## Actinopterygian species tree hypothesis Erpetoichthys calabaricus Reedfish Lepisosteus oculatus Spotted gar Actinopterygii Osteoglossidae Scleropages formosus Asian arowana Osteoglossomorpha (Sallan 2014) (Inoue et al. 2009) Mormyridae Elephantfish Paramormyrops kingsleya Denticipitidae Denticeps clupeoides Denticle herring Neopterya Clupeidae Atlantic herring Clupea harengus Zebrafish Danio rerio Otocephala Cypriniformes Cyprinidae Carassius auratus Goldfish (Mayden et al. 2009) Cyprinini (Nakatani et al. 2011) Sinocyclocheilus grahami Golden-line barbel TGD (Wu et al. 2010) Sinocyclocheilus/ CGD Cyprinus Telenstei Otophys Cyprinus carpio Common carp (Inoue et al. 2003) (Saitoh et al. 2003) Gymnotiformes Electrophorus electricus Electric eel Tachysurus fulvidraco Yellow catfish Characiphysae Siluriformes (Nakatani et al. 2011) Pangasianodon hypophthalmus Striped catfish Ictaluridae Ictalurus punctatus Channel catfish Siluriformes/ Characiforme Characidae Astyanax mexicanus Mexican tetra Characiformes Red-hellied pirapha Pvaocentrus nattereri Clupeocephala (Inoue et al. 2003) Esociforme Esox lucius Northern pike Protacanthopterygi Hucho hucho Huchen SaGD (Ishiguro et al. 2003) Salmo salar Atlantic salmon Salmoniforme (Campbell et al. 2013) (Horreo 17) Salvelinus/ Salvelinus alpinus Arctic char Oncorhynchus mykiss Oncorhynchus mykiss (Campbell et al. 2013) Oncorhynchus Oncorhynchus tshawytscha Chinook salmon (Campbell et al. 2013) tshawytscha/kisutch (Campbell et al. 2013) Coho salmon Oncorhvnchus kisutch Gadiformes Gadus morhua Atlantic cod (Ishiguro et al. 2003) Labridae Ballan wrasse Labrus bergylta Gasterosteidae Labridae/ Tetraodontiformes Gasterosteus aculeatus Three spined stickleback Perciformes Bovichtidae (Near et al. 2013) Cottoperca gobio Channel bull blenny Perciformes/ Tetraodontiformes Notothenioidei Notothenia coriiceps Yellowbelly rockcod (Near et al. 2013) Acanthomorphata Sciaenidae/ Tetraodontiformes Larimichthys crocea Large yellow croaker (Miya et al. 2003 Moloide Ocean sunfish (Near et al. 2013) Spotted green pufferfish Tetraodon nigroviridis Tetraodontoidei Takifugu rubripes Torafugu Cynoglossidae Cynoglossus semilaevis Tongue sole Pleuronectiformes Percomorphacea Scophthalmidae Scophthalmus maximus Turbot (Near et al. 2013) Paralichthyidae Paralichthys olivaceus Pleuronectiformes/ Carangiformes (Campbell et al. 2014) Japanese flounder Centropomidae Centropomidae/ Carangiformes (Song et al. 2014) Barramundi perch Seriola lalandi dorsalis Yellowtail amberjack (Li et al. 2011) Carangiformes Seriola dumeril Greater amberjack Bicolor damselfish Stegastes partitus Pomacentridae Amphiprion ocellaris Clown anemonefish Amphiprion/Acanthochromis Pomacentridae/ (Cooper and Westneat 2009) Acanthochromis polyacanthus Spiny chromis Pleuronectiformes/ Atherinomorpha New World cichlids (Mabuchi et al. 2007) (Song et al. 2014) Amphilophus citrinellus Midas cichlid Cichlidae Tilapia Oreochromis niloticus Yretail cichlid Neolamprologus brichardi African Pundamilia nyererei Makobe Island cichlid (Meyer et al. 2015) Haplochromini Mavlandia zebra (Meyer et al. 2015) Zebra mbuna Pomacentridae/ Atherinomorpha (Smith and Carleton 2010) Haplochromis burtoni Burton's mouthbrooder (Mabuchi et al. 2007) Hippocampus comes Tiger tail seahorse Syngnathiformes Syngnathiformes/Gobiiformes Mastacembelus armatus Zig-zag eel (Song et al. 2014) Periophthalmus magnuspinnatus P. magnuspinnatus Great blue-spotted mudskipper Gobiiforme Boleophthalmus pectinirostris Synbranchiformes Monopterus albus Swamp eel Nothobranchiidae Nothobranchius furzeri Syngnathiformes/ Atherinomorpha (Song et al. 2014) Turquoise killifish Aplocheiloidei (Braganca et al. 2018) Austrofundulus limnaeus Rivulid Cyprinodontiformes Cyprinodontidae Cyprinodon variegatus Sheepshead minnow Synbranchiformes/ Atherinomorpha (Song et al. 2014) (Braganca et al. 2018) Fundulidae Fundulus heteroclitus Mummichog Cvprinodontoidei (Braganca et al. 2018) Platvfish Xiphophorus maculatus (Braganca et al. 2018) Poeciliidae Atherinomorpha (Braganca et al. 2018) Poecilia Poecilia formosa Amazon molly (Mabuchi et al. 2007) Poecilia reticulata Guppy Oryzias melastigma Indian medaka Beloniformes Adrianichthyidae Orvzias latipes Medaka