, M	50	12M + 36SM + 2ST	98	100	2		0-2 B, ACN=52	Brazil (PR)	P-39, P-73
<i>Moenkhausia</i> sp.		F, M	50	16M + 34SM	100	100	2		0 B, ACN=52	Brazil (MT)	D-31
<i>Oligosarcus</i> <i>hepsetus</i>			50	2M + 16SM + 16ST + 16A	68	84	3	3.3 FD	ACN=52	Brazil	H-38, C-94
<i>Oligosarcus</i> <i>hepsetus</i>		F, M	50	6M + 10SM + 16ST + 18A	66	82	2		ACN=52	Brazil (Paraiba do Sul R.)	K-21
<i>Oligosarcus</i> <i>jenynsii</i>			50	2M + 24SM + 10ST + 14A	76	86	2		ACN=52	Brazil	H-38
<i>Oligosarcus</i> <i>macrolepis</i>		F, M	50	8M + 20SM + 6ST + 16A	78	84			ACN=52	Brazil (MG)	F-2
<i>Oligosarcus</i> <i>paranensis</i>		F, M	50					3.3 FD		Brazil (SP)	C-93
<i>Oligosarcus</i> <i>pintoi</i>			50	2M + 20SM + 12ST + 16A	72	84	2		ACN=52	Brazil (SP)	H-38
<i>Oligosarcus</i> <i>pintoi</i>	<i>Paroligosarcus</i>	F, M	50	24 M/SM + 26 ST/A	74				0-1 B, ACN=52	Brazil (SP)	F-56
<i>Piabina</i> <i>argentea</i>		F, M	52	26 M/SM + 26 ST/A	78		1-4		ACN=52	Brazil (SP)	P-38
<i>Piabina</i> <i>argentea</i>			52	8M + 14SM + 16ST + 14A	74	90	2		ACN=52	Brazil (MG)	A-122
<i>Piabina</i> <i>argentea</i>			52	18 M/SM + 12ST + 22A	70	82		2.4 FD	0-1 B	Brazil (SP)	C-98, C-93
<i>Schultzites</i> <i>axerlodi</i>			52*							(Colombia)	S-30
<i>Tetragonopterus</i> <i>argenteus</i>		F	52	16 M/SM + 2ST + 34A	68	70	2	3.0 FD	ACN=52	Argentina (Parana R.)	A-14, C-94
<i>Tetragonopterus</i> <i>chalceus</i>		F, M	52	26 M/SM + 26 ST/A	78		1-2	3.9 FD	ACN=52	Brazil (MG)	P-38, C-94

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Thayeria boehlkei</i>			50*		(100)				ACN=52	(Peru, Brazil)	S-152
Triporthinae											
<i>Triportheus albus</i>		F, M	52	14M + 20SM + 14ST + 4A	86	100	1-4		ZW/ZZ	Amazon basin	S-12
<i>Triportheus culter</i>			52	14M + 16SM + 16ST + 6A	82	98				Amazon basin	S-12
<i>Triportheus auritus</i>	<i>elongatus</i>	F, M	52	22M + 12SM + 16ST + 2A	86	102	1-4		ZW/ZZ	Amazon basin	S-12
<i>Triportheus cf. auritus</i>	<i>cf. elongatus</i>	F, M	52						ZW/ZZ	Brazil (MT)	A-117
<i>Triportheus angulatus</i>	<i>flavus</i>	F, M	52	22M + 14SM + 12ST + 4A	88	100	1-4		ZW/ZZ	Amazon basin	S-12
<i>Triportheus guentheri</i>		F	52	20 M/SM + 12 ST/A	72		1-4		ZW, ACN=53	Brazil (MG)	A-117, S-12
<i>Triportheus guentheri</i>		M	52	20 M/SM + 12 ST/A	72		1-4		ZZ, ACN=54	Brazil (MG)	A-117, S-12
<i>Triportheus nematurus</i>		F	52	13M + 23SM + 16ST	88	104	3		ZW, ACN=53	Brazil (SP)	D-30
<i>Triportheus nematurus</i>		M	52	14M + 22SM + 16ST	88	104	2		ZZ, ACN=54	Brazil (SP)	D-30
<i>Triportheus nematurus</i>	<i>paranensis</i>	F	52	25M + 23SM + 4ST	100	104	1-4		ZW, ACN=53	Argentina	S-12
<i>Triportheus nematurus</i>	<i>paranensis</i>	M	52	26M + 22SM + 4ST	100	104	1-4	2.7 FD	ZZ, ACN=54	Argentina	S-12, C-94
<i>Triportheus pictus</i>			52					3.5 FD		(Brazil, Peru)	P-88, C-94
<i>Triportheus pictus</i>			50*		(100)				ACN=52	(S. America)	S-152
<i>Triportheus pictus</i>			52*							(Brazil)	S-30
<i>Triportheus rotundatus</i>			52*							(Brazil)	S-30
<i>Triportheus rotundatus</i>			50*		(100)				ACN=52	(S. America)	S-152
<i>Triportheus signatus</i>			52						ZW/ZZ	(Parana-Paraguay basin)	A-117
<i>Triportheus venezuelensis</i>		F	52	20M + 16SM + 16ST	88	104	2-4		ZW, ACN=55	Venezuela (Bolivar)	N-69
<i>Triportheus venezuelensis</i>		M	52	20M + 16SM + 16ST	88	104	2-4		ZZ, ACN=56	Venezuela (Bolivar)	N-69
Chilodontidae											
<i>Caenotropus labyrinthicus</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (MT)	M-44
<i>Chilodus punctatus</i>		F, M	54	54 M/SM	108	108	2	3.2 BFA		Brazil (AM)	M-44, H-13
Crenuchidae											
<i>Characidium cf. alipioi</i>		F, M	50	30M + 20SM	100	100	2		ZW/ZZ	Brazil (SP)	C-91
<i>Characidium cf. fasciatum</i>			50	32M + 18SM	100	100		2.4 FD	0-4 B, ZW/ZZ	Brazil (SP)	C-93, C-98
<i>Characidium gomesi</i>		F, M	50	32M + 18SM	100	100	2		1-2 B, ZW/ZZ	Brazil (SP)	M-113
<i>Characidium cf. gomesi</i>		F	50	31M + 18SM + 1ST	99	100	2-7		ZW, ACN=52	Brazil (PR)	V-91
<i>Characidium cf. gomesi</i>		M	50	32M + 18SM	100	100	2-7		ZZ, ACN=52	Brazil (PR)	V-91
<i>Characidium cf. lagosantense</i>		F, M	50	32M + 18SM	100	100			ACN=52	Brazil (SP)	M-74
<i>Characidium lauroi</i>		F, M	50	24M + 24SM + 2ST	98	100	2-3			Brazil (SP)	C-91
<i>Characidium oiticicai</i>		F	50	30M + 18SM + ZW					0-3 B, ZW	Brazil (SP)	C-98

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Characidium</i> <i>pterostictum</i>		F, M	50	32M + 16SM + 2ST	98	100			ACN=52	Brazil (SP)	M-74
<i>Characidium</i> <i>cf. zebra</i>		F, M	50	32M + 18SM	100	100	6		0-1 B, ACN=52	Brazil (SP)	M-74, V-94
<i>Characidium</i> sp.		F	50	32M + 18SM	100	100			ACN=52	Brazil (SP)	M-74
<i>Characidium</i> sp.			50	32M + 16SM + 2A	98	98			0-2 B	Brazil (SP)	C-98
Ctenoluciidae											
<i>Boulengerella</i> sp.			36							(S. America)	P-88
<i>Ctenolucius</i> <i>hujeta</i>	<i>hujeti</i>		36	26 M/SM + 10 ST/A	62					(S. America)	A-92
Curimatidae											
<i>Curimata</i> <i>cyprinoides</i>		F, M	54	44M + 10SM	108	108	2		ACN=56	Brazil (AM)	F-12, V-92
<i>Curimata</i> <i>inornata</i>		F, M	54	40M + 14SM	108	108	2		ACN=56	Brazil (AM)	F-12, V-92
<i>Curimata</i> <i>knerii</i>		F, M	54	40M + 12SM + 2ST	106	108	2		ACN=56	Brazil (AM)	F-12
<i>Curimata</i> <i>ocellata</i>		F	56	40M + 16SM	112	112	2		ACN=56	Brazil (AM)	F-12
<i>Curimata</i> <i>vittata</i>		F, M	54	42M + 12SM	108	108	2	3.0 FD	ACN=56	Brazil (AM)	F-12, V-92, C-94
<i>Curimatella</i> <i>alburna</i>		M	54	46M + 8SM	108	108	2		ACN=56	Brazil (AM)	F-12
<i>Curimatella</i> <i>dorsalis</i>		F, M	54	46M + 8SM	108	108	2	2.8 FD	ACN=56	Brazil (MS)	N-14, C-94
<i>Curimatella</i> <i>dorsalis</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B-74
<i>Curimatella</i> <i>immaculata</i>		F, M	54	46M + 8SM	108	108	2			Brazil (GO)	V-92
<i>Curimatella</i> <i>lepidura</i>		F, M	54	54 M/SM	108	108	2			Brazil (MG)	V-93
<i>Curimatella</i> <i>meyeri</i>		F, M	54	46M + 8SM	108	108	2		ACN=56	Brazil (AM)	F-12
<i>Curimatopsis</i> <i>aff. macrolepis</i>	cytotype A		52*							(S. America)	S-30
<i>Curimatopsis</i> <i>aff. macrolepis</i>	cytotype B		46*							(S. America)	S-30
<i>Cyphocharax</i> <i>myersi</i>		F	46	42M + 4SM	92	92	2			Brazil (MS)	N-14
<i>Cyphocharax</i> <i>gilberti</i>		F, M	54	44M + 10SM	108	108	2			Brazil (SP)	V-92
<i>Cyphocharax</i> <i>cf. gillii</i>		F	54	54 M/SM	108	108	2			Brazil (MT)	V-93
<i>Cyphocharax</i> <i>gouldingi</i>		F, M	54	54M	108	108	2		1 B	Brazil (GO)	V-92
<i>Cyphocharax</i> <i>modestus</i>	<i>Curimata modesta</i>	F, M	54	54 M/SM	108	108	2	(3.2 FD)	0-1 B	Brazil (SP)	V-30, C-93
<i>Cyphocharax</i> <i>modestus</i>	<i>Curimata modesta</i>		82	82 M/SM	164	164	3		0-1 B, 3X	Brazil (SP)	V-30
<i>Cyphocharax</i> <i>modestus</i>	<i>modesta</i>	F, M	54	54 M/SM	108	108	2		0-1 B, ACN=56	Brazil (PR)	M-42
<i>Cyphocharax</i> <i>modestus</i>		F, M	54	54 M/SM	108	108	2		0-2 B, ACN=56	Brazil (PR)	G-95, T-82
<i>Cyphocharax</i> <i>modestus</i>	<i>modesta</i>	F, M	54	54 M/SM	108	108	2			Brazil (Upper Parana)	V-93
<i>Cyphocharax</i> <i>modestus</i>	<i>modesta</i>		54	54 M/SM					0-1 B	Brazil (SP)	V-94
<i>Cyphocharax</i> <i>modestus</i>		F, M	54	50M + 4SM	108	108	2		1 B	Brazil (SP)	V-92
<i>Cyphocharax</i> <i>nagelii</i>		F, M	54	54 M/SM	108	108	2		1 B	Brazil (Upper Parana)	V-93, C-98

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-	I Genome size NORs (pg/cell)	J Comments	K Locality	L Reference
<i>Cyphocharax nagelii</i>		F, M	54	46M + 8SM	108	108	2-9			Brazil (SP)	V-92
<i>Cyphocharax platanus</i>		F, M	58	52 M/SM + 6ST	110	116	2			Argentina	B-74
<i>Cyphocharax platanus</i>		F, M	58	48M + 4SM + 6ST	110	116	2			Argentina	V-92
<i>Cyphocharax spilotus</i>		F, M	54	54 M/SM	108	108	2		0-1 B, ACN=56	Argentina	B-74, C-98
<i>Cyphocharax cf. spilurus</i>	<i>spilura</i>	F, M	54	54 M/SM	108	108	2			Brazil (RO)	V-93
<i>Cyphocharax vanderi</i>		F, M	54	54 M/SM	108	108	2			Brazil (SP)	V-93
<i>Cyphocharax vogia</i>		F, M	54	54 M/SM	108	108	2			Brazil (RS)	V-93
<i>Cyphocharax vogia</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B-74
<i>Potamorhina altamazonica</i>		F, M	102	2M + 2SM + 98A	106	106	2			Brazil (AM)	F-13
<i>Potamorhina latior</i>		F, M	56	52M + 2SM + 2ST	110	112	2		ACN=56	Brazil (AM)	F-13
<i>Potamorhina pristigaster</i>		F, M	54	44M + 10SM	108	108	2		ACN=56	Brazil (AM)	F-13
<i>Potamorhina squamoralevis</i>		F, M	102	14 M/SM + 88A	116	116	2	3.8 FD		Argentina	B-74, C-94
<i>Psectrogaster amazonica</i>		F, M	54	44M + 10SM	108	108	2			Brazil (MT)	V-92
<i>Psectrogaster curviventris</i>		F, M	54	42M + 12SM	108	108	2		ACN=56	Brazil (MS)	N-14
<i>Psectrogaster curviventris</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B-74
<i>Psectrogaster rutiloides</i>		F, M	54	42M + 12SM	108	108	2			Brazil (AM)	F-12
<i>Steindachnerina amazonica</i>		F, M	54	42M + 12SM	108	108	3			Brazil (GO)	V-92
<i>Steindachnerina brevipinna</i>		F, M	54	48M + 6SM	108	108	2		ACN=56	Brazil (MS)	N-14
<i>Steindachnerina brevipinna</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Argentina	B-74
<i>Steindachnerina conspersa</i>		F, M	54	46M + 8SM	108	108	2		ACN=56	Argentina	B-74
<i>Steindachnerina conspersa</i>		F, M	54	54 M/SM	108	108	2			Brazil (MS)	V-93
<i>Steindachnerina elegans</i>		F, M	54	54 M/SM	108	108	2	3.5 FD		Brazil (MG)	V-93, C-94
<i>Steindachnerina gracilis</i>		F, M	54	38M + 16SM	108	108	2-6			Brazil (MT)	V-92
<i>Steindachnerina cf. guentheri</i>		F, M	54	54 M/SM	108	108	2	3.2 FD		Brazil (Acre)	C-25, C-94
<i>Steindachnerina insculpta</i>		F, M	54	54 M/SM	108	108	2	(2.9 FD)	0-2 B, ACN=56	Brazil (PR)	V-93, C-93, G-95
<i>Steindachnerina insculpta</i>		F, M	54	50M + 4SM	108	108	2			Brazil (SP)	V-92
<i>Steindachnerina leucisca</i>	<i>leuciscus</i>	F	54	48M + 6SM	108	108	2		ACN=56	Brazil (AM)	F-12
Erythrinidae											
<i>Erythrinus erythrinus</i>		F, M	54	6M + 2ST + 46A	60	62			4B, no sex chrom.	Brazil (Birigui)	B-35
<i>Erythrinus erythrinus</i>		F, M	54	6M + 2ST + 46A	60	62			No sex chrom.	Brazil (Penapolis)	B-35
<i>Erythrinus erythrinus</i>		F	54	6M + 2ST + 46A	60	62			2B, X ₁ X ₁ X ₂ X ₂	Brazil (Guaira, PR)	B-35, C-110
<i>Erythrinus erythrinus</i>		M	53	7M + 2ST + 44A	60	62			X ₁ X ₂ Y, ACN=54	Brazil (Guaira, PR)	B-35, C-110
<i>Erythrinus erythrinus</i>		F	52	6M + 2SM + 6ST + 38A	60	66	3-8		X ₁ X ₂ X ₂ , ACN=54	Brazil (Manaus, AM)	B-33, B-35, C-110
<i>Erythrinus erythrinus</i>		M	51	7M + 2SM + 6ST + 36A	60	66			X ₁ X ₂ Y, ACN=54	Brazil (Manaus, AM)	B-35, C-110

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Erythrinus</i>	<i>erythrinus</i>		F	52 4M + 2SM + 2ST + 44A	58	60		X ₁ X ₁ X ₂ X ₂ , ACN=54	Brazil (Natal)	B-35, C-110	
<i>Erythrinus</i>	<i>erythrinus</i>		M	51 5M + 2SM + 2ST + 42A	58	60		X ₁ X ₂ Y, ACN=54	Brazil (Natal)	B-35, C-110	
<i>Erythrinus</i>	<i>erythrinus</i>			54					Argentina	F-20	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F, M	48 48 M/SM	96	96		ACN=50	Brazil (AM)	G-96	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F, M	48 47 M/SM + 1 ST/A	95			ACN=48	Brazil (AM)	G-96	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F, M	48 46 M/SM + 2 ST/A	94				Brazil (AM)	G-96	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>	cytotype A	F, M	48 48 M/SM	96	96		ACN=50	Brazil (RO, MS, Argentina)	G-21	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>	cytotype B	F, M	48 46 M/SM + 2A	94	94		ACN=48	Brazil (Su)	G-21	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F, M	52 46 M/SM + 6A	98	98		ACN=52	Brazil (MG)	G-21	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F, M	48 44 M/SM + 4ST	92	96	2-4	No sex chrom.	Brazil (SP, MS)	D-16	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F, M	52 44 M/SM + 4ST + 4A	96	100	4-6	No sex chrom.	Brazil (MG)	D-16	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>		F	72 69 M/SM + 3 ST/A	141		3	3X	Brazil (AM)	G-20	
<i>Hoplerythrinus</i>	<i>unitaeniatus</i>			48					Argentina	F-20	
<i>Hoplias</i>	<i>lacerdae</i>		F, M	50 50 M/SM	100	100	2	No sex chrom.	Brazil	B-78	
<i>Hoplias</i>	<i>lacerdae</i>		F, M	50 36M + 14SM	100	100		XX/XY, ACN=50	Brazil (SP)	B-29	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype A	F, M	42 22M + 20SM	84	84	2-6	No sex chrom.	Brazil (RS, MG)	B-61, B- 77	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype A	F, M	42 24M + 18SM	84	84	3-8	(2.3 FD)	No sex chrom.	Brazil (SP, AM, PR)	B-61, B-77, P-21, C-93
<i>Hoplias</i>	<i>malabaricus</i>	cytotype A	F, M	42 20M + 22SM	84	84	3-7		No sex chrom.	Brazil (SP, MT)	B-61, B- 77
<i>Hoplias</i>	<i>malabaricus</i>	cytotype A	F, M	42 42 M/SM	84	84			No sex chrom.	Argentina	L-90
<i>Hoplias</i>	<i>malabaricus</i>	cytotype B	F	42 24M + 16SM + 2ST	82	84	4-7	XX, ACN=50	Brazil (MG)	B-61, B-76	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype B	M	42 24M + 17SM + 1ST	83	84	4-7	XY, ACN=50	Brazil (MG)	B-76	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype C	F, M	40 40 M/SM	80	80		No sex chrom.	Brazil (AM, PA, RO, MT, PR)	B-61, P-21	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype C	F, M	40 40 M/SM	80	80		No sex chrom.	Argentina	L-90	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype D	F	40 40 M/SM	80	80	(2.8 BFA)	X ₁ X ₁ X ₂ X ₂	Brazil (SP, MG, PR)	B-31, B-34, B- 61, H-13	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype D	M	39 39 M/SM	78	78		X ₁ X ₂ Y, ACN=48	Brazil (SP, PR)	B-31, B-34, B- 61, P-21	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype E	M	42 40 M/SM + 2A	82	82		ACN=50	Brazil (PA)	B-61	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype F	F, M	40 40 M/SM	80	80		No sex chrom.	Brazil (PA, MA, RN, MG)	B-61	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype G	F	40 40 M/SM	80	80		XX, ACN=48	Brazil (PA, RO, MT)	B-61	
<i>Hoplias</i>	<i>malabaricus</i>	cytotype G	M	41 40 M/SM + 1A	81	81		XY ₁ Y ₂ , ACN=48	Brazil (PA, RO, MT)	B-61	
Gasteropelecidae											
<i>Carnegiella</i>	<i>marthae</i>		F	50 20M + 12SM + 4ST + 14A	82	86	1-3	ZW, ACN=55	Brazil (AM)	T-76	
<i>Carnegiella</i>	<i>marthae</i>		M	50 20M + 12SM + 4ST + 14A	82	86	1-3	ZZ, ACN=56	Brazil (AM)	T-76	
<i>Carnegiella</i>	<i>strigata</i>		F	50 4M + 4SM + 2ST + 40A	58	60	1-3	ZW, ACN=56	Brazil (AM)	T-76	
<i>Carnegiella</i>	<i>strigata</i>		M	50 4M + 4SM + 2ST + 40A	58	60	1-3	ZZ, ACN=56	Brazil (AM)	T-76	

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Carnegiella strigata</i>			50-52					2.8 BFA		(S. America)	H-13
<i>Carnegiella strigata</i>			48*								S-30
<i>Gasteropelecus sternicla</i>			54*							(S. America)	S-30
<i>Thoracocharax stellatus</i>			54							Paraguay R.	C-101
<i>Thoracocharax stellatus</i>		F, M	54	6M + 6SM + 6ST + 36A	66	72	4		ZW/ZZ	Brazil (MT)	V-90
<i>Thoracocharax cf. stellatus</i>		F	52	8M + 16SM + 4ST + 24A	76	80	2	2.2 FD	ZW, ACN=54	Brazil (Rio Branco, Acre)	C-94, C-101
<i>Thoracocharax cf. stellatus</i>		M	52	8M + 16SM + 4ST + 24A	76	80	2	2.2 FD	ZZ, ACN=54	Brazil (Rio Branco, Acre)	C-94, C-101
Hemiodontidae											
<i>Anodus elongatus</i>		M	54	24M + 26SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
<i>Anodus elongatus</i>	<i>steatops</i>		54	52 M/SM + 2A	106	106				(Brazil)	A-92
<i>Anodus elongatus</i>	<i>melanopogon</i>	F, M	54	20M + 28SM + 6ST	102	108	2		ACN=56	Brazil (AM)	P-40
<i>Anodus</i> sp.		F, M	54	24M + 24SM + 6ST	102	108	2		ACN=56	Brazil (AM)	P-40
<i>Argoneutes longiceps</i>	<i>scapularis</i>		54	50 M/SM + 4ST	104	108	2			(S. America)	P-88
<i>Hemiodus argenteus</i>	<i>ocellatus</i>	F, M	54	26M + 24SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
<i>Hemiodus immaculatus</i>		F, M	54	22M + 26SM + 6ST	102	108	2		ACN=56	Brazil (AM)	P-40
<i>Hemiodus microlepis</i>			54	52 M/SM + 2A	106	106				(Brazil, Venezuela)	A-92
<i>Hemiodus cf. microlepis</i>		F, M	54	20M + 30SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
<i>Hemiodus unimaculatus</i>		F, M	54	26M + 24SM + 4ST	104	108	2		ACN=56	Brazil (AM)	P-40
Lebiasinidae											
<i>Copeina guttata</i>			42*							(S. America)	S-30
<i>Copella arnoldi</i>			44*							(S. America)	S-30
<i>Copella nattereri</i>			36*							(S. America)	S-30
<i>Nannostomus beckfordi</i>		M	42	2M + 40A	44	44			ACN=44	(S. America)	A-92
<i>Nannostomus beckfordi</i>	<i>cytotype A</i>		44*							(S. America)	S-30
<i>Nannostomus beckfordi</i>	<i>cytotype B</i>		36*							(S. America)	S-30
<i>Nannostomus eques</i>	<i>Nannobrycon</i>	34	34A		34					(Brazil, Peru)	A-92
<i>Nannostomus eques</i>	<i>Poecilobrycon</i>		36*							(S. America)	S-30
<i>Nannostomus harrisoni</i>	<i>Poecilobrycon</i>		40*							(Guyana)	S-30
<i>Nannostomus marginatus</i>			42*							(S. America)	S-30
<i>Nannostomus trifasciatus</i>	<i>erythrurus</i>		46*							(S. America)	S-30
<i>Nannostomus trifasciatus</i>	<i>erythrurus</i>		38*							(S. America)	S-30
<i>Nannostomus trifasciatus</i>	<i>erythrurus</i>		30*							(S. America)	S-30
<i>Nannostomus trifasciatus</i>	<i>erythrurus</i>		24*							(S. America)	S-30

Table 6.12 Order CHARACIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Nannostomus unifasciatus</i>	<i>Poecilobrycon</i>		22*							(S. America)	S-30
<i>Pyrrhulina cf. australis</i>		F, M	40	6ST + 34A	40	46	8		ACN=42	Brazil (SP)	O-53
<i>Pyrrhulina australis</i>	<i>rachoviana</i>		42					(2.0 FD), 2.4 BFA		(S. America)	C-93, H-13
<i>Pyrrhulina</i> sp.			42	2M + 2SM + 38 ST/A	46					Brazil	O-82
Parodontidae											
<i>Apareiodon affinis</i>		F	55	51 M/SM + 4ST	106	110	2		ZW ₁ W ₂ , ACN=56	Brazil (MG, SP)	M-82, M-83, L-85
<i>Apareiodon affinis</i>		M	54	50 M/SM + 4ST	104	108	2	(2.0, 2.5 FD)	ZZ, ACN=56	Brazil (MG, SP)	M-82, M-83, L-85, C-93, C-94
<i>Apareiodon affinis</i>		F	55	47 M/SM + 8ST	102	110	2		ACN=56	Argentina	C-96
<i>Apareiodon affinis</i>		F	55	43 M/SM + 10ST + 2A	98	108	2		ACN=55, 56	Argentina	C-96
<i>Apareiodon affinis</i>		F	54	45 M/SM + 8ST + 1A	99	107	2		ACN=55	Argentina	C-96
<i>Apareiodon affinis</i>		M	54	40 M/SM + 12ST + 2A	94	106	2		ACN=54	Argentina	C-96
<i>Apareiodon affinis</i>		M	54	42 M/SM + 8ST + 4A	96	104	2		ACN=55	Argentina	C-96
<i>Apareiodon ibitiensis</i>			54	50 M/SM + 4ST	104	108	2		ACN=56	Brazil (PR, SP)	M-83, J-8
<i>Apareiodon piracicabae</i>		F, M	54	52 M/SM + 2ST	106	108	4		0-1 B, ACN=56	Brazil (SP)	J-8, F-56
<i>Apareiodon vittatus</i>			54	52 M/SM + 2ST	106	108	2		ACN=56	Brazil (Timbo R)	J-8
<i>Apareiodon</i> sp. A			54	50 M/SM + 4ST	104	108	2		ACN=56	Brazil (MG)	J-8
<i>Apareiodon</i> sp. B			54	50 M/SM + 4ST	104	108	2		ACN=56	Brazil (MG)	J-8
<i>Apareiodon</i> sp. C			54	52 M/SM + 2ST	106	108	2		ACN=54	Brazil (Araguaia R., MT)	J-8
<i>Parodon hilarii</i>		F	54	31M + 22SM + 1ST	107	108	2		ZW, ACN=55	Brazil (MG)	M-84, J-7
<i>Parodon hilarii</i>		M	54	32M + 22SM	108	108	2		ZZ, ACN=54	Brazil (MG)	M-84, J-7
<i>Parodon nasus</i>		F, M	54	48 M/SM + 6ST	102	108	2		ACN=56	Brazil (MT)	B-81
<i>Parodon nasus</i>	<i>tortuosus</i>	F, M	54	48 M/SM + 6ST	102	108	2		ACN=56	Brazil (SP)	B-81
<i>Parodon nasus</i>	<i>tortuosus</i>	F, M	54	48 M/SM + 6ST	102	108	2		ACN=56	Brazil (PR)	J-7
<i>Parodon</i> sp.		F, M	54	50 M/SM + 4ST	104	108	2		ACN=54	Brazil (MT)	J-7
Prochilodontidae											
<i>Prochilodus argenteus</i>		F, M	54	40M + 14SM	108	108	2	3.1 FD	ACN=56	Brazil (CE)	P-20, C-94
<i>Prochilodus brevis</i>	<i>cearaensis</i>	F, M	54	40M + 14SM	108	108	2		0-2 B, ACN=56	Brazil (CE)	P-20
<i>Prochilodus costatus</i>	<i>affinis</i>	F, M	54	40M + 14SM	108	108	2	3.1 FD	ACN=56	Brazil (MG)	P-20, C-94
<i>Prochilodus lineatus</i>		F, M	54	40M + 14SM	108	108		(3.4 FD)	ACN=56	Brazil (MS)	P-20, C-93
<i>Prochilodus lineatus</i>			54	54 M/SM	108	108				Argentina	F-20
<i>Prochilodus lineatus</i>	<i>platensis</i>		54	54 M/SM	108	108				Argentina	F-20
<i>Prochilodus lineatus</i>		F, M	54	40M + 14SM	108	108	2		0-7 B, ACN=56	Brazil (PR, SP)	D-12, A-119, V-107
<i>Prochilodus lineatus</i>	<i>scrofa</i>	F, M	54	40M + 14SM	108	108	2		0-5 B, ACN=56	Brazil (SP)	P-19, P-20

Table 6.12 Order CHARACIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Prochilodus</i> <i>marggravii</i>		F, M	54	40M + 14SM	108	108	2			Brazil (MG)	P-20
<i>Prochilodus</i> <i>mariae</i>			54	40M + 14SM	108	108			0-3 B, ACN=54	Venezuela (Bolivar)	C-77, C-98
<i>Prochilodus</i> <i>nigricans</i>		F, M	54	40M + 14SM	108	108	2		0-2 B, ACN=56	Brazil (AM.)	P-20, V-94
<i>Prochilodus</i> <i>vimboides</i>		F, M	54	40M + 14SM	108	108			ACN=56	Brazil (SP)	P-20
<i>Semaprochilodus</i> <i>insignis</i>		F, M	54	54 M/SM	108	108	2		ACN=56	Brazil (AM.)	F-11
<i>Semaprochilodus</i> <i>kneri</i>			54	40M + 14SM	108	108	2		ACN=54	Venezuela (Bolivar)	O-78
<i>Semaprochilodus</i> <i>laticeps</i>			54	40M + 14SM	108	108	2		ACN=54	Venezuela (Bolivar)	O-78
<i>Semaprochilodus</i> <i>taeniurus</i>		F	54	53 M/SM + 1large M	108	108	2		ZW, ACN=55	Brazil (AM.)	F-11
<i>Semaprochilodus</i> <i>taeniurus</i>		M	54	54 M/SM	108	108	2		ZZ, ACN=54	Brazil (AM.)	F-11

Table 6.13 Order SILURIFORMES

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Amblycipitidae											
<i>Amblyceps</i> <i>mangois</i>		F, M	36	4M + 12SM + 16ST + 4A	52	68				India (J & K)	S-48
<i>Liobagrus</i> <i>andersoni</i>		F, M	28	18M + 10SM	56	56			ACN=30	Korea (Han R.)	S-94
<i>Liobagrus</i> <i>andersoni</i>		F, M	28	14M + 14SM	56	56			ACN=30	Korea (Gapyeong)	K-52
<i>Liobagrus</i> <i>anguillicauda</i>			34	20M + 12SM + 2ST	66	68				China (Zhejiang)	L-38
<i>Liobagrus</i> <i>marginatoides</i>	<i>Leiobagrus</i>	F	30	16M + 6SM + 6ST + 2A	52	58			XX, ACN=36	China (Nanchong)	Y-15
<i>Liobagrus</i> <i>marginatoides</i>	<i>Leiobagrus</i>	M	30	16M + 5SM + 7ST + 2A	51	58			XY, ACN=35	China (Nanchong)	Y-15
<i>Liobagrus</i> <i>marginatus</i>		F, M	24	20M + 2SM + 2ST	46	48				China (Sichuan)	L-36
<i>Liobagrus</i> <i>marginatus</i>	<i>Leiobagrus</i>	F	24	20M + 2SM + 2ST	46	48			XX, ACN=30	China (Sichuan)	L-30, Y-15
<i>Liobagrus</i> <i>marginatus</i>	<i>Leiobagrus</i>	M	24	19M + 2SM + 2ST + 1A	45	47			XY, ACN=30	China (Sichuan)	L-30, Y-15
<i>Liobagrus</i> <i>mediadiposalis</i>		F, M	42	26M + 16SM	84	84			ACN=42	Korea (Nakdong R.)	S-94
<i>Liobagrus</i> <i>mediadiposalis</i>		F, M	42	26M + 12SM + 4 ST/A	80		2		ACN=42	Korea (Hamyang)	K-52
<i>Liobagrus</i> <i>mediadiposalis</i>			28	18M + 6SM + 4ST	52	56			ACN=30	Korea (Gum R.)	U-34
<i>Liobagrus</i> <i>nigricauda</i>	<i>Leiobagrus</i>	F	30	16M + 6SM + 6ST + 2A	52	58			XX, ACN=36	China (Nanchong)	Y-15
<i>Liobagrus</i> <i>nigricauda</i>	<i>Leiobagrus</i>	M	30	16M + 5SM + 7ST + 2A	51	58			XY, ACN=35	China (Nanchong)	Y-15
<i>Liobagrus</i> <i>obesus</i>		F, M	20	20M	40	40				Korea (Kum R.)	S-94
<i>Liobagrus</i> <i>reinii</i>		F, M	38	26M + 8SM + 4ST	72	76			ACN=46	Japan (Gifu)	U-34
<i>Liobagrus</i> <i>reinii</i>			38	28M + 10SM	76	76				Japan	O-22

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag– NORs	Genome size (pg/cell)	Comments	Locality	Reference
Ariidae											
<i>Ariopsis</i>	<i>felis</i>	<i>Arius</i>		54 26M + 28ST/A	80			(4.5 FCM)	ACN=54	USA (LA)	L-19, T-73
<i>Ariopsis</i>	<i>felis</i>	<i>Arius</i>	F, M	54 16M + 12SM + 20ST + 6A	82	102			ACN=54	Mexico	G-74
<i>Ariopsis</i>	<i>guatemalensis</i>	<i>Galeichthys caeruleescens</i>		52 16M + 24SM + 10ST + 2A	92	102				Mexico	G-74
<i>Bagre</i>	<i>bagre</i>			56 24M + 26SM + 6ST	106	112				Brazil (SP)	G-52
<i>Bagre</i>	<i>marinus</i>			54 12M + 8SM + 34ST/A	74			4.8 BFA		USA (LA)	F-27, H-13
<i>Cathorops</i>	<i>melanopus</i>	<i>Arius</i>		52 16M + 30SM + 6ST	98	104				Mexico	G-74
<i>Cathorops</i>	<i>spixii</i>			54						Brazil	G-52
<i>Cathorops</i>	sp.			54 13M + 13SM + 28ST	80	108				Brazil (SP)	B-86
<i>Genidens</i>	<i>barbus</i>	<i>Netuma barba</i>		56 18M + 18SM + 18ST + 2A	92	110			XX/XY	Brazil	B-86, G-52
<i>Genidens</i>	<i>genidens</i>			56 12M + 20SM + 20ST + 4A	88	108				Brazil (SP)	B-86, G-52
<i>Nemapteryx</i>	<i>caelata</i>	<i>Arius caelatus</i>		54 6M + 20SM + 28A	80	80				India (Bombay)	K-101
<i>Nemapteryx</i>	<i>nenga</i>	<i>Arius</i>	F, M	54 16M + 36SM + 2ST	106	108			ACN=54	India (Orissa)	C-63
<i>Netuma</i>	<i>thalassina</i>	<i>Arius serratus</i>	F	56 8M + 24SM + 24ST	88	112			ACN=56	India (Orissa)	C-63
<i>Notarius</i>	<i>luniscutis</i>	<i>Sciadeichthys</i>		56						Brazil	G-52
<i>Plicofollis</i>	<i>dussumieri</i>	<i>Arius</i>	F, M	54 12M + 18SM + 12ST + 12A	84	96				India (Bombay)	R-59
<i>Sciaudes</i>	<i>parkeri</i>	<i>Arius</i>		56 16M + 16SM + 22ST + 2A	88	110				Brazil (SP)	B-86
Aspredinidae											
<i>Bunocephalus</i>	cf. <i>larai</i>			50 6M + 8SM + 8ST + 28A	64	72	2			S. America	F-20
Auchenipteridae											
<i>Ageneiosus</i>	<i>atronasus</i>	<i>atronases</i>	F, M	56 16M + 16SM + 12ST + 12A	88	100	2			Brazil (AM)	F-18
<i>Ageneiosus</i>	<i>inermis</i>	<i>brevifilis</i>	F, M	56 20M + 16SM + 10ST + 10A	92	102	2			Brazil (AM)	F-18
<i>Auchenipterus</i>	<i>nuchalis</i>		F, M	58 24M + 14SM + 10ST + 10A	96	106	2		ACN=58	Brazil (PR)	R-39
<i>Glanidium</i>	<i>ribeiroi</i>		F, M	58 28M + 16SM + 10ST + 4A	102	112	2		ACN=58	Brazil (Iguaçu, PR)	R-39
<i>Trachelyopterus</i>	<i>galeatus</i>	<i>Parauchenipterus</i>	F, M	58 22M + 12SM + 6ST + 18A	92	98	2		ACN=58	Brazil (PR)	R-39
<i>Trachelyopterus</i>	<i>galeatus</i>			58						Argentina	F-20
Bagridae											
<i>Bagrichthys</i>	<i>macracanthus</i>	<i>Bagroides</i>		50 16M + 26SM + 2ST + 6A	92	94				Thailand (Nakhon Phanom)	M-8
<i>Coreobagrus</i>	<i>brevicorpus</i>		F, M	44 22M + 14SM + 8ST/A	80				ACN=48	Korea (Hamyang)	K-52
<i>Coreobagrus</i>	<i>ichikawai</i>		F, M	56 18M + 14SM + 24ST/A	88				ACN=56	Japan (Gifu)	U-34
<i>Hemibagrus</i>	<i>guttatus</i>	<i>Mystus</i>	F, M	60 20M + 12SM + 16ST + 12A	92	108			ACN=62	China (Guangdong)	Y-15
<i>Hemibagrus</i>	<i>guttatus</i>	<i>Mystus elongatus</i>	F, M	60 20M + 12SM + 16ST + 12A	92	108			ACN=62	China (Yangshan)	Y-15
<i>Hemibagrus</i>	<i>macropterus</i>	<i>Mystus</i>	F, M	60 20M + 12SM + 16ST + 12A	92	108			ACN=62	China (Wuhan)	H-20, Y-15

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
<i>Hemibagrus macropterus</i>	<i>Mystus</i>		60							China	C-86	
<i>Hemibagrus menoda</i>	<i>Mystus</i>		48	12M + 12ST + 24A	60	72				India	L-1	
<i>Hemibagrus menoda</i>			58	22M + 20SM + 16A	100	100			ACN=58	India (WB)	D-34	
<i>Hemibagrus menoda menoda</i>	<i>Mystus</i>	F	56	36M + 16SM + 4A	108					India (Assam)	K-46, C-108	
<i>Hemibagrus menoda menoda</i>	<i>Mystus corsula</i>	M	58	22M + 20SM + 16A	100		2			India (WB)	B-4	
<i>Hemibagrus nemurus</i>	<i>Mystus bleekeri</i>	F, M	56	20M + 14SM + 10ST + 12A	90	100				India (Jammu)	S-55	
<i>Hemibagrus nemurus</i>	<i>Mystus bleekeri</i>		56	32M + 14SM + 10A	102	102				India (Assam)	K-46, C-108	
<i>Hemibagrus wyckii</i>	<i>Mystus</i>		54	16M + 14SM + 24A	84				ACN=54	Thailand (Nakhon Phanom)	M-8	
<i>Horabagrus brachysoma</i>			60	28M + 20SM + 8ST + 4A	108	116	2		ACN=60	India (Kerala)	N-56	
<i>Horabagrus nigricollaris</i>			60	26M + 20SM + 10ST + 4A	106	116	2			India (Kerala)	N-57	
<i>Mystus cavasius</i>			58	18M + 16SM + 10ST + 14A	92	102	2			India (Jammu)	S-55, R-122	
<i>Mystus cavasius</i>		F, M	58	18M + 22SM + 18A	98				ACN=58	India (Orissa)	T-49	
<i>Mystus cavasius</i>		F, M	58	14M + 26SM + 4ST + 14A	98	102				India (Bihar)	K-32	
<i>Mystus gulio</i>		F, M	58	30M + 12SM + 2ST + 14A	100	102	2		ACN=58	India (WB)	M-28, D-33	
<i>Mystus gulio</i>		F	58	12M + 34SM + 4ST + 8A	104	108			XX, ACN=58	India (Orissa)	C-63	
<i>Mystus gulio</i>		M	58	13M + 33SM + 4ST + 8A	104	108			XY, ACN=58	India (Orissa)	C-63	
<i>Mystus tengara</i>		F	54	9M + 38 SM/ST + 7A	101					ZW	India (Haryana)	R-46
<i>Mystus tengara</i>		M	54	10M + 38 SM/ST + 6A	102					ZZ	India (Haryana)	R-46
<i>Mystus tengara</i>		F	54	25M + 18 SM/ST + 11A	97					ZW	India (Haryana)	R-75
<i>Mystus tengara</i>		M	54	26M + 18 SM/ST + 10A	98					ZZ	India (Haryana)	R-75
<i>Mystus vittatus</i>		F, M	54	22M + 26SM + 6ST	102	108					India (Orissa)	T-49
<i>Mystus vittatus</i>		F, M	54	22M + 20SM + 12ST	96	108					India (Jammu)	S-55
<i>Mystus vittatus</i>		F, M	58	10M + 30SM + 12ST + 6A	98	110			ACN=58	India (Orissa)	C-63	
<i>Mystus vittatus</i>	var. A	F, M	54	20M + 24SM + 10ST	98	108			ACN=56	India (WB)	M-23	
<i>Mystus vittatus</i>	var. B	M	58	16M + 10SM + 20ST + 12A	84	104			ACN=58	India (WB)	M-23	
<i>Mystus vittatus</i>	vittatus vittatus	F, M	54	28M + 22SM + 2ST + 2A	104	106	2				India (Orissa)	K-42, J-9
<i>Pelteobagrus eupogon</i>		M	50	20M + 14SM + 16ST	84	100			ACN=52	China (Wuhan)	H-20, Y-15	
<i>Pelteobagrus nudiceps</i>		F, M	56	18M + 12SM + 26 ST/A	86			(1.8* FCM)	ACN=56	Japan (Lake Biwa)	U-34, O-48	
<i>Pelteobagrus nudiceps</i>			56	44 M/SM + 12 ST/A	100					Japan (Shimane)	F-51	
<i>Pelteobagrus ussuriensis</i>	<i>Pseudobagrus</i>	M	52	24M + 18SM + 10ST	94	104			ACN=58	China (Wuhan)	H-20, Y-15	
<i>Pelteobagrus ussuriensis</i>	<i>Pseudobagrus</i>	F, M	52	18M + 16SM + 18 ST/A	86		2		ACN=58	Korea (Kangkyeong)	K-52	
<i>Pelteobagrus ussuriensis</i>	<i>Pseudobagrus emarginatus</i>	F, M	52	24M + 10SM + 18ST	86	104			ACN=54	China (Nanchong)	Y-15	
<i>Pelteobagrus ussuriensis</i>	<i>emarginatus</i>	F, M	52	20M + 20SM + 12 ST/A	92				ACN=54	Korea (Han R.)	U-34	
<i>Pseudobagrus aurantiacus</i>		F, M	48	20M + 12SM + 16 ST/A	80				ACN=54	Japan (Kyushu)	U-25	
<i>Pseudobagrus aurantiacus</i>		F, M	48	18M + 14SM + 16 ST/A	80				ACN=54	Japan (Kumamoto)	U-34	
<i>Pseudobagrus crassilabris</i>	<i>Leiocassis</i>	F, M	52	24M + 14SM + 14ST	90	104			ACN=56	China (Wuhan)	H-20, Y-15	

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference	
<i>Pseudobagrus</i>	<i>koreanus</i>	sp.	F, M	48	18M + 14SM + 16 ST/A	80			ACN=54	Korea (Han R.)	U-34	
<i>Pseudobagrus</i>	<i>koreanus</i>	sp.	F, M	48	20M + 14SM + 14 ST/A	82			ACN=54	Korea (Gapyeong)	K-52	
<i>Pseudobagrus</i>	<i>longirostris</i>	<i>Leiocassis</i>	F, M	52	20M + 16SM + 16ST	88	104		ACN=56	China (Wuhan)	H-20, Y-15	
<i>Pseudobagrus</i>	<i>nitidus</i>	<i>Pelteobagrus</i>	F, M	52	22M + 20 SM/ST + 10A	94			ACN=54	Korea (Kangkyeong)	K-52	
<i>Pseudobagrus</i>	<i>nitidus</i>	<i>Pelteobagrus</i>	F, M	52	20M + 16SM + 16ST	88	104		ACN=56	China (Wuhan)	H-20, Y-15	
<i>Pseudobagrus</i>	<i>pratti</i>		M	52	20M + 14SM + 8ST + 10A	86	94		ACN=58	China (Guilin)	Y-15	
<i>Pseudobagrus</i>	<i>tenius</i>		F, M	52	22M + 16SM + 14ST	90	104		ACN=56	China (Wuhan)	H-20, Y-15	
<i>Pseudobagrus</i>	<i>tokiensis</i>	<i>aurantiacus</i>	F, M	56	24M + 12SM + 20 ST/A	92			ACN=56	Japan (Tokyo, Chiba, Iwate)	U-25	
<i>Pseudobagrus</i>	<i>truncatus</i>		F, M	52	26M + 14SM + 12ST	92	104		ACN=58	China (Nanchong)	Y-15	
<i>Pseudobagrus</i>	<i>vachellii</i>	<i>Pelteobagrus</i>	F, M	52	22M + 16SM + 14ST	90	104		ACN=56	China (Wuhan)	H-20, Y-15	
<i>Pseudobagrus</i>	<i>vachellii</i>	<i>Pelteobagrus</i>	M	52	16M + 20SM + 16 ST/A	88	2		ACN=56	Korea (Gum R.)	U-34	
<i>Rita</i>	<i>chrysea</i>			54	28M + 20SM + 6ST	102	108			India (Orissa)	D-2	
<i>Rita</i>	<i>chrysea</i>				52	8M + 22SM + 2ST + 20A	82	84		ACN=52	India (WB)	K-139
<i>Rita</i>	<i>rita</i>		F, M	54	14M + 34SM + 6ST	102	108	2		ACN=54	India (WB)	K-42, D-33
<i>Rita</i>	<i>rita</i>			54	14M + 24SM + 12ST + 4A	92	104			India	M-20	
<i>Sperata</i>	<i>aor</i>	<i>Aorichthys</i>		52	20M + 14SM + 10ST + 8A	86	96			India	L-1	
<i>Sperata</i>	<i>seenghala</i>	<i>Mystus</i>	F	54	28M + 12SM + 8ST + 6A	94	102	2		India (Jammu)	S-55, R-122	
<i>Sperata</i>	<i>seenghala</i>			50	10M + 14SM + 6ST + 20A	74	80	2		India	D-34	
<i>Tachysurus</i>	<i>adiposalis</i>	<i>Pseudobagrus</i>	F, M	50	20M + 14SM + 14ST + 2A	84	98		ACN=56	China (Yangshan)	Y-15	
<i>Tachysurus</i>	<i>fulvidraco</i>	<i>Pelteobagrus</i>	F, M	52	24M + 14SM + 10ST + 4A	90	100	1.9*, 2.0 FD	ACN=54	China (Hubei)	H-20, L-41, C-83	
<i>Tachysurus</i>	<i>fulvidraco</i>	<i>Pelteobagrus</i>		52	22M + 12SM + 14ST + 4A	86	100	4		China (Shasi)	Z-21	
<i>Tachysurus</i>	<i>fulvidraco</i>	<i>Pelteobagrus</i>	F, M	52	18M + 26 SM/ST + 8A	96			ACN=54	Korea (Kangkyeong)	K-52	
<i>Tachysurus</i>	<i>fulvidraco</i>	<i>Pseudobagrus</i>	F, M	52	28M + 12SM + 12ST	92	104			China (Amur)	S-63	
<i>Tachysurus</i>	<i>fulvidraco</i>	<i>Pseudobagrus</i>		52	22 M + 24 SM/ST + 6A		98			(Hubei, China)	L-53	
<i>Tachysurus</i>	<i>fulvidraco</i>	<i>Pseudobagrus</i>		52	24M + 24SM + 4A	100	100			Korea	L-15	
<i>Tachysurus</i>	<i>fulvidraco</i>		F, M	52	18M + 26SM + 8A	96	96			Korea (Kum R.)	P-68	
Callichthyidae												
Callichthyinae												
<i>Callichthys</i>	<i>callichthys</i>		F, M	58	22M + 22SM + 14ST	102	116	2	1.9 FD, (3.4 BFA)	0-5 B, ACN=58	Brazil (SP)	O-56, H-13
<i>Callichthys</i>	<i>callichthys</i>		F, M	56	14M + 10SM + 32 ST/A	80	2			0-2 B	Argentina	S-11
<i>Callichthys</i>	<i>callichthys</i>			54	46 M/SM + 8 ST/A	100		3			Brazil (Central Amazon)	P-89
<i>Callichthys</i>	<i>callichthys</i>			52	44 M/SM + 8 ST/A	96					Brazil (Central Amazon)	P-89
<i>Dianema</i>	<i>longibarbis</i>			60	6M + 54A	66	66	2			Brazil (Central Amazon)	M-148
<i>Dianema</i>	<i>urostriatum</i>			62	6M + 6ST + 50A	68	74	2			Brazil (Central Amazon)	M-148
<i>Dianema</i>	<i>urostriata</i>		F, M	62	8M + 4SM + 4ST + 46A	74	78	2	1.2 FD	ACN=64	Brazil (SP)	O-56

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Hoplosternum littorale</i>		F, M	60	4M + 4SM + 52A	68	68	2		ACN=62	Brazil (Amazon R.)	O-56, P-85
<i>Hoplosternum</i> sp.			60	6M + 2SM + 52A	68	68	2	1.4 FD	ACN=62	Brazil (SP)	O-56
<i>Hoplosternum</i> sp.			62	8 M/SM + 54ST	70	124	4			Brazil (Amazon R.)	P-88
<i>Megalechis thoracata</i>	<i>Hoplosternum</i>	F, M	64	8M + 12SM + 44 ST/A	84		2	3.2 FCM	ACN=66	Brazil (Amazon R.)	P-85, V-86
<i>Corydoradinae</i>											
<i>Aspidoras fuscoguttatus</i>		F, M	44	28M + 12SM + 4ST	84	88	2	1.5 FD	ACN=62	Brazil (SP)	O-56
<i>Aspidoras cf. fuscoguttatus</i>		F, M	46	32M + 10SM + 4ST	88	92	2		ACN=58	(Brazil)	S-190
<i>Aspidoras poecilus</i>		F	46	30M + 10SM + 6ST	86	92	2		ACN=60	Brazil (MG)	S-190
<i>Aspidoras taurus</i>		F, M	46	30M + 10SM + 6ST	86	92	1		ACN=60	Brazil (MG)	S-190
<i>Brochis britskii</i>		F	90	4M + 10SM + 22ST + 54A	104	126	2			Brazil (SP)	O-56
<i>Brochis britskii</i>	<i>Corydoras</i>	F, M	90	4M + 10SM + 22ST + 54A	104	126	4		ACN=90	Brazil (MG)	S-190
<i>Brochis splendens</i>		M	100	18M + 18SM + 20ST + 44A	136	156	4	2.3 FD	4X, ACN=100	Brazil (SP)	O-56
<i>Corydoras aeneus</i>		F	56	32 M/SM + 24 ST/A	88			3.6 FD	XX	Brazil (Belem, PA)	T-58
<i>Corydoras aeneus</i>		M	56	33 M/SM + 23 ST/A	89				XY	Brazil (Belem, PA)	T-58
<i>Corydoras aeneus</i>	<i>schultzei</i>		ca. 58	48 non-A + 10A		(106)		(3.2 FIA)		(S. America)	S-27, H-40
<i>Corydoras aeneus</i>			60	20M + 20SM + 20 ST/A	100					(Brazil)	K-17
<i>Corydoras aeneus</i>		F, M	60	26M + 26SM + 8ST	112	120	8	2.8 FD	0-3 B, ACN=64	Brazil (SP)	O-51, O-56
<i>Corydoras aeneus</i>		F	61	25M + 26 SM + 8ST + 2A	112	120			0-1B, ACN=64	Brazil (SP)	O-51
<i>Corydoras aeneus</i>			60	26M + 18SM + 16ST	104	120			2B	Brazil (SP)	C-98
<i>Corydoras aeneus</i>			134					6.3 FD	4X	Peru, Guyana	T-58
<i>Corydoras aeneus</i>			ca. 132	90 non-A + 42A		(222)		(8.4* FCM)	4X	(S. America)	S-27, O-48
<i>Corydoras aeneus</i>			120					8.8 BFA		(S. America)	H-13
<i>Corydoras agassizii</i>			98	82 non-A + 16A		(180)				(S. America)	S-27
<i>Corydoras araguaiaensis</i>		F, M	94	46M + 40SM + 8ST	180	188	6			(Brazil)	S-69
<i>Corydoras arcuatus</i>		M	46	28M + 18SM	92	92	2	(4.5 FD)		Brazil, Peru	O-54
<i>Corydoras arcuatus</i>			46	46 non-A		(92)				(S. America)	S-27
<i>Corydoras axelrodi</i>			46	46 non-A		(92)				(Colombia)	S-27
<i>Corydoras bondi</i>			46	46 non-A		(92)				(northern S. America)	S-27
<i>Corydoras delphax</i>			84	12M + 22SM + 50 ST/A	118					(Colombia)	K-16
<i>Corydoras difluviatilis</i>		F, M	78	6M + 2SM + 20ST + 50A	86	106	2			Brazil (SP)	S-69
<i>Corydoras ehrhardti</i>		F, M	44	22M + 22SM	88	88	2			Brazil (SC)	S-69
<i>Corydoras ehrhardti</i>		F, M	44	18M + 26SM	88	88	4		ACN=58	Brazil (SC)	O-55
<i>Corydoras elegans</i>			50	50 non-A		(100)				(Brazil, Colombia, Peru)	S-27
<i>Corydoras elegans</i>			50					6.0 BFA		(S. America)	H-13
<i>Corydoras flaveolus</i>		F, M	58	18M + 26SM + 14ST	102	116	4	3.0 FD	ACN=58	Brazil (SP)	O-54
<i>Corydoras julii</i>			46	32M + 14SM	92	92				(Brazil)	K-16

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Corydoras julii</i>			92	92 non-A		(184)		(8.4 BFA)		(S. America)	S-27, H-13
<i>Corydoras melanistius</i>			46	32M + 14SM	92	92				(northern S. America)	K-16
<i>Corydoras melanistius</i>			46	46 non-A		(92)				(S. America)	S-27
<i>Corydoras melanistius</i>			48				6.0 BFA			(S. America)	H-13
<i>Corydoras metae</i>		F, M	92	40M + 36SM + 6ST + 10A	168	174	6	(8.8 FD, 6.4 FIA)	4X, ACN=106	Brazil (PA)	O-54, H-41
<i>Corydoras metae</i>			92	88 non-A + 4A		(180)				(S. America)	S-27
<i>Corydoras nattereri</i>		M	44	18M + 26SM	88	88	2			Brazil (PR)	S-69
<i>Corydoras nattereri</i>		F, M	44	18M + 26SM	88	88	2			Brazil (PR)	O-55
<i>Corydoras nattereri</i>		F, M	44	20M + 24SM	88	88	2		ACN=58	Brazil (RJ)	O-52, O-55
<i>Corydoras nattereri</i>		F, M	40	20M + 20SM	80	80	2	(3.6 FD)	ACN=58	Brazil (Bonito R., RJ)	O-52, O-55
<i>Corydoras nattereri</i>		F, M	42	18M + 24SM	84	84	4		ACN=58	Brazil (Bigua R., SP)	O-52
<i>Corydoras cf. njsseni</i>		F, M	52	32M + 20SM	104	104	2			(Brazil)	S-69
<i>Corydoras aff. osteocarus</i>			76	50 non-A + 26A		(126)				(Venezuela, Suriname)	S-27
<i>Corydoras paleatus</i>		F, M	44	20M + 24SM	88	88	4			Brazil (RS)	S-69
<i>Corydoras paleatus</i>		F, M	44	20M + 24SM	88	88	4-6		ACN=58	Brazil (PR, RS)	O-55
<i>Corydoras paleatus</i>		F, M	44	22M + 22SM	88	88	4		ACN=58	Brazil (RS)	O-55
<i>Corydoras panda</i>		F, M	46	24M + 22SM	92	92	2		ACN=58	Brazil (SP)	O-56
<i>Corydoras pulcher</i>		M	102	10M + 14SM + 42ST + 36A	126	168	2		4X	(Brazil)	S-69
<i>Corydoras punctatus</i>			44-46				5.8 BFA			(S. America)	H-13
<i>Corydoras aff. punctatus</i>		F	102	10M + 14SM + 20ST + 58A	126	146	2		4X, ACN=106	Brazil (AM)	O-54
<i>Corydoras rabauti</i>		F, M	58	20M + 22SM + 10ST + 6A	100	110	2		ACN=60	Brazil (SP)	O-56
<i>Corydoras rabauti</i>	myersi		56				4.6 BFA			S. America	O-54, H-13
<i>Corydoras reticulatus</i>		F, M	74	16M + 20SM + 12ST + 26A	110	122	2	(2.0 FD)	ACN=76	Brazil (AM)	O-54
<i>Corydoras reticulatus</i>			74	20M + 10SM + 44 ST/A	104					(Brazil)	K-16
<i>Corydoras robineae</i>		F, M	84	8M + 18SM + 16ST + 42A	110	126	2			(Brazil)	S-69
<i>Corydoras schwartzi</i>		F, M	46	32M + 14SM	92	92	2	4.8 FD	ACN=62	Brazil (AM)	O-54
<i>Corydoras simulatus</i>		M	62	32M + 18SM + 6ST + 6A	112	118	4	1.3 FD	ACN=62	Colombia	O-54
<i>Corydoras cf. simulatus</i>		M	62	34M + 22SM + 6ST	118	124	2	1.0 FD	ACN=62	Colombia	O-54
<i>Corydoras sodalis</i>		F, M	74	16M + 18SM + 10ST + 30A	108	118	2		ACN=84	(Brazil)	S-190
<i>Corydoras trilineatus</i>		M	46	28M + 18SM	92	92	2	4.9 FD	ACN=58	Brazil (PA)	O-54
<i>Corydoras undulatus</i>		F, M	52	24M + 14SM + 12ST + 2A	90	102	10			Brazil (RS)	S-69
<i>Corydoras undulatus</i>			50				6.0 BFA				H-13
<i>Corydoras zygatus</i>		F, M	56	18M + 20SM + 10ST + 8A	94	104	2			(Brazil)	S-69
<i>Corydoras sp.</i>		M	60	38M + 16SM + 6ST	114	120	2	1.3 FD	ACN=62	Brazil (Caripi R., PA)	O-54
<i>Corydoras sp.</i>		F, M	84	4M + 2SM + 18ST + 60A	90	108	10	2.4 FD	ACN=88	Brazil (Galheiro R., MG)	O-54
<i>Corydoras sp.</i>			62							Argentina	F-20

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Scleromystax barbatus</i>	<i>Corydoras</i>	F, M	66	38M + 22SM + 4ST + 2A	126	130	6			Brazil (SP)	S-69
<i>Scleromystax barbatus</i>	<i>Corydoras</i>	F, M	66	38M + 22SM + 6ST	126	132	6			Brazil (PR)	S-69
<i>Scleromystax barbatus</i>	<i>Corydoras</i>	F, M	64	38M + 20SM + 4ST + 2A	122	126	8	1.7, 1.9 FD	ACN=64	Brazil (SP)	O-55
<i>Scleromystax barbatus</i>	<i>Corydoras</i>	F, M	66	38M + 22SM + 4ST + 2A	126	130	8		ACN=66	Brazil (PR, SC)	O-55
<i>Scleromystax macropterus</i>	<i>Corydoras</i>	F, M	66	28M + 14SM + 16ST + 8A	108	124	6	1.4 FD	ACN=66	Brazil (SP)	O-55
<i>Scleromystax prionotos</i>	<i>Corydoras</i>	F, M	68	14M + 12SM + 14ST + 28A	94	108	4	1.2 FD	ACN=68	Brazil (SP)	O-55
<i>Scleromystax prionotos</i>	<i>Corydoras</i>	F	86	20M + 28SM + 20ST + 18A	134	154	4	1.6 FD	ACN=86	Brazil (RJ)	O-55
Clariidae											
<i>Clarias batrachus</i>		F	100	4M + 6SM + 78A + 12 MC	110				XX, 4X	Thailand	W-30
<i>Clarias batrachus</i>		M	100	4M + 7SM + 77A + 12 MC	111				XY, 4X	Thailand	W-30
<i>Clarias batrachus</i>			56					1.6* FD		China	C-83, C-85
<i>Clarias batrachus</i>	<i>Clarius</i>		52	6 M/SM + 46 ST/A	58					India (U.P.)	S-104
<i>Clarias batrachus</i>			50	16M + 8SM + 14ST + 12A	74	88				India	R-52
<i>Clarias batrachus</i>			50	18M + 20SM + 8ST + 4A	88	96				India (WB)	P-92
<i>Clarias batrachus</i>			54					2.4 BFA			H-13
<i>Clarias cameronensis</i>			54			2				(W. and W.C. Africa)	O-83
<i>Clarias ebriensis</i>			50							(W. Africa)	O-83
<i>Clarias fuscus</i>		F	56	18M + 24SM + 8ST + 6A	98	106			XX, ACN=56	China (Guangdong)	W-30
<i>Clarias fuscus</i>		M	56	19M + 23SM + 8ST + 6A	98	106			XY, ACN=56	China (Guangdong)	W-30
<i>Clarias fuscus</i>		F	56	20M + 22SM + 8ST + 6A	98	106			XX, ACN=56	China (Guangdong)	L-76
<i>Clarias fuscus</i>		M	56	20M + 22SM + 8ST + 6A	98	106			XY, ACN=56	China (Guangdong)	L-76
<i>Clarias fuscus</i>		F, M	56	18M + 14SM + 14ST + 10A	88	102				China (Guangdong)	Y-15
<i>Clarias fuscus</i>			56	32 M/SM + 24 ST/A	88				ACN=56	Japan (Ishigaki)	A-56
<i>Clarias gariepinus</i>		F	56	8M + 25SM + 23A	89	2			ZW, ACN=56	Africa, Israel	T-29, O-69
<i>Clarias gariepinus</i>		M	56	8M + 24SM + 24A	88	2	(2.4 BFA)		ZZ, ACN=56	Africa, Israel	T-29, O-69, H-13
<i>Clarias gariepinus</i>		F	56	14M + 17SM + 25A	87				ZW	Egypt	N-3
<i>Clarias gariepinus</i>		M	56	14M + 18SM + 24A	88				ZZ	Egypt	N-3
<i>Clarias gariepinus</i>			56	20M + 16SM + 10ST + 10A	92	102				India (introduced)	N-3
<i>Clarias macrocephalus</i>		F, M	54	24M + 20SM + 6ST + 4A	98	104			XX/XY	Thailand	W-30
<i>Clarias platycephalus</i>			54			2				(W. and W.C. Africa)	O-83
<i>Heterobranchus longifilis</i>		F	52	6M + 25SM + 21A	83	2			ZW	Ivory Coast	T-29
<i>Heterobranchus longifilis</i>		M	52	6M + 24SM + 22A	82	2			ZZ	Ivory Coast	T-29
Cranoglanididae											
<i>Cranoglanis bouderius</i>	<i>sinensis</i>	F, M	74	8M + 16SM + 18ST + 32A	98	116			ACN=74	China	Y-15

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag– NORs	Genome size (pg/cell)	Comments	Locality	Reference
Diplomystidae											
<i>Diplomystes</i>	<i>camposensis</i>		F, M	56	16M + 24SM + 8ST + 8A	96	104	2		ACN=58	Chile
<i>Diplomystes</i>	<i>nahuelbutaensis</i>		M	56	14M + 26SM + 8ST + 8A	96	104	2		ACN=58	Chile
<i>Olivaichthys</i>	<i>mesembrinus</i>	<i>Diplomystes</i>	F, M	56	22M + 24SM + 6ST + 4A	102	108	2	2.6 FD	ACN=56	Argentina (Chubut)
Doradidae											
<i>Doras</i>	<i>eigenmanni</i>			66						(S. America)	E-11
<i>Hassar</i>	<i>orestis</i>			58	42M + 14SM + 2A	114	114	2		Brazil (MT)	M-144
<i>Hassar</i>	<i>orestis</i>		F, M	58	32M + 20SM + 6ST	110	116	2		ACN=58	Brazil (Xingú R., PA)
<i>Hassar</i>	<i>cf. orestis</i>		F, M	58	32M + 18SM + 8ST	108	116	2		ACN=58	Brazil (Jari R., PA)
<i>Hassar</i>	<i>wilderi</i>		F	58	32M + 16SM + 10ST	106	116	2		ACN=58	Brazil (Araguaia R., MT)
<i>Hassar</i>	sp.		F	58	32M + 18SM + 8ST	108	116	2		ACN=58	Brazil (Jari R., PA)
<i>Leptodoras</i>	<i>acipenserinus</i>			58	24M + 16SM + 14ST + 4A	98	112	2		ACN=58	Brazil (MT)
<i>Nemadoras</i>	<i>humeralis</i>	<i>Opsodoras</i>		58						Brazil (Amazon)	D-32
<i>Opsodoras</i>	<i>ternetzi</i>		F, M	58	44M + 12SM + 2A	114	114	2		ACN=58	Brazil (Xingú R., PA)
<i>Opsodoras</i>	sp.		F	58	21M + 18SM + 12ST + 7A	97	109	2			Brazil (MT)
<i>Opsodoras</i>	sp.		M	58	20M + 18SM + 12ST + 8A	96	108				Brazil (MT)
<i>Platydoras</i>	<i>cf. costatus</i>		F	58	26M + 16SM + 4ST + 12A	100	104	2		ACN=58	Brazil (Xingú R., PA)
<i>Oxydoras</i>	<i>niger</i>	<i>Pseudodoras</i>	F, M	58	20M + 16SM + 8ST + 14A	94	102	2		ACN=58	Brazil (PA)
<i>Pterodoras</i>	<i>granulosus</i>			58						Brazil (Parana R., PR)	J-20
<i>Rhinodoras</i>	<i>dorbignyi</i>		F, M	58	20M + 20SM + 4ST + 14A	98	102	2	3.5 FD	ACN=58	Brazil (SP)
<i>Rhinodoras</i>	sp.			58	18M + 16SM + 12ST + 12A	92	104	2			Brazil (MT)
<i>Trachydoras</i>	<i>paraguayensis</i>	<i>paraguaiensis</i>	F, M	56	32M + 20SM + 4ST	108	112	2		ACN=56	Argentina
<i>Wertheimeria</i>	<i>maculata</i>			58	24M + 14SM + 8ST + 12A	96	104	2		ACN=58	Brazil (MG)
Erethistidae											
<i>Pseudolaguvia</i>	<i>ribeiroi</i>	<i>Laguvia rebeiroi</i>		50	6M + 28SM + 16A	84				India (Assam)	K-46, C-108
Heptapteridae											
<i>Cetopsorhamdia</i>	<i>iheringi</i>	<i>iheringhi</i>		58	22M + 16SM + 10ST + 10A	96	106	2	(1.8 FD)	ACN=58	Brazil (MG, PR)
<i>Cetopsorhamdia</i>	<i>iheringi</i>	<i>Pimelodidae</i>	F, M	58	28M + 24SM + 6ST	110	116	2			Brazil (SP)
<i>Cetopsorhamdia</i>	sp.		F, M	58	22M + 16SM + 10ST + 10A	96	106	2		ACN=58	Brazil (SP)
<i>Imparfinis</i>	<i>borodini</i>	<i>Heptapterus longicauda</i>	F, M	52	22M + 26SM + 4ST	100	104	4	2.2 FD		Brazil (SP)
<i>Imparfinis</i>	<i>hollandi</i>	<i>Pariolius</i>		42	22M + 10SM + 4ST + 6A	74	78				Brazil (PR)
<i>Imparfinis</i>	<i>hollandi</i>		F, M	42	22M + 10SM + 10ST	74	84	2			Brazil (PR)
<i>Imparfinis</i>	<i>mirini</i>		F	58	23M + 35SM	116	116	2	1.9–2.4 FD	ZW	Brazil (SP)
											V-45, F-64

Table 6.13 Order SILURIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
<i>Imparfinis</i> <i>mirini</i>		M	58	24M + 34SM	116	116	2		ZZ	Brazil (SP)	V-45	
<i>Imparfinis</i> <i>piperatus</i>	cytotype A	F, M	58	32M + 26SM	116	116	2			Brazil (SP)	V-48	
<i>Imparfinis</i> <i>piperatus</i>	cytotype B	F, M	58	26M + 22SM + 8ST + 2A	106	114	2			Brazil (SP)	V-48	
<i>Imparfinis</i> <i>cf. piperatus</i>		M	56	22M + 26SM + 4ST + 4A	104	108	2			Brazil (SP)	V-48	
<i>Imparfinis</i> <i>cf. piperatus</i>		F, M	56	24M + 12SM + 20ST	92	112	2		ACN=58	Brazil (SP)	F-19	
<i>Imparfinis</i> <i>aff. mirini</i>	<i>aff. schubarti</i>	F, M	58	28M + 28SM + 2ST	114	116	2		ACN=58	Brazil (PR)	S-180, S-198	
<i>Imparfinis</i> <i>aff. mirini</i>	<i>aff. schubarti</i>	F, M	58	22M + 18SM + 10ST + 8A	98	108	2		ACN=58	Brazil (SP, PR)	F-19	
<i>Pariolius</i> <i>cf. longicaudus</i>			52	22M + 16SM + 4ST + 10A	90	94				Brazil (PR)	S-180	
<i>Pimelodella</i> <i>avanhandavae</i>		Pimelodidae	M	46	20M + 20SM + 6ST	86	92	2			Brazil (SP)	V-46
<i>Pimelodella</i> <i>aff. avanhandavae</i>			F, M	52	30M + 22SM	104	104	2			Brazil (PR)	S-149
<i>Pimelodella</i> <i>cristata</i>				52						Brazil (MT)	S-180	
<i>Pimelodella</i> <i>gracilis</i>				52				1.8 BFA		Brazil (MS)	S-180, H-13	
<i>Pimelodella</i> <i>kronei</i>		F, M	58	54 M/SM + 4ST	112	116	2		0-1 B	Brazil (SP)	A-20	
<i>Pimelodella</i> <i>meeki</i>		Pimelodidae	F, M	46	30M + 12SM + 4ST	88	92	2			Brazil (Tibagi R., PR)	V-95
<i>Pimelodella</i> <i>transitoria</i>			F, M	58	54 M/SM + 4ST	112	116	2			Brazil (SP)	A-20, F-57
<i>Pimelodella</i> sp.				46			84			S. America	L-21	
<i>Pimelodella</i> sp.				56						Argentina	F-20	
<i>Pimelodella</i> sp.				46						Argentina	F-20	
<i>Pimelodella</i> sp. 1		F, M	46	20M + 20SM + 6ST	86	92	2	1.1 FD		Brazil (PR)	V-84, F-64	
<i>Pimelodella</i> sp. 2				52	22M + 22SM + 8ST	96	104	8	2.0 FD		Brazil (PR)	V-84, F-64
<i>Pimelodella</i> sp.	Rhamdiidae			46	34M + 12SM	92	92				Brazil (Tibagi R., PR)	S-166
<i>Pimelodella</i> sp.		F	46	40 M/SM + 6 ST/A	86		2		XX	Brazil (MG)	D-11	
<i>Pimelodella</i> sp.		M	46	40 M/SM + 6 ST/A	86		2		XY	Brazil (MG)	D-11	
<i>Rhamdella</i> <i>microcephala</i>				56	18M + 30SM + 8ST	104	112	2			Brazil (MG)	F-29, S-180
<i>Rhamdella</i> sp.	Rhamdiidae			56	26 M/SM + 30 ST/A	82					Brazil (BA)	S-166
<i>Rhamdia</i> <i>laticauda</i>				58						C. America	L-21	
<i>Rhamdia</i> <i>quelen</i>	<i>branneri</i>			58	36M + 14SM + 4ST + 4A	108	112		0-2 B	Brazil (PR)	S-166	
<i>Rhamdia</i> <i>quelen</i>	<i>branneri</i>			58	30M + 10SM + 14ST + 4A	98	112		0-4 B	Brazil (PR)	C-98	
<i>Rhamdia</i> <i>quelen</i>	<i>branneri</i>	F, M	58	36M + 14SM + 4ST + 4A	108	112			0-4 B	Brazil (SC)	A-5	
<i>Rhamdia</i> <i>quelen</i>	<i>hilarii</i>	F, M	58	58 M/SM	116	116	2	(2.0-2.3 FD)	0-2 B, ACN=58	Brazil (SP)	S-166, M-13, F-64	
<i>Rhamdia</i> <i>quelen</i>	<i>hilarii</i>	F, M	58-63		>100		2		0-5 B	Brazil (SP)	F-15	
<i>Rhamdia</i> <i>quelen</i>	<i>hilarii</i>	F, M	58	26M + 16SM + 8ST + 8A	100	108	2		0 B, ACN=58	Argentina	F-19	
<i>Rhamdia</i> <i>cf. quelen</i>	<i>cf. hilarii</i>	F, M	58	30M + 18SM + 10ST	106	116	2		0-3 B	Brazil (SP)	V-47	
<i>Rhamdia</i> <i>quelen</i>		F, M	58	26M + 20SM + 6ST + 6A	104	110	2		0-4 B	Brazil (SP)	S-154	
<i>Rhamdia</i> <i>quelen</i>		F, M	58	26M + 22SM + 6ST + 4A	106	112	2		0 B	Brazil (PR)	S-154	
<i>Rhamdia</i> <i>quelen</i>			58	26M + 24SM + 8ST	108	116	2		0 B	Brazil (PR)	S-154	

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag– NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Rhamdia</i> <i>quelen</i>		F	58	26M + 16SM + 8ST + 8A	100	108	2		0 B, ACN=58	Argentina	F-19
<i>Rhamdia</i> <i>quelen</i>		F, M	58	36M + 16SM + 6ST	110	116	2		0–3 B, ACN=58	Brazil (MS)	M-157
<i>Rhamdia</i> <i>quelen</i>		F, M	58	36M + 16SM + 6ST	110	116			0–2 B, ACN=58	Brazil (SP, PR)	M-158
<i>Rhamdia</i> <i>quelen</i>			58	36M + 16SM + 6ST	110	116			0–2 B	Brazil (SC)	M-158
<i>Rhamdia</i> <i>quelen</i>	<i>sapo</i>	F, M	58	44 M/SM + 14 ST/A	102				0–1 B	Argentina	V-78
<i>Rhamdia</i> <i>quelen</i>	<i>sapo</i>		56							Uruguay	S-166
<i>Rhamdia</i> <i>quelen</i>	<i>voulezi</i>	F, M	58	36M + 14SM + 4ST + 4A	108	112			0–2 B	Brazil (PR)	A-5
<i>Rhamdia</i> sp.		F, M	58	46 M/SM + 12ST	104	116	2		0–4 B, ACN=58	Brazil (SP)	G-13
<i>Rhamdia</i> sp.		F	87	69 M/SM + 18ST (3n)	156	174	3		3X, ACN=87	Brazil (SP)	G-13
Heteropneustidae											
<i>Heteropneustes</i> <i>fossiliis</i>		F, M	56	14M + 26SM + 16ST	96	112				India	P-48
<i>Heteropneustes</i> <i>fossiliis</i>		F, M	56	18M + 10SM + 12ST + 16A	84	96				India (Jammu)	T-51
<i>Heteropneustes</i> <i>fossiliis</i>			56	22M + 16SM + 6ST + 12A	94	100	2			India	R-69
<i>Heteropneustes</i> <i>fossiliis</i>			56	18M + 18 SM/ST + 20A		92				India	R-52
<i>Heteropneustes</i> <i>fossiliis</i>			56	14M + 12SM + 30A	82					Thailand	D-28
Ictaluridae											
<i>Ameiurus</i> <i>brunneus</i>	<i>Ictalurus</i>		62							(S.E. USA)	H-45
<i>Ameiurus</i> <i>catus</i>	<i>Ictalurus</i>	F, M	48	16M + 20SM + 12ST	84	96			ACN=58	USA (AL)	L-22
<i>Ameiurus</i> <i>melas</i>	<i>Ictalurus</i>	F, M	60	12M + 10SM + 12ST + 26A	82	94				USA (TN)	O-65
<i>Ameiurus</i> <i>melas</i>	<i>Ictalurus</i>	M	60	16 M/SM + 44 ST/A	76				ACN=60	USA (OH)	L-21
<i>Ameiurus</i> <i>natalis</i>	<i>Ictalurus</i>	F, M	62	12M + 10SM + 14ST + 26A	84	98				USA (TN)	O-65
<i>Ameiurus</i> <i>natalis</i>	<i>Ictalurus</i>	M	62	22 M/SM + 40 ST/A	84				ACN=64	USA (OH, MO)	L-21
<i>Ameiurus</i> <i>nebulosus</i>	<i>Ictalurus</i>	F, M	60	16 M/SM + 44 ST/A	76		1.9 FD, 2.4 BFA	ACN=60	USA (OH)	L-21, H-13	
<i>Ameiurus</i> <i>nebulosus</i>	<i>Ictalurus</i>	F, M	60	20 M/SM + 40 ST/A	80					Bosnia	B-22
<i>Ameiurus</i> <i>nebulosus marmoratus</i>	<i>Ictalurus</i>	F, M	60	16 M/SM + 44 ST/A	76					Italy	B-10
<i>Ameiurus</i> <i>platycephalus</i>	<i>Ictalurus</i>		54							(S.E. USA)	H-45
<i>Ameiurus</i> <i>serracanthus</i>	<i>Ictalurus</i>	F	52	38 M/SM + 14 ST/A	90			ACN=58	USA (FL)	L-21	
<i>Ictalurus</i> <i>furcatus</i>			58	18M + 14SM + 26ST	90	116		ACN=58	USA (AL)	L-22	
<i>Ictalurus</i> <i>punctatus</i>			58	34 M/SM + 24 ST/A	92			ACN=58	USA (LA)	L-21	
<i>Ictalurus</i> <i>punctatus</i>		F, M	58	18M + 14SM + 26ST	90	116	(2.0 FCM, 2.1 FD)	ACN=58	USA	L-22, M-91, T-73	
<i>Noturus</i> <i>albater</i>			66–72		82					USA	L-21
<i>Noturus</i> <i>elegans</i>		F, M	46	36 M/SM + 10 ST/A	82			ACN=54	USA (KY)	L-21	
<i>Noturus</i> <i>eleutherus</i>		F, M	42	24 M/SM + 18 ST/A	66			ACN=58	USA (AR, VA)	L-21	
<i>Noturus</i> <i>exilis</i>		F	54	14 M/SM + 40 ST/A	68			ACN=56	USA (MO)	L-21	

Table 6.13 Order SILURIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Noturus</i> <i>flavater</i>		M	44	20 M/SM + 24 ST/A	64				ACN=58	USA (MO)	L-21
<i>Noturus</i> <i>flavipinnis</i>		F	52	30 M/SM + 22 ST/A	82				ACN=56	USA (VA)	L-21
<i>Noturus</i> <i>flavus</i>		F, M	48	22 M/SM + 26 ST/A	70				ACN=56	USA (OH, PA)	L-20, L-21
<i>Noturus</i> <i>flavus</i>		F	50	20 M/SM + 30 ST/A	70				ACN=56	USA (VA)	L-20, L-21
<i>Noturus</i> <i>flavus</i>			48							USA (IN)	H-17
<i>Noturus</i> <i>funebris</i>		F	44	24 M/SM + 20 ST/A	68				ACN=58	USA (LA)	L-21
<i>Noturus</i> <i>gilberti</i>		M	54	28 M/SM + 26 ST/A	82				ACN=58	USA (VA)	L-21
<i>Noturus</i> <i>gyrinus</i>		F, M	42	30 M/SM + 12 ST/A	72				ACN=56	USA (LA, MO, OH)	L-21
<i>Noturus</i> <i>hildebrandi hildebrandi</i>		F, M	46	34 M/SM + 12 ST/A	80				ACN=58	USA (MS)	L-21
<i>Noturus</i> <i>hildebrandi laetus</i>		F, M	46	34 M/SM + 12 ST/A	80				ACN=58	USA (TN)	L-21
<i>Noturus</i> <i>insignis</i>		F, M	54	20 M/SM + 34 ST/A	74				ACN=58	USA (PA, NC)	L-21
<i>Noturus</i> <i>lachneri</i>		F, M	42	30 M/SM + 12 ST/A	72				ACN=54	USA (AR)	L-21
<i>Noturus</i> <i>leptacanthus</i>		F, M	46	26 M/SM + 20 ST/A	72				ACN=56	USA (LA)	L-21
<i>Noturus</i> <i>miurus</i>			50	24 M/SM + 26 ST/A	74				ACN=58	USA (LA, MO, OH)	L-21
<i>Noturus</i> <i>munitus</i>		F	42	20 M/SM + 22 ST/A	62				ACN=58	USA (LA)	L-21
<i>Noturus</i> <i>nocturnus</i>		F, M	48	24 M/SM + 24 ST/A	72				ACN=58	USA (LA, MS, MO)	L-21
<i>Noturus</i> <i>phaeus</i>			42	26 M/SM + 16 ST/A	68				ACN=56	USA (MS, TN)	L-21
<i>Noturus</i> <i>stigmosus</i>		F	42	20 M/SM + 22 ST/A	62				NAN=54	USA (OH)	L-21
<i>Noturus</i> <i>taylori</i>		F, M	40	24 M/SM + 16 ST/A	64				ACN=56	USA (AR)	L-21
<i>Prietella</i> <i>phreatophila</i>			50		ca. 80	2			ACN=52?	Mexico	A-37
<i>Pylodictis</i> <i>olivaris</i>			56	26 M/SM + 30 ST/A	82				ACN=60	USA (OH)	L-21
Loricariidae											
Ancistrinae											
<i>Ancistrus</i> cf. <i>dubius</i>		F, M	44	18M + 10SM + 8ST + 8A	72	80	2		ZW/ZZ	Brazil (MT)	M-164
<i>Ancistrus</i> cf. <i>dubius</i>		F, M	42	24M + 10SM + 8ST	76	84	2		XX/XY	Brazil (Pantanal, MT)	M-165
<i>Ancistrus</i> cf. <i>dubius</i>		F, M	42	24M + 10SM + 8ST	76	84	2		no sex chrom.	Brazil (Pantanal, MT)	M-165
<i>Ancistrus</i> <i>multispinis</i>	Hypostominae, Ancistrini		52	28 M/SM + 24 ST/A	80				ACN=52	Brazil (SC)	A-34
<i>Ancistrus</i> <i>ranunculus</i>		F	48	19M + 9SM + 6ST + 14A	76	82	4		ZW, ACN=51	Brazil (Amazon R.)	O-80
<i>Ancistrus</i> <i>ranunculus</i>		M	48	20M + 8SM + 6ST + 14A	76	82	4		ZZ, ACN=52	Brazil (Amazon R.)	O-80
<i>Ancistrus</i> sp.	Purus	F	34	20M + 12SM + 2ST	66	68	2		XX, ACN=42	Brazil (Purus, AM)	O-85
<i>Ancistrus</i> sp.		M	34	21M + 11SM + 2ST	66	68	2		XY, ACN=42	Brazil (Purus, AM)	O-85
<i>Ancistrus</i> sp.	Trombetas	M	38	22M + 8SM + 5ST + 3A	68	73	2		ACN=48	Brazil (Trombetas, PA)	O-85
<i>Ancistrus</i> sp.	Vermelho	M	42	26M + 6SM + 4ST + 6A	74	78	2		ACN=42	Brazil (Demini, AM)	O-85
<i>Ancistrus</i> sp.	Macoari	F	46	18M + 12SM + 6ST + 10A	76	82	2		XX, ACN=48	Brazil (Branco, RR)	O-85
<i>Ancistrus</i> sp.	Macoari	M	46	18M + 11SM + 6ST + 11A	75	81	2		XY, ACN=48	Brazil (Branco, RR)	O-85

Table 6.13 Order SILURIIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Ancistrus</i>	sp.	Dimona	F, M	52 16M + 8SM + 2ST + 26A	76	78	2		ACN=56	Brazil (Dimona, AM)	O-85
<i>Ancistrus</i>	sp. 1	Balbina	F	38 26M + 10SM + 2ST	74	76	2		XX, ACN=48	Brazil (Barretinho, AM)	O-84
<i>Ancistrus</i>	sp. 1	Balbina	M	39 27M + 10SM + 2ST	76	78	2		XY ₁ Y ₂ , ACN=48	Brazil (Barretinho, AM)	O-84
<i>Ancistrus</i>	sp. 2	Barcelos	F	52 11M + 12SM + 4ST + 25A	75	79	2		Z ₁ Z ₂ W ₁ W ₂	Brazil (Demeni, AM)	O-84
<i>Ancistrus</i>	sp. 2	Barcelos	M	52 12M + 12SM + 4ST + 24A	76	80	2		Z ₁ Z ₁ Z ₂ Z ₂	Brazil (Demeni, AM)	O-84
<i>Ancistrus</i>	sp.	Piagaçu	F	52 16M + 9SM + 2ST + 25A	77	79	2		ZW, ACN=52	Brazil (Purus, AM)	O-80
<i>Ancistrus</i>	sp.	Piagaçu	M	52 16M + 8SM + 2ST + 26A	76	78	2		ZZ, ACN=52	Brazil (Purus, AM)	O-80
<i>Ancistrus</i>	sp. 1			38 30M/SM + 8ST	68	76	2			Brazil (Acre)	A-34
<i>Ancistrus</i>	sp. 2			52 32M/SM + 20 ST/A	84		2		ACN=52	Brazil (SP)	A-34
<i>Ancistrus</i>	n. sp. 1		F	40 34M + 6SM	80	80	2		XX	Brazil (GO)	A-112
<i>Ancistrus</i>	n. sp. 1		M	39 33M + 6SM	78	78	2		XO	Brazil (GO)	A-112
<i>Ancistrus</i>	n. sp. 2		F, M	52 10M + 16SM + 12ST + 14A	78	90	2			Brazil (SC)	A-112
<i>Baryancistrus</i>	aff. <i>niveatus</i>			52 16M + 32SM + 4A	100	100	2			Brazil (PA)	O-79
<i>Hemiancistrus</i>	<i>spilomma</i>		F	52 25M + 21SM + 6ST	98	104	6		ZW, ACN=57	Brazil (MT)	O-79
<i>Hemiancistrus</i>	<i>spilomma</i>		M	52 24M + 22SM + 6ST	98	104	6		ZZ, ACN=58	Brazil (MT)	O-79
<i>Hemiancistrus</i>	<i>spinossissimus</i>		F, M	52 26M + 22SM + 4ST	100	104	2		ACN=56	Brazil (MT)	O-79
<i>Hemiancistrus</i>	sp.		F	52 20M + 20SM + 12 ST/A	92				ZW	Brazil (MT)	A-109
<i>Megalancistrus</i>	<i>parananus</i>	<i>aculeatus</i>		52 26M + 26SM	104	104	2			Brazil (PR)	A-34
<i>Panaque</i>	cf. <i>nigrolineatus</i>		F, M	52 26M + 20SM + 6ST	98	104				Brazil (MT)	A-109
Hypoptopomatinae											
<i>Corumbataia</i>	<i>cuestae</i>		F, M	54 28M + 20SM + 6 ST/A	102		2			Brazil (SP)	C-3
<i>Hisonotus</i>	<i>depressicauda</i>	<i>Microlepidogaster</i>	F	54 14M + 28SM + 2ST + 10A	96	98	2			Brazil (SP)	A-49
<i>Hisonotus</i>	<i>leucofrenatus</i>	<i>Microlepidogaster</i>	F, M	54 24M + 26SM + 2ST + 2A	104	106	1-2		ZW, 0-2 B	Brazil (SP)	A-48
<i>Hisonotus</i>	<i>leucofrenatus</i>	<i>Microlepidogaster</i>	F	54 22M + 26SM + 4ST + 2A	102	106	1-2		ZW, 0-2 B	Brazil (PR)	A-48
<i>Hisonotus</i>	<i>leucofrenatus</i>		F	54 22M + 24SM + 6ST + 2A	100	106	2		ACN=58	Brazil (SC)	A-108
<i>Hisonotus</i>	<i>nigricauda</i>		F	54 26M + 20SM + 8ST	100	108	2		ACN=58	Brazil (RS)	A-108
<i>Hisonotus</i>	sp. 1			54			2.7 FD		ZW	Brazil (SP)	F-64
<i>Hisonotus</i>	sp. 2			54			1.8 FD		ZW	Brazil (SP)	F-64
<i>Hisonotus</i>	sp. A	<i>Microlepidogaster</i>	F	54 30M + 20SM + 4ST	104	108	4			Brazil (SP)	A-49
<i>Hisonotus</i>	sp. A			54 26M + 26SM + 2ST	106	108	2		ACN=58	Brazil (SP)	A-108
<i>Hisonotus</i>	sp. B	<i>Microlepidogaster</i>	F	54 22M + 28SM + 4ST	104	108	2			Brazil (SP)	A-49
<i>Hisonotus</i>	sp. D			54 26M + 26SM + 2ST	106	108	2		ACN=58	Brazil (SP)	A-108
<i>Lampiella</i>	<i>gibbosa</i>	<i>Hisonotus gibbosos</i>		58						Brazil (SP)	K-20
<i>Macrotocinclus</i>	<i>affinis</i>	<i>Otocinclus</i>	F, M	54 46M + 8SM	108	108	2	(4.2 BFA)		Brazil (SP)	A-49, H-13
<i>Macrotocinclus</i>	<i>affinis</i>	<i>Otocinclus</i>	F, M	54 40M + 12SM + 2ST	106	108	2			Brazil (RJ)	A-49
<i>Otocinclus</i>	aff. <i>vestitus</i>		F	72 22M + 12SM + 4ST + 34A	106	110	2		ZW	Brazil (PA)	A-49

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Parotocinclus</i> <i>maculicauda</i>		M	54	20M + 32SM + 2ST	106	108	2			Brazil (SP)	A-49
<i>Pseudotocinclus</i> <i>tietensis</i>		F	54	26M + 22SM + 6ST	102	108	2		XX	Brazil (SP)	A-47
<i>Pseudotocinclus</i> <i>tietensis</i>		M	54	27M + 21SM + 6ST	102	108	2		XY	Brazil (SP)	A-47
<i>Pseudotothyris</i> <i>obtusa</i>		M	54	26M + 18SM + 4ST + 6A	98	102	2			Brazil (SP)	A-49
Hypostominae											
<i>Corymbophanes</i> sp.	<i>Pareiorhina</i>		54	20M + 20SM + 14ST	94	108			ACN=54	Brazil (MG)	A-35
<i>Hypostomus</i> <i>affinis</i>			66	14M + 14SM + 12ST + 26A	94	106	5			Brazil (Jacui Stream, SP)	K-20
<i>Hypostomus</i> <i>albopunctatus</i>		F, M	74	10M + 20SM + 44 ST/A	104		6		ACN=76	Brazil (SP)	A-98
<i>Hypostomus</i> <i>ancistroides</i>		F, M	68	16M + 18SM + 34 ST/A	102		6		ACN=76	Brazil (SP)	A-98
<i>Hypostomus</i> <i>ancistroides</i>		F, M	68	18M + 10SM + 12ST + 28A	96	108	6			Brazil (SP)	A-112
<i>Hypostomus</i> <i>ancistroides</i>	<i>Plecostomus</i>	F	68	10M + 28SM + 30 ST/A	106				XX	Brazil	M-66
<i>Hypostomus</i> <i>ancistroides</i>	<i>Plecostomus</i>	M	68	10M + 27SM + 31 ST/A	105				XY	Brazil	M-66
<i>Hypostomus</i> aff. <i>auroguttatus</i>		F	76	8M + 30SM + 38 ST/A	114		2		ACN=76	Brazil (SP)	A-98
<i>Hypostomus</i> <i>commersoni</i>			68	14M + 14SM + 8ST + 32A	96	104				Argentina	F-20
<i>Hypostomus</i> <i>goyazensis</i>		F, M	72	10M + 16SM + 10ST + 36A	98	108	2			Brazil (GO)	A-112
<i>Hypostomus</i> <i>macrops</i>	<i>Plecostomus</i>	M	68	10M + 14SM + 44 ST/A	92					Brazil	M-66
<i>Hypostomus</i> <i>nigromaculatus</i>			76	8M + 20SM + 48 ST/A	104		3		ACN=76	Brazil (SP)	R-119
<i>Hypostomus</i> <i>nigromaculatus</i>			76	6M + 20SM + 50 ST/A	102		3		ACN=76	Brazil (PR)	R-119
<i>Hypostomus</i> <i>paulinus</i>	<i>Plecostomus</i>	M	74	10M + 20SM + 44 ST/A	104					Brazil	M-66
<i>Hypostomus</i> <i>plecostomus</i>			68				(3.2 FIA, 4.2 BFA)			(S. America)	H-13, H-41
<i>Hypostomus</i> <i>plecostomus?</i>	<i>plecostomus</i>		54	24 M/SM + 12ST + 18A	78	90		3.6 FD		(S. America)	M-91
<i>Hypostomus</i> <i>regani</i>		F, M	72	10M + 20SM + 42 ST/A	102				ACN=74	Brazil (SP)	A-98
<i>Hypostomus</i> <i>regani</i>		F, M	72	12M + 18SM + 26ST + 16A	102	128	4			Brazil (SP)	A-112
<i>Hypostomus</i> <i>strigaticeps</i>	<i>Plecostomus</i>	F, M	74	8M + 4SM + 62 ST/A	86					Brazil	M-66
<i>Hypostomus</i> <i>tietensis</i>			68	14M + 12SM + 42 ST/A	94					Brazil (SP)	A-35
<i>Hypostomus</i> sp.			67	15M + 12SM + 14ST + 26A	94	108		1B		Brazil (SP)	C-98
<i>Hypostomus</i> sp. A		F, M	70	18M + 14SM + 38 ST/A	102		6		ACN=76	Brazil (SP)	A-98
<i>Hypostomus</i> sp. B		F, M	72	12M + 18SM + 42 ST/A	102		2		ACN=76	Brazil (SP)	A-98, A-132
<i>Hypostomus</i> sp. C		F, M	72	10M + 18SM + 44 ST/A	100		4	(4.3 FD)	ACN=74	Brazil (SP)	A-98, F-64
<i>Hypostomus</i> sp. D ₁		M	72	10M + 26SM + 36 ST/A	108		2	(4.7 FD)	ACN=74	Brazil (SP)	A-98, F-64
<i>Hypostomus</i> sp. D ₂		M	72	14M + 20SM + 38 ST/A	106		2	(3.7 FD)	ACN=78	Brazil (SP)	A-98, F-64
<i>Hypostomus</i> sp. E		F, M	80	8M + 16SM + 56 ST/A	104		4		ACN=80	Brazil (SP)	A-98, A-132
<i>Hypostomus</i> sp. 3			82	6M + 14SM + 62 ST/A	102				0-2 B	Brazil (MS)	C-98
<i>Hypostomus</i> sp. 2	Rio Perdido	F, M	84	6M + 16SM + 62 ST/A	106		2		ACN=84	Brazil (MS)	C-107
<i>Hypostomus</i> sp. 3	Córrego Salobrinha	F, M	82	6M + 12SM + 64 ST/A	100				ACN=82	Brazil (MS)	C-107
<i>Hypostomus</i> sp. 3	Córrego Salobrinha	F, M	84	6M + 12SM + 66 ST/A	102				ACN=84	Brazil (MS)	C-107

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Hypostomus</i>	sp. F		76	10M + 16SM + 50 ST/A	102		2	(4.2, 4.9 FD)		Brazil (MG)	A-132, F-64
<i>Hypostomus</i>	sp. G		64	14M + 24SM + 26 ST/A	102				ZW	Brazil (MT)	A-109
<i>Hypostomus</i>	sp.	F	64	15M + 24SM + 25 ST/A	103		2	3.9 FD	ZW	Brazil (MT)	A-99, F-64
<i>Hypostomus</i>	sp.	M	64	14M + 24SM + 26 ST/A	102		2	3.9 FD	ZZ, ACN=82	Brazil (MT)	A-99, F-64
<i>Hypostomus</i>	sp. 1?		54	36 M/SM + 18 ST/A	90					Argentina	F-20
<i>Hypostomus</i>	sp. 2		72	28 M/SM + 44 ST/A	100					Argentina	F-20
<i>Pterygoplichthys</i>	<i>ambrosetii</i>	<i>Liposarcus anisitsi</i>	F, M	52 16M + 24SM + 8ST + 4A	92	100	2	(4.0 FD)		Brazil (SP)	A-133, F-64
<i>Pterygoplichthys</i>	<i>ambrosetii</i>	<i>Liposarcus anisitsi</i>	F, M	52 28M + 12SM + 8ST + 4A	92	100	2			Brazil (SP)	A-112
<i>Pterygoplichthys</i>	<i>ambrosetii</i>	<i>Liposarcus anisitsi</i>	F, M	52 8M + 14SM + 14ST + 16A	74	88	2			Brazil (MS)	A-112
<i>Pterygoplichthys</i>	<i>gibbiceps</i>	<i>Glyptoperichthys</i>	F, M	52 20M + 24SM + 8ST	96	104	2			Venezuela (Orinoco R.)	A-112
<i>Pterygoplichthys</i>	<i>joselimaianus</i>		F, M	52 28M + 16SM + 8 ST/A	96		2			Brazil (MG)	O-79
<i>Pterygoplichthys</i>	<i>multiradiatus</i>	<i>Liposarcus</i>	F, M	52 22M + 18SM + 12ST	92	104	2			Venezuela (Orinoco R.)	A-112
<i>Pogonopoma</i>	<i>wertheimeri</i>		F	54 20M + 30SM + 4ST	104	108			ACN=58	Brazil (Bahia)	A-109
<i>Rhinelepis</i>	<i>aspera</i>		F, M	54 20M + 26SM + 8ST	100	108			ACN=58	Brazil (PR)	A-109
<i>Squaliforma</i>	<i>emarginata</i>	<i>Hypostomus emarginatus</i>	F, M	52 16M + 30SM + 6ST	98	104			ACN=56	Brazil (MT)	A-109
<i>Loricariinae</i>											
<i>Brochiloricaria</i>	<i>macrodon</i>	<i>Loricaria</i>	M	58 18M + 2SM + 38 ST/A	78					Brazil	M-66
<i>Harttia</i>	<i>kronei</i>			58 40 M/SM + 18ST	98	116	2		ACN=58	Brazil (SP)	A-34
<i>Harttia</i>	<i>loricariformis</i>			52 32 M/SM + 20 ST/A	84		2		ACN=54	Brazil (SP)	A-34
<i>Harttia</i>	<i>loricariformis</i>			56 16M + 22SM + 10ST + 8A	94	104	2			Brazil (Paraitinga R., SP)	K-20
<i>Harttia</i>	sp.			56 14SM + 42A	70					Brazil (MG)	A-34
<i>Loricaria</i>	<i>cataphracta</i>	<i>carinata</i>		64 12 M/SM + 52 ST/A	76					Argentina	F-20
<i>Loricaria</i>	sp.			64 10M + 6SM + 4ST + 44A	80	84			1-3 B	Brazil (PR)	A-34, C-98
<i>Loricaria</i>	sp.			52						Brazil (PA)	A-34
<i>Loricaria</i>	sp.			62						Brazil (AM)	A-34
<i>Loricariichthys</i>	<i>maculatus</i>			56 22 M/SM + 34 ST/A	78					Argentina	F-20
<i>Loricariichthys</i>	<i>platypteron</i>			54 7M + 20SM + 4ST + 23A	81	85				Argentina	F-20
<i>Loricariichthys</i>	<i>platypteron</i>		F	54 7M + 20SM + 4ST + 23A	81	85	2		ZW	Brazil (Paraná R., PR)	S-186
<i>Loricariichthys</i>	<i>platypteron</i>		M	54 6M + 20SM + 4ST + 24A	80	84	2		ZZ	Brazil (Paraná R., PR)	S-186
<i>Loricariichthys</i>	sp.			54 6M + 26SM + 4ST + 18A	86	90				Argentina	A-34
<i>Loricariichthys</i>	sp.			54 28M + 26A	82					Brazil (MG)	A-34
<i>Proloricaria</i>	<i>prolixa</i>	<i>Loricaria</i>		62 20M + 4SM + 38A	86	86			0-5 B	Brazil (PR)	A-34, C-98
<i>Rineloricaria</i>	<i>cadeae</i>	<i>cadeae</i>		66 2M + 64 ST/A	68				ACN=66	Brazil (RS)	A-34
<i>Rineloricaria</i>	<i>cadeae</i>		F, M	64 2 M/SM + 62 ST/A	66		2		ACN=64	Brazil (RS)	M-168
<i>Rineloricaria</i>	<i>kroniei</i>			64 6 M/SM + 58 ST/A	70		2		ACN=64	Brazil (SC)	A-34
<i>Rineloricaria</i>	<i>latirostris</i>			44 12M + 4SM + 28A	60	60				Brazil (Passa Cinco R., SP)	K-20

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag– NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Rineloricaria latirostris</i>			44	10M + 4SM + 30A	58	58				Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			44	13M + 2SM + 29A	59	59				Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			44	13M + 4SM + 27A	61	61				Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			44	13M + 1SM + 30A	58	58				Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			44	10M + 3SM + 31A	57	57				Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			45	15 M/SM + 30 ST/A	60					Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			46	10M + 3SM + 33A	59	59				Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			46	14 M/SM + 32 ST/A	60					Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			47	13 M/SM + 34 ST/A	60					Brazil (Passa Cinco R., SP)	K-20
<i>Rineloricaria latirostris</i>			36	24 M/SM + 12 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
<i>Rineloricaria latirostris</i>			37	23 M/SM + 14 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
<i>Rineloricaria latirostris</i>			38	22 M/SM + 16 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
<i>Rineloricaria latirostris</i>			39	21 M/SM + 18 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
<i>Rineloricaria latirostris</i>			40	20 M/SM + 20 ST/A	60					Brazil (Mogi-Guacu R., SP)	K-20
<i>Rineloricaria latirostris</i>			43	17 M/SM + 26 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
<i>Rineloricaria latirostris</i>			44	16 M/SM + 28 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
<i>Rineloricaria latirostris</i>			46	14 M/SM + 32 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
<i>Rineloricaria latirostris</i>			47	13 M/SM + 34 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
<i>Rineloricaria latirostris</i>			48	12 M/SM + 36 ST/A	60					Brazil (Tres Bocas R., PR)	K-20
<i>Rineloricaria parva</i>			48				3.2 BFA			(S. America)	G-73, H-13
<i>Rineloricaria pentamaculata</i>		F, M	56	8 M/SM + 48 ST/A	64	2			ACN=60	Brazil (PR)	A-34, M-168
<i>Rineloricaria strigilata</i>		F, M	68	6 M/SM + 62 ST/A	74	2			ACN=68	Brazil (RS)	M-168
<i>Rineloricaria</i> sp.			70	2SM + 68A	72				ACN=70	Brazil (SP)	A-34
<i>Sturisoma cf. nigrirostrum</i>		F, M	74	20M + 18SM + 36 ST/A	112					Brazil (MT)	A-109
Neoplecostominae											
<i>Isbrueckerichthys duseni</i>			54	20M + 20SM + 14ST	94	108	2		ACN=56	Brazil (SP)	A-35
<i>Kronichthys lacerta</i>			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (PR)	A-35
<i>Kronichthys subteres</i>			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SP)	A-35
<i>Neoplecostomus microps</i>			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SP)	A-35
<i>Neoplecostomus microps</i>			54	24M + 20SM + 10ST	98	108	2			Brazil (Paraitinga R., SP)	K-20
<i>Neoplecostomus paranensis</i>			54	20M + 20SM + 14ST	94	108	2	2.3 FD	0-2 B, ACN=54	Brazil (MG)	A-35, F-64, C-98
<i>Neoplecostomus paranensis</i>			54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SP)	A-35
<i>Pareiorhaphis splendens</i>	<i>Hemipsilichthys</i>		54	20M + 30SM + 4ST	104	108	2		ACN=54	Brazil (SC, PA)	A-35
<i>Pareiorhaphis steindachneri</i>	<i>Hemipsilichthys</i>		54	20M + 20SM + 14ST	94	108	2		ACN=54	Brazil (SC)	A-35
<i>Pareiorhaphis vestigipinnis</i>	<i>Hemipsilichthys</i>		54	20M + 20SM + 14ST	94	108	2		ACN=56	Brazil (SC)	A-35
<i>Pareiorhaphis</i> sp.	<i>Hemipsilichthys</i>		54	20M + 20SM + 14ST	94	108	2		ACN=56	Brazil (PR)	A-35

Table 6.13 Order SILURIIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
<i>Pareiorhina</i>	<i>rudolphi</i>		54	26M + 16SM + 12ST	96	108	2		ACN=54	Brazil (SP)	A-35	
Upsilodinae												
<i>Upsilodus</i>	sp.		96	16M + 8SM + 72A	120		2			Brazil (Paraitinga R., SP)	K-20	
Mochokidae												
<i>Hemisynodontis</i>	<i>membranaceus</i>	M	54	30 M/SM + 14ST + 10A	84	98	2		ZZ, ACN=56	Africa	A-10, O-1	
<i>Hemisynodontis</i>	<i>membranaceus</i>	F	54	31 M/SM + 13ST + 10A	85	98	2		ZW, ACN=56	Africa	A-10, O-1	
<i>Synodontis</i>	<i>bastiani</i>	F	54	23 M/SM + 18ST + 13A	77	95			ZW, ACN=56	Ivory Coast	A-10	
<i>Synodontis</i>	<i>budgetti</i>	M	54	30 M/SM + 18ST + 6A	84	102	2		ACN=56	Mali	A-10, O-1	
<i>Synodontis</i>	<i>courteti</i>	F	54	28 M/SM + 19ST + 7A	82	101			ACN=56	Mali	A-10	
<i>Synodontis</i>	<i>filamentosa</i>	<i>filamentosus</i>	F	56	24 M/SM + 22ST + 10A	80	102	2		ACN=56	Mali	A-10, O-1
<i>Synodontis</i>	<i>ocellifer</i>		F	54	22 M/SM + 20ST + 12A	76	96			ACN=56	Mali	A-10
<i>Synodontis</i>	<i>schall</i>		F	54	24 M/SM + 17ST + 13A	78	95	2	2.2 BFA	ACN=56	Mali	A-10, O-1, H-13
<i>Synodontis</i>	<i>sorex</i>		M	54	26 M/SM + 16ST + 12A	80	96	2		ZZ, ACN=56	Mali	A-10, O-1
<i>Synodontis</i>	<i>sorex</i>		F	54	27 M/SM + 15ST + 12A	81	96	2		ZW, ACN=56	Mali	A-10, O-1
<i>Synodontis</i>	<i>violacea</i>	<i>violaceus</i>	M	54	32 M/SM + 14ST + 8A	86	100	2		ACN=56	Mali	A-10, O-1
Pangasiidae												
<i>Pangasianodon</i>	<i>gigas</i>	F, M	60	10M + 26SM + 14ST + 10A	96	110			XX/XY	Thailand (Chiang Mai)	M-30	
<i>Pangasianodon</i>	<i>gigas</i>		60	32M + 8SM + 12ST + 8A	100	112				Thailand	D-21	
<i>Pangasianodon</i>	<i>hypophthalmus</i>	<i>Pangasius</i>	60	20M + 12SM + 4ST + 24A	92	96				Thailand	D-21	
<i>Pangasianodon</i>	<i>hypophthalmus</i>		<i>Pangasius</i>	M	60	12M + 12SM + 6ST + 30A	84	90	2		(Thailand)	K-136
<i>Pangasianodon</i>	<i>hypophthalmus</i>	<i>Pangasius sutchi</i>	60	20M + 12SM + 4ST + 24A	92	96			ACN=60	Thailand (Nakhonsawan)	M-7	
<i>Pangasius</i>	<i>larnaudii</i>		60	24M + 20SM + 4ST + 12A	104	108			ACN=60	Thailand (Nakhonsawan)	M-7	
<i>Pangasius</i>	<i>pangasius</i>	F	58	14M + 20SM + 2ST + 22A	92	94				India (WB)	K-42	
<i>Pangasius</i>	<i>pangasius</i>		62	14M + 6SM + 18ST + 24A	82	100				India	M-20	
<i>Pangasius</i>	<i>sanitwongsei</i>		60	20M + 6SM + 18ST + 16A	86	104				Thailand	D-21	
Pimelodidae												
<i>Bergiaria</i>	<i>westermanni</i>	F, M	56	42 M/SM + 14 ST/A	98		2		0-5 B	Brazil (MG)	D-11	
<i>Calophysus</i>	<i>macropterus</i>		50	22M + 18SM + 10A	90		2			Brazil (R. Negro)	S-166	
<i>Herisorubim</i>	<i>platyrhynchos</i>	F, M	56	22M + 18SM + 6ST + 10A	96	102	2		ACN=56	Brazil (Parana basin)	M-46	
<i>Iheringichthys</i>	<i>labrosus</i>	F	56	22M + 18SM + 10ST + 6A	96	106	2			Brazil (SP)	V-47	
<i>Iheringichthys</i>	<i>labrosus</i>	F, M	56	32M + 8SM + 6ST + 10A	96	102			0-3 B	Brazil (Lower Tibagi R., PR)	C-97	
<i>Iheringichthys</i>	<i>labrosus</i>	F, M	56	14M + 32SM + 4ST + 6A	102	106	2		0 B, ACN=56	Brazil (Upper Tibagi R., PR)	R-124	
<i>Iheringichthys</i>	<i>labrosus</i>	F, M	56	26M + 12SM + 6ST + 12A	94	100	2		0-1 B, ACN=56	Brazil (PR)	C-104, C-105	

Table 6.13 Order SILURIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag– NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Iheringichthys</i> <i>labrosus</i>			56							Argentina	F-20
<i>Luciopimelodus</i> <i>pati</i>			50	16M + 14SM + 8ST + 12A	80	88				Argentina	S-180
<i>Megalonema</i> <i>platanum</i>			54	14M + 18SM + 12ST + 10A	86	98				Argentina	S-180
<i>Megalonema</i> <i>platanum</i>			54	26M + 10SM + 18ST	90	108			0–1 B	Brazil (PR)	C-98
<i>Parapimelodus</i> <i>nigribarbis</i>		F, M	56	20M + 20SM + 4ST + 12A	96	100	2		ACN=56	Brazil (Porto Alegre, RS)	T-78
<i>Parapimelodus</i> <i>valenciennis</i>			56							Brazil (RS)	S-166
<i>Pimelodus</i> <i>absconditus</i>		F, M	56	24M + 18SM + 8ST + 6A	98	106	2			Brazil (PR)	B-46
<i>Pimelodus</i> <i>albicans</i>			56							Argentina	F-20
<i>Pimelodus</i> <i>argenteus</i>		F, M	56	24M + 16SM + 12ST + 4A	96	108	2			Brazil (Paraguai R.)	S-102, S-197
<i>Pimelodus</i> <i>blochii</i>			56	36M/SM + 20 ST/A	92					Brazil (MT)	B-47
<i>Pimelodus</i> <i>clarias</i>			56					(2.4 BFA)		Argentina	F-20, H-13
<i>Pimelodus</i> <i>fur</i>			56	30M + 14SM + 12A	100	100				S. America	L-21
<i>Pimelodus</i> <i>fur</i>		F, M	54	32M + 8SM + 6ST + 8A	94	100	2		ACN=56	Brazil (MG)	G-81
<i>Pimelodus</i> <i>heraldoi</i>		F, M	56	22M + 22SM + 6ST + 6A	100	106	2			Brazil (PR)	S-180, S-197
<i>Pimelodus</i> <i>heraldoi</i>		F, M	56	18M + 24SM + 6ST + 8A	98	104	2		ACN=56	Brazil (PR)	T-81
<i>Pimelodus</i> <i>maculatus</i>		F, M	56	22M + 16SM + 10ST + 8A	94	104	2	(2.7–2.8 FD)		Brazil (Paraguai R.)	S-102, S-197, F-64
<i>Pimelodus</i> <i>maculatus</i>		F, M	56	40M/SM + 16 ST/A	96		2			Brazil (MG)	D-11
<i>Pimelodus</i> <i>maculatus</i>			M	56	41M/SM + 15 ST/A	97		2		Brazil (MG)	D-11
<i>Pimelodus</i> <i>maculatus</i>		F, M	56	20M + 20SM + 10ST + 6A	96	106	2		ACN=56	Brazil (PR)	B-46, M-161, V-46
<i>Pimelodus</i> <i>maculatus</i>		F, M	56	32M + 12SM + 12ST	100	112	2		ACN=56	Brazil (MG)	G-81
<i>Pimelodus</i> <i>maculatus</i>		F, M	56	24M + 20SM + 6ST + 6A	100	106	2		ACN=56	Brazil (Porto Alegre, RS)	T-78
<i>Pimelodus</i> <i>mysteriosus</i>		F, M	56	26M + 20SM + 2ST + 8A	102	104	2			Brazil (Paraguai R.)	S-102, S-197
<i>Pimelodus</i> <i>ornatus</i>		F, M	56	20M + 18SM + 8ST + 10A	94	102	2			Brazil (PR)	B-46
<i>Pimelodus</i> <i>ornatus</i>			56							Argentina	F-20
<i>Pimelodus</i> <i>ortmanni</i>		F, M	56	24M + 18SM + 8ST + 6A	98	106	2		0–4 B	Brazil (PR)	B-47
<i>Pimelodus</i> <i>ortmanni</i>			56	20M + 12SM + 14ST + 10A	88	102				Brazil (PR)	B-47
<i>Pimelodus</i> <i>paranaensis</i>		F, M	56	22M + 22SM + 4ST + 8A	100	104	2		ACN=56	Brazil (PR)	T-81
<i>Pimelodus</i> sp.		F, M	56	41M/SM + 15 ST/A	97		2			Brazil (MG)	D-11
<i>Pimelodus</i> sp.		F, M	56	30M + 14SM + 8ST + 4A	100	108	2		0–4 B	Brazil (PR)	B-47
<i>Pimelodus</i> sp.		F, M	56	32M + 12SM + 6ST + 6A	100	106	2		ACN=56	Brazil (MG)	G-81
<i>Pinirampus</i> <i>pirinampu</i>		F	50	22M + 12SM + 4ST + 12A	84	88	2			Brazil (PR)	V-84
<i>Pinirampus</i> <i>pirinampu</i>		F, M	50	26M + 12SM + 2ST + 10A	88	90	2			Brazil (PR)	S-146, S-147
<i>Pseudoplatystoma</i> <i>coruscans</i>	coruscans	F, M	56	18M + 16SM + 10ST + 12A	90	100	2			Brazil (Parana basin)	M-46
<i>Pseudoplatystoma</i> <i>coruscans</i>	coruscans		56	24M + 16SM + 8ST + 8A	96	104				Brazil	P-42
<i>Pseudoplatystoma</i> <i>coruscans</i>	coruscans		56	20M + 16SM + 8ST + 12A	92	100	2			Brazil (MS, Paraguay R.)	S-150
<i>Pseudoplatystoma</i> <i>coruscans</i>	coruscans		56	26M + 10SM + 6ST + 14A	92	98	2			Brazil (SP, Parana R.)	S-150

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Pseudoplatystoma fasciatum</i>		F, M	56	18M + 14SM + 10ST + 14A	88	98	2		ACN=56	Brazil (AM)	F-17
<i>Pseudoplatystoma fasciatum</i>		F, M	56	20M + 12SM + 12ST + 12A	88	100	2		ACN=56	Brazil (MS)	P-42
<i>Pseudoplatystoma tigrinum</i>		F, M	56	18M + 16SM + 8ST + 14A	90	98	2		ACN=56	Brazil (AM)	F-17
<i>Sorubim lima</i>		F, M	56	18M + 12SM + 14ST + 12A	86	100	2		ACN=56	Brazil (AM)	F-17
<i>Sorubim lima</i>		F, M	56	20M + 14SM + 10ST + 12A	90	100	2		ACN=56	Brazil (Parana basin)	M-46
<i>Sorubim lima</i>			56							Argentina	F-20
<i>Steindachneridion scriptum</i>	<i>inscripta</i>		56							Argentina	F-20
<i>Steindachneridion scriptum</i>	<i>scripta</i>	F, M	56	24M + 20SM + 4ST + 8A	100	104	2		ACN=56	Brazil (PR)	S-199, S-200
<i>Steindachneridion melanodermatum</i>	sp.	F	56	20M + 24SM + 2ST + 10A	100	102	2		XX, ACN=56	Brazil (PR)	S-165, S-180, S-200
<i>Steindachneridion melanodermatum</i>	sp.	M	56	21M + 23SM + 2ST + 10A	100	102	2		XY, ACN=56	Brazil (PR)	S-165, S-200
<i>Zungaro zungaro</i>			56	32M + 6SM + 8ST + 10A	94	102	2			Brazil (SP)	S-148
<i>Zungaro zungaro</i>	<i>Paulicea luetkeni</i>	F, M	56	26M + 10SM + 6ST + 14A	92	98	2		ACN=56	Brazil (Parana basin)	M-46
Plotosidae											
<i>Plotosus lineatus</i>	<i>anguillaris</i>		48	12 M/SM + 36 ST/A	60				ACN=48	Japan (Okinawa)	A-58
<i>Plotosus canius</i>		F, M	36	10M + 10SM + 16A	56				ACN=36	India (Orissa)	R-58
<i>Plotosus canius</i>		F	36	14M + 12SM + 2ST + 8A	62	64			ACN=36	India (WB)	K-139
<i>Plotosus canius</i>		F, M	36	20M + 8SM + 8 ST/A	64				ACN=36	India (Orissa)	T-49
Pseudopimelodidae											
<i>Cephalosilurus apurensis</i>		M	54	6M + 28SM + 14ST + 6A	88	102	2		ACN=56	Venezuela (Orinoco R.)	M-142
<i>Conorhynchus conirostris</i>	<i>Conorhynchus</i>	F, M	60	20M + 18SM + 10ST + 12A	98	108	2		ACN=60	Brazil (MG)	A-17
<i>Lophiosilurus alexandri</i>			54	54 M/SM /ST/A			2			Brazil	M-128
<i>Lophiosilurus alexandri</i>		F, M	54	16M + 18SM + 10ST + 10A	88	98	2		ACN=58	Brazil (MG)	A-17
<i>Microglanis cottooides</i>		F, M	54	22M + 20SM + 12ST	96	108	2	2.5 FD		Brazil (SP)	V-46, F-64
<i>Microglanis aff. cottooides</i>		F, M	54	10M + 32SM + 10ST + 2A	96	106	4		ACN=56	Brazil (SC)	M-142
<i>Pseudopimelodus bufonius</i>			54	18M + 22SM + 6ST + 8A	94	100	2			Brazil (PR)	M-128
<i>Pseudopimelodus bufonius</i>		F, M	54	12M + 30SM + 12ST	96	108	6		ACN=56	Brazil (AM)	M-142
<i>Pseudopimelodus mangurus</i>		F, M	54	6M + 26SM + 12ST + 10A	86	98	2	2.2 FD	ACN=56	Brazil (SP)	M-128, F-64
Schilbeidae											
<i>Ailia coila</i>			58	14M + 36SM + 8A	108	108			ACN=58	India (Assam)	K-46, C-108
<i>Clarias garua</i>			56	18M + 34SM + 4A	108	108			ACN=56	India (Assam)	C-108
<i>Clarias garua</i>			66	66A	66	66				India	L-1
<i>Eutropiichthys vacha</i>		F, M	58	10M + 20SM + 12ST + 16A	88	100				India (WB)	M-28
<i>Neotropius atherinoides</i>	<i>Pseudeutropius</i>		58	10M + 30SM + 18A	98	98			ACN=58	India (Assam)	K-46, C-108
<i>Neotropius atherinoides</i>	<i>Pseudeutropius</i>	F, M	58	28M + 12SM + 2ST + 16A	98	100			ACN=58	India (Orissa)	R-58

Table 6.13 Order SILURIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Scolopacidae											
<i>Scolopax</i>	<i>distolothrix</i>		F, M	50	18M + 18SM + 10ST + 4A	86	96	2	ACN=54?	Brazil (MT)	O-72
Siluridae											
<i>Kryptopterus</i>	<i>bicirrhos</i>			60				1.8 BFA		(SE Asia)	H-13
<i>Ompok</i>	<i>bimaculatus</i>	<i>Callichrous</i>	F	42	18M + 12SM + 12A	72			XX, ACN=42	India (Haryana)	R-49
<i>Ompok</i>	<i>bimaculatus</i>	<i>Callichrous</i>	M	41	17M + 12SM + 12A	70			XY	India (Haryana)	R-49
<i>Ompok</i>	<i>bimaculatus</i>		F	42	6M + 24SM + 12A	72	2			India (WB)	K-136
<i>Ompok</i>	<i>bimaculatus</i>		M	41	5M + 24SM + 12A	70	2			India (WB)	K-136
<i>Ompok</i>	<i>pabda</i>			54	28M + 10SM + 8ST + 8A	92	100			India	D-2
<i>Ompok</i>	<i>pabo</i>			54	36M + 12SM + 6A	102			ACN=54	India (Assam)	K-43
<i>Silurus</i>	<i>aristotelis</i>	<i>Parasilurus</i>	F, M	58	30M + 20SM + 8ST	108	116			Greece	I-22
<i>Silurus</i>	<i>aristotelis</i>		F	58	20M + 24SM + 14 ST/A	102		2	ACN=58	Macedonia	R-121
<i>Silurus</i>	<i>asotus</i>	<i>Parasilurus</i>	M	58	38 M/SM + 8ST + 12A	96	104			Japan	M-92
<i>Silurus</i>	<i>asotus</i>	<i>Parasilurus</i>		58	46 M/SM + 12 ST/A	104		2	ACN=58	Japan (Yamaguchi)	F-51
<i>Silurus</i>	<i>asotus</i>	<i>Parasilurus</i>		58	44 M/SM + 14 ST/A	102			ACN=58	Japan (Tochigi)	A-58, O-48
<i>Silurus</i>	<i>asotus</i>	<i>Parasilurus</i>	F, M	58	24M + 24SM + 10 ST/A	106			ACN=58	Korea (Janghyeon)	K-52
<i>Silurus</i>	<i>asotus</i>			58	20M + 24SM + 10ST + 4A	102	112	(1.5* FD)	ACN=58	China (Wuhan)	H-18, Y-15, C-83
<i>Silurus</i>	<i>asotus</i>	<i>Parasilurus</i>		58	20M + 14SM + 6ST + 18A	92	98	2	2.9 FD		China (Shasi)
<i>Silurus</i>	<i>asotus</i>	<i>Parasilurus</i>		58	20M + 24SM + 10ST + 4A	102	112			China (Amur)	Y-13
<i>Silurus</i>	<i>biwaensis</i>	<i>Parasilurus</i>		58	44 M/SM + 14 ST/A	102			ACN=58	Japan (Lake Biwa)	A-58
<i>Silurus</i>	<i>glanis</i>			48	30 M/SM + 18 ST/A	78				Yugoslavia	A-28
<i>Silurus</i>	<i>glanis</i>			60	28M + 26SM + 6ST	114	120		ACN=60	Czech	R-1
<i>Silurus</i>	<i>glanis</i>			60	22M + 38 SM/ST		120	2	ACN=60	Czech	R-18
<i>Silurus</i>	<i>glanis</i>			60	18M + 32 SM/ST + 10A		110			(Russia)	V-72
<i>Silurus</i>	<i>lithophilus</i>	<i>Parasilurus</i>		58	44 M/SM + 14 ST/A	102			ACN=58	Japan (Lake Biwa)	A-58
<i>Silurus</i>	<i>meridionalis</i>	<i>soldatovi meridionalis</i>	F, M	58	20M + 20SM + 14ST + 4A	98	112		ACN=58	China (Wuhan)	H-18, Y-15, C-83
<i>Silurus</i>	<i>microdorsalis</i>	<i>Parasilurus</i>	F, M	60	22M + 24SM + 14 ST/A	106			ACN=60	Korea (Janghyeon)	K-52
<i>Silurus</i>	<i>microdorsalis?</i>	<i>Parasilurus microdorsalis</i>		28	12M + 14SM + 2ST	54	56			Korea	L-15
<i>Silurus</i>	<i>soldatovi</i>			58	24M + 16SM + 14ST + 4A	98	112		ACN=58	China (Jilin)	H-34
<i>Wallago</i>	<i>attu</i>		F, M	86	12M + 6SM + 2ST + 66A	104	106		ACN=86	India (Haryana)	R-61
<i>Wallago</i>	<i>attu</i>		F, M	86	10M + 12SM + 8ST + 56A	108	116		ACN=86	India (Jammu)	S-202

Table 6.13 Order SILURIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Sisoridae											
Glyptosterninae											
<i>Euchiloglanis</i>	<i>davidi</i>		F, M	36	8M + 6SM + 22 ST/A	50			ACN=36	China (Sichuan)	L-35
<i>Euchiloglanis</i>	<i>kishinouyei</i>	<i>Coraglanis</i>	F, M	50	14M + 6SM + 30 ST/A	70			ACN=50	China (Sichuan)	L-35
<i>Glyptosternon</i>	<i>reticulatum</i>	<i>Exostoma stoliczkae</i>		42						India	R-74
<i>Glyptothorax</i>	<i>fokiensis</i>	<i>fukiensis</i>	F, M	52	20M + 18SM + 14ST	90	104		ACN=52	China (Guangdong)	Y-15
<i>Glyptothorax</i>	<i>telchitta</i>			56	18M + 26SM + 2ST + 10A	100	102		ACN=56	India (Bihar)	K-41
<i>Glyptothorax</i>	<i>trilineatus</i>			52	18M + 24SM + 10A	94			ACN=52	India (Assam)	K-46, C-108
<i>Pseudecheneis</i>	<i>sulcata</i>	<i>sulcatus</i>	F, M	52	8M + 14SM + 30 ST/A	74			ACN=52	India (U.P.)	R-74
Sisorinae											
<i>Gagata</i>	<i>cenia</i>			46	4M + 8SM + 8ST + 26A	58	66		ACN=46	India (U.P.)	M-162
<i>Gogangra</i>	<i>viridescens</i>	<i>Nangra punctata</i>		42	14M + 20SM + 8A	76			ACN=42	India (Assam)	K-46, C-108
<i>Gogangra</i>	<i>viridescens</i>	<i>Gagata</i>	M	48	12M + 22SM + 4ST + 10A	82	86		ACN=48	India (Jammu)	S-52
Trichomycteridae											
<i>Bullockia</i>	<i>maldonadoi</i>			60	46 M/SM + 14 ST/A	106				(Chile)	A-127, B-80
<i>Eremophilus</i>	<i>mutisii</i>		F, M	54	30M + 20SM + 4ST	104	108	2	ACN=56	Colombia	G-53
<i>Hatcheria</i>	<i>macraei</i>			52	30 M/SM + 22 ST/A	82				(Chile)	A-127, B-80
<i>Trichogenes</i>	<i>longipinnis</i>		F, M	54	36M + 12SM + 6ST	102	108	2	ACN=56	Brazil (SP)	L-51
<i>Trichomycterus</i>	<i>alternatus</i>	<i>floreensis</i>		54	42M + 10SM + 2ST	106	108		ACN=56	Brazil (MG)	S-109
<i>Trichomycterus</i>	<i>areolatus</i>			56	56 M/SM	112	112			(Chile)	A-127
<i>Trichomycterus</i>	<i>areolatus</i>			54	44M + 8SM + 2ST	106	108	2	ACN=56	Chile (Osomo)	C-66
<i>Trichomycterus</i>	<i>areolatus</i>			55	43M + 8SM + 2ST + 2A	106	108		ACN=56	Chile (Osomo)	C-66
<i>Trichomycterus</i>	<i>areolatus</i>			56	42M + 8SM + 2ST + 4A	106	108		ACN=56	Chile (Osomo)	C-66

Table 6.13 Order SILURIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Trichomycterus</i> <i>auroguttatus</i>			54	42M + 10SM + 2ST	106	108			ACN=56	Brazil (MG) (Chile)	S-109
<i>Trichomycterus</i> <i>chiltoni</i>			52	44 M/SM + 8 ST/A	96						A-127
<i>Trichomycterus</i> <i>davisi</i>		F, M	54	40M + 12SM + 2ST	106	108	2		ACN=58	Brazil (Iguaçu R.)	B-67, B-79, B-80
<i>Trichomycterus</i> <i>davisi</i>			55	41M + 12SM + 2ST	108	110			ACN=58	Brazil (Iguaçu R.)	B-79
<i>Trichomycterus</i> <i>davisi</i>			56	40M + 12SM + 2ST + 2A	108	110			ACN=58	Brazil (Iguaçu R.)	B-79
<i>Trichomycterus</i> <i>davisi</i>			54	42M + 10SM + 2ST	106	108			ACN=58	Brazil (PR)	S-109
<i>Trichomycterus</i> <i>davisi</i>		M	81	60M + 18SM + 3ST	159	162	3		3X	Brazil (PR)	B-67
<i>Trichomycterus</i> <i>cf. iheringi</i>		F, M	54				2.3 FD			Brazil (SP)	F-64
<i>Trichomycterus</i> <i>aff. itatiayae</i>	aff. <i>itatiayae</i>		54	42M + 10SM + 2ST	106	108			ACN=58	Brazil (PR)	S-109
<i>Trichomycterus</i> <i>laucaensis</i>			58	42 M/SM + 16 ST/A	100					(Chile)	A-127, B-80
<i>Trichomycterus</i> <i>laucaensis</i>			62	62 M/SM/ST		124				Chile	B-80
<i>Trichomycterus</i> <i>paolence</i>		F, M	54	46M + 6SM + 2ST	106	108	2			Brazil (Itatinga, SP)	T-48, T-69
<i>Trichomycterus</i> <i>paolence</i>			54	46M + 6SM + 2ST	106	108			1B	Brazil (Itatinga, SP)	T-48
<i>Trichomycterus</i> <i>paolence</i>			55	46M + 6SM + 3ST	107	110				Brazil (Itatinga, SP)	T-48
<i>Trichomycterus</i> <i>paolence</i>			56	46M + 6SM + 4ST	108	112			1B	Brazil (Itatinga, SP)	T-48
<i>Trichomycterus</i> <i>paolence</i>	cytotype A		54	44M + 8SM + 2ST	106	108	2		ACN=56	Brazil (Botucatu, SP)	T-69
<i>Trichomycterus</i> <i>paolence</i>	cytotype B		54	40M + 14SM	108	108	2		ACN=56	Brazil (Bofete, SP)	T-69
<i>Trichomycterus</i> <i>reinhardti</i>			54	42M + 10SM + 2ST	106	108			ACN=56	Brazil (MG)	S-109
<i>Trichomycterus</i> <i>spiegazzinii</i>			54	54 M/SM	108	108				Argentina	F-20
<i>Trichomycterus</i> <i>stawiarski</i>			54	42M + 8SM + 4ST	104	108			ACN=58	Brazil (Iguaçu R.)	B-80
<i>Trichomycterus</i> sp.			54	42M + 10SM + 2ST	106	108			ACN=58	Brazil (Iguaçu R.)	B-80
<i>Trichomycterus</i> sp.	F, M	54					2.6 FD			Brazil	L-51, F-64
<i>Trichomycterus</i> sp. B			54	42M + 8SM + 4ST	104	108		0-2 B	Brazil (PR)	C-98	
<i>Vandellia</i> <i>cirrhosa</i>			32							(S. America)	L-51

Table 6.14 Order GYMNOTIFORMES

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Gymnotoidei											
Gymnotidae											
<i>Electrophorus</i> <i>electricus</i>			52	42 M/SM + 10A		94				Brazil (AM, GO)	A-125
<i>Gymnotus</i> <i>carapo</i>			54	54 M/SM	108	108			ACN=54	Brazil (SP)	A-125
<i>Gymnotus</i> <i>carapo</i>			54	44M + 8SM + 2ST	106	108	2		ACN=54	Brazil (SP)	F-71, F-72
<i>Gymnotus</i> <i>carapo</i>			54	52 M/SM + 2 ST/A	106				X ₁ X ₂ Y	Brazil (PR)	A-125
<i>Gymnotus</i> <i>carapo</i>		F, M	54	54 M/SM	108	108	2		ACN=54	Brazil (SP)	F-34
<i>Gymnotus</i> <i>carapo</i>		F, M	52	50 M/SM + 2 ST/A	102		2			Brazil (SP)	F-34
<i>Gymnotus</i> <i>carapo</i>			48	34 M/SM + 14 ST/A	82					Brazil (AM)	F-34
<i>Gymnotus</i> <i>carapo</i>		F, M	42	32 M/SM + 10 ST/A	74					Brazil (PA)	F-34
<i>Gymnotus</i> <i>carapo</i>			40	36 M/SM + 4 ST/A	76					Brazil (PR)	A-125
<i>Gymnotus</i> <i>carapo</i>			54	54 M/SM	108	108	2		ACN=54	Argentina	F-20
<i>Gymnotus</i> <i>carapo</i>			38					2.0 BFA		(S. America)	H-13
<i>Gymnotus</i> <i>carapo</i>			81	78 M/SM + 3 ST/A	159				3X	Brazil (SP)	A-125
<i>Gymnotus</i> <i>inaequilabiatus</i>			52	40M + 10SM + 2 ST/A	102		2		ACN=52	Brazil (SP)	F-71, F-72
<i>Gymnotus</i> <i>pantanai</i>			40	14 M/SM + 26 ST/A	54					Brazil (Pantanal)	A-125
<i>Gymnotus</i> <i>pantherinus</i>			52	38M + 8SM + 6 ST/A	98					East basin	A-125
<i>Gymnotus</i> <i>pantherinus</i>			52	38M + 8SM + 6 ST/A	98		2		ACN=52	Brazil (SP)	F-71, F-72
<i>Gymnotus</i> <i>paraguensis</i>		F, M	54	50 M/SM + 4 ST/A	104		3		ACN=54	Brazil (MG)	V-85
<i>Gymnotus</i> <i>sylvius</i>			40	30 M/SM + 10 ST/A	70		2			Brazil	A-15
<i>Gymnotus</i> <i>sylvius</i>			40	30 M/SM + 10 ST/A	70					Parana River	A-125
<i>Gymnotus</i> <i>sylvius</i>			40	30 M/SM + 10 ST/A	70					Brazil (SP)	A-125
<i>Gymnotus</i> <i>sylvius</i>			40	28M + 10SM + 2 ST/A	78		2		ACN=50	Brazil (SP)	F-71, F-72
<i>Gymnotus</i> <i>sylvius</i>		F, M	40	36 M/SM + 4 ST/A	76		2			Brazil (MG)	V-85
<i>Gymnotus</i> <i>sp.</i>		M	50	26 M/SM + 24 ST/A	76		2		ACN=52	Brazil (MG)	V-85
<i>Gymnotus</i> <i>sp.</i>		F	52	50 M/SM + 2 ST/A	102					Brazil (SP)	F-34
<i>Gymnotus</i> <i>sp.</i>		F	40	14 M/SM + 26 ST/A	54				X ₁ X ₂ X ₂	Brazil (PR)	A-125
<i>Gymnotus</i> <i>sp.</i>		M	39	14 M/SM + 25 ST/A	53				X ₁ X ₂ Y	Brazil (PR)	A-125
<i>Gymnotus</i> <i>sp.</i>		F	40	14 M/SM + 26 ST/A	54		2		X ₁ X ₁ X ₂ X ₂	Argentina	S-155
<i>Gymnotus</i> <i>sp.</i>		M	39	15 M/SM + 24 ST/A	54		2		X ₁ X ₂ Y	Argentina	S-155

Table 6.14 Order GYMNOTIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Sternopygoidei											
<i>Apteronotidae</i>											
<i>Apteronotus albifrons</i>		F, M	24	14M + 2SM + 2ST + 6A	40	42				(Brazil)	H-29
<i>Apteronotus albifrons</i>			24	14M + 2SM + 2ST + 6A	40	42			0-4 B	Brazil (PR)	C-98
<i>Apteronotus albifrons</i>		F, M	24	12M + 4SM + 2ST + 6A	40	42	2			Brazil (PA)	A-18
<i>Apteronotus albifrons</i>			22					1.4 BFA		(Brazil)	H-13
<i>Apteronotus</i> sp.			52	46 M/SM + 6 ST/A	98					Brazil (SP)	A-125
<i>Parapteronotus bonapartii</i>	<i>Apteronotus anas</i>		52	30M + 12SM + 10A	94					Brazil (Manaus)	A-125
<i>Parapteronotus hasemani</i>	<i>Apteronotus</i>		52	26M + 16SM + 10A	94					Brazil (Manaus)	A-125
<i>Hypopomidae</i>											
<i>Brachyhypopomus brevirostris</i>			36	4M + 2SM + 8ST + 22A	42	50				Brazil (AM)	A-125
<i>Brachyhypopomus pinnicaudatus</i>		F	42	42A	42	42			X ₁ X ₂ X ₂	Brazil (SP)	A-113
<i>Brachyhypopomus pinnicaudatus</i>		M	41	1M + 40A	42	42			X ₁ X ₂ Y, ACN=42	Brazil (SP)	A-113
<i>Hypopomus artedi</i>			38	32 M/SM + 6 ST/A	70					Brazil (AM)	A-125
<i>Hypopygus lepturus</i>			50	16M + 20SM + 10ST + 4A	86	96				Brazil (PA)	A-125
<i>Rhamphichthyidae</i>											
<i>Rhamphichthys cf. marmoratus</i>			52	38M + 10SM + 4ST	100	104				Brazil (AM)	A-125
<i>Sternopygidae</i>											
<i>Eigenmannia humboldtii</i>			40	8 M/SM + 32 ST/A	48					Brazil (PR)	A-125
<i>Eigenmannia virescens</i>			40							Argentina	F-20
<i>Eigenmannia virescens</i>		F, M	38	16 M/SM + 22 ST/A	54	2			no sex chrom.	Brazil (SP)	A-114
<i>Eigenmannia virescens</i>		F	38	16 M/SM + 22 ST/A	54	2			XX, ACN=44	Brazil (SP)	A-114
<i>Eigenmannia virescens</i>		M	38	16 M/SM + 22 ST/A	54	2			XY, ACN=44	Brazil (SP)	A-114
<i>Eigenmannia virescens</i>		F	38	23 M/SM + 15 ST/A	61	2			ZW, ACN=44	Brazil (MG)	A-115
<i>Eigenmannia virescens</i>		M	38	22 M/SM + 16 ST/A	60	2			ZZ, ACN=44	Brazil (MG)	A-115
<i>Eigenmannia virescens</i>		F	38	15 M/SM + 23 ST/A	53	2			ZW, ACN=44	Brazil (PA)	A-115, S-206
<i>Eigenmannia virescens</i>		M	38	14 M/SM + 24 ST/A	52	2			ZZ, ACN=44	Brazil (PA)	A-115, S-206
<i>Eigenmannia</i> sp.		F	31	13 M/SM + 18 ST/A	44	2			ACN=32	Brazil (PA)	A-19
<i>Eigenmannia</i> sp.		F, M	32	12 M/SM + 20 ST/A	44	2			ACN=32	Brazil (PA)	A-19
<i>Eigenmannia</i> sp.			46	20 M/SM + 26 ST/A	66	3			3X	Brazil (PA)	A-19
<i>Eigenmannia</i> sp.		F	30	6M + 24 ST/A	36	2				Brazil (PA)	M-169
<i>Eigenmannia</i> sp.		M	29	7 M/SM + 22 ST/A	36					Brazil (PA)	A-125
<i>Eigenmannia</i> sp.	cytotype A		36	14 M/SM + 22ST/A	50	2				Brazil (SP)	M-169

Table 6.14 Order GYMNOTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Eigenmannia</i> sp.	cytotype B		36	8 M/SM + 28 ST/A	44	2			Brazil (SP)	M-169	
<i>Eigenmannia</i> sp.	cytotype C		36	16 M/SM + 20 ST/A	52	2		ACN=44	Brazil (MG)	M-169	
<i>Eigenmannia</i> sp.			34	24 M/SM + 10 ST/A	58	2		ACN=44	Brazil (MG)	M-169	
<i>Eigenmannia</i> sp.			34				2.0 BFA		(S. America)	H-13	
<i>Eigenmannia</i> sp. 1		F, M	28	14 M/SM + 14 ST/A	42	2		ACN=32	Brazil (SP)	A-125, A-131	
<i>Eigenmannia</i> sp. 2		F	32	8 M/SM + 24A	40	40	2	X ₁ X ₁ X ₂ X ₂	Brazil (SP)	A-116, A-130	
<i>Eigenmannia</i> sp. 2		M	31	9 M/SM + 22A	40	40	2	X ₁ X ₂ Y, ACN=44	Brazil (SP)	A-116, A-130	
<i>Sternopygus</i> <i>macrurus</i>		M	46	30M + 16SM	92	92	2	ACN=46	Brazil (AM)	A-21	
<i>Sternopygus</i> <i>macrurus</i>		F	46	32M + 14SM	92	92	2	ACN=46	Brazil (MG)	A-21	
<i>Sternopygus</i> <i>macrurus</i>		F, M	46	28M + 18SM	92	92	2	ACN=46	Brazil (SP)	A-21	
<i>Sternopygus</i> <i>macrurus</i>			48				2.0 BFA		(S. America)	H-13	

Table 6.15 Order ARGENTINIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Argentinidae											
<i>Argentina</i> <i>silus</i>		M	44	17 M/SM + 27A	61	61		1.7 FD	ACN=47	(N. Atlantic)	E-2
Microstomatidae (= Bathylagidae)											
Bathylaginae											
<i>Bathylagooides</i> <i>wesethi</i>	<i>Bathylagus</i>	F	36	20M + 14SM + 2 satellite chrom.				XX	USA (off CA)	C-46, C-48	
<i>Bathylagooides</i> <i>wesethi</i>	<i>Bathylagus</i>	M	36	19M + 14SM + 1A + 2 satellite chrom.			3.5 FD	XY	USA (off CA)	C-45, C-48, E-2	
<i>Leuroglossus</i> <i>stilbius</i>	<i>Bathylagus</i>	M	62	14M + 9SM + 1A + 2 satellite chrom. + 36 MC			3.4 FD	XY	USA (off CA)	C-46, C-48, E-2	
<i>Lipolagus</i> <i>ochotensis</i>	<i>Bathylagus</i>	M	54	9M + 2SM + 43A	65			XY, ACN=60	USA (off CA)	C-46, C-48, E-2	
<i>Pseudobathylagus</i> <i>milleri</i>	<i>Bathylagus</i>	F	60	12M + 4SM + 2A + 2 satellite chrom. + 40 MC			6.3 FD	XX	USA (off CA)	E-2, E-6, C-46	
<i>Pseudobathylagus</i> <i>milleri</i>	<i>Bathylagus</i>	M	60	11M + 4SM + 2A + 2 satellite chrom. + 41 MC				XY	USA (off CA)	C-48	

Table 6.16 Order OSMERIFORMES

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Galaxiidae											
<i>Brachygalaxias bullocki</i>		F, M	38	10M + 16SM + 12A	64	64			ACN=44	Chile	C-5
<i>Brachygalaxias bullocki</i>		F, M	40	18M + 8SM + 14 ST/A	66		4			Chile	C-82
<i>Brachygalaxias gothei</i>		F, M	40	12M + 6SM + 22 ST/A	58					Chile	C-82
<i>Galaxias auratus</i>		F, M	32	10M + 2SM + 6ST + 14A	44	50			ACN=44	Tasmania	J-14
<i>Galaxias brevipinnis</i>		F, M	44	6M + 8SM + 2ST + 28A	58	60			ACN=44	Tasmania	J-14
<i>Galaxias fontanus</i>		F, M	44	10M + 8SM + 12ST + 14A	62	74			ACN=44	Tasmania	J-14
<i>Galaxias johnstoni</i>		F, M	44	4M + 10SM + 8ST + 22A	58	66			ACN=44	Tasmania	J-14
<i>Galaxias maculatus</i>		F, M	22	8M + 12SM + 2A	42	42			ACN=42	Chile, Australia	C-5
<i>Galaxias maculatus</i>		F, M	22	8M + 10SM + 4ST	40	44			ACN=44	New Zealand	M-62
<i>Galaxias maculatus</i>		F, M	22	18M + 4SM	44	44	(2.1* FD)		ACN=44	Tasmania	J-14, J-17
<i>Galaxias platei</i>		F	30	2M + 16SM + 12A	48	48			Sex chrom.	Chile	C-5
<i>Galaxias platei</i>		M	30	1M + 18SM + 11A	49	49	(1.8* FD)	Y chrom., ACN=42	Chile		C-5, J-18
<i>Galaxias tanycephalus</i>		F, M	32	10M + 2SM + 4ST + 16A	44	48			ACN=44	Tasmania	J-14
<i>Galaxias truttaceus</i>		F, M	32	10M + 2SM + 2ST + 18A	44	46			ACN=44	Tasmania	J-14
Osmeridae											
Hypomesinae											
<i>Hypomesus olidus</i>			56	22 M/SM + 34 ST/A	78					Russia	V-72
<i>Hypomesus olidus</i>			56	4M + 12SM + 40A	72	72				China	Z-23
<i>Hypomesus pretiosus</i>			50±				1.5 FD		Figure absent	USA	O-8, O-11
<i>Hypomesus transpacificus nipponensis</i>		F, M	56	26SM + 30A	82	82	2		ACN=56	Japan (Shimane)	K-69
Osmerinae											
<i>Mallotus villosus</i>		F, M	54	26 M/SM + 28 ST/A	80				ACN=56	Barents Sea	G-89
<i>Osmerus eperlanus</i>			54	16 M/SM + 38 ST/A	70		(1.2 FCM)		ACN=56	Sweden	N-42, V-86
<i>Osmerus eperlanus</i>		F, M	56	10M + 18SM + 28 ST/A	84		2		ACN=56	Poland (Lake Galadus)	O-77
<i>Osmerus eperlanus</i>			56		68					Russia (White Sea)	L-88
<i>Spirinchus starksii</i>			50±				1.7 FD		Figure absent	USA	O-8, O-11
Plecoglossinae											
<i>Plecoglossus altivelis</i>			56	12 M/SM/ST + 44A	68				ACN=56	Japan (Lake Biwa)	Y-8
Salanginae											
<i>Neosalanx taihuensis</i>			56	50M + 6SM	112	112			ACN=56	China (Lake Taihu)	S-121
<i>Salangichthys microdon</i>			56							Japan	N-37

Table 6.17 Order SALMONIFORMES

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Salmonidae											
Coregoninae											
<i>Coregonus albula</i>		M	80	14M + 2SM + 64 ST/A	96					Sweden	N-41, V-41
<i>Coregonus albula</i>			81	14M + 2SM + 4ST + 61A	97	101	4		0-2 B	Finland	J-3
<i>Coregonus albula</i>			80	14M + 2SM + 4ST + 60A	96	100			ACN=100	Finland	J-3
<i>Coregonus artedi</i>			80	14M + 2SM + 4ST + 60A	96	100			ACN=100	USA (Lake Huron)	P-33
<i>Coregonus artedii</i>			80	16M + 10SM + 54A	106	106		6.5 FD		USA (Lake Superior)	B-43
<i>Coregonus autumnalis</i>			78-80		96-98			6.0, 6.4 FCM		Europe, N. America	P-34
<i>Coregonus chadary</i>			80-84		98-100					Russia	P-34
<i>Coregonus clupeaformis</i>			80	20M + 8SM + 52A	108	108		6.9 FD		USA (Lake Superior)	B-43
<i>Coregonus clupeaformis</i>			80	20 M/SM + 60A	100	100	2	(4.9 FIA)	ACN=100	Canada (Ontario)	P-31, P-33, H-41
<i>Coregonus hoyi</i>			80	10M + 8SM + 62A	98	98		5.5 FD		USA (Lake Superior)	B-43
<i>Coregonus hoyi</i>			80	14M + 2SM + 4ST + 60A	96	100			ACN=100	USA (Lake Michigan)	P-33
<i>Coregonus lavaretus</i>			80	12 M/SM + 68 ST/A	92				ACN=100?	Sweden	N-45
<i>Coregonus lavaretus</i>		M	80	18 M/SM + 62 ST/A	98					Sweden	N-45
<i>Coregonus lavaretus ludoga</i>			80	22M + 58 ST/A	102					Russia (Siberia)	V-43
<i>Coregonus lavaretus maraenoides</i>			80	22M + 58 ST/A	102					Russia (Siberia)	V-43
<i>Coregonus muksun</i>			78		100					Russia	P-34
<i>Coregonus nasus</i>			80	10 M/SM + 2ST + 68A	90	92			ACN=100	Sweden	N-45
<i>Coregonus nasus</i>			60	30M + 8SM + 22 ST/A	98			(7.1 FCM)	3B, ACN=100	Russia (Anadyr River)	F-41, L-34
<i>Coregonus nasus</i>			58-60	22-24 M + 10SM + 24-28 ST/A	92					Russia (E. Siberia Sea)	V-42
<i>Coregonus nigripinnis</i>			80	14M + 2SM + 4ST + 60A	96	100			ACN=98	Canada (Lake Nipigon)	P-33
<i>Coregonus peled</i>			80	12 M/SM + 68 ST/A	92					Sweden	N-45
<i>Coregonus peled</i>			80	18 M/SM/ST + 62A		98			ACN=100	Sweden	N-45
<i>Coregonus peled</i>			74	22 S/SM + 52 ST/A	96					Russia	V-43
<i>Coregonus peled</i>			76							(Europe)	J-4
<i>Coregonus pidschian</i>		M	80	18 M/SM + 62 ST/A	98				ACN=100	Sweden	N-45
<i>Coregonus pidschian</i>	<i>lavaretus pidschian</i>		80	22M + 58 ST/A	102					Russia (Siberia)	V-43
<i>Coregonus pidschian</i>	<i>lavaretus pidschian</i>		80-82	12-14 M + 8SM + 62-58 ST/A	102					Russia (E. Siberia Sea)	V-42
<i>Coregonus reighardi</i>			80	12M + 12SM + 56A	104	104		6.0 FD		USA (Lake Huron)	B-43
<i>Coregonus sardinella</i>		F	80	8M + 10SM + 62 ST/A	98				XX, 1-6 B	Russia (Anadyr River)	F-45
<i>Coregonus sardinella</i>		M	81	9M + 10SM + 62 ST/A	100				XY ₁ Y ₂ , 1-6 B	Russia (Anadyr River)	F-42, F-45
<i>Coregonus tugun</i>			86	12M + 8SM + 66A	106	106			ACN=100	Russia (Siberia)	V-43
<i>Coregonus ussuriensis</i>			80	20 M/SM + 60 ST/A	100				ACN=100	Russia	V-43
<i>Coregonus ussuriensis</i>			80-82	10-12 M + 8SM + 64-60 A	100					Russia (Far East)	V-41

Table 6.17 Order SALMONIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference	
<i>Coregonus</i> <i>widegreni</i>	<i>lavaretus baeri</i>		80	12M + 4SM + 64 ST/A	96					Russia	V-41	
<i>Coregonus</i> <i>zenithicus</i>			80	10M + 8SM + 62A	98	98		5.3 FD		USA (Lake Superior)	B-43	
<i>Coregonus</i> <i>zenithicus</i>			80	14M + 2SM + 4ST + 60A	96	100	2		ACN=98	Canada (Lake Nipigon)	P-33	
<i>Coregonus</i> sp.			80	12M + 6SM + 62A	98	98			ACN=98	Russia (Anadyr R.)	V-43	
<i>Coregonus</i> sp.		F, M	80	14M + 16 SM/ST + 50A		110	5		ACN=99	Italy (Bolsena)	S-89	
<i>Coregonus</i> sp.		F, M	80	14M + 15 SM/ST + 51A		109	3		ACN=99	Italy (Bracciano)	S-89	
<i>Prosopium</i> <i>abyssicola</i>			72	12M + 16SM + 44A	100	100				USA (Bear Lake)	B-44	
<i>Prosopium</i> <i>coulteri</i>			82	10M + 8SM + 64A	100	100		5.1 FD	ACN=100?	USA (Lake Superior)	B-43	
<i>Prosopium</i> <i>cylindraceum</i>			78	12M + 10SM + 56A	100	100		5.0 FD, 4.0 FIA		USA (Lake Superior)	B-43, H-41	
<i>Prosopium</i> <i>geminifer</i>	<i>geminiferum</i>		64	24M + 12SM + 28A	100	100				USA (Bear Lake)	B-44	
<i>Prosopium</i> <i>spilonotus</i>			74	12M + 14SM + 48A	100	100				USA (Bear Lake)	B-44	
<i>Prosopium</i> <i>williamsoni</i>			78	8M + 14SM + 56A	100	100				USA	B-44	
<i>Stenodus</i> <i>leucichthys</i>			74	20M + 14SM + 40A	108	108		(6.5 FD)		USA (AK)	B-45, B-43	
<i>Stenodus</i> <i>leucichthys nelma</i>			76	22 M/SM/ST + 54A		98			ACN=100	Russia (Anadyr R.)	F-46	
Thymallinae												
<i>Thymallus</i> <i>arcticus</i>			100	58 SM/M + 10ST + 32A	158	168		(3.9–4.0 FIA)	ACN=102	Russia (upper Ob R.)	S-44, H-40	
<i>Thymallus</i> <i>arcticus</i>			102	56 SM/M + 10ST + 36A	158	168			ACN=102	Russia (upper Ob R.)	S-44	
<i>Thymallus</i> <i>arcticus</i>			98	52 M/SM + 10ST + 36A	150	160				Russia (lower Ob R.)	S-44	
<i>Thymallus</i> <i>grubei</i>			98–100	46–50 M/SM + 10–18 ST + 34–44A					ACN=100?	Russia (Far East)	M-16	
<i>Thymallus</i> <i>grubei</i>			98	32M + 18SM + 14ST + 34A	148	162				Russia (Far East)	M-16	
<i>Thymallus</i> <i>thymallus</i>			102	68 M/SM + 34A	170	170		(4.3 FCM)	ACN=102	Russia (Syla R.)	S-43, V-86	
<i>Thymallus</i> <i>thymallus</i>			104	66 M/SM + 38A	170	170				Russia (Syla R.)	S-43	
<i>Thymallus</i> <i>thymallus</i>			102	58 M/SM + 10ST + 34A	160	170				short-cycle type	Russia (Kama basin)	S-45
<i>Thymallus</i> <i>thymallus</i>			102	58 M/SM + 10ST + 34A	160	170				middle-cycle type	Russia (Kama basin)	S-45
<i>Thymallus</i> <i>thymallus</i>			104	56 M/SM + 10ST + 38A	160	170				long-cycle type	Russia (Kama basin)	S-45
<i>Thymallus</i> <i>thymallus</i>		M	102	68 M/SM/ST + 34A		170				Sweden	N-41	
<i>Thymallus</i> <i>thymallus</i>							2			Europe	K-2	
<i>Thymallus</i> <i>thymallus</i>							1–4			Poland	J-5	
Salmoninae												
<i>Brachymystax</i> <i>lenok</i>			92	16M + 12SM + 64 ST/A	120				ACN=100	Russia	V-44	
<i>Brachymystax</i> <i>lenok</i>		F, M	90	26 M/SM + 64 ST/A	116				ACN=100	Korea	K-3	
<i>Hucho</i> <i>hucho</i>			82	26M + 6SM + 12ST + 38A	114	126			ACN=100	former Yugoslavia	R-5	
<i>Hucho</i> <i>hucho</i>			82	26M + 4SM + 12ST + 40A	112	124			ACN=100	Slovakia	R-5	
<i>Hucho</i> <i>taimen</i>			84	20M + 12SM + 52 ST/A	116				ACN=100	Russia	V-44	
<i>Hucho</i> <i>taimen</i>			82	22M + 8SM + 12ST + 40A	112	124				Russia (Amur R.)	F-50	

Table 6.17 Order SALMONIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon	Reported in karyotype paper		Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Hucho</i>	<i>taimen</i>			83	22M + 7SM + 12ST + 42A	112	124				Russia (Amur R.)	F-50
<i>Parahucho</i>	<i>perryi</i>			62	42 M/SM + 4ST + 16A	104	108	2		ACN=102	Japan (Hokkaido)	C-38, U-72
<i>Parahucho</i>	<i>perryi</i>			62	38 M/SM + 8ST + 16A	100	108				Russia	V-72
<i>Oncorhynchus</i>	<i>aguabonita</i>	<i>Salmo</i>		58	44M + 2SM + 2ST + 10A	104	106		5.0* FCM	ACN=102	USA (CA)	M-71, G-25, J-15
<i>Oncorhynchus</i>	<i>apache</i>	<i>Salmo</i>		56	50 M/SM + 6 ST/A	106				ACN=102	USA (AZ)	M-71, G-26
<i>Oncorhynchus</i>	<i>chrysogaster</i>	<i>Salmo</i>		60		102					Mexico	P-34
<i>Oncorhynchus</i>	<i>clarkii alvordensi</i>	<i>Salmo</i>		64	40 M/SM + 24 ST/A	104					USA (OR)	G-26
<i>Oncorhynchus</i>	<i>clarkii bouvieri</i>	<i>Salmo</i>		64	38M + 2SM + 24A	104	104		5.0* FCM		USA (WY)	L-70, J-15
<i>Oncorhynchus</i>	<i>clarki clarki</i>	<i>Salmo</i>		68	36 M/SM + 32 ST/A	104		(5.2* FCM)		ACN=100	USA (CA)	G-26, G-97, J-15
<i>Oncorhynchus</i>	<i>clarki clarki</i>	<i>Salmo</i>		70	36 M/SM + 34 ST/A	106		2			USA (WA)	G-26, P-31
<i>Oncorhynchus</i>	<i>clarki henshawi</i>	<i>Salmo</i>		64	40 M/SM + 24 ST/A	104				ACN=100	USA (CA)	G-26, G-97
<i>Oncorhynchus</i>	<i>clarki henshawi</i>	<i>Salmo</i>		64	42 M/SM + 22 ST/A	106					USA (NV)	G-26
<i>Oncorhynchus</i>	<i>clarki lewisi</i>	<i>Salmo</i>		66	34M + 4SM + 12ST + 16A	104	116			ACN=100	USA (MT)	L-70
<i>Oncorhynchus</i>	<i>clarki lewisi</i>	<i>Salmo</i>		64	42 M/SM + 22 ST/A	106					USA (MT, WY)	G-26
<i>Oncorhynchus</i>	<i>clarki</i> subsp.	<i>Salmo</i>		64	42 M/SM + 22 ST/A	106					USA (NV)	G-26, M-71
<i>Oncorhynchus</i>	<i>gilae</i>	<i>Salmo</i>		56	49 M/SM + 7A	105	105			ACN=100	USA (NM)	B-13
<i>Oncorhynchus</i>	<i>gilae</i>	<i>Salmo</i>		56	48 M/SM + 8A	104	104				USA (NM)	B-13
<i>Oncorhynchus</i>	<i>gorbuscha</i>		F, M	52	48 M/SM + 4ST	100	104	2	(5.1* FCM, 4.5 FD)	ACN=100	Japan (Hokkaido)	M-95, J-15, P-93
<i>Oncorhynchus</i>	<i>gorbuscha</i>			52	52 M/SM	104	104			XX/XY	USA (AK)	S-71, P-62
<i>Oncorhynchus</i>	<i>gorbuscha</i>			52		104					Russia (Kamchatka)	G-56
<i>Oncorhynchus</i>	<i>keta</i>			74	26 M/SM + 6ST + 42A	100	106		(5.3* FCM, 5.5 FD)	ACN=100	Japan (Hokkaido)	S-14, J-15, O-33
<i>Oncorhynchus</i>	<i>keta</i>			74	28 M/SM + 46 ST/A	102			(5.0 FIA)		Japan	U-72, H-41
<i>Oncorhynchus</i>	<i>keta</i>			74	32 M/SM/ST + 42A		106			ACN=100	Japan (Hokkaido)	I-11
<i>Oncorhynchus</i>	<i>keta</i>			74	28 M/SM + 46 ST/A	102		2		XX/XY	USA (WA)	S-71, P-31, P-62
<i>Oncorhynchus</i>	<i>keta</i>			74	26M + 6SM + 42A	106	106				Russia (Kamchatka)	G-55
<i>Oncorhynchus</i>	<i>kisutch</i>			60	48 M/SM + 12ST	108	120		(5.2* FCM, 6.1 FD)		Japan	U-72, J-15, O-8
<i>Oncorhynchus</i>	<i>kisutch</i>			60	38M + 8SM + 14 ST/A	106					Korea?	K-118
<i>Oncorhynchus</i>	<i>kisutch</i>			60	44M + 14-16 ST + 2-0 A	104	118-120			ACN=102	Russia (Kamchatka)	G-55
<i>Oncorhynchus</i>	<i>kisutch</i>		F, M	60	34M + 8SM + 14ST + 4A	102	116				Russia (Pacific)	S-61
<i>Oncorhynchus</i>	<i>kisutch</i>			60	38M + 12SM + 10 ST/A	110		2		ACN=102	USA	U-67, P-93
<i>Oncorhynchus</i>	<i>kisutch</i>			60	52 M/SM + 8 ST/A	112		2			USA (WA)	S-71, P-31
<i>Oncorhynchus</i>	<i>masou</i>	<i>Sakuramasu</i>		66	38 M/SM + 28 ST/A	104			(5.1* FCM, 4.1 FD)		Japan	U-72, J-15, O-8
<i>Oncorhynchus</i>	<i>masou</i>			66	36 M/SM + 22ST + 8A	102	124	2		ACN=100	Japan (Hokkaido)	C-38
<i>Oncorhynchus</i>	<i>masou</i>			66	34 M/SM + 32 ST/A	100					Russia	V-72
<i>Oncorhynchus</i>	<i>masou ishikawae</i>	<i>rhodurus</i> var. <i>macrostomus</i>		66	34 M/SM + 24ST + 8A	100	124		5.9* FCM	ACN=100	Japan	M-95, O-48

Table 6.17 Order SALMONIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Oncorhynchus masou ishikawai</i>	<i>masou</i> , Amago		66	38 M/SM + 28 ST/A	104					Japan	U-72, F-52
<i>Oncorhynchus masou ishikawai</i>	<i>masou</i> var. <i>ishikawai</i>		66	34 M/SM + 24ST + 8A	100	124			ACN=100	Japan	M-95
<i>Oncorhynchus masou masou</i>	<i>masou</i> var. <i>masou</i>	F, M	66	34 M/SM + 24ST + 8A	100	124		6.6 FD	ACN=100	Japan	M-95, O-33
<i>Oncorhynchus masou</i> subsp.	<i>rhodurus</i> var. <i>rhodurus</i>	F, M	66	34 M/SM + 24ST + 8A	100	124		4.3 FD	ACN=100	Japan	M-95, O-33
<i>Oncorhynchus masou</i> subsp.	Biwamasu		66							Japan	F-52
<i>Oncorhynchus mykiss</i>	<i>Parasalmo</i>		58	46M + 2ST + 10A	104	106		(5.2 FD)	XY, ACN=100	Russia (Kamchatka)	F-40, F-43, G-85
<i>Oncorhynchus mykiss</i>	<i>Salmo</i>		58	46 M/SM + 2ST + 10A	104	106		(5.2, 5.4 FCM)	ACN=100	Russia (Kamchatka)	G-58, V-86
<i>Oncorhynchus mykiss</i>	<i>Salmo</i>		60-62		106-108					diadromous	V-2
<i>Oncorhynchus mykiss</i>	<i>Salmo</i>		58-60		104					lacustrine	V-2
<i>Oncorhynchus mykiss</i>	<i>Salmo</i>		58	46M + 2ST + 10A	104	106				USA, Canada, Russia	O-64
<i>Oncorhynchus mykiss</i>	<i>Salmo</i>		60	44M + 4ST + 12A	104	108				USA (WA), Canada	O-64
<i>Oncorhynchus mykiss</i>	<i>Salmo</i> , Nijimasu		60							culture pond, Japan	F-52
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		64							Mexico	N-21
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		58-60		104		2	(4.9* FCM)		USA (AK-CA)	P-54, P-93, T-47, J-15
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		58							USA (AK, ID)	T-47, P-78
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		58-63		104					UK (Scotland)	H-6
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		60	44 M/SM + 16 ST/A	104			(4.8 FIA)		USA (MI)	M-71, G-26, H-41
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		58-60		104					USA (WA)	T-44
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>	F, M	58	46M + 2ST + 10A	104	106			XX/XY	USA (WA)	T-45
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		60	44 M/SM + 2ST + 14A	104	106				USA (MI)	C-81
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		90	66 M/SM + 3ST + 21A	156	159			3X	USA (MI)	C-81
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>	F, M	60	44 M/SM + 2ST + 14A	104	106	2		ACN=100	Japan	M-95, U-6
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>	F, M	60	44 M/SM + 2ST + 14A	104	106	2		XX/XY, ACN=100	Japan	U-6
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>	F, M	62	42 M/SM + 2ST + 18A	104	106	2		XX/XY, ACN=100	Japan (Tochigi)	U-6
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>	F, M	61	43 M/SM + 1ST + 17A	104	105	2		XX/XY, ACN=100	Japan (Tochigi)	U-6
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		60	44 M/SM + 16 ST/A	104					Japan	U-78
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		60	44 M/SM + 16 ST/A	104				ACN=100	Croatia	A-26
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdnerii</i>		62		104					Russia	V-2
<i>Oncorhynchus mykiss</i>	<i>Salmo gairdneri aquilarum</i>		58	46 M/SM + 2ST + 10A	104	106				USA (CA)	B-60
<i>Oncorhynchus mykiss irideus</i>	<i>Salmo irideus</i>		60	44 M/SM + 16A	104	104			ACN=100	Rumania (Carpathians)	R-35
<i>Oncorhynchus mykiss irideus</i>	<i>Salmo irideus</i>		62	44 M/SM + 18A	106	106			ACN=102	Rumania (Carpathians)	R-35
<i>Oncorhynchus mykiss irideus</i>	<i>Salmo irideus</i>		61	42 M/SM + 19A	103	103			ACN=101	Rumania (Carpathians)	R-35
<i>Oncorhynchus mykiss irideus</i>	<i>Salmo irideus</i>		58	42 M/SM + 16A	100	100				Rumania (Carpathians)	R-35
<i>Oncorhynchus mykiss</i>			58, 60							USA (CA, ID)	P-78
<i>Oncorhynchus mykiss</i>	PdD 66		58	46 M/SM + 2ST + 10A	104	106				former Czechoslovakia	F-28

Table 6.17 Order SALMONIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon	Reported in karyotype paper		Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Oncorhynchus mykiss</i>	PdD 66			60	44 M/SM + 2ST + 14A	104	106				former Czechoslovakia	F-28
<i>Oncorhynchus nerka</i>				58	44M + 2SM + 12A	104	104	(6.1 FD)	ACN=102	Russia (Kamchatka)	G-55, O-33	
<i>Oncorhynchus nerka</i>		F		58	44 M/SM + 2ST + 12A	102	104			Russia (Kamchatka)	S-60, S-61	
<i>Oncorhynchus nerka</i>		M		57	45 M/SM + 2ST + 10A	102	104			Russia (Kamchatka)	S-60, S-61	
<i>Oncorhynchus nerka</i>		F		58		104			Sex chrom.	Russia	F-44	
<i>Oncorhynchus nerka</i>		M		57		104			Sex chrom.	Russia	F-44	
<i>Oncorhynchus nerka</i>				56	46 M/SM + 10A	102	102			Canada (B.C.)	S-71	
<i>Oncorhynchus nerka</i>		F		58	44 M/SM + 2ST + 12A	104	104	2	(5.5-5.9* FCM)	X ₁ X ₁ X ₂ X ₂	USA (WA)	
<i>Oncorhynchus nerka</i>		M		57	45 M/SM + 2ST + 10A	102	104			X ₁ X ₂ Y	USA (WA)	
<i>Oncorhynchus nerka</i>	Himemasu	F		58	46 M/SM + 12A	104	104	(6.1 FD)	X ₁ X ₁ X ₂ X ₂	Japan (Tochigi)	U-5, U-72, O-33	
<i>Oncorhynchus nerka</i>	Himemasu	M		57	47 M/SM + 10A	104	104			X ₁ X ₂ Y	Japan (Tochigi)	
<i>Oncorhynchus nerka</i>	Himemasu			58	44 M/SM + 2ST + 12A	102	104		ACN=102	Japan	S-14, M-95	
<i>Oncorhynchus penshinensis</i>	<i>Salmo</i>	F, M		58	46 M/SM + 2ST + 10A	104	106		ACN=102	Russia (Kamchatka)	G-58	
<i>Oncorhynchus tshawytscha</i>				68	32M + 4SM + 32A	104	104	2	(5.2* FCM, 4.9 FIA)	ACN=100	USA, E. Pacific	
<i>Oncorhynchus tshawytscha</i>				68	36 M/SM + 32A	104	104			USA (WA)	S-71	
<i>Oncorhynchus tshawytscha</i>		M		68	32 M/SM + 28ST + 8A	100	128		ACN=100	W. Pacific	M-95	
<i>Oncorhynchus tshawytscha</i>				68			120			Russia (Kamchatka)	G-56	
<i>Oncorhynchus</i> sp.	<i>Salmo</i>			58		104				USA (CA., OR)	G-26	
<i>Salmo carpio</i>				80		98				Italy	P-34	
<i>Salmo ischchan aestivalis</i>				82	18M + 64A	100	100		ACN=100	Armenia (Sevan basin)	D-22, R-98	
<i>Salmo ischchan danilewskii</i>				82	16M + 66A	98	98		ACN=100	Armenia (Sevan basin)	D-22, R-98	
<i>Salmo ischchan gegarkuni</i>				80	18M + 62A	98	98		ACN=100	Armenia (Sevan basin)	D-22, R-98	
<i>Salmo ischchan ischchan</i>				80	16M + 64A	96	96		ACN=98	Armenia (Sevan basin)	D-22, R-98	
<i>Salmo letnica</i>				80		104				Macedonia	P-34	
<i>Salmo marmoratus</i>				80	22 M/SM + 58A	102	102		ACN=100	Croatia	A-26	
<i>Salmo obtusirostris</i>	<i>Salmothymus o. oxyrhynchus</i>			82	12 M/SM + 70A	94	94		ACN=98	former Yugoslavia	B-18	
<i>Salmo</i> <i>salar</i>				54	18 M/SM + 36A	72	72	2	ACN=92	Atlantic	U-73	
<i>Salmo</i> <i>salar</i>		F, M		58	16 M/SM + 42A	74	74	(6.2 FCM)	ACN=98	Russia (Lake Onega)	Z-11, V-86	
<i>Salmo</i> <i>salar</i>				56	14 M/SM + 42A	70	70		ACN=94	Russia (Lake Onega)	Z-11	
<i>Salmo</i> <i>salar</i>				56	18 M/SM + 38A	74	74		ACN=98	Russia (White Sea basin)	Z-33	
<i>Salmo</i> <i>salar</i>				57	16 M/SM + 41A	73	73		ACN=97	Russia (White Sea basin)	Z-33	
<i>Salmo</i> <i>salar</i>				58	14M + 2SM + 42A	74	74		ACN=98	Russia (Lake Ladoga)	Z-10	
<i>Salmo</i> <i>salar</i>				58	14 M/SM + 44A	72	72		ACN=98	Russia (Neva)	B-7, B-8	
<i>Salmo</i> <i>salar</i>				58	16 M/SM + 42A	74	74			Russia (Neva)	B-7, B-8	
<i>Salmo</i> <i>salar</i>				58	16 M/SM + 42A	74	74		ACN=98	Sweden	N-39, N-48	

Table 6.17 Order SALMONIFORMES (continued)

A Current scientific name of taxon Family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Salmo</i> <i>salar</i>			56	16 M/SM + 40A	72	72				Sweden	N-39
<i>Salmo</i> <i>salar</i>			58	10M + 6SM + 42A	74	74			ACN=98	Norway	B-42
<i>Salmo</i> <i>salar</i>			57-59							Norway	G-23
<i>Salmo</i> <i>salar</i>			58	16 M/SM + 42A	74	74		(6.0* FCM)	ACN=98	UK (Scotland)	H-7, J-15
<i>Salmo</i> <i>salar</i>			58	16M + 42 ST/A	74					UK (Scotland)	H-10
<i>Salmo</i> <i>salar</i>			57	17 M/SM + 40A	74	74			ACN=98	UK (Scotland)	H-7
<i>Salmo</i> <i>salar</i>			56	18 M/SM + 38A	74	74			ACN=98	UK (Scotland)	H-7
<i>Salmo</i> <i>salar</i>			58	16 M/SM + 42A	74	74				Canada (Chaleur Bay)	N-48
<i>Salmo</i> <i>salar</i>			56				2	(6.2-6.5 FIA)		Atlantic	P-31, P-54, H-40
<i>Salmo</i> <i>salar</i> <i>salar</i>			54-56		72						B-63
<i>Salmo</i> <i>salar</i> <i>salar</i>			54	18 M/SM + 36 ST/A	72						B-63
<i>Salmo</i> <i>salar sebago</i>			56-57		72					(USA, Lake Sebago)	B-63
<i>Salmo</i> <i>salar sebago</i>			56	16 M/SM + 40 ST/A	72					(USA, Lake Sebago)	B-63
<i>Salmo</i> <i>trutta</i>			82	16M + 66A	98	98		(6.1 FCM)		Armenia (Marmarik R.)	R-99, V-86
<i>Salmo</i> <i>trutta</i>			84	16M + 68A	100	100		(5.9 FCM)	ACN=100	Armenia (Argichi R.)	R-99, T-73
<i>Salmo</i> <i>trutta</i>			80	14M + 8SM + 58A	102	102	2			Poland	W-29
<i>Salmo</i> <i>trutta</i>			77-82	20-25 M/SM + 52-62 ST/A	102					Germany	Z-14
<i>Salmo</i> <i>trutta</i>		F, M	80	20 M/SM + 60 ST/A	100				ACN=100	Sweden (Morrum)	N-44, N-51
<i>Salmo</i> <i>trutta</i>			80						migratory	Norway	G-23
<i>Salmo</i> <i>trutta</i>			80	22M/SM + 58A	102	102	4	(5.2* FCM)	ACN=100	UK (Scotland)	H-6, J-15
<i>Salmo</i> <i>trutta</i>			80	21M/SM + 59A	101	101				UK (Scotland)	H-6
<i>Salmo</i> <i>trutta</i>			78	20 M/SM + 58A	98	98				Armenia (Veda R.)	D-22
<i>Salmo</i> <i>trutta</i>		F	80	18 M/SM + 62 ST/A	98				ACN=100	Japan (Tochigi)	U-77
<i>Salmo</i> <i>trutta</i>	<i>trutta fario</i>		80	24 M/SM + 56A	104	104		(6.3 FCM, 5.8 FD)	ACN=100	Rumania (Carpathians)	R-35, G-85
<i>Salmo</i> <i>trutta</i>	<i>trutta fario</i>		80	22 M/SM/ST + 58A		102			ACN=100	Spain	M-81
<i>Salmo</i> <i>trutta</i>	<i>trutta fario</i>		79	23 M/SM/ST + 56A		102				Spain	M-81
<i>Salmo</i> <i>trutta</i>	<i>trutta m. fario</i>		80	20 M/SM + 60 ST/A	100				ACN=100	Croatia	A-26
<i>Salmo</i> <i>trutta</i>	<i>trutta m. fario</i>		80	22 M/SM + 58 ST/A	102					Poland	W-28
<i>Salmo</i> <i>trutta</i>	<i>trutta m. trutta</i>		80	14M + 8SM + 58A	102	102	2		migratory	Poland	W-29
<i>Salmo</i> <i>trutta</i>	<i>trutta m. trutta</i>		80	14M + 8SM + 58A	102	102	2-3	(5.9 FCM, 5.5 FD)		Spain (Galicia)	M-40, M-137, G-85
<i>Salmo</i> <i>trutta oxianus</i>			80	18 M/SM + 62 ST/A	98					Kyrgyzstan (Kyzylsu R.)	M-59
<i>Salvelinus</i> <i>albus</i>			78-80		98					Russia	P-34
<i>Salvelinus</i> <i>alpinus</i>			82-84	16-18 M/SM + 64-68 ST/A	100					Russia (Kamchatka)	V-74
<i>Salvelinus</i> <i>alpinus</i>			82	18 M/SM + 64 ST/A	100				ACN=98	Russia (Kamchatka)	V-74
<i>Salvelinus</i> <i>alpinus</i>			80	20 M/SM + 60 ST/A	100				ACN=98	Russia (Kamchatka)	V-74

Table 6.17 Order SALMONIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Salvelinus</i>	<i>alpinus</i>		78	20 M/SM + 58A	98	98		6.9 FD	ACN=98	UK (Scotland)	H-9, H-28
<i>Salvelinus</i>	<i>alpinus</i>		82				4-8	(5.8, 6.7 FIA)		(N. Europe)	P-54, P-93, H-41
<i>Salvelinus</i>	<i>alpinus</i>		78-80							Norway	G-23
<i>Salvelinus</i>	<i>alpinus</i>	<i>Salmo</i>	M	80 20 M/SM + 60 ST/A	100					Sweden	N-44
<i>Salvelinus</i>	<i>boganiidae</i>		76-78		98					Russia (Lake Elgygytgyn)	P-34
<i>Salvelinus</i>	<i>confluentus</i>		78	24 M/SM + 54 ST/A	102	2			ACN=98	USA (MT)	C-38
<i>Salvelinus</i>	<i>elgycicus</i>	F, M	78	18M + 2SM + 58 ST/A	98	2			ACN=96	Russia (Lake Elgygytgyn)	F-48
<i>Salvelinus</i>	<i>elgycicus</i>	F, M	77	19M + 2SM + 56 ST/A	98	2			ACN=96	Russia (Lake Elgygytgyn)	F-48
<i>Salvelinus</i>	<i>elgycicus</i>	M	76	20M + 2SM + 54 ST/A	98				ACN=96	Russia (Lake Elgygytgyn)	F-48
<i>Salvelinus</i>	<i>fontinalis</i>		84			8-12	(5.7* FCM)			USA	K-73, P-54, J-15
<i>Salvelinus</i>	<i>fontinalis</i>	F, M	84	18 M/SM + 66 ST/A	102		(6.5 FD)		ACN=98	Japan	U-2, O-33
<i>Salvelinus</i>	<i>fontinalis</i>	F, M	84	16 M/SM + 6ST + 62A	100	106				Japan	M-95
<i>Salvelinus</i>	<i>fontinalis</i>		84	16 M/SM + 68 ST/A	100			(6.5 FIA, 7.0 BFA)		N. America	U-67, B-63, H-39, H-40
<i>Salvelinus</i>	<i>kronocius</i>	<i>kronicus</i>	78-82		100					Russia (Kamchatka)	P-34
<i>Salvelinus</i>	<i>leucomaenoides</i>		84	16 M/SM + 2ST + 66A	100	102				Russia	V-72
<i>Salvelinus</i>	<i>leucomaenoides</i>	F, M	84	14M + 4SM + 66 ST/A	102				ACN=98	Russia (Prymorye)	F-47
<i>Salvelinus</i>	<i>leucomaenoides imbrarius</i>	Gogi	84	16 M/SM + 2 SM/ST + 66 ST/A	100/102					Japan (Hyogo)	U-72
<i>Salvelinus</i>	<i>leucomaenoides imbrarius</i>	Gogi	84	16 M/SM + 68 ST/A	100	2			ACN=98	Japan (Shimane)	C-38
<i>Salvelinus</i>	<i>leucomaenoides leucomaenoides</i>	Amemasu	F, M	84 16 M/SM + 2ST + 66A	100	102		(7.5 FD)	ACN=98	Japan (Hokkaido)	A-2, U-72, O-33
<i>Salvelinus</i>	<i>leucomaenoides leucomaenoides</i>	Amemasu	84	16 M/SM + 2 SM/ST + 66 ST/A	100/102					Japan (Hokkaido)	U-72
<i>Salvelinus</i>	<i>leucomaenoides leucomaenoides</i>	Amemasu	84	16 M/SM + 68 ST/A	100	2			ACN=98	Japan (Hokkaido)	C-38
<i>Salvelinus</i>	<i>leucomaenoides pluvius</i>	Nikkoiwana	F, M	84 16 M/SM + 2 SM/ST + 66 ST/A	100/102					Japan (Tochigi)	U-72, U-77
<i>Salvelinus</i>	<i>leucomaenoides pluvius</i>	Nikkoiwana	84	16 M/SM + 68 ST/A	100	2			ACN=98	Japan (Toyama)	C-38
<i>Salvelinus</i>	<i>levanidovi</i>		78-80		98					Russia	P-34
<i>Salvelinus</i>	<i>malma</i>		F, M	82 14M + 4SM + 64 ST/A	100				ACN=98	Russia (Prymorye)	F-47
<i>Salvelinus</i>	<i>malma krascheninnikovi</i>		82	16 M/SM + 66 ST/A	98	2			ACN=98	Japan (Hokkaido)	C-38
<i>Salvelinus</i>	<i>malma lordi</i>		82	16 M/SM + 66 ST/A	98	2			ACN=98	USA (AK)	C-38, U-14
<i>Salvelinus</i>	<i>malma malma</i>	Oshorokoma	F, M	82 16 M/SM + 4ST + 62A	98	102			ACN=98	Japan (Hokkaido)	A-2, M-95
<i>Salvelinus</i>	<i>malma malma</i>	Oshorokoma	F, M	82 16 M/SM + 2 SM/ST + 64 ST/A	98/100				ACN=98	Japan (Hokkaido)	U-2, U-72
<i>Salvelinus</i>	<i>malma miyabei</i>	Miyabeiwana	82	16 M/SM + 66 ST/A	98	2			ACN=98	Japan (Hokkaido)	C-38
<i>Salvelinus</i>	<i>malma miyabei</i>	Miyabeiwana	82	18 M/SM + 64 ST/A	100				ACN=98	Japan (Hokkaido)	U-2, U-72
<i>Salvelinus</i>	<i>namaycush</i>		84	16 M/SM + 68 ST/A	100	8-12	5.7-6.3 FIA		XX/XY	N. America	B-63, P-34, P-54, H-40
<i>Salvelinus</i>	<i>taranetzi</i>		76-78		98-100					Russia	P-34
<i>Salvethymus</i>	<i>svetovidovi</i>	F, M	56	38M + 4SM + 14A	98	98			ACN=98	Russia (Lake Elgygytgyn)	F-49

Table 6.18 Order ESOCIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Esocidae											
<i>Esox</i>	<i>a. americanus</i>		50	50A		50	50	2	2.4 FD	ACN=50	Canada, USA
<i>Esox</i>	<i>a. vermiculatus</i>		50	50A		50	50	2	2.3 FD, 2.1 FIA	ACN=50	Canada (Ontario)
<i>Esox</i>	<i>lucius</i>		50	50A		50	50	(2.3 FCM, 2.2 FIA)		USA	A-32, V-86, H-41
<i>Esox</i>	<i>lucius</i>		50	50A		50	50	2	2.7 FD	ACN=50	Canada, UK
<i>Esox</i>	<i>lucius</i>	M	50	50A		50	50			ACN=50	Sweden
<i>Esox</i>	<i>masquinongy</i>		50	50A		50	50	2	2.6 FD	ACN=50	Canada (Ontario)
<i>Esox</i>	<i>masquinongy</i>		50	50A		50	50	2			N. USA, Canada
<i>Esox</i>	<i>niger</i>		50	50 ST/A		50		(1.8 FIA)			R-115
<i>Esox</i>	<i>niger</i>		50			50	50	2			N. America
<i>Esox</i>	<i>niger</i>		50					2.4 FD	ACN=50	USA (NC)	B-63, H-41
<i>Esox</i>	<i>niger</i>		50							USA (NC)	R-115
<i>Esox</i>	<i>reicherti</i>		50	50 ST/A		50		2.6 FD	ACN=50	USA (NC)	B-12
<i>Esox</i>	<i>reicherti</i>		50	50 ST/A		50				Russia (Amur R.)	B-12, B-63
Umbridae											
<i>Dallia</i>	<i>pectoralis</i>		78	18M/SM + 60 ST/A		96		2	2.5 FD		USA (AK)
<i>Novumbra</i>	<i>hubbsi</i>		48	4M + 10SM + 14ST + 20A		62	76	4	2.1 FD	ACN=48	USA (WA)
<i>Umbra</i>	<i>krameri</i>	F, M	44	44A		44	44	2		ACN=44	Slovakia
<i>Umbra</i>	<i>limi</i>		22	22M		44	44	(5.0 FD, 5.1 FIA)		ACN=44	Canada (Ontario)
<i>Umbra</i>	<i>limi</i>		22	18M + 4SM		44	44	2	(5.4 BFA)		USA (NY)
<i>Umbra</i>	<i>pygmaea</i>		22	22M		44	44	2	4.8 FD	ACN=44	USA (NC)
											B-12, R-115

Table 6.19 Order STOMIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Gonostomatoidei											
Gonostomatidae											
<i>Bonapartia</i>	<i>pedaliota</i>			48*						Atlantic	P-46
<i>Gonostoma</i>	<i>elongatum</i>			ca. 48*						Atlantic	P-46
<i>Sigmops</i>	<i>bathyphilum</i>	<i>Gonostoma</i>		12*						Atlantic	P-46
Sternopychidae											
Sternopychinae											
<i>Argyropelecus</i>	<i>affinis</i>		<i>pacificus</i>	50	20 M/SM + 28A + 2 satellited chrom.				ACN=52	USA (off CA)	C-46
<i>Argyropelecus</i>	<i>hemigymnus</i>		<i>intermedius</i>	52	26M + 10SM + 10A + 6 satellited chrom.				ACN=52	USA (off CA)	C-46
<i>Argyropelecus</i>	<i>lychnus</i>			48	20M + 10SM + 12A + 6 satellited chrom.				ACN=52	USA (off CA)	C-46
<i>Sternopyx</i>	<i>diaphana</i>	M		35	16M + 8SM + 5A + 6 satellited chrom.			XO		USA (off CA)	C-46, C-48

Table 6.20 Order AULOPIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag— NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Synodontoidei											
Synodontidae											
<i>Saurida elongata</i>		F	48	47A + 1 MC	48			ZW	Japan (Yamaguchi)	N-35	
<i>Saurida elongata</i>		M	48	48A	48	48		ZZ, ACN=48	Japan (Yamaguchi)	N-35	
<i>Saurida elongata</i>		F	48	47A + 1 MC	48			ZW	Japan (Wakayama)	U-44	
<i>Saurida elongata</i>		M	48	48A	48	48	2.8* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44	
<i>Saurida</i> sp. 2	<i>undosquamis</i> , Ma-eso	F	48	47A + 1 MC	48			ZW	Japan (Yamaguchi)	N-35	
<i>Saurida</i> sp. 2	<i>undosquamis</i> , Ma-eso	M	48	48A	48	48		ZZ, ACN=48	Japan (Yamaguchi)	N-35	
<i>Synodus fuscus</i>			48	48A	48	48		ACN=48	Japan	I-21	
<i>Synodus hoshinonis</i>		F	48	2ST + 45A + 1 MC	48	50	1	ZW	Japan (Wakayama)	U-44	
<i>Synodus hoshinonis</i>		M	48	2ST + 46A	48	50	2.2* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44	
<i>Synodus lucioceps</i>		F	48	28 M/SM + 20 ST/A	76		2.5 FD	ACN=48	USA (CA)	O-54, E-2	
<i>Synodus ulae</i>		F	48	47A + 1 MC	48		1	ZW	Japan (Wakayama)	U-44	
<i>Synodus ulae</i>		M	48	48A	48	48	2.9* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44	
<i>Trachinocephalus myops</i>		F	27	23M + 1ST + 2A + 1 MC	50	51	2	ZW ₁ W ₂	Japan (Wakayama)	U-44	
<i>Trachinocephalus myops</i>		M	26	24M + 2A	50	50	2.7* FCM	ZZ, ACN=48	Japan (Wakayama)	U-44	
Suborder Chlorophthalmoidei											
Chlorophthalmidae											
<i>Chlorophthalmus albatrossis</i>			36				2		Japan (Suruga Bay)	O-65	
<i>Chlorophthalmus</i> sp.	Bake-aome-eso		24	24M	48	48		ACN=48	Japan	I-21	

Table 6.21 Order MYCTOPHIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Neoscopelidae											
<i>Scopelengys</i> <i>tristis</i>		M, F	48	2SM + 46A	50	50		2.6 FD	ACN=48	USA (off CA)	C-54, E-2
Myctophidae											
<i>Bolinichthys</i> <i>photothorax</i>	<i>Lepidophanes</i>		48*							Atlantic	P-45
<i>Bolinichthys</i> <i>supralateralis</i>	<i>Lepidophanes</i>		48*							Atlantic	P-45
<i>Ceratoscopelus</i> <i>townsendi</i>			48	48 ST/A		48			ACN=48	USA (off CA)	C-54
<i>Ceratoscopelus</i> <i>warmingii</i>	<i>warmingi</i>		48*							Atlantic	P-45
<i>Diaphus</i> <i>brachycephalus</i>			48*							Atlantic	P-45
<i>Diaphus</i> <i>dumerili</i>	<i>dumerili</i>		48*							Atlantic	P-45
<i>Diaphus</i> <i>fragilis</i>			48*							Atlantic	P-45
<i>Diaphus</i> <i>rafinesquii</i>	<i>rafinesquei</i>		48*							Atlantic	P-45
<i>Diaphus</i> <i>theta</i>			48						ACN=48	USA (off CA)	C-54
<i>Electrona</i> <i>rissoides</i>	<i>rissoides</i>		48*							Atlantic	P-45
<i>Hygophum</i> <i>hygomii</i>	<i>hygomi</i>		48*							Atlantic	P-45
<i>Lampadena</i> <i>chavesi</i>			48*							Atlantic	P-45
<i>Lampadena</i> <i>urophaos</i>			44	44 ST/A		44			ACN=48	USA (off CA)	C-54
<i>Lepidophanes</i> <i>guentheri</i>			48*							Atlantic	P-45
<i>Lobianchia</i> <i>gemellarii</i>			48*							Atlantic	P-45
<i>Myctophum</i> <i>nitidulum</i>			48						ACN=48	USA (off CA)	C-54
<i>Myctophum</i> <i>phengodes</i>	<i>Ctenoscopelus</i>		48*							Atlantic	P-45
<i>Nannobrachium</i> sp. "ater"	<i>Lampanyctus</i>		48*							Atlantic	P-45
<i>Nannobrachium</i> <i>nigrum</i>	<i>Lampanyctus niger</i>		50*							Atlantic	P-45
<i>Nannobrachium</i> <i>regale</i>	<i>Lampanyctus regalis</i>	M	48	48A	48	48			ACN=48	USA (off CA)	C-54
<i>Nannobrachium</i> <i>ritteri</i>	<i>Lampanyctus</i>	F	48	48A	48	48	4.0 FD	XX, ACN=48	USA (off CA)	C-48, C-54, E-2	
<i>Nannobrachium</i> <i>ritteri</i>	<i>Lampanyctus</i>	M	47	1SM + 46A	48	48	4.0 FD	XO, ACN=48	USA (off CA)	C-48, C-54, E-2	
<i>Notoscopelus</i> <i>resplendens</i>			48							Atlantic	P-45
<i>Parvilux</i> <i>ingens</i>		M	49	1M/SM + 48 ST/A	50		(3.9 FD)			USA (off CA)	C-46, C-48, E-2
<i>Parvilux</i> <i>ingens</i>	<i>Lampanyctus</i>		50?							USA (off CA)	C-54
<i>Protomyctophum</i> <i>crockeri</i>			48	48A	48	48			ACN=48	USA (off CA)	C-54
<i>Stenobrachius</i> <i>leucopsarus</i>			48	48A	48	48			ACN=48	USA (off CA)	C-54
<i>Symbolophorus</i> <i>californiensis</i>			48	2SM + 46A	50	50			ACN=48	USA (off CA)	C-46, C-54
<i>Triphoturus</i> <i>mexicanus</i>		M	48	48A	48	48	3.8 FD	ACN=48	USA (off CA)	C-54, E-2	

Table 6.22 Order PERCOPSIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag— NORs	Genome size (pg/cell)	Comments	Locality	Reference
Aphredoderidae											
<i>Aphredoderus</i>	<i>sayanus</i>		48	2M + 18 SM/ST + 28A		68		1.2 FD	ACN=50	USA (TX)	G-82

Table 6.23 Order GADIFORMES

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag— NORs	Genome size (pg/cell)	Comments	Locality	Reference	
Gadidae												
Gadinae												
<i>Eleginops</i>	<i>gracilis</i>		F	26	22M + 4A		48	48		Japan (Hokkaido)	I-14	
<i>Eleginops</i>	<i>navaga</i>			26	20M + 6A		46	46		Russia	V-72	
<i>Eleginops</i>	<i>navaga</i>		F, M	26	22M + 4A		48	48	ACN=46	Russia (White Sea)	K-83	
<i>Eleginops</i>	<i>navaga</i>			27			49			Russia (White Sea)	L-88	
<i>Gadus</i>	<i>macrocephalus</i>		F	44	10M + 10ST + 24A		54	64	1.7 FIA	ACN=46	Japan (Hokkaido)	I-14, H-40
<i>Gadus</i>	<i>morhua</i>			46					(1.9 FIA)		Sweden	J-1, N-49, H-41
<i>Gadus</i>	<i>morhua</i>			46	10 M/SM + 36 ST/A		56		ACN=46	UK	F-4	
<i>Gadus</i>	<i>morhua</i>			45	11 M/SM + 34 ST/A		56		ACN=46	UK	F-4	
<i>Gadus</i>	<i>morhua</i>			46			52			Russia (White Sea)	L-88	
<i>Gadus</i>	<i>ogac</i>	<i>morhua marisalbi</i>		46	8 M/SM + 38 ST/A		54			Russia	V-72	
<i>Gadus</i>	<i>ogac</i>	<i>morhua marisalbi</i>	F, M	46	6M + 2SM + 10ST + 28A		54	64		Russia (White Sea)	K-83	
<i>Micromesistius</i>	<i>poutassou</i>			44						Sweden	N-49	
<i>Pollachius</i>	<i>pollachius</i>			38	10M + 28 ST/A		48		ACN=44	Sweden	N-49	
<i>Pollachius</i>	<i>virens</i>			40	10M + 30 ST/A		50		ACN=46	Sweden	N-49	
<i>Theragra</i>	<i>chalcogramma</i>		F, M	44	10M + 4ST + 30A		54	58	1.8 FIA	ACN=46	Japan (Hokkaido)	I-14, H-40
<i>Trisopterus</i>	<i>minutus</i>			48						Sweden	N-49	
Lotinae												
<i>Lota</i>	<i>lota</i>		F, M	48	12M + 18SM + 14ST + 4A		78	92		Europe	R-9, K-83	
Ranicipitinae												
<i>Raniceps</i>	<i>raninus</i>			48	30 M/SM + 18 ST/A		78		ACN=48	Sweden	N-49	
Muraenolepididae												
<i>Muraenolepis</i>	<i>marmoratus</i>		M	48	4M + 2SM + 42 ST/A		54		ACN=48	Antarctica	D-4	

Table 6.23 Order GADIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Phycidae											
<i>Gaidropsarus</i>	<i>mediterraneus</i>			28	24 M/SM + 4A	52	52		ACN=48	Black Sea	V-5
<i>Gaidropsarus</i>	<i>mediterraneus</i>	A karyotype	F, M	28	24 M/SM + 4A	52	52			Italy (Palermo)	V-50
<i>Gaidropsarus</i>	<i>mediterraneus</i>	B karyotype	F, M	28	18M + 5SM + 5A	51	51			Italy (Palermo)	V-50
<i>Gaidropsarus</i>	<i>mediterraneus</i>	C karyotype	F, M	28	22 M/SM + 6A	50	50	2		Italy (Palermo)	V-50
<i>Phycis</i>	<i>phycis</i>		F	48	48A	48	48		ACN=48	Spain	A-30

Table 6.24 Order OPHIDIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Ophidioidei											
Carapidae											
<i>Carapus</i>	<i>acus</i>		F, M	36	2SM + 34A	38	38	2	ACN=36	Italy (Palermo)	V-55
Ophidiidae											
<i>Ophidion</i>	<i>barbatum</i>	A-type	F, M	44	44A	44	44		ACN=44	Italy (Palermo)	V-75
<i>Ophidion</i>	<i>barbatum</i>	B-type	F, M	43	1M + 42A	44	44		ACN=44	Italy (Palermo)	V-75
<i>Parophidion</i>	<i>vassali</i>	A-type	F, M	44	44A	44	44		ACN=44	Italy (Palermo)	V-75
<i>Parophidion</i>	<i>vassali</i>	B-type	F, M	43	1M + 42A	44	44		ACN=44	Italy (Palermo)	V-75

Table 6.25 Order MUGILIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Mugilidae											
<i>Agonostomus</i>	<i>monticola</i>		F, M	48	2ST + 46A	48	50	2		ACN=48	Panama, Venezuela
<i>Chelon</i>	<i>labrosus</i>		F, M	48	2ST + 46A	48	50			ACN=48	Italy (Tyrrhenian Sea)
<i>Liza</i>	<i>aurata</i>		F, M	48	2ST + 46A	48	50		2.3 FD	ACN=48	Mediterranean
<i>Liza</i>	<i>haematocheila</i>			48	48A	48	48			ACN=48	China (Shandong)
<i>Liza</i>	<i>parsia</i>	<i>Mugil</i>	M	48	48A	48	48			ACN=48	India (WB)
<i>Liza</i>	<i>ramada</i>		F, M	48	2ST + 46A	48	50		1.6 FCM	ACN=48	Italy (Tyrrhenian Sea)
<i>Liza</i>	<i>saliens</i>		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy
<i>Mugil</i>	<i>cephalus</i>		F, M	48	48A	48	48			ACN=48	Italy (Rome)
<i>Mugil</i>	<i>cephalus</i>			48	48A	48	48	1-2	(2.4 FD)	ACN=48	Europe, USA, Australia, Taiwan
<i>Mugil</i>	<i>cephalus</i>			48	48A	48	48		(1.6 FIA)	ACN=48	USA (LA)
<i>Mugil</i>	<i>cephalus</i>			48	48A	48	48			ACN=48	India (A.P.)
<i>Mugil</i>	<i>cephalus</i>		F, M	48							India (Portonovo)
<i>Mugil</i>	<i>cephalus</i>		F, M	48	48A	48	48		(1.6* FCM)	ACN=48	China
<i>Mugil</i>	<i>curema</i>			28	20M + 4ST + 4A	48	52		(1.4 FD)	ACN=48	USA (LA)
<i>Mugil</i>	<i>curema</i>			28	20M + 4ST + 4A	48	52	2		ACN=48	Brazil (PR)
<i>Mugil</i>	<i>curema</i>			24	22M + 2SM	48	48	2		ACN=48	Venezuela (Margarita Is.)
<i>Mugil</i>	<i>gaimardianus</i>		F, M	48	48A	48	48			ACN=48	Panama
<i>Mugil</i>	<i>gaimardianus</i>			48	48A	48	48			ACN=48	Venezuela (Margarita Is.)
<i>Mugil</i>	<i>liza</i>			48	48A	48	48	2		ACN=48	Venezuela (Margarita Is.)
<i>Mugil</i>	<i>platanus</i>			48	48A	48	48	2		ACN=48	Brazil (SP)
<i>Mugil</i>	<i>rubioculus</i>			48	48A	48	48	2		ACN=48	Venezuela (Margarita Is.)
<i>Mugil</i>	<i>trichodon</i>		F, M	48	48A	48	48	2		ACN=48	Venezuela (Margarita Is.)
<i>Oedalechilus</i>	<i>labeo</i>		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy (Tyrrhenian Sea)
<i>Paramugil</i>	<i>parmatus</i>	<i>Liza macrolepis</i>	F, M	48	48A	48	48			ACN=48	India (Orissa)
<i>Paramugil</i>	<i>parmatus</i>	<i>Liza oligolepis</i>	F, M	48	48A	48	48			ACN=48	India (Orissa)
<i>Rhinomugil</i>	<i>corsula</i>	<i>Mugil</i>		48	48A	48	48			ACN=48	India (WB)
<i>Valamugil</i>	<i>speigleri</i>	<i>Mugil</i>	F, M	48	48A	48	48			ACN=48	India (Orissa)
<i>Valamugil</i>	<i>speigleri</i>		M	48	48A	48	48			ACN=48	India (WB)

Table 6.26 Order AETHERINIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Atherinopsoidei											
Atherinopsidae											
Atherinopsinae											
<i>Basilichthys</i>	<i>australis</i>		F, M	48	4M + 4SM + 40 ST/A	56			ACN=48	Chile (Augostura)	G-1
<i>Basilichthys</i>	<i>microlepidotus</i>		F, M	46	2M + 8SM + 36 ST/A	56			ACN=46	Chile (Petorca)	G-1
<i>Odontesthes</i>	<i>bonariensis</i>			48						Argentina	F-20
<i>Odontesthes</i>	<i>bonariensis</i>	Atherinidae	F, M	48	4 M/SM + 44 ST/A	52	1-4			Italy (Lake Nemi)	S-170
<i>Odontesthes</i>	<i>bonariensis</i>	Atherinidae		48	3 M/SM + 45 ST/A	51				Italy (Lake Nemi)	S-170
<i>Odontesthes</i>	<i>bonariensis</i>	Atherinidae		48	2SM + 46 ST/A	50				Italy (Lake Nemi)	S-170
<i>Odontesthes</i>	<i>bonariensis</i>	Atherinidae		48	2M + 46 ST/A	50				Italy (Lake Nemi)	S-170
<i>Odontesthes</i>	<i>bonariensis</i>	<i>Basilichthys</i>		48	4SM + 44 ST/A	52			ACN=48	(introduced, Japan)	A-76
Menidiinae											
<i>Chirostoma</i>	<i>attenuatum</i>			48	4M + 24SM + 2ST + 18A	76	78			Mexico	U-50
<i>Chirostoma</i>	<i>estor</i>			48	12M + 8SM + 12ST + 16A	68	80		ACN=48	Mexico (Michoacán)	U-50
<i>Chirostoma</i>	<i>grandocule</i>			48						Mexico	U-50
<i>Chirostoma</i>	<i>jordani</i>			48	8M + 12SM + 10ST + 18A	68	78		ACN=48	Mexico (Lake Chapultepec)	U-50
<i>Chirostoma</i>	<i>patzcuaro</i>			44	12ST + 32A	44	56			Mexico (Michoacán)	U-50
<i>Labidesthes</i>	<i>siccus</i>		F, M	48	12M + 22SM + 14 ST/A	82		1.3 FIA		USA	K-100, H-40
<i>Membras</i>	<i>martinica</i>		F, M	48	18M + 18SM + 12 ST/A	84				USA (LA)	K-100
<i>Menidia</i>	<i>beryllina</i>		F, M	48	8M + 18SM + 22 ST/A	74				freshwater	K-100
<i>Menidia</i>	<i>beryllina</i>		F, M	48	10M + 24SM + 14 ST/A	82				marine	K-100
<i>Menidia</i>	<i>menidia</i>			48	4M + 14SM + 12ST + 18A	66	78			USA (Long Island)	W-16
Suborder Atherinoidei											
Atherinidae											
<i>Atherina</i>	<i>boyeri</i>	<i>mochon caspia</i>		48	6SM + 42 ST/A	54				Russia	V-72
<i>Atherina</i>	<i>boyeri</i>	<i>mochon pontica</i>		48	6SM + 42 ST/A	54				Russia	V-72
<i>Hypoatherina</i>	<i>valenciennei</i>	<i>bleekeri</i>		48	4M + 44SM	96	96	2	ACN=48	Japan (Wakayama)	K-50
Atherionidae											
<i>Atherion</i>	<i>elymus</i>			48	2SM + 10ST + 36A	50	60		ACN=48	Japan (Chiba)	A-71
Melanotaeniidae											
<i>Bedotia</i>	<i>geayi</i>			48		(72)				Madagascar	S-24
<i>Marosatherina</i>	<i>ladigesi</i>	<i>Telmaterina</i>		48		(86)				(Sulawesi)	S-24
<i>Melanotaenia</i>	<i>fluviatilis</i>			48			2.6 BFA			(Australia)	H-13
<i>Melanotaenia</i>	<i>goldiei</i>	<i>nigricans</i>		48			2.6 BFA			(Papua New Guinea)	H-13
<i>Melanotaenia</i>	<i>maccullochi</i>			46	46A	46	46			Australia	S-24
<i>Melanotaenia</i>	<i>cf. splendida</i>	<i>Nematozentris cf. rubrostriatus</i>	M	48	48A	48	48		ACN=48	(Australia)	A-71

Table 6.27 Order BELONIFORMES

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Adrianichthyoidei											
Adrianichthyidae											
Oryziinae											
<i>Oryzias</i>	<i>celebensis</i>		F, M	36	8M + 4SM + 24A	48	48	2	1.7 FD	ACN=44	Sulawesi
<i>Oryzias</i>	<i>curvinotus</i>			48	2M + 14SM + 32 ST/A	64		2	1.5 FD	XX/XY, ACN=48	China (Hainan Is.)
<i>Oryzias</i>	<i>dancena</i>	<i>melastigma</i>	F, M	48	48A	48	48	2	1.8 FD	XX/XY, ACN=48	India (Chidambaram)
<i>Oryzias</i>	<i>hubbsi</i>	<i>javanicus</i>		48	48A	48	48		1.8 FD	ZZ/ZW, ACN=48	Indonesia (Jakarta)
<i>Oryzias</i>	<i>javanicus</i>		M	48	2ST + 46A	48	50	2	1.7 FD	ZZ/ZW, ACN=48	Thailand (Phuket), Singapore
<i>Oryzias</i>	<i>latipes</i>		M	48	20 M/SM + 28A	68			(2.2 BFA)	ACN=48	Japan
<i>Oryzias</i>	<i>latipes</i>		F, M	48	4M + 16SM + 2ST + 26A	68	70	2	(2.1* FCM), 1.7 FD	XX/XY, ACN=48	Japan (Ehime)
<i>Oryzias</i>	<i>latipes</i>			48	4M + 18SM + 4ST + 22A	70	74	2	1.7 FD	ACN=48	Japan (Aomori)
<i>Oryzias</i>	<i>latipes</i>	Himedaka	F, M	48	20 M/SM + 2ST + 26A	68	70			ACN=48	Japan
<i>Oryzias</i>	<i>latipes</i>			48	22 M/SM + 26 ST/A	70				ACN=48	Korea
<i>Oryzias</i>	<i>latipes</i>			48	10M + 10SM + 2ST + 26A	68	70			ACN=48	Korea (Japan Sea side)
<i>Oryzias</i>	<i>luzonensis</i>		F, M	48	14M + 34SM	96	96	2	1.9 FD	XX/XY, ACN=48	Philippines (Solsona)
<i>Oryzias</i>	<i>marmoratus</i>			42	2M + 4SM + 36A	48	48	2		ACN=48	Sulawesi
<i>Oryzias</i>	<i>matanensis</i>			42	2M + 4SM + 2ST + 34A	48	50	2		ACN=48	Sulawesi
<i>Oryzias</i>	<i>mekongensis</i>			48	2M + 8SM + 24ST + 14A	58	82		1.5 FD	XX/XY, ACN=48	N.E. Thailand
<i>Oryzias</i>	<i>minutillus</i>			42	42A	42	42	2		ACN=42	S. and NE Thailand
<i>Oryzias</i>	<i>minutillus</i>			42	2SM + 40A	44	44	2		ACN=42	SE Thailand
<i>Oryzias</i>	<i>minutillus</i>			40	2M + 2SM + 36A	44	44	2		ACN=42	SE Thailand
<i>Oryzias</i>	<i>minutillus</i>			34	8M + 2SM + 24A	44	44	2	1.5 FD	XX/XY, ACN=42	C. Thailand (Bangkok)
<i>Oryzias</i>	<i>minutillus</i>			32	10M + 2SM + 20A	44	44	2		ACN=42	N. Thailand
<i>Oryzias</i>	<i>minutillus</i>			30	12M + 2SM + 16A	44	44	2	1.5 FD	XX/XY, ACN=42	C. and N. Thailand (Chiang Mai)
<i>Oryzias</i>	<i>minutillus</i>			28	14M + 2SM + 12A	44	44	2		ACN=42	C. Thailand
<i>Oryzias</i>	<i>nigrimas</i>			38	6M + 4SM + 28A	48	48	2		ACN=44	Sulawesi
<i>Oryzias</i>	<i>sinensis</i>	<i>latipes</i>		46	12M + 12SM + 22A	70	70			ACN=48	Korea (Yellow Sea side)
<i>Oryzias</i>	<i>sinensis</i>			46	6M + 16SM + 2ST + 22A	68	70			ACN=48	Korea
<i>Oryzias</i>	<i>sinensis</i>			46	22 M/SM + 24 ST/A	68				ACN=48	Korea
<i>Oryzias</i>	<i>sinensis</i>	<i>latipes</i>		46	6M + 18SM + 4ST + 18A	70	74			ACN=48	China (Shanghai)

Table 6.27 Order BELONIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Belonoidei (= Exocoetoidei)											
Exocoetidae											
<i>Cheilopogon agoo agoo</i>	<i>Cypselurus</i>		48					1.9* FCM		Japan	O-48
Hemiramphidae											
<i>Dermogenys pusilla</i>	<i>pusillus</i>		48			(58)		1.5 BFA		E. Asia	S-24, H-13
<i>Hemiramphus brasiliensis</i>	<i>marginatus</i>		52	52 ST/A	52					India (Goa)	R-45
<i>Hyporhamphus kurumeus</i>	<i>Hemiramphus</i>	F, M	40	2M + 38A	42		1.3* FD	ACN=48	China (Hubei)	Z-28, H-32, C-83	
<i>Rhynchorhamphus georgii</i>	<i>Hemiramphus</i>		46	6 M/SM + 40 ST/A	52					India (Goa)	R-45
Belonidae											
<i>Potamorrhaphis cf. eigenmanni</i>		F, M	54	6 M/SM + 48 ST/A	60	2				Argentina (Misiones)	P-15
<i>Potamorrhaphis guianensis</i>			48				2.4 BFA			(S. America)	H-13
<i>Pseudotylosurus microps</i>	<i>Strongylura</i>	F, M	50	50 ST/A	50	2		0-2 B, ACN=50	Argentina (Misiones)	P-15	
<i>Strongylura incisa</i>			48				2.2* FCM			Japan	O-48
<i>Strongylura leiura</i>	<i>Tylosurus leiurus</i>		48	48 ST/A	48					India (Goa)	R-45
<i>Strongylura strongylura</i>		F, M	50	16M + 14SM + 20A	80	80		ACN=50	India (Orissa)	R-57	
<i>Strongylura strongylura</i>	<i>Tylosurus strongylurus</i>		48	48 ST/A	48					India (Tamil Nadu)	R-45
<i>Xenentodon cancila</i>		F, M	48	16M + 18SM + 6ST + 8A	82	88				India (Jammu)	S-51
<i>Xenentodon cancila</i>		F	48	30M + 2SM + 2ST + 14A	80	82		ACN=48	India (WB)	N-16	
<i>Xenentodon cancila</i>			48	24M + 8SM + 4ST + 12A	80	84		ACN=48	Thailand	D-20	
Scomberesocidae											
<i>Cololabias saira</i>		M	42							N. Pacific	Y-2

Table 6.28 Order CYPRINODONTIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Aplocheiloidei											
Aplocheilidae (Asian rivulines)											
<i>Aplocheilus</i> <i>blockii</i>			48	2 M/SM + 46 ST/A	50	(70)			S. India	S-24, S-158	
<i>Aplocheilus</i> <i>dayi</i>			48	6 M/SM + 42 ST/A	54	(86)			ACN=48	Ceylon	S-24, S-158
<i>Aplocheilus</i> <i>lineatus</i>			48	48 ST/A	48	(60)				S. India	S-24, S-158
<i>Aplocheilus</i> <i>panchax</i>			38	12 M/SM + 26 ST/A	50	(56)				India, Thailand	S-24, S-158
<i>Aplocheilus</i> <i>panchax</i>		F	38	13M + 9SM + 4ST + 12A	60	64			ZW	India (WB)	K-31
<i>Aplocheilus</i> <i>panchax</i>		M	38	14M + 8SM + 4ST + 12A	60	64	(1.5 FD, 1.4 BFA)		ZZ	India (WB)	K-31, U-59, H-13
<i>Aplocheilus</i> <i>werneri</i>			48			(88)				Ceylon	S-24
<i>Pachypanchax</i> <i>playfairii</i>			48	22 M/SM + 26 ST/A	70	(96)	1.5 FIA	ACN=48		Seychelles	S-24, S-158, H-41
Nothobranchiidae (African rivulines)											
<i>Aphyosemion</i> <i>ahlri</i>	AHL-NN		40	12SM + 6ST + 22A	52	58			ACN=44	E. Cameroon (Nyong)	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-NS		38	2M + 2SM + 12ST + 22A	42	54			ACN=42	E. Cameroon (Nyong)	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-ED		38	4M + 2SM + 6ST + 26A	44	50			ACN=42	E. Cameroon	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-MB		36	8 M/SM + 28A	44	44			ACN=44	E. Cameroon	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-SA		34	6M + 2SM + 2ST + 24A	42	44			ACN=44	E. Cameroon	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-BE		26	10M + 2SM + 2ST + 12A	38	40			ACN=40	E. Cameroon	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-CO		20	20 M/SM	40	40			ACN=40	E. Cameroon	S-158
<i>Aphyosemion</i> <i>ahlri</i>	AHL-BN, KI, LO		22	22 M/SM	44	44			ACN=44	E. Cameroon	S-158
<i>Aphyosemion</i> <i>alpha</i>	<i>Chromaphyosemion</i>	F, M	38	2SM + 12ST+ 24A	40	52	2		ACN=42	N.W. Gabon	V-71
<i>Aphyosemion</i> <i>amoenum</i>	AMO-TY		34			(44)				E. Cameroon	S-158
<i>Aphyosemion</i> <i>australe</i>	AUS-CA		30	6M + 2SM + 22A	38	38			ACN=42	Gabon	S-158
<i>Aphyosemion</i> <i>australe</i>	AUS-LI		34	2M + 2SM + 30A	38	38			ACN=42	Gabon	S-158
<i>Aphyosemion</i> <i>bamilekorum</i>	BAM-TY		34	6M + 6SM + 22 ST/A	46	(66)			ACN=40	E. Cameroon	S-158
<i>Aphyosemion</i> <i>batesii</i>	BAT-AK		34	34 M/SM	68	68			ACN=44	E. Cameroon	S-158
<i>Aphyosemion</i> <i>batesii</i>	<i>splendidum</i> SPL-DJ		32			(60)				Congo	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-BI		34	2M + 4SM + 8ST + 20A	40	48			ACN=42	Cameroon	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-LO		36	6SM + 2ST + 28A	42	44			ACN=40	Cameroon (Kribi)	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-EC		26	14 M/SM + 2ST + 10A	40	42			ACN=40	Cameroon (Rio Muni)	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-KA		36	2M + 2ST + 32A	38	40			ACN=44	Cameroon	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-DI		38	6ST + 32A	38	44			ACN=42	E. Cameroon	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-BA, EK, MB, NN, TK		38	2ST + 36A	38	40			ACN=42	Cameroon	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	BIT-IJ		40	4M + 2ST + 34A	44	46			ACN=42	S.W. Nigeria	S-158
<i>Aphyosemion</i> <i>bitaeniatum</i>	<i>Chromaphyosemion</i> , Afanyangan	F, M	40	10 M/SM/ST + 30A	50	2			ACN=44	Cameroon	V-97
<i>Aphyosemion</i> <i>bivittatum</i>	BIV-ES		34	4M + 4SM + 2ST + 24A	42	44			ACN=42	E. Cameroon	S-24
<i>Aphyosemion</i> <i>bivittatum</i>	BIV-NE		36	2M + 2ST + 32A	38	40			ACN=44	W. Cameroon	S-158
<i>Aphyosemion</i> <i>bivittatum</i>	BIV-NW		32	8SM + 4ST + 20A	40	44			ACN=44	W. Cameroon	S-158

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion 'Funge'</i>		36	3 M/SM + 1ST + 32A	39	40	2		ACN=40	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/4</i>	F, M	34	3 M/SM + 3ST + 28A	37	40	2		ACN=40	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/6</i>		34	4 M/SM + 6ST + 24A	38	44	2		ACN=42	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/6</i>		33	7 M/SM + 4ST + 22A	40	44	2		ACN=42	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/6</i>		31	9 M/SM + 4ST + 18A	40	44	2		ACN=42	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/6</i>		30	8 M/SM + 6ST + 16A	38	44	2		ACN=42	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/6</i>		29	11 M/SM + 4ST + 14A	40	44	2		ACN=42	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion CO3/9</i>	F, M	32	6 M/SM + 4ST + 22A	38	42	2		ACN=40	Cameroon	V-81
<i>Aphyosemion bivittatum</i>	<i>Chromaphyosemion KVO3/34</i>	F, M	32	6 M/SM + 4ST + 22A	38	42	2		ACN=40	Cameroon	V-81
<i>Aphyosemion bualanum</i>	BUA-BA		40	4M + 4SM + 4ST + 28A	48	52			ACN=44	E. Cameroon	S-158
<i>Aphyosemion bualanum</i>	BUA-ND		38	2M + 4SM + 10ST + 22A	44	54			ACN=44	W. Cameroon	S-158
<i>Aphyosemion bualanum kekemense</i>	BUA-KE		36	4SM + 32 ST/A	40	(72)			ACN=42	S.W. Cameroon	R-30
<i>Aphyosemion buytaerti</i>	BUY-AQ		38			(58)				Congo	S-158
<i>Aphyosemion calliurum</i>	CAL-IJ		32	2M + 4SM + 26A	38	38			ACN=42	S.W. Nigeria	S-158
<i>Aphyosemion calliurum</i>	CAL-DM, ME		20	20 M/SM	40	40			6B, ACN=44	E. Cameroon (Nyong)	S-158
<i>Aphyosemion calliurum</i>	CAL-CM		24	16 M/SM + 8A	40	40			ACN=44	E. Cameroon (Nyong)	S-158
<i>Aphyosemion calliurum</i>	CAL-BK, MO, MU		20	20 M/SM	40	40			ACN=44	E. & W. Cameroon	S-158
<i>Aphyosemion calliurum</i>	CAL-NK		20	18 M/SM + 2ST	38	40			ACN=44	E. Cameroon	S-158
<i>Aphyosemion calliurum</i>	CAL-WC		20	20 M/SM	40	40				Cameroon	S-158
<i>Aphyosemion calliurum</i>	CAL-NT		18	18 M/SM	36	36			ACN=44	E. Cameroon	S-158
<i>Aphyosemion cameronense</i>	CAM-MI		34	4M + 2SM + 6ST + 22A	40	46			ACN=44	E. Cameroon	S-158
<i>Aphyosemion cameronense</i>	CAM-LN		34	4M + 2SM + 4ST + 24A	40	44			ACN=44	E. Cameroon	S-158
<i>Aphyosemion cameronense</i>	CAM-BE, EC, YA		34							E. Cameroon	S-158
<i>Aphyosemion cameronense</i>	CAM-MA		32			(46)				W. Cameroon	S-24
<i>Aphyosemion cameronense</i>	CAM-KO		30			(46)				E. Cameroon	S-24
<i>Aphyosemion cameronense</i>	CAM-NG		28	14 M/SM + 2ST + 12A	42	44				E. Cameroon	S-158
<i>Aphyosemion cameronense</i>	CAM-LW		24	14 M + 6ST + 4A	38	44			ACN=44	E. Cameroon	S-158
<i>Aphyosemion celiae</i>	CEL-BA, BU, MA		20	20 M/SM	40	40			ACN=44	W. Cameroon	S-158
<i>Aphyosemion celiae</i>	<i>celiae winifredae</i> WIN-TY		20	20 M/SM	40	40			ACN=40	W. Cameroon	S-158
<i>Aphyosemion chauchei</i>	CHO		24	12 M/SM + 12A	36	36			ACN=40	Congo	H-33
<i>Aphyosemion christyi</i>	CHR-SA		36	36A	36	36				Zaire	H-33, S-158
<i>Aphyosemion christyi</i>	CHR		18	16M + 2SM	36	36			ACN=40	Zaire	S-28, S-158
<i>Aphyosemion christyi</i>	<i>shoutedeni</i> SCH-AQ		22	10M + 4SM + 8A	36	36			ACN=40	Zaire	H-33, S-28, S-158
<i>Aphyosemion coeleste</i>	COL-TY		32	4 M/SM + 28 ST/A	36					Gabon	S-158
<i>Aphyosemion coeleste</i>	COL-TI		30	6 M/SM + 24 ST/A	36					Congo	S-158
<i>Aphyosemion cognatum</i>	COG-AQ		28	6M + 2SM + 20A	36	36			ACN=40	Congo	S-158
<i>Aphyosemion cognatum</i>	COG		30	6 M/SM + 24A	36	36				Congo	S-158
<i>Aphyosemion conicum</i>	<i>melanopteron</i> MET		30	6M + 24A	36	36			ACN=40	Zaire	S-24, S-28, H-33

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Aphyosemion cyanostictum</i>	CYA-AQ		34	14 M/SM + 6ST + 14A	48	54			ACN=38	N. Gabon	S-158
<i>Aphyosemion decorsei</i>	DEC-KCF 5		24	18 M/SM + 6ST	42	48			ACN=42	Zaire	H-33
<i>Aphyosemion elberti</i>	<i>ruberifascium</i>		38			(40)				Cameroon	S-159
<i>Aphyosemion elberti kekemense</i>	<i>kekemense</i> KEK-TY		36	6 M/SM + 30 ST/A	42	(72)			ACN=42	E. Cameroon	S-158
<i>Aphyosemion elegans</i>	ELE-SA		20	12M + 4SM + 4A	36	36			ACN=38	Congo	S-28, S-158, H-33
<i>Aphyosemion escherichi</i>	<i>simulans</i> SIM-AQ		40			(70)				Gabon	S-158
<i>Aphyosemion exigoideum</i>	EXO-AQ		22			(42)				Gabon	S-158
<i>Aphyosemion exiguum</i>	EXI-NG		36	20 M/SM + 16ST	56	72			ACN=42	E. Cameroon	S-158
<i>Aphyosemion franzwernerii</i>	FRA-TY		22	22 M/SM	44	44			ACN=44	E. Cameroon	S-158
<i>Aphyosemion fulgens</i>	FUL-AQ		38	38A	38	38				N. Gabon	S-158
<i>Aphyosemion gabunense</i>	MRG-AQ		36			(64)				Gabon	S-158
<i>Aphyosemion gabunense</i>	GAB-AQ		40			(54)				Gabon	S-158
<i>Aphyosemion georgiae</i>	GEO-AQ		36	4SM + 32A	40	40				Gabon	S-158
<i>Aphyosemion georgiae</i>	GEO-AQ		34	4 M/SM + 30A	38	38				Gabon	S-158
<i>Aphyosemion herzogi</i>	HEZ-AQ		34			(68)				N. Gabon	S-158
<i>Aphyosemion kouamense</i>	<i>Chromaphyosemion</i>	F, M	38	10ST + 28A	38	48	2		ACN=42	N. W. Gabon	V-71
<i>Aphyosemion labarrei</i>	LAB-AQ		28	8M + 12SM + 2ST + 6A	48	50			ACN=44	Congo	S-158
<i>Aphyosemion labarrei</i>	LAB-NSC-4		26	20 M/SM + 4ST + 2A	46	50			ACN=44	Congo	S-158
<i>Aphyosemion lamberti</i>	LAI-AQ		36	2M + 6SM + 4ST + 24A	44	48			ACN=44	Gabon	H-33, S-158
<i>Aphyosemion loennbergii</i>	LOE-NS		38	2M + 4SM + 6ST + 26A	44	50			ACN=42	E. Cameroon	S-158
<i>Aphyosemion loennbergii</i>	LOE-KI		34	2M + 6SM + 6ST + 20A	42	48			ACN=42	E. Cameroon	S-158
<i>Aphyosemion loennbergii</i>	LOE-MO		32	4M + 6SM + 4ST + 18A	42	46			ACN=42	E. Cameroon	S-158
<i>Aphyosemion loennbergii</i>	<i>pappenheimi</i> PAP-BI		32			(52)				E. Cameroon	S-158
<i>Aphyosemion loennbergii</i>	<i>Chromaphyosemion KV03/38</i>	F	34	20 M/SM/ST + 14A	54	2			XX	Cameroon	V-97
<i>Aphyosemion loennbergii</i>	<i>Chromaphyosemion KV03/38</i>	M	34	19 M/SM/ST + 15A	53	2			XY	Cameroon	V-97
<i>Aphyosemion loennbergii</i>	<i>Chromaphyosemion C03/29</i>	F, M	34	8 M/SM/ST + 26A	42				XX/XY	Cameroon	V-97
<i>Aphyosemion louessense</i>	LOU-AQ		40	2 M/SM + 38 ST/A	42	(74)				Congo	H-33
<i>Aphyosemion louessense</i>	LOU-MI		20	16M + 4SM	40	40			ACN=40	Congo	S-158
<i>Aphyosemion lugens</i>	<i>Chromaphyosemion</i>	F, M	36	2M + 34A	38	38	2		ACN=42	S. W. Cameroon	V-71
<i>Aphyosemion cf. lugens</i>	<i>Chromaphyosemion CMM36</i>		28	12 M/SM/ST + 16A	40	2				Cameroon	V-97
<i>Aphyosemion lujae</i>		M	40*							(Zaire)	G-65
<i>Aphyosemion maculatum</i>	MAL-AQ		34			(44)				N. Gabon	S-158
<i>Aphyosemion malumbresi</i>	<i>Chromaphyosemion GEMHS00/31</i>	F, M	24	20 M/SM/ST + 4A	44	2			XX/XY	Cameroon	V-97
<i>Aphyosemion melanogaster</i>	<i>Chromaphyosemion KV03/41</i>	F, M	36	14 M/SM/ST + 22A	50	2			XX/XY	Cameroon	V-97
<i>Aphyosemion microphthalmum</i>	MIP-AQ		38	16 M/SM + 22 ST/A	54	(76)			ACN=42	Congo, Gabon	S-158
<i>Aphyosemion mimbon</i>	MIM-AQ		30			(50)				Gabon	S-158
<i>Aphyosemion obscurum</i>	<i>Panchax obscurus</i>		34			(40)				Cameroon	S-159
<i>Aphyosemion ocellatum</i>	OCE-AQ		30			(54)				Congo, Gabon	S-158

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
<i>Aphyosemion ogoense</i>	OGO-AQ		40	18 M/SM + 22 ST/A	58	(72)			ACN=40	Gabon	S-158	
<i>Aphyosemion ogoense</i>	OGO-BA		32			(56)				C. Congo	S-158	
<i>Aphyosemion ogoense caudofasciatum</i>	CAU-AQ		38			(76)				S. Congo	S-158	
<i>Aphyosemion ogoense pyrophore</i>	PYR-AQ		38			(64)				S. Congo	S-158	
<i>Aphyosemion ogoense ottogartneri</i>	OTT-AQ		40	12 M/SM + 28 ST/A	52	(76)			ACN=44	C. Congo	S-24, S-158	
<i>Aphyosemion pascheni</i>	PAS-TY		24	18 M/SM + 4ST + 2A	42	46			ACN=42	E. Cameroon	S-158	
<i>Aphyosemion pascheni</i>	PAS-AQ		24			(48)			ACN=42	E. Cameroon	S-158	
<i>Aphyosemion primigenium</i>	PRI-AQ		22			(42)				Gabon	S-158	
<i>Aphyosemion punctatum</i>	PUC-OV		24	22 M/SM + 2ST	46	48				Gabon	H-33	
<i>Aphyosemion punctulatum</i>	<i>Chromaphyosemion CMM22</i>	F, M	36	8 M/SM/ST + 28A	44	2			ACN=42	Cameroon	V-97	
<i>Aphyosemion raddai raddai</i>	RAD-TY		32	12 M/SM + 20A	44	44			ACN=44	E. Cameroon	S-158	
<i>Aphyosemion rectogoense</i>	REC		18	18 M/SM	36	36			ACN=44	Gabon	H-33	
<i>Aphyosemion riggenbachi</i>	RIG-YA		38	38 ST/A	38	(42)			ACN=42	E. Cameroon (Dibonba)	S-158	
<i>Aphyosemion riggenbachi</i>	RIG-GI		34	4SM + 30A	38	38			ACN=40	E. Cameroon (Vuri)	S-158	
<i>Aphyosemion riggenbachi</i>	RIG-SA		30	2M + 8SM + 20A	40	40			ACN=36	E. Cameroon (Sabaga)	S-158	
<i>Aphyosemion riggenbachi</i>	RIG-WN		20	12M + 8SM	40	40			ACN=42	E. Cameroon (Wuri)	S-158	
<i>Aphyosemion riggenbachi</i>	<i>Chromaphyosemion KVO3/16</i>	M	36	2SM + 2ST + 32A	38	40	6		ACN=40	E. Cameroon	V-80	
<i>Aphyosemion riggenbachi</i>	<i>Chromaphyosemion KVO3/27</i>	F, M	30	8 M/SM + 8ST + 14A	38	46	2		ACN=38	E. Cameroon	V-80	
<i>Aphyosemion riggenbachi</i>	<i>Chromaphyosemion KVO3/25</i>	F, M	24	12 M/SM + 8ST + 4A	36	44	2		ACN=38	E. Cameroon	V-80	
<i>Aphyosemion riggenbachi</i>	<i>Chromaphyosemion KVO3/28</i>	F, M	20	16 M/SM + 4ST	36	40	2, 4		ACN=36	E. Cameroon	V-80	
<i>Aphyosemion riggenbachi</i>	<i>Chromaphyosemion KVO3/29</i>	F, M	20	16 M/SM + 4ST	36	40	2		ACN=36	E. Cameroon	V-80	
<i>Aphyosemion schioetzi</i>	SIO-AQ		18	18 M/SM	36	36			ACN=36	C. Africa	H-33	
<i>Aphyosemion schluppi</i>	SLU-AQ		28	12 M/SM + 16 ST/A	40	(54)			ACN=40	S. Gabon	S-158	
<i>Aphyosemion splendopleure</i>	<i>Chromaphyosemion Bioko</i>		38	4ST + 34A	38	42	2		ACN=42	Cameroon	V-97	
<i>Aphyosemion striatum</i>	STR-AQ		40	4 M/SM + 36 ST/A	44	(66)			ACN=44	N. Gabon	S-158	
<i>Aphyosemion thysi</i>	THY-AQ		28			(52)				S. Congo	S-158	
<i>Aphyosemion volcanum</i>	VOL-TY		36	2M + 2ST + 32A	38	40			ACN=44	W. Cameroon	S-158	
<i>Aphyosemion volcanum</i>	<i>Chromaphyosemion</i>	F, M	38	2ST + 36A	38	40	2		ACN=44	W. Cameroon	V-79	
<i>Aphyosemion wachtersi</i>	WAC-AQ		34			(68)				Congo	S-158	
<i>Aphyosemion wildekampi</i>	WIL-TY		30	4M + 2SM + 24A	36	36			ACN=40	E. Cameroon	H-33, S-158	
<i>Aphyosemion zygaima</i>	ZYG-MI		20			(40)				Congo	S-158	
<i>Archiaphyosemion guineense</i>	<i>Aphyosemion GUI-AQ</i>		38	2M + 6SM + 2ST + 28A	46	48			ACN=44	Upper Niger	S-158	
<i>Callopanchax monroviae</i>	<i>Aphyosemion</i>		46							annual	Liberia	S-158
<i>Callopanchax occidentalis</i>	<i>Roloffia o. occidentalis</i>	M	46*								Sierra Leone	G-65
<i>Callopanchax occidentalis</i>	<i>Aphyosemion OCC-AQ</i>		46	32 M/SM + 14 ST/A	78	(92)			ACN=46	Sierra Leone	S-24, S-158	
<i>Callopanchax toddi</i>	<i>Roloffia occidentalis toddi</i>	M	46*								Sierra Leone	G-65
<i>Callopanchax toddi</i>	<i>Aphyosemion TOD-TY</i>		46	32 M/SM + 14 ST/A	78	(86)			ACN=46	Sierra Leone	S-24, S-158	
<i>Chromaphyosemion polaki</i>		F, M	38	2ST + 36A	38	40	2		ACN=44	W. Cameroon	V-79	

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Chromaphyosemion</i> sp.	GEMHS00/41	F, M	36	8 M/SM/ST + 28A	44	2			XY	Rio Muni	V-97
<i>Epiplatys annulatus</i>	<i>Aplocheilus</i>		50	20 M/SM + 30 ST/A	70	(86)				Guinea, Liberia	S-24, S-158, S-159
<i>Epiplatys ansorgii</i>	<i>Aplocheilus</i>		46	4 M/SM + 42 ST/A	50	(88)				Gabon	S-158
<i>Epiplatys barmoiensis</i>	<i>Aplocheilus</i> BAR		34	14 M/SM + 20 ST/A	48	(54)			ACN=46	Sierra Leone, W. Liberia	S-24, S-158
<i>Epiplatys berkenkampi</i>	<i>Aplocheilus</i>		48	2 M/SM + 46A	50	50				Gabon	S-158
<i>Epiplatys bifasciatus</i>		M	40							Volta	S-18
<i>Epiplatys bifasciatus</i>	<i>Aplocheilus</i>		40	8M + 32A	48	48			ACN=48	W. Africa to Nile	S-24, S-159
<i>Epiplatys chaperi</i>	<i>Aplocheilus</i>		50	50 ST/A	50	(56)				Ghana, Ivory Coast	S-24, S-159
<i>Epiplatys chaperi schreiberi</i>	<i>Aplocheilus</i>		50			(52)				Ghana	S-158
<i>Epiplatys chaperi sheljuzhkoii</i>	<i>Aplocheilus</i>		50			(52)				Ivory Coast	S-158
<i>Epiplatys dageti</i>		M	50							Monrovia	S-18
<i>Epiplatys dageti</i>	<i>Aplocheilus</i>		50	32 M/SM + 18 ST/A	82	(92)				Ghana to Liberia	S-24, S-159
<i>Epiplatys dageti monroviae</i>	<i>Aplocheilus</i>		50			(92)				Liberia	S-158
<i>Epiplatys duboisi</i>	<i>Aplocheilus</i>		48*		48	(52)				Congo	S-24, S-159
<i>Epiplatys esekanus</i>	<i>Aplocheilus</i>		42	8M + 34A	50	50				E. Cameroon	S-24, S-159
<i>Epiplatys fasciolatus fasciolatus</i>	<i>Aplocheilus</i>		40	10 M/SM + 30 ST/A	50	(76)			ACN=48	Guinea, Liberia	S-24, S-158, S-159
<i>Epiplatys fasciolatus</i>		M	38							Sierra Leone	S-18
<i>Epiplatys fasciolatus</i>	<i>Aplocheilus</i>		38			(76)				Guinea, Liberia	S-24, S-159
<i>Epiplatys fasciolatus</i>	<i>Aplocheilus</i>		36			(76?)				Guinea, Liberia	S-24, S-159
<i>Epiplatys grahami</i>	<i>Aplocheilus</i>		48	2SM + 46A	50	50			ACN=48	Nigeria to Congo	S-24
<i>Epiplatys grahami</i>	<i>Aplocheilus nigromarginatus</i>		48			(50)				Cameroon	S-158
<i>Epiplatys huberi</i>	<i>Aplocheilus</i>		46	6 M/SM + 40A	52	52				S.W. Gabon	S-158
<i>Epiplatys lamottei</i>	<i>Aplocheilus</i> LAM		48	4 M/SM + 44A	52	52			ACN=48	Liberia	S-158
<i>Epiplatys maeseni</i>	<i>Aphyosemion</i> MAE-AQ		42			(52)				Ivory Coast	S-158
<i>Epiplatys mesogramma</i>	<i>Aplocheilus</i>		48	48A	48	48				C. Afrin Rep.	S-158
<i>Epiplatys multifasciatus</i>	<i>Aplocheilus</i>		46	14 M/SM + 32 ST/A	60	(92)				Zaire	S-158
<i>Epiplatys multifasciatus</i>	<i>Aplocheilus boulengeri</i>		46	14 M/SM + 32 ST/A	60	(92)				Congo	S-158
<i>Epiplatys olbrechtsi</i>	<i>Aplocheilus</i>		38	12 M/SM + 26 ST/A	50	(76)				Ivory Coast	S-158
<i>Epiplatys roloffi</i>	<i>Aplocheilus</i>		46			(92)				Liberia	S-158
<i>Epiplatys sangmelinensis</i>	<i>Aplocheilus</i>		48*		48	48				E. Cameroon	S-24, S-159
<i>Epiplatys sexfasciatus</i>	<i>Aplocheilus</i>		48	48 ST/A	48	(50)				Ghana to Gabon	S-24, S-159
<i>Epiplatys sexfasciatus rathkei</i>	<i>Aplocheilus</i>		48			(50)				W. Cameroon	S-158
<i>Epiplatys singa</i>	<i>Aplocheilus</i>		42			(58)				Zaire	S-158
<i>Epiplatys spilargyreius</i>		M	34							Nigeria	S-18
<i>Epiplatys spilargyreius</i>	<i>Aplocheilus</i>		34*			(48)				W. Africa to Nile	S-24, S-159
<i>Fenerbahce formosus</i>	<i>Adamas</i> FOR-AQ		24	24A	24	24				Zaire	S-158
<i>Foerschichtthys flavipinnis</i>	FLA-AQ		40			52				Nigeria	S-158
<i>Fundulopanchax arnoldi</i>	<i>Aphyosemion</i>		38	10 M/SM + 28 ST/A	48	(62)			ACN=42	Nigeria	S-24, S-159

Table 6.28 Order CYPRINODONTIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Fundulopanchax cinnamomeum</i>	<i>Aphyosemion CIN-TY</i>		40	4M + 4SM + 32 ST/A	48	(64)			ACN=44	Cameroon	S-24, S-158, R-29
<i>Fundulopanchax fallax</i>	<i>Aphyosemion schwoiseri</i>		44			(48)				W. Cameroon	S-158
<i>Fundulopanchax filamentosum</i>	<i>Aphyosemion FIL-IJ</i>		36	4 M/SM + 2ST + 30A	40	42			ACN=40	Nigeria	S-24, S-158
<i>Fundulopanchax filamentosum</i>	<i>Aphyosemion FIL-AQ</i>		30	8M + 2ST + 20A	38	40			ACN=38	Nigeria	S-24, S-158
<i>Fundulopanchax filamentosum</i>	<i>Aphyosemion FIL-AQ</i>		30	6M + 10ST + 14A	36	46			ACN=38	Nigeria	S-24, S-158
<i>Fundulopanchax gardneri</i>	<i>Aphyosemion GAR-GE</i>		40	4M + 6SM + 30 ST/A	50	(68)				W. Cameroon	S-24, S-158, S-159
<i>Fundulopanchax gardneri</i>	<i>Aphyosemion GAR-MI</i>		38			(68)				Nigeria	S-158
<i>Fundulopanchax gardneri</i>	<i>Aphyosemion GAR-EG</i>		36	4 M/SM + 32 ST/A	40	(68)				Nigeria	S-24
<i>Fundulopanchax gardneri</i>	<i>Aphyosemion GAR-OW</i>		36	4 M/SM + 32 ST/A	40	(66)				Nigeria (Owo)	S-158
<i>Fundulopanchax gardneri clausen</i>	<i>Aphyosemion CLA</i>		36	4 M/SM + 32 ST/A	40	(66)				Nigeria	S-158
<i>Fundulopanchax gardneri lacustre</i>	<i>Aphyosemion</i>	F	39	3M + 4SM + 12ST + 20A	46	58			ACN=42	W. Cameroon	R-29
<i>Fundulopanchax gardneri lacustre</i>	<i>Aphyosemion</i>	M	37	5M + 4SM + 12ST + 16A	46	58			ACN=42	W. Cameroon	R-29
<i>Fundulopanchax gardneri mamfense</i>	<i>Aphyosemion</i>	F	40	16 M/SM + 2ST + 22A	56	58			ACN=42	W. Cameroon	R-29
<i>Fundulopanchax gularis</i>	<i>Aphyosemion gulare GUL-AQ</i>		32	32A		32	32		ACN=40	Nigeria	S-24, S-158
<i>Fundulopanchax gularis</i>	<i>Aphyosemion gulare</i>	M	36							Nigeria	G-65
<i>Fundulopanchax intermittens</i>	<i>Aphyosemion</i>		33, 36							Cameroon	S-158
<i>Fundulopanchax kribianus</i>	<i>Aphyosemion KRI-TY</i>		44			(48)				E. Cameroon	S-158
<i>Fundulopanchax marmoratum</i>	<i>Aphyosemion MAM-TY</i>		40	6 M/SM + 10ST + 24A	46	56			ACN=42	W. Cameroon	S-158, S-159
<i>Fundulopanchax mirabilis</i>	<i>Aphyosemion mirabile</i>		32-38			(60)				W. Cameroon	S-158
<i>Fundulopanchax mirabilis</i>	<i>Aphyosemion mirabile MIR-TY</i>		30	30 M/SM/ST		(60)				W. Cameroon	S-158
<i>Fundulopanchax mirabilis</i>	<i>Aphyosemion mirabile</i>		38	20 M/SM + 18 ST/A	58	(60)				W. Cameroon	S-158
<i>Fundulopanchax mirabilis</i>	<i>Aphyosemion mirabile mirabile</i>	F	37	19 M/SM + 18A	56	56			ACN=42	W. Cameroon	R-29
<i>Fundulopanchax moensis</i>	<i>Aphyosemion mirabile moense MOE-IN</i>		32			(60)				W. Cameroon	S-158
<i>Fundulopanchax moensis</i>	<i>Aphyosemion mirabile moense MOE-TY</i>		38			(66)				W. Cameroon	S-158
<i>Fundulopanchax nidianus</i>	<i>Aphyosemion nidianum NDI-AQ</i>		40	40A		40	40		ACN=44	E. Nigeria	S-158
<i>Fundulopanchax oeseri</i>	<i>Aphyosemion s. santaisabellae</i>		40	6 M/SM + 10ST + 24A	46	56			ACN=42	Fernando Po	S-24, S-158
<i>Fundulopanchax puerzli</i>	<i>Aphyosemion PUE-TY</i>		38	2SM + 2ST + 34A	40	42			ACN=40	E. Cameroon	R-28, S-158
<i>Fundulopanchax robertsoni</i>	<i>Aphyosemion ROS-TY</i>		42	20 M/SM + 22 ST/A	62	(78)			ACN=44	W. Cameroon	R-28, S-158
<i>Fundulopanchax rubrolabialis</i>	<i>Aphyosemion rubrolabiale RUL-MB</i>		44	6M + 6SM + 2ST + 30A	56	58			ACN=44	W. Cameroon	R-28, S-158
<i>Fundulopanchax rubrolabialis</i>	<i>Aphyosemion rubrolabiale RUL-YO</i>		40	10 M/SM + 8ST + 22A	50	58			ACN=44	W. Cameroon	S-158
<i>Fundulopanchax rubrolabialis</i>	<i>Aphyosemion rubrolabiale</i>		40	8SM + 2ST + 30A	48	50				W. Cameroon	R-28
<i>Fundulopanchax scheeli</i>	<i>Aphyosemion SCE-AQ</i>		40	10 M/SM + 30 ST/A	50	(76)			ACN=42	S.E. Nigeria, Cameroon	S-24
<i>Fundulopanchax schwoiseri</i>	<i>Aphyosemion</i>		44			(48)				W. Cameroon	S-158
<i>Fundulopanchax sjostedti</i>	<i>Aphyosemion SJO-AQ</i>		40	40A		40	40		ACN=42	W. Cameroon	S-158
<i>Fundulopanchax traudeae</i>	<i>Aphyosemion mirabile traudeae</i>		37							W. Cameroon	R-29
<i>Fundulopanchax walkeri</i>	<i>Aphyosemion WAL-AQ</i>		36	12 SM + 24 ST/A	48	(70)			ACN=40	Ivory Coast	S-158
<i>Nimbaopanchax petersii</i>	<i>Aphyosemion PET-AQ</i>		40	10M + 30A	50	50			ACN=44	Ivory Coast	S-24, S-158

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Nimbaphanachax</i> <i>viridis</i>	<i>Aphyosemion viride</i> VIR-AQ		40	10M + 30A	50	50			ACN=48	Liberia	S-158
<i>Nothobranchius</i> <i>eggersi</i>			36		(66)					S. Tanzania	S-158
<i>Nothobranchius</i> <i>elongatus</i>			38		(76)					Kenya	S-158
<i>Nothobranchius</i> <i>foerschi</i>		F, M	34	12 M/SM + 22A	46	46			ACN=42	Tanzania	E-5
<i>Nothobranchius</i> <i>foerschi</i>	FOE-AQ		34		(46)					Tanzania	S-158
<i>Nothobranchius</i> <i>furzeri</i>	FUR-TY		38		(76)					Rhodesia	S-158
<i>Nothobranchius</i> <i>guentheri</i>		F	36	2M + 34A	38	38		X ₁ X ₁ X ₂ X ₂ , ACN=44	Zanzibar	E-5	
<i>Nothobranchius</i> <i>guentheri</i>		M	35	2M + 1SM + 32A	38	38		X ₁ X ₂ Y, ACN=44	Zanzibar	E-5	
<i>Nothobranchius</i> <i>guentheri</i>	GUE-ZA		36	4 M/SM + 32A	40	40				Zanzibar	S-158
<i>Nothobranchius</i> <i>hengstleri</i>			38	6 M/SM + 32 ST/A	44			ACN=42		Mozambique	W-35
<i>Nothobranchius</i> <i>janpapi</i>	JAN-TY		38		(70)					Tanzania	S-158
<i>Nothobranchius</i> <i>jubbi cyaneus</i>	CYN-WA		34		(68)					Kenya	S-158
<i>Nothobranchius</i> <i>jubbi jubbi</i>	JUB-TY		34		(66)					Kenya	S-158
<i>Nothobranchius</i> <i>kirki</i>	KIR-TY		36		(58)					Malawi	S-24, S-158
<i>Nothobranchius</i> cf. <i>kirki</i>	"KIR"		44		(84)					Malawi	S-158
<i>Nothobranchius</i> <i>kiyawensis</i>	<i>Aphyosemion seymouri</i> SEM-VO		28	2M + 26 ST/A	30	(52)		ACN=38		Ghana	S-158
<i>Nothobranchius</i> <i>korthausae</i>	KOR-TY		36		(42)					Tanzania	S-158
<i>Nothobranchius</i> <i>kuhntae</i>	KUH-AQ		38		(66)					Mozambique	S-158
<i>Nothobranchius</i> <i>lourensi</i>	LOR-AQ		32	4M + 28A	36	36				Tanzania	S-158
<i>Nothobranchius</i> <i>lucius</i>			36	22 M/SM + 14 ST/A	58			ACN=42		Tanzania	W-35
<i>Nothobranchius</i> <i>makondorum</i>			38	18 M/SM + 20 ST/A	56			ACN=42		Tanzania, Mozambique	W-35
<i>Nothobranchius</i> <i>melanospilus</i>			38	14 M/SM + 24 ST/A	52			ACN=42		Tanzania	W-35
<i>Nothobranchius</i> <i>melanospilus</i>	MEP-DS		38		(76)					Tanzania	S-158
<i>Nothobranchius</i> <i>melanospilus</i>		F, M	36	2M + 34 ST/A	38	(76)		ACN=44		Tanzania	E-5
<i>Nothobranchius</i> <i>microlepis</i>	MIL-WA		24		(26)					Kenya, Somalia	S-158
<i>Nothobranchius</i> <i>palmqvisti</i>		F, M	36	4M + 32 ST/A	40			ACN=42		Kenya, Tanzania	E-5
<i>Nothobranchius</i> <i>palmqvisti</i>	PAL 1956 strain		34		(40)					Kenya, Tanzania	S-24, S-158
<i>Nothobranchius</i> <i>palmqvisti</i>	PAL 1957 strain		34	12M + 22A	46	46		ACN=38		Kenya, Tanzania	S-24, S-158
<i>Nothobranchius</i> <i>patrizii</i>		F, M	36	12 M/SM + 24 ST/A	48			ACN=44		Kenya, Somalia	E-5
<i>Nothobranchius</i> <i>patrizii</i>			36		(72)					Somali	S-158
<i>Nothobranchius</i> <i>polli</i>	PLL-ZA		36		(72)					Zaire	S-158
<i>Nothobranchius</i> <i>rachovii</i>		F, M	16	8M + 6SM + 2A	30	30		ACN=42		Somalia	K-106, E-5
<i>Nothobranchius</i> <i>rachovii</i>	RAC-AQ		18	12 M/SM + 6A	30	30				Mozambique	S-24, S-158, S-159
<i>Nothobranchius</i> <i>steinforti</i>	STI-AQ		36		(72)					Tanzania	S-158
<i>Nothobranchius</i> <i>thierryi</i>			42		(48)			ACN=48		W. Africa	S-24
<i>Nothobranchius</i> <i>thierryi</i>	<i>Fundulosoma</i> THI-AQ	M	43	4 M/SM + 39A	47	47				Ghana	S-158
<i>Scriptaphyosemion</i> <i>bertholdi</i>			42		(>44)					Sierra Leone	S-158
<i>Scriptaphyosemion</i> <i>bertholdi</i>	<i>Roloffia</i>	M	42							Sierra Leone	G-65

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Scriptaphyosemion brueningi</i>		M	42		ca. 44					Sierra Leone	S-158
<i>Scriptaphyosemion brueningi</i>	<i>Roloffia</i>	M	42*							Sierra Leone	G-65
<i>Scriptaphyosemion chaytori</i>	<i>Roloffia</i>	M	42							Sierra Leone	G-65
<i>Scriptaphyosemion fredrodi</i>	<i>Aphyosemion FRE-TY</i>		42	2M/SM + 40A	44	44				Sierra Leone	S-158
<i>Scriptaphyosemion geryi</i>	<i>Aphyosemion GER-AQ</i>		40	2M + 38A	42	42			ACN=44	Guinea, Sierra Leone	S-158
<i>Scriptaphyosemion geryi</i>	<i>Roloffia</i>	M	40	2M + 38A	42	42				Sierra Leone	G-65
<i>Scriptaphyosemion geryi</i>	<i>Aphyosemion guineense GUI-AQ</i>		38	2M + 6SM + 2ST + 28A	46	48			ACN=46	Guinea, Sierra Leone	S-158
<i>Scriptaphyosemion geryi</i>	<i>Roloffia guineensis</i>	M	40							Sierra Leone	G-65
<i>Scriptaphyosemion guignardi</i>	<i>Aphyosemion GUG-TY</i>		40	4M/SM + 36A	44	44				W. Guinea	S-158
<i>Scriptaphyosemion liberiene</i>	<i>Aphyosemion</i>		42		(44)					Liberia	S-24
<i>Scriptaphyosemion liberiene</i>	<i>Roloffia calabaricus</i>		42*							(Africa)	G-93
<i>Scriptaphyosemion liberiene</i>	<i>Aphyosemion melantereon MEL-AQ</i>		48	2M + 46A	50	50				Liberia	S-158
<i>Scriptaphyosemion roloffi</i>	<i>Aphyosemion ROL-AQ</i>		42	2M + 40A	44	44			ACN=44	Sierra Leone	S-158
<i>Scriptaphyosemion roloffi</i>	<i>Roloffia</i>	M	42							Sierra Leone	G-65
<i>Scriptaphyosemion roloffi</i>	<i>Roloffia caldal</i>		42							(Africa)	G-93
<i>Scriptaphyosemion schmitti</i>	<i>Aphyosemion</i>		40		(60)					Liberia	S-158
Rivulidae (New World rivulines)											
<i>Aphyolebias peruensis</i>	<i>Pterolebias</i>		54*		(90)					Upper Amazon	S-26
<i>Austrofundulus limmaeus</i>		F, M	44	12M + 16SM + 16A	72					Venezuela	E-4
<i>Austrofundulus transilis</i>		F, M	44	12M + 16SM + 16A	72				ACN=46	Venezuela	E-4
<i>Austrofundulus transilis</i>			44		(80)				ACN=46	Venezuela	S-24
<i>Astrolebias adloffii</i>	<i>Cynolebias</i>	F, M	48	2SM + 46A	50	2			ACN=48	Brazil (RS)	G-15
<i>Astrolebias cf. adloffii</i>	<i>Cynolebias</i> sp.		48	4M/SM + 44 ST/A	52	6				Uruguay	G-14
<i>Astrolebias cf. adloffii</i>	<i>Cynolebias</i> sp.		46	6M/SM + 40 ST/A	52					Uruguay	G-14
<i>Astrolebias cf. adloffii</i>	<i>Cynolebias</i> sp.		48	8M/SM + 40 ST/A	56					Uruguay	G-14
<i>Astrolebias affinis</i>	<i>Cynolebias</i>	F	48	2M + 2SM + 44A	52	52	4		ACN=48	Uruguay (Tacuarembó)	G-15
<i>Astrolebias affinis</i>	<i>Cynolebias</i>	F	49	2M + 2SM + 45A	53	53	4			Uruguay (Tacuarembó)	G-15
<i>Astrolebias alexandrii</i>	<i>Cynolebias</i>	F, M	48	4SM + 6ST + 38A	52	58	2		ACN=48	Uruguay (Salto)	G-15
<i>Astrolebias alexandrii</i>	<i>Cynolebias</i>	F, M	48	4SM + 10ST + 34A	52	62			ACN=48	Uruguay (Salto)	G-15
<i>Astrolebias arachan</i>	<i>Cynolebias uruguayensis</i>		48	4M/SM + 44 ST/A	52		3			Uruguay	G-92
<i>Astrolebias arachan</i>	<i>Cynolebias uruguayensis</i>		48	2M/SM + 46 ST/A	50		3			Uruguay	G-92
<i>Astrolebias bellotti</i>	<i>Cynolebias</i>	M	48	4M/SM + 44 ST/A	52		5-6			Uruguay	G-14
<i>Astrolebias bellotti</i>	<i>Cynolebias</i>	M	48	6M/SM + 42 ST/A	54					Argentina	G-14
<i>Astrolebias bellotti</i>	<i>Cynolebias</i>		48			52				La Plata	S-24
<i>Astrolebias charrua</i>	<i>Cynolebias</i>		48	2M/SM + 46 ST/A	50				ACN=48	Uruguay	G-17
<i>Astrolebias charrua</i>	<i>Cynolebias</i>		48	4M/SM + 44 ST/A	52				ACN=48	Uruguay	G-17
<i>Astrolebias charrua</i>	<i>Cynolebias</i>		48	6M/SM + 42 ST/A	54				ACN=48	Uruguay	G-17

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Austrolebias</i> <i>charrua</i>	<i>Cynolebias</i>		48	8 M/SM + 40 ST/A	56				ACN=48	Uruguay	G-17
<i>Austrolebias</i> <i>cheradophilus</i>	<i>Cynolebias</i>		40	4 M/SM + 36 ST/A	44	4				Uruguay	H-43
<i>Austrolebias</i> <i>cinereus</i>	<i>Cynolebias</i>	F	44	4M + 2SM + 14ST + 24A	50	64	2		ACN=46	Uruguay (Colonia)	G-16
<i>Austrolebias</i> <i>duraznensis</i>	<i>Cynolebias</i>	M	48	4M + 6ST + 38A	52	58	3			Uruguay (Durazno)	G-15
<i>Austrolebias</i> <i>duraznensis</i>	<i>Cynolebias</i>	F, M	48	2M + 2SM + 6ST + 38A	52	58	3		ACN=48	Uruguay (Durazno)	G-15
<i>Austrolebias</i> <i>gymnoventris</i>	<i>Cynolebias</i>	F, M	48	2M + 2SM + 10ST + 34A	52	62	2		ACN=48	Uruguay (Rocha)	G-15
<i>Austrolebias</i> <i>luteoflammulatus</i>	<i>Cynolebias</i>	F, M	34	16 M/SM + 6ST + 12A	50	56	4		ACN=48	Uruguay (Rocha)	G-14
<i>Austrolebias</i> <i>melanoorus</i>	<i>Cynolebias</i>	F, M	48	2SM + 22ST + 24A	50	72	2		ACN=48	Uruguay (Tacuarembo)	G-16
<i>Austrolebias</i> <i>nigripinnis</i>	<i>Cynolebias</i>	F, M	48	8 M/SM + 40 ST/A	56		5-6		ACN=48	Uruguay (Salto)	G-14
<i>Austrolebias</i> <i>nigripinnis</i>	<i>Cynolebias</i>	M	48	6 M/SM + 8ST + 34A	54	62			ACN=48	Uruguay (Artigas)	G-14
<i>Austrolebias</i> <i>nigripinnis</i>	<i>Cynolebias</i>		48			(74)				La Plata	S-24
<i>Austrolebias</i> <i>nioni</i>	<i>Cynolebias</i>	F, M	46	2M + 6SM + 34ST + 4A	54	88	2		ACN=48	Uruguay (Tacuarembo)	G-16
<i>Austrolebias</i> <i>vazferreiraia</i>	<i>Cynolebias</i>		46	2M + 2SM + 30ST + 12A	50	80	2		ACN=48	Uruguay (Cerro Largo)	G-16
<i>Austrolebias</i> <i>vazferreiraia</i>	<i>Cynolebias</i>		46	2M + 4SM + 24ST + 16A	52	76			ACN=48	Uruguay (Cerro Largo)	G-16
<i>Austrolebias</i> <i>viarius</i>	<i>Cynolebias</i>	M	46	2M + 2ST + 42A	48	50	6		ACN=48	Uruguay	G-14
<i>Austrolebias</i> <i>viarius</i>	<i>Cynolebias</i>	M	48	2 M/SM + 46 ST/A	50				ACN=48	Uruguay	G-14
<i>Cynopoecilus</i> <i>melanotaenia</i>			44			(52)				Brazil	S-24
<i>Cynopoecilus</i> <i>melanotaenia</i>	<i>Cynolebias</i>	F, M	44	14 M/SM + 30 ST/A	58		5			Uruguay	G-14
<i>Gnatholebias</i> <i>zonatus</i>	<i>Pterolebias</i>	F, M	42	12 M/SM + 30A	54	54			ACN=46	Venezuela	E-3
<i>Kryptolebias</i> <i>brasiliensis</i>	<i>Rivulus dorni</i>		48*			(70)				Brazil (RJ)	S-24
<i>Kryptolebias</i> <i>marmoratus</i>	<i>Rivulus</i>		48			(52)			hermaphrodite	USA (FL), Cuba	S-24
<i>Kryptolebias</i> <i>marmoratus</i>	<i>Rivulus</i>		48	4 M/SM + 46 ST/A	52		2		ACN=48	America	S-92
<i>Kryptolebias</i> <i>ocellatus</i>	<i>Rivulus</i>		48			(54)				Brazil	S-24
<i>Megalebias</i> <i>prognatus</i>	<i>Cynolebias</i>	F, M	36	12M + 6ST + 18A	48	54	3			Uruguay (Rocha)	G-14
<i>Megalebias</i> <i>prognatus</i>	<i>Cynolebias</i>	M	36	10 M/SM + 6ST + 20A	46	52			ACN=48	Uruguay (Rocha)	G-14
<i>Megalebias</i> <i>wolterstorffi</i>	<i>Cynolebias</i>	M	46	4 M/SM + 42 ST/A	50		5			Uruguay	G-14
<i>Nematolebias</i> <i>whitei</i>	<i>Cynolebias</i>		46			(92)				Brazil (RJ)	S-24
<i>Pterolebias</i> <i>hoignei</i>		F	46	6M + 40A	52	52			ACN=46	Venezuela	E-3
<i>Pterolebias</i> <i>hoignei</i>		M	46	6M + 3SM + 37A	55	55				Venezuela	E-3
<i>Pterolebias</i> <i>hoignei</i>		F, M	46	6M + 4SM + 36A	56	56			ACN=46	Venezuela	E-4
<i>Pterolebias</i> <i>longipinnis</i>			20	20A		20	20				(Lower Amazon)
<i>Rachovia</i> <i>brevis</i>		F, M	44	12M + 14SM + 18A	70	70			ACN=46	Venezuela	E-4
<i>Rachovia</i> <i>hummelincki</i>		F, M	44	10M + 10SM + 24A	64	64			ACN=46	Venezuela	E-4
<i>Rachovia</i> <i>maculipinnis</i>	<i>Pterolebias</i>		44			(80)				Venezuela	S-24
<i>Rachovia</i> <i>maculipinnis</i>	<i>maculipinna</i>	F, M	44	20M + 12SM + 12A	76	76			ACN=48	Venezuela	E-4
<i>Rachovia</i> <i>pyropunctata</i>		F, M	44	10M + 8SM + 26A	62	62			ACN=46	Venezuela	E-4
<i>Rachovia</i> <i>stellifer</i>	<i>Rivulus</i>	F, M	48	18M + 8SM + 22A	74	74			ACN=48	Venezuela	E-4
<i>Rivulus</i> <i>agilae</i>			44	8M + 2SM + 14ST + 20A	54	68	4		ACN=46	French Guyana	Z-41

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Rivulus cylindraceus</i>			48		(58)					Cuba	S-24
<i>Rivulus hartii</i>			44		(56)					S. America	S-24
<i>Rivulus holmiae</i>			44		(72)					S. America	S-24
<i>Rivulus magdalena</i> ne	<i>milesi</i>		46		(92)				ACN=48	Colombia	S-24
<i>Rivulus ornatus</i>			40		(66)				ACN=46	Lower Amazon	S-24
<i>Rivulus strigatus</i>			46		(88)					Amazon	S-24
<i>Rivulus urophthalmus</i>			46		(86)					Lower Amazon	S-24
<i>Rivulus urophthalmus</i>			44					3.0 BFA		(S. America)	H-13
<i>Terranatos dolichopterus</i>	<i>Austrofundulus</i>		44		(54)					Venezuela	S-24
Suborder Cyprinodontoidei											
Anablepidae											
<i>Anableps dowi</i>		F, M	46	46 ST/A		46			ACN=46	Mexico (Tehuantepec)	M-69
Cyprinodontidae (pupfishes)											
Cyprinodontinae											
<i>Aphanius asquamatus</i>	<i>Kosswigichthys</i>		48*							Turkey	K-9
<i>Aphanius dispar</i>			48*							Middle East	K-9
<i>Aphanius fasciatus</i>		F, M	48	48 ST/A	48		1-8		ACN=48	Italy (Sicily)	V-69
<i>Aphanius iberus</i>			48*							Spain	K-9
<i>Aphanius mento</i>	<i>cyprius</i>		48							Iraq, Turkey	K-9
<i>Aphanius persicus</i>			48	22SM + 26ST	70	96			ACN=48	Iran (Fars)	E-12
<i>Aphanius sophiae</i>			48	28SM + 20ST	76	96			ACN=48	Iran (Fars)	E-12
<i>Aphanius sophiae</i>			48*							Iran	K-9
<i>Cyprinodon alvarezi</i>		F	48					X ₁ X ₁		Mexico	H-1
<i>Cyprinodon atrorus</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	Mexico	S-108
<i>Cyprinodon beltrani</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	Mexico	S-108
<i>Cyprinodon bifasciatus</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	Mexico	S-108
<i>Cyprinodon bovinus</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108
<i>Cyprinodon dearborni</i>		F, M	48	2M + 10SM + 36 ST/A	60		2		ACN=48	Venezuela (Margarita Is.)	N-61
<i>Cyprinodon elegans</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108
<i>Cyprinodon eximus</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108
<i>Cyprinodon fontinalis</i>			48	2M + 6ST + 40A	50	56				Mexico	S-160
<i>Cyprinodon hubbsi</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (FL)	S-108
<i>Cyprinodon macularius</i>			48	2M + 46A	50	50				USA (Death Valley)	T-62
<i>Cyprinodon macularius</i>			48	2M/SM + 46 ST/A	50					USA (CA)	T-56
<i>Cyprinodon nevadensis amargosae</i>			48	2M + 46A	50	50				USA (Death Valley)	T-62
<i>Cyprinodon pecosensis</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX)	S-108

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Cyprinodon</i> <i>radiosus</i>			48	2M + 46A	50	50				USA (Death Valley)	T-62
<i>Cyprinodon</i> <i>rubrofluviatilis</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (OK)	S-108
<i>Cyprinodon</i> <i>salinus</i>			48	2M + 46A	50	50				USA (Death Valley)	T-62
<i>Cyprinodon</i> <i>tularosa</i>			48	2M + 14SM + 32ST	64	96				USA (NM)	M-150
<i>Cyprinodon</i> <i>variegatus</i>		F, M	48	2M + 14SM + 32ST	64	96	(3.2 BFA)		ACN=48	USA (LA)	S-59, H-13
<i>Cyprinodon</i> <i>variegatus</i>		F, M	48	2M + 14SM + 32ST	64	96			ACN=48	USA (TX, FL), Mexico	S-108
<i>Garmanella</i> <i>pulchra</i>		F	48	2M + 46 ST/A	50			X ₁ X ₁ X ₂ X ₂ , ACN=48		Yucatan Peninsula	L-26
<i>Garmanella</i> <i>pulchra</i>		M	47	3M/SM + 44 ST/A	50			X ₁ X ₂ Y, ACN=48		Yucatan Peninsula	L-26
<i>Jordanella</i> <i>floridæ</i>		F, M	48	2M + 46 ST/A	50					Mexico	L-26
<i>Megupsilon</i> <i>aporus</i>		F	48	2M + 6SM + 40 ST/A	56			X ₁ X ₁ X ₂ X ₂ , ACN=48		Mexico (Nuevo Leon)	M-68, H-1
<i>Megupsilon</i> <i>aporus</i>		M	47	3M + 6SM + 38 ST/A	56			X ₁ X ₂ Y, ACN=48		Mexico (Nuevo Leon)	M-68, H-1
<i>Orestias</i> <i>agassii</i>		F, M	48	2M + 4SM + 14ST + 28A	54	68			ACN=48	Chile (Altiplano)	L-74, V-76, V-111
<i>Orestias</i> <i>ascotanensis</i>		F, M	48	2M + 4SM + 4ST + 38A	54	58			ACN=48	Chile (Altiplano)	V-76, V-111
<i>Orestias</i> <i>chungarensis</i>		F, M	50	2M + 2SM + 20ST + 26A	54	74			5B, ACN=48	Chile (Altiplano)	V-76, V-111
<i>Orestias</i> <i>laucaensis</i>		F	50							Chile	V-76
<i>Orestias</i> <i>laucaensis</i>		M	51							Chile	V-76
<i>Orestias</i> <i>luteus</i>			48*							Peru (Lake Titicaca)	L-74
<i>Orestias</i> <i>parinacotensis</i>				48	2M + 4SM + 10ST + 32A	54	64		ACN=48	Chile (Altiplano)	V-76, V-111
<i>Orestias</i> <i>piacotensis</i>		F, M	50	2M + 2SM + 12ST + 34A	54	66			2B, ACN=48	Chile (Altiplano)	V-76, V-111
Fundulidae (topminnows and killifishes)											
<i>Adinia</i> <i>xenica</i>	<i>multifasciatus</i>		32			(64)				USA (TX)	S-24
<i>Adinia</i> <i>xenica</i>		F, M	32	16M + 6SM + 10ST	54	64			ACN=48	USA (LA)	S-59
<i>Fundulus</i> <i>catenatus</i>			46						ACN=48	USA	C-52
<i>Fundulus</i> <i>chrysotus</i>			34	14M + 20 ST/A	48	4			ACN=48	USA (FL)	C-52
<i>Fundulus</i> <i>cinctus</i>			46	2M + 44 ST/A	48	2			ACN=48	USA (FL)	C-52
<i>Fundulus</i> <i>confluentus</i>			48	48 ST/A	48	2			ACN=48	USA (FL)	C-52
<i>Fundulus</i> <i>diaphanus</i>		F, M	48	4SM + 44A	52	52	3.0 FCM		ACN=48	USA (CT)	C-52, A-87, G-85
<i>Fundulus</i> <i>diaphanus</i>		F	48	4SM + 44A	52	52	2		ACN=48	USA (CT, NY)	C-49, H-27
<i>Fundulus</i> <i>diaphanus</i>		M	48	2M + 2SM + 44A	52	52	2		ACN=48	USA (CT, NY)	C-49, H-27
<i>Fundulus</i> <i>grandis</i>		F, M	48	4ST + 44A	48	52			ACN=48	USA (LA)	S-59
<i>Fundulus</i> <i>grandis</i>			48	2SM + 46 ST/A	50	4			ACN=48	USA (FL)	C-52
<i>Fundulus</i> <i>heteroclitus</i>			48	48 ST/A	48	2	(2.7 FCM, 2.6 FIA)		ACN=48	USA (CT)	C-49, C-52, G-85, H-40
<i>Fundulus</i> <i>heteroclitus</i>		M	48	48 ST/A	48				ACN=48	USA (ME)	K-99
<i>Fundulus</i> <i>heteroclitus</i>	<i>Valencia lozanoi</i>	F, M	48	2SM + 10ST + 36A	50	60			ACN=48	S. W. Spain	B-27
<i>Fundulus</i> <i>kansae</i>			48	48A	48	48	2		ACN=48	USA (MO)	C-52
<i>Fundulus</i> <i>lineolatus</i>			46	2M + 44 ST/A	48	2			ACN=48	USA (FL)	C-52
<i>Fundulus</i> <i>luciae</i>			32	16M + 4SM + 12 ST/A	52	2			ACN=48	USA (CT)	C-52

Table 6.28 Order CYPRINODONTIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Fundulus majalis</i>		F, M	48	2SM + 46 ST/A	50	2	(2.8 BFA)	ACN=48	USA (CT)	C-49, C-52, H-13	
<i>Fundulus notatus</i>			44	6M + 12ST + 26A	50	62		ACN=48	USA (AL)	B-38	
<i>Fundulus notatus</i>		F, M	40	10M + 12ST + 18A	50	62		ACN=48	USA (MS, TN, TX)	B-38, S-42	
<i>Fundulus notatus</i>			40	10M + 2SM + 28 ST/A	52	2		ACN=48	USA (MO)	C-52	
<i>Fundulus notti</i>			46	2M + 44 ST/A	48	2		ACN=48	USA (FL)	C-52	
<i>Fundulus notti</i>			48						USA (AL)	D-6	
<i>Fundulus olivaceus</i>			48	2M + 2SM + 44 ST/A	52	2		ACN=48	USA (MO)	C-52	
<i>Fundulus olivaceus</i>		F, M	48	2M + 12SM + 34A	62	62			USA (TX)	C-6	
<i>Fundulus olivaceus</i>		F, M	48	2M + 12ST + 34A	50	62		ACN=48	USA (AL, MS, TX)	B-38, S-42	
<i>Fundulus parvipinnis</i>		F, M	48	2SM + 46A	50	50			USA (CA)	K-99	
<i>Fundulus parvipinnis</i>		F	48	2SM + 46A	50	50		XX, ACN=48	USA (CA)	C-49	
<i>Fundulus parvipinnis</i>		M	48	1SM + 47A	49	49		XY, ACN=48	USA (CA)	C-49	
<i>Fundulus parvipinnis</i>			48	48A	48	48	2	ACN=48	USA (CA)	C-52	
<i>Fundulus pulvereus</i>			48	48 ST/A	48	2		ACN=48	USA (AL)	C-52	
<i>Fundulus rathbuni</i>			48	2SM + 46 ST/A	50	2		ACN=48	USA (NC)	C-52	
<i>Fundulus sciadicus</i>			44	4M + 2SM + 38 ST/A	50	2		ACN=48	USA (MO)	C-52	
<i>Fundulus seminolis</i>			48	48A	48	48	2	ACN=48	USA (FL)	C-52	
<i>Fundulus similis</i>		F, M	48	2SM + 46A	50	50	2	ACN=48	USA (FL)	C-52, S-59	
<i>Fundulus stellifer</i>			48					ACN=48	USA	C-52, D-6	
<i>Fundulus waccamensis</i>			48	4SM + 44 ST/A	52	2		ACN=48	USA (NC)	C-52	
<i>Fundulus zebrinus</i>			48					ACN=48	USA	C-52	
Goodeidae											
Goodeinae											
<i>Allodontichthys hubbsi</i>		F	42	8M + 34 SM/ST/A	54			ACN=48	Mexico (Jalisco)	M-70, U-65, U-70	
<i>Allodontichthys hubbsi</i>		M	41	9M + 32 SM/ST/A	54			ACN=48	Mexico (Jalisco)	M-70, U-65, U-70	
<i>Allodontichthys tamazulae</i>			48	2M + 2SM + 44 ST/A	52			ACN=48	Mexico	U-70	
<i>Allodontichthys zonistius</i>			48	2M + 2SM + 44 ST/A	52			ACN=48	Mexico	U-70	
<i>Allodontichthys</i> sp.			48	2M + 2SM + 44 ST/A	52			ACN=48	Mexico	U-70	
<i>Alloophorus robustus</i>			30	20M + 2ST + 8 ST/A	50			ACN=48	Mexico	U-70	
<i>Allotoca catarinae</i>	<i>Neoophorus</i>		46	2M + 4ST + 40A	48	52		ACN=48	Mexico	U-70	
<i>Allotoca diazi</i>	<i>Neoophorus</i>		46	2M + 4ST + 40A	48	52		ACN=48	Mexico	U-70	
<i>Allotoca dugesi</i>			26	22M + 4 SM/ST	52			ACN=48	Mexico	U-70	
<i>Allotoca dugesi</i>			26	22M + 4ST	48	52			W. Mexico	B-63, S-160	
<i>Allotoca goslinei</i>		F, M	48	6ST + 42A	48	54		ACN=48	Mexico (Jalisco)	S-73	
<i>Allotoca maculata</i>			48	4ST + 44A	48	52		ACN=48	W. Mexico	S-160, U-70	
<i>Allotoca meeki</i>	<i>Neoophorus</i>		46	2M + 6ST + 38A	48	54		ACN=48	Mexico	U-70	
<i>Ameba splendens</i>		F, M	26	22M + 2SM + 2A	50	50		ACN=48	Mexico (Pacific side)	M-72, U-70	

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Ataeniobius</i>	<i>toweri</i>		48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
<i>Chapalichthys</i>	<i>encaustus</i>		36	12M + 4SM + 16ST + 4A	52	68			ACN=48	Mexico	U-70
<i>Chapalichthys</i>	<i>pardalis</i>		36	12M + 2SM + 8ST + 14A	50	58			ACN=48	Mexico	U-70
<i>Characodon</i>	<i>lateralis</i>		24	24M	48	48			ACN=48	Mexico	F-59, U-70
<i>Girardinichthys</i>	<i>multiradiatus</i>		48	10ST + 38A	48	58			ACN=48	Mexico	U-70
<i>Girardinichthys</i>	<i>viviparus</i>		48	10ST + 38A	48	58			ACN=48	Mexico	U-70
<i>Goodea</i>	<i>atripinnis</i>		48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
<i>Goodea</i>	<i>gracilis</i>		48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
<i>Goodea</i>	<i>luitpoldi</i>		48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
<i>Hubbsina</i>	<i>turneri</i>		48	48 ST/A	48				ACN=48	Mexico	U-70
<i>Ilyodon</i>	<i>furcidens</i>	F, M	48	8ST + 40A	48	56			ACN=48	Mexico	U-70, M-163
<i>Ilyodon</i>	<i>furcidens</i>		48	7ST + 41A	48	55			ACN=48	Mexico (Pacific side)	T-57
<i>Ilyodon</i>	<i>furcidens</i>		48	2 M/SM + 11ST + 35A	50	61			ACN=48	Mexico (Pacific side)	T-57
<i>Ilyodon</i>	<i>furcidens</i>		48	4 M/SM + 12ST + 32A	52	64			ACN=48	Mexico (Pacific side)	T-57
<i>Ilyodon</i>	<i>furcidens</i>		48	6M + 3SM + 10ST + 29A	57	67			ACN=48	Mexico (Pacific side)	T-57
<i>Ilyodon</i>	<i>furcidens</i>		48	12 M/SM + 17ST + 19A	60	77			ACN=48	Mexico (Pacific side)	T-57
<i>Ilyodon</i>	<i>lennoni</i>	F	48	2SM + 46 ST/A	50				ACN=48	Mexico (Guerrero)	M-163
<i>Ilyodon</i>	<i>lennoni</i>		M	48 ST/A	48				ACN=48	Mexico (Guerrero)	M-163
<i>Ilyodon</i>	<i>whitei</i>	F, M	48	8ST + 40A	48	56			ACN=48	Mexico	U-70
<i>Ilyodon</i>	<i>whitei</i>		F	48 1M + 47 ST/A	49				ZW, ACN=48	Mexico (Guerrero)	M-163
<i>Ilyodon</i>	<i>whitei</i>		M	48 ST/A	48				ZZ, ACN=48	Mexico (Guerrero)	M-163
<i>Ilyodon</i>	<i>xantusi</i>	F, M	48	8ST + 40A	48	56			ACN=48	Mexico	U-70, M-163
<i>Skiffia</i>	<i>bilineata</i>		48	4M + 2SM + 34ST + 8A	54	88			ACN=48	Mexico	U-70
<i>Skiffia</i>	<i>francesae</i>		48	2M + 6SM + 40A	56	56			ACN=48	Mexico	U-70
<i>Skiffia</i>	<i>lermae</i>		26	22M + 4A	48	48			ACN=48	Mexico	U-70
<i>Skiffia</i>	<i>multipunctata</i>		46	4M + 4ST + 38A	50	54			ACN=48	Mexico	U-70
<i>Xenoophorus</i>	<i>captivus</i>	F	48	2SM + 46 ST/A	50				ACN=48	Mexico	U-70
<i>Xenotaenia</i>	<i>resolanae</i>		F	48 ST/A	48				ACN=48	Mexico	U-70
<i>Xenotoca</i>	<i>eiseni</i>	M	48	6ST + 42A	48	54			ACN=48	Mexico	U-70
<i>Xenotoca</i>	<i>melanosoma</i>		48	8ST + 40A	48	56			ACN=48	Mexico	U-70
<i>Xenotoca</i>	<i>variata</i>		48	4ST + 44A	48	52			ACN=48	Mexico	U-70
<i>Zoogeneticus</i>	<i>quitzeoensis</i>		28	22M + 6 ST/A	50				Mexico (Pacific side)	B-63	

Table 6.28 Order CYPRINODONTIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Poeciliidae											
<i>Apocheilichthys hutereui</i>	<i>schalleri</i>		48	28ST + 20A	48	76				Mozambique	S-31
<i>Apocheilichthys spilauchen</i>			48			(94)				Africa	S-24
Procatopodinae											
<i>Micropanchax macropthalmus</i>	<i>Apocheilichthys</i>		48		48	(48)			ACN=48	Nigeria	S-24
<i>Poropanchax normani</i>	<i>Apocheilichthys</i>		48		48	(48)			ACN=48	Africa	S-24
<i>Procatopus aberrans</i>			48			(96)				Nigeria, Cameroon	S-24
<i>Procatopus similis</i>			48*			(96)				Nigeria, Cameroon	S-24
Poeciliinae											
<i>Gambusia affinis affinis</i>	<i>affinis</i>	F	48	1M + 47A	49	49	(1.8* FCM)	ZW, ACN=49	Japan (Kochi)	I-16, O-48	
<i>Gambusia affinis affinis</i>	<i>affinis</i>	M	48	48A	48	48		ZZ, ACN=48	Japan (Kochi)	I-16	
<i>Gambusia affinis affinis</i>	<i>affinis</i>	F	48	1M + 2SM + 45A	51	51	(1.9 FCM)	ZW, ACN=49	USA (CA, TX)	C-47, G-85	
<i>Gambusia affinis affinis</i>	<i>affinis</i>	M	48	2SM + 46A	50	50		ZZ, ACN=48	USA (CA, TX)	C-47	
<i>Gambusia affinis affinis</i>		F	48	1M + 47A	49	49		ZW, ACN=49	USA (AL, MS, AR, MO)	B-39	
<i>Gambusia affinis affinis</i>		M	48	48A	48	48		ZZ, ACN=48	USA (AL, MS, AR, MO)	B-39	
<i>Gambusia affinis holbrooki</i>		F, M	48	48A	48	48	(1.5 FCM, 1.7 BFA)	ACN=48	USA (NC)	R-81, T-73, H-13	
<i>Gambusia affinis holbrooki</i>		F, M	48	48A	48	48		ACN=48	USA (NC, SC, FL, AL)	B-39	
<i>Gambusia affinis holbrooki</i>		F, M	48	48A	48	48		ACN=48	India (J & K)	S-53, K-103	
<i>Gambusia affinis holbrooki</i>		F, M	48	1SM + 47A	49	49		ACN=48	Italy, Cyprus	L-66, V-68, R-100	
<i>Gambusia affinis holbrooki</i>		F, M	48	2SM + 46A	50	50		ACN=48	Italy (Palermo)	V-68	
<i>Gambusia gaigei</i>		F	48	1M + 47A	49	49		ZW, ACN=48	USA (TX)	C-4	
<i>Gambusia gaigei</i>		M	48	48A	48	48		ZZ, ACN=48	USA (TX)	C-4	
<i>Gambusia hurtadoi</i>		F	48	1M + 47A	49	49		ZW, ACN=48	Mexico	C-4	
<i>Gambusia hurtadoi</i>		M	48	48A	48	48		ZZ, ACN=48	Mexico	C-4	
<i>Gambusia luma</i>		F, M	48	48A	48	48		ACN=48	Belize	W-26	
<i>Gambusia marshi</i>		F, M	42	42A	42	42		ACN=48	Mexico	C-4	
<i>Gambusia nobilis</i>		F	48	1M + 47A	49	49		ZW, ACN=48	USA (TX)	C-4	
<i>Gambusia nobilis</i>		M	48	48A	48	48		ZZ, ACN=48	USA (TX)	C-4	
<i>Gambusia puncticulata puncticulata</i>		F	48	5 M/SM + 43A	53	53		ACN=48	Cuba	R-7	
<i>Gambusia puncticulata puncticulata</i>		M	48	6 M/SM + 42A	54	54			Cuba	R-7	
<i>Gambusia regani</i>		F, M	48	48A	48	48		ACN=48	Mexico	C-4	
<i>Gambusia rhizophorae</i>		F, M	48	2M + 4SM + 42A	54	54		ACN=48	USA (FL)	W-26	
<i>Gambusia sexradiata</i>		F	48	48A	48	48		ACN=48	Belize	W-26	
<i>Gambusia vittata</i>		F, M	48	48A	48	48		ACN=48	Mexico	C-4	
<i>Gambusia xanthosoma</i>		F, M	48	2M + 4SM + 42A	54	54		ACN=48	Cayman Islands	W-26	
<i>Gambusia</i> sp.			48	48A	48	48			Tenerife	S-24	
<i>Girardinus falcatus</i>	<i>Glaridichthys</i>	F, M	48	48A	48	48		ACN=48	Cuba	R-7	
<i>Girardinus metallicus</i>			48	2SM + 46A	50	50			(Cuba)	F-67	
<i>Limia vittata</i>		M	46	46A	46	46	1.9 FD	ACN=48	Cuba	R-7, G-85	
<i>Phalloceros caudimaculatus</i>			48						Argentina	F-20	

Table 6.28 Order CYPRINODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Poecilia</i> <i>formosa</i>			46	46A	46	46	2	1.9 FCM	ACN=48	Mexico (Tamaulipas)	G-8, L-82
<i>Poecilia</i> <i>formosa</i>		F	69	69A	69	69	4	3.1 FCM	3X	Mexico (Tamaulipas)	G-8, L-82
<i>Poecilia</i> <i>latipinna</i>			46		46			2.0 FCM, 1.9 FD		Mexico	K-73, L-82, G-85
<i>Poecilia</i> <i>latipinna</i>		F	46	46A	46	46	1-4		ZW	Mexico	S-188
<i>Poecilia</i> <i>latipinna</i>		M	46	46A	46	46	1-2		ZZ	Mexico	S-188
<i>Poecilia</i> <i>latipunctata</i>		F, M	46	46 ST/A	46	46	8	1.8 FD	ACN=48	Mexico (Tamps)	G-7, G-85
<i>Poecilia</i> <i>mexicana</i>			46					2.0 FCM, 1.5-1.8 FD		Mexico	G-7, G-85, L-82
<i>Poecilia</i> <i>mexicana mexicana</i>		F, M	46	46A	46	46	4			Mexico	S-187
<i>Poecilia</i> <i>mexicana mexicana</i>			69	69A	69	69		2.2 FD	3X	Mexico	S-187
<i>Poecilia</i> <i>reticulata</i>	<i>Lebistes reticulatus</i>		46	46A	46	46		2.0 FCM, 1.5 FD	ACN=48	(Mexico)	I-16, C-109, V-86
<i>Poecilia</i> <i>sphenops</i>	<i>Mollenesia</i>	F	46	1M + 45A	47	47			ZW	India	R-48
<i>Poecilia</i> <i>sphenops</i>	<i>Mollenesia</i>	M	46	46A	46	46			ZZ	India	R-48
<i>Poecilia</i> <i>sphenops</i>	<i>Mollenesia</i>	F, M	46	46A	46	46		(1.9 FD)	ACN=48	Japan	I-16, G-85
<i>Poecilia</i> <i>velfifera</i>			46							Mexico	G-7
<i>Poecilia</i> <i>vivipara</i>			48	48A	48	48				Brazil	O-50
<i>Poeciliopsis</i> <i>baenschi</i>			48	48A	48	48				(Mexico, Pacific)	F-67
<i>Poeciliopsis</i> <i>latidens</i>			48					1.3 FD		Mexico	S-161, C-109
<i>Poeciliopsis</i> <i>latidens</i>			72						3X	Mexico	S-161
<i>Poeciliopsis</i> <i>lucida</i>			48					1.3 FCM, 1.4 FD	ACN=48	Mexico	S-161, C-109, G-85
<i>Poeciliopsis</i> <i>monacha</i>			48					1.3 FCM, 1.3 FD		Mexico	S-183, C-109, G-85
<i>Poeciliopsis</i> <i>occidentalis</i>			48					1.4 FD		(S. USA, N. Mexico)	S-207, C-109
<i>Poeciliopsis</i> <i>viriosa</i>			48					1.4 FD		Mexico	S-183, C-109
<i>Quintana</i> <i>atrigona</i>		F, M	48	48A	48	48			ACN=48	Cuba	R-7
<i>Xenophallus</i> <i>umbratilis</i>			46	2SM + 44A	48	48				Costa Rica (Atlantic)	F-67
<i>Xiphophorus</i> <i>helleri</i>		F, M	48	48A	48	48		1.9* FCM, 1.9 BFA	ACN=48	(C. America)	I-16, O-48, H-13
<i>Xiphophorus</i> <i>helleri</i>		M	48	48A	48	48		1.5 FCM, 1.6 FD		(C. America)	O-4, G-85, T-72
<i>Xiphophorus</i> <i>maculatus</i>		F, M	48	48A	48	48		(1.8* FCM, 1.9 BFA)	ACN=48	(C. America)	I-16, O-48, H-13
<i>Xiphophorus</i> <i>maculatus</i>			48	48A	48	48		1.5 FCM	XY/XX	(C. America)	C-55, S-24, T-72
<i>Xiphophorus</i> <i>montezumae</i>		F	48	48A	48	48		1.5 FCM	ACN=48	(Mexico)	L-75, T-72
<i>Xiphophorus</i> <i>xiphidium</i>		M	48	48A	48	48			ACN=48	(Mexico)	L-75
Valenciidae											
<i>Valencia</i> <i>hispanica</i>			48		(92)					(Spain)	S-24

Table 6.29 Order STEPHANOBERYCIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Melamphaidae											
<i>Melamphaes</i>	<i>acanthomus</i>	M	48	48A	48	48			ACN=48	USA (off CA)	C-46
<i>Melamphaes</i>	<i>parvus</i>	M	50	50A	50	50			XY, ACN=50	USA (off CA)	O-48
<i>Poromitra</i>	<i>crassiceps</i>	M	58	56 M/SM/ST/A + 2 satellited chrom.						USA (off CA)	C-46
<i>Scopeloberyx</i>	<i>robustus</i>	M	42	40A + 2 satellited chrom.					XY, ACN=44	USA (off CA)	C-46, C-48
<i>Scopelogadus</i>	<i>mizolepis bispinosus</i>	M	46	46A	46	46			XY, ACN=48	USA (off CA)	C-46, C-48

Table 6.30 Order BERYCIFORMES

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Trachichthyoidei											
Anoplogasteridae											
<i>Anoplogaster</i>	<i>cornuta</i>	M	48	2SM + 46A	50	50			ACN=50	USA (off CA)	C-46
Diretmidae											
<i>Diretmus</i>	<i>argenteus</i>	M	44-46	2 macro. + 42-44 normal						Atlantic	P-74
<i>Diretmus</i>	sp. C	M	70±							Atlantic	P-74
Monocentridae											
<i>Monocentris</i>	<i>japonica</i>		48	48A	48	48			ACN=48	Japan (Chiba)	A-67
<i>Monocentris</i>	<i>japonica</i>		48	2ST + 46A	48	50			ACN=48	Japan (Suruga Bay)	M-104
Trachichthyidae											
<i>Hoplostethus</i>	<i>mediterraneus</i>		48	2ST + 46A	48	50			ACN=48	Japan (Suruga Bay)	M-104
Suborder Berycoidei											
Berycidae											
<i>Beryx</i>	<i>splendens</i>	F	48	4M + 8SM + 36A	60	60	2	1.7* FCM	X ₁ X ₁ X ₂ X ₂ , ACN=48	Japan (Izu Peninsula)	O-43, O-48
<i>Beryx</i>	<i>splendens</i>	M	47	5M + 8SM + 34A	60	60			X ₁ X ₂ Y, ACN=48	Japan (Izu Peninsula)	O-43

Table 6.30 Order BERYCIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Holocentroidei											
Holocentridae											
<i>Holocentrus</i>	<i>adscensionis</i>			50			78		1.3 FD, 1.8 BFA	Brazil (CE, RN)	G-12, G-85, H-13
<i>Myripristis</i>	<i>jacobus</i>			48			48	48		Brazil (RN, SPR)	G-12
<i>Sargocentron</i>	<i>ruberum</i>			<i>Adioryx ruber</i>	48	48A	48	48	ACN=48	Japan (Yakushima Is.)	A-67

Table 6.31 Order ZEIFORMES

A	B	C	D	E	F	G	H	I	J	K	L	
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference	
Suborder Zeioidei												
Oreosomatidae												
<i>Allocyttus</i>	<i>verrucosus</i>			42 42A			42	42		ACN=48	Japan (Hokkaido)	S-140
Zeidae												
<i>Zeus</i>	<i>faber</i>			F 44 44A			44	44	2	ACN=46	Italy (Palermo)	V-57, V-64
<i>Zeus</i>	<i>faber</i>			M 42 1ST + 41A			42	43	2	Y chrom., ACN=46	Italy (Palermo)	V-64

Table 6.33 Order BATRACHOIDIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Batrachoididae											
<i>Amphichthys cryptocentrus</i>			46	4M + 2SM + 40A	52	52			ACN=48	Venezuela	N-24
<i>Batrachoides manglae</i>			46	6M + 6SM + 34A	58	58			ACN=48	Venezuela	N-24
<i>Batrachoides pacifici</i>		F, M	46	6M + 6SM + 34A	58	58			ACN=48	Panama (Pacific coast)	N-23
<i>Halobatrachus didactylus</i>		F, M	46	8M + 12SM + 26 ST/A	66	2			ACN=48	Spain (Bay of Cadiz)	P-3
<i>Porichthys notatus</i>		F	48	10M + 20SM + 18A	78	78	4.4 BFA			E. Pacific	C-46, H-13
<i>Porichthys pectorodon</i>		F, M	44	8M + 10SM + 6ST + 20A	62	68	2		ACN=48	Venezuela	N-26
<i>Porichthys porosissimus</i>		F, M	44	14 M/SM + 30 ST/A	58	1-3	3.4 BFA		ACN=48	Brazil (RJ)	B-58, H-13
<i>Thalassophryne maculosa</i>		F, M	46	8M + 6SM + 32 ST/A	60				ACN=48	Venezuela	N-24
<i>Thalassophryne maculosa</i>		F, M	46	12M + 6SM + 20ST + 8A	64	84	2		ACN=48	Venezuela	N-27
<i>Thalassophryne nattereri</i>		F, M	46	8M + 8SM + 24ST + 6A	62	86	2		ACN=48	Brazil (RN)	C-106

Table 6.34 Order SYNBRANCHIFORMES

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Mastacembeloidei											
Mastacembelidae											
<i>Macrognathus aculeatum</i>		M	48	8M + 2SM + 38A	58	58			ACN=48	India (WB)	M-26
<i>Macrognathus aculeatum</i>		F, M	48	8M + 2SM + 38A	58	58			ACN=48	India (Bihar)	K-42
<i>Macrognathus aculeatum</i>		F, M	48	10M + 38A	58	58	2			India (Haryana)	R-76
<i>Macrognathus aculeatum</i>		F	48							India (Portonovo)	N-13
<i>Macrognathus pancalus</i>	<i>Mastacembelus</i>	F, M	48	14M + 12SM + 14ST + 8A	74	88			ACN=48	India (Bihar)	K-42
<i>Macrognathus pancalus</i>	<i>Mastacembelus</i>	F	48	16M + 6SM + 8ST + 18A	70	78			ACN=48	India (WB)	M-26
<i>Mastacembelus armatus</i>		F, M	48	14M + 2SM + 4ST + 28A	64	68	2		ACN=48	China (Guangdong, Guilin)	Y-15
<i>Mastacembelus armatus</i>		F	48	10M + 4SM + 2ST + 32A	62	64	2			India (WB)	M-28, D-34
<i>Mastacembelus armatus</i>		F, M	48	10M + 6SM + 4ST + 28A	64	68	2	1.4 FD	ACN=48	(Asia)	O-57
<i>Sinobdella sinensis</i>	<i>Mastacembelus aculeatus</i>	F	48	16M + 4SM + 2ST + 26A	68	70	(1.8* FD)	XX, ACN=48		China (Guilin)	Y-15, C-83
<i>Sinobdella sinensis</i>	<i>Mastacembelus aculeatus</i>	M	48	15M + 4SM + 3ST + 26A	67	70		XY, ACN=48		China (Guilin)	Y-15
<i>Sinobdella sinensis</i>	<i>Mastacembelus aculeatus</i>	F, M	48	16M + 4SM + 28A	68	68		XX/XY		China (Hubei)	L-55

Table 6.33 Order BATRACHOIDIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Batrachoididae											
<i>Amphichthys cryptocentrus</i>			46	4M + 2SM + 40A	52	52			ACN=48	Venezuela	N-24
<i>Batrachoides manglae</i>			46	6M + 6SM + 34A	58	58			ACN=48	Venezuela	N-24
<i>Batrachoides pacifici</i>		F, M	46	6M + 6SM + 34A	58	58			ACN=48	Panama (Pacific coast)	N-23
<i>Halobatrachus didactylus</i>		F, M	46	8M + 12SM + 26 ST/A	66	2			ACN=48	Spain (Bay of Cadiz)	P-3
<i>Porichthys notatus</i>		F	48	10M + 20SM + 18A	78	78	4.4 BFA			E. Pacific	C-46, H-13
<i>Porichthys pectorodon</i>		F, M	44	8M + 10SM + 6ST + 20A	62	68	2		ACN=48	Venezuela	N-26
<i>Porichthys porosissimus</i>		F, M	44	14 M/SM + 30 ST/A	58	1-3	3.4 BFA		ACN=48	Brazil (RJ)	B-58, H-13
<i>Thalassophryne maculosa</i>		F, M	46	8M + 6SM + 32 ST/A	60				ACN=48	Venezuela	N-24
<i>Thalassophryne maculosa</i>		F, M	46	12M + 6SM + 20ST + 8A	64	84	2		ACN=48	Venezuela	N-27
<i>Thalassophryne nattereri</i>		F, M	46	8M + 8SM + 24ST + 6A	62	86	2		ACN=48	Brazil (RN)	C-106

Table 6.34 Order SYNBRANCHIFORMES

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Mastacembeloidei											
Mastacembelidae											
<i>Macrognathus aculeatum</i>		M	48	8M + 2SM + 38A	58	58			ACN=48	India (WB)	M-26
<i>Macrognathus aculeatum</i>		F, M	48	8M + 2SM + 38A	58	58			ACN=48	India (Bihar)	K-42
<i>Macrognathus aculeatum</i>		F, M	48	10M + 38A	58	58	2			India (Haryana)	R-76
<i>Macrognathus aculeatum</i>		F	48							India (Portonovo)	N-13
<i>Macrognathus pancalus</i>	<i>Mastacembelus</i>	F, M	48	14M + 12SM + 14ST + 8A	74	88			ACN=48	India (Bihar)	K-42
<i>Macrognathus pancalus</i>	<i>Mastacembelus</i>	F	48	16M + 6SM + 8ST + 18A	70	78			ACN=48	India (WB)	M-26
<i>Mastacembelus armatus</i>		F, M	48	14M + 2SM + 4ST + 28A	64	68	2		ACN=48	China (Guangdong, Guilin)	Y-15
<i>Mastacembelus armatus</i>		F	48	10M + 4SM + 2ST + 32A	62	64	2			India (WB)	M-28, D-34
<i>Mastacembelus armatus</i>		F, M	48	10M + 6SM + 4ST + 28A	64	68	2	1.4 FD	ACN=48	(Asia)	O-57
<i>Sinobdella sinensis</i>	<i>Mastacembelus aculeatus</i>	F	48	16M + 4SM + 2ST + 26A	68	70	(1.8* FD)	XX, ACN=48		China (Guilin)	Y-15, C-83
<i>Sinobdella sinensis</i>	<i>Mastacembelus aculeatus</i>	M	48	15M + 4SM + 3ST + 26A	67	70		XY, ACN=48		China (Guilin)	Y-15
<i>Sinobdella sinensis</i>	<i>Mastacembelus aculeatus</i>	F, M	48	16M + 4SM + 28A	68	68		XX/XY		China (Hubei)	L-55

Table 6.34 Order SYNBRANCHIFORMES (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Synbranchoidei											
Synbranchidae											
<i>Monopterus albus</i>	<i>Fluta alba</i>	F, M	24	24A	24	24			ACN=24	Japan (Nara)	K-65
<i>Monopterus albus</i>			24	24A	24	24	(1.3*, 1.6 FD)		ACN=24	China (Hubei)	L-39, C-83
<i>Monopterus albus</i>			24	24A	24	24			ACN=24	China	L-61, Y-12
<i>Monopterus albus</i>	<i>alba</i>	F	24	24A	24	24			ACN=24	India (Manipur)	R-56, R-64
<i>Monopterus cuchia</i>	<i>Amphipnous</i>		42	2M + 4SM + 14ST + 22A	48	62				India (WB)	K-46
<i>Monopterus cuchia</i>	<i>Amphipnous</i>	F, M	42	4SM + 38A	46	46			ACN=42	India (Assam)	R-64
<i>Ophisternon bengalense</i>	<i>Synbranchus bengalensis</i>	F	46	6 M/SM + 40A	52	52				India (Portonovo)	N-13
<i>Synbranchus marmoratus</i>		F, M	44	4 M/SM + 40 ST/A	48	4		0-2 B		Argentina	S-10, C-98
<i>Synbranchus marmoratus</i>			44	4 M/SM + 40 ST/A	48	2			ACN=48	Brazil (CE, SP)	F-57
<i>Synbranchus marmoratus</i>		F, M	42	4 M/SM + 38 ST/A	46	2			ACN=48	Brazil (MS, GO, SP)	F-57
<i>Synbranchus marmoratus</i>			46	6 M/SM + 40 ST/A	52	2				Brazil (SP)	F-57
<i>Synbranchus marmoratus</i>			42	4M + 6SM + 8ST + 24A	52	60	7.6-8.5 FD		ACN=48	Brazil (SP)	T-75
<i>Synbranchus marmoratus</i>			42	4M + 2SM + 8ST + 28A	48	56	6.6-7.4 FD		ACN=48	Brazil (PR)	T-75
<i>Synbranchus marmoratus</i>			42	4M + 2SM + 8ST + 28A	48	56	6.6 FD		ACN=48	Brazil (MS)	T-75
<i>Synbranchus marmoratus</i>			44	4M + 2SM + 8ST + 30A	50	58	7.9 FD		ACN=48	Brazil (SP)	T-75
<i>Synbranchus marmoratus</i>			46	4M + 2SM + 8ST + 32A	52	60	6.4 FD		ACN=48	Brazil (PR)	T-75
<i>Synbranchus marmoratus</i>			46	6M + 2SM + 6ST + 32A	54	60	5.6 FD		ACN=48	Brazil (MS)	T-75

Table 6.35 Order SCORPAENIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Dactylopteroidei											
Dactylopteridae											
<i>Dactylopterus</i>	<i>volitans</i>		48	16M + 14SM + 6ST + 12A	78	84				Brazil (RJ)	B-86
Suborder Scorpaenoidei											
Scorpaenidae											
Sebastinae											
<i>Helicolenus</i>	<i>dactylopterus</i>	F, M	48	2M + 46A	50	50			ACN=48	Italy (Palermo)	V-54
<i>Helicolenus</i>	<i>dactylopterus</i>	F, M	47	3M + 44A	50	50			ACN=48	Italy (Palermo)	V-54
<i>Helicolenus</i>	<i>hilgendorfi</i>		48		52					Japan	Y-22
<i>Sebastes</i>	<i>hubbsi</i>	M	46	4M + 42A	50	50			ACN=48	Japan (Sanriku)	I-4, N-33
<i>Sebastes</i>	<i>hubbsi</i>		48	3M + 2ST + 43A	51	53				China	Z-23
<i>Sebastes</i>	<i>inermis</i>		48	2M + 46A	50	50			ACN=48	Japan	N-33
<i>Sebastes</i>	<i>inermis</i>		48		50		(1.9* FCM)			Japan	Y-22, O-48
<i>Sebastes</i>	<i>iracundus</i>	M	48							W.N. Pacific	I-12
<i>Sebastes</i>	<i>joyneri</i>		48	2M + 46A	50	50			ACN=48	Japan (Izu)	I-4
<i>Sebastes</i>	<i>longispinis</i>		48	2M + 46A	50	50			ACN=48	Japan	N-33
<i>Sebastes</i>	<i>matsubarae</i>		48		50					Japan	Y-22
<i>Sebastes</i>	<i>oblongus</i>	F, M	48	2SM + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
<i>Sebastes</i>	<i>pachycephalus nudus</i>	F, M	48	2M + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
<i>Sebastes</i>	<i>schlegeli</i>		48	2M + 2ST + 44A	50	52			ACN=48	Japan	N-33
<i>Sebastes</i>	<i>schlegeli</i>	M	48	2M + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
<i>Sebastes</i>	<i>schlegeli</i>		48	2M + 2SM + 44A	52	52			ACN=48	China (Liaoning)	Z-15
<i>Sebastes</i>	<i>schlegeli</i>	F, M	48	2M + 46A	50	50	2		ACN=48	China (Shandong)	Y-18, W-8
<i>Sebastes</i>	<i>taczanowskii</i>	M	48	2M + 46A	50	50			ACN=48	Japan (Hokkaido)	S-15
<i>Sebastes</i>	<i>thompsoni</i>	F	48	2SM + 46A	50	50			ACN=48	Japan (Sanriku)	I-4
<i>Sebastes</i>	<i>trivittatus</i>	M	48	2M + 46A	50	50			ACN=48	Japan (Hokkaido)	I-4
<i>Sebastes</i>	<i>vulpes</i>		48	2M + 46A	50	50			ACN=48	Japan (Hokkaido)	I-4
<i>Sebastiscus</i>	<i>albofasciatus</i>		48		52					Japan	Y-22
<i>Sebastiscus</i>	<i>marmoratus</i>		48	2M + 46A	50	50	(1.8* FCM)		ACN=48	Japan	N-33, Y-22, O-48
<i>Sebastiscus</i>	<i>marmoratus</i>		48	2SM + 46A	50	50			ACN=48	China	P-4
<i>Sebastiscus</i>	<i>marmoratus</i>	F, M	48	2M + 46A	50	50	1.6* FCM		ACN=48	Korea (Busan)	P-70
<i>Sebastolobus</i>	<i>macrochir</i>	M	46							Okhotsk Sea	I-12

Table 6.35 Order SCORPAENIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Scorpaeninae											
<i>Dendrochirus</i> <i>zebra</i>		F, M	48	4M + 6ST + 38A	52	58	2		ACN=48	Indonesia (Java)	C-23
<i>Pterois</i> <i>lunulata</i>			48	2M + 10SM + 18 ST + 18A	60	78			ACN=48	Japan	N-33
<i>Pterois</i> <i>lunulata</i>		F, M	48	2M + 12ST + 34A	50	62	2		ACN=48	Indonesia (Java)	C-23
<i>Pterois</i> <i>radiata</i>		F, M	48	4M + 8ST + 36A	52	60	2		ACN=48	Indonesia (Java)	C-23
<i>Pterois</i> <i>volitans</i>			48	2M + 10ST + 36A	50	60	2	2.0 FIA	ACN=48	Indonesia (Java)	C-23, H-41
<i>Scorpaena</i> <i>brasiliensis</i>		F, M	46	2M + 12SM + 32 ST/A	60		2	2.8 BFA	ACN=48	Brazil (RJ)	C-78, H-13
<i>Scorpaena</i> <i>isthmensis</i>		F, M	40	6M + 8SM + 26 ST/A	54		2		ACN=46	Brazil (RJ)	C-78
<i>Scorpaena</i> <i>izensis</i>			48			56				Japan	Y-22
<i>Scorpaena</i> <i>miostoma</i>	<i>neglecta miostoma</i>		48			82				Japan	Y-22
<i>Scorpaena</i> <i>miostoma</i>	<i>neglecta miostoma</i>		48	6SM + 22ST + 20A	54	76			ACN=48	Japan (Suruga Bay)	M-118
<i>Scorpaena</i> <i>notata</i>		F, M	34	26ST + 8A	34	60	2			Italy (Senigallia)	C-16
<i>Scorpaena</i> <i>notata</i>			34	24ST + 10A	34	58	2	1.1 FD	ACN=48	Spain (Malaga)	T-34
<i>Scorpaena</i> <i>notata</i>	<i>ustulata</i>		34	10 M/SM + 24 ST/A	44					Croatia	S-195
<i>Scorpaena</i> <i>onaria</i>	<i>neglecta neglecta</i>		48	6SM + 32ST + 10A	54	86			ACN=48	Japan (Suruga Bay)	M-118
<i>Scorpaena</i> <i>onaria</i>	<i>neglecta neglecta</i>		47	7SM + 32ST + 8A	54	86				Japan (Suruga Bay)	M-118
<i>Scorpaena</i> <i>onaria</i>	<i>neglecta neglecta</i>		48	6M + 14SM + 18ST + 10A	68	86			ACN=48	Japan	N-33
<i>Scorpaena</i> <i>onaria</i>	<i>neglecta neglecta</i>		47	7M + 14SM + 18ST + 8A	68	86			ACN=48	Japan	N-33
<i>Scorpaena</i> <i>onaria</i>	<i>neglecta neglecta</i>		48			56				Japan	Y-22
<i>Scorpaena</i> <i>porcus</i>		F, M	42	4M + 2SM + 10ST + 26A	48	58	2	(2.8 FCM)	ACN=46	Italy (Senigallia)	C-16, V-86
<i>Scorpaena</i> <i>porcus</i>			42	6M + 10ST + 26A	48	58	2	1.8 FD	ACN=46	Spain (Malaga)	T-34, C-9
<i>Scorpaena</i> <i>porcus</i>		M	42	6M + 10ST + 26A	48	58				Italy (Roma)	C-31
<i>Scorpaena</i> <i>porcus</i>			42	16 M/SM + 26A	58	58				Croatia	S-195
<i>Scorpaena</i> <i>scrofa</i>			46	20ST + 26A	46	66				Italy	T-34
<i>Scorpaenodes</i> <i>littoralis</i>		F	36	32 M/SM + 2ST + 2A	68	70	2			Japan (Chiba)	A-54, T-6
<i>Scorpaenodes</i> <i>littoralis</i>			36	32M + 2ST + 2A	68	70				Japan (Suruga Bay)	M-118
<i>Scorpaenopsis</i> <i>cirrosa</i>	<i>cirrhosa</i>		48	4ST + 44A	48	52			ACN=48	Japan (Suruga Bay)	M-118
<i>Scorpaenopsis</i> <i>gibbosa</i>		M	48	10ST + 38A	48	58	2		ACN=48	Indonesia (Java)	C-23
Tetraoginae											
<i>Paracentropogon</i> <i>rubripinnis</i>	<i>Hypodytes</i>		48	4 M/SM + 44 ST/A	52			(2.1* FCM)	ACN=48	Japan (Chiba, Kanagawa)	A-54, O-48
<i>Paracentropogon</i> <i>rubripinnis</i>	<i>Hypodytes</i>	F	48	2M + 46A	50	50			X ₁ X ₂ X ₂	S. Japan	U-41
<i>Paracentropogon</i> <i>rubripinnis</i>	<i>Hypodytes</i>	M	47	3M + 44A	50	50			X ₁ X ₂ Y, ACN=48	S. Japan	U-41
<i>Tetraoge</i> <i>niger</i>		M	50							India (Portonovo)	N-13

Table 6.35 Order SCORPAENIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Synanceiinae											
<i>Inimicus</i>	<i>japonicus</i>		48	10M + 4SM + 2ST + 32A	62	64			ACN=48	Japan	N-33
Suborder Platycephaloidei											
Triglidae											
<i>Chelidonichthys</i>	<i>lucernus</i>	<i>Trigla lucerna</i>	F, M	48 2M + 2SM + 2ST + 42A	52	54			ACN=48	Italy (Palermo)	V-54
<i>Chelidonichthys</i>	<i>lucernus</i>	<i>Trigla lucerna</i>	F, M	47 3M + 2SM + 2ST + 40A	52	54			ACN=48	Italy (Palermo)	V-54
<i>Chelidonichthys</i>	<i>lucernus</i>	<i>Trigla lucerna</i>		48 2M + 4SM + 2ST + 40A	54	56	2		ACN=48	Italy (Senigallia)	C-16
<i>Chelidonichthys</i>	<i>lucernus</i>	<i>Trigla lucerna</i>		47 3M + 4SM + 2ST + 38A	54	56	2		ACN=48	Italy (Senigallia)	C-16
<i>Chelidonichthys</i>	<i>lucernus</i>	<i>Trigla lucerna</i>		48						Russia	V-72
<i>Prionotus</i>	<i>punctatus</i>			100-102				100-102		Brazil (RJ)	B-86
<i>Trigloporus</i>	<i>lastoviza</i>		F, M	48 6M + 4ST + 38A	54	58	2		ACN=48	Italy (Palermo)	C-16
Platycephalidae											
<i>Inegocia</i>	<i>guttata</i>			48 20M + 10SM + 6ST + 12A	78	84			ACN=48	Japan (Izu)	I-2
<i>Onigocia</i>	<i>macrolepis</i>			48 48A	48	48			ACN=48	Japan (Izu)	I-2
<i>Onigocia</i>	<i>spinosa</i>			48 32M + 12SM + 4ST	92	96			ACN=48	Japan (Izu, Tokyo)	I-2
<i>Platycephalus</i>	sp. 2	<i>indicus</i>		48 2SM + 6ST + 40A	50	56			ACN=48	Japan (Iwate)	I-2
<i>Platycephalus</i>	<i>indicus</i>			48 2M + 8SM + 2ST + 36A	58	60	2	(1.6 FIA)	ACN=48	China (Shandong)	K-96, H-41
<i>Platycephalus</i>	<i>indicus</i>			48 4M + 6SM + 2ST + 36A	58	60			ACN=48	China (Shandong)	Z-37
<i>Platycephalus</i>	<i>indicus</i>			48 10 M/SM + 38 ST/A	58					India (Portonovo)	N-13
<i>Platycephalus</i>	<i>indicus</i>			48 2SM + 10ST + 36A	50	60			ACN=48	India (Orissa)	C-61
<i>Platycephalus</i>	<i>tuberculatus</i>			48 4M + 4SM + 6ST + 34A	56	62			ACN=48	India (WB)	N-17
<i>Thysanophrys</i>	<i>chiltonae</i>			48 22M + 12SM + 10ST + 4A	82	92			ACN=48	Japan (Okinawa)	I-2
Suborder Anoplopomatoidei											
Anoplopomatidae											
<i>Erilepis</i>	<i>zonifer</i>			30 22M + 6SM + 2ST	58	60				N. Pacific	I-21
<i>Erilepis</i>	<i>zonifer</i>			30 22M + 6SM + 1ST + 1A	58	59				N. Pacific	I-21
<i>Erilepis</i>	<i>zonifer</i>			30 18M + 4SM + 4ST + 4A	52	56				N. Pacific	I-21
<i>Erilepis</i>	<i>zonifer</i>			30 18M + 2SM + 4ST + 6A	50	54				N. Pacific	I-21

Table 6.35 Order SCORPAENIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Hexagrammoidei											
Hexagrammidae											
<i>Hexagrammos agrammus</i>	<i>Agrammus</i>		48	8M + 26SM + 14ST	82	96			ACN=48	Japan (Hokkaido)	M-51
<i>Hexagrammos agrammus</i>	<i>Agrammus</i>	F, M	48	8M + 26SM + 14ST	82	96			ACN=48	China (Liaoning)	Z-15
<i>Hexagrammos lagocephalus</i>			48	2M + 6SM + 28ST + 12A	56	84			ACN=48	Japan (Hokkaido)	M-51
<i>Hexagrammos otakii</i>			48	6M + 12SM + 22ST + 8A	66	88	(1.7* FCM)		ACN=48	Japan (Yamaguchi)	N-36, O-48
<i>Hexagrammos otakii</i>		F, M	48	6M + 8SM + 12ST + 22A	62	74			ACN=48	China (Liaoning)	Z-15
<i>Hexagrammos otakii</i>		F, M	48	6M + 16SM + 20ST + 6A	70	90	2		ACN=48	China (Shandong)	Y-18
<i>Hexagrammos otakii</i>			48	6M + 20SM + 16ST + 6A	74	90				China	W-8
<i>Hexagrammos stelleri</i>		F	48	4M + 12SM + 12ST + 20A	64	76			ACN=48	Japan (Hokkaido)	M-51
<i>Pleurogrammus azonus</i>			48	18M + 8SM + 12ST + 10A	74	86			ACN=48	Japan (Hakodate)	M-51
Suborder Cottoidei											
Cottidae											
<i>Alcichthys alcicornis</i>		F, M	48	2M + 6SM + 40 ST/A	56		1.5 FD		ACN=48	Japan (Iwate)	T-64
<i>Artedius fenestralis</i>		M	48	10M + 10SM + 10ST + 18A	68	78			ACN=48	USA (WA)	I-7
<i>Artedius lateralis</i>		M	48	8M + 12SM + 12ST + 16A	68	80			ACN=48	USA (WA)	I-7
<i>Batrachocottus baicalensis</i>		M	48	6M + 6SM + 36 ST/A	60				ACN=50	Russia (Lake Baikal)	S-167, S-168
<i>Batrachocottus multiradiatus</i>		F, M	48	12M + 8SM + 18ST + 10A	68	86			ACN=48	Russia (Lake Baikal)	S-167, S-168
<i>Clinocottus analis</i>			48*				1.9 BFA			USA (CA)	C-46, H-13
<i>Cottocomorphorus grewingkii</i>		F, M	48	10M + 6SM + 32 ST/A	64				ACN=48	Russia (Lake Baikal)	S-168
<i>Cottocomorphorus inermis</i>		M	48	6M + 8SM + 34 ST/A	62				ACN=48	Russia (Lake Baikal)	S-168
<i>Cottus gobio</i>		F, M	48	10 M/SM + 38 ST/A	58		4		ACN=48	Italy (Vicenza)	V-62
<i>Cottus gobio</i>		F, M	48	6 M/SM + 42 ST/A	54					Bosnia-Herzegovina	B-24
<i>Cottus gobio</i>			52	6 M/SM + 46A	58	58				Poland	S-107
<i>Cottus hangiongensis</i>		F	48	6 M/SM + 42 ST/A	54				ACN=48	Japan (Hokkaido)	A-1
<i>Cottus kazika</i>		F, M	40	18 M/SM + 22 ST/A	58				ACN=48	Japan (Hokuriku)	A-4
<i>Cottus nozawae</i>		F, M	48	10 M/SM + 38 ST/A	58				ACN=48	Japan (Hokkaido)	A-1
<i>Cottus paulus</i>	<i>pygmaeus</i>		48		48					USA (AL)	G-32
<i>Cottus poecilopus</i>			48	8 M/SM + 40A	56	56				Europe	S-107
<i>Cottus pollux</i>		F, M	48	10 M/SM + 38 ST/A	58		2		ACN=48	Japan	A-4
<i>Cottus pollux</i>		F, M	48	4M + 6SM + 16ST + 22A	58	74			ACN=48	Japan (Sanriku)	I-7
<i>Cottus reinii</i>		F	48	12 M/SM + 36 ST/A	60				ACN=48	Japan (Iwate)	A-4

Table 6.35 Order SCORPAENIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C	D Sex	E 2n	F Karyotype	G NF ₁	H NF ₂	I Ag- NORs	J Genome size (pg/cell)	K Comments	L Locality	M Reference
<i>Gymnoanthus intermedius</i>			F, M	44	2M + 4SM + 38 ST/A	50			1.5 FD	ACN=48	Japan (Iwate)	T-64
<i>Gymnoanthus tricuspis</i>				46	4M + 42A	50	50		(1.5 FIA)		Russia	L-87, H-40
<i>Gymnoanthus tricuspis</i>				46	3M + 1SM + 42A	50	50				Russia	L-87
<i>Icelus cataphractus</i>			M	40	12M + 12SM + 16 ST/A	64			1.5 FD		Japan (Iwate)	T-64
<i>Leocottus kesslerii</i>		<i>Cottus</i>	M	48	6 M + 4SM + 38 ST/A	58				ACN=48	Russia (Lake Baikal)	S-167, S-168
<i>Myoxocephalus brandti</i>			F, M	44	2M + 18ST + 24A	46	64			ACN=44	Russia (Amur Bay)	R-103
<i>Myoxocephalus jaok</i>			F, M	24	16M + 4SM + 4A	44	44			ACN=42	Russia (Far East)	R-113
<i>Myoxocephalus ochotensis</i>			F, M	42	2M + 20ST + 20A	44	64			ACN=42	Russia (Sea of Okhotsk)	R-114
<i>Myoxocephalus scorpius</i>				36	8M + 2SM + 2ST + 24A	46	48		1.7 FIA		Russia	V-72, H-40
<i>Myoxocephalus scorpius</i>				37	7M + 2SM + 2ST + 26A	46	48				Russia	V-72
<i>Myoxocephalus scorpius</i>				38	6M + 2SM + 2ST + 28A	46	48				Russia	V-72
<i>Myoxocephalus stelleri</i>				40	6 M/SM + 34 ST/A	46		4		ACN=42	Russia (Far East)	M-67
<i>Ocynectes maschalalis</i>			F, M	46	4M + 6SM + 36 ST/A	56				ACN=46	Japan (Kanagawa)	A-72
<i>Oligocottus maculosus</i>			F	48	14M + 14SM + 6ST + 14A	76	82			ACN=48	USA (WA)	I-7
<i>Oligocottus snyderi</i>				48*							USA	C-46
<i>Paracottus knerii</i>			F, M	48	8M + 6SM + 34 ST/A	62				ACN=48	Russia (Lake Baikal)	S-167, S-168
<i>Pseudoblennius cottooides</i>			F	46	4M + 8SM + 34 ST/A	58				ACN=46	Japan (Kanagawa)	A-72
<i>Pseudoblennius marmoratus</i>		Type A		46	4M + 8SM + 34 ST/A	58				ACN=48	Japan (Chiba, Kanagawa)	A-72
<i>Pseudoblennius marmoratus</i>		Type B	F	46	4M + 7SM + 35 ST/A	57				ACN=48	Japan (Chiba, Kanagawa)	A-72
<i>Pseudoblennius marmoratus</i>		Type C	M	46	4M + 6SM + 36 ST/A	56				ACN=48	Japan (Chiba, Kanagawa)	A-72
<i>Pseudoblennius percoides</i>				46	10SM + 36 ST/A	56			1.1 FCM	ACN=48	Korea (Busan)	K-125
<i>Trachidermis fasciatus</i>				40	24 M/SM + 16 ST/A	64				ACN=48	Japan (Fukuoka)	A-4
<i>Trachidermis fasciatus</i>				40		60					China (Shanghai)	C-43
<i>Triglopsis quadricornis</i>		<i>Tryglopsis</i>		32	12 M/SM + 20ST	44	64		1.8 FIA		Russia, White Sea	L-87, L-88, H-41
Comephoridae												
<i>Comephorus baicalensis</i>			F	48	8M + 40 ST/A	56				ACN=48	Russia (Lake Baikal)	S-168
<i>Comephorus dybowskii</i>				48	2M + 2SM + 44 ST/A	52					Russia (Lake Baikal)	S-168

Table 6.35 Order SCORPAENIFORMES (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Abyssocottidae											
<i>Abyssocottus gibbosus</i>			48	10M + 12SM + 26 ST/A	70					Russia (Lake Baikal)	S-168
<i>Abyssocottus korotneffi</i>		F, M	48	8M + 16SM + 14ST + 10A	72	86			ACN=48	Russia (Lake Baikal)	S-167, S-168
<i>Asprocottus herzensteini</i>			48	10M + 10SM + 28 ST/A	68					Russia (Lake Baikal)	S-168
<i>Asprocottus platycephalus</i>		F, M	48	8M + 10SM + 30 ST/A	66				ACN=48	Russia (Lake Baikal)	S-167, S-168
<i>Cottinella boulengeri</i>		F	48	6M + 12SM + 30 ST/A	66				ACN=48	Russia (Lake Baikal)	S-167, S-168
<i>Cyphocottus megalops</i>	<i>Limnocottus</i>	F, M	48	14M + 2SM + 32 ST/A	64				ACN=50	Russia (Lake Baikal)	S-167, S-168
<i>Limnocottus bergianus</i>			48	8M + 12SM + 28 ST/A	68					Russia (Lake Baikal)	S-168
<i>Limnocottus griseus</i>			48	8M + 12SM + 28 ST/A	68					Russia (Lake Baikal)	S-168
<i>Limnocottus pallidus</i>			48	8M + 14SM + 26 ST/A	70					Russia (Lake Baikal)	S-168
<i>Procottus major</i>		F, M	48	10M + 16SM + 22 ST/A	74				ACN=48	Russia (Lake Baikal)	S-167, S-168
Hemipteridae											
<i>Hemipterus villosus</i>			46	20M + 16SM + 10A	82	82			ACN=46	China (Liaoning)	M-36
Agonidae											
<i>Agonus cataphractus</i>			48							Russia	V-72
Cyclopteridae											
<i>Cyclopterus lampus</i>			50	8SM + 12ST + 30A	58	70			ACN=50	Canada (Atlantic)	L-33
<i>Cyclopterus lampus</i>			50		54					Russia (White Sea)	L-88

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Percoidei											
Ambassidae (= Chandidae)											
<i>Chanda</i>	<i>nama</i>			48 12ST + 36A	48	60			ACN=48	India	Z-20
<i>Chanda</i>	<i>nama</i> ?	<i>Ambassis nama</i>	F, M	40 2M + 12SM + 26A	54	54			ACN=46	India (Orissa)	T-53
<i>Chanda</i>	<i>nama</i>		F	48 2SM + 46A	50	50			ACN=48	India (WB)	K-34
<i>Parambassis</i>	<i>siamensis</i>	<i>Chanda</i>		40 4M + 6ST + 30A	44	50			ACN=48	Thailand	D-20
<i>Parambassis</i>	<i>wolffii</i>			48 48A	48	48				Thailand	D-28
<i>Pseudambassis</i>	<i>ranga</i>	<i>Chanda</i>	M	44 4M + 40A	48	48			ACN=46	India (Orissa)	K-41
<i>Pseudambassis</i>	<i>ranga</i>	<i>Chanda</i>		48 2ST + 46A	48	50			ACN=48	India	Z-20
Apogonidae											
<i>Apogon</i>	<i>binotatus</i>			36 14 M/SM + 22 ST/A	50				ACN=46	USA (FL)	R-109
<i>Apogon</i>	<i>binotatus</i>			36 26 M/SM + 10 ST/A	62				ACN=44	USA (WI)	R-109
<i>Apogon</i>	<i>binotatus</i>			35 14 M/SM + 21 ST/A	49				ACN=45	USA (FL)	R-109
<i>Apogon</i>	<i>doederleini</i>			46 2M + 6SM + 38 ST/A	54		2.4 FIA		ACN=46	Japan (Wakayama)	O-41, H-40
<i>Apogon</i>	<i>endekataenia</i>		M	46 46 ST/A	46		2.1 FIA			India (Andaman Is.)	R-45, H-41
<i>Apogon</i>	<i>endekataenia</i>			46 2M + 4SM + 16ST + 24A	52	68			ACN=46	Japan	M-111
<i>Apogon</i>	<i>imberbis</i>			36	56				ACN=46	Spain	A-32
<i>Apogon</i>	<i>lineatus</i>			46 2M + 4SM + 2ST + 38A	52	54			ACN=46	Japan	M-111
<i>Apogon</i>	<i>maculatus</i>			34 27 M/SM + 7 ST/A	61				ACN=44	Puerto Rico	R-110
<i>Apogon</i>	<i>moluccensis</i>		M	46 46 ST/A	46		2.1 FIA			India (Andaman Is.)	R-45, H-40
<i>Apogon</i>	<i>notatus</i>		F, M	46 2M + 4SM + 40 ST/A	52				ACN=46	Japan (Wakayama)	O-41
<i>Apogon</i>	<i>notatus</i>		F, M	46 2M + 5SM + 39 ST/A	53				ACN=46	Japan (Wakayama)	O-41
<i>Apogon</i>	<i>notatus</i>		F, M	46 2M * 4SM + 40 ST/A	52				ACN=46	Japan	O-41, M-111
<i>Apogon</i>	<i>pseudomaculatus</i>	<i>Apogon (Apogon)</i>		36 30 M/SM + 2ST + 4A	66	68			ACN=46	(Puerto Rico)	R-79, R-110
<i>Apogon</i>	<i>semilineatus</i>			46 2M + 4SM + 20ST + 20A	52	72			ACN=46	Japan (Suruga Bay)	M-101
<i>Apogon</i>	<i>semilineatus</i>			46 2M + 6SM + 38 ST/A	54				ACN=46	Japan (Wakayama)	O-41
<i>Nectamia</i>	<i>fusca</i>	<i>Apogon nubilus</i>		46 2M + 44 SM/ST/A			2.6 FIA		ACN=46	(Pacific)	R-79, H-41
<i>Phaeoptyx</i>	<i>pigmentaria</i>			38 6M + 32 SM/ST/A					ACN=46	(Atlantic)	R-79
<i>Sphaeramia</i>	<i>orbicularis</i>	<i>Apogon</i>		46 4SM + 42 ST/A	50				ACN=46	(Indo-West Pacific)	O-41

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Bramidae											
<i>Brama</i>	<i>japonica</i>		F, M	54						N. Pacific	Y-3
Carangidae											
<i>Alectis</i>	<i>ciliaris</i>			48 48A	48	48			ACN=48	Japan (Izu Peninsula)	M-97
<i>Alepes</i>	<i>djedaba</i>	<i>Selar kalla</i>	F, M	56 56A	56	56			ACN=56	India (Orissa)	C-64
<i>Alepes</i>	<i>melanoptera</i>	<i>Selar malam</i>	F, M	48 2SM + 46A	50	50			ACN=48	India (Orissa)	C-64
<i>Atropus</i>	<i>atropos</i>	<i>atropus</i>	M	48 48A	48	48			ACN=48	India (Orissa)	D-3
<i>Atule</i>	<i>mate</i>	<i>Caranx</i>		50 14SM + 36A	64				ACN=50	USA (Hawaii)	L-8
<i>Carangooides</i>	<i>armatus</i>		M	48 2ST + 46A	48	50			ACN=48	India (Orissa)	D-3
<i>Carangooides</i>	<i>equula</i>	<i>Caranx</i>		48 2ST + 46A	48	50			ACN=48	Japan (Izu Peninsula)	M-97
<i>Carangooides</i>	<i>praeustus</i>	<i>proeustus</i>	M	48 10 M/SM + 38A	58	58			ACN=48	India (Orissa)	D-3
<i>Caranx</i>	<i>latus</i>			46 46A	46	46	2	1.2 FD		Brazil (RJ)	B-86
<i>Caranx</i>	<i>sansun</i>		F	48 2SM + 46A	50	50				India (Orissa)	P-16
<i>Caranx</i>	<i>sexfasciatus</i>			48 2ST + 46A	48	50			ACN=48	Japan (Izu Peninsula)	M-97
<i>Chloroscombrus</i>	<i>chrysurus</i>			48 48A	48	48		1.6 BFA		Brazil (RJ)	B-86, H-13
<i>Megalaspis</i>	<i>cordyla</i>		F	50 2ST + 48A	50	52			ACN=50	India (Orissa)	C-64
<i>Scomberoides</i>	<i>lysan</i>	<i>Chorinemus tolloparah</i>	M	48 4 M/SM + 44A	52	52			ACN=48	India (Orissa)	D-3
<i>Selene</i>	<i>setapinnis</i>			46 2SM + 44A	48	48				Brazil (RJ)	B-86
<i>Selene</i>	<i>vomer</i>			48 2ST + 46A	48	50	2		ACN=48	Brazil (SP)	R-108
<i>Seriola</i>	<i>dumerili</i>			48 2SM + 2ST + 44A	50	52	2	1.5 FIA	ACN=48	Italy (Sicily)	S-91, H-40
<i>Seriola</i>	<i>dumerili</i>			48 2SM + 46A	50	50			ACN=48	Italy (Sicily)	V-52
<i>Seriola</i>	<i>dumerili</i>			47 1M + 2SM + 44A	50	50			ACN=48	Italy (Sicily)	V-52
<i>Seriola</i>	<i>nigrofasciata</i>		F, M	48 48A	48	48		1.4 FD	ACN=48	India (Orissa)	T-53
<i>Seriola</i>	<i>quinqueradiata</i>			48 2SM + 2ST + 44A	50	52		1.7* FCM	ACN=48	Japan (Iwate)	I-1, O-48
<i>Trachinotus</i>	<i>carolinus</i>			48 8 M/SM + 40A	56	56	2		ACN=48	Brazil (SP)	R-108
<i>Trachinotus</i>	<i>falcatus</i>			48 10 M/SM + 38A	58	58	2	1.7 BFA	ACN=48	Brazil (SP)	R-108, H-13
<i>Trachinotus</i>	<i>goodei</i>			48 4 M/SM + 44A	52	52	2		ACN=48	Brazil (SP)	R-108
<i>Trachinotus</i>	<i>ovatus</i>		M	48 2M + 4SM + 42 ST/A	54				ACN=48	India (Orissa)	C-64
<i>Trachurus</i>	<i>japonicus</i>			48 4M + 14SM + 12ST + 18A	66	78			ACN=48	Japan (Izu Peninsula)	M-97
<i>Trachurus</i>	<i>mediterraneus ponticus</i>			48 4M + 6SM + 38 ST/A	58				ACN=48	Black Sea	V-5
<i>Trachurus</i>	<i>mediterraneus</i>			48 4M + 4SM + 14ST + 26A	56	70	2		ACN=48	Italy (Ancona)	C-14
<i>Trachurus</i>	<i>trachurus</i>		F, M	48 2SM + 46A	50	50	2		ACN=48	Italy (Ancona)	C-14

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Centracanthidae											
<i>Spicara</i> <i>maena</i>	<i>smaris</i>		46	8M + 4SM + 2ST + 32A	58	60			ACN=48	Black Sea	V-4
<i>Spicara</i> <i>maena</i>	<i>smaris</i>		45	9M + 4SM + 2ST + 30A	58	60			ACN=48	Black Sea	V-4
<i>Spicara</i> <i>maena</i>	<i>smaris</i>		44	10M + 4SM + 2ST + 28A	58	60			ACN=48	Black Sea	V-4
<i>Spicara</i> <i>maena</i>	<i>flexuosa</i>		46	8M + 4SM + 2ST + 32A	58	60			ACN=48	Black Sea	S-7, V-11
<i>Spicara</i> <i>maena</i>	<i>flexuosa</i>		45	9M + 4SM + 2ST + 30A	58	60			ACN=48	Black Sea	S-7, V-11
<i>Spicara</i> <i>maena</i>	<i>flexuosa</i>		44	10M + 4SM + 2ST + 28A	58	60			ACN=48	Black Sea	S-7, V-11
<i>Spicara</i> <i>maena</i>			48	4M + 2SM + 10ST + 32A	54	64			ACN=48	Black Sea	S-7, V-4, V-11
Centrarchidae											
<i>Acantharchus</i> <i>pomotis</i>		F, M	48	48A		48	48		ACN=48	USA (NC)	R-80
<i>Ambloplites</i> <i>rupestris</i>		F, M	48	48A		48	48	2.3 FIA	ACN=48	USA (NC, WV)	R-80, H-40
<i>Archoplites</i> <i>interruptus</i>		F	48	2ST + 46A		48	50		ACN=48	USA (CA)	B-83
<i>Centrarchus</i> <i>macropterus</i>		F	48	48A		48	48		ACN=48	USA (NC)	R-80
<i>Enneacanthus</i> <i>chaetodon</i>			48	48A		48	48		ACN=48	USA (NC)	R-80
<i>Enneacanthus</i> <i>gloriosus</i>			48	48A		48	48		ACN=48	USA (NC)	R-80
<i>Enneacanthus</i> <i>obesus</i>			48	48A		48	48		ACN=48	USA (NC)	R-80
<i>Lepomis</i> <i>auritus</i>			48	48A		48	48	2.1 FD	ACN=48	USA (NC)	R-80
<i>Lepomis</i> <i>cyanellus</i>			48	48A		48	48	(2.0 FD)	ACN=48	USA (NC)	O-6, R-80
<i>Lepomis</i> <i>cyanellus</i>		F, M	46	2SM + 44A		48	48		ACN=48	USA (WV)	R-80
<i>Lepomis</i> <i>cyanellus</i>		M	48	48A		48	48		ACN=48	USA (CA)	B-15
<i>Lepomis</i> <i>cyanellus</i>		M	47	1M + 46A		48	48		ACN=48	USA (CA)	B-15
<i>Lepomis</i> <i>cyanellus</i>		M	46	2SM + 44A		48	48		ACN=48	USA (CA)	B-15
<i>Lepomis</i> <i>gibbosus</i>		F, M	48	48A		48	48	(1.9 FIA)	ACN=48	USA (NC, WV)	R-80, B-63, H-40
<i>Lepomis</i> <i>gibbosus</i>			46	10M + 36 ST/A		56			ACN=48	(USA)	F-30
<i>Lepomis</i> <i>gulosus</i>	<i>Chaenobryttus</i>		48	48A		48	48		ACN=48	USA (NC)	R-80
<i>Lepomis</i> <i>humilis</i>			48					2.0 FD		USA	A-38
<i>Lepomis</i> <i>humilis</i>			46	2SM + 44A		48	48		ACN=48	USA (KY)	R-80
<i>Lepomis</i> <i>macrochirus</i>		F, M	48	48A		48	48	1.9* FCM, 1.9 FD	ACN=48	USA (WV)	R-80, B-63, O-48
<i>Lepomis</i> <i>marginatus</i>			48	48A		48	48	2.2 FD	ACN=48	USA (NC)	R-80
<i>Lepomis</i> <i>megalotis</i>			48	48A		48	48	2.1* FCM, 2.1 FD	ACN=48	USA (TN)	R-80, O-48
<i>Lepomis</i> <i>microlophus</i>		M	48	48A		48	48	2.0 FD	ACN=48	USA (NC, VA)	R-80
<i>Lepomis</i> <i>symmetricus</i>		F, M	40	8 M + 32 ST/A		48			ACN=48	USA (MS)	T-43
<i>Lepomis</i> <i>symmetricus</i>		F, M	41	7M + 34 ST/A		48			ACN=48	USA (MS)	T-43

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Lepomis symmetricus</i>		F, M	39	9M + 30 ST/A	48				ACN=48	USA (MS)	T-43
<i>Lepomis symmetricus</i>		M	38	10M + 28 ST/A	48				ACN=48	USA (MS)	T-43
<i>Micropterus dolomieu</i>		M	46	2SM + 44A	48	48		2.0 FIA	ACN=48	USA (WV)	R-80, B-63, H-40
<i>Micropterus punctulatus</i>		F, M	46	2 M/SM + 44 ST/A	48				sex chrom.	USA (TX)	T-40
<i>Micropterus salmoides</i>		F, M	46	2 M/SM + 44A	48	48		2.0* FCM	ACN=48	USA (WV)	T-40, T-73, R-80, O-48
<i>Micropterus treculi</i>		F, M	46	2 M/SM + 44 ST/A	48				sex chrom.	USA (TX)	T-40
<i>Pomoxis annularis</i>			48	48A	48	48		2.1 FCM	ACN=48	USA (NC)	R-80
<i>Pomoxis nigromaculatus</i>		F	48	48A	48	48			ACN=48	USA (NC, WV)	R-80
Centropomidae											
<i>Centropomus parallelus</i>			48	48A	48	48	2			Brazil (RJ)	B-86
Chaetodontidae											
<i>Chaetodon auriga</i>			48	48A	48	48		1.4 FIA	ACN=48	Japan (Okinawa)	A-61, H-40
<i>Chaetodon auripes</i>	<i>collaris</i>		48	48A	48	48			ACN=48	Japan (Chiba, Kagoshima)	A-61
<i>Chaetodon auripes</i>			48	48A	48	48		1.5* FCM		Japan	O-48
<i>Chaetodon collare</i>			48	48A	48	48	2		ACN=48	India (Kerala)	N-65
<i>Chaetodon lunula</i>			48	48A	48	48			ACN=48	Japan (Yakushima)	A-61
<i>Chaetodon plebeius</i>	<i>Megaprotodon</i>		48	2M + 46A	50	50			ACN=48	Japan (Tanegashima)	A-61
<i>Chaetodon sedentarius</i>			48		48					Brazil (ES)	G-12
<i>Chaetodon striatus</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (RN, BA)	A-7
<i>Chaetodon strigangulus</i>	<i>Megaprotodon</i>		48	2SM + 46A	50	50			ACN=48	Japan (Okinawa)	A-61
<i>Chaetodon trifasciatus</i>			48	48A	48	48			ACN=48	Japan (Okinawa)	A-61
<i>Chaetodon vagabundus</i>			48	48A	48	48		1.7 FIA	ACN=48	Japan (Okinawa)	A-61, H-40
<i>Heniochus acuminatus</i>			48	48A	48	48			ACN=48	Japan (Wakayama)	A-77
Echeneidae											
<i>Remora remora</i>		M	42	42 ST/A	42					India (Andaman Is.)	R-45
Gerreidae											
<i>Diapterus olithostomus</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (RN)	M-121
<i>Eucinostomus argenteus</i>		F, M	48	48A	48	48	2		ACN=48	USA (FL), Puerto Rico	R-96
<i>Eucinostomus gula</i>		F, M	48	48A	48	48	2	1.6 BFA	ACN=48	USA (FL)	R-96, H-13
<i>Eucinostomus harengulus</i>		F, M	48	48A	48	48	2		ACN=48	USA (FL)	R-96

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Eugerres plumieri</i>		F, M	48	48A	48	48	2		ACN=48	USA (FL)	R-96
<i>Gerres filamentosus</i>	<i>Gerreis</i>			48 4M + 44A	52	52				India (WB)	K-46
<i>Gerres oblongus</i>		M	50*					1.4* FCM		India (Andaman Is.)	R-45, O-48
<i>Gerres oyena</i>				48 48 ST/A	48				ACN=48	Japan (Wakayama)	A-77
Haemulidae (= Pomadasytidae)											
<i>Anisotremus moricandi</i>			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
<i>Anisotremus surinamensis</i>			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
<i>Anisotremus virginicus</i>			48	48A	48	48	2		ACN=48	Brazil (RN, RJ)	G-12, N-59
<i>Conodon nobilis</i>			48	48A	48	48			ACN=48	Brazil (RN)	G-12
<i>Haemulon aurolineatum</i>			48	48A	48	48		(1.5 FD)	ACN=48	Brazil (RN, RJ)	G-12, N-59
<i>Haemulon aurolineatum</i>		F, M	48	48A	48	48	2		ACN=48	Venezuela	N-59
<i>Haemulon bonariense</i>		F, M	48	48A	48	48	2		ACN=48	Venezuela	N-59
<i>Haemulon flavolineatum</i>			48					(1.8 BFA)		Brazil (RN)	G-12, H-13
<i>Haemulon flavolineatum</i>		F, M	48	48A	48	48	2	(1.3 FD)	ACN=48	Venezuela	R-106
<i>Haemulon parra</i>			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
<i>Haemulon plumieri</i>			48	48A	48	48	2	(2.0 BFA)	ACN=48	Brazil (RN)	G-12, N-59, H-13
<i>Haemulon plumieri</i>		F, M	48	48A	48	48	2		ACN=48	Venezuela	N-59
<i>Haemulon sciurus</i>			48	48A	48	48		(1.7 BFA)	ACN=48	W. Atlantic	R-41, H-13
<i>Haemulon sciurus</i>			46	2 SM/ST + 44A	48			(1.2 FD)		W. Atlantic	R-41
<i>Haemulon striatum</i>			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
<i>Hapalogenys analis</i>	<i>mucronatus</i>		48	2M + 8SM + 14ST + 24A	58	72			ACN=48	China	Y-20
<i>Hapalogenys nigripinnis</i>	<i>nitens</i>		48	2M + 8SM + 2ST + 36A	58	60			ACN=48	China	Y-20
<i>Orthopristis ruber</i>		F, M	48	2SM + 46 ST/A	50		2		ACN=48	Brazil (RJ)	B-65
<i>Pomadasys argenteus</i>	<i>hasta</i>		48	48A	48	48			ACN=48	India (WB)	K-139
<i>Pomadasys corvinaeformis</i>			48	48A	48	48	2		ACN=48	Brazil (RN)	G-12, N-59
<i>Pomadasys commersonii</i>	<i>Pristipoma operculare</i>		48	48A	48	48			ACN=48	India (Bombay)	R-63
Kuhliidae											
<i>Kuhlia boninensis</i>			48	2SM + 46A	50	50			ACN=48	Japan (Okinawa)	A-77
<i>Kuhlia mugil</i>	<i>taeniura</i>		48	2SM + 46A	50	50			ACN=48	Japan (Chiba)	A-77

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Kyphosidae											
Girellinae											
<i>Girella melanichthys</i>			48	48A	48	48	4		ACN=48	Japan (Yamaguchi)	N-29
<i>Girella melanichthys</i>		F	48	48A	48	48	4		ACN=48	Japan (Wakayama)	U-38
<i>Girella punctata</i>			48	48A	48	48	2		ACN=48	Japan (Wakayama)	U-83
Kyphosinae											
<i>Kyphosus</i> sp.	<i>bigibbus</i>		48	2SM + 2ST + 44A	50	52		1.8* FCM		Japan	O-48
<i>Kyphosus cinerascens</i>			48	2SM + 46A	50	50	2		ACN=48	Japan (Noto Peninsula)	T-21
<i>Kyphosus vaigiensis</i>	<i>lembus</i>		48	2SM + 46A	50	50	2		ACN=48	Japan (Noto Peninsula)	T-21
<i>Kyphosus bigibbus</i>	sp.		48	2SM + 46A	50	50	2		ACN=48	Japan (Noto Peninsula)	T-21
Microcanthinae											
<i>Microcanthus strigatus</i>			48	2SM + 46A	50	50			ACN=48	Japan (Chiba)	A-61
Scorpidinae											
<i>Labracoglossa argentiventralis</i>		F, M	48	48A	48	48		1.8* FCM	ACN=48	Japan (Shizuoka)	M-103, O-48
Latidae											
<i>Lates calcarifer</i>	<i>calcerifer</i>	M	48	2M + 6SM + 2ST + 38A	56	58		1.4 FIA	ACN=48	India (WB)	K-31, H-40
<i>Lates calcarifer</i>		Centropomidae	48						ACN=48	India (Portonovo)	N-13
<i>Psammoperca waigiensis</i>			48	48A	48	48	2		ACN=48	Thailand (Gulf of Siam)	U-39
Leiognathidae											
<i>Gazza minuta</i>		F	48	48A	48	48			ACN=48	India (Orissa)	P-16
<i>Leiognathus nuchalis</i>			48	48 ST/A	48				ACN=48	Japan (Suruga Bay)	A-77
<i>Photopectoralis bindus</i>	<i>Leiognathus</i>	M	40	40 ST/A	40			1.3 FIA		India (Goa)	R-45, H-40
Lethrinidae											
<i>Lethrinus nebulosus</i>			48	48A	48	48			ACN=48	China	Z-39
<i>Lethrinus xanthochilus</i>			48	48A	48	48		2.8* FCM		Japan	O-48
Lobotidae											
<i>Lobotus surinamensis</i>		F, M	48	2SM + 46A	50	50			ACN=48	India (Orissa)	T-53

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Lutjanidae											
<i>Lutjanus alexandrei</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
<i>Lutjanus analis</i>		M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
<i>Lutjanus analis</i>			48	48A	48	48	2		ACN=48	Venezuela	N-70
<i>Lutjanus argentimaculatus</i>			48	48A	48	48			ACN=48	China	C-12
<i>Lutjanus argentimaculatus</i>		F, M	48	48A	48	48			ACN=48	India (Orissa)	P-16, K-46
<i>Lutjanus bohar</i>			48	48A	48	48		2.4 FIA	ACN=48	China	C-12, H-40
<i>Lutjanus cyanopterus</i>		M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
<i>Lutjanus erythropterus</i>			48	48A	48	48			ACN=48	China	C-12, Y-26
<i>Lutjanus griseus</i>		F, M	48	48A	48	48	2-4		ACN=48	Venezuela	N-70
<i>Lutjanus jocu</i>		F, M	48	48A	48	48	4		ACN=48	Brazil (RN)	R-111
<i>Lutjanus johnii</i>			48	48A	48	48			ACN=48	China (Zhanjiang)	L-81
<i>Lutjanus kasmira</i>		M	48	48A	48	48			ACN=48	India (Orissa)	C-61
<i>Lutjanus kasmira</i>		F, M	48	48A	48	48	2	2.9* FCM	ACN=48	Japan (Okinawa)	U-79
<i>Lutjanus quinquefasciatus</i>		F	48	48A	48	48	2	2.9* FCM	X ₁ X ₁ X ₂ X ₂	Japan (Okinawa)	U-79
<i>Lutjanus quinquefasciatus</i>		M	47	1M + 47A	48	48	2	2.9* FCM	X ₁ X ₂ Y, ACN=48	Japan (Wakayama, Okinawa)	U-79
<i>Lutjanus russelli</i>			48	48A	48	48	2	2.3 FIA	ACN=48	Thailand (Gulf of Siam)	U-38, H-40
<i>Lutjanus sanguineus</i>		M	48	48A	48	48			ACN=48	India (Goa)	R-45
<i>Lutjanus sebae</i>			48	48A	48	48		1.6 FIA	ACN=48	China (Hainan)	Y-26, H-41
<i>Lutjanus synagris</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (RN)	R-111
<i>Lutjanus synagris</i>	cytotype I	F, M	48	48A	48	48	2		ACN=48	Venezuela	N-70
<i>Lutjanus synagris</i>	cytotype II		47	1M + 46A	48	48	2		ACN=48	Venezuela	N-70
<i>Lutjanus vitta</i>			48	48A	48	48		2.0 FIA	ACN=48	China (Zhanjiang)	L-81, H-41
<i>Ocyurus chrysurus</i>			48	48A	48	48		2.2 FD, 2.6 BFA		Brazil (RN)	G-12, H-13
<i>Ocyurus chrysurus</i>				48	48A	48	48	2	ACN=48	Brazil (RN), Venezuela	R-111, N-76
<i>Rhombocephalus aurorubens</i>		F, M	48	2ST + 46A	48	50	2		ACN=48	Venezuela	N-76
Monodactylidae											
<i>Monodactylus argenteus</i>		F, M	48	48A	48	48		(1.8 BFA)	ACN=48	(Asia)	S-129, H-13
<i>Monodactylus argenteus</i>				48						India (Portonovo)	N-13
<i>Monodactylus sebae</i>		M	47	1M + 46A	48	48			XO, ACN=48	W. Africa	S-129
<i>Monodactylus sebae</i>	F	48	48A		48	48			XX, ACN=48	W. Africa	S-129

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Moronidae											
<i>Dicentrarchus labrax</i>	Serranidae	F, M	48	48A	48	48	2		XX/XY	Spain (Malaga)	C-11
<i>Dicentrarchus labrax</i>		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy (Tyrrhenian Sea)	V-63, C-31
<i>Dicentrarchus labrax</i>			48	48 ST/A	48		1-2	(1.6 FCM)	ACN=48	Italy	S-90
<i>Dicentrarchus labrax</i>	Serranidae		48	2SM + 46A	50	50	2			USSR (Black Sea)	A-90
<i>Dicentrarchus punctatus</i>		F, M	48	48 ST/A	48		2		ACN=48	Egypt	S-90
<i>Dicentrarchus punctatus</i>		F, M	48	2ST + 46A	48	50	2		ACN=48	Italy (Palermo)	V-63
<i>Lateolabrax japonicus</i>	Serranidae	F, M	48	48A	48	48	2		ACN=48	Japan (Shimane)	K-70, K-82, T-27
<i>Lateolabrax japonicus</i>	Serranidae		48	48A	48	48			ACN=48	China (Shandong)	W-7, Y-20, Y-21
<i>Lateolabrax japonicus</i>	sea bass	F, M	48	48A	48	48		1.7 FCM	ACN=48	Korea (Chungchongnam-do)	P-12
<i>Lateolabrax latus</i>	Serranidae	F, M	48	2ST + 46A	48	50	2		ACN=48	Japan (Shimane)	K-70, K-82, T-27
<i>Lateolabrax</i> sp.	spotted sea bass	F, M	48	48A	48	48		1.7 FCM	ACN=48	Korea (Chungchongnam-do)	P-12
<i>Morone americana</i>	Serranidae		48	48A	48	48			ACN=48	E. USA	B-64
<i>Morone saxatilis</i>			48	2SM + 8ST + 38A	50	58		(1.9 FIA, 1.8 BFA)	ACN=48	USA (NY)	R-27, H-13, H-41
<i>Morone saxatilis</i>			48	2SM + 6ST + 40A	50	56			ACN=48	USA (NY)	R-27
Mullidae											
<i>Mulloidichthys flavolineatus</i>			48	48A	48	48		1.2* FCM		Japan	O-48
<i>Mullus argentinae</i>			44	2SM + 42A	46	46				Brazil	B-86
<i>Mullus barbatus</i>			44	4 M/SM + 40A	48	48			ACN=48	Monaco	L-5
<i>Mullus barbatus</i>			44	6 M/SM + 38A	50	50			ACN=48	Monaco	L-5
<i>Mullus barbatus</i>		F, M	44	6 M/SM + 16ST + 22A	50	66			ACN=48	Italy (Palermo)	V-66
<i>Mullus surmuletus</i>		F, M	48		50			1.3 FD		Spain (Malaga)	C-9
<i>Mullus surmuletus</i>		F, M	44	8 M/SM + 16ST + 20A	52	68			ACN=48	Italy (Palermo)	V-66
<i>Parupeneus spilurus</i>			44	8M + 8SM + 28 ST/A	60		2		ACN=48	Japan (Chiba)	A-74
<i>Upeneus parvus</i>		F, M	44	8 M/SM + 36 ST/A	52				0-4 B, ACN=48	Brazil (RJ)	P-83
<i>Upeneus tragula</i>		M	50	50 ST/A	50					India (Andaman Is.)	R-45
Nandidae											
Badinae											
<i>Badis badis</i>			48	26 M/SM + 22A	74	74				India (Assam)	K-46
<i>Badis badis</i>		F, M	46	10M + 4SM + 32A	60	60			ACN=48	India (Orissa)	T-53
<i>Badis badis</i>		F, M	46	6M + 40A	52	52			ACN=48	India (Jammu)	S-54

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Nandinae											
<i>Nandus</i>	<i>nandus</i>		F	48 6M + 28SM + 14A	82	82			ACN=48	India (WB)	N-16
<i>Nandus</i>	<i>nandus</i>		F, M	48 4M + 36SM + 6ST + 2A	88	94			ACN=48	India (WB)	M-26
<i>Nandus</i>	<i>nandus</i>		F, M	48 4M + 30SM + 6ST + 8A	82	88	4		ACN=48	India (WB)	K-136
<i>Nandus</i>	<i>nandus</i>		M	48 4M + 18SM + 14ST + 12A	70	84			ACN=48	India (Jammu)	S-54
<i>Nandus</i>	<i>oxyrhynchus</i>			48 14M + 8SM + 6ST + 20A	70	76			ACN=48	Thailand	D-28
Pristolepidinae											
<i>Pristolepis</i>	<i>marginata</i>			48 48A	48	48	2		ACN=48	India (Kerala)	N-58
Oplegnathidae											
<i>Oplegnathus</i>	<i>fasciatus</i>			48 2SM + 46A	50	50		1.8* FCM	ACN=48	Japan	N-29, M-111, O-48
<i>Oplegnathus</i>	<i>fasciatus</i>		F, M	48 2 M/SM + 46A	50	50	2	1.3 FD	ACN=48	Korea	K-53
<i>Oplegnathus</i>	<i>fasciatus</i>			48 2M + 2ST + 44A	50	52			ACN=48	(China)	Z-39
<i>Oplegnathus</i>	<i>punctatus</i>			48 2SM + 46A	50	50			ACN=48	Japan	M-111
Pempheridae											
<i>Pempheris</i>	<i>schwenkii</i>	<i>xanthoptera</i>		48 2SM + 46 ST/A	50			1.4* FCM	ACN=48	Japan (Tanegashima)	A-74, O-48
Percichthyidae											
<i>Coreoperca</i>	<i>herzi</i>			48 2SM + 46 ST/A	50				ACN=48	Korea (Chungchongnam-do)	U-28
<i>Coreoperca</i>	<i>herzi</i>			48						Korea	L-15
<i>Coreoperca</i>	<i>kawamebari</i>			48 4SM + 44 ST/A	52			1.8* FCM	ACN=48	Japan (Hyogo)	U-28, O-48
<i>Siniperca</i>	<i>chuatsi</i>		F, M	48 24 SM/ST + 24A	72		(1.7* FD)		ACN=48	China	Y-10, C-83
<i>Siniperca</i>	<i>chuatsi</i>			48 22ST + 26A	48	70			ACN=48	China (Hubei)	L-53
<i>Siniperca</i>	<i>kneri</i>			48 6SM + 14ST + 28A	54	68			ACN=48	China	Y-15
<i>Siniperca</i>	<i>obscura</i>			48 4SM + 14ST + 30A	52	66			ACN=48	China	Y-15
<i>Siniperca</i>	<i>roulei</i>	<i>Coreosiniperca</i>	M	48 2SM + 10ST + 36A	50	60			ACN=48	China	Y-15
<i>Siniperca</i>	<i>scherzeri</i>			48 6SM + 14ST + 28A	54	68			ACN=48	China	Y-15
<i>Siniperca</i>	<i>scherzeri</i>	black variant	F, M	48 4SM + 44 ST/A	52			1.4 FD	ACN=48	Korea (Han R.)	P-11
<i>Siniperca</i>	<i>scherzeri</i>	gold variant	F, M	48 4SM + 44 ST/A	52			1.4 FD	ACN=48	Korea (Han R.)	P-11
<i>Siniperca</i>	<i>undulata</i>		F, M	48 2SM + 16ST + 30A	50	66			ACN=48	China	Y-15

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Percidae											
<i>Ammocrypta</i> <i>vivax</i>			48	12M + 32SM + 4 ST/A	92				ACN=48	USA (TX)	G-30
<i>Etheostoma</i> <i>blennioides blennioides</i>			48	2M + 46A	50				ACN=48	USA (OH)	R-91
<i>Etheostoma</i> <i>blennioides pholidotum</i>			48	2M + 1SM + 45A	51				ACN=48	USA (OH)	R-91
<i>Etheostoma</i> <i>caeruleum</i>			48	8 M/SM + 40 ST/A	56				ACN=48	Canada (Ontario)	D-1
<i>Etheostoma</i> <i>caeruleum</i>	<i>camurum caeruleum</i>		48	4M + 2SM + 42A	54	54			ACN=48	USA (OH)	R-91
<i>Etheostoma</i> <i>camurum</i>			48	2M + 2SM + 44A	52	52			ACN=48	USA (OH)	R-91
<i>Etheostoma</i> <i>ditrema</i>			48		52					N. America	G-32
<i>Etheostoma</i> <i>exile</i>			48	4M/SM + 44 ST/A	52				ACN=48	Canada (Ontario)	D-1
<i>Etheostoma</i> <i>flabellare</i>			48	4M/SM + 44 ST/A	52				ACN=48	Canada (Ontario)	D-1
<i>Etheostoma</i> <i>flabellare flabellare</i>			48	4M + 44A	52	52			ACN=48	USA (OH)	R-91
<i>Etheostoma</i> <i>nigrum</i>			48	6 M/SM + 42 ST/A	54				ACN=48	Canada (Ontario)	D-1
<i>Etheostoma</i> <i>nigrum nigrum</i>			48	2M + 2SM + 44A	52	52			ACN=48	USA (OH)	R-91
<i>Etheostoma</i> <i>swaini</i>			48		52					N. America	G-32
<i>Gymnocephalus</i> <i>baloni</i>		M	48	10M + 32SM + 6ST	90	96			ACN=48	Danube R., Europe	R-11
<i>Gymnocephalus</i> <i>cernuus</i>	<i>Acerina cernua</i>	M	48							Sweden	N-40
<i>Gymnocephalus</i> <i>cernuus</i>	<i>cernua</i>	F, M	48	4M + 22SM + 16ST + 6A	74	90	2		ACN=48	Germany (Baltic Sea)	K-77
<i>Gymnocephalus</i> <i>cernuus</i>	<i>Acerina cernua</i>		48	4M + 22SM + 16ST + 6A	74	90			ACN=48	Hungary	B-84
<i>Gymnocephalus</i> <i>cernuus</i>		F, M	48	2M + 32SM + 8ST + 6A	82	90			ACN=48	Danube R., Europe	R-11
<i>Gymnocephalus</i> <i>schraester</i>		F, M	48	10M + 32SM + 6ST	90	96			ACN=48	Danube R., Europe	R-11
<i>Perca</i> <i>flavescens</i>			48	48 ST/A	48			1.9 FIA, 2.4 BFA	ACN=48	Canada (Ontario)	D-1, H-13, H-40
<i>Perca</i> <i>fluviatilis</i>		F, M	48	2M + 24SM + 12ST + 10A	74	86	2		ACN=48	Germany (Baltic Sea)	K-78
<i>Perca</i> <i>fluviatilis</i>		F, M	48	2M + 28SM + 10ST + 8A	78	88		(2.4 FCM)	ACN=48	Elbe R., Danube R	R-11, V-86
<i>Perca</i> <i>fluviatilis</i>			48	2M + 32SM + 6ST + 8A	82	88			ACN=48	Hungary	B-84
<i>Perca</i> <i>fluviatilis</i>			48	16SM + 20ST + 12A	64	84			ACN=48	Macedonia	K-8
<i>Percarina</i> <i>demidoffi</i>			48	14M + 14SM + 20 ST/A	76				ACN=48	Danube Delta, Europe	S-119
<i>Percina</i> <i>caprodes</i>		F, M	48	8M + 36SM + 4ST	92			(2.1 FIA)	ACN=48	USA (TX)	G-30, G-32, H-40
<i>Percina</i> <i>caprodes</i>			48	1M + 47 ST/A	49				ACN=48	Canada (Ontario)	D-1
<i>Percina</i> <i>caprodes</i>			46	1M + 2SM + 43 ST/A	49				ACN=48	Canada (Ontario)	D-1
<i>Percina</i> <i>maculata</i>			48	5 M/SM + 43 ST/A	53				ACN=48	Canada (Ontario)	D-1
<i>Percina</i> <i>nigrofasciata</i>			48	8M + 38SM + 2ST	94	96			ACN=48	USA (LA)	G-30
<i>Percina</i> <i>sciera</i>		F, M	48	10M + 22SM + 16 ST/A	80				ACN=48	USA (TX)	G-30
<i>Sander</i> <i>lucioperca</i>	<i>Stizostedion</i>	M	48	2M + 30SM + 10ST + 6A	80	90	2	(2.3 FCM)	ACN=48	Baltic Sea	G-46, R-11, V-86
<i>Sander</i> <i>lucioperca</i>	<i>Lucioperca</i>		48	14M + 14SM + 14ST + 6A	76	90			ACN=48	Hungary	B-84

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Sander</i> <i>lucioperca</i>	<i>Lucioperca</i>	M	48							Sweden	N-40
<i>Sander</i> <i>vitreum vitreum</i>	<i>Stizostedion</i>		48	48 ST/A		48		2.1 FIA	ACN=48	Canada (Ontario)	D-1, H-40
<i>Sander</i> <i>volgense</i>	<i>Stizostedion</i>										
<i>Zingel</i> <i>streber</i>		M	48	2M + 30SM + 10ST + 6A	80	90			ACN=48	Danube R., Europe	R-11
<i>Zingel</i> <i>zingel</i>		F, M	48	6M + 20SM + 22 ST/A	74				ACN=48	Danube R., Europe	R-11
<i>Zingel</i> <i>zingel</i>			48	4M + 20SM + 24 ST/A	72				ACN=48	Danube R., Europe	R-11
<i>Zingel</i> <i>zingel</i>		F	48	4M + 16SM + 28 ST/A	68			X ₁ X ₁ X ₂ X ₂ , ACN=48		Czech (Morava R.)	K-122
			M	47	5M + 16SM + 26 ST/A	68		X ₁ X ₂ Y, ACN=48		Czech (Morava R.)	K-122
Plesiopidae											
<i>Plesiops</i> <i>coeruleolineatus</i>			48	2M + 46 ST/A		50			ACN=48	Japan (Ogasawara, Okinawa)	A-66
Polycentridae											
<i>Polycentrus</i> <i>schomburgkii</i>				46*						(W. Atlantic)	S-30
Polynemidae											
<i>Eleutheronema</i> <i>tetradactylum</i>		M	48	48A		48	48		ACN=48	India (WB)	K-42
Pomacanthidae											
<i>Centropyge</i> <i>aurantonotus</i>			48	4M + 14SM + 26ST + 4A	66	92	2		ACN=48	Brazil (ES, RJ)	A-9
<i>Centropyge</i> <i>bicolor</i>		F, M	52	2M + 50 ST/A	54	2		1.4 FIA		W. Pacific	T-67, H-41
<i>Centropyge</i> <i>bispinosa</i>		F	48	48 ST/A	48	2			ACN=48	W. Pacific	T-67
<i>Centropyge</i> <i>ferrugata</i>		F	48	48A	48	2			ACN=48	W. Pacific	T-67
<i>Centropyge</i> <i>ferrugata</i>	<i>ferrugatus</i>		48	48A	48	2			ACN=48	Philippines Sea	A-9
<i>Centropyge</i> <i>heraldi</i>		M	52	8M + 22SM + 22 ST/A	82	2				W. Pacific	T-67
<i>Centropyge</i> <i>loricula</i>			48	48A	48	2			ACN=48	W. Pacific	T-67
<i>Centropyge</i> <i>nox</i>		F	52	12M + 18SM + 22 ST/A	82	2				W. Pacific	T-67
<i>Centropyge</i> <i>tibicen</i>		F	52	52A	52	52	2			W. Pacific	T-67
<i>Centropyge</i> <i>vrolickii</i>			48	48A	48	48			ACN=48	Japan (Yakushima Is.)	A-61
<i>Holacanthus</i> <i>ciliaris</i>			48	48A	48	48	2		ACN=48	Brazil (CE, PE, BA, ES)	A-7
<i>Holacanthus</i> <i>tricolor</i>			48	48A	48	48	2		ACN=48	Brazil (BA, ES, RJ)	A-7
<i>Pomacanthus</i> <i>arcuatus</i>			48	2ST + 46A	48	50	2		ACN=48	Brazil (CE, AL, BA, RJ)	A-8
<i>Pomacanthus</i> <i>paru</i>			48	2ST + 46A	48	50	2		ACN=48	Brazil (CE, RN, AL, RJ, SP)	A-8
<i>Pomacanthus</i> <i>semicirculatus</i>			48	48A	48	48			ACN=48	Japan (Yakushima Is.)	A-61

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Pomatomidae											
<i>Pomatodus</i>	<i>saltatrix</i>			48 48A		48		1.6 FIA, 1.9 BFA		Brazil	B-86, H-13, H-40
Priacanthidae											
<i>Priacanthus</i>	<i>arenatus</i>				F, M 52	4ST + 48A			ACN=48	Brazil (RJ)	G-12, M-121, H-13
<i>Priacanthus</i>	<i>arenatus</i>					50 50A				Brazil (RJ)	B-86
Sciaenidae											
<i>Aplodinotus</i>	<i>grunniens</i>				48	48A			ACN=48	USA (Mississippi R.)	L-23
<i>Argyrosomus</i>	<i>amoyensis</i>				Nibea miichthoides	48	48A		ACN=48	China	W-3
<i>Bairdiella</i>	<i>chrysoura</i>					48	48A		ACN=48	Gulf of Mexico	L-23, H-13
<i>Boesemania</i>	<i>microlepis</i>					48	48A		ACN=48	Thailand	D-28
<i>Corvina</i>	<i>nigra</i>					46	2M + 44A		ACN=48	Croatia	S-195
<i>Cynoscion</i>	<i>acoupa</i>					48	48A			Brazil (RJ)	B-86
<i>Cynoscion</i>	<i>arenarius</i>					48	2M/SM + 46 ST/A	50	ACN=48	Gulf of Mexico	F-60
<i>Cynoscion</i>	<i>nebulosus</i>					48	2M/SM + 46 ST/A	50	ACN=48	Gulf of Mexico	F-60
<i>Johnius</i>	<i>belangerii</i>					48				India	L-1
<i>Johnius</i>	<i>belangerii</i>				belengeri	48	48A		ACN=48	China (Shandong)	W-7
<i>Johnius</i>	<i>borneensis</i>				vogleri	F, M 48	48A		ACN=48	India (Orissa)	P-16
<i>Johnius</i>	<i>carutta</i>					M 48	48A		ACN=48	India (Orissa)	P-16
<i>Johnius</i>	<i>dorsalis</i>					48	48A		ACN=48	India	R-125
<i>Johnius</i>	<i>dussumieri</i>					M 48	48A		ACN=48	India (Assam)	K-46, C-108
<i>Kathala</i>	<i>axillaris</i>					F, M 48	48A		ACN=48	India (Orissa)	T-53
<i>Larimichthys</i>	<i>crocea</i>				Pseudosciaena	F, M 48	48A		ACN=48	China (Fujian)	Z-32
<i>Larimichthys</i>	<i>polyactis</i>				Pseudosciaena	48	48A		ACN=48	China	W-7
<i>Leiostomus</i>	<i>xanthurus</i>					48	48A		ACN=48	Gulf of Mexico	L-23
<i>Menticirrhus</i>	<i>americanus</i>					48	48A		ACN=48	Brazil (RN)	G-51, A-124
<i>Menticirrhus</i>	<i>littoralis</i>				litoralis	48	48A		ACN=48	Brazil	R-123
<i>Micropogonias</i>	<i>furnieri</i>					F, M 48	48A		ACN=48	Brazil (SP, RJ)	G-50, B-59
<i>Micropogonias</i>	<i>undulatus</i>					48	48A		ACN=48	Gulf of Mexico	L-23, H-13
<i>Nibea</i>	<i>albiflora</i>					48	48A		ACN=48	China (Shandong)	W-7, Y-21
<i>Nibea</i>	<i>mitsukurii</i>					F 48	48A		ACN=48	Japan (Hyogo)	O-46, O-48
<i>Ophioscion</i>	<i>punctatissimus</i>					48	48A		ACN=48	Brazil (RN)	A-124
<i>Otolithes</i>	<i>cuvieri</i>					48	48A		ACN=48	India	C-42

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag– NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Otolithoides</i> <i>pama</i>		M	48	48A	48	48			ACN=48	India (WB)	K-139
<i>Pachyurus</i> <i>bonariensis</i>				48						Argentina	F-20
<i>Paranibea</i> <i>semiluctuosa</i>	<i>Nibea</i>			48						India	L-1
<i>Pareques</i> <i>acuminatus</i>				48 48A	48	48	2		ACN=48	Brazil (RN)	A-124
<i>Plagioscion</i> <i>montei</i>				48 2M + 46A	50	50	2			Brazil	P-86
<i>Plagioscion</i> <i>squamosissimus</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (AM)	F-66, P-86
<i>Plagioscion</i> <i>ternetzi</i>				48						Argentina	F-20
<i>Plagioscion</i> sp.	Cytotype a			48 2M + 46A	50	50	2		ACN=48	Brazil (AM)	F-66
<i>Plagioscion</i> sp.	Cytotype b			48 48A	48	48	2		ACN=48	Brazil (AM)	F-66
<i>Pogonias</i> <i>cromis</i>				48 48A	48	48		2.0 BFA	ACN=48	Gulf of Mexico	L-23, H-13
<i>Protonibea</i> <i>diacanthus</i>	<i>Nibea</i>			48 48A	48	48			ACN=48	China	W-13
<i>Protonibea</i> <i>diacanthus</i>	<i>Nibea</i>			48 48A	48	48			ACN=48	India	C-42
<i>Sciaena</i> <i>umbra</i>				48 48A	48	48			ACN=48	Black Sea	V-5
<i>Sciaenops</i> <i>ocellatus</i>				48 48A	48	48			ACN=48	Gulf of Mexico	L-23
<i>Umbrina</i> <i>coroides</i>				46 4SM + 42A	50	50				Brazil (RJ)	B-86
Serranidae											
Epinephelinae											
<i>Alphestes</i> <i>afer</i>				48 48A	48	48	2		ACN=48	Brazil (RN, Bahia)	M-78
<i>Chromileptes</i> <i>altivelis</i>				48 2ST + 46A	48	50	2		ACN=48	(Indo-West Pacific)	T-20
<i>Epinephelus</i> <i>adscensionis</i>				48 48A	48	48	4		ACN=48	Brazil (RN, Bahia)	M-78
<i>Epinephelus</i> <i>alexandrinus</i>				48 48 ST/A	48		2		ACN=48	Spain (Malaga)	M-39
<i>Epinephelus</i> <i>alexandrinus</i>				48 48A	48	48	4		ACN=48	Spain	A-30
<i>Epinephelus</i> <i>awoara</i>				48 48A	48	48			ACN=48	China	Z-23, A-11
<i>Epinephelus</i> <i>caninus</i>				48 48A	48	48	2		ACN=48	Spain (Alboran Sea)	R-89
<i>Epinephelus</i> <i>coiooides</i>				48 2SM + 46A	50	50			ACN=48	China (Fujian)	D-13
<i>Epinephelus</i> <i>diacanthus</i>				48 2SM + 46A	50	50			ACN=48	India (Portonovo)	N-13
<i>Epinephelus</i> <i>fario</i>				48 14 M/SM + 34 ST/A	62				ACN=48	China	C-57
<i>Epinephelus</i> <i>fasciatomaculatus</i>				48 48A	48	48	2		ACN=48	China	L-47
<i>Epinephelus</i> <i>fasciatus</i>				48 48A	48	48	2		ACN=48	China	L-47
<i>Epinephelus</i> <i>guaza</i>				48 48 ST/A	48		2		ACN=48	Spain (Malaga)	M-39
<i>Epinephelus</i> <i>guaza</i>				48 48A	48	48			ACN=48	Brazil (RJ)	A-11, A-12
<i>Epinephelus</i> <i>guttatus</i>				48 48A	48	48		2.1 FD, 2.4 BFA	ACN=48	(W. Atlantic)	M-132, H-13
<i>Epinephelus</i> <i>malabaricus</i>	F	48	2SM + 46A		50	50	2		ACN=48	Thailand (Gulf of Siam)	U-39

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Epinephelus marginatus</i>			48	48A	48	48			ACN=48	Brazil (RJ)	G-12
<i>Epinephelus merra</i>			48	6ST + 42A	48	54	2.1* FCM, 2.2 FIA		ACN=48	Japan	O-48, H-41
<i>Epinephelus sexfasciatus</i>			48	2SM + 46A	50	50			ACN=48	China	C-56
<i>Epinephelus tauvina</i>		F	48	2SM + 46A	50	50			ACN=48	India (Orissa)	P-16
<i>Epinephelus ongus</i>	<i>Serranus tumilabris</i>	F	48	48A	48	48			ACN=48	India (Bombay)	R-63
<i>Mycteroperca acutirostris</i>			48	48A	48	48			ACN=48	Brazil (RJ)	G-12
<i>Mycteroperca rubra</i>			48	48A	48	48			ACN=48	Brazil (RJ)	A-11, A-12
Serraninae											
<i>Centropristes ocyurus</i>			48	28M + 20SM	96	96			ACN=48	W. Atlantic	A-11
<i>Diplectrum eumelum</i>			48	2M + 4SM + 42A	54	54			ACN=48	E. Pacific	A-11
<i>Diplectrum formosum</i>			48	2SM + 46A	50	50	2-4		ACN=48	Brazil (RJ)	A-11, A-12
<i>Diplectrum radiale</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (RJ, SP)	A-11, P-41
<i>Paracentropistis hepatus</i>		F, M	48	48A	48	48	2	1.1 FD	ACN=48	Spain (Malaga)	C-8, C-9, M-39
<i>Serranus cabrilla</i>		F, M	48	48A	48	48	2	1.0 FD	ACN=48	Spain (Malaga)	C-8, C-9, M-39
<i>Serranus cabrilla</i>			48	48A	48	48			ACN=48	Spain (Malaga)	C-11
<i>Serranus cabrilla</i>		F, M	48	48A	48	48	2		ACN=48	Italy (Palermo)	V-68
<i>Serranus flaviventris</i>			48	48A	48	48	2		ACN=48	Brazil (RJ, RN)	A-11, M-78
<i>Serranus scriba</i>			48	48A	48	48	2		ACN=48	Spain (Malaga)	M-39
<i>Serranus scriba</i>		F, M	48	48A	48	48	2		ACN=48	Italy (Palermo)	V-68
<i>Serranus scriba</i>			48	48A	48	48			ACN=48	Croatia	S-86
<i>Serranus scriba</i>			48	48A	48	48			ACN=48	USSR	V-72
Sillaginidae											
<i>Sillago sihama</i>		M	48	48 ST/A	48				ACN=48	India (Andaman Is.)	R-45
Sparidae											
<i>Acanthopagrus latus</i>			48	4SM + 6ST + 38A	52	58			ACN=48	Japan	M-106
<i>Acanthopagrus latus</i>			48	4M + 2SM + 4ST + 38A	54	58			ACN=48	China	Z-23
<i>Acanthopagrus schlegeli</i>		M	48	8 M/SM + 40A	56	56	2	1.2 FD	ACN=48	Korea	K-53
<i>Acanthopagrus schlegeli</i>			48	6SM + 4ST + 38A	54	58			ACN=48	Japan	M-106
<i>Acanthopagrus schlegeli</i>	<i>macrocephalus</i>		48	4M + 4SM + 2ST + 38A	56	58	2		ACN=48	China	Y-19
<i>Archosargus probatocephalus</i>			48	1M + 4SM + 43 ST/A	53				ACN=48	Gulf of Mexico	L-6
<i>Archosargus probatocephalus</i>		F, M	48	12 M/SM + 36 ST/A	60				ACN=48	USA (Atlantic)	F-69
<i>Archosargus probatocephalus</i>			48	48A	48	2			ACN=48	Brazil	A-124

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Boops</i> <i>boops</i>		F, M	48		54			1.0 FD		Spain (Malaga)	C-9
<i>Dentex</i> <i>dentex</i>			48	2M + 2SM + 44 ST/A	52		2-4		ACN=48	Italy	L-48
<i>Dentex</i> <i>hypselosomus</i>	<i>tumifrons</i>		48	4ST + 44A	48	52			ACN=48	Japan	M-106
<i>Diplodus</i> <i>annularis</i>		F, M	48	6 M/SM + 2ST + 40A	54	56			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Diplodus</i> <i>annularis</i>			48	2M + 4SM + 42 ST/A	54				ACN=48	Black Sea	V-5
<i>Diplodus</i> <i>annularis</i>		F, M	47	5M + 2SM + 40A	54	54			ACN=48	Italy (Palermo)	V-68
<i>Diplodus</i> <i>annularis</i>		F, M	48	4M + 3SM + 41A	55	55			ACN=48	Italy (Palermo)	V-68
<i>Diplodus</i> <i>annularis</i>		F	48	4M + 2SM + 42A	54	54			ACN=48	Italy (Palermo)	V-68
<i>Diplodus</i> <i>annularis</i>		M	48	4M + 4SM + 40A	56	56			ACN=48	Italy (Palermo)	V-68
<i>Diplodus</i> <i>annularis</i>			48	6 M/SM + 42A	54	54	10		ACN=48	Italy (Palermo)	V-96
<i>Diplodus</i> <i>annularis</i>			47	7 M/SM + 40A	54	54			ACN=48	Italy (Palermo)	V-96
<i>Diplodus</i> <i>argenteus</i>			48	48A	48	48		1.6 FD, 1.9 BFA	ACN=48	Brazil (BA)	G-12, H-13
<i>Diplodus</i> <i>bellottii</i>			46	2M + 6SM + 38 ST/A	54		4		ACN=48	Spain (Malaga)	A-45
<i>Diplodus</i> <i>cervinus</i>			48		54					Spain	A-45
<i>Diplodus</i> <i>puntazzo</i>			48	8 M/SM + 40A	56	56	12		ACN=48	Italy (Sicily)	V-96
<i>Diplodus</i> <i>sargus</i>		F, M	48	6 M/SM + 2ST + 40A	54	56			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Diplodus</i> <i>sargus</i>			48	6 M/SM + 42A	54		14		ACN=48	Italy (Sicily)	V-96
<i>Diplodus</i> <i>sargus</i>		F, M	48		52			1.2 FD		Spain (Malaga)	C-9
<i>Diplodus</i> <i>vulgaris</i>			48	6 M/SM + 42 ST/A	54		8		ACN=48	Italy (Palermo)	V-96
<i>Diplodus</i> <i>vulgaris</i>		F, M	48		52			1.1 FD		Spain (Malaga)	C-9
<i>Evynnis</i> <i>tumifrons</i>	<i>Evinnis japonica</i>		48	2SM + 46A	50	50			ACN=48	Japan	M-106
<i>Lagodon</i> <i>rhombooides</i>		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	USA (Atlantic)	F-69
<i>Lithognathus</i> <i>mormyrus</i>		F, M	48		52			1.2 FD		Spain (Malaga)	C-9
<i>Lithognathus</i> <i>mormyrus</i>		F, M	48	6M + 16ST + 26A	54	70			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Oblada</i> <i>melanura</i>		M	46	6 M/SM + 6ST + 34A	52	58			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Pagellus</i> <i>acarne</i>		F, M	48		52			1.3 FD		Spain (Malaga)	C-9
<i>Pagellus</i> <i>acarne</i>		F, M	48	2M + 6ST + 40A	50	56			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Pagellus</i> <i>bogaraveo</i>			48	8M + 10SM + 8ST + 22A	66	74	2		ACN=48	Italy (Sicily)	V-61
<i>Pagellus</i> <i>erythrinus</i>		F, M	48	48A	48	48			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Pagrus</i> <i>auratus</i>	<i>Sparus latus</i>		48	4M + 2SM + 4ST + 38A	54	58		1.3 FIA	ACN=48	China	L-57, H-40
<i>Pagrus</i> <i>auriga</i>			48	48A	48	48	2		ACN=48	Italy (Palermo)	V-105
<i>Pagrus</i> <i>caeruleostictus</i>	<i>coeruleostictus</i>		48	2SM + 46A	50	50	2		ACN=48	Italy (Palermo)	V-105
<i>Pagrus</i> <i>major</i>	<i>Pagrosomus</i>		48	2ST + 46A	48	50	2		ACN=48	China	Y-19

Table 6.36 Order PERCIFORMES. Part 1 Percoidei and Elassomatoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Pagrus</i> <i>major</i>		F, M	48	48A	48	48	2	1.3 FD	ACN=48	Korea	K-53
<i>Pagrus</i> <i>major</i>	<i>Chrysophrys</i>		48	2ST + 46A	48	50		1.8* FCM	ACN=48	Japan (Yamaguchi)	N-29, O-48
<i>Pagrus</i> <i>pagrus</i>			48			50				Brazil (RJ)	G-12
<i>Pagrus</i> <i>pagrus</i>			48	2SM + 46A	50	50	2		ACN=48	Italy (Palermo)	V-105
<i>Rhabdosargus</i> <i>sarba</i>		<i>Sparus</i>		48 6SM + 6ST + 34A	54	60		1.5 FIA	ACN=48	Japan	M-106, H-40
<i>Sarpa</i> <i>salpa</i>			F, M	48		58		1.1 FD		Spain (Malaga)	C-9
<i>Sarpa</i> <i>salpa</i>			F, M	48 6M + 10ST + 32A	54	64			ACN=48	Italy (Tyrrhenian Sea)	C-36
<i>Sparus</i> <i>aurata</i>				48		56				Spain	A-32
<i>Sparus</i> <i>aurata</i>			F, M	48 8 M/SM + 10ST + 30A	56	66	2	1.9 FCM	ACN=48	Italy (Tyrrhenian Sea)	C-36, V-105, G-85
Terapontidae (= Teraponidae)											
<i>Rhyncopelates</i> <i>oxyrhynchus</i>	<i>Rhyncopelates</i>	F	48	2SM + 46A	50	50	2	1.7* FCM	ACN=48	Japan (Hyogo)	O-48, O-46
<i>Terapon</i> <i>jarbua</i>	<i>Therapon</i>	F, M	48	48A	48	48		1.3 FIA	ACN=48	India	S-116, R-45, H-41
<i>Terapon</i> <i>puta</i>	<i>Therapon</i>	F, M	48	48A	48	48		1.6 FIA	ACN=48	India	S-116, H-41
<i>Terapon</i> <i>theraps</i>				48 48A	48	48		1.4 FIA	ACN=48	India (WB)	K-46, G-85
Suborder Elassomatoidei											
Elassomatidae											
<i>Elassoma</i> <i>zonatum</i>		Centrarchidae		48 2SM + 46 ST/A	50				ACN=48	USA (NC)	R-80

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Suborder Labroidei											
Cichlidae											
American Cichlidae											
<i>Acarichthys</i>	<i>heckelii</i>		M	48 6 M/SM + 42 ST/A	54				ACN=48	(Amazon R.)	T-41
<i>Aequidens</i>	<i>metae</i>		F, M	48 6 M/SM + 16ST + 26A	54	70			ACN=48	(Orinoco R.)	T-41
<i>Aequidens</i>	<i>plagiozonatus</i>			48 48 ST/A	48		2			(Brazil)	M-149
<i>Aequidens</i>	<i>pulcher</i>			48			(82)			(Venezuela, Trinidad)	S-184
<i>Amphilophus</i>	<i>citrinellus</i>	<i>Cichlasoma citrinellum</i>	F, M	48 8 M/SM + 12ST + 28A	56	68			ACN=48	(C. America, Atlantic side)	T-41
<i>Amphilophus</i>	<i>citrinellus</i>	<i>Cichlasoma citrinella</i>		48 36 SM/ST + 12A		84			ACN=48	(C. America, Atlantic side)	N-30
<i>Apistogramma</i>	<i>agassizii</i>	<i>agassizii</i>	F, M	46 24 M/SM + 22 ST/A	70				ACN=46		T-41
<i>Apistogramma</i>	<i>agassizii</i>	<i>agassizii</i>		40			(78)			(S. America)	S-184
<i>Apistogramma</i>	<i>borellii</i>		M	38 22 M/SM + 2ST + 14A	60	62			ACN=46		T-41
<i>Apistogramma</i>	<i>borellii</i>			46			(90)			(S. America)	S-184
<i>Apistogramma</i>	<i>borellii</i>	<i>reitzigi</i>		46			(86)			(S. America)	S-184
<i>Apistogramma</i>	<i>cacatuoides</i>			46			(86)			(S. America)	S-184
<i>Apistogramma</i>	<i>ortmanni</i>		M	46 24 M/SM + 22 ST/A	70				ACN=48		T-41
<i>Apistogramma</i>	<i>ortmanni</i>			38			(64)			(S. America)	S-184
<i>Apistogramma</i>	<i>trifasciata</i>			46 16 M/SM + 30 ST/A	62					Argentina	F-20, R-107
<i>Apistogramma</i>	sp.			46			(86)			(S. America)	S-184
<i>Archocentrus</i>	<i>centrarchus</i>	<i>Cichlasoma</i>	F	48 6 M/SM + 14ST + 28A	54	68			ACN=48	(C. America, Pacific side)	T-41
<i>Archocentrus</i>	<i>nigrofasciatus</i>	<i>Cichlasoma</i>	F, M	48 4 M/SM + 44 ST/A	52				ACN=48	Costa Rica	T-41
<i>Archocentrus</i>	<i>septemfasciatus</i>	<i>Cichlasoma</i>	F	48 6 M/SM + 14ST + 28A	54	68			ACN=48	Costa Rica (Atlantic side)	T-41
<i>Archocentrus</i>	<i>spilurus</i>	<i>Cichlasoma spilurus</i>		48 6 M/SM + 42 ST/A	54				ACN=48	Costa Rica	T-39
<i>Archocentrus</i>	<i>spilurus</i>	<i>Cichlasoma cutteri</i>		48			(68)			(S. America)	S-184
<i>Astronotus</i>	<i>ocellatus</i>		F, M	48 12 M/SM + 36 ST/A	60	2			ACN=48	Brazil (MS, AM)	F-9, F-10
<i>Astronotus</i>	<i>ocellatus</i>			48			(96)			(S. America)	S-184
<i>Astronotus</i>	<i>ocellatus</i>		F	48 6 M/SM + 42 ST/A	54			(2.1* FCM)		(S. America)	T-41, O-48
<i>Astronotus</i>	<i>ocellatus</i>		F, M	48 16 M/SM + 32 ST/A	64	2				Brazil (Tiete R, SP)	M-136
<i>Australoheros</i>	<i>facetus</i>	<i>Cichlasoma facetum</i>	F, M	48 10 M/SM + 38 ST/A	58	2			ACN=48	Brazil (SP)	F-9, F-10
<i>Australoheros</i>	<i>facetus</i>	<i>Cichlasoma facetum</i>	F, M	48 10SM + 38 ST/A	58	2			ACN=48	Brazil (PR)	V-87
<i>Australoheros</i>	<i>facetus</i>	<i>Cichlasoma facetum</i>	F, M	48 8SM + 40A	56	56			ACN=48	Uruguay	O-66
<i>Bujurquina</i>	<i>vittata</i>			44 22 M/SM + 8 ST/A + 14 MC	66				ACN=46	Argentina	F-20, R-107
<i>Bujurquina</i>	<i>vittata</i>	<i>Aequidens paraguayensis</i>	F, M	44 26 M/SM + 18 ST/A	70				ACN=46	(Paraguay R.)	T-41
<i>Caquetaia</i>	<i>kraussii</i>	<i>Cichlasoma</i>	F, M	50 6 M/SM + 14ST + 30A	56	70				Colombia	T-41
<i>Chaetobranchopsis</i>	<i>australe</i>		F, M	48 48A			2		ACN=48	Brazil (MS)	F-9, F-10
<i>Cichla</i>	<i>monoculus</i>		F, M	48 48A			2		1-3 B, ACN=48	Brazil (Amazon R.)	F-14, B-85

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Cichla</i> <i>temensis</i>		F, M	48	48A	48	48	2		ACN=48	Brazil (Amazon R.)	T-41, B-85
<i>Cichlasoma</i> <i>beani</i>		F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	Mexico (Sonora)	T-41
<i>Cichlasoma</i> <i>bimaculatum</i>		M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(Brazil, Suriname)	T-41
<i>Cichlasoma</i> <i>dimerus</i>			48	8 M/SM + 22ST + 18A	56	78			ACN=48	Argentina	F-20, R-107
<i>Cichlasoma</i> <i>dovii</i>		F, M	48	8 M/SM + 40 ST/A	56				ACN=48	Costa Rica	T-41, S-6
<i>Cichlasoma</i> <i>friedrichstalii</i>			48	6 M/SM + 42 ST/A	54				ACN=48	Costa Rica	S-6
<i>Cichlasoma</i> <i>friedrichstalii</i>			47	6 M/SM + 41 ST/A	53				ACN=48	Costa Rica	S-6
<i>Cichlasoma</i> <i>istlanum fusca</i>	<i>istlania fusca</i>	F, M	48	8SM + 40 ST/A	56				ACN=48	Mexico (Michoacán)	U-49
<i>Cichlasoma</i> <i>istlanum istlanum</i>	<i>istlania istlana</i>	F	48	8SM + 40 ST/A	56				ACN=48	Mexico (Morelos)	U-49
<i>Cichlasoma</i> <i>octofasciatum</i>		F, M	48	6 M/SM + 14ST + 28A	54	68		2.6 BFA	ACN=48	(Atlantic side of C. America)	T-41, H-13
<i>Cichlasoma</i> <i>paranaense</i>		F, M	48	20SM + 12ST + 16A	68	80	2		ACN=48	Brazil (PR)	M-41
<i>Cichlasoma</i> <i>portalegrensis</i>	<i>Aequidens</i>		48		(68)			2.4 BFA		(Brazil)	O-50, S-184, H-13
<i>Cichlasoma</i> <i>salvini</i>		F, M	52	28 M/SM + 24 ST/A	80					Belize	T-41
<i>Cichlasoma</i> <i>tetraecanthum</i>			48	6SM + 28ST + 14A	54	82			ACN=48	Cuba	R-6
<i>Cichlasoma</i> <i>trimaculatum</i>		F, M	48	6 M/SM + 14ST + 28A	54	68				(Mexico)	T-41
<i>Cichlasoma</i> <i>trimaculatum</i>		F, M	48	8SM + 40 ST/A	56					Mexico (near Acapulco)	U-48
<i>Cichlasoma</i> sp.		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	Mexico (Coahuila)	T-41
<i>Cleithracara</i> <i>maroni</i>	<i>Aequidens maroni</i>		48		(82)					(Guyana, Suriname)	S-184
<i>Crenicichla</i> <i>britskii</i>			48	8 M/SM + 40 ST/A	56	2			ACN=48	Paraná–Paraguai basin	B-82
<i>Crenicichla</i> <i>cincta</i>			48	8 M/SM + 40 ST/A	56	2			ACN=48	Brazil (AM)	B-82
<i>Crenicichla</i> <i>iguassuensis</i>		F, M	48	2M + 6SM + 14ST + 26A	56	70	2		ACN=48	Brazil (PR)	M-159
<i>Crenicichla</i> <i>iguassuensis</i>			48	6 M/SM + 42 ST/A	54	2				Brazil (PR)	B-82
<i>Crenicichla</i> <i>inpa</i>			48	6 M/SM + 42 ST/A	54	2			ACN=48	Brazil (Amazon basin)	B-82
<i>Crenicichla</i> cf. <i>johanna</i>			48	8 M/SM + 40 ST/A	56	2			ACN=48	Brazil (Amazon basin)	B-82
<i>Crenicichla</i> <i>lacustris</i>		M	48	6 M/SM + 42 ST/A	54	2			ACN=48	Brazil (SP.)	F-9, F-10
<i>Crenicichla</i> <i>lepidota</i>		F	48	6 M/SM + 8ST + 34A	54	62			ACN=48	(S. America)	T-41
<i>Crenicichla</i> <i>lepidota</i>		M	48	6 M/SM + 42 ST/A	54	2			ACN=50	Brazil (MS)	F-9, F-10
<i>Crenicichla</i> <i>lepidota</i>			48	6 M/SM + 42 ST/A	54				ACN=48	Argentina	F-20, R-107
<i>Crenicichla</i> <i>lepidota</i>		F, M	48	2M + 4SM + 6ST + 36A	54	60	2		ACN=48	Brazil (PR)	M-41
<i>Crenicichla</i> <i>lucius</i>		F	48							(Amazon R.)	T-41
<i>Crenicichla</i> <i>lugubris</i>			48	8 M/SM + 40 ST/A	56	2			ACN=48	Brazil (Amazon basin)	B-82
<i>Crenicichla</i> <i>niederleinii</i>		F, M	48	2M + 12SM + 4ST + 30A	62	66	4			Brazil (PR)	M-41
<i>Crenicichla</i> <i>niederleinii</i>		M	48	2M + 8SM + 38 ST/A	58	2			ACN=48	Brazil (PR)	L-71
<i>Crenicichla</i> <i>niederleinii</i>			48	6 M/SM + 42 ST/A	54	2			ACN=48	Argentina	F-20, R-107
<i>Crenicichla</i> <i>notophthalmus</i>		F	48	6 M/SM + 8ST + 34A	54	62				(Amazon R.)	T-41
<i>Crenicichla</i> <i>reticulata</i>			48	6 M/SM + 42 ST/A	54	2		1-3 B, ACN=48	Brazil (Amazon R.)	B-82, F-14	

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Crenicichla</i> <i>saxatilis</i>	<i>sexatilis</i>	M	48	4M + 44A	52	52		2.2 BFA	ACN=48	S. America (Atlantic side)	O-66, H-13
<i>Crenicichla</i> <i>semifasciata</i>			48	6 M/SM + 42 ST/A	54					Argentina	F-20
<i>Crenicichla</i> <i>semifasciata</i>	<i>Batrachops semifasciatus</i>	F, M	48	6 M/SM + 42 ST/A	54		2		ACN=48	Brazil (MS)	F-9, F-10
<i>Crenicichla</i> <i>strigata</i>		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	(Amazon R.)	T-41
<i>Crenicichla</i> <i>vittata</i>		M	48	6 M/SM + 42 ST/A	54		2		ACN=48	Brazil (MS)	F-9, F-10
<i>Crenicichla</i> sp.		M	48	2M + 6SM + 40 ST/A	56		2		ACN=48	Brazil (SC)	L-71
<i>Dicrossus</i> <i>filamentosus</i>	<i>Crenicara filamentosa</i>	F	46	12 M/SM + 34 ST/A	58				ACN=46	Brazil, Venezuela	T-41
<i>Dicrossus</i> <i>maculatus</i>	<i>Crenicara</i>		46			(86)				(Brazil)	S-184
<i>Geophagus</i> <i>brasiliensis</i>		F, M	48	4 M/SM + 44 ST/A	52				ACN=48	(Brazil)	T-41
<i>Geophagus</i> <i>brasiliensis</i>		F, M	48	2 M/SM + 46 ST/A	50		2		ACN=48	Brazil (SP)	F-9, F-10
<i>Geophagus</i> <i>brasiliensis</i>		F, M	48	8SM + 18ST + 22A	56	74	2		ACN=48	Brazil (PR)	M-41
<i>Geophagus</i> <i>brasiliensis</i>		F, M	48	6SM + 42 ST/A	54		2			Brazil (PR)	V-87
<i>Geophagus</i> <i>brasiliensis</i>		F, M	48	4SM + 44 ST/A	52		2		ACN=48	Brazil (PR)	L-89
<i>Geophagus</i> <i>surinamensis</i>		F, M	48	4 M/SM + 44 ST/A	52		2		ACN=48	Brazil (AM)	T-41, F-9, F-10
<i>Gymnocephagus</i> <i>balzani</i>		F, M	48	2 M/SM + 46 ST/A	50		2		0-4 B, ACN=48	Brazil (MS)	F-9, F-10
<i>Gymnocephagus</i> <i>balzani</i>			48	2 M/SM + 46 ST/A	50		2		ACN=48	Argentina	F-20, R-107
<i>Gymnocephagus</i> <i>gymnogenys</i>			48	4 M/SM + 44 ST/A	52		2			Brazil	P-87
<i>Gymnocephagus</i> <i>labiatus</i>			48	4 M/SM + 44 ST/A	52		2			Brazil	P-87
<i>Gymnocephagus</i> <i>lacustris</i>			48	4 M/SM + 44 ST/A	52					Brazil	P-87
<i>Gymnocephagus</i> <i>rhabdotus</i>			48	4 M/SM + 44 ST/A	52					Brazil	P-87
<i>Gymnocephagus</i> sp.			48	2 M/SM + 46 ST/A	50				ACN=48	Argentina	F-20, R-107
<i>Herichthys</i> <i>cyanoguttatus</i>	<i>Cichlasoma cyanoguttatum</i>	F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	USA (TX), Mexico	T-41
<i>Herichthys</i> <i>labridens</i>	<i>Cichlasoma</i>	F	48	6 M/SM + 14ST + 28A	54	68			ACN=48	Mexico (Atlantic side)	T-41
<i>Heros</i> <i>severus</i>	<i>Cichlasoma severum</i>	F, M	48	4 M/SM + 44 ST/A	52				ACN=48	Brazil, Venezuela	T-41
<i>Herotilapia</i> <i>multispinosa</i>		F, M	48	6 M/SM + 42 ST/A	54				ACN=48	C. America	T-41
<i>Hypselecara</i> <i>coryphaenoides</i>	<i>Cichlasoma</i>	F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(Amazones)	T-41
<i>Krobia</i> <i>itanyi</i>	<i>Aequidens</i>		46			(64)				(Suriname)	S-184
<i>Laetacara</i> <i>curviceps</i>	<i>Aequidens</i>		38			(76)				(Amazon R.)	S-184
<i>Laetacara</i> cf. <i>dorsigera</i>			45	3M + 42A	48				0-2 B	Brazil (PR)	C-98
<i>Mesonauta</i> <i>festivus</i>	<i>Cichlasoma festivum</i>	F, M	48	8 M/SM + 40 ST/A	56				ACN=48	(S. America)	T-41
<i>Nannacara</i> <i>anomala</i>		F, M	44	18 M/SM + 26 ST/A	62					S. America	T-41
<i>Neetroplus</i> <i>nematopus</i>		F, M	48	8 M/SM + 12ST + 28A	56	68			ACN=48	Costa Rica	T-41
<i>Papiliochromis</i> <i>ramirezi</i>	<i>Microgeophagus</i>		48			(64)				(S. America)	S-184
<i>Parachromis</i> <i>managuensis</i>	<i>Cichlasoma managuense</i>		48	8 M/SM + 40 ST/A	56				ACN=48	Costa Rica	S-6
<i>Parachromis</i> <i>managuensis</i>	<i>Cichlasoma managuense</i>	F, M	48	6 M/SM + 14ST + 28A	54	68			ACN=48	(Costa Rica)	T-41
<i>Pterophyllum</i> <i>scalare</i>		F, M	48	4 M/SM + 44 ST/A	52		(2.0 FCM, 2.4 BFA)		ACN=48	(S. America)	T-41, V-86, H-13

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag-NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Pterophyllum scalare</i>		F, M	48	12 M/SM + 36 ST/A	60	2				Brazil (PA)	N-2
<i>Satanoperca jurupari</i>			48	6SM + 42 ST/A	54				0-3 B, XY	S. America	M-41, O-86
<i>Satanoperca jurupari</i>	<i>Geophagus</i>	F, M	48	4 M/SM + 44 ST/A	52		(2.4 BFA)	ACN=48	(S. America)	T-41, H-13	
<i>Satanoperca papaterra</i>		F, M	48	6SM + 6ST + 36A	54	60	2	ACN=48	Brazil (PR.)	M-41	
<i>Sympodus aequifasciatus</i>	<i>aequifasciata</i>	F, M	60	58 M/SM + 2 ST/A	118		(2.5* FCM, 2.4 FD)		(Amazon R.)	T-41, O-4, O-48	
<i>Sympodus aequifasciatus</i>	cytotype 1	F, M	60	48 M/SM + 8 ST/A + 4 MC		2		ACN=62	Brazil (Amazon)	M-146	
<i>Sympodus aequifasciatus</i>	cytotype 2	M	60	50 M/SM + 6 ST/A + 4 MC		2		ACN=62	Brazil (Amazon)	M-146	
<i>Sympodus discus</i>	cytotype 1	F, M	60	50 M/SM + 10 ST/A	110	2		ACN=62	Brazil (Amazon)	M-146	
<i>Sympodus discus</i>	cytotype 2	M	60	54 M/SM + 6 ST/A	114	2		ACN=62	Brazil (Amazon)	M-146	
<i>Sympodus haraldi</i>	<i>aequifasciata axelrodi</i>		60	26M + 26SM + 8 ST/A	112	2	2.5 FCM		(Amazon R.)	T-24	
<i>Sympodus haraldi</i>		F, M	60	52 M/SM + 4 ST/A + 4 MC		2-5		ACN=62	Brazil (Amazon)	M-146	
<i>Thorichthys ellioti</i>	<i>Cichlasoma</i>	F, M	48	6 M/SM + 42 ST/A	54				Mexico (Veracruz)	U-48	
<i>Thorichthys meeki</i>	<i>Cichlasoma</i>	F, M	48	6 M/SM + 14ST + 28A	54	68	2.8 BFA	ACN=48	(S. America)	T-41, H-13	
<i>Uaru amphiacanthoides</i>		F, M	46	8 M/SM + 38 ST/A	54			ACN=48	(Amazon R.)	T-41	
Asian Cichlidae											
<i>Etroplus maculatus</i>		F, M	46	18 M/SM + 28 ST/A	64			ACN=48?	(Asia)	T-39	
<i>Etroplus maculatus</i>		F, M	46						India (Portonovo)	N-13	
<i>Etroplus suratensis</i>		F, M	48	48A	48	48		ACN=48	India (Orissa, WB)	R-57, K-46	
<i>Etroplus suratensis</i>		F, M	48						India (Portonovo)	N-13	
African Cichlidae											
<i>Anomalochromis thomasi</i>	<i>Pelmatolochromis</i>		48		(58)				(Africa)	S-25	
<i>Astatotilapia burtoni</i>		F, M	40	16 M/SM + 24 ST/A	56		1.9 FCM	ACN=48	Africa (Lake Tanganyika)	T-39, T-42, G-85	
<i>Aulonocara baenschi</i>			44	6M + 8SM + 30A	58				Malawi	F-68	
<i>Aulonocara hueseri</i>			44	4M + 6SM + 34A	54				Malawi	F-68	
<i>Aulonocara korneliae</i>			44	4M + 8SM + 32A	56				Malawi	F-68	
<i>Aulonocara stuartgranti</i>			44	4M + 6SM + 34A	54				Malawi	F-68	
<i>Aulonocara stuartgranti</i>			44	6M + 6SM + 32A	56				Malawi	F-68	
<i>Aulonocara</i> sp.			44	6M + 6SM + 32A	56				Malawi	F-68	
<i>Chromidotilapia finleyi</i>			48		(68?)				(Africa)	S-184	
<i>Chromidotilapia batesii</i>	<i>Pelmatolochromis</i> (southern form)		44		(80)				E. Cameroon	S-25	
<i>Chromidotilapia batesii</i>	<i>Pelmatolochromis</i> (northern form)		42		(80)				E. Cameroon	S-25	
<i>Haplochromis flavijosephi</i>		F	44	10 M/SM + 34 ST/A	54		2.2 FD	ACN=48	Sea of Galilee	K-98	
<i>Haplochromis obliquidens</i>		F, M	44	12 M/SM + 32 ST/A	56			0-2 B	(E. Africa)	P-95	
<i>Hemichromis bimaculatus</i>			44		(64)				(Africa)	S-184	
<i>Hemihaplochromis kirki</i>			44		(76)				(Africa)	S-184	
<i>Hemihaplochromis multicolor</i>			44		(78)				(Africa)	S-184	

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Heterochromis</i> <i>multidens</i>	<i>Pelmatochromis taeniatus</i>		42		(74)				(Africa)		S-25
<i>Julidochromis</i> <i>ornatus</i>			44		(58)				(Africa)		S-184
<i>Labeotropheus</i> <i>fuelleborni</i>			44	12 M/SM + 32 ST/A	56				Africa (Lake Malawi)		K-120
<i>Lamprologus</i> <i>congoensis</i>			44		(46)				(Africa)		S-184
<i>Melanochromis</i> <i>auratus</i>		F	46	10 M/SM + 36 ST/A	56				ACN=48	(E. Africa)	T-42
<i>Melanochromis</i> <i>auratus</i>	<i>Pseudotropheus</i>		46	10 M/SM + 36 ST/A	56					(E. Africa)	T-39
<i>Metriclaima</i> <i>zebra</i>	<i>Pseudotropheus</i>		44	12 M/SM + 32 ST/A	56					Africa (Lake Malawi)	K-120
<i>Neolamprologus</i> <i>savoryi</i>	<i>Lamprologus savory</i>		32?		(54?)					(Africa)	S-184
<i>Oreochromis</i> <i>andersonii</i>	<i>Tilapia</i>	F, M	44	6SM + 38 ST/A	50				ACN=48	S. Africa	V-35
<i>Oreochromis</i> <i>aureus</i>			44	14M/SM + 30ST	58	88	2.4 FD		ACN=48	Egypt	M-125
<i>Oreochromis</i> <i>aureus</i>	<i>Sarotherodon</i>	F, M	44	10SM + 34ST	54	88	2.5 FD		ACN=48	Sea of Galilee	K-98
<i>Oreochromis</i> <i>aureus</i>	<i>Sarotherodon</i>	F, M	44	8SM + 2ST + 34A	52	54			ACN=48	(Africa)	T-42
<i>Oreochromis</i> <i>aureus</i>	<i>Tilapia</i>		44	44 ST/A	44					(Africa)	T-39
<i>Oreochromis</i> <i>karongae</i>		F, M	38	4M + 22 SM/ST + 12A	64				ACN=48	Africa (Lake Malawi)	H-36
<i>Oreochromis</i> <i>lepidurus</i>	<i>Tilapia</i>		44		(86)					(C. Africa)	S-184
<i>Oreochromis</i> <i>leucostictus</i>			44				2.4 BFA			(E. Africa)	H-13
<i>Oreochromis</i> <i>macrochir</i>			44	10SM + 34ST	54	88	1.7 FD		ACN=48	Botswana	M-125
<i>Oreochromis</i> <i>macrochir</i>	<i>Tilapia</i>	F, M	44	6SM + 38 ST/A	50				ACN=48	Zaire	V-35
<i>Oreochromis</i> <i>mortimeri</i>			44	18 M/SM + 26A	62	62			ACN=48	Zambezi	H-11
<i>Oreochromis</i> <i>mossambicus</i>			44	6SM + 38ST	50	88	2.0 FD		ACN=48	(Africa)	M-125
<i>Oreochromis</i> <i>mossambicus</i>	<i>Sarotherodon</i>	F, M	44	6SM + 38 ST/A	50				ACN=48	(Africa)	T-42
<i>Oreochromis</i> <i>mossambicus</i>	<i>Tilapia</i>	M	44	6ST + 38A	44	50			ACN=48	(introduced, India)	P-49
<i>Oreochromis</i> <i>mossambicus</i>	<i>Tilapia</i>		44	8SM + 34ST + 2A	52	86	(1.8* FD)			(introduced, China)	C-44, C-83
<i>Oreochromis</i> <i>mossambicus</i>	<i>Tilapia</i>		44	12ST + 32A	44	56			ACN=48	(introduced, China)	L-53
<i>Oreochromis</i> <i>mossambicus</i>	<i>Tilapia</i>	F, M	44	18ST + 26A	44	62			ACN=48	(introduced, Japan)	F-54
<i>Oreochromis</i> <i>niloticus</i>			44	2M + 18SM + 24ST	64	88	1.9 FD		ACN=48	Egypt	M-125
<i>Oreochromis</i> <i>niloticus</i>	<i>Tilapia</i>		44	8SM + 34ST + 2A	52	86	2.2* FD			(introduced, China)	C-44, C-83
<i>Oreochromis</i> <i>niloticus</i>	<i>Sarotherodon</i>		44	2M + 16SM + 26 ST/A	62				ACN=48	(introduced, Japan)	A-76
<i>Oreochromis</i> <i>spilurus</i>			44	6SM + 38ST	50	88	1.9 FD		ACN=48	Kenya	M-125
<i>Oreochromis</i> <i>urolepis hornorum</i>			44	8SM + 2ST + 34A	52	54			ACN=48	(introduced, Mexico)	U-47
<i>Pelvicachromis</i> <i>pulcher</i>	<i>Pelmatochromis</i>		44		(82)					(Africa)	S-25
<i>Pelvicachromis</i> <i>subocellatus</i>	<i>Pelmatochromis</i>		40		(70)					(Africa)	S-25
<i>Pelvicachromis</i> <i>taeniatus</i>	<i>Pelmatochromis klugei</i>		40		(70)		2.0 BFA			(Africa)	S-25, H-13
<i>Sarotherodon</i> <i>galilaeus</i>		F, M	44	6SM + 38 ST/A	50	2	2.2 FD		ACN=48	Sea of Galilee	K-98
<i>Sarotherodon</i> <i>galilaeus</i>	<i>Tilapia galilaea</i>	F, M	44	6SM + 38 ST/A	50				ACN=48	(Africa)	V-35
<i>Sarotherodon</i> <i>galilaeus</i>	<i>Tilapia</i>		44	8SM + 34ST + 2A	52	86				(introduced, China)	C-44

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Sarotherodon galilaeus</i>			44	4SM + 40ST	48	88		1.7 FD	ACN=48	Kenya	M-125
<i>Sarotherodon melanotheron</i>			44	4M + 30 SM/ST + 10A	78				ACN=48	Ivory Coast	H-11
<i>Tilapia congica</i>		F, M	44	10 M/SM + 34 ST/A	54				ACN=48	Zaire	V-35
<i>Tilapia guineensis</i>		F, M	44	8 M/SM + 36 ST/A	52				ACN=48	(Guinea)	V-35
<i>Tilapia mariae</i>		F, M	40	4 M/SM + 36 ST/A	44				ACN=48	(Africa)	V-35
<i>Tilapia mariae</i>		F, M	40	8 M/SM + 32 ST/A	48					(Africa)	T-42
<i>Tilapia rendalli</i>		F, M	44	10SM + 8ST + 26A	54	62	4		ACN=48	Brazil (PR)	K-123, M-65
<i>Tilapia sparrmanii</i>		F, M	42	8 M/SM + 34 ST/A	50				ACN=48	Zaire	V-35
<i>Tilapia sparrmanii</i>		F, M	42	10 M/SM + 32 ST/A	52				ACN=48	(Africa)	T-42
<i>Tilapia zillii</i>		F, M	44	10 M/SM + 34 ST/A	54			2.4 FD, (2.4 BFA)	ACN=48	Sea of Galilee	K-98, H-13
<i>Tilapia zillii</i>			44	4M + 18SM + 22ST	66	88			ACN=48	Egypt	M-125
<i>Tristramella sacra</i>		M	44	6 M/SM + 38 ST/A	50			2.6 FD	ACN=48	Sea of Galilee	K-98
<i>Tristramella simonis</i>		F, M	44	6 M/SM + 38 ST/A	50			2.5 FD	ACN=48	Sea of Galilee	K-98
<i>Thysochromis ansorgii</i>	<i>Pelmatochromis ansorgei</i>		46		(54)					(Africa)	S-25
<i>Tylochromis lateralis</i>	<i>Pelmatochromis guentheri</i>		48		(50)					(Africa)	S-25
Embiotocidae											
<i>Embiotoca jacksonii</i>			48*					2.0 BFA		USA (CA)	C-46, H-13
<i>Micrometrus aurora</i>		<i>Amphigonopterus</i>	48*							USA (CA)	C-46
<i>Neoditrema ransonneti</i>			48	6SM + 42 ST/A	54				ACN=48	Japan (Kanagawa)	A-77
Pomacentridae											
Amphiprioninae											
<i>Amphiprion clarkii</i>			48	14M + 16SM + 18 ST/A	78			2.2* FCM, 2.1 FIA	ACN=48	Japan (Tanegashima Is.)	A-65, O-48, H-41
<i>Amphiprion clarkii</i>			48	12M + 26SM + 10 ST/A	86				ACN=48	(W. Pacific)	T-70
<i>Amphiprion frenatus</i>			48	14M + 22SM + 10ST + 2A	84	94			ACN=48	Japan (Okinawa)	A-66
<i>Amphiprion frenatus</i>			48	12M + 26SM + 10 ST/A	86				ACN=48	(W. Pacific)	T-70
<i>Amphiprion frenatus</i>			48	14M + 22SM + 8ST + 4A	84	92	2		ACN=48	Philippines	M-79
<i>Amphiprion ocellaris</i>			48	14M + 22SM + 12 ST/A	84				ACN=48	Japan (Okinawa)	A-66
Chrominae											
<i>Chromis chromis</i>		F, M	48	48A	48	48		2.6* FD	ACN=48	Spain (Malaga)	A-29
<i>Chromis chrysura</i>			48	2M + 46 ST/A	50				ACN=48	(Japan)	O-49
<i>Chromis flavicauda</i>		M	39	9M + 6SM + 24A	54	54	2		ACN=48	Brazil (ES)	M-143
<i>Chromis insolata</i>			46	4M + 6SM + 36A	56	56	2		ACN=48	Brazil (ES)	M-143
<i>Chromis insolata</i>			47	3M + 6SM + 38A	56	56	2		ACN=48	Brazil (ES)	M-143
<i>Chromis multilineata</i>		F	48	48A	48	48	2		ACN=48	Brazil (BA)	M-143

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Chromis ternatensis</i>	<i>caeruleus</i>		48	48A	48	48			ACN=48	(Pacific)	T-23
<i>Dascyllus aruanus</i>			32	16 M/SM + 16A	48	48	2	(2.1* FCM, 1.7 FIA)	ACN=48	S. Japan	K-15, O-48, H-41
<i>Dascyllus aruanus</i>			31	17 M/SM + 14A	48	48			ACN=48	S. Japan	K-15
<i>Dascyllus aruanus</i>			30	18 M/SM + 12A	48	48			ACN=48	S. Japan	O-36, K-15
<i>Dascyllus aruanus</i>			29	19 M/SM + 10A	48	48			ACN=48	S. Japan	K-15
<i>Dascyllus aruanus</i>			28	20 M/SM + 8A	48	48	2		ACN=48	S. Japan	O-36, K-15
<i>Dascyllus melanurus</i>			48	48A	48	48	2		ACN=48	S. Japan	O-36, K-15
<i>Dascyllus reticulatus</i>			36	12 M/SM + 24A	48	48	2	(1.7 FIA)	ACN=48	S. Japan	K-15, H-40
<i>Dascyllus reticulatus</i>			35	13 M/SM + 22A	48	48			ACN=48	S. Japan	O-36, K-15
<i>Dascyllus reticulatus</i>			34	14 M/SM + 20A	48	48			ACN=48	S. Japan	O-36, K-15
<i>Dascyllus trimaculatus</i>			48	48A	48	48	2	1.8 FIA	ACN=48	S. Japan	O-36, K-15, H-40
<i>Dascyllus trimaculatus</i>			47	1M + 46A	48	48			ACN=48	Japan (Tanegashima Is.)	A-65
Pomacentrinae											
<i>Abudefduf notatus</i>			48	2M + 2ST + 44A	50	52			ACN=48	Japan (Tanegashima Is.)	A-65
<i>Abudefduf saxatilis</i>		F	48	2M + 2SM + 44A	52	52	2	(2.0 BFA)		Brazil (RJ)	A-12, B-59, H-13
<i>Abudefduf saxatilis</i>			48	2M + 2SM + 44A	52	52	2		ACN=48	Brazil (RN)	M-79
<i>Abudefduf sexfasciatus</i>	<i>coelestinus</i>		48	2M + 46A	50	50	2	1.4 FIA		(W. Pacific)	T-7, H-40
<i>Abudefduf sordidus</i>			48	2M + 2SM + 2ST + 42A	52	54		1.7 FIA	ACN=48	Japan (Tanegashima Is.)	A-65, H-40
<i>Abudefduf vaigiensis</i>			48	2M + 2SM + 2ST + 42A	52	54			ACN=48	Japan (Chiba)	A-65
<i>Abudefduf vaigiensis</i>			48	2M + 2SM + 44A	52	52	2		ACN=48	(W. Pacific)	T-7
<i>Amblyglyphidodon curacao</i>			48	6M + 22SM + 20 ST/A	76		2	2.2* FCM, 1.8 FIA		(Indo-W. Pacific)	T-6, O-48, O-49, H-40
<i>Cheiloprion labiatus</i>			48	26SM + 22 ST/A	74		2		ACN=48	Japan (Ryukyu)	T-7
<i>Chrysiptera cyanea</i>			42	6M + 16SM + 2ST + 18A	64	66	2	3.4* FCM, 1.6, 2.1 FIA	ACN=48	(W. Pacific)	T-19, O-48, H-41
<i>Chrysiptera cyanea</i>	<i>Glyphidodontops cyaneus</i>		48	48 ST/A	48					(Indo-W. Pacific)	O-49
<i>Chrysiptera hemicyanea</i>			48	30SM + 10ST + 8A	78	88	2	2.7* FCM	ACN=48	(W. Pacific)	T-16, T-23, O-48
<i>Chrysiptera hemicyanea</i>	<i>Glyphidodontops hemicyaneus</i>		48	32SM + 16 ST/A	80					(Indo-W. Pacific)	O-49
<i>Chrysiptera leucopoma</i>			48	4M + 22SM + 6ST + 16A	74	80	2		ACN=48	(W. Pacific)	T-19
<i>Chrysiptera rex</i>			36	12M + 10SM + 14 ST/A	58		2		ACN=48	(W. Pacific)	T-19
<i>Chrysiptera rex</i>	<i>Glyphidodontops rex</i>		48	8M + 22SM + 18 ST/A	78					(Indo-W. Pacific)	O-49
<i>Chrysiptera starcki</i>			48	2M + 10SM + 36A	60	60	2		ACN=48	(W. Pacific)	T-6, T-7
<i>Dischistodus prosopotaenia</i>			48				2	1.5 FIA		(Indo-W. Pacific)	T-6, H-41
<i>Microspathodon chrysurus</i>			48	6M + 10ST + 32A	54	64	2		ACN=48	Brazil (BA)	G-12, M-79
<i>Neoglyphidodon melas</i>			48	8M + 26SM + 2ST + 12A	82	84				Japan (Wakayama)	T-84
<i>Neoglyphidodon nigroris</i>	<i>Paraglyphidodon</i>		48	8M + 26SM + 2ST + 12A	82	84	2		ACN=48	(W. Pacific)	T-16
<i>Neoglyphidodon oxyodon</i>	<i>Paraglyphidodon</i>		48	2M + 20SM + 12ST + 14A	70	82	2		ACN=48	(W. Pacific)	T-16
<i>Plectroglyphidodon lacrymatus</i>			48				2			(Indo-W. Pacific)	T-6

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Plectroglyphidodon leucozonus</i>	<i>Abudefdof</i>		48	4ST + 44A	48	52			ACN=48	Japan (Yakushima Is.)	A-65
<i>Pomacentrus chrysurus</i>	<i>rhodonotus</i>		48	8M + 22SM + 12ST + 6A	78	90	2	2.1 FIA	ACN=48	(W. Pacific)	T-16, H-40
<i>Pomacentrus coelestis</i>			48	48A	48	48		(1.8 FIA)	ACN=48	Japan (Tanegashima Is.)	A-65, H-40
<i>Pomacentrus coelestis</i>	<i>Abudefdof</i>		48	48A	48	48	2		ACN=48	(W. Pacific)	T-7, T-23
<i>Pomacentrus moluccensis</i>			48	10M + 26SM + 10ST + 2A	84	94	2	1.5 FIA	ACN=48	(W. Pacific)	T-16, H-40
<i>Pomacentrus cf. nagasakiensis</i>	<i>Paraglyphidodon melas</i>		48	2M + 46A	50	50	2		ACN=48	Japan (Wakayama)	T-7, T-84
<i>Pomacentrus philippinus</i>			48	8M + 24SM + 10ST + 6A	80	90	2		ACN=48	Japan (Yaeyama)	T-16
<i>Pomacentrus trilineatus</i>	<i>biocellatus</i>	M	50	8M/SM + 42 ST/A	58					India (Andaman Is.)	R-45
<i>Pomacentrus</i> sp.			48	10M + 26SM + 12 ST/A	84					(Pacific)	O-49
<i>Stegastes fuscus</i>		F, M	48	20M + 22SM + 6A	90	90	2	1.5 FD	ACN=48	Brazil (RN)	G-12, G-85, M-145
<i>Stegastes insularis</i>			48	14M + 24SM + 6ST + 4A	86	92	2		ACN=48	India (Kerala)	N-65
<i>Stegastes leucostictus</i>		F, M	48	18M + 22SM + 8A	88	88	2		ACN=48	Brazil (BA)	G-12, M-145
<i>Stegastes lividus</i>	<i>Eupomacentrus</i>		48	6M + 24SM + 18 ST/A	78					(Pacific)	O-49
<i>Stegastes nigricans</i>	<i>Eupomacentrus</i>		48	2M + 2SM + 44 ST/A	52			1.5 FIA		(Indo-W. Pacific)	O-49, H-40
<i>Stegastes pictus</i>		F, M	48	14M + 28SM + 2ST + 4A	90	92	2		ACN=48	Brazil (BA, CE)	G-12, M-145
<i>Stegastes sanctipauli</i>			48			92				Brazil (SPR)	G-12
<i>Stegastes variabilis</i>		F, M	48	18M + 22SM + 8A	88	88	2		ACN=48	Brazil (RN)	G-12, M-145
Labridae											
<i>Bodianus axillaris</i>			48	8M + 30SM + 10 ST/A	86				ACN=48	S. Japan	O-31
<i>Bodianus loxozonus</i>			48	8M + 26SM + 14 ST/A	82					S. Japan	O-31
<i>Bodianus mesothorax</i>			48	8M + 18SM + 22 ST/A	74					S. Japan	O-31
<i>Bodianus rufus</i>			48	48A	48	48				Brazil	B-86
<i>Bodianus rufus</i>			48			80				Brazil (RN)	G-12
<i>Cheilinus bimaculatus</i>			32	4M + 2SM + 26A	38	38			ACN=34	Japan (Wakayama)	O-27
<i>Cheilinus fasciatus</i>			48	12SM + 36 ST/A	60					(Japan)	O-49
<i>Cheilio inermis</i>			48	12M + 12SM + 24 ST/A	72		1.8* FCM			S. Japan	O-31, O-48
<i>Cheilio inermis</i>			48	4M + 2SM + 42A	54	54			ACN=48	Japan (Yakushima Is.)	A-75
<i>Choerodon azurio</i>			48	6M + 2SM + 40 ST/A	56				ACN=48	Japan (Wakayama)	A-75
<i>Cirrhilabrus cyanopleura</i>			34	10M + 2SM + 22 ST/A	46					S. Japan	O-31
<i>Cirrhilabrus temminckii</i>			34	12M + 22A	46	46			ACN=46	Japan (Wakayama)	O-27
<i>Coris aygula</i>			48	6M + 6SM + 36 ST/A	60					(Japan)	O-49
<i>Coris dorsomacula</i>	<i>multicolor</i>		48	6M + 8SM + 34 ST/A	62			1.4 FIA	ACN=48	Japan (Wakayama)	O-27, H-40
<i>Coris gaimardi</i>			48	2M + 10SM + 36 ST/A	60					S. Japan	O-31
<i>Coris julis</i>		F	48	10M + 38A	58	58			ACN=48	Elba, Europe	D-24
<i>Coris julis</i>		M	48	11M + 37A	59	59			ACN=48	Elba, Europe	D-24

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
<i>Coris julis</i>		F, M	48	4M + 6SM + 38A	58	58		2.4 FD	ACN=48	Italy (Palermo)	V-58, G-85
<i>Coris julis</i>		F, M	48		56			1.4 FD		Spain (Malaga)	C-9
<i>Ctenolabrus rupestris</i>			48	4M + 22SM + 10ST + 12A	74	84			ACN=48	Spain (Mediterranean)	A-31
<i>Epibulus insidiator</i>			48	4M + 8SM + 36 ST/A	60				ACN=48	S. Japan	O-31
<i>Gomphosus varius</i>			48	48 ST/A	48			2.1* FCM		S. Japan	O-31, O-48
<i>Halichoeres argus</i>	<i>binotopsis</i>		48	48 ST/A	48				ACN=48	Japan (Yakushima Is.)	A-75
<i>Halichoeres hortulanus</i>	<i>centriquadrus</i>		48	48 ST/A	48					S. Japan	O-31
<i>Halichoeres melanochir</i>			48	2M + 46 ST/A	50				ACN=48	Japan (Tanegashima Is.)	A-75
<i>Halichoeres melanochir</i>			48	2SM + 46 ST/A	50				ACN=48	Japan	O-27, O-31
<i>Halichoeres melanurus</i>	<i>kallochroma</i>		48	48 ST/A	48			1.7 FIA		S. Japan	O-31, H-40
<i>Halichoeres poecilopterus</i>			48	4M + 2SM + 42 ST/A	54			1.8* FCM	ACN=48	S. Japan	O-31, O-48
<i>Halichoeres poecilopterus</i>			48	4M + 44 ST/A	52				ACN=48	Japan (Chiba)	A-75
<i>Halichoeres poecilopterus</i>		F, M	48	2M + 2SM + 44 ST/A	52				ACN=48	Korea (Cheju Is.)	P-67
<i>Halichoeres poeyi</i>			48		58					Brazil (RN, BA, RJ)	G-12
<i>Halichoeres prosopeion</i>			48	2SM + 46 ST/A	50				ACN=48	Japan (Wakayama)	O-27
<i>Halichoeres radiatus</i>			48	48A	48	48				Brazil (SPR)	G-12
<i>Halichoeres tenuispinnis</i>			48	2SM + 46 ST/A	50			1.5* FCM	ACN=48	Japan (Wakayama)	O-27, M-2
<i>Halichoeres tenuispinnis</i>			48	2SM + 46 ST/A	50				ACN=48	Japan (Chiba)	A-75
<i>Halichoeres tenuispinnis</i>		F, M	48	2M + 46 ST/A	50				ACN=48	Korea (Cheju Is.)	P-67
<i>Halichoeres trimaculatus</i>			48	48 ST/A	48					S. Japan	O-31
<i>Hemigymnus fasciatus</i>			48	6M + 6SM + 36 ST/A	60					(Japan)	O-49
<i>Hologymnosus annulatus</i>	<i>semidiscus</i>		48	2M + 2SM + 44 ST/A	52					S. Japan	O-31
<i>Labrodes dimidiatus</i>			48	48A	48	48		1.8* FCM	ACN=48	Japan (Wakayama)	O-27, O-48
<i>Labrus bimaculatus</i>			48	48A	48	48			ACN=48	Italy (Palermo)	V-53
<i>Labrus merula</i>			48	48A	48	48		2.9 FD	ACN=48	Italy (Palermo)	V-53, G-85
<i>Labrus viridis</i>			48	48A	48	48			ACN=48	Italy (Palermo)	V-53
<i>Novaculichthys taeniurus</i>	<i>Hemipteronotus</i>		48	4SM + 44 ST/A	52					(Japan)	O-49
<i>Pseudolabrus eoethinus</i>	<i>japonicus</i>		48	2M + 2SM + 44 ST/A	52			2.1* FCM	ACN=48	Japan (Wakayama)	O-27, M-2
<i>Pseudolabrus sieboldi</i>	<i>japonicus</i>		42	20M + 8SM + 14 ST/A	70			2.1* FCM	ACN=46	Japan (Kanagawa, Wakayama)	A-75, M-2
<i>Pseudolabrus sieboldi</i>	<i>japonicus</i>	F, M	42	4M + 24SM + 14 ST/A	70	2			ACN=46	Korea (Cheju Is.)	P-67
<i>Pteragogus aurigarius</i>	<i>flagellifera</i>		44	2M + 10SM + 32 ST/A	56			3.5* FCM	ACN=44	Japan (Izu Peninsula)	A-75, M-2
<i>Pteragogus aurigarius?</i>	<i>flagellifera</i>	F, M	42	4M + 24SM + 14 ST/A	70	2			ACN=46	Korea (Cheju Is.)	P-67
<i>Stethojulis bandanensis</i>			48	4M + 44 ST/A	52					S. Japan	O-31
<i>Stethojulis interrupta</i>			48	2M + 46 ST/A	50				ACN=48	Japan (Wakayama)	O-27
<i>Stethojulis interrupta</i>			48	2SM + 46 ST/A	50				ACN=48	Japan (Chiba, Kagoshima)	A-75
<i>Stethojulis strigiventer</i>			48	2M + 46 ST/A	50					S. Japan	O-31

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Syphodus doderleini</i>		F, M	48	24M + 6SM + 10ST + 8A	78	88			ACN=48	Italy (Palermo)	C-29
<i>Syphodus cinereus</i>	<i>griseus</i>		48	32 M/SM/ST + 16A		80		2.5 FD	ACN=48	USSR	V-8, G-85
<i>Syphodus mediterraneus</i>			48	22M + 20SM + 6A	90	90			ACN=48	Italy (Palermo)	V-53
<i>Syphodus mediterraneus</i>		F, M	46		52			1.1 FD		Spain (Malaga)	C-9
<i>Syphodus melops</i>			46	2M + 42 SM/ST + 2A		90	2		ACN=48	Spain (Malaga)	L-67
<i>Syphodus melops</i>	<i>Crenilabrus</i>		46	10M + 36ST	56	92			ACN=48	Italy (Roma)	C-31
<i>Syphodus ocellatus</i>			48	10M + 20SM + 18A	78			2.2 FD	ACN=48	Italy (Palermo)	V-53, G-85
<i>Syphodus ocellatus</i>			48	8M + 18SM + 8ST + 14A	74	82			ACN=48	Spain (Mediterranean)	A-31
<i>Syphodus ocellatus</i>	<i>Crenilabrus</i>		48	36 M/SM/ST + 12A		84			ACN=48	USSR	V-8
<i>Syphodus roissali</i>			38	32M + 4SM + 2A	74	74			ACN=48	Italy (Palermo)	V-53
<i>Syphodus roissali</i>			38	36 M/SM + 2A	74	74	2		ACN=48	Spain (Malaga)	L-67
<i>Syphodus roissali</i>	<i>Crenilabrus quinquemaculatus</i>		38	36 M/SM/ST + 2A		74			ACN=48	Black Sea	V-8
<i>Syphodus roissali</i>		F, M	46		60			1.0 FD		Spain (Malaga)	C-9
<i>Syphodus rostratus</i>	<i>scina</i>		48	40 M/SM/ST + 8A		88		2.0 FD	ACN=48	Black Sea	V-8, G-85
<i>Syphodus tinca</i>	<i>Crenilabrus</i>		48	34 M/SM/ST + 14A		82		1.5 FCM	ACN=48	Black Sea	V-8, V-86
<i>Syphodus tinca</i>			48	16M + 14SM + 4ST + 14A	78	82		2.2 FD	ACN=48	Italy (Palermo)	V-53, G-85
<i>Thalassoma amblycephala</i>			48	48 ST/A		48			ACN=48	S. Japan	O-31
<i>Thalassoma cupido</i>			48	48 ST/A		48		2.3* FCM	ACN=48	Japan	O-31, A-75, M-2
<i>Thalassoma cupido</i>		F, M	48	48A	48	48	6		ACN=48	Japan (Wakayama)	U-42
<i>Thalassoma lunare</i>			48	48A		48	48		ACN=48	Japan (Wakayama)	O-27
<i>Thalassoma lutescens</i>			48	48A		48	48		ACN=48	Japan (Wakayama)	O-27
<i>Thalassoma lutescens</i>			48	48 ST/A		48			ACN=48	Japan (Yakushima Is.)	A-75
<i>Thalassoma pavo</i>			48	48A		48	48		ACN=48	Italy (Palermo)	V-53
<i>Thalassoma pavo</i>			48			48		1.6 FD		Spain (Malaga)	C-9
<i>Thalassoma quinquevittata</i>			48	48 ST/A		48				S. Japan	O-31
<i>Xyrichthys dea</i>		F	44	44A	44	44	2		ACN=46	Japan (Wakayama, Tokushima)	U-43
<i>Xyrichthys dea</i>	<i>Hemipteronotus</i>		44	44A		44	44			Japan (Wakayama)	O-27
<i>Xyrichthys novacula</i>			48	8SM + 40A	56	56	2		ACN=48	Italy (Palermo)	V-53, V-60
<i>Xyrichthys pavo</i>		F, M	44	44A		44	44	2	1.8* FCM	Japan (Wakayama, Tokushima)	U-43
<i>Xyrichthys twistii</i>		F	22	18 M/SM + 4A	40	40	2	1.7* FCM		Japan (Wakayama)	U-43

Table 6.37 Order PERCIFORMES. Part 2 Labroidei and Zoarcoidei (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag ⁻ NORs	Genome size (pg/cell)	Comments	Locality	Reference
Scaridae											
<i>Calotomus japonicus</i>			48	8M + 10SM + 30 ST/A	66				ACN=48	Japan (Chiba)	A-75
<i>Chlorurus sordidus</i>	<i>Scarus rhoduropterus</i>		48	10M + 8SM + 30 ST/A	66				ACN=48	Japan (Ogasawara)	A-75
<i>Chlorurus sordidus</i>	<i>Scarus</i>		48				4.1* FCM			Japan	O-48
<i>Scarus trispinosus</i>	<i>coelestinus</i>		48	6M + 10SM + 24ST + 8A	64	88	2			Brazil (RN)	S-178
<i>Sparisoma axillare</i>		F, M	46	6M + 14SM + 4ST + 22A	66	70	2		ACN=48	Brazil (BA)	S-178
Suborder Zoarcoidei											
Bathymasteridae											
<i>Ronquilus jordanii</i>			26	22 M/SM + 4A	48	48			ACN=48	(Canada)	M-61
Zoarcidae											
<i>Lycodichthys dearborni</i>		F, M	48	2M + 2SM + 44 ST/A	52	2	3.2 FD, 2.2 FIA		ACN=48	Ross Sea	M-89, H-41
<i>Pachycara brachycephalum</i>		F, M	48	2M + 4SM + 42 ST/A	54	2	2.9 FD		ACN=48	Ross Sea	M-89
<i>Pachycara brachycephalum</i>		M	72	3M + 6SM + 63A	81	81	3			3X	M-89
<i>Zoarces elongatus</i>			48	30M + 14SM + 4A	92	92			ACN=48	China (Liaoning)	M-36
<i>Zoarces viviparus</i>		F, M	48	2M + 6SM + 18ST + 22A	56	74	2		ACN=48	Baltic Sea, White Sea	K-80
Stichaeidae											
<i>Alectrias berjamini</i>			48	18M + 18SM + 12A	84	84			ACN=48	China (Liaoning)	M-34
<i>Chiroliphis japonicus</i>	<i>Azuma emmnion</i>		56	6M + 10SM + 40A	72	72				China (Liaoning)	M-36
<i>Dictyosoma burgeri</i>			48	12M + 18SM + 6ST + 12A	78	84			ACN=48	Japan (Kanagawa)	A-59
<i>Dictyosoma burgeri</i>		M	46	14M + 18SM + 8ST + 6A	78	86			ACN=48	Japan (Yamaguchi)	N-34
<i>Ernogrammus hexagrammus</i>			48	48A	48	48			ACN=48	China (Liaoning)	M-31
<i>Lumpenus fabricii</i>			48	2M + 14SM + 32 ST/A	64					Russia, White Sea	L-87, L-88
<i>Lumpenus fabricii</i>			47	2M + 15SM + 30 ST/A	64					Russia, White Sea	L-87, L-88
<i>Zoarchias microstomus</i>			28	24M + 4A	52	52			ACN=46?	China (Liaoning)	M-36
Pholidae											
<i>Pholis nebulosa</i>	<i>Enedrius pictus</i>		26	26M	52	52			ACN=48?	China (Liaoning)	M-33
<i>Pholis picta</i>		M	46							Japan (Hokkaido)	M-14

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-	I Genome size NORs (pg/cell)	J Comments	K Locality	L Reference
Suborder Notothenioidei											
Artedidraconidae											
<i>Artedidraco mirus</i>			46	2M + 2SM + 42A	50	50			ACN=46	South Georgia Is.	P-57
<i>Artedidraco oriana</i> e		F, M	46	2M + 6SM + 38A	54	54	2		ACN=48	Weddell Sea	O-70
<i>Artedidraco shackletoni</i>		F, M	46	2M + 6SM + 38A	54	54	2		ACN=48	Weddell Sea	O-70
<i>Histiobranchus velifer</i>		F, M	46	6SM + 40 ST/A	52		2			Ross Sea	O-21
<i>Pogonophryne barsukovi</i>		F, M	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
<i>Pogonophryne dolichobranchiata</i>			46	4M + 2SM + 2ST + 38A	52	54			ACN=48	South Orkney Is.	P-57
<i>Pogonophryne marmorata</i>		M	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
<i>Pogonophryne mentella</i>		F, M	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
<i>Pogonophryne scotti</i>		F	46	2M + 4SM + 40A	52	52	2		ACN=48	Weddell Sea	O-70
<i>Pogonophryne scotti</i>		M	46	6SM + 40A	52	52	2	4.1 FD	ACN=48	Ross Sea	M-89
Bathydraconidae											
<i>Bathydraco marri</i>		F	38	4SM + 34A	42	42			XX, ACN=40	Weddell Sea	O-70
<i>Bathydraco marri</i>		M	39	3SM + 36A	42	42			XY ₁ Y ₂ , ACN=40	Weddell Sea	O-70
<i>Cygnodraco mawsoni</i>		F	44-46	44-46 ST/A	44-46					Weddell Sea	O-70
<i>Cygnodraco mawsoni</i>		F	48	2M + 4SM + 42 ST/A	54		2	2.8 FD	ACN=48	Ross Sea	M-89, C-20
<i>Gerlachea australis</i>		F	48	2M + 2-4 SM + 42-44 A	52-54	52-54			ACN=48	Weddell Sea	O-70
<i>Parachaenichthys georgianus</i>			48								O-70
<i>Prionodraco evansii</i>			20								O-70
<i>Psilodraco breviceps</i>			48	48A	48	48					O-70
<i>Racovitzia glacialis</i>		F	36	4M + 32A	40	40				Weddell Sea	O-70
Bovichtyidae (= Bovichtidae)											
<i>Bovichtus angustifrons</i>			48	48A	48	48			ACN=48	Tasmania	M-123
<i>Bovichtus diacanthus</i>		F, M	48	48A	48	48			ACN=48	Tristan da Cunha	M-123
<i>Bovichtus variegatus</i>		F, M	48	48A	48	48			ACN=48	New Zealand	M-123
<i>Cottoperca gobio</i>			48-50	48-50 A	48-50	48-50				Chile	P-55
<i>Cottoperca gobio</i>		F	48	48A	48	48	2		ACN=48	Magellan Strait	P-58

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag ⁻ NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Channichthyidae											
<i>Chaenocephalus aceratus</i>		M	48	4M + 44A	52	52				South Sandwich Is.	M-88
<i>Chaenodraco wilsoni</i>		F	48	4M + 6SM + 38A	58	58			X ₁ X ₁ X ₂ X ₂ , ACN=48	Antarctica	O-68, O-70
<i>Chaenodraco wilsoni</i>		M	47	5M + 6SM + 36A	58	58			X ₁ X ₂ Y, ACN=48	Weddell Sea	O-70, M-88
<i>Champscephalus gunnari</i>			48						ACN=48	Antarctica	D-4
<i>Channichthys rhinoceratus</i>		F, M	48	2M + 4SM + 40A + 2A-sat.	54	54			ACN=48	Antarctica	D-4
<i>Chionobathyscus dewitti</i>		M	47	5SM + 4-6 SM + 38-36 A	56-58	56-58			X ₁ X ₂ Y, ACN=48	Weddell Sea	O-70, M-88
<i>Chionodraco hamatus</i>		F	48	2M + 4SM + 42A	54	54	3		X ₁ X ₁ X ₂ X ₂ , ACN=48	Weddell Sea	O-70
<i>Chionodraco hamatus</i>		F	48	2M + 4SM + 42A	54	54		3.7 FD	X ₁ X ₁ X ₂ X ₂ , ACN=48	Ross Sea	M-88
<i>Chionodraco hamatus</i>		M	47	2M + 4SM + 41A	53	53	2		X ₁ X ₂ Y, ACN=48	Ross Sea	M-88
<i>Chionodraco myersi</i>		F	48	2M + 6SM + 40A	56	56			X ₁ X ₁ X ₂ X ₂ , ACN=48	Weddell Sea	O-70
<i>Chionodraco myersi</i>		M	47	2M + 6SM + 39A	55	47			X ₁ X ₂ Y, ACN=48	Weddell Sea	O-70, M-88
<i>Chionodraco rastrospinosus</i>		M	48	4M + 44A	52	52				South Orkney Is.	M-88
<i>Cryodraco atkinsoni</i>	<i>antarcticus</i>	M	48	2M + 4SM + 42A	54	54			ACN=48	Weddell Sea	O-70
<i>Cryodraco atkinsoni</i>	<i>antarcticus</i>	M	48	2M + 4SM + 42A	54	54	2	3.9 FD	ACN=48	Ross Sea	M-89
<i>Neopagetopsis ionah</i>		F, M	48	2M + 8SM + 38A	58	58	2		ACN=48	Weddell Sea	O-70
<i>Pagetopsis macropterus</i>		M	47	3M + 12SM + 32A	62	62			ACN=48	Weddell Sea	O-70
<i>Pagetopsis macropterus</i>		F	48	2M + 12SM + 34A	62	62	2	4.4 FD	X ₁ X ₁ X ₂ X ₂ , ACN=48	Ross Sea	M-88
<i>Pagetopsis macropterus</i>		M	47	3M + 12SM + 32A	62	62			X ₁ X ₂ Y, ACN=48	Ross Sea	M-88
<i>Pagetopsis maculatus</i>		F	48	2M + 6SM + 40A	56	56				Weddell Sea	O-70
<i>Pseudochaenichthys georgianus</i>			48	4M + 8SM + 36A	60	60				South Georgia	M-88
Eleginopidae											
<i>Eleginops maclovinus</i>		F, M	48	4M + 2SM + 42A	54	54			ACN=48	S. America (subantarctic)	M-124
Harpagiferidae											
<i>Harpagifer antarcticus</i>			48	2M + 4ST + 42A	50	54			ACN=48	South Orkney Is.	P-56
<i>Harpagifer</i> sp.			48	4M + 2SM + 8ST + 34A	54	62			ACN=48	Macquarie Is.	P-56

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag ⁻ NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Nototheniidae											
<i>Dissostichus eleginoides</i>			48	2M + 46A	50	50			ACN=48	Antarctica	D-4
<i>Dissostichus eleginoides</i>		F, M	48	2M + 2SM + 44A	52	52	2			Southern Ocean	G-83
<i>Dissostichus mawsoni</i>		F, M	48	2M + 4SM + 42A	54	54	4			Southern Ocean	G-83
<i>Dissostichus mawsoni</i>		F	48	2M + 2SM + 44A	52	52		(2.1 FIA)	ACN=48	Weddell Sea	O-70, H-41
<i>Gobionotothen acuta</i>	<i>Notothenia</i>	F	46	6M + 8SM + 32A	60	60			4B	Antarctica (Heard Is.)	O-67
<i>Gobionotothen gibberifrons</i>	<i>Notothenia</i>	F, M	46	4M + 2SM + 40A	52	52			ACN=48	Antarctica (Admiralty Bay)	P-26, P-27
<i>Lepidonotothen kempfi</i>	<i>Notothenia</i>	F, M	48	4M + 44A	52	52				Antarctica (Prydz Bay)	O-67
<i>Lepidonotothen squamifrons</i>	<i>Notothenia</i>	F, M	48	4M + 44A	52	52				Antarctica	O-67
<i>Lindbergichthys mizops</i>	<i>Notothenia</i>	F, M	48	4M + 44A	52	52				Antarctica	O-67
<i>Notothenia angustata</i>		F, M	26	24 M/SM + 2A	50	50	2		ACN=48	New Zealand	P-36
<i>Notothenia coriiceps neglecta</i>			22	20M + 2SM	44	44			ACN=44	Duville Is.	P-52
<i>Notothenia coriiceps neglecta</i>		F	22	18M + 2SM + 2ST	42	44			ACN=44	Antarctica (Admiralty Bay)	P-27
<i>Notothenia coriiceps</i>		M	22	18M + 4SM	44	44	2		ACN=44	Ross Sea	M-126
<i>Notothenia cyanobrancha</i>		M	48	4M + 44A	52	52			ACN=48	Antarctica	D-4
<i>Notothenia rossi marmorata</i>			24	24M	48	48			ACN=46	South Georgia	P-52
<i>Notothenia rossii rossii</i>		F, M	24	24M	48	48			ACN=46	Antarctica	D-4
<i>Pagothenia borchgrevinki</i>		F	46	4M + 2SM + 40A	52	52	2		X ₁ X ₁ X ₂ X ₂ , ACN=48	Antarctica	M-126
<i>Pagothenia borchgrevinki</i>		M	45	5M + 2SM + 38A	52	52	2		X ₁ X ₂ Y, ACN=48	Antarctica	M-126
<i>Paranotothenia magellanica</i>			26	24M + 2A	50	50			ACN=48	Antarctica	D-4
<i>Paranotothenia microlepidota</i>	<i>Notothenia</i>		26	22M + 2SM + 2A	50	50			ACN=48	Cambell Is.	P-51
<i>Patagonotothen longipes</i>		F, M	48	2M + 46A	50	50			ACN=48	Magellanic Region	P-51
<i>Patagonotothen ramsayi</i>			46	4M + 42 ST/A	50					Magellanic Region	P-51
<i>Pleuragramma antarcticum</i>		F, M	48	8M + 12SM + 28A	68	68			ACN=48	Weddell Sea	O-70
<i>Pseudotrematomus bernacchii</i>	<i>Trematomus</i>		48	2M + 46 ST/A	50					Antarctica (Bransfield Strait)	P-26
<i>Pseudotrematomus bernacchii</i>	<i>Trematomus</i>		48	2M + 2SM + 44A	52	52		(2.4 FIA)	ACN=48	Weddell Sea	O-70, H-41
<i>Pseudotrematomus bernacchii</i>	<i>Trematomus</i>	F, M	48	2M + 2SM + 44A	52	52	2	3.6 FD	ACN=48	Ross Sea	M-89
<i>Pseudotrematomus bernacchii</i>	<i>Pagothenia</i>	F, M	48	2M + 2SM + 44A	52	52	2		ACN=48	Ross Sea	M-126
<i>Pseudotrematomus eulepidotus</i>	<i>Trematomus</i>	F, M	24	20M + 4SM	48	48	2		ACN=46	Weddell Sea	O-70
<i>Pseudotrematomus eulepidotus</i>	<i>Trematomus</i>	F, M	24	22M + 2SM	48	48	2		ACN=46	Ross Sea	M-126
<i>Pseudotrematomus eulepidotus</i>	<i>Trematomus</i>	F, M	24	8M + 14SM + 2A	46	46			ACN=46	Antarctica (Prydz Bay)	O-67, O-70
<i>Pseudotrematomus hansonii</i>	<i>Trematomus</i>		48	2M + 4SM + 42 ST/A	54					Antarctica (Bransfield Strait)	P-26
<i>Pseudotrematomus hansonii</i>	<i>Trematomus</i>		48	2M + 4SM + 42A	54	54				Weddell Sea	O-70
<i>Pseudotrematomus hansonii</i>	<i>Pagothenia</i>	F	46	4M + 2SM + 40A	52	52	2		X ₁ X ₂ X ₂ , ACN=48	Ross Sea	M-126

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-	I Genome size NORs (pg/cell)	J Comments	K Locality	L Reference
<i>Pseudotrematomus hansonii</i>	<i>Pagothenia</i>	M	45	5M + 2SM + 38A	52	52	2		X ₁ X ₂ Y, ACN=48	Ross Sea	M-126
<i>Pseudotrematomus lepidorhinus</i>	<i>Trematomus</i>	F, M	48	4M + 44A	52	52				Weddell Sea	O-67, O-70
<i>Pseudotrematomus pennelli</i>	<i>Trematomus</i>	M	28	9M + 2SM + 17A	39	39			4B	Weddell Sea	O-70
<i>Pseudotrematomus pennelli</i>	<i>Trematomus</i>	F, M	32	12M + 2SM + 18A	46	46	2		ACN=44	Ross Sea	M-126
<i>Pseudotrematomus scotti</i>	<i>Trematomus</i>	F	50	4M + 2-4 SM + 42-44 A	56-58	56-58			ACN=50	Weddell Sea	O-70
<i>Trematomus loenbergii</i>		F, M	28	18M + 6SM + 4A	52	52	2		ACN=48	Ross Sea	M-126
<i>Trematomus loenbergii</i>		F	30	16M + 6SM + 8A	52	52	2			Ross Sea	M-126
<i>Trematomus newnesi</i>		F	46	4M + 2SM + 40A	52	52	2		X ₁ X ₁ X ₂ X ₂ , ACN=48	Ross Sea	M-126
<i>Trematomus newnesi</i>		M	45	5M + 2SM + 38A	52	52	2		X ₁ X ₂ Y, ACN=48	Ross Sea	M-126
<i>Trematomus newnesi</i>			69					3X		Ross Sea	M-89
<i>Trematomus nicolai</i>		F	58	2M + 6SM + 18ST + 32A	66	84	2		X ₁ X ₁ X ₂ X ₂ , ACN=58	Ross Sea	M-126
<i>Trematomus nicolai</i>		M	57	3M + 6SM + 18ST + 30A	66	84	2		X ₁ X ₂ Y, ACN=58	Ross Sea	M-126
Pseudaphritidae											
<i>Pseudaphritis urvillii</i>	Bovichtidae	F	48	4M + 44A	52	52	6		ACN=48	Tasmania	P-58
Suborder Trachinoidei											
Ammodytidae											
<i>Gymnammodytes cicerelus</i>	<i>cicerellus</i>	F, M	46	22 M/SM + 24 ST/A	68				ACN=46	Italy (Palermo)	V-57
Pinguipedidae (= Parapercidae)											
<i>Parapercis kamoharai</i>			48	48A	48	48			ACN=48	Japan (Wakayama)	A-80
<i>Parapercis pulchella</i>			42	8M + 34A	50	50	2		ACN=44	Japan (Shizuoka, Yamaguchi)	M-109
<i>Parapercis sexfasciata</i>			26	22M + 2ST + 2A	48	50	2		ACN=48	Japan (Shizuoka, Yamaguchi)	M-109
<i>Parapercis sexfasciata</i>		F	26	22M + 2ST + 2A	48	50			XX, ACN=48	Japan (Hyogo)	O-40
<i>Parapercis sexfasciata</i>		M	26	22M + 2ST + 2A	48	50			XY, ACN=48	Japan (Hyogo)	O-40
<i>Parapercis sexfasciata</i>		F, M	26	22M + 2ST + 2A	48	50		1.9* FCM		Korea (Busan)	P-70
Trachinidae											
<i>Echiichthys vipera</i>		F, M	48	48A	48	48	2		ACN=48	Italy (Ancona)	C-22
<i>Trachinus draco</i>			48	48A	48	48				USSR	V-72
<i>Trachinus draco</i>		F, M	48	48A	48	48			ACN=48	Italy (Palermo)	V-57

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

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Trichodontidae											
<i>Arctoscopus</i>	<i>japonicus</i>		F, M	48	2SM + 46A	50	50	2	1.5 FCM	XY/XX?	Japan
Uranoscopidae											
<i>Uranoscopus</i>	<i>scaber</i>			26	20M + 2SM + 4 ST/A	48				Croatia	S-86
<i>Uranoscopus</i>	<i>scaber</i>			30	18M + 12 ST/A	48		2		Italy (Ancona)	C-22
<i>Uranoscopus</i>	<i>scaber</i>			28	20M + 8 ST/A	48				Italy (Ancona)	C-22
<i>Uranoscopus</i>	<i>scaber</i>			27	21M + 6 ST/A	48				Italy (Ancona)	C-22
<i>Uranoscopus</i>	<i>scaber</i>			32	18 M/SM + 14A	50	50			USSR	V-72
<i>Uranoscopus</i>	<i>scaber</i>	A-type		30	22M + 4SM + 4A	56	56	2		Italy (Palermo)	V-104
<i>Uranoscopus</i>	<i>scaber</i>			31	23M + 4SM + 4A	58	58			Italy (Palermo)	V-104
<i>Uranoscopus</i>	<i>scaber</i>	B-type		29	23M + 2SM + 4A	54	54			Italy (Palermo)	V-104
<i>Uranoscopus</i>	<i>scaber</i>	C-type		28	24M + 4A	52	52	2		Italy (Palermo)	V-104
Suborder Blennioidei											
Blenniidae											
<i>Aidablennius</i>	<i>sphynx</i>		F, M	48	48 ST/A	48		2		ACN=48	Italy (Ancona)
<i>Aidablennius</i>	<i>sphynx</i>	<i>Blennius sphinx</i>		48	48A	48	48			ACN=48	Italy
<i>Aidablennius</i>	<i>sphynx</i>	<i>Blennius sphinx</i>	F, M	48	4M + 4SM + 40 ST/A	56		1.2 FD		ACN=48	Spain (Malaga)
<i>Atrosalarias</i>	<i>fuscos holomelas</i>	<i>fucus</i>		48	48A	48	48			ACN=48	Japan (Ishigakijima)
<i>Blennius</i>	<i>ocellaris</i>		F, M	48	2SM + 2ST + 44A	50	52	1.7 FD		ACN=48	Spain (Malaga)
<i>Blennius</i>	<i>ocellaris</i>			48	2M + 2ST + 44A	50	52			ACN=48	Italy (Palermo)
<i>Coryphoblennius</i>	<i>galerita</i>	<i>Blennius</i>	F, M	48	2M + 2SM + 44 ST/A	52		2			Spain (Mediterranean)
<i>Istiblennius</i>	<i>enosimae</i>			48	2SM + 46A	50	50			ACN=48	Japan (Chiba, Kanagawa)
<i>Istiblennius</i>	<i>lineatus</i>		F	48	48 ST/A	48				ACN=48	Japan (Ishigakijima)
<i>Lipophrys</i>	<i>adriaticus</i>	<i>Lipophrys</i>	F, M	48	48 ST/A	48		2		ACN=48	Italy (Ancona)
<i>Lipophrys</i>	<i>canevae</i>	<i>Blennius</i>		48*	8ST + 40A	48	56			ACN=48	Italy
<i>Lipophrys</i>	<i>pholis</i>	<i>Blennius</i>	F, M	46	6M + 2SM + 8ST + 30A	54	62	2	1.6 FD	ACN=48	Spain (Malaga)
<i>Omobranchus</i>	<i>elegans</i>		F, M	42	10M + 2SM + 6ST + 24A	54	60			ACN=48	Japan (Kanagawa)
<i>Omobranchus</i>	<i>punctatus</i>			44	4M + 40A	48	48			ACN=48	Japan (Wakayama)
<i>Parablennius</i>	<i>gattorugine</i>		F	48	48 ST/A	48		2		ACN=48	Italy (Ancona)
<i>Parablennius</i>	<i>gattorugine</i>	<i>Blennius</i>	F, M	48	2M + 2SM + 44A	52	52	2	1.2 FD	ACN=48	Spain (Malaga)
<i>Parablennius</i>	<i>gattorugine</i>	<i>Blennius</i>	F, M	48	2M + 2SM + 44A	52	52			ACN=48	Italy (Palermo)
<i>Parablennius</i>	<i>incognitus</i>	<i>Blennius</i>		48	48A	48	48			ACN=48	Italy

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

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<i>Parablennius incognitus</i>	<i>Blennius ponticus incognitus</i>	F, M	48	4ST + 44A	48	52	2	1.6 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
<i>Parablennius pilicornis</i>		F, M	48	8ST + 40A	48	56				Italy (Palermo)	C-28
<i>Parablennius pilicornis</i>			48	48A	48	48				Brazil (RJ)	B-86
<i>Parablennius ponticus</i>		F, M	48	48 ST/A	48		2		ACN=48	Italy (Ancona)	C-19
<i>Parablennius sanguinolentus</i>	<i>Blennius</i>	F, M	48	8ST + 40A	48	56			ACN=48	Italy (Tyrrhenian Sea)	C-31, C-33
<i>Parablennius sanguinolentus</i>	<i>Blennius</i>	F, M	48	6ST + 42A	48	54	2	1.8 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
<i>Parablennius sanguinolentus</i>	<i>Blennius</i>	F, M	48	22ST + 26A	48	70			ACN=48	Black Sea	A-95
<i>Parablennius sanguinolentus</i>	<i>Blennius</i>	M	47	1M + 22ST + 24A	48	70			ACN=48	Black Sea	A-95
<i>Parablennius tentacularis</i>	<i>Blennius</i>	F	48	48 ST/A	48				XX, ACN=48	Italy (Palermo)	C-24
<i>Parablennius tentacularis</i>	<i>Blennius</i>	M	48	1ST + 47 ST/A	48				XY, ACN=48	Italy (Palermo)	C-24
<i>Parablennius tentacularis</i>	<i>Blennius</i>	M	47	1SM + 46 ST/A	48				neo Y, ACN=48	Italy (Palermo)	C-24
<i>Parablennius tentacularis</i>		F	48	48 ST/A	48		2		XX, ACN=48	Italy (Ancona)	C-19
<i>Parablennius tentacularis</i>		M	48	1ST + 47 ST/A	48		2		XY, ACN=48	Italy (Ancona)	C-19
<i>Parablennius tentacularis</i>		M	47	1SM + 46 ST/A	48		2		neo Y, ACN=48	Italy (Ancona)	C-19
<i>Parablennius tentacularis</i>	<i>Blennius</i>	F	48	48A	48	48			ACN=48	Black Sea	A-95
<i>Parablennius tentacularis</i>	<i>Blennius</i>	M	47	1 large A + 46 ST/A	47				ACN=48	Black Sea	A-95
<i>Parablennius tentacularis</i>	<i>Blennius</i>	M	47	1 large SM + 46 ST/A	48				ACN=48	Black Sea	A-95
<i>Parablennius tentacularis</i>	<i>Blennius</i>		48	48 ST/A	48				ACN=48	USSR	V-72
<i>Parablennius yatabei</i>	<i>Blennius</i>	F, M	48	6SM + 12ST + 30A	54	66			ACN=48	Japan (Kanagawa)	A-59
<i>Paralipophrys trigloides</i>	<i>Blennius</i>		48	2M + 6SM + 18ST + 22A	56	74			ACN=48	Italy	C-33
<i>Paralipophrys trigloides</i>	<i>Blennius</i>	F, M	46	4M + 4SM + 10ST + 28A	54	64	2	2.4 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
<i>Paralipophrys trigloides</i>	<i>Blennius</i>	F, M	48	2M + 6SM + 40 ST/A	56				ACN=48	Italy (Palermo)	V-51
<i>Petroscirtes breviceps</i>	<i>Dasson trossulus</i>	F	40	8M + 32 ST/A	48			1.6* FCM	ACN=44	Japan (Chiba)	A-59, O-48
<i>Salaria fluviatilis</i>	<i>Blennius</i>	M	48							Italy (Roma)	C-31, C-33
<i>Salaria pavo</i>	<i>Blennius</i>	M	48	8ST + 40A	48	56			ACN=48	Italy (Tyrrhenian Sea)	C-31, C-33
<i>Salaria pavo</i>	<i>Blennius</i>	F, M	48	4SM + 12ST + 32A	52	64	2	2.1 FD	ACN=48	Spain (Malaga)	C-9, C-10, G-18
<i>Salarias fasciatus</i>			48	48A	48	48		1.7 FIA	ACN=48	Japan (Okinawa)	A-55, H-40
<i>Salarias luctuosus</i>			48	48 ST/A	48				ACN=48	Japan (Okinawa)	A-59
<i>Scartella cristata</i>	<i>Blennius cristatus</i>	F, M	48	2ST + 46A	48	50			ACN=48	Italy (Palermo)	V-51
<i>Scartella cristata</i>		F, M	48	2SM + 46 ST/A	50		2			Brazil (RJ)	B-65
Clinidae											
<i>Clinitrichus argentatus</i>	<i>Clinethrachus</i>	F, M	48	48 ST/A	48				ACN=48	Italy (Palermo)	V-51

Table 6.38 Order PERCIFORMES. Part 3 Notothenioidei, Blennioidei, and Callionymoidei (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-	I Genome size NORs (pg/cell)	J Comments	K Locality	L Reference	
Labrisomidae												
<i>Labrisomus</i>	<i>nuchipinnis</i>			48				50		Brazil (RN, RJ)	G-12	
Suborder Gobiesocoidei												
Gobiesocidae												
<i>Conidens</i>	<i>laticephalus</i>			42	12M + 10SM + 20 ST/A	64				Japan (Chiba)	A-68	
<i>Diademichthys</i>	<i>lineatus</i>			47	3M + 11SM + 33 ST/A	61			sex chrom.?, ACN=48	Japan (Okinawa)	A-68	
<i>Lepadichthys</i>	<i>frenatus</i>			48	8 M/SM + 40 ST/A	56			ACN=48	Japan (Yakushima)	A-68	
<i>Lepadogaster</i>	<i>candolii</i>	<i>candollei</i>	F, M	46	12M + 18SM + 16ST	76	92	2	XX/XY, ACN=46	Spain (Malaga)	T-36	
<i>Lepadogaster</i>	<i>lepadogaster</i>		M	46	13M + 17SM + 16 ST/A	76		2	ACN=46	Black Sea	A-89	
Suborder Callionymoidei												
Callionymidae												
<i>Eleutherochir</i>	<i>mirabilis</i>	<i>Draculo</i>		36	36A	36	36		ACN=36	Japan (Hokkaido)	S-16	
<i>Repmucenus</i>	<i>beniteguri</i>	<i>Callionymus</i>	F	38	38ST	38	76		X ₁ X ₁ X ₂ , ACN=38	Japan (Yamaguchi, Shizuoka)	M-105	
<i>Repmucenus</i>	<i>beniteguri</i>	<i>Callionymus</i>	M	37	1M + 36ST	38	74	2	X ₁ X ₂ Y, ACN=38	Japan (Yamaguchi, Shizuoka)	M-105	
<i>Repmucenus</i>	<i>huguenini</i>	<i>Callionymus doryssus</i>	M	32	2M + 30A	34	34	2	ACN=34	Japan (Yamaguchi, Shizuoka)	M-110	
<i>Repmucenus</i>	<i>ornatipinnis</i>	<i>Callionymus</i>	F	38	38ST	38	76		X ₁ X ₁ X ₂ , ACN=38	Japan (Yamaguchi)	M-105	
<i>Repmucenus</i>	<i>ornatipinnis</i>	<i>Callionymus</i>	M	37	1M + 36ST	38	74	2	X ₁ X ₂ Y, ACN=38	Japan (Yamaguchi)	M-105	
<i>Repmucenus</i>	<i>richardsonii</i>	<i>Callionymus punctatus</i>	F, M	38	38A	38	38	2	ACN=38	Japan (Yamaguchi, Shizuoka)	M-110	
<i>Repmucenus</i>	<i>richardsonii</i>	<i>Callionymus punctatus</i>	M	38	36 SM/ST + 2A	74		1.6* FCM	ACN=38	Japan (Hyogo)	O-46, O-48	

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei

A	B	C	D	E	F	G	H	I	J	K	L		
Current scientific name of taxon Suborder/family/subfamily/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference		
Suborder Gobioidei													
Odontobutidae													
<i>Micropercops</i>	<i>swinhonis</i>	<i>Hypseleotris</i>		44 44A	44	44				China (Wuhan)	D-18		
<i>Odontobutis</i>	<i>obscura</i>	F, M 44 44 ST/A		44			(2.4* FCM)	ACN=44	Japan (Oita, Kagoshima)	A-60, O-48			
<i>Odontobutis</i>	<i>obscura</i>	44 44A		44	44			ACN=44	Japan (Yamaguchi)	N-31			
<i>Odontobutis</i>	<i>obscura</i>	44 44A		44	44				Korea	L-15			
<i>Odontobutis</i>	<i>obscura</i>	44 44A		44	44				China (Hubei)	D-18			
<i>Odontobutis</i>	<i>obscura</i>	F, M 44 4SM + 40A		48	48		(2.8* FD)	ACN=44	China (Wuhan)	G-67, Y-15, C-83			
<i>Odontobutis</i>	<i>platycephalus</i>	F, M 44 44 ST/A		44				ACN=44	Korea (Kwanchon)	L-79, L-14			
<i>Percottus</i>	<i>glehni</i>	F, M 44 44 ST/A		44			2.2 FCM	ACN=44	Russia (Moscow)	K-104, V-86			
<i>Percottus</i>	<i>glehni</i>	44 1SM + 43 ST/A		45				ACN=44	Russia (Moscow)	K-104			
Eleotridae													
Butinae													
<i>Bostrychus</i>	<i>sinensis</i>	<i>Bostrichthys</i>		48 4 M/SM + 44 ST/A	52			ACN=48	Japan (Okinawa)	A-60			
<i>Bostrychus</i>	<i>sinensis</i>	<i>Bostrichthys</i>		48 4SM + 2ST + 42A	52	52		ACN=48	China (Zhejiang)	F-8			
<i>Ophiocara</i>	<i>porocephala</i>			48 48 ST/A	48			ACN=48	Thailand	A-73			
<i>Oxyeleotris</i>	<i>lineolatus</i>			46 2SM + 8ST + 36A	48	56			(Australia)	C-90			
<i>Oxyeleotris</i>	<i>marmorata</i>			46 2M + 2SM + 42 ST/A	50		(2.5 FIA)	ACN=46	Thailand (Khon Kaen)	A-73, H-40			
<i>Oxyeleotris</i>	<i>marmorata</i>			46 2M + 2SM + 42A	50	50			Thailand	D-19			
<i>Oxyeleotris</i>	<i>marmorata</i>			46 2M + 2ST + 42A	48	50			China (Guangdong)	Z-30			
<i>Oxyeleotris</i>	<i>urophthalmoides</i>			46 6M + 6SM + 8ST + 26A	58	66			Thailand	D-28			
Eleotrinae													
<i>Dormitator</i>	<i>latifrons</i>			46 12M + 22SM + 10ST + 2A	80	90		ACN=46	Mexico (Pacific coast)	U-45, U-46			
<i>Dormitator</i>	<i>maculatus</i>	F, M 46 12M + 22SM + 10ST + 2A		80	90			ACN=46	Mexico (Veracruz)	U-46, M-18			
<i>Dormitator</i>	<i>maculatus</i>	F, M 46 40 M/SM + 6 ST/A		86		2		ACN=46	Brazil (RN)	M-80			
<i>Dormitator</i>	<i>maculatus</i>	F 46 14M + 28SM + 2ST + 2A		88	90	2		XX, ACN=46	Brazil (SP)	O-76			
<i>Dormitator</i>	<i>maculatus</i>	M 46 13M + 28SM + 3ST + 2A		87	90	2		XY, ACN=46	Brazil (SP)	O-76			
<i>Eleotris</i>	<i>acanthopoma</i>	M 46 46 ST/A		46				ACN=46	Japan (Okinawa)	A-57			
<i>Eleotris</i>	<i>oxycephala</i>	F, M 46 46A		46	46			ACN=46	China (Guangdong)	G-67, Y-15			
<i>Eleotris</i>	<i>picta</i>	52 52A		52	52				Mexico	U-82			
<i>Eleotris</i>	<i>pisonis</i>	46 2M + 44A		48					Mexico	M-80			
<i>Eleotris</i>	<i>pisonis</i>	F, M 46 46A		46	46	2		ACN=46	Brazil (RN)	M-80			
<i>Gobiomorus</i>	<i>dormitor</i>	F, M 48 2M + 4SM + 42A		54	54			ACN=48	Mexico (Veracruz)	M-18			
<i>Hypseleotris</i>	<i>cyprinoides</i>	48 48A		48	48			ACN=48	Japan	S-122			
<i>Mogurnda</i>	<i>mogurnda</i>	F, M 46 6SM + 40 ST/A		52				ACN=46	Australia	A-60			

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Ptereleotridae											
<i>Parioglossus</i>	<i>raoi</i>		F, M	46 46A		46	46		ACN=46	Fiji	W-22
Gobiidae											
Gobiinae											
<i>Acentrogobius</i>	<i>pflaumi</i>			50 48 M/SM/ST + 2A		98			ACN=50	Japan (Shimonoseki)	N-31
<i>Acentrogobius</i>	<i>pflaumi</i>		F, M	50 36 M/SM + 14 ST/A	86				ACN=50	Korea (Kunsan)	L-14
<i>Amblygobius</i>	<i>phalaena</i>	<i>albimaculatus</i>		44 2M + 42 ST/A	46		2.0 FIA		ACN=44	Japan (Okinawa)	A-60, H-40
<i>Aphia</i>	<i>minuta</i>		F, M	44 44A	44	44			ACN=44	Italy (Ortona)	C-18
<i>Aphia</i>	<i>minuta</i>		M	43 1ST + 42A	43	44			ACN=44	Italy (Ortona)	C-18
<i>Aphia</i>	<i>minuta</i>		F, M	42 1M + 1ST + 40A	43	44			ACN=44	Italy (Ortona)	C-18
<i>Aphia</i>	<i>minuta</i>		M	42 2M + 40A	44	44			ACN=44	Italy (Ortona)	C-18
<i>Aphia</i>	<i>minuta</i>		F, M	41 2M + 1ST + 38A	43	44			ACN=44	Italy (Ortona)	C-18
<i>Bathygobius</i>	<i>fucus</i>			48 48A	48	48			ACN=48	Japan (Chiba, Kanagawa)	A-52, A-62
<i>Bathygobius</i>	<i>fucus?</i>			44 44A	44	44				Thailand	D-19
<i>Bathygobius</i>	<i>soporator</i>			46		48				Brazil (RN)	G-12
<i>Benthophilus</i>	<i>leobergius</i>	<i>stellatus leobergius</i>		44 2SM + 2ST + 40A	46	48				Russia (Volga R.)	G-63
<i>Benthophilus</i>	<i>stellatus</i>			44 2ST + 42A	44	46			ACN=46	Russia (Volga R.)	G-63
<i>Benthophilus</i>	<i>leobergius</i>			44 1SM + 2ST + 41A	45	47				Russia (Volga R.)	G-63
<i>Caspiosoma</i>	<i>caspium</i>			48 4SM + 30ST + 14A	52	82				Russia (Don R.)	G-63
<i>Favonigobius</i>	<i>gymnauchen</i>		F, M	48 48 M/SM	96	96			ACN=50	Korea (Kunsan)	L-14
<i>Glossogobius</i>	<i>giuris</i>		F, M	46 46A	46	46			ACN=46	India (Orissa)	R-57, M-24
<i>Glossogobius</i>	<i>olivaceus</i>	<i>fuscipunctatus</i>		46 16SM + 6ST + 24A	62	68			ACN=46	China (Zhejiang)	F-8
<i>Gobiodon</i>	<i>citrinus</i>		F	44 2M + 42 ST/A	46		2.1 FIA		ACN=46	Japan (Okinawa)	A-57, H-41
<i>Gobiodon</i>	<i>citrinus</i>		M	43 1M + 42 ST/A	44				ACN=44	Japan (Okinawa)	A-57
<i>Gobiodon</i>	<i>quinquestrigatus</i>			44 44 ST/A	44		2.2 FIA		ACN=44	Japan (Okinawa)	A-73, H-40
<i>Gobiodon</i>	<i>rivulatus rivulatus</i>			44 44 ST/A	44				ACN=44	Australia (Heron Is.)	A-73
<i>Gobiopsis</i>	<i>macrostoma</i>	<i>Gobiophis</i>		46 10M + 4SM + 32A	60	60				India (WB)	K-46
<i>Gobiosoma</i>	<i>macrodon</i>		F, M	38 38A	38	38				Venezuela	A-13
<i>Gobiosoma</i>	<i>zebrellus</i>	<i>zebrella</i>	F, M	38 38A	38	38				Venezuela	A-13
<i>Gobiosoma</i>	<i>zebrellus</i>		F	37 1M + 36A	38	38				Venezuela	A-13
<i>Gobius</i>	<i>bucchichi</i>		M	40 4M + 2SM + 34A	46	46	0.9 FD			Spain (Málaga)	T-32, C-9
<i>Gobius</i>	<i>bucchichi</i>		F, M	44 2SM + 42A	46	46			ACN=44	Spain (Málaga)	T-31
<i>Gobius</i>	<i>cobitis</i>		F, M	46 46A	46	46	1.3 FD		ACN=46	Spain (Málaga)	T-32, C-9
<i>Gobius</i>	<i>cobitis</i>			46 46A	46	46			ACN=46	Italy (Tyrrhenian Sea)	C-31

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Gobius cobitis</i>			46	46A	46	46			ACN=46	Black Sea	G-63
<i>Gobius couchi</i>		M	46	2SM + 44A	48	48				Europe	M-116
<i>Gobius cruentatus</i>		F, M	46	2ST + 44A	46	48			ACN=46	Spain (Málaga)	T-31
<i>Gobius fallax</i>		M	38	8 M/SM + 30A	46	46			ACN=46	Spain (Málaga)	T-37
<i>Gobius fallax</i>		M	39	7 M/SM + 32A	46	46			ACN=46	Spain (Málaga)	T-37
<i>Gobius fallax</i>		F, M	40	6 M/SM + 34A	46	46	1-4	0.9 FD	ACN=46	Spain (Málaga)	T-30, T-32, T-37
<i>Gobius fallax</i>			40	7 M/SM + 33A	47	47			ACN=46	Spain (Málaga)	T-37
<i>Gobius fallax</i>		F, M	41	5 M/SM + 36A	46	46			ACN=46	Spain (Málaga)	T-37
<i>Gobius fallax</i>		F, M	42	4 M/SM + 38A	46	46			ACN=46	Spain (Málaga)	T-37
<i>Gobius fallax</i>		M	43	3 M/SM + 40A	46	46			ACN=46	Spain (Málaga)	T-37
<i>Gobius niger</i>			46							UK	M-116
<i>Gobius niger</i>		M	50	1M + 12SM + 37A	63	63		2.0 FD	XY, ACN=46	Spain (Málaga)	T-32, C-9
<i>Gobius niger</i>		F	48	4M + 4SM + 10ST + 30A	56	66	2		ACN=50	Norway	K-131
<i>Gobius niger</i>		F	50	4M + 4SM + 10ST + 32A	58	68			ACN=52	Norway	K-131
<i>Gobius niger</i>		F	51	3M + 4SM + 10ST + 34A	58	68				Norway	K-131
<i>Gobius niger jozo</i>			48	2M + 6SM + 8ST + 32A	56	64				Italy (Rome)	C-31
<i>Gobius niger jozo</i>		M	50*							Italy (Venice)	C-76
<i>Gobius niger jozo</i>	A-type	F, M	52	8 M/SM + 10ST + 28A + 6MC	60	70			ACN=46	Italy (Palermo)	V-59
<i>Gobius niger jozo</i>	B-type	F, M	51	9 M/SM + 10ST + 26A + 6MC	60	70			ACN=46	Italy (Palermo)	V-59
<i>Gobius niger jozo</i>	C-type	F, M	50	10 M/SM + 10ST + 30A	60	70			ACN=46	Italy (Palermo)	V-59
<i>Gobius niger jozo</i>	D-type	M	49	11 M/SM + 10ST + 28A	60	70			ACN=46	Italy (Palermo)	V-59
<i>Gobius niger jozo</i>			52	4SM + 48 ST/A	56					Black Sea	V-22
<i>Gobius niger jozo</i>			52	1M + 4SM + 47 ST/A	57					Black Sea	V-22
<i>Gobius ophiocephalus</i>			45	1M + 44A	46	46			ACN=46	Black Sea	V-72
<i>Gobius ophiocephalus</i>			46	46A	46	46			ACN=46	Black Sea	V-72
<i>Gobius paganellus</i>			45	1M + 44 ST/A	46		4			Spain (Mediterranean)	G-76
<i>Gobius paganellus</i>			45	3M + 42 ST/A	48		4			Spain (Mediterranean)	G-76
<i>Gobius paganellus</i>		F, M	45	2 M/SM + 43 ST/A	47		4		ACN=46	Mediterranean	G-76, V-49
<i>Gobius paganellus</i>		M	46	46 ST/A	46				ACN=46	Spain (Málaga)	T-33
<i>Gobius paganellus</i>		F	46	1 M/SM + 45 ST/A	47				ACN=46	Italy (Palermo)	V-49
<i>Gobius paganellus</i>		F, M	46	2 M/SM + 44 ST/A	48				ACN=48	Mediterranean	V-49, T-33
<i>Gobius paganellus</i>		F	46	2M + 44A	48	48		0.8 FD	XX, ACN=46	Spain (Málaga)	T-32, A-44, C-9
<i>Gobius paganellus</i>		M	46	1M + 45A	47	47			XY, ACN=46	Spain (Málaga)	T-32
<i>Gobius paganellus</i>		F, M	47	1 M/SM + 46 ST/A	48				ACN=47	Italy (Palermo)	V-49
<i>Gobius paganellus</i>		F, M	47	1 M/SM + 46 ST/A	48				ACN=48	Mediterranean	V-49, T-33
<i>Gobius paganellus</i>		M	47	47 ST/A	47				ACN=47	Spain (Málaga)	T-33

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Gobius</i> <i>paganellus</i>			F	48 48A	48	48			ACN=48	Italy (Palermo)	V-49
<i>Gobius</i> <i>paganellus</i>			F, M	48 48 ST/A	48				ACN=48	Mediterranean	V-49, T-33
<i>Gobius</i> <i>paganellus</i>			F	48 1SM + 47A	49	49			ACN=48	Italy (Palermo)	V-49
<i>Gobius</i> <i>paganellus</i>			M	48 1M/SM + 47A	49	49				Spain (Málaga)	T-33
<i>Gobiusculus</i> <i>flavescens</i>			F, M	46 6 M/SM + 40A	52	52	2		ACN=46	Norway	K-131
<i>Mesogobius</i> <i>batrachocephalus</i>				30 16 M/SM + 14A	46	46			ACN=46	Black Sea	G-64
<i>Mesogobius</i> <i>batrachocephalus</i>	<i>Gobius</i>			30 16M + 14A	46	46				Black Sea	I-18
<i>Neogobius</i> <i>cephalargoides</i>				46 46A	46	46				Black Sea	E-9
<i>Neogobius</i> <i>constructor</i>	<i>platygobius construtor</i>			42 4 M/SM + 38A	46	46			ACN=46	Georgia (Tbilisi Reservoir)	V-18, V-23, V-103
<i>Neogobius</i> <i>constructor</i>	<i>platygobius construtor</i>			44 2M + 42A	46	46			ACN=46	Black Sea basin	V-18, V-23, V-103
<i>Neogobius</i> <i>constructor</i>	<i>platygobius construtor</i>			44 2M + 2SM + 40A	48	48			ACN=46	Black Sea basin	V-18, V-23, V-103
<i>Neogobius</i> <i>cyrinus</i>	<i>platygobius construtor</i>			37 9 M/SM + 2ST + 26A	46	48			ACN=46	Georgia (Kura R.)	V-18, V-23, V-103
<i>Neogobius</i> <i>cyrinus</i>	<i>platygobius construtor</i>			38 8 M/SM + 30A	46	46			ACN=46	Georgia (Tbilisi Reservoir)	V-18, V-23, V-103
<i>Neogobius</i> <i>cyrinus</i>	<i>platygobius construtor</i>			40 6 M/SM + 34A	46	46			ACN=46	Georgia (Kura R.)	V-18, V-23, V-103
<i>Neogobius</i> <i>cyrinus</i>	<i>platygobius construtor</i>			41 5 M/SM + 1ST + 35A	46	47			ACN=46	Georgia (Kura R.)	V-23, V-103
<i>Neogobius</i> <i>eurycephalus</i>			F, M	32 12M + 2SM + 18A	46	46	2		ACN=46	Danube Delta system	E-9
<i>Neogobius</i> <i>eurycephalus</i>			F, M	31 13M + 2SM + 16A	46	46	2		ACN=46	Danube Delta system	E-9
<i>Neogobius</i> <i>eurycephalus</i>			M	30 14M + 2SM + 14A	46	46	2		ACN=46	Danube Delta system	E-9
<i>Neogobius</i> <i>fluviatilis fluviatilis</i>				46 46A	46	46			ACN=46	Russia (Don R.)	G-63
<i>Neogobius</i> <i>fluviatilis pallasi</i>				46 46A	46	46			ACN=46	Russia (Don R.)	G-63
<i>Neogobius</i> <i>gorlap</i>			F, M	46 46 ST/A	46					Caspian basin	V-21
<i>Neogobius</i> <i>gymnotrachelus</i>				46 46A	46	46			ACN=46	Black Sea basin	G-64
<i>Neogobius</i> <i>gymnotrachelus</i>				46 2 SM/ST + 44A		48			ACN=46	Black Sea basin	G-64
<i>Neogobius</i> <i>gymnotrachelus</i>				46 1M + 1SM + 44A	48	48			ACN=46	Black Sea basin	G-64
<i>Neogobius</i> <i>kessleri</i>			F	30 14M + 2SM + 14 ST/A	46					Black Sea basin	V-21
<i>Neogobius</i> <i>kessleri</i>			M	29 15M + 2SM + 12 ST/A	46					Black Sea basin	V-21
<i>Neogobius</i> <i>kessleri kessleri</i>				30 14M + 2SM + 14A	46	46			ACN=46	Black Sea basin	G-64
<i>Neogobius</i> <i>kessleri kessleri</i>				29 17 M/SM + 12A	46	46			ACN=45	Black Sea basin	G-64
<i>Neogobius</i> <i>melanostomus</i>	<i>Gobius</i>			46 46A	46	46	(2.5 FIA)			Black Sea basin	I-18, H-41
<i>Neogobius</i> <i>melanostomus affinis</i>				46 46A	46	46				Black Sea basin	V-72
<i>Neogobius</i> <i>melanostomus</i>	<i>cephalarges</i>			46 46A	46	46			ACN=46	Azov Sea basin	V-23
<i>Neogobius</i> <i>rhodionis</i>	<i>platyrostris</i>			46 46A	46	46			ACN=46	Black Sea basin	V-23, V-103
<i>Padogobius</i> <i>bonelli</i>	<i>martensi</i>		F	46 3M + 2SM + 3ST + 38A	51	54			ACN=47	Italy (Liguria)	C-31
<i>Pomatoschistus</i> <i>lozanoi</i>			F, M	37 3M + 12SM + 10ST + 12A	52	62				Dutch North Sea	W-21
<i>Pomatoschistus</i> <i>microps</i>			F, M	46 30SM + 16ST	76	92			ACN=46	UK (Devon)	W-23

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Pomatoschistus microps</i>		F, M	46	4M + 16SM + 20ST + 6A	66	86			ACN=46	Germany (Baltic Sea)	K-74
<i>Pomatoschistus minutus</i>		F, M	46	4M + 16SM + 16ST + 10A	66	82			ACN=46	Germany (Baltic Sea)	K-74
<i>Pomatoschistus minutus</i>		F, M	46	18SM + 18ST + 10A	64	82	2		ACN=46	Norway	K-131
<i>Pomatoschistus minutus</i>		F, M	46	6SM + 24ST + 16A	52	76			ACN=46	UK (Plymouth)	W-21
<i>Pomatoschistus norvegicus</i>		F, M	32	10M + 10SM + 8ST + 4A	52	60				UK (Plymouth)	W-21
<i>Pomatoschistus pictus</i>		F, M	46	22 M/SM + 12ST + 12A	68	80	2		ACN=46	Norway	K-131
<i>Proterorhinus marmoratus</i>		F, M	46	46A	46	46			XX/XY	Slovakia	R-8
<i>Proterorhinus marmoratus</i>			46	46A	46	46				Russia (Don R.)	G-63, V-72
<i>Valenciennea muralis</i>	<i>Eleotris</i>		46	46A	46	46			ACN=46	India (WB)	K-139
<i>Valenciennea strigata</i>	<i>Eleotriodes strigatus</i>		44	2M + 42 ST/A	46				ACN=44	Japan (Okinawa)	A-57
<i>Yongeichthys criniger</i>	<i>Ctenogobius</i>	F, M	50	34 M/SM + 6ST + 10A	84	90			ACN=50	Japan (Okinawa)	A-57
<i>Zosterisessor ophiocephalus</i>		F, M	46	2M + 44 ST/A	48		2		ACN=46	Italy (Ancona)	C-15
<i>Zosterisessor ophiocephalus</i>	<i>Gobius</i>		46	46A	46	46				Black Sea	V-72
Gobionellinae											
<i>Acanthogobius elongata?</i>	sp.	F, M	42	8 M/SM + 34 ST/A	50				ACN=46	Korea (Kunsan)	L-14
<i>Acanthogobius flavimanus</i>		M	44	36ST + 8A	44	80			ACN=44	Japan (Kanagawa)	A-52, A-62
<i>Acanthogobius flavimanus</i>			44	10ST + 34A	44	54			ACN=44	Japan (Yamaguchi)	N-31
<i>Acanthogobius flavimanus</i>		F, M	44	44A	44	44				Korea (Dadaepo)	L-14
<i>Acanthogobius flavimanus</i>			44	44A	44	44			ACN=44	China (Shandong)	W-7
<i>Acanthogobius hasta</i>			F, M	44	6 M/SM + 38 ST/A	50			ACN=44	Korea (Kunsan)	L-14
<i>Acanthogobius hasta</i>			F, M	44	2M + 42 ST/A	46			ACN=44	Korea (Gyehwato)	L-79
<i>Acanthogobius hasta</i>	<i>Synechogobius</i>		44	2M + 42 ST/A	46				ACN=44	Japan (Ariake Sea)	A-62
<i>Acanthogobius hasta</i>	<i>Synechogobius</i>		44	2M + 42 ST/A	46				ACN=44	China	Y-21
<i>Acanthogobius lactipes</i>		F, M	40	40A	40	40			ACN=46	Korea (Pi-in)	L-14
<i>Acanthogobius lactipes</i>	<i>Aboma</i>	F, M	40	40 ST/A	40		2		ACN=44	Japan (Lake Kasumigaura)	A-52, A-57
<i>Awaous flavus</i>	<i>strigatus</i>		46						X ₁ X ₂ Y	(Brazil)	O-86
<i>Awaous grammepomus</i>		F, M	46	46A	46	46			ACN=46	India (WB)	K-42
<i>Awaous tajasica</i>			46	46A	46	46				Brazil	S-196
<i>Brachygobius nunus</i>			48							(S. Asia)	P-44
<i>Chaenogobius annularis</i>	<i>Chasmichthys dolichognathus</i>		44	44 ST/A	44				ACN=44	Japan (Kanagawa)	A-52, A-62
<i>Chaenogobius annularis</i>	<i>Chasmichthys dolichognathus</i>	F, M	44	44A	44	44			ACN=44	Korea (Kunsan)	L-79, L-14
<i>Chaenogobius gulosus</i>	<i>Chasmichthys</i>		44	44 ST/A	44				ACN=44	Japan (Chiba, Kanagawa)	A-62
<i>Chaenogobius gulosus</i>	<i>Chasmichthys</i>		44	16ST + 28A	44	60			ACN=44	Japan (Yamaguchi)	N-31
<i>Chaenogobius gulosus</i>	<i>Chasmichthys</i>	F, M	44	8 M/SM + 36 ST/A	52				ACN=44	Korea (Woolsan)	L-14
<i>Ctenogobius shufeldti</i>	<i>Gobionellus</i>	F	48	48A	48	48		X ₁ X ₂ X ₂ , ACN=48	USA (LA)	P-24	

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag-NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Ctenogobius shufeldti</i>	<i>Gobionellus</i>	M	47	1M + 46A	48	48			X ₁ X ₂ Y, ACN=48	USA (LA)	P-24
<i>Gillichthys mirabilis</i>		F, M	44	12ST + 32A	44	56			ACN=44	USA (CA)	C-53
<i>Gillichthys seta</i>		F	44	6M + 14ST + 24A	50	64			ACN=44	Gulf of California	C-53
<i>Gobionellus microdon</i>			56	4M + 6SM + 46 ST/A	66					Mexico	U-82
<i>Gymnogobius breunigii</i>	<i>Chaenogobius</i>		44	36 M/SM/ST + 8A		80			ACN=44	Japan (Yamaguchi)	N-31
<i>Gymnogobius breunigii</i>	<i>Chaenogobius</i>	F, M	42	22 M/SM + 20 ST/A	64				ACN=42	Korea (Samchuk)	L-14
<i>Gymnogobius heptacanthus</i>	<i>Chaenogobius</i>	M	44	44 ST/A	44					Korea (Dolsanto)	L-79
<i>Gymnogobius isaza</i>	<i>Chaenogobius</i>		44	12SM + 32ST	56	88			ACN=44	Japan (Lake Biwa)	A-62
<i>Gymnogobius castaneus</i>	<i>Rhodonichthys laevis</i>	F, M	42	14 M/SM + 28ST	56	84				Japan (Tokyo)	A-60
<i>Gymnogobius castaneus</i>	<i>Chaenogobius urotaenia</i>		42	14SM + 28ST	56	84			ACN=42	Japan (Hokkaido)	Y-5
<i>Gymnogobius mororanus</i>	<i>Chaenogobius</i>	F, M	42	12 M/SM + 30 ST/A	54				ACN=42	Korea (Kunsan)	L-14
<i>Gymnogobius urotaenia</i>	<i>Chaenogobius annularis</i>		44	36 M/SM + 8ST	80	88	(2.4* FCM)		ACN=44	Japan (Kanto district)	A-60, O-48
<i>Gymnogobius urotaenia</i>	<i>Chaenogobius annularis</i>		44	18SM + 26ST	62	88			ACN=44	Japan (Lake Biwa)	A-62
<i>Gymnogobius urotaenia</i>	<i>Chaenogobius annularis</i>		44	38 SM/ST + 6A		82			ACN=44	Japan (Yamaguchi)	N-31
<i>Gymnogobius urotaenia</i>	<i>Chaenogobius annularis</i>	F, M	44	40 M/SM + 4 ST/A	84				ACN=44	Korea (Kum R.)	L-14
<i>Gymnogobius urotaenia</i>	<i>Chaenogobius annularis</i>		44	20M + 22SM + 2A	86	86			ACN=44	China (Liaoning)	M-35
<i>Luciogobius grandis</i>			44						ACN=44	Japan (Izu Peninsula)	A-123
<i>Luciogobius guttatus</i>		F	44	12ST + 32A	44	56			ACN=44	Japan (Izu Peninsula)	M-102
<i>Luciogobius guttatus</i>			44							Japan (Kanagawa)	A-52
<i>Luciogobius guttatus</i>			44	14M + 14SM + 16A	72	72			ACN=44	China (Liaoning)	M-32
<i>Mugilogobius abei</i>		F, M	46	46 ST/A	46				ACN=46	Korea (Kunsan)	L-14
<i>Mugilogobius abei</i>			46		46					Japan (Okayama)	A-52
<i>Pterogobius elapoides</i>			44	14SM + 30ST	58	88			ACN=44	Japan (Chiba, Kanagawa)	A-52, A-62
<i>Pterogobius zonoleucus</i>			44	14SM + 30 ST/A	58				ACN=44	Japan (Kanagawa)	A-62
<i>Quietula guaymasiae</i>		F, M	42	6M + 4SM + 32A	52	52			ACN=42	Gulf of California	C-77
<i>Quietula y-cauda</i>		F	42	42A	42	42			ACN=42	Gulf of California	C-77
<i>Rhinogobius sp. CB</i>	<i>brunneus</i> , Shimayoshinobori		44	44 ST/A	44				ACN=44	Japan (Chiba)	A-62
<i>Rhinogobius sp. LD</i>	<i>brunneus</i> , Ooyoshinobori	F, M	44	44 ST/A	44				ACN=44	Japan (Itoh)	A-62
<i>Rhinogobius sp. DA</i>	<i>brunneus</i> , Kuroyoshinobori	F, M	44	44 ST/A	44				ACN=44	Japan (Tokyo)	A-62
<i>Rhinogobius brunneus</i>		F, M	44	44A	44	44			ACN=44	W. Japan	N-1, N-31
<i>Rhinogobius brunneus</i>		F, M	44	44A	44	44			ACN=44	Korea (Pongdong)	L-14
<i>Rhinogobius flumineus</i>	<i>Tukugobius</i>	F, M	44	44A	44	44			ACN=44	W. Japan	N-1, O-48
<i>Rhinogobius flumineus</i>			44	44 ST/A	44				ACN=44	Japan	A-52
<i>Rhinogobius giurinus</i>			44	44A	44	44			ACN=44	Japan (Yamaguchi)	N-31

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Rhinogobius giurinus</i>	<i>Ctenogobius</i>		44	44A	44	44			ACN=44	China (Guangdong)	G-67, Y-15
<i>Rhinogobius giurinus</i>			44	44 ST/A	44				ACN=44	China (Kunming)	L-38
<i>Rhinogobius giurinus?</i>	<i>Ctenogobius</i>		44	8M + 12SM + 24A	64		2-4		ACN=44	China (Anhui)	Z-38
<i>Rhinogobius shennongensis</i>	<i>Ctenogobius</i>		44	44A	44	44				China (Wuhan)	D-18
<i>Stigmatogobius sadanundio</i>	<i>Gobius</i>		48					2.8 BFA			H-13
<i>Stigmatogobius sadanundio</i>			46	2SM + 44A	48	48				India (WB)	K-46
<i>Tridentiger brevispinis</i>	<i>obscurus brevispinis</i>	F, M	44	10 M/SM + 34ST	54	88			ACN=44	Japan (Lake Kasumigaura)	A-52, A-60
<i>Tridentiger nudicervicus</i>			44		62					Korea	L-80
<i>Tridentiger obscurus</i>		F, M	44	12 M/SM + 32 ST/A	56				ACN=44	Korea (Samchuk)	L-14
<i>Tridentiger obscurus</i>	<i>obscurus obscurus</i>		44	10 M/SM + 34ST	54	88			ACN=44	Japan (Chiba)	A-60
<i>Tridentiger obscurus</i>	<i>obscurus obscurus</i>		44	26 M/SM/ST + 18A		70			ACN=44	Japan (Yamaguchi)	N-31
<i>Tridentiger trigonocephalus</i>		F, M	44	16 M/SM + 28 ST/A	60		2		ACN=44	Japan (Kanagawa)	A-52, A-60
<i>Tridentiger trigonocephalus</i>			44	28 M/SM/ST + 16A		72			ACN=44	Japan (Yamaguchi)	N-31
<i>Tridentiger trigonocephalus</i>		F, M	44	20 M/SM + 24 ST/A	64				ACN=44	Korea (Gyeysto)	L-79
<i>Tridentiger trigonocephalus</i>			44	20M + 12SM + 12A	76	76			ACN=44	China (Liaoning)	M-32
<i>Tridentiger trigonocephalus</i>			44	10M + 28SM + 2ST + 4A	82	84			ACN=44	China (Zhejiang)	F-8
<i>Tridentiger</i> sp.		F, M	44	18 M/SM + 26 ST/A	62				ACN=44	Korea (Kunsan)	L-14
Sicydiinae											
<i>Sicyopterus japonicus</i>			44	10 M + 10SM + 24 ST/A	64				ACN=46	Japan (Chiba)	A-73
Oxudercinae											
Periophthalmini											
<i>Periophthalmus schlosseri</i>			46	46A	46	46		1.9 FIA	ACN=46	Malaysia	M-52, H-40
<i>Periophthalmus chrysosipilos</i>				56						Malaysia	M-52
<i>Periophthalmus modestus</i>	<i>cantonensis</i>		46	18M + 12SM + 16 ST/A	76				ACN=46	Japan (Tokyo Bay)	A-52, A-62
<i>Periophthalmus modestus</i>			46	32 M/SM + 14 ST/A	78				ACN=46	Japan	M-52
<i>Periophthalmus modestus</i>	<i>cantonensis</i>		46	34 M/SM/ST + 12A		80			ACN=46	Japan (Ariake Sea)	N-31
<i>Periophthalmus modestus</i>	<i>cantonensis</i>	F, M	46	16 M/SM + 30A	62	62			ACN=46	Korea (Kohwato)	L-79
Apocryptei											
<i>Apocryptes bato</i>		M	46	24M + 10SM + 12A	80	80			ACN=46	India (WB)	N-15
<i>Apocryptodon madurensis</i>				48						India	V-33
<i>Apocryptodon punctatus</i>			42	24 M/SM + 18 ST/A	66				ACN=44	Japan (Ariake Sea)	M-52
<i>Parapocryptes serperaster</i>	<i>Apocryptes</i>		46	8M + 16SM + 4ST + 18A	70	74			ACN=46	India (WB)	K-139
<i>Pseudapocryptes borneensis</i>				48						India	V-33
<i>Pseudapocryptes lanceolatus</i>	<i>Apocryptes</i>	F	38	14M + 22SM + 2ST	74	76			ACN=46	India (WB)	N-15

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Boleophthalmi											
<i>Boleophthalmus boddarti</i>			46	46A	46	46			ACN=46	Malaysia	M-52
<i>Boleophthalmus boddarti</i>	<i>boddaerti</i>	F, M	46	46A	46	46			ACN=46	India	S-177
<i>Boleophthalmus boddarti</i>	<i>Gobius striatus</i>		46							India	V-33
<i>Boleophthalmus dussumieri</i>	<i>dentatus</i>	F, M	46	14M + 18SM + 14A	78	78			ACN=46	India (WB)	K-39
<i>Boleophthalmus dussumieri</i>			46							India	V-33, K-102
<i>Boleophthalmus dussumieri</i>			46	4M + 8ST + 34A	50	58			ACN=46	Malaysia	M-52
<i>Boleophthalmus pectinirostris</i>			46	46 ST/A	46				ACN=46	Japan (Ariake Sea)	A-62
<i>Boleophthalmus pectinirostris</i>			46	46A	46	46			ACN=46	Japan (Ariake Sea)	N-31, M-52
<i>Boleophthalmus pectinirostris</i>			46	2ST + 44A	46	48			ACN=46	China (Zhejiang)	F-8
<i>Scartelaos cantoris</i>	<i>Boleophthalmus glaucus</i>	F, M	46	12M + 20SM + 2ST + 12A	78	80			ACN=46	India (WB)	M-24
<i>Scartelaos histophorus</i>			48	8 M/SM + 40 ST/A	56					Malaysia	M-52
Amblyopinae											
<i>Odontamblyopus rubicundus</i>			46	4M + 16SM + 26 ST/A	66				ACN=46	Japan (Ariake Sea)	A-62
<i>Odontamblyopus rubicundus?</i>	<i>rubicundus</i>		38	20M + 18SM	76	76				China	M-36
<i>Odontamblyopus rubicundus</i>		F, M	46	4M + 24SM + 8ST + 10A	74	82			ACN=46	India (WB)	K-42
<i>Odontamblyopus rubicundus</i>	<i>Gobiooides</i>	M	46	2M + 26SM + 10ST + 8A	74	84			ACN=46	India (WB)	M-24
<i>Trypauchen vagina</i>		M	46	12M + 6SM + 10ST + 18A	64	74			ACN=46	India (WB)	K-29
Suborder Kurtoidei											
Kurtidae											
<i>Kurtus gulliveri</i>		F, M	44	2SM + 4A + 38 non-identified					ACN=46	Australia (N. Territory)	E-10
Suborder Acanthroidei											
Acanthuridae											
<i>Acanthurus bahianus</i>			36	16 non-A + 20A	52					Brazil (RN, BA)	G-12
<i>Acanthurus chirurgus</i>			34	16 non-A + 18A	50		1.4 FD			Brazil (RN)	G-12, G-85, M-133
<i>Acanthurus coeruleus</i>			48	4 non-A + 44A	52					Brazil (RN, BA)	G-12
<i>Acanthurus triostegus</i>			48	48A	48	48	1.6* FCM	ACN=48	Japan (Yakushima)	A-65, O-48	
<i>Ctenochaetus striatus</i>			48	48A	48	48	1.7* FCM			Japan	O-48
<i>Prionurus scalprum</i>	<i>microlepidotus</i>		48	48A	48	48		ACN=48	Japan (Chiba)	A-65	
Ephippidae											
<i>Platax teira</i>	<i>orbicularis</i>		48	48A	48	48		ACN=48	Japan (Yakushima)	A-66	

Table 6.39 Order PERCIFORMES. Part 4 Gobioidei, Kurtoidei, Acanthuroidei, and Scombroidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Scatophagidae											
<i>Scatophagus</i>	<i>argus</i>		F	48 2SM + 46A		50	50	(1.5 BFA)	ACN=48	India (Orissa)	C-61, H-13
<i>Scatophagus</i>	<i>argus</i>			48						India (Portonovo)	N-13
<i>Scatophagus</i>	<i>argus</i>		M	48 1M + 47A		49	49		XY, ACN=48	India	K-26
<i>Scatophagus</i>	<i>argus</i>		F	48 48A		48	48		XX, ACN=48	India	K-26
<i>Scatophagus</i>	<i>argus</i>			48 48A		48	48	2	ACN=48	(W. Pacific)	S-130
<i>Scatophagus</i>	<i>argus</i>			48 48A		48	48			China	Z-39
<i>Selenotoca</i>	<i>multifasciata</i>		M, F	48 48A		48	48	1.4 FIA	ACN=48	(W. Pacific)	S-130, H-41
Siganidae											
<i>Siganus</i>	<i>fuscescens</i>			48 2ST + 46A		48	50	1.2 FIA	ACN=48	Japan (Shimane)	K-68, H-41
<i>Siganus</i>	<i>javus</i>		F	48 48A		48	48		ACN=48	India (Orissa)	C-61
<i>Siganus</i>	<i>spinus</i>			42 6M + 36A		48	48	1.1* FCM, 1.2 FIA		Japan	O-48, H-40
Suborder Scombroidei											
Sphyraenidae											
<i>Sphyraena</i>	<i>tome</i>			48 48A		48	48			Brazil (RJ)	B-86
Scombridae											
<i>Auxis</i>	<i>rochei</i>			48		50		1.9 FD	ACN=48	Japan	I-9
<i>Auxis</i>	<i>thazard</i>			48 48A		48	48	1.8 FD, 1.7 FIA	ACN=48	Japan (Sanriku)	I-9, H-40
<i>Katsuwonus</i>	<i>pelamis</i>		M	48 48A		48	48	(1.6 FIA, 2.0 BFA)	ACN=48	Japan (Sanriku)	I-9, H-13, H-40
<i>Katsuwonus</i>	<i>pelamis</i>			48 48A		48	48		ACN=48	N. Pacific	R-38, S-95, S-96
<i>Scomber</i>	<i>australisicus</i>	<i>tapaeinocephalus</i>		48 2ST + 46A		48	50	1.7 FIA	ACN=48	Japan (Iwate)	I-1, H-40
<i>Scomber</i>	<i>japonicus</i>		F, M	48 2ST + 46A		48	50	2	ACN=48	Japan	M-99, K-50
<i>Thunnus</i>	<i>alalunga</i>			48 2M + 2SM + 2ST + 42A		52	54	1.8 FIA	ACN=48	N. Pacific	R-38, S-96, H-41
<i>Thunnus</i>	<i>albacares</i>			48 2M + 2SM + 2ST + 42A		52	54	1.8 FIA	ACN=48	N. Pacific	R-38, S-96, H-40
<i>Thunnus</i>	<i>orientalis</i>		M	48 4M + 6SM + 4ST + 34A		58	62		ACN=48	India (WB)	K-136
<i>Thunnus</i>	<i>thynnus</i>		F	48 2M + 2ST + 44A		50	52	1.7 FD, (1.6 FIA)		Japan (Sanriku)	I-1, I-9, H-40
<i>Thunnus</i>	<i>thynnus</i>		F	48 2M + 4ST + 42A		50	54	1.7 FD	ACN=48	Japan (Sanriku)	I-9

Table 6.40 Order PERCIFORMES. Part 5 Anabantoidei, Channoidei, and Caproidei

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Anabantoidei											
Anabantidae											
Anabantineae											
<i>Anabas</i>	<i>cobojius</i>			<i>oligolepis</i>	46					ACN=46	India (Andhra Pradesh) D-25
<i>Anabas</i>	<i>testudineus</i>				48						India (Andhra Pradesh) D-25
<i>Anabas</i>	<i>testudineus</i>				46	2M + 6SM + 6ST + 32A	54	60	2	ACN=46	India (Manipur) K-138
<i>Anabas</i>	<i>testudineus</i>				F, M	46	2SM + 2ST + 42A	48	50	2	ACN=46 India K-44
<i>Anabas</i>	<i>testudineus</i>					46	2SM + 44 ST/A	48		2	ACN=46 India (Delhi) R-68
<i>Anabas</i>	<i>testudineus</i>				F, M	46	4ST + 42A	46	50		ACN=46 India (WB) M-22
<i>Anabas</i>	<i>testudineus</i>				F	46	4 M/SM + 42A	50	50		ACN=46 (Asia) A-3
<i>Anabas</i>	<i>testudineus</i>					46					(Bangladesh, Dhaka) T-68
Ctenopominae											
<i>Ctenopoma</i>	<i>acutirostre</i>				48	48A	48	48		ACN=48 (Africa) K-110	
<i>Ctenopoma</i>	<i>muriei</i>				48	48A	48	48		ACN=48 W. Ethiopia K-110	
<i>Ctenopoma</i>	<i>ocellatum</i>				48	48 ST/A	48			ACN=48 (Africa) K-110	
<i>Ctenopoma</i>	<i>petherici</i>				48	48A	48	48		ACN=48 W. Ethiopia K-110	
<i>Ctenopoma</i>	sp.				48	48A	48	48		ACN=48 (Africa) K-110	
<i>Microctenopoma</i>	<i>ansorgii</i>			<i>ansorgei</i>	46	2M + 44A	48	48			(Africa) K-110
<i>Microctenopoma</i>	<i>conicum</i>				46	2M + 44A	48	48		ACN=48 (Africa) K-110	
<i>Microctenopoma</i>	<i>pekkolai</i>				48	2M + 2SM + 44 ST/A	52				W. Ethiopia K-110
Helostomatidae											
<i>Helostoma</i>	<i>temminkii</i>			<i>temmincki</i>	F, M	48	48A	48	48	1.8 BFA	ACN=48 (S. E. Asia) A-3, H-13
Osphronemidae (= Belontiidae)											
Luciocephalinae											
<i>Ctenops</i>	<i>nobilis</i>				F, M	44	8M + 8SM + 28A	60	60		ACN=44 India R-77, R-78
<i>Luciocephalus</i>	<i>pulcher</i>					20	20A	20	20		Thailand D-28
<i>Sphaerichthys</i>	<i>osphromenoides</i>				F, M	16	14 M/SM + 2A	30	30		ACN=42 (Asia) C-89
<i>Sphaerichthys</i>	<i>osphromenoides</i>					16	10M + 4SM + 2A	30	30		(India) K-134
<i>Trichogaster</i>	<i>chuna</i>			<i>Colisa</i>	F, M	46	10M + 8SM + 28A	64	64	(1.3 FCM)	ACN=46 (India) R-77, V-86
<i>Trichogaster</i>	<i>chuna</i>			<i>Colisa sota</i>		46	20M + 8SM + 6ST + 12A	74	80		India L-1
<i>Trichogaster</i>	<i>chuna</i>			<i>Colisa chuna</i> var. <i>sota</i>		46	28M + 12SM + 6A	86	86		India (Assam) K-46, C-108
<i>Trichogaster</i>	<i>fasciatus</i>			<i>Colisa fasciatus</i>		48	16M + 16SM + 6ST + 10A	80	86	2	ACN=48 India (Manipur) K-138
<i>Trichogaster</i>	<i>fasciatus</i>				F	48	15M + 12 SM/ST + 21A	75			ZW, ACN=48 India (Haryana) R-47
<i>Trichogaster</i>	<i>fasciatus</i>				M	48	14M + 12 SM/ST + 22A	74			ZZ, ACN=48 India (Haryana) R-47

Table 6.40 Order PERCIFORMES. Part 5 Anabantoidei, Channoidei, and Caproidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Trichogaster</i> fasciatus	<i>Colisa fasciata</i>	F	48	17M + 16SM + 15A	81	81		ZW, ACN=48	India (Haryana)	R-54, R-77, R-78, S-57	
<i>Trichogaster</i> fasciatus	<i>Colisa fasciata</i>	M	48	16M + 16SM + 16A	80	80		ZZ, ACN=48	India (Haryana)	R-54, R-77, R-78, S-57	
<i>Trichogaster</i> fasciatus	<i>Colisa fasciata</i>	F	48	15M + 16SM + 4ST + 13A	79	83	6	ZW, ACN=48	India (Manipur)	S-175	
<i>Trichogaster</i> fasciatus	<i>Colisa fasciata</i>	M	48	16M + 16SM + 4ST + 12A	80	84		ZZ, ACN=48	India (Manipur)	S-175	
<i>Trichogaster</i> fasciatus		F, M	48	8M + 20SM + 12ST + 8A	76	88			India (WB)	M-26	
<i>Trichogaster</i> fasciatus		F, M	46	18M + 12SM + 16A	76	76		ACN=46	India (Orissa)	T-50	
<i>Trichogaster</i> labiosus	<i>Colisa</i>		48	22M + 12SM + 4ST + 12A	82	86			India	L-1	
<i>Trichogaster</i> labiosus		M	48	12M + 6SM + 12ST + 18A	66	78			India (WB)	M-26	
<i>Trichogaster</i> labiosus	<i>Colisa</i>	F, M	48	22M + 16SM + 10A	86	86		ACN=48	(India)	R-77	
<i>Trichogaster</i> lalius	<i>Colisa</i>	F	45	14M + 12 SM/ST + 19A	71			ZO	India (Haryana)	R-50	
<i>Trichogaster</i> lalius	<i>Colisa</i>	M	46	14M + 12 SM/ST + 20A	72			ZZ	India (Haryana)	R-50	
<i>Trichogaster</i> lalius	<i>Colisa</i>	F	46	14M + 6SM + 26A	66	66		XX, ACN=46	India (Haryana)	R-77, R-78	
<i>Trichogaster</i> lalius	<i>Colisa</i>	M	45	14 M + 6SM + 25A	65	65		XO	India (Haryana)	R-77, R-78	
<i>Trichogaster</i> lalius	<i>larius</i>	F, M	46	14M + 10SM + 12ST + 10A	70	82		ACN=46	India (WB)	K-34	
<i>Trichogaster</i> lalius	<i>Colisa lalia</i>		46	24 M/SM + 22 ST/A	70		(1.2 FCM, 1.2 BFA)	ACN=46	(Asia)	A-3, V-101, H-39	
<i>Trichopodus</i> cantoris	<i>Trichogaster pectoralis</i>		46	46A	46	46			(SE Asia)	K-114	
<i>Trichopodus</i> leeri	<i>Trichogaster</i>	F, M	46	46A	46	46	(1.4 FCM)	ACN=46	(India)	R-77, V-86	
<i>Trichopodus</i> leeri	<i>Trichogaster</i>	M	46	46A	46	46			(Asia)	A-3	
<i>Trichopodus</i> microlepis	<i>Trichogaster</i>		46	46A	46	46				K-134	
<i>Trichopodus</i> microlepis	<i>Trichogaster</i>		48	48A	48	48	1.8* FCM		(Asia)	O-48	
<i>Trichopodus</i> sumatranaus	<i>Trichogaster</i>		48		48				(Asia)	C-89	
<i>Trichopodus</i> trichopterus	<i>Trichogaster</i>	M	46	46A	46	46	(1.2 FCM)	ACN=46	(Asia)	A-3, V-86	
<i>Trichopodus</i> t. sumatranaus	<i>Colisa</i>	F, M	46	46A	46	46		ACN=46	(India)	R-77	
<i>Trichopodus</i> t. trichopterus	<i>Colisa</i>	F, M	46	46A	46	46		ACN=46	(India)	R-77	
Macropodusinae											
<i>Betta</i> splendens			42				1.3 FIA, 1.3 BFA		(Thailand)	H-13, H-41	
<i>Macropodus</i> chinensis			48	6M + 2SM + 40A	56	56			Korea	L-15	
<i>Macropodus</i> chinensis			46	4M + 4SM + 38A	54	54	2.8* FD		China (Wuhan)	D-18, C-83	
<i>Macropodus</i> ocellatus		F, M	46	8M + 8SM + 14ST + 16A	62	76		ACN=48	(Asia)	K-97	
<i>Macropodus</i> opercularis		F, M	46	8M + 8SM + 16ST + 14A	62	78	(1.1 FCM)		(Asia)	K-97, V-101	
<i>Macropodus</i> opercularis		F, M	46	4M + 10SM + 12ST + 20A	60	72	(1.2 BFA)	ACN=46	China (Guilin)	Y-15, H-13	
<i>Macropodus</i> opercularis			46	12 M/SM + 34 ST/A	58			ACN=46	(Asia)	A-3	
<i>Macropodus</i> spechti	<i>concolor</i>	F, M	46	10M + 2SM + 22ST + 12A	58	80		ACN=46	(Asia)	K-97	
<i>Osphronemus</i> goramy			48	2SM + 46A	50	50		ACN=48	(S. E. Asia)	K-97	
<i>Parosphromenus</i> sumatranaus	<i>Colisa</i>		46	46A	46	46		ACN=46	(India)	R-77	

Table 6.40 Order PERCIFORMES. Part 5 Anabantoidei, Channoidei, and Caproidei (continued)

A Current scientific name of taxon Suborder/family/subfamily/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Channoidei											
Channidae											
<i>Channa</i>	<i>argus</i>		F, M	48 4SM + 44 ST/A	52			1.7* FD	ACN=48	China (Wuhan)	L-31, Y-15, C-83
<i>Channa</i>	<i>argus</i>			48 2M + 4SM + 42ST	54	96	4		ACN=48	China (Shashi)	Z-21
<i>Channa</i>	<i>argus</i>	<i>Ophiocephalus</i>		48 20ST + 28A	48	68				China (Hubei)	L-53
<i>Channa</i>	<i>argus</i>	<i>Ophiocephalus</i>	F, M	48 4SM + 22ST + 22A	52	74			ACN=48	China (Beijing)	Z-31
<i>Channa</i>	<i>asiatica</i>		F, M	44 4M + 8SM + 32 ST/A	56			1.8* FD	ACN=46	China (Shaoguan)	L-31, Y-15, C-83
<i>Channa</i>	<i>asiatica</i>		F, M	46 2M + 8SM + 36 ST/A	56				ACN=46	China (Guangzhou)	L-31
<i>Channa</i>	<i>asiatica</i>			44 2M + 8SM + 28ST + 6A	54	82	4			China (Shashi)	Z-21
<i>Channa</i>	<i>barca</i>			38 6M + 6SM + 4ST + 22A	50	54			ACN=42	India (Assam, Meghalaya)	D-9
<i>Channa</i>	<i>gachua</i>		F, M	78 12M + 12SM + 54A	102	102				India (WB)	M-21
<i>Channa</i>	<i>gachua</i>			F, M 78 10M + 16SM + 52 ST/A	104			2.0 FD		India	B-2
<i>Channa</i>	<i>maculata</i>		F, M	42 4M + 2SM + 36 ST/A	48				ACN=46	China (Guangdong)	L-31, Y-15
<i>Channa</i>	<i>maculata</i>	<i>Ophiocephalus</i>	F, M	42						China	C-85
<i>Channa</i>	<i>marulius</i>			44 4M + 40A	48	48			ACN=44	India (Simlipal Hills)	K-41
<i>Channa</i>	<i>orientalis?</i>	<i>orientalis</i>		42 2M + 2SM + 38A	46	46			ACN=44	India (Assam)	K-41
<i>Channa</i>	<i>orientalis</i>			76 2M + 6SM + 68A	84	84				India (Assam, Meghalaya)	D-9
<i>Channa</i>	<i>orientalis</i>			78 34M + 2SM + 42 ST/A	114				ACN=78	Bangladesh (Dhaka)	R-102
<i>Channa</i>	<i>punctata</i>	<i>punctatus</i>	F, M	32 20M + 12SM	64	64	2			India (Haryana, U.P.)	R-70, R-73, S-2
<i>Channa</i>	<i>punctata</i>	<i>punctatus</i>	F, M	32 24M + 8SM	64	64		1.3 FD	ACN=42	India	B-2
<i>Channa</i>	<i>punctata</i>	<i>punctatus</i>	F, M	32 18M + 12SM + 2ST	62	64				India (WB)	M-21
<i>Channa</i>	<i>punctata</i>	<i>punctatus</i>	F, M	32 10M + 18SM + 4A	60	60				India (Haryana)	R-46, R-53
<i>Channa</i>	<i>punctata</i>	<i>punctatus</i>	F, M	32 16M + 14SM + 2A	62	62				India (Haryana)	R-75
<i>Channa</i>	<i>punctata</i>	var. A		34 16M + 14SM + 4A	64	64			ACN=42	India (Assam, Meghalaya)	D-9
<i>Channa</i>	<i>punctata</i>	var. B		32 16M + 16SM	64	64			ACN=42	India (Assam, Meghalaya)	D-9
<i>Channa</i>	<i>punctata</i>			32 24M + 2SM + 2ST + 4A	58	60				Bangladesh (Dhaka)	R-102
<i>Channa</i>	<i>stewartii</i>			66 12M + 6SM + 6ST + 42A	84	90				India (Assam, Meghalaya)	D-9
<i>Channa</i>	<i>stewartii</i>		M	104 2M + 102A	106	106				India (Nagaland)	R-65
<i>Channa</i>	<i>striata</i>	<i>striatus</i>	F, M	40 8M + 2SM + 2ST + 28A	50	52		1.5 FD	ACN=46	India	B-2
<i>Channa</i>	<i>striata</i>	<i>striatus</i>		40 8M + 6ST + 26A	48	54			ACN=46	India (Assam, Meghalaya)	D-9
<i>Channa</i>	<i>striata</i>	<i>striatus</i>	F, M	40 8M + 2SM + 30A	50	50				India (WB)	M-21
<i>Parachanna</i>	<i>obscura</i>	<i>Ophiocephalus obscurus</i>		42				2.0 BFA		(Africa)	H-13
Suborder Caproidei											
Caproidae											
<i>Capros</i>	<i>aper</i>			46 2M + 2SM + 8ST + 34A	50	58	2		ACN=48	France (Gulf of Lion)	V-67
<i>Capros</i>	<i>aper</i>			44 4M + 2SM + 8ST + 30A	50	58	2		ACN=48	France (Gulf of Lion)	V-67
<i>Capros</i>	<i>aper</i>			42 6M + 2SM + 8ST + 26A	50	58	2		ACN=48	France (Gulf of Lion)	V-67

Table 6.41 Order PLEURONECTIFORMES

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Pleuronectoidei											
Scophthalmidae											
<i>Psetta</i> <i>maeotica</i>	<i>Rhombus maeoticus</i>		40	20M + 20 SM/A					ACN=44	Black Sea	I-19
<i>Psetta</i> <i>maeotica</i>	<i>Rhombus maeoticus</i>		48						ACN=48	Black Sea	I-19
<i>Psetta</i> <i>maeotica</i>	<i>Rhombus maeoticus</i>		44							Black Sea	V-72
<i>Psetta</i> <i>maxima</i>	<i>Scophthalmus maximus</i>	F, M	44	4M + 12ST + 28A	48	60	2	(1.7 FIA)	ACN=44	Spain	B-53, P-63, H-41
<i>Scophthalmus</i> <i>rhombus</i>			44	4M + 2SM + 38 ST/A	50		2		ACN=44	Spain	P-63
Paralichthyidae											
<i>Citharichthys</i> <i>spilopterus</i>		F, M	28	14M + 6SM + 2ST + 6A	48	50			ACN=46	USA (LA)	L-17
<i>Citharichthys</i> <i>spilopterus</i>		F, M	26	18 M/SM + 8 ST/A	44				ACN=38	Brazil (SP)	A-120
<i>Etropus</i> <i>crossotus</i>		F, M	38	38 M/SM/ST		76		(2.0 BFA)	ACN=44	USA (LA)	L-17, H-13
<i>Etropus</i> <i>crossotus</i>		F, M	38	26 M/SM + 12 ST/A	64				ACN=44	Brazil (SP)	A-120
<i>Hippoglossina</i> <i>macrops</i>			48	48A	48	48			ACN=48	Chile (Coquimbo bay)	W-36
<i>Paralichthys</i> <i>adpersus</i>			46	2M + 44 ST/A	48				ACN=48	Chile (Coquimbo bay)	W-36
<i>Paralichthys</i> <i>dentatus</i>			48	48A	48	48				(W.N. Atlantic)	X-3
<i>Paralichthys</i> <i>lethostigma</i>		M	48	20ST + 28A	48	68			ACN=48	USA (LA)	L-17
<i>Paralichthys</i> <i>microps</i>			46	2M + 44 ST/A	48				ACN=48	Chile (Coquimbo bay)	W-36
<i>Paralichthys</i> <i>olivaceus</i>			48	48A	48	48	2	(1.4* FCM)	ACN=48	Japan	K-48, O-48
<i>Paralichthys</i> <i>olivaceus</i>		F	46	46A	46	46	2		ACN=46	Japan (Yamaguchi)	S-5
<i>Paralichthys</i> <i>olivaceus</i>			48	48A	48	48				China	Y-20, X-3, Z-37
<i>Paralichthys</i> <i>orbignyanus</i>			46	2M + 44 ST/A	48				ACN=46	Brazil (SC)	A-120
<i>Paralichthys</i> <i>patagonicus</i>		F, M	46	46A	46	46			ACN=46	Brazil (SP)	A-120
<i>Pseudorhombus</i> <i>arsius</i>		M	46	46 ST/A	46			1.0 FIA	ACN=46	India (Orissa)	P-17, H-40
<i>Pseudorhombus</i> <i>cinnamoneus</i>			48	48A	48	48				China	Y-20
<i>Pseudorhombus</i> <i>triocellatus</i>		F	48	48A	48	48			ACN=48	India (Orissa)	P-17
<i>Xystreurus</i> <i>liolepis</i>		M	48	48A	48	48		1.6 FD, 1.5 BFA	ACN=48	(E. Pacific)	O-4, H-13
Pleuronectidae											
<i>Cleisthenes</i> <i>herzensteini</i>	<i>pinetorum herzensteini</i>		44	4 SM/ST + 40A		48			ACN=48	Japan (Hokkaido)	F-53
<i>Glyptocephalus</i> <i>stelleri</i>		M	46							Japan (Hokkaido)	Y-1
<i>Hippoglossus</i> <i>hippoglossus</i>			48	48 ST/A	48			1.5 FIA		UK	B-71, H-41
<i>Kareius</i> <i>bicoloratus</i>			48	48A	48	48	2	(1.3* FCM)	ACN=48	Japan (Hokkaido)	F-53, S-142, O-48
<i>Kareius</i> <i>bicoloratus</i>		F	48	48A	48	48			ACN=48	China (Yellow Sea)	Z-15, Z-37, Y-20
<i>Limanda</i> <i>ferruginea</i>	<i>Pleuronectes</i>		48	48A	48	48		1.5 FIA		East coast of Canada	A-120, H-41

Table 6.41 Order PLEURONECTIFORMES (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Limanda</i> <i>limanda</i>		F, M	46	46 ST/A	46				ACN=46	Europe (Irish Sea)	D-10
<i>Limanda</i> <i>limanda</i>			46		46					Russia (White Sea)	L-88
<i>Liopsetta</i> <i>glacialis</i>			48	48A	48	48				Russia (White Sea)	L-87, L-88
<i>Microstomus</i> <i>achne</i>			48	48A	48	48			ACN=48	Japan (Hokkaido)	F-53
<i>Microstomus</i> <i>achne</i>			48	48A	48	48				China	Y-20
<i>Platichthys</i> <i>flesus</i>	<i>Pleuronectes</i>		48	48A	48	48				Russia (White Sea)	L-87
<i>Platichthys</i> <i>flesus</i>			48	48A	48	48				Germany (Baltic Sea)	K-132
<i>Platichthys</i> <i>flesus</i>			48	48A	48	48	2		ACN=48	Spain	P-63
<i>Platichthys</i> <i>stellatus</i>			48	48A	48	48	2		ACN=48	Japan (Hokkaido)	F-53, S-142
<i>Pleuronectes</i> <i>herzensteini</i>	<i>Limanda</i>	F, M	48	48A	48	48				Japan (Hokkaido)	F-53
<i>Pleuronectes</i> <i>obscurus</i>			48	48A	48	48		1.2 FCM	ACN=48	Korea (Busan)	K-125
<i>Pleuronectes</i> <i>platessa</i>			48	48A	48	48				(UK)	B-6
<i>Pleuronectes</i> <i>platessa</i>			48	48A	48	48			ACN=48	UK	F-4
<i>Pleuronectes</i> <i>platessa</i>			47	1M + 47A	48	48			ACN=48	UK	F-4
<i>Pleuronectes</i> <i>punctatissimus</i>	<i>Limanda</i>	M	48	48A	48	48				Japan (Hokkaido)	F-53
<i>Pleuronectes</i> <i>putnami</i>	<i>Liopsetta</i>		48							WN Atlantic	B-71
<i>Pleuronectes</i> <i>schrenki</i>	<i>Limanda</i>		48	48A	48	48				Japan (Hokkaido)	F-53
<i>Pleuronectes</i> <i>schrenki</i>			48	48A	48	48	2		ACN=48	Japan (Hokkaido)	S-142
<i>Pleuronectes</i> <i>yokohamae</i>	<i>Limanda</i>		48	48A	48	48		1.3* FCM		Japan (Hokkaido)	F-53, O-48
<i>Pleuronectes</i> <i>yokohamae</i>	<i>Pseudopleuronectes</i>		48	48A	48	48				China (Shandong)	Y-20
<i>Pleuronectes</i> <i>yokohamae</i>			48	48A	48	48			ACN=48	Korea (Busan)	P-70
<i>Pleuronichthys</i> <i>cornutus</i>			48	14M + 34A	62	62		1.1* FCM		Japan	O-48
<i>Pleuronichthys</i> <i>cornutus</i>			48	12M + 2SM + 34A	62	62				China (Shandong)	Y-20
<i>Pleuronichthys</i> <i>verticalis</i>		M	48	48A	48	48		1.3 FD	ACN=48	(E. Pacific)	O-4
<i>Pseudopleuronectes americanus</i>			48					1.5 FD, 1.4 BFA		WN Atlantic	B-71, H-13
<i>Verasper</i> <i>moseri</i>		F, M	46	2 SM/ST + 44A	48				ACN=46	Japan (Hokkaido)	F-53
Bothidae											
<i>Bothus</i> <i>ocellatus</i>		F	32	18 M/SM + 14 ST/A	50				ACN=48	Brazil (SP)	A-120
<i>Bothus</i> <i>podas</i>		F	38	12M + 2SM + 24ST	52	2			XX	Italy (Palermo)	V-100
<i>Bothus</i> <i>podas</i>		M	38	12M + 2SM + 24ST	52	2			XY	Italy (Palermo)	V-100
<i>Psettina</i> <i>tosana</i>			44	4M + 2SM + 6ST + 32A	50	56		1.1* FCM		Japan	O-48

Table 6.42 Order LOPHIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Antennariidae											
<i>Antennarius</i>	<i>nummifer</i>		48	16 M/SM + 32 ST/A	64				ACN=48	Japan (Chiba)	A-69
<i>Histrio</i>	<i>histrio</i>		46	46 ST/A	46				ACN=46	Japan (Kanagawa)	A-69
Lophiidae											
<i>Lophius</i>	<i>piscatorius</i>	F, M	46	14 M/SM + 32 ST/A	60	2			ACN=46	Italy (Palermo)	V-57, V-65

Table 6.43 Order TETRAODONTIFORMES

A	B	C	D	E	F	G	H	I	J	K	L		
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference		
Suborder Balistoidei													
Triacanthidae													
<i>Triacanthus</i>	<i>biaculeatus</i>		48	2M + 4ST + 42A	50	54				Japan	I-21		
<i>Triacanthus</i>	<i>biaculeatus</i>		<i>brevirostris</i>	M	48	1M + 47A	49	49	ACN=48	India (Orissa)	C-62		
<i>Triacanthus</i>	<i>biaculeatus</i>		<i>Tricanthus brevirostris</i>	F, M	48	48A	48	48	ACN=48	India (Orissa)	R-57		
<i>Pseudotriacanthus</i>	<i>strigilifer</i>		<i>Triacanthus</i>	M	48	48A	48	48		India (Goa)	R-45		
Balistidae													
<i>Balistapus</i>	<i>undulatus</i>		F	42	42A	42	42	2	1.5* FCM, 1.3 FIA	ACN=46	Japan (Okinawa)	T-9, O-48, H-41	
<i>Balistes</i>	<i>capriscus</i>		<i>carolinensis</i>	F, M	44	44A	44	44	2 (1.1 FD)	ACN=46	Italy (Palermo)	V-57, V-65, M-133	
<i>Balistes</i>	<i>capriscus</i>		<i>carolinensis</i>	F, M	44	44A	44	44	2	ACN=46	Spain (Malaga)	T-38	
<i>Balistes</i>	<i>vetula</i>				44	44A	44	44	2	ACN=46	Brazil (Bahia)	S-110	
<i>Balistoides</i>	<i>conspicillus</i>			F	44	44A	44	44	2	ACN=46	Japan (Okinawa)	T-9	
<i>Balistoides</i>	<i>viridescens</i>				44	2M + 2SM + 40 ST/A	48	2	1.4* FCM	ACN=46	(Indo-West Pacific)	T-10, O-48	
<i>Melichthys</i>	<i>niger</i>				40	40A	40	40	2	ACN=42	Brazil (Saint Pauls Rocks)	S-110, B-75	
<i>Melichthys</i>	<i>vidua</i>			M	40	40 ST/A	40	2		ACN=42	(Indo-West Pacific)	K-71	
<i>Odonus</i>	<i>niger</i>				42	42 ST/A	42	2		ACN=44	(Indo-West Pacific)	K-71	
<i>Pseudobalistes</i>	<i>flavimarginatus</i>				44	2M + 42 ST/A	46			ACN=46	Japan (Yaku and Tanega Is)	A-64	
<i>Rhinecanthus</i>	<i>aculeatus</i>				44	44A	44	44	2	1.3 FIA	ACN=46	Japan (Okinawa)	A-64, K-71, T-9, H-40
<i>Rhinecanthus</i>	<i>echarpe</i>				44	44 ST/A	44	2		ACN=46	(Indo-West Pacific)	K-71, T-9	
<i>Rhinecanthus</i>	<i>verrucosus</i>				44	44A	44	44	2	ACN=46	Japan (Tanegashima)	A-64, K-71, T-9	
<i>Sufflamen</i>	<i>chrysopterus</i>		<i>Hemibalistes</i>		46	46A	46	46	2	1.2 FIA	ACN=46	Japan (Yakushima)	A-64, H-40
<i>Sufflamen</i>	<i>fraenatus</i>			F	46	46A	46	46	2	1.3 FIA	ACN=46	Japan (Okinawa)	T-9, H-41

Table 6.42 Order LOPHIIFORMES

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Antennariidae											
<i>Antennarius</i>	<i>nummifer</i>		48	16 M/SM + 32 ST/A	64				ACN=48	Japan (Chiba)	A-69
<i>Histrio</i>	<i>histrio</i>		46	46 ST/A	46				ACN=46	Japan (Kanagawa)	A-69
Lophiidae											
<i>Lophius</i>	<i>piscatorius</i>	F, M	46	14 M/SM + 32 ST/A	60	2			ACN=46	Italy (Palermo)	V-57, V-65

Table 6.43 Order TETRAODONTIFORMES

A	B	C	D	E	F	G	H	I	J	K	L		
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference		
Suborder Balistoidei													
Triacanthidae													
<i>Triacanthus</i>	<i>biaculeatus</i>		48	2M + 4ST + 42A	50	54				Japan	I-21		
<i>Triacanthus</i>	<i>biaculeatus</i>		<i>brevirostris</i>	M	48	1M + 47A	49	49	ACN=48	India (Orissa)	C-62		
<i>Triacanthus</i>	<i>biaculeatus</i>		<i>Tricanthus brevirostris</i>	F, M	48	48A	48	48	ACN=48	India (Orissa)	R-57		
<i>Pseudotriacanthus</i>	<i>strigilifer</i>		<i>Triacanthus</i>	M	48	48A	48	48		India (Goa)	R-45		
Balistidae													
<i>Balistapus</i>	<i>undulatus</i>		F	42	42A	42	42	2	1.5* FCM, 1.3 FIA	ACN=46	Japan (Okinawa)	T-9, O-48, H-41	
<i>Balistes</i>	<i>capriscus</i>		<i>carolinensis</i>	F, M	44	44A	44	44	2 (1.1 FD)	ACN=46	Italy (Palermo)	V-57, V-65, M-133	
<i>Balistes</i>	<i>capriscus</i>		<i>carolinensis</i>	F, M	44	44A	44	44	2	ACN=46	Spain (Malaga)	T-38	
<i>Balistes</i>	<i>vetula</i>				44	44A	44	44	2	ACN=46	Brazil (Bahia)	S-110	
<i>Balistoides</i>	<i>conspicillus</i>			F	44	44A	44	44	2	ACN=46	Japan (Okinawa)	T-9	
<i>Balistoides</i>	<i>viridescens</i>				44	2M + 2SM + 40 ST/A	48	2	1.4* FCM	ACN=46	(Indo-West Pacific)	T-10, O-48	
<i>Melichthys</i>	<i>niger</i>				40	40A	40	40	2	ACN=42	Brazil (Saint Pauls Rocks)	S-110, B-75	
<i>Melichthys</i>	<i>vidua</i>			M	40	40 ST/A	40	2		ACN=42	(Indo-West Pacific)	K-71	
<i>Odonus</i>	<i>niger</i>				42	42 ST/A	42	2		ACN=44	(Indo-West Pacific)	K-71	
<i>Pseudobalistes</i>	<i>flavimarginatus</i>				44	2M + 42 ST/A	46			ACN=46	Japan (Yaku and Tanega Is)	A-64	
<i>Rhinecanthus</i>	<i>aculeatus</i>				44	44A	44	44	2	1.3 FIA	ACN=46	Japan (Okinawa)	A-64, K-71, T-9, H-40
<i>Rhinecanthus</i>	<i>echarpe</i>				44	44 ST/A	44	2		ACN=46	(Indo-West Pacific)	K-71, T-9	
<i>Rhinecanthus</i>	<i>verrucosus</i>				44	44A	44	44	2	ACN=46	Japan (Tanegashima)	A-64, K-71, T-9	
<i>Sufflamen</i>	<i>chrysopterus</i>		<i>Hemibalistes</i>		46	46A	46	46	2	1.2 FIA	ACN=46	Japan (Yakushima)	A-64, H-40
<i>Sufflamen</i>	<i>fraenatus</i>			F	46	46A	46	46	2	1.3 FIA	ACN=46	Japan (Okinawa)	T-9, H-41

Table 6.43 Order TETRAODONTIFORMES (continued)

A	B	C	D	E	F	G	H	I	J	K	L
Current scientific name of taxon Suborder/family/species	Reported in karyotype paper	Sex	2n	Karyotype	NF ₁	NF ₂	Ag- NORs	Genome size (pg/cell)	Comments	Locality	Reference
Monacanthidae											
<i>Cantherhines macrocerus</i>			40	40A	40	40				Brazil (RJ)	B-86
<i>Cantherhines pardalis</i>	<i>Amanses sandwichiensis</i>		40	40 ST/A	40				ACN=40	Japan (Tanegashima)	A-64
<i>Meuschenia scaber</i>	<i>Parika</i>	F, M	40	40A	40	40	2		ACN=40	New Zealand	M-112
<i>Oxymonacanthus longirostris</i>			36	36A	36	36			ACN=36	Japan (Okinawa)	A-64
<i>Paramonacanthus japonicus</i>	<i>Stephanolepis</i>	F	34	34A	34	34			ACN=36	Japan (W. Izu Peninsula)	M-98
<i>Paramonacanthus japonicus</i>	<i>oblongus</i>	M	34	34A	34	34				Japan (W. Izu Peninsula)	M-98
<i>Rudarius ercodes</i>			36	36A	36	36			ACN=36	Japan (Izu Peninsula)	A-64
<i>Stephanolepis cirrhifer</i>			34	34A	34	34			ACN=34	Japan (W. Izu Peninsula)	M-98, O-48
<i>Stephanolepis cirrhifer</i>		F	34	34A	34	34				X ₁ X ₂ X ₂ , ACN=34	M-100
<i>Stephanolepis cirrhifer</i>		M	33	1M + 32A	34	34				X ₁ X ₂ Y, ACN=34	M-100
<i>Stephanolepis cirrhifer</i>			33	1M + 32A	34	34				China (Shandong)	W-6
<i>Stephanolepis hispidus</i>		F	34	34A	34	34	2	1.2 FCM, 1.4 BFA	X ₁ X ₁ X ₂ X ₂ , ACN=34	Brazil (Bahia, RJ)	S-181, B-75, H-13
<i>Stephanolepis hispidus</i>		M	33	1M + 32A	34	34	2		X ₁ X ₂ Y, ACN=34	Brazil (Bahia, RJ)	S-181
<i>Thamnaconus modestus</i>	<i>Navodon</i>		40	40 ST/A	40			1.1* FCM	ACN=40	Japan (W. Izu Peninsula)	M-98, O-48
<i>Thamnaconus septentrionalis</i>	<i>Navodon</i>	F, M	40	40A	40	40			ACN=40	China (Yellow Sea)	Z-15, W-6, Y-21
Ostraciidae											
<i>Lactoria cornuta</i>			48	2M + 2SM + 44ST	52	96				Japan	I-23, O-72
<i>Lactoria diaphana</i>			48	4M + 44A	52	52				Japan	I-23
<i>Lactoria diaphana</i>			36	10M + 2SM + 24 ST/A	48				ACN=44	Japan (Wakayama)	A-79
<i>Lactoria fornasini</i>			34	12M + 6SM + 16 ST/A	52					Japan	I-23
<i>Ostracion cubicus</i>	<i>tuberculatus</i>		50	4SM + 46 ST/A	54				ACN=48	Japan (Ishigaki and Yaku Is)	A-64
<i>Ostracion immaculatus</i>			50	4SM + 46 ST/A	54				ACN=48	Japan (Wakayama)	A-79
Suborder Tetraodontoidei											
Tetraodontidae											
<i>Arothron hispidus</i>			42					0.8* FCM, 1.0 FIA		India (Portonovo)	N-13, O-48, G-85
<i>Arothron immaculatus</i>		F, M	42	12M + 14SM + 16 ST/A	68				ACN=42	India (Orissa)	C-62
<i>Arothron manilensis</i>	<i>Tetraodon immaculatus</i>		42	14M + 16SM + 12ST	72	84		1.0 FIA	ACN=42	Japan (Okinawa)	A-64, G-85, H-41
<i>Arothron meleagris</i>			38					0.8* FCM		Japan	O-48
<i>Arothron nigropunctatus</i>	<i>Tetraodon</i>		38	14M + 20SM + 4ST	72	76			ACN=40	Japan (Okinawa)	A-64
<i>Arothron reticularis</i>		M	42	12M + 14SM + 16 ST/A	68				ACN=44	India (Orissa)	C-62
<i>Canthigaster coronata</i>			28	6M + 2SM + 20 ST/A	36					Japan (Wakayama)	A-79
<i>Canthigaster rivulata</i>			34	4M + 6SM + 10ST + 14A	44	54		0.7* FCM	ACN=34	Japan (Chiba)	A-64, M-2

Table 6.43 Order TETRAODONTIFORMES (continued)

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag- NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
<i>Chelonodon</i> <i>patoca</i>			40	14M + 16SM + 10 ST/A	70				ACN=42	Japan (Okinawa)	A-64
<i>Lagocephalus</i> <i>inermis</i>	<i>Tetraodon</i>		44	2M + 42A	46					India	L-1
<i>Lagocephalus</i> <i>laevigatus</i>			46							Brazil	S-110
<i>Lagocephalus</i> <i>lunaris</i>	<i>Gastrophysus</i>	M	44	10M + 14SM + 20 ST/A	68			0.9 FIA		India (Orissa)	C-62, G-85, H-41
<i>Sphoeroides</i> <i>greeleyi</i>		F, M	46	24 M/SM + 22 ST/A	70	2			ACN=46	Brazil (RJ)	B-56
<i>Sphoeroides</i> <i>spengleri</i>		F, M	46	18 M/SM + 28 ST/A	64				ACN=46	Brazil (RJ)	B-56
<i>Sphoeroides</i> <i>spengleri</i>		F, M	46	20 M/SM + 26 ST/A	66				0-2 B, ACN=46	Brazil (SP)	A-126
<i>Sphoeroides</i> <i>testudineus</i>			46	18M + 4SM + 6ST + 18A	68	74	2		ACN=46	Brazil (RN)	S-110
<i>Sphoeroides</i> <i>tyleri</i>		F, M	46	14 M/SM + 32 ST/A	60				ACN=46	Brazil (RJ)	B-57
<i>Takifugu</i> <i>chrysops</i>	<i>Sphoeroides</i>		44	6M + 14SM + 24 ST/A	64				ACN=46	Japan (Izu Peninsula)	A-64
<i>Takifugu</i> <i>niphobles</i>	<i>Fugu</i>		44	20 M/SM + 24 ST/A	64			(0.8* FCM)	ACN=46	Japan (Kanagawa)	A-54, O-48
<i>Takifugu</i> <i>niphobles</i>		F	44	4M + 16SM + 24 ST/A	64				ACN=46	Japan (Oomura Bay)	M-134
<i>Takifugu</i> <i>pardalis</i>	<i>Fugu</i>		44							Japan (Wakayama, Shizuoka)	A-79
<i>Takifugu</i> <i>pardalis</i>			44	6M + 16SM + 22 ST/A	66				ACN=46	Japan (Oomura Bay)	M-134
<i>Takifugu</i> <i>poeilonotus</i>		F	44	12M + 10SM + 22 ST/A	66				ACN=46	Japan (Tachibana Bay)	M-134
<i>Takifugu</i> <i>poeilonotus</i>	<i>Fugu</i>		44							Japan (Wakayama)	A-79
<i>Takifugu</i> <i>pseudommus</i>			44	12M + 8SM + 24A	64	64				China (Yellow Sea)	Z-37
<i>Takifugu</i> <i>rubripes</i>			44	10M + 12SM + 22 ST/A	66				ACN=46	Japan	M-134
<i>Takifugu</i> <i>rubripes</i>	<i>Fugu</i>		44	20 M/SM + 24 ST/A	64					China	Y-20, G-85
<i>Takifugu</i> <i>rubripes</i>	<i>Fugu</i>		44	12M + 6SM + 26A	62					China (Shandong)	W-6
<i>Takifugu</i> <i>vermicularis</i>	<i>radiatus</i>	F	44	8M + 14SM + 22 ST/A	66					Japan (Tachibana Bay)	M-134
<i>Takifugu</i> <i>xanthopterus</i>		M	44	8M + 14SM + 22 ST/A	66				ACN=46	Japan (Tachibana Bay)	M-134
<i>Tetraodon</i> <i>cutcutia</i>		F, M	42	16M + 12SM + 4ST + 10A	70	74		0.8 FCM	ACN=44	India (WB)	K-42, V-86
<i>Tetraodon</i> <i>fluvialis</i>			42	8M + 14SM + 2ST + 18A	64	66		(0.8 FCM, 0.8 BFA)	ACN=42	India (WB)	B-3, B-75, H-13
<i>Tetraodon</i> <i>fluvialis</i>		F, M	42	2M + 4SM + 2ST + 34A	48	50	4	(0.8* FCM)		(S. Asia)	M-19, O-48
<i>Tetraodon</i> <i>leopardus</i>	<i>Arothron</i>	F, M	40	14M + 14SM + 12 ST/A	68				ACN=42	India (Orissa)	C-62
<i>Tetraodon</i> <i>nigroviridis</i>			42	20 M/SM + 22ST	62	84		0.7 FCM, 1.0 FIA		(S. Asia)	F-24, J-21, H-41
<i>Tetraodon</i> <i>palembangensis</i>			42*					1.0 BFA		(SE Asia)	H-13
Diodontidae											
<i>Chilomycterus</i> <i>antennatus</i>			52	6M + 46 ST/A	58	2				Brazil (RJ)	S-110
<i>Chilomycterus</i> <i>spinosus</i>		F, M	52	16 M/SM + 36 ST/A	68					Brazil (RJ)	B-57
<i>Diodon</i> <i>holocanthus</i>			46	20 M/SM + 26 ST/A	66			1.6 FCM		Brazil	S-110, B-75
<i>Diodon</i> <i>liturosus</i>	<i>bleekeri</i>		46	6M + 6SM + 34 ST/A	58			1.7* FCM	ACN=46	Japan (Okinawa)	A-64, O-48
Molidae											
<i>Mola</i> <i>mola</i>		M	46	46A	46	46	2	(1.7, 1.9 FCM)	ACN=46	Japan (Chiba)	N-7, B-75

Table 7 Class SARCOPTERYGII (OSTEICHTHYES)

Table 7.1 Order COELACANTHIFORMES

A Current scientific name of taxon Family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag ⁻ NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Latimeriidae											
<i>Latimeria chalumnae</i>			48	10M + 4ST + 18A + 16 MC	58	62		7.2 FD		Comoro	B-41, C-95

Table 7.2 Order CERATODONTIFORMES

A Current scientific name of taxon Suborder/family/species	B Reported in karyotype paper	C Sex	D 2n	E Karyotype	F NF ₁	G NF ₂	H Ag ⁻ NORs	I Genome size (pg/cell)	J Comments	K Locality	L Reference
Suborder Ceratodontoidei											
Ceratodontidae											
<i>Neoceratodus forsteri</i>	<i>Epiceratodus</i>		32-38					(149.7* FD)		Australia	W-25, P-72
<i>Neoceratodus forsteri</i>			54	6M + 2SM + 26 ST/A + 20 MC	62			105.5 FCM, 109.2 FIA		Australia (Sydney)	R-101, G-85
Suborder Lepidosirenoidei											
Lepidosirenidae											
<i>Lepidosiren paradox</i>		F	38	38 M/SM	76	76		(161.1 FCM, 225.6* FD)		(S. America)	O-4, V-101, P-72
<i>Lepidosiren paradox</i>			38	38 M/SM/ST		76				Brazil (Manaus)	O-50
<i>Lepidosiren paradox</i>			38							Argentina	F-20
Protopteridae											
<i>Protopterus aethiopicus congicus</i>			34					80.2, 265.7* FD		Zaire	V-38, P-72
<i>Protopterus annectens</i>			34	14M + 10SM + 4ST + 6A	58	62				(Africa)	S-128
<i>Protopterus annectens</i>		F, M	34	16M + 6 SM + 12A	56	56	2	125.2 FCM		Nigeria	M-115
<i>Protopterus annectens annectens</i>			34	16M + 6SM + 12A	56	56		80.9 FD		Senegal	V-38
<i>Protopterus dolloi?</i>	<i>dolloi</i>							130.8 FCM		(Africa)	V-101
<i>Protopterus dolloi</i>			68	36 M/SM + 32 ST/A	104			163.2 FD	4X	Zaire	V-38

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(Papers marked with an asterisk were not seen directly.)

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Journal List

Acad. Nat. Lincei, ser. 8 = Atti della Accademia Nazionale dei Lincei, Serie Ottava (Roma)
Acta Amazonica
Acta Biol. Colombiana = Acta Biologica Colombiana (Bogotá)
Acta Biol. Debrecina = Acta Biologica Debrecina (Debrecen, Hungary)
Acta Biol. Exp. Sinica = Acta Biologiae Experimentalis Sinica
Acta Biol. Iugoslavica = Acta Biologica Jugoslavica
Acta Cient. Venezolana = Acta Cientifica Venezolana
Acta Genet. Sinica = Acta Genetica Sinica
Acta Hydrobiol. = Acta Hydrobiologica
Acta Hydrobiol. Sinica = Acta Hydrobiologica Sinica
Acta Sci. Nat. Brno = Acta Scientiarum Naturalium Academiae Scientiarum Bohemoslovacae Brno,
Nova series
Acta Zool. = Acta Zoologica (Stockholm)
Acta Zool. Fennica = Acta Zoologica Fennica (Helsinki)
Acta Zool. Sinica = Acta Zoologica Sinica
Acta Zootax. Sinica = Acta Zootaxonomica Sinica
Advanced Aquarists Mag. = Advanced Aquarists Magazine
Afr. Zool. = African Zoology
AKA-KN = American Killifish Association-Killie Notes
Amer. Natur. = The American Naturalist
Amer. Zool. = American Zoologist
An. Acad. Brasil. Cienc. = Anais da Academia Brasileira de Ciencia (Rio de Janeiro)
An. Inst. Cienc. Mar Limnol. Univ. Nal. Autón. México = Anales del Instituto do Ciencias del Mar
y Limnologia, Universidad Nacional Autónoma de México
Anim. Sci. = Animal Science (Sofia)
Animals and Nature = The Nature and Animals (Tokyo)
Ann. Acad. Reg. Sci. Upsalien. = Annales Academiæ Regiæ Scientiarum Upsaliensis
Ann. Mus. Royal Afr. Centrale = Annales. Musee Royal de l'Afrique Centrale
Ann. Nat. Acad. Sci. India = Annals of the National Academy of Sciences India
Ann. New York Acad. Sci. = Annals of the New York Academy of Sciences
Ann. Rep. Biol. Res., Jeonbug Natn. Univ. = Annual Report of Biological Research, Jeonbug National
University (Korea)
Ann. Rep. Biwako Bunkakan = Annual Report of the Biwako Bunkakan (Japan)
Antarctic Sci. = Antarctic Science
Aquaculture
Aquacult. Res. = Aquaculture Research
Aquaria
Aquarien Terrarien = Aquarien und Terrarien

Aquarium

Aquarium-J. = The Aquarium Journal

Arch. FischWiss. = Archiv für Fischereiwissenschaft

Arch. Zootec. = Archivos de Zootecnia

Arquivos Mus. Bocage = Arquivos do Museu Bocage

Asian Fisheries Science (Manila)

Atti Soc. Ital. Sci. nat. Museo civ. Stor. nat. Milano = Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano

Aust. J. Mar. Freshw. Res. = Australian Journal of Marine and Freshwater Research

Basic Sci. Rev., Jeonbug Natn. Univ. = Basic Science Review, Jeonbug National University (Korea)

Bilješke notes, Inst. Oceanograf. Ribarstvo, Jugoslavija = Bilješke Notes. Instituto za Oceanografiju i Ribarstvo, Jugoslavija

Biochem. Syst. Ecol. = Biochemical Systematics and Ecology

Biol. Bratislava = Biologia, Bratislava

Biol. Bull. = Biological Bulletin

Biol. J. Linn. Soc. = Biological Journal of the Linnean Society

Biol. Morya = Biologiya Morya

Biol. Rev. = Biological Review of the Cambridge Philosophical Society

Biol. Zentralbl. = Biologisches Zentralblatt

BKA-Killi News = British Killifish Association-Killi News

BMC Evol. Biol. = BMC Evolutionary Biology

BMC Genetics

Bol. Inst. Espanol Oceanogr. = Boletin del Instituto Español de Oceanografia

Bol. Inst. Oceanogr. Univ. Oriente = Boletin del Instituto Oceanografico, Universidad de Oriente, Venezuela

Bol. Inst. Pesca = Boletim do Instituto de Pesca

Boll. Zool. = Bollettino di Zoologia

Bolm Inst. Oceanogr. S Paulo = Boletim do Instituto Oceanografica. São Paulo

Brazil. Archiv. Biol. Technol. = Brazilian Archives of Biology and Technology

Brazil. J. Biol. = Brazilian Journal of Biology

Brazil. J. Genet. = Brazilian Journal of Genetics

Bull. Aichi Univ. Educ. (Nat. Sci.) = Bulletin of Aichi University of Education (Natural History) (Japan)

Bull. Biogeogr. Soc. Japan = Bulletin of the Biogeographical Society of Japan

Bull. Dept. Educ. Utsunomiya Univ. = Bulletin of the Department of Education, Utsunomiya University (Japan)

Bull. Fac. Educ. Yamaguchi Univ. = Bulletin of the Faculty of Education, Yamaguchi University (Japan)

Bull. Fac. Fish. Hokkaido Univ. = Bulletin of the Faculty of Fisheries, Hokkaido University (Japan)

Bull. Fr. Pêche Piscic. = Bulletin Français de la Pêche et de la Pisciculture

Bull. Hiroshima Women's Univ. = Bulletin of the Hiroshima Women's University (Japan)

Bull. Inst. Basic. Sci., Inha Univ. = Bulletin of the Institute for Basic Science, Inha University (Korea)

Bull. Inst. Zool. Academia Sinica, Monograph = Bulletin of the Institute of Zoology, Academia Sinica, Monograph

Bull. Japan. Soc. Sci. Fish. = Bulletin of the Japanese Society of Scientific Fisheries

Bull. Korean Fish. Soc. = Bulletin of the Korean Fisheries Society

Bull. Mar. Sci. = Bulletin of Marine Science

Bull. Natl. Res. Inst. Aquaculture = Bulletin of National Research Institute of Aquaculture (Japan)

Bull. Natn. Sci. Mus. Tokyo = Bulletin of the National Science Museum, Tokyo

Bull. Natn. Sci. Mus. Tokyo, (A) = Bulletin of the National Science Museum, Tokyo. Series A (Zoology)

Bull. Sci. Yougoslavie, Sec. A = Bulletin Scientifique, Yougoslavie. Section A

Bull. Soc. Hist. Nat. Toulouse = Bulletin de la Société d'Histoire Naturelle de Toulouse

Calif. Fish Game = California Fish and Game

Can. J. Fish. Aquat. Sci. = Canadian Journal of Fisheries and Aquatic Sciences

Can. J. Genet. Cytol. = Canadian Journal of Genetics and Cytology

Can. J. Zool. = Canadian Journal of Zoology

Caribbean J. Sci. = Caribbean Journal of Science

Caryologia

Chinese J. Zool. = Chinese Journal of Zoology

Chrom. Inform. Serv. = Chromosome Information Service

Chrom. Res. = Chromosome Research

Chrom. Sci. = Chromosome Science

Chromatin

Chromosoma

Cien. Cultura = Ciência e Cultura

College Rev. College Liberal Arts Sci., Seoul Natn. Univ. = College Review of College of Liberal Arts and Sciences, Seoul National University (Korea)

Comp. Biochem. Physiol. = Comparative Biochemistry and Physiology

Contri. Sci. Nat. Hist. Mus. Los Angeles County = Contribution in Science. Los Angeles County Museum of Natural History

Copeia

Curr. Biol. = Current Biology

Curr. Opinion Genet. Develop. = Current Opinion in Genetics and Development

Curr. Sci. = Current Sciences (India)

Cybum

Cybum, 3rd ser.

Cytobios

Cytogenet. Cell Genet. = Cytogenetics and Cell Genetics

Cytogenet. Genome Res. = Cytogenetic and Genome Research

Cytogenetics

Cytologia

Cytometry

Dokl. Akad. Sci. USSR = Doklady Akademii Nauk SSSR

Doklady Acad. Sci. Ukrain. SSR, Ser. B = Doklady Akademii Nauk Ukrainskoy SSR, Ser. B

Dokl. Biol. Sci. = Doklady Biological Sciences

Doñana, Acta Vertebrata = Doñana - Acta Vertebrata

Environ. Biol. Fishes = Environmental Biology of Fishes

Environ. Ecol. = Environment and Ecology

Evolution

Exp. Cell Res. = Experimental Cell Research

Experientia

Fish Genet. Breed. Sci. = Fish Genetics and Breeding Science

Fish. Bull. = Fishery Bulletin

Fish. Sci. = Fisheries Science (Tokyo)

Fish. Sci. (China) = Fisheries Science (China)

Folia Biol. (Krakow) = Folia Biologica (Kraków)

Folia Zool. = Folia Zoologica (Brno)

Freshwater Fish. = Freshwater Fisheries (China)

Fujian Fish. = Fujian Fisheries (China)

Gayana

Gene

Genen Phaenen

Genet. Mol. Biol. = Genetics and Molecular Biology (Brazil)

Genet. Mol. Res. = Genetics and Molecular Research (Brazil)

Genet. Res. Camb. = Genetical Research, Cambridge

Genet. Sel. Evol. = Genetics Selection Evolution

Genetica

Genetics

Genetika = Russian Journal of Genetics

Genetika, Acta Biol. Iugoslavica = Acta Biologica Iugoslavica, serija F, Genetika (Beograd)

Genome

Genome Res. = Genome Research

Geobios

God. Biol. Inst. Univ. Saraevu = Godišnjaka Biološkog Instituta Univerziteta u Sarajevu

Hereditas

Hereditas (Beijing)

Heredity

Hydrobiol. J. = Hydrobiological Journal (Gidrobiologichesky Zhurnal)

Hydrobiologia

Ichthyol. Explor. Freshwaters = Ichthyological Exploration of Freshwaters

Ichthyol. Res. = Ichthyological Research (Japan)

Ichthyologia = Acta Biologica Iugoslavica, Serija E, Ichthyologia

Iden = Iden (Tokyo)

In Vitro

Ind. Biologist = Indian Biologist

Ind. J. Anim. Sci. = Indian Journal of Animal Sciences

Ind. J. Exp. Biol. = Indian Journal of Experimental Biology

Ind. J. Zool. = Indian Journal of Zoology

Ind. Vet. J. = Indian Veterinary Journal (Madras)

Interciencia (Caracas)

Intl. J. Acad. Ichthyol. = International Journal of Academy of Ichthyology (U.P., India)

Issled. Fauny Morei = Issledovaniia Fauny Morei

Ital. J. Zool. = The Italian Journal of Zoology

J. Annamalai Univ. Sci. = Journal of the Annamalai University. Part B, Science (India)

J. Aquaculture = Journal of Aquaculture (Korea)

J. Beijing Normal Univ. (Nat. Sci.) = Journal of Beijing Normal University (Natural Science)

J. Cytol. Genet. = The Journal of Cytology and Genetics (India)

J. Dalian Fish. Univ. = Journal of Dalian Fisheries University (China)

J. Dalian Fish. College = Journal of Dalian Fisheries College (China)

J. Exp. Mar. Biol. Ecol = Journal of Experimental Marine Biology and Ecology.

J. Exp. Zool. = The Journal of Experimental Zoology

J. Fac. Sci. Hokkaido Univ., Ser. Zool. = Journal of the Faculty of Science, Hokkaido University, Ser. 6, Zoology (Japan)
J. Fish Biol. = Journal of Fish Biology
J. Fish. China = Journal of Fisheries of China
J. Fish. Res. Board Can. = Journal of the Fisheries Research Board of Canada
J. Fish. Sci. China = Journal of Fishery Sciences of China
J. Fish. Sci. Technol. = Journal of Fisheries Science and Technology (Korea)
J. FisheriesSciences.com = Journal of FisheriesSciences.com
J. General Biol. = Journal of General Biology
J. General Physiol. = The Journal of General Physiology
J. Genet. = Journal of Genetics
J. Heredity = The Journal of Heredity
J. Ichthyol. = Journal of Ichthyology
J. Inland Fish. Soc. India = Journal of the Inland Fisheries Society of India
J. Liaoning Normal Univ. (Nat. Sci.) = Journal of Liaoning Normal University (Natural Science) (China)
J. Mar. Biol. Ass. India = Journal of the Marine Biological Association of India
J. Mar. Biol. Ass. U.K. = Journal of Marine Biological Association of the United Kingdom
J. Morphol. = Journal of Morphology
J. Ocean Univ. Qingdao = Journal of Ocean University of Qingdao (China)
J. Shanghai Fish. Univ. = Journal of Shanghai Fisheries University (China)
J. Shimonoseki Univ. Fish. = Journal of Shimonoseki University of Fisheries (Japan)
J. Structural Functional Genomics = Journal of Structural and Functional Genomics
J. Wuhan Univ. (Nat. Sci.) = Journal of Wuhan University (Natural Science Edition) (China)
J. Xiamen Univ. (Nat. Sci.) = Journal of Xiamen University (Natural Science) (China)
J. Yunnan Univ. = Journal of Yunnan University (China)
J. Zhanjiang Fish. Coll. = Journal of Zhanjiang Fisheries College (China)
J. Zhejiang College Fish. = Journal of Zhejiang College of Fisheries (China)
J. Zool. Lond. = Journal of Zoology, London
J. Zool. Syst. Evol. Res. = Journal of Zoological Systematics and Evolutionary Research
Japan Women's Univ. J. = Journal of Japan Women's University
Japan. J. Genetics = Japanese Journal of Genetics
Japan. J. Ichthyol. = Japanese Journal of Ichthyology

Korean J. Genet. = Korean Journal of Genetics
Korean J. Ichthyol. = The Korean Journal of Ichthyology
Korean J. Limnol. = Korean Journal of Limnology
Korean J. Zool. = Korean Journal of Zoology

La Kromosomo
La Kromosomo, II = La Kromosomo, Series II
Lat. Am. J. Aquat. Res. = Latin American Journal of Aquatic Research
Life Sci. Adv. = Life Science Advances (India)

Mar. Biol. = Marine Biology
Mar. Freshwater Res. = Marine and Freshwater Research
Mar. Sci. Monthly = Marine Sciences, Monthly (Tokyo)
Mar. Sci. Bull. = Marine Science Bulletin (China)
Marine Sciences (Beijing)
Matsya (India)
Medaka = The Fish Biology Journal Medaka (Japan)

Mem. Hyogo Univ. Agricul. = Memoirs of the Hyogo University of Agriculture (Japan)
Mitt. Hamburg. Zool. Mus. Inst. = Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut
Mol. Phylogenet. Evol. = Molecular Phylogenetics and Evolution

Nat. Acad. Sci. India, Ann. Num. = National Academy of Sciences India, Ann. Num.
Nat. Acad. Sci. Letters = National Academy Science Letters (Allahabad, India)
Nat. Hist. Mus. Stadt Bern, Jahrbuch = Naturhistorisches Museum der Stadt Bern, Jahrbuch
Naturalia = Naturalia, São Paulo
Naturaliste can. = Le Naturaliste Canadien
Nature
Neotrop. Ichthyol. = Neotropical Ichthyology
Notulae Naturae = Notulae Naturae of the Academy of Natural Sciences of Philadelphia
Nucleus = The Nucleus

Occ. Pap. Calif. Acad. Sci. = Occasional Papers of the California Academy of Sciences
Occ. Pap. Mus. Zool. Univ. Michigan = Occasional Papers of the Museum of Zoology, University of Michigan
Oceanol. Limnol. Sinica = Oceanologia et Limnologia Sinica
Oikos

Pakistan J. Zool. = Pakistan Journal of Zoology
Perspect. Cytol. Genet. = Perspectives in Cytology and Genetics (New Delhi)
Phil. Trans. R. Soc. London, (B) = Philosophical Transactions of the Royal Society of London, Ser. B
Physiol. Ecol. Japan = Physiology and Ecology Japan
Polar Biol. = Polar Biology
Postilla
Proc. Ind. Acad. Sci., Sec. B = Proceedings of the Indian Academy of Sciences, Section B
Proc. Japan Acad. = Proceedings of the Japan Academy
Proc. Japan Acad., Ser. B = Proceedings of the Japan Academy. Ser. B, Physical and Biological Sciences
Proc. Japan. Soc. Syst. Zool. = Proceedings of the Japanese Society of Systematic Zoology
Proc. Louisiana Acad. Sci. = Proceedings of the Louisiana Academy of Sciences
Proc. Nat. Acad. Sci. India = Proceedings of the National Academy of Sciences, India
Proc. R. Soc. Lond., B = Proceedings of the Royal Society of London. Series B, Biological Sciences
Proc. Soc. Exper. Biol. Med. = Proceedings of the Society for Experimental Biology and Medicine
Proc. Zool. Inst. Leningrad = Proceedings of the Zoological Institute, Leningrad
Proc. Zool. Soc. Calcutta = Proceedings of the Zoological Society, Calcutta
Progress Modern Biol. = Progress of Modern Biology (Uspekhi Sovremennoi Biologii)
Progressive Fish-Culturist = The Progressive Fish-Culturist (Washington, D.C.)

Radovi Anubih
Rapp. Comm. Int. Mer. Médit. = Rapport du Commission International de la Mer Méditerranee
Rep. Mishima Res. Inst. Sci. Liv., Nihon Univ. = Report of the Mishima Research Institute of Sciences for Living, Nihon University (Japan)
Res. Bull. (N.S.) Panjab Univ. = Research Bulletin (N.S.) of the Panjab University (India)
Res. Rev. BioSciences (India) = Research and Reviews in BioSciences (India)
Rev. Biol. Trop. = Revista de Biología Tropical (San José)

Rev. Biol. Uruguay = Revista de Biología del Uruguay
 Rev. Fish Biol. Fish. = Reviews in Fish Biology and Fisheries
 Rev. fr. Aquariol. = Revue Française D'aquariologie
 Rev. Hydrobiol. Trop. = Revista Hydrobiologia Tropical
 Russian J. Genet. = Russian Journal of Genetics
 Russian J. Mar. Biol. = Russian Journal of Marine Biology

Saber, Univ. Oriente, Venezuela = Saber, Universidad de Oriente, Venezuela
 Sci. Culture = Science and Culture (Calcutta)
 Sci. Rep. Res. Inst. Evol. Biol. = Science Report of the Research Institute of Evolutionary Biology (Tokyo)
 Sci. Mar. = Scientia Marina
 Science
 Sinozool. = Sinozoologia
 Southwest. Nat. = The Southwestern Naturalist
 Stain Technol. = Stain Technology
 Swedish. J. Agric. Res. = Swedish Journal of Agricultural Research

Tansuigyo (Osaka)
 Texas J. Sci. = The Texas Journal of Science
 Texas Rep. Biol. Med. = Texas Reports on Biology and Medicine
 TFH = Tropical Fish Hobbyist
 Theor. Appl. Genet. = Theoretical and Applied Genetics
 Trans. Amer. Fish. Soc. = Transactions of the American Fisheries Society
 Trans. Chinese Ichthyol. Soc. = Transactions of the Chinese Ichthyological Society
 Travaux Mus. Natl. Hist. Nat. "Grigore Antipa" = Travaux du Museum National d'Histoire Naturelle "Grigore Antipa"
 Trends Genet. = Trends in Genetics
 Tropic Oceanology (Beijing)
 Trudy Zool. Inst. = Trudy Zoologicheskogo Instituta
 Tsitol. Genet. = Tsitologiya i Genetika
 Tsitobiologiya
 Turk. J. Biol. = Turkish Journal of Biology
 Turk. J. Zool. = Turkish Journal of Zoology

Veterinar. Arhiv = Veterinarski Arhiv
 Vidensk. Medd. Dansk naturh. Foren. = Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening
 Vie Milieu = Vie et Milieu
 Vopr. Ichthyol. = Voprosy Ikhtiologi

Z. Binnenfisch. = Zeitschrift für die Binnenfischerei
 Z. Fisch. = Zeitschrift für Fischerei
 Z. Fischkunde = Zeitschrift für Fischkunde
 Z. Zool. Syst. Evol.-Forsch. = Zeitschrift für Zoologische Systematik und Evolutionsforschung
 Zool. Abhand. Staat. Mus. Tier. Dresden = Zoologische Abhandlungen Staatliches Museum für Tierkunde in Dresden
 Zool. Anz. = Zoologischer Anzeiger
 Zool. Mag. Japan = Zoological Magazine, Japan
 Zool. Orientalis = Zoologica Orientalis
 Zool. Res. = Zoological Research (Kunming, China)
 Zool. Sci. = Zoological Science (Japan)
 Z. l. Zh. l. = Zoologicheskii Zhurnal

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