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SPECIES COMPOSITION, DISTRIBUTION AND ECONOMIC IMPORTANCE OF FISHES IN THE BOLGODA LAGOON

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Abstract

There are 55 species of fin fishes belonging to 33 families in the Bolgoda Lagoon, of which about 30 are commercially important. *Sardinella melanura, Caranx sansun, Leognathus.* sp, *Mugil cephalus, Etroplus suratensis* and *Trachysurus caelus* are the dominant species. The mean annual fin fish production is 30 mt/year and it is on the decline.

Key words: Bolgoda Lagoon, Fin Fish, Annual Production.

1. Introduction:

Bellanwila—Attidiya marshes have been declared bird and wildlife sanctury. These marshes serve as the primary drainage area for the Bolgoda Lagoon system which consists of southern Bolgoda lake, northern Bolgoda Lake, Bolgoda Ganga, Veras ganga and Panadura ganga (Fig. 1).

The Ratmalana Industrial Zone (RIZ) is located in close proximity to these marshes. At present some effluents, discharged by the factories, pass through the marshes and finally reach the head end of the Bolgoda Lagoon system. This could possibly have an impact on the fin fish fauna of the lagoon in the future. In order to assess such an impact, it is necessary to understand its present faunal composition. There is no published information on the species composition and the diversity of fin fish of the Bolgoda Lagoon system. A comprehensive check list of fishes of the Bellanwila—Attidiya marshes, however, have been reported for the period 1980—87 (Nalinda, 1987), where he listed 33 species of fin fishes for the above marshes.

The purpose of the present study was to prepare a check list of species present, their broad distribution pattern and to indicate whether or not they are commercially important.

2. Materials and methods

The study was carried out from March 1979 to June 1991. Sampling was done at Katubedda, Deltara, Diggala, Kospelana, Molpe, Horetuduwa,

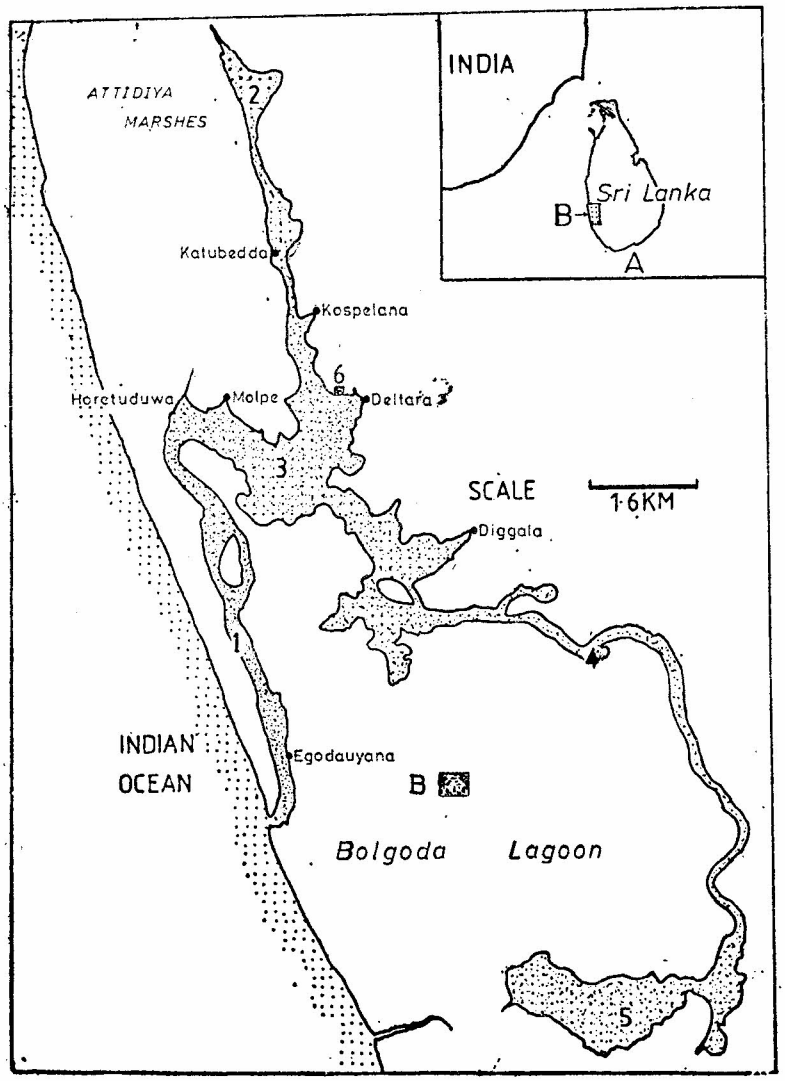

Fig. 1 1. Map of Bolgoda Lagoon indicating sampling stations,
1. Panadura Ganga, 2. Veras Ganga, 3. Northern Bolgoda Lake,
4. Bolgoda Ganga, 5. Southern Bolgoda Lake, B. Location of the study area in Sri Lanka.

and Egodauyana. Commercial fish catches of traps, encircling nets, beach seines and gill nets were sampled biweekly. Identification were made according to Munro (1955) and Fischer and Whitehead (1974). Parameters such as salinity and temperature were also monitored during the above period in an attempt to understand the hydrobiology, primary production and fishery of the Bolgoda lagoon system. These findings would be reported separately.

3. Results:

The results indicate that there are 55 species of fish in the Bolgoda Lagoon of which seven are distributed in the upper part, sixteen in the lower part, five in the upper and middle part, eleven in the lower and middle part and six to the entire lagoon respectively (Table. 1). The total number of commercially important species varied from 27 at Egoda—Uyana, near the mouth of the Lagoon to 20 at Katubedda, near the head end of the Lagoon. The highest number 30, was recorded at Deltara area, in the northern Bolgoda lake, where the water is blackish. Dominant species of fishes such as *Sardinella melanura*, *Caranx sansun*, *Leiognathus smithursti*, *L. splendens*, *L. daura*, *Secutor ruconius*, *Elops machinata* and *S. insidinator* are confined to the lower part of the Lagoon and contribute to about 35% of the total fin fish catch. Species such as *Mugil cephalus* and *L. dussumieri* are mostly found around the middle region of the Lagoon and contribute to about 12% of the total catch. *Etroplus suratensis*, *L. brevirostris*, *Gazza minuta* and *Trachysurus caelatus* are confined to the upper half of the Lagoon and contribute to about 20% to the total catch. (Table. 1).

Table. 1. Check list and distribution pattern of fish in the Bolgoda Lagoon.

	Family	*Species*	*Distribution*	*Salinity range (‰)*	*Commercial importance*	*Habitat*
1.	Acunthuridae	*Acanthurus gahn* (Forskal, 1975))	lower part	12-33	++ ++	M
2.	Anguillidae	*i. Anguilla bicolor bicolor*	entire	0.5-34	++	F,C
		ii. A. nebulosa nebulosa	entire	0.5--34	++	F,C
3.	Bagridae	*Macrones guliop* (H.Buchanan,. 1822)	entire	0.5-34	++	B,eF
4.	Balonidae	*Tylosurus strongylurus* (Van hasselt)	lower part	12-34	++	M, eF&S
5.	Carangidae	*Caranx sansun* (Forskal, 1975)	lower	12-34	++	M
		C. melampyqus (cuvier, 1833)	lower	12-33	++	M
6.	Chanidae	*Chanos chanos* (Forskal, 1775)	lower	13-34	++	C,M,eB
7.	Cichlidae	*Etroplus suratensis* (Bloch, 1785)	middle and upper	0.5-18	++	F, eB
		E. maculatus (Bloch, 1785)	middle and upper	0.5-19	++	B
		Oreochromis mosambicus (Bloch, 1785)	middle and upper	0.5-19	++	F, eB

8.	Clupeidae	*Macrura kelee*(cuvier, 1829)	lower	10-34	++	M
		Tenualosa sinensis (Linnaeus, 1758)	lower	10-34	—	M
		Sardinella melanura (Cuvier, 1829)	lower	13-34	++	M
9.	Cyprinidae	*Amblypharynaodon melettinus* (Velenciennes,1844)	upper	0.5-8	—	F
		Puntius filamentosus (Val, 1844)	upper	0.5-8	—	F, R&S
		Labeo porcellus lankae (Deraniyagala, 1952)	upper	0.5-6	—	F, R
10.	Cyprinodontidae	*Aplocheilus lineatus deyi* (Steindachner, 1982)	upper	0.5-7	—	F
11.	Dorosomidae	*Nematalosa nasus* (Bloch, 1795)	lower and middle	8.0-18	—	B
12.	Dussumieridae	*Ehirava fluviatilia* (Deraniyagala, 1929)	lower and middle	12-34	++	B, eS
13.	Elopidae	*Elops machnata* (Forskal, 1775)	lower	0.5-8.0	++	B
		Meqalops cyprinoides (Broussonet, 1782)	upper	5.0-13	++	B
14.	Gerridae	*Garreomorpha setifer* (H.Buchanan,1822)	middle and upper	5-18	++	B

15.	Gobiidae	*Awaous grammepomus* (Bleeker,1849)	middle and upper	5-18	—	M
		Glossoqobius qiuris (H. Buchanan, 1822)	upper	0.58	++	M, eL
16.	Hemiramphidae	*Hyporhamphus qaimarbi* (Val. 1846)	lower and middle	8.34	++	M, eL
		Hemirhamphus marqinatus (Forskal,1775)	middle and upper	5-18	++	M, eL
17.	Latidae	*Lates calcarifer* (Bloch,1790)	lower and middle	8-34	++	M
18.	Leiognathidae	*Secutor ruconius* (H.Buchanan,1822)	lower	18-34	++	M
		S. insidiator (Bloch,1787)	lower	18-34	—	M
		L. splendens (Cuvier,1829)	lower and middle	16-34	++	M, eL
		L. daura (Cuvier,1829)	Lower and middle	16-34	++	M
		Gazzv minuta (Bloch,1787)	lower	16-34	++	M
		L. smithursti (Ramsay and Ogilby,1886)	lower	16-34	++	M, eL
		L. dussumieri (Val,1835)	entire	0.5-34	++	M, eL
		L. fasciatus (Lacepede,1803)	lower and middle	12-34	++	M
		L. brevirostris (Val,1835)	entire	0.5-34	++	M
19.	Lutianidae	*Lutianus araentimaculatus* (Forska, 1775)	lower and middle	12-34	++	M, eL
20.	Monodactylidae	*Monodactylus argenteus* (Lin,1758)	lower and middle	12-34	++	M
21.	Mugillidae	*Mugil cephalus* (Lin,1758)	lower and middle	0.5-34	++	C, B, eF
		Liza oligolepis (Bleeker,1859)	entire	0.5-24	++	C, M, eL

22.	Muraenesocidae	*Muraenesox cinereus* (Forskal,1775)	entire	0.5-34	++	B
23.	Ophichthydae	*Ophichthys rhytidodermatoides* (Bleeker,1852)	upper	0.5-34	++	M, eL
24.	Ophiocephalidae	*Ophiocephalus striatus* (Bloch,1793)	upper	0.5-8	++	F, eL
25.	Periophthalmidae	*Periophthalmus koelreuteri* (Pallas,1770)	upper	0.5-11	—	B, eMouth
26.	Plectorhynchidae	*Gatarin schotaf* (Forskal,1775)	lower	18-34	—	M
27.	Scatophagidae	*Scatophagus argus* (Lin,1766)	upper	0.5-11	++	B
28.	Serranidae	*Epinephalus merra* (Bloch,1793)	lower	18-34	++	M
29.	Sillaginidae	*Sallago sihama* (Forskal,1775)	lower	18-34	++	M, eL
30.	Soleidae	*Brachius orientalis* (Bloch,1801)	lower	15-34	++	M, eL
31.	Tachysuridae	*Tachysurus caelatus* (Val,1862)	entire	0.5-34	++	M, eL
		Netuma thalasasimus (Ruppel,1835)	lower and middle	11-34	++	M, eL
		Pseudarius platystomus (Day,1975)	lower and middle	12-34	—	M, eL
32.	Tetraodotidae	*Monotretus cutcutla*(H.Buchanan,1822)	middle and upper	0.5-12	—	F, eL
33.	Theraponidae	*Austisthes puta* (Cuvier,1829)	lower	15-34	—	M, eL

M, Marine; B, Brackishwater; F, Freshwater; C, Catadromous; eF, enter Freshwater; eS, enter Streams; eB, enter Brackishwater; R, Reservoir; S, Stream; eL, enter Lagoon; eMouth, enter Mouth, + + commercially impt.

4. General Comments:

A total of 55 species of fish belonging to 33 families are present in the Bolgoda Lagoon system which has an area of about 1500 ha. The majority fish (90%) are either marine or brackish water species and are mostly confine to the nothern Bolgoda Lake, where the water is brakish during most part of the year. Nalinda (1988) had reported 33 species of fish belonging to 16 families from the Attidiya marsh which is situated around Bolgoda Lagoon. Eleven species of fishes reported in the present study are common to the above marshes as well (Nalinda 1988). Therefore, the total number of species of fish reported so far for the Bolgoda Lagoon and the Attidiya marshes is sixty—seven belonging to 44 families. The above numbers are very high when compared either with the total number of marine species of fish around Sri Lanka or fresh water species of fish in Sri Lanka. there are about 900 species of marine fish belonging to 150 families (Munro, 1954 ; Jinadasa, 1984; Jayanth, 1989) and 64 species of freshwater fishes (Senanayake and Moyle, 1982).

There are about 27 out of the above 55 species of fish which are migratory. Some of these are catadromous, viz. *A. bicolor bicolor*, *A. nebulosa nebulosa*, *L. oligolepis*, *M. cephalus* and *C. chanos.*

Other species such as *L. splendens*, *L. smitjursti* and *L. dussumieri* enter the Lagoon and migrate in and out of the Lagoon (Jayanth, 1989). Therefore, barriers and traps constructed across the Lagoon affect their migration pathways. Thus, the recruitment of these species to the Lagoon could be affected.

According to Senanayake and Moyle (1982) the number of fresh water fishes in Sri Lanka are declining due to seven reasons, of which urbanisation, land reclamation and application of chemicals and pesticides are taking place in the Bolgoda Lagoon area. Land reclamation had already taken about 60 ha of marshy land from Attidiya which sustanined the above speices of fish. The annual total fin and shell fish productions from the lagoon with an area of 28000 ha had varied from about 57 mt in 1979 to about 45 mt 1980. Thus a steady decline is evident. This could perhaps be attributed to pollution and rise in cost of construction of traps.

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