

## TAXONOMIC NOTES ON ESTUARINE FISHES COLLECTED FROM LOWER REACHES OF MANIMALA RIVER

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**ABSTRACT :** Estuarine fishes were collected from lower reaches of Manimala River and systematic studies were conducted on them. Their meristic counts, morphometric characters and other relevant features were studied and taxonomically analyzed.

**Key words :** Systematics, native fishes, *Lates*, *Scatophagus*, *Gerres*.

### INTRODUCTION

Estuaries are highly productive environments that provide important forage, spawning, refuge, and nursery habitat for various fish species during their life history stages (Able, 2005; Chambers, 1992; Nelson and Monaco, 2000). They are usually biologically highly productive zones and act as breeding and spawning ground for many commercially important fishes. Several of the species of prawns of marine origin as well as some of the species of freshwater origin have an estuarine phase in their life history. Only a few freshwater fish species, such as cichlids, have become fully euryhaline and have successfully occupied a wide range of estuaries.

Some estuarine species occasionally visits freshwater bodies. They are primarily saltwater species, but can penetrate freshwaters too infrequently. During a zoological survey, this author could collect some estuarine and salt water fishes from the lower reaches of Manimala river. Taxonomic studies were conducted on them.

### MATERIALS AND METHODS

This study was conducted during the period from January, 2010 to January, 2013. Experimental fishing was carried out at low level regions of Manimala River such as Paduthodu, Manackachira, West Venpala and

Kallumkal. Gill nets, caste nets and dip nets were used for collecting fishes. Gill nets were used in areas where water body was deep; cast nets were used in areas where water is shallow. Fishes collected from various localities during the morning times. After capture, fishes were fixed in nine percent formalin. Fixed fishes were taken out after one month and taxonomically identified based mainly on meristic, morphometric and descriptive characters. Methods and measurements used are as per Jayaram (2002, 2010).

### RESULTS AND DISCUSSION

During the present study, seven species of estuarine and marine fishes were collected from lower levels of Manimala river. They are *Megalops cyprinoides*, *Arius subrostratus*, *Strongylura strongylura*, *Lates calcarifer*, *Gerres filamentosus*, *Scatophagus argus* and *Euryglossa orientalis*. All these are edible fishes. Systematic details of these fishes are as follows:

#### *Megalops cyprinoides* (Broussonet)

*Clupea cyprinoides* Broussonet, *Ichthyol.* (Type locality: Tanna Ids. New Hebrides; type species, *Megalops filamentosus* Lacepede).

**Diagnosis :** Last branched ray of dorsal fin greatly elongated. Lower jaw prominent and longer than upper

**Abbreviations used :** D- Dorsal fin rays; P- Pectoral fin rays; V- Ventral fin rays; A- Anal fin rays; C- Caudal fin rays; LLS- Lateral line scales; PDS- Pre dorsal scales; PRPLS- Pre pelvic scales; PRAS- Pre anal scales; LL/D- Scales between lateral line and dorsal fin; LL/V- Scales between lateral line and ventral fin; L/TR- Transverse scales; LL/A- Scales between lateral line and anal fin; CPS- Circumpeduncular scales; HD- Head depth; HW- Head width; BDD-Body depth at dorsal fin; BDA- Body depth at anal fin; BWD-Body width at dorsal fin; BWA- Body width at anal fin; PRD-Pre dorsal distance; POD-Post dorsal distance; PRP- Pre pectoral distance; PRPL- Pre pelvic distance; PRA- Pre anal distance; LD- Length of dorsal fin; LP- Length of pectoral fin; LPL- Length of pelvic fin; LA- Length of anal fin; LBD- Length of base of dorsal fin; LBA- Length of base of anal fin; LCP- Length of caudal peduncle; DCP- Depth of caudal peduncle; WCP- Width of caudal peduncle; DAV- Distance from anal to vent; DVV- Distance from ventral to vent; DP-PL- Distance from pectoral to pelvic fin; DPL- A- Distance from pelvic to anal fin; DA- C- Distance from anal to caudal fin; LSPD- Length of spinal dorsal fin; LSOD- Length of soft dorsal fin; LBSPD- Length of base of spinous dorsal fin; LBSOD- Length of base of soft dorsal fin; LDSP- Length of dorsal spine; ED- Eye diameter; IOW- Inter orbital width; INW- Inter narial width; WGM- Width of gape of mouth; STL- Snout Length.

jaw. Lateral line straight, complete with 37- 42 scales and branched tubes.

**Meristic counts :** D- 17- 21; P-15- 16; V-10-11; A-24-31; LLS-37-42.

**Metric characters :** TL (mm)- 175.0; SL (mm)- 137.0; HL (mm)- 40.0% SL: HL- 29.2; HD-27.7; BDD- 33.6; PRD- 51.1; POD-58.4; PRP- 51.1; LD- 21,9; LP- 17.5; LPL- 13.1; LBD- 14.6; LBA-16.8% HL: HD- 95.0; ED- 25.0; STL- 22.5.

**Other features :** Dark greenish on the back and silvery on the flanks; scales large and brilliantly silver in colour. Eyes large, not visible from below ventral surface. Lateral line straight. Caudal fin deeply forked.

#### *Arius subrostratus Valenciennes*

*Arius subrostratus Valenciennes*, Hist. nat. Poiss., 15, P.62 (Type locality: Malabar).

**Dignosis :** Cephalic frontal groove narrow, considerably deep and reach to occiput; occipital process reaches dorsal front; distal half of last undivided ray of rayed dorsal fin extremely long, filamentous and extends up to or very near to origin of adipose dorsal fin; tip of pectoral fin never reach pelvic origin; ventral fin located in the middle of rayed and adipose dorsal fin; its tip reach very near to anal fin origin; anal tip reach caudal base.

**Meristic counts :** D- I, 7; V- i, 6; P- I, 12; A- VI, 14; C- 16.

**Metric characters :** TL (mm)- 252.0; SL (mm)- 216.0% SL: HL- 20.5; HD-1.1; HW-16,2; BDD-12.0; PRD-28.5; POD-60.5; LD- 6.7; LBA-41.0; LP-11.7; LPL-10.0; LA-4.2; LC-13.6; DP- PL- 20.1; DPL- A- 7.4% HL: HD-59.2; HW- 65.3; ED-22.4; STL-44.8; IOW-34.7; INW-14.3.

**Other features :** Upper caudal lobe longer than the lower one; dorsal spine serrated on inner and outer sides; pectoral spine finely serrated on outer side and moderately serrated on inner side. Maxillary barbels reach just behind the front border of orbit; never reach pectoral origin or opercle, just reach half way between maxillary base and pectoral base; outer mandibulars shorter than maxillary; it never reach orbit; inner mandibulars shorter than outer mandibulars; no nasals.

**Remarks :** The present species differs considerably from *Arius subrostratus* and all other congeners in the length of barbels, deep cephalic groove and in the number of pectoral fin rays. But it is tentatively considered here as *Arius subrostratus*.

#### *Strongylura strongylura Van Hasselt*

*Belone strongylura Van Hasselt, Algem Konst.*

*Letter- Bode*, 2: 130 (type locality : Vizhagapattanam).

**Diagnosis :** Dorsal fin inserted on the posterior region of the body, behind the origin of anal fin; caudal nearly rounded; a deep black spot present at the base of caudal fin.

**Meristic counts :** D-14; P-12; V-i, 6; A-16; C-14.

**Metric characters :** TL (mm) - 350.0; SL- 325.0; HL (mm)- 123.5% SL: HL- 38.0; HD-6.2; HW-4.6; BDP- 6.8; BDA-5.4; BWA-4.3; LP-8.0; LPL-4.9; LA-8.6; LC- 10.5; DP-PL-23.1; DL-A- 15.2; DA-C-20.0; LBD-10.8; LBA- 13.7; DAV- 1.7; DVV- 13.1% HL: HD-16.2; HW- 12.1; ED-8.5; STL-68.0; WGM- 7.3; IOW-8.9; INW- 6.5.

**Remarks :** It is a very rare fish species. *Strongylura strongylura* is the only one species of this genus found in India. This researcher could collect five specimens of *Strongylura* from West Bengal; the present fish showed some differences from the latter; but before come to a conclusion *Strongylura* from Vizhagapattanam must be collected and analysed

#### *Lates calcarifer Bloch*

*Holocentrus calcarifer Bloch, Naturges, ausland. Fische* (4): 100 (Type locality: Indonesia).

**Diagnosis :** Dorsal and anal fins with strong spines; pelvic fin with a thin but strong spine; pelvic fin originate just below pectoral fin; tip of anal reach caudal base; mouth with canine teeth.

**Meristic counts :** D- X, 14; P- i, 14; V- I, 5; A- III, 9; C- 17; LLS- 50; PDS- 16; PPLS- 9; PRAS- 25; LL/ V- 16; LL/D- 6; LL/A- 14.

**Metric characters :** TL (mm)- 199.0; SL (mm)- 161.0; HL (mm) - 59.0% SL: HL- 36.7; HD-28.6; HW- 19.8; BDD-34.8; BDA-14.3; BWD-21.1; BWA-30.4; PRD-46.0; POD-62.7; PRP-37.8; PRPL-41.6; PRA- 69.6; LP-30.4; LPL-20.5; LC-24.2; LSPD-13.0; LSOD- 13.0; LBSPD-35.4; LBSOD-17.4; LBA-16.1; LCP-18.0; DCP-12.4; DPL-A-30.4; DA-C-34.1; DVV-24.2; DAV- 6.2% HL: HD- 78.0; HW-54.2; ED- 27.1; WGM-32.2; STL-32.2; IOW-22.0; INW-22.0.

**Remarks :** It is an estuarine species; might have descended to Manimala River from Vembanadu Lake.

#### *Gerres filamentosus Cuvier*

*Gerres filamentosus Cuvier, Regne Animale* (2<sup>nd</sup> ed.) 2: 188 (on 'Wodowahal' of Russel, Vizagapattanam).

**Diagnosis :** Second dorsal ray extremely long, reach above the middle of anal. First ventral fin ray weekly ossified; pectoral fin unusually elongated, tip of it reach anal fin origin; lateral line convex up to in front of posterior

Fig. 1 : *M. cyprinoides*.Fig. 2 : *A. subrostratus*.Fig. 3 : *S. strongylura*.Fig. 4 : *L. calcarifer*.Fig. 5 : *G. filamentosa*.Fig. 6 : *S. argus*.Fig. 7 : *E. orientalis*.

end of anal fin base and then goes straight up to extreme tip of caudal base.

**Meristic counts :** D- II, 17; P- 16; V- I, 6; A- III, 7; C- 20; LLS- 50; PDS- 21; LL/D-  $7\frac{1}{2}$ ; LL/V-  $10\frac{1}{2}$ ; LL/A- 11; PRPLS- 10; PRAS- 26.

**Metric characters :** TL (mm)- 165.0; SL (mm)- 130.0; HL (mm) - 42.0% SL: HL- 32.3; HD-27.0; HW- 15.4; BDD-40.8; BDA-31.5; BWD-19.2; BWA-13.1; PRD- 43.8; POD-63.8; PRP-32.3; PRPL-39.2; PRA- 67.7; LP- 33.1; LPL-23.1; LA-12.3; LC- 27.0; LBD- 50.8; LBA-14.6; DPL- A-31.5; DA-C-30.0; DVV-23.1; DAV-8.5; LCP-17.7; DCP- 11.5; WCP-5.4% HL: HD- 83.3; HW-47.6; ED-35.7; STL-33.3; WGM-21.4; IOW- 31.0; INW-21.4.

**Remarks :** This fish is peculiar in possessing a number of oval brownish blotches present on the upper lateral sides of the body; major parts of anal and dorsal fins are enclosed in a skin layer.

#### *Scatophagus argus* (Linnaeus)

*Chaetodon argus* Linnaeus, Systema Naturae (ed.12), 1: 464 (type locality: India).

**Diagnosis :** Body deep and laterally compressed; head comparatively small; pre dorsal region not straight; the region from occiput to dorsal front steep; a prominent depression present at occiput; dorsal, ventral and anal fins with strong fins; lateral sides of the body with round, black spots.

**Meristic counts :** D- XI, 18; P- i 17; V- I, 5; A- IV, 16; C- 14.

**Metric characters :** TL (mm)- 111.0; SL (mm)- 92.0; HL (mm)- 2.8% SL: HL- 30.4; HD-43.5; HW- 18.5; BDD-59.8; BDA-57.6; BWD-22.8; BWA-19.6; PRD-49.0; POD- 62.0; PRA-65.2; PRP-30.4; PRPL- 40.2; PRA-64.1; LP- 16.8; LPL- 25.0; LA- 19.6; LC- 20.7; LSOD-19.6; LDSP-21.7; LSOD-19.6; LCP- 8.7; DCP-14.7; WCP-6.5% HL: HD- 142.8; HW-60.7; STL- 35.7; IOW-42.8; INW-28.6; WGM- 35.7.

**Remarks :** It is a brackishwater fish ascended to Manimala River from Vembanad Lake; during the present study it is collected only from low level regions of Manimala River. Various specimens of *S. argus* showed no major difference in meristic and metric characters.

#### *Euryglossa orientalis* (Bloch & Schneider)

*Pleuronectes orientalis* Bloch & Schneider, Syst. Ichth: 157 (Type locality: Tranquebar, S. India).

**Diagnosis :** Eyes located close together on the dorsal side of head; pectorals considerably short and present on both sides; ventral short and its tip reach behind the origin of anal fin. Dorsal fins fused to caudal fin at its base; scales are minute.

**Meristic counts :** D- 55; P- 8; V- 5; C- 16.

#### CONCLUSION

Lower reaches of Manimala River is a biodiversity rich area containing many rare economically important

fishes (Plamoottil, 2015a; Plamoottil and Suvarnakumar, 2017); this part is known for many endemic and endangered species. During last six years many new fishes had been discovered and described from the low lying areas of this River (Plamoottil and Abraham, 2013a & b; Plamoottil, 2014, 2015b, 2016a). But many indigenous fishes such as *Clarias dussumieri*, *Heteropneustes fossilis*, *Sahyadria denisoni*, *Channa gachua* etc have greatly been reduced in its total number. Several anthropogenic stressors threaten the ichthyodiversity of the river. Introduction of many exotic fish species (Plamoottil, 2015c) such as *Pangasinodon hypenthalamus*, *Oreochromis mossambicus*, *Osphronemus gorami*, *Clarias gariepinus* and cultivable non- native species (Plamoottil, 2016b) such as *Catla catla*, *Cirrhinus mrigala* and *Labeo rohita*, water pollution, destructive fishing practices (Plamoottil and Win, 2017) and sand and gravel mining are some of the major causes of depletion of fishery resources of Manimala River.

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