INHIBITION OF LARVAL RECRUITMENT OF ARMANDZA SP.

(POLYCHAETA:OPHELIIDAE) BY ESTABLISHED ADULTS OF

PSEUDOPOLYDORA PAUCZBRANCHZATA (Okuda)

(POLYCHAETA : SPIONIDAE) ON AN INTERTIDAL SAND FLAT

The basic procedure in field experiments examining adult-larval interactions is to

establish plots from which adults which may interact with settling larvae are removed

or in which densities of such adults are varied, and to compare the larval densities there

with those in control plots. Although cages are most commonly used to assess the

influence of larger predators such as fish, crabs, and epibenthic predatory benthos on

infauna, they also provide a good opportunity to study competitive or adult-larval

interations between infaunal species which can attain high densities within cages.

Description of a new subfamily, genus and species of a freshwater atherinid,

Bleheratherina pierucciae (Pisces: Atherinidae) from New Caledonia

intro

Atherinids are small marine, estuarine and freshwater fishes not exceeding 120 mm SL (a soon to

be described species of Craterocephalus may reach 300 mm SL), occurring predominantly in the Old

World, with only Alepidomus evermanni (freshwaters of Cuba) and two marine species,

Atherinomorus stipes and Hypoatherina harringtonensis

(predominantly in the shore waters of the

Caribbean) known from the New World. In the

Southeast Pacific, the family is only known only

from Tumaco, Colombia, according to Dyer.

All freshwater atherinid species are derived from

marine ancestors and until recently have only been

known from the rivers of Australia, New Guinea

and some islands in the vicinity of the latter.

Species-specific traits and the environment drive ichthyoplankton fluxes

between an intermittently closed-open lagoon and adjacent coastal waters

This study evaluated the connectivity between an intermittently closed-open lagoon (LR) and adjacent coastal

waters (CW), and the influence of that connection on ichthyoplankton assemblages. We performed field surveys

along a year in LR and CW to capture different sandbar states (open/closed) and lagoon-sea connectivity processes (e.g. lagoon discharges, marine intrusion, overwashing). Results showed differences in environmental

conditions and ichthyoplankton communities between LR and CW, and also evidenced different mechanisms of

exchange of water and ichthyoplankton. At least three estuarine species were found to spawn and use LR as a

nursery ground. Larval stages of six marine species were found at CW. Environmental factors (e.g. wind and

runoff) and species-specific traits (e.g. life cycle strategy, spawning season) determined ichthyoplankton ex change vs. retention. Marine estuarine-related species entered LR mostly during summer-autumn, at their peak

abundance in CW. Sandbar closure did not impede the entrance of these species. Overwashing events (closed bar)

and light onshore winds during the open-sandbar period were the most important process that promoted the

transport of these larvae into LR. Conversely, there was no evidence of entrance of marine estuarine-independent

larvae to LR. Eggs and larvae of estuarine species that spawned within LR were effectively retained there, except

when heavy rains led to severe lagoon discharges. Similarly, unusual strong onshore winds advected eggs from

CW to LR, possibly reducing their survival. Generally, eggs were more vulnerable to drift than larvae. Many of

the estuarine larvae that drifted out of the lagoon seemed to survive, suggesting a loss of individuals from the

lagoon population but a potential contribution to the genetic flux among coastal populations.

Body size as a predictor of species loss effect on ecosystem functioning

There is an urgent need to develop predictive indicators of the effect of

species loss on ecosystem functioning. Body size is often considered as a good

indicator because of its relationship to extinction risk and several functional

traits. Here, we examined the predictive capacity of species body size in marine

and freshwater multitrophic systems. We found a significant, but weak, effect of

body size on functioning. The effect was much stronger when considering the

effect of body size within trophic position levels. Compared to extinctions

ordered by body size, random extinction sequences had lower multiple species

loss effects on functioning. Our study is the first to show experimentally, in

multitrophic systems, a more negative impact of ordered extinction sequences on

ecosystem functioning than random losses. Our results suggest apparent ease in

predicting species loss effect on functioning based on easily measured

ecological traits that are body size and trophic position.

Aspects of body size and gonadal histology in the Antarctic tooth®sh,

Dissostichus mawsoni, from McMurdo Sound, Antarctica

Twenty-eight specimens of the large not othenioid Dissostichus mawsoni were dissected after

capture on a set line near the southern limit of its range

in McMurdo Sound, Antarctica. Total length (LT) averaged 127.3 cm (range 90±162 cm) and weight (W) was

26.7 kg (range 10.4±60.3 kg). The length-weight rela tionship was W=3.44 10ÿ5 L2:85T (n 28, r2 0.96).

Subcutaneous lipid thickness averaged 2.6 mm and

showed no dierence due to sex, but a signi®cant weak

relationship to W and LT. Hepatosomatic index (IH) was

1.6% for females and 1.7% for males; gonadosomatic

index (IG) was 0.9% for females and 0.2% for males.

Although specimens were large and sexually mature, the

histology indicated that the gonads of this November

samples were in a resting stage. Testes lacked spermatids

and spermatozoa. Oocytes were in the previtellogenic

stage (91.2%) or in the ®rst stage of vitellogenesis

(8.8%). A few atretic oocytes and empty follicles

indicated that some females in this sample had

spawned previously. A summary of the life-cycle is also

presented

Body size and ecological diversification in a sister species pair of triplefin fishes

The effect of body size on spatial resource competition and reproductive isolation was examined in a sister species pair of subtidal triplefin fishes (F. Tripterygiidae) in

New Zealand. Ruanoho decemdigitatus and Ruanoho whero have overlapping sympatric

distributions and differ in body size, attaining a total length of 12 cm and 9 cm, respectively. R. decemdigitatus was most commonly found in sheltered areas shallower than 5 m,

while R. whero was frequently found in sheltered to moderately exposed areas down to

20 m. In sites where the species co-occurred, R. whero was less associated with rock

substratum. The effect of body size on substratum use was investigated using laboratory

trials based on the field data to test habitat preference and competitive ability in a common

setting. Reproductive behaviour was assessed in courtship, mate choice and hybridisation

trials. Both species exhibited similar habitat preferences, but large R. decemdigitatus were

dominant in inter- and intraspecific contests for the preferred rock habitat, while small

R. whero were displaced into less preferred habitats. Courtship behaviour in R. whero was

a subset of that displayed by R. decemdigitatus, while no mating behaviour was observed

in heterospecific trials. Female R. whero showed a strong preference for smaller males,

while female R. decemdigitatus had no preference for male size. Results suggest that body

size differences in the Ruanoho pair are consistent with female choice for smaller males in

R. whero and competition for habitat in both species. Body size in the Ruanoho species

appears to be influenced by conflicting selection pressures that may differ between the

species.

Brief Review of the Genera Hemilepidotus

and Melletes (Cottidae) and Some Traits of the Biology

of a New Species for Russia Hemilepidotus zapus from Pacific

Waters of the Northern Kurils

Abstract—

The Comparative morphological description of 248 specimens of six species of the genera Hemil epidotus and Melletes served as the basis for the assessment of the variation of over 28 external morphological

features for the determination of taxonomic boundaries of species belonging to this group. Improved diagnosis of species are composed. Significant transgression of most features previously used in identification is

revealed. Additional taxonomic features are found. In combination with some previously used features, they are

used in the key for reliable identification of species of both genera irrespective of localities, sex, age, and condition of a specimen. In Russian waters, Hemilepidotus zapus is distributed off the Commander Islands and the

Northern Kurils from Paramushir Island to Ketoy Island. Taking into consideration trawl catches of 1996-2001,

the spatial-bathymetric distribution of zapus in Pacific waters off the Northern Kurils (from 47°50' to 50°30' N, depths of 100-850 m) is analyzed, its thermal environment is characterized. In the northern part of the investigated area near Paramushir Island, H. zapus is represented by larger specimens staying at greater depths than

in the southern part (on the slopes of the underwater ridge of the outer Kurils). This species is the smallest and

the most short-cycled representative of the genus Hemilepidotus, whose maximum size reaches 26 cm and

330 g, and age reaches nine years. It spawns in August to September; the spawning is single-batch; fecundity

is relatively low (on average 12800 eggs); there is dimorphism in size (females are larger than males) and in

color and size of fins. Similar to other representatives of the genus Hemilepidotus, H. zapus is a benthoich thyophage with a wide food range consisting mainly of bottom and demersal crustaceans (Cirripedia,

Amphipoda, and Decapoda) and Polychaeta

Description of a new subfamily, genus and species of a freshwater atherinid,

Bleheratherina pierucciae (Pisces: Atherinidae) from New Caledonia

Abstract

Bleheratherina pierucciae is described from Tontouta

(26°56.9’S 166°14’E) and Pirogues Rivers, New Caledonia. The new species has been compared with other Indo Pacific atherinids, both freshwater and marine (representatives of genera Atherinason, Atherinomorus, Atherinosoma,

Atherion, Craterocephalus, Hypoatherina, Kestratherina,

Leptatherina and Stenatherina) and an atherionid (Athe rion). Dyer & Chernoff’s (1996) division of Atherinidae

into three subfamilies has been briefly reviewed and a

fourth subfamily, Bleheratherininae, is now added to this

list since the new species is distinct and different from all

known atherinids. Bleheratherina pierucciae can be imme diately recognised by the unusual structure of its mouth parts. Other distinct osteological characters confirm that it

merits a subfamilial status. The evolutionary history of this

new species must have commonality with the Australian

coastal and marine fishes, having probably been derived

from a common ancestor likely to have occurred in a

marine environment i.e. Arafura Sea. The zoogeographic

events, which led to the separation of New Caledonia from

Australia and its emergence as a separate island, post

Palaeocene, must have led to a divergence of the ancestral

fauna which invaded the freshwaters of New Caledonia.

A REVIEW OF THE MARINE CATFISH GENUS PARAPLOTOSUS

(PLOTOSIDAE) WITH THE DESCRIPTION OF A NEW SPECIES

FROM NORTH-WESTERN AUSTRALIA

The marine catfish genus Paraplotosus Bleeker is reviewed. Three

species are recognised: P. albilabris (Valenciennes) from the Indo-Australian

Archipelago, P. muelleri (Klunzinger) from north-western Australia and adjacent

Northern Territory, and an undescribed species from northern Australia. Paraplotosus

butleri, new species, is described from 40 specimens, 26-325 mm SL, collected mainly

from coastal seas of northwestern Australia. It is clearly distinguishable from congeners

by its black colouration, longer dorsal fin , longer barbels, and greater number oflowerlimb gill rakers and upper procurrent caudal rays. Paraplotosus muelleri and P.

albilabris are similar in appearance and habits, but are separable on the basis of dorsal

fin height and eye size, which are invariably greater in P. muelleri.

Life history and ecology of seahorses: implications for

conservation and management

Newborn young measured from 2 to 20 mm in length, which was a narrower size range than the 17-fold difference that occurred in adult size. Newborn body size

had no relationship to adult size. Both eggs and young were larger than expected among marine

teleosts, even when considering only those with parental care, but brood size at release was

lower than expected, perhaps because the young were more developed. The size of adults, eggs

and young increased with increasing latitude, although brood size did not. Considerable

research is needed to advance seahorse conservation and management, including (a) fisheries dependent and fisheries-independent abundance estimates, (b) age- or stage-based natural and

fishing mortalities, (c) growth rates and age at first maturity, and (d) intrinsic rates of increase

and age- or size-specific reproductive output. Current data confirm that seahorses are likely to

be vulnerable to high levels of exploitation

With maximum sizes of over 100 kg (DeVries 1998;

Kock and Everson 1998), the Patagonian and Antarctic

tooth®sh of the genus Dissostichus are an important

resource and the largest ®ship in the Southern Ocean.

Their size, neutral buoyancy, pelagic nomadic lifestyle

and piscivorous feeding behaviour are unusual within a

notothenioid group dominated by small, sedentary de mersal ®shes (Eastman 1993). Dissostichus eleginoides

Smitt, the Patagonian tooth®sh, lives primarily north of

the Antarctic Zone whereas the Antarctic tooth®sh,

D. mawsoni Norman, inhabits colder waters between

the Antarctic Polar Front and the continental margin

(DeWitt et al. 1990)

This is a tube-building, spionid polychaete, and a transient member of the present

sand flat. In summer, it reaches its peak numerical density and is the most dominant

infaunal organism (Tamaki & Kikuchi, 1983; Tamaki, 1984a). The maximum body

length is 8 mm. This species collects detritus on the sediment surface with its palps and

makes a dwelling tube that protrudes above the sediment surface. It is basically a

suspension-feeder that catches suspended food including benthic larvae (Levin, 198 1;

Tamaki, 1984a) but it also deposit-feeds.

Most marine fish and invertebrate species produce free and small

early-stages which are part of the plankton. These incompletely developed individuals are highly vulnerable to unsuitable conditions like

starvation and environmental variability, and it was early recognized

that survival during these stages often regulates recruitment and adult

population size (Cowan and Shaw, 2002, Pineda et al., 2007). Recruitment theories have thus focused on the environmental modulation of

larval survival, and they generally assume that while spawning occurs

within relatively fixed time-frames along the year cycle, hydrographic

conditions and plankton production show higher inter-annual variability.

The three species exhibit similar behavior and ecological preferences. They are inhabitants

of shallow reef areas, usually encountered in less than 10 m depth. During the day they are

mainly sedentary, frequently seen resting on the bottom under rock or coral outcrops on

substrata containing substantial amounts of sand, silt, mud, or algae. Presumably they are

active nocturnally, and are known to feed on small invertebrates, particularly gastropod

molluscs and crustaceans.