Bangladesh J. Zool. **38**(1): 105-112, 2010

ABUNDANCE OF SMALL INDIGENOUS SPECIES OF FISH (SIS) AT TRISHAL, MYMENSINGH

Muhammad Siaful Islam and Md. Kawser Ahmed*

Department of Fisheries, University of Dhaka, Dhaka-1000, Bangladesh

Abstract: An investigation was conducted to find the richness and diversity of small indigenous species (SIS) of fish at Trishal upazila in Mymensingh district of Bangladesh. Sampling was carried out frequently over a year in selected landing stations, fish markets and catch points. A total of 54 SIS belonging to 41 genera, 23 families and 10 orders was recorded. The most dominant family was Cyprinidae comprising 18 species under the order Cypriniformes. *Puntius* was the largest genus including six species. The most abundant SIS was Tengra *(Mystus* sp.*)* during the investigation period, whereas the least abundant SIS was Bacha (*Eutripiichthyes vacha*). Seasonal variations were observed in the abundance of different SIS.

mvi-ms‡¶ct evsjv‡`‡ki gqgbwmsn †Rjvi wÎkvj Dc‡Rjvq †`kx †QvU gv‡Qi ˆewPÎ I cvPh wbi"c‡bi Rb¨ GB M‡elYv KvhwU m¤úvw`Z n‡q‡Q| GK eQi hveZ wKQ wbavwiZ Avor, gvQ evRvi Ges gvQ aivi ¯vb †_‡K gv‡Qi bgbv msMn Kiv nq| 41wU Mb, 23wU cwievi Ges 10wU e‡Mi AšMZ me‡gvU 54wU cRvwZi †QvU gvQ wbeÜb Kiv nq| Cypriniformes e‡Mi AšMZ Cyprinidae cwiev‡i m‡ev"P 18 cRvwZi †QvU gvQ mbv³ Kiv nq| G‡`i g‡a¨ *Puntius* MbwUi mieivn me‡P‡q †ekx wQj hvi QqwU cRvwZ wbeÜb Kiv nq| M‡elYvKvjxb mg‡q me‡P‡q †ekx msL¨K SIS wQj †Usiv *(Mystus* sp.) Ges me‡P‡q Kg msL¨K wQj evPv gvQ *(Eutripiichthyes vacha)*| SIS gv‡Qi cvPh FZMZ wfbZv cwijw¶Z n‡q‡Q|

Key words: Abundance, SIS, Trishal, Bangladesh.

INTRODUCTION

In the inland open waters of Bangladesh 260 species of finfish belonging to 55 families occur (Rahman 1989). Of the 260 species, over 143 species have been classified as "small indigenous species" (Ali 1997). The small indigenous species (SIS) of fish in Bangladesh are generally considered to be those which grow to a length of about 25 cm or 9 inches at maturity (Felts *et al.* 1996, Hossain and Afroze 1991, Hossain *et al.* 1999). SIS have high nutritional value in terms of protein, micro-nutrients, vitamins and minerals (Hossain and Afroze 1991). Besides providing animal protein food for family members, fishing is a major source of subsistence income for rural families.

To meet up animal protein deficiency of the people, greater emphasis should be given to boost up SIS production in this country through proper management of open water fishery and aquaculture (Kohinoor 2000). Before undertaking any

*Corresponding author, Email: kawser@univdhaka.edu

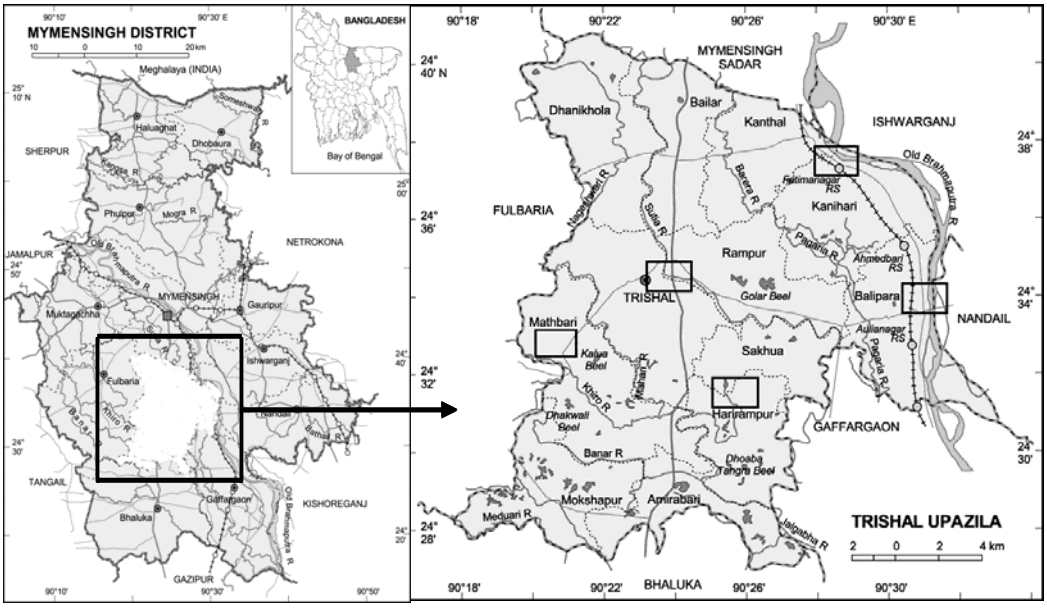
fisheries management tools, the taxonomic scenario of fish in the waters must be known (Huda *et al.* 2009). Trishal, an upazila under Mymensingh district of Bangladesh, is famous for its richness in fisheries resources. At Trishal, SIS culture has drawn considerable attention in recent years. Therefore, for proper management techniques and biodiversity conservation of SIS in this area, it is important to know their abundance.

OBJECTIVE

The present investigation was carried out to overview the richness and diversity of SIS at Trishal, Mymensingh.

MATERIAL AND METHODS

Trishal, with an area of 338.98 sq km, is 100 km north to Dhaka City. Trishal is rich in all types of water body, such as rivers, floodplain areas, *beels* (natural depression), aquaculture ponds etc. The main rivers are the Old Brahmaputra, Khiru, Sutia, Meduari, Nageshwari, Pagria and Barera. The beels are Galhar, Shukni, Singaduli, Durbachora and Kumuria (Banglapedia 2004). Two fish landing centers (at Fatema Nagar and Balipara), two fish markets (Trishal Bazar and Mathbari Bazar) and some catch points at Harirampur were selected to collect fish samples and data for this investigation (Fig. 1).



Fig, 1. Maps showing collection sites of SIS at Trishal

The sampling was conducted over a year from March 2008 to February 2009 following the method described by Backiel and Welcome (1980). Catch assessment, direct observations and questionnaire interviews with the fishermen, fish traders were used to constitute data for this investigation. The samples of SIS were primarily sorted out in the collection area with the help of fishermen or fish traders. The samples which were difficult to identify on the spot, were preserved in 10% formalin and were brought to the laboratory of Department of Fisheries, University of Dhaka. The samples were then identified with the help of literature. The identification keys and taxonomic information were collected according to Hamilton (1822), Day (1878), Jayaram (1981) and Fishbase (2009).

RESULTS AND DISCUSSION

In the present investigation, 54 small indigenous species of fish were identified under 10 orders, 23 families and 41 genera. The taxonomic features of the identified species are presented in Table 1. The order Cyprinoiformes was the most dominant order comprising 20 species. The highest number of SIS (18) was identified under the family Cyprinidae. *Puntius* was the most dominant genus including six species. The results suggested that the water bodies of Trishal were suitable for barbs and minnows. A total number of 15 SIS was found under the order Siluriformes representing the 2nd largest order of SIS at Trishal. Only one species was found under each of the orders Cyprinodontiformes, Osteoglossiformes and Tetraodontiformes. The number of SIS found under different orders during the investigation period is shown in Fig. 2.

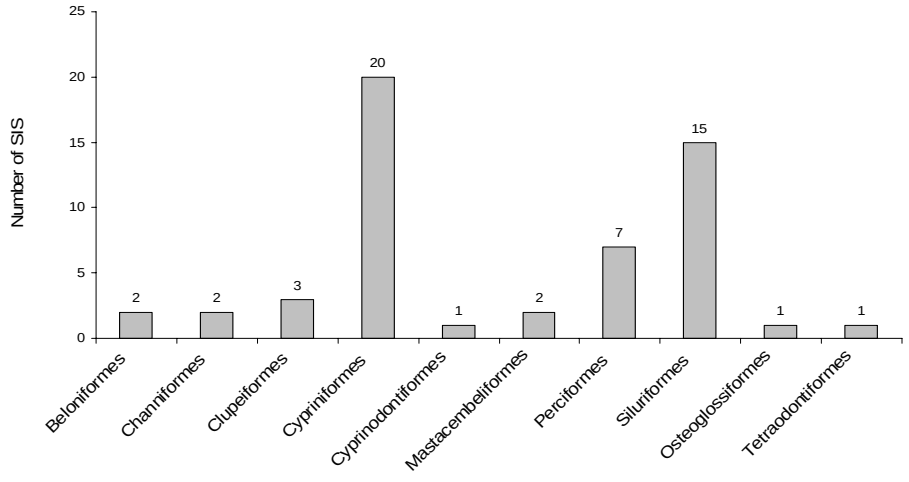


Fig. 2. Number of SIS found under different Orders during the investigation.

Table 1. Taxonomy of SIS with their occurrence in investigation sites and seasonal abundance.

Taxonomy of SIS	Local name	Investigation Site	Seasonal Abundance
O. Beloniformes			
F. Belonidae			
G. *Xenentodon* (Regan, 1911)			
1. *X. cancila* (Hamilton, 1822)	Kaikka/Kakila	T,F,B,M,H	M
F. Hemirhamphidae			
G. *Hemirhamphus* (Cuvier, 1817)			
2. *H. gaimardi* (Valenciennes, 1847)	Ekthuita	T,F,B,M	M
O. Channiformes			
F. Channidae			
G. *Channa* (Scopoli, 1977)			
3. *C. punctata* (Bloch, 1793)	Taki	T,F,B,M,H	W
4. *C. orientalis* (Bloch and Schneider, 1801)	Cheng/ Telo Taki	T,F,B,M	W
O. Clupeiformes			
F. Clupeidae			
G. *Corica* (Hamilton, 1822)			
5. *C. soborna* (Hamilton, 1822)	Kachki	T,F,B,M,H	PM
G. *Gudusia* (Fowler, 1911)			
6. *G. chapra* (Hamilton, 1822)	Chapila	T,F,B,M,H	W
F. Engraulidae			
G. *Seipinna* (Swainson, 1839)			
7. *S. phasa* (Hamilton, 1822)	Phasa	T,F,B,H	M
O. Cypriniformes			
F. Cobitidae			
G. *Botia* (Gray, 1831)			
8. *B. dario* (Hamilton, 1822)	Beti/Bou/Rani	T,F,B,M	PM
G. *Lepidocephalichthys* (Bleeker, 1863)			
9. *L. guntea* (Hamilton, 1822)	Gutum	T,F,B,M,H	A
F. Cyprinidae			
S.F. Cyprininae			
G. *Amblypharyngodon* (Bleeker, 1860)			
10. *A. mola* (Hamilton, 1822)	Mola	T,F,B,M,H	A
G. *Aspidoparia* (Heckel, 1847)			
11. *A. morar* (Hamilton, 1822)	Piasi/Piali	F,M,H	M
G. *Barilius* (Hamilton, 1822)			
12. *B. bendelisis* (Hamilton, 1822)	Joya/Hiralu	T,F,B,H	M
G. *Cirrhinus* (Oken, 1817)			
13. *C. reba* (Hamilton, 1822)	Rayek/Bhagna	T,F,H	M
G. *Labeo* (Cuvier, 1816)			
14. *L. bata* (Hamilton, 1822)	Bata	T,F,B,M	M
15. *L. gonius* (Hamilton, 1822)	Gonia	T,F,B,M	M
G. *Osteobrama* (Heckel, 1843)			
16. *O. cotio* (Heckel, 1843)	Dhela/Moa	T,F,B,M,H	M
G. *Puntius* (Hamilton, 1822)			
17. *P. chola* (Hamilton 1822)	Chola Punti	T,F,B,M,H	PM
18. *P. conchonius* (Hamilton, 1822)	Kanchan Punti	T,B,M,H	W
19. *P. phutunio* (Hamilton, 1822)	Phutuni Punti	T,F,B,M	PM
20. *P. sarana* (Hamilton, 1822)	Shorpunti	T,F,B,M,H	PM
21. *P. sophore* (Hamilton, 1822)	Jatipunti	T,F,B,M,H	A
22. *P. ticto* (Hamilton, 1822)	Titpunti	T,F,B,M,H	A

S.F. Leuciscinae			
G. *Chela* (Hamilton, 1822)			
23. *C. cachius* (Hamilton 1822)	Chhep Chela	T,F,B,M,H	PM
G. *Salmostoma* (Swainson, 1839)			
24. *S. bacaila* (Hamilton, 1822)	Narkeli Chela	T,F,B,M,H	PM
25. *S. phulo* (Hamilton, 1822)	Phul Chela	T,F,B,M,H	PM
S.F. Rasborinae			
G. *Esomus* (Swainson, 1839)			
26. *E. danricus* (Hamilton, 1822)	Darkina/ Darika	T,B,M,H	M
G. *Rasbora* (Bleeker, 1860)			
27. *R. elanga* (Hamilton, 1822)	Elang/Shulong	F,B,H	M
O. Cyprinodontiformes			
F. Cyprinodontidae			
G. *Aplocheilus* (McClelland, 1839)			
28. *A. panchax* (Hamilton, 1822)	Kanpona	F,B,M,H	M
O. Mastacembeliformes			
F. Mastacembelidae			
G. *Macrognathus* (Lacepède, 1800)			
29. *M. aculeatus* (Bloch, 1786)	Tara Baim	T,F,B,M,H	M
G. *Mastacembelus* (Scopoli, 1777)			
30. *M. pancalus* (Hamilton, 1822)	Guchi Baim	T,F,B,M,H	M
O. Perciformes			
F. Anabantidae			
G. *Anabas* (Clooquet, 1816)			
31. *A. testudineus* (Bloch, 1792)	Koi	T,F,B,M,H	W
F. Osphronemidae			
G. *Colisa* (Cuvier and Valenciennes, 1831)			
32. *C. fasciata* (Bloch and Schneider, 1801)	Kholisa	T,F,B,M,H	W
33. *C. lalia* (Hamilton, 1822)	Lal Kholisa/ Boicha	T,F,B,M,H	W
F. Gobiidae			
S.F. Gobiinae			
G. *Glossogobius* (Gill, 1856)			
34. *G. giuris* (Hamilton, 1822)	Baila/ Bele	T,F,B,M,H	M
F. Ambassidae			
G. *Chanda* (Hamilton, 1822)			
35. *C. nama* (Hamilton, 1822)	Nama Chanda	T,F,B,M,H	PM
G. *Parambassis* (Bleeker, 1874)			
36. *P. ranga* (Hamilton, 1822)	Lal Chanda	T,F,H	PM
F. Nandidae			
G. *Nandus* (Cuvier and Valenciennes, 1831)			
37. *N. nandus* (Hamilton, 1822)	Bheda	T,F,B,M,H	W
O. Siluriformes			
F. Bagridae			
G. *Mystus* (Scopoli, 1777)			
38. *M. bleekeri* (Day, 1877)	Guja Tengra	T,F,B,M,H	A
39. *M. cavasius* (Hamilton, 1822)	Kabashi Tengra	T,F,B,M,H	A
40. *M. tengara* (Hamilton, 1822)	Kalo Bujuri/Tengra	T,F,B,M,H	A
41. *M. vittatus* (Bloch, 1794)	Gulsha Tengra	T,F,B,M,H	A

F. Chacidae			
G. *Chaca* (Gray, 1831)			
42. *C. chaca* (Hamilton, 1822)	Chega/Chaka	F,M,H	W
F. Clariidae			
G. *Clarias* (Scopoli, 1777)			
43. *C. batrachus* (Linnaeus, 1758)	Magur	T,F,B,M,H	W
F. Heteropneustidae			
G. *Heteropneustes* (Muller, 1840)			
44. *H. fossilis* (Bloch, 1792)	Shing	T,F,B,M,H	W
F. Schilbeidae			
G. *Ailia* (Gray, 1831)			
45. *A. coila* (Hamilton, 1822)	Kajoli	T,F,B,M,H	W
G. *Clupisoma* (Swainson, 1838)			
46. *C. garua* (Hamilton, 1822)	Ghaura	F,B,H	M
G. *Eutropiichthys* (Bleeker, 1862)			
47. *E. vacha* (Hamilton, 1822)	Bacha	T,F,B	M
G. *Neotropius* (Kulkarni, 1952)			
48. *N. atherinoides* (Bloch, 1794)	Batashi/Bashpata	T,F,B,M	M
G. *Silonia* (Swainson, 1839)			
49. *S. silondia* (Hamilton, 1822)	Shilong	T,F,B	M
F. Siluridae			
G. *Ompok* (Lacepède, 1803)			
50. *O. bimaculatus* (Bloch, 1794)	Kani/ Boali Pabda	T,B,M	W
51. *O. pabda* (Hamilton, 1822)	Pabda	T,F,B,M	W
F. Sisoridae			
G. *Gagata* (Bleeker, 1858)			
52. *G. viridescens* (Hamilton, 1822)	Gang Tengra	F,B,H	M
O. Osteoglossiformes			
F. Notopteridae			
G. *Notopterus* (Lacepède, 1800)			
53. *N. notopterus* (Pallas, 1769)	Pholi	T,F,B,M,H	W
O. Tetraodontiformes			
F. Tetraodontidae			
G. *Tetradon* (Linnaeus, 1758)			
54. *T. cutcutia* (Hamilton, 1822)	Potka/Tepa	T,F,B,M,H	M

Investigation Site: T: Trishal Bazar, F: Fatema Nagar, B: Balipara, M: Mathbari Bazar,
H: Harirampur Seasonal Abundance: A: All season, M: monsoon, PM: Post-Monsoon, W: Winter

Tengra (*Mystus* sp.), Punti (*Puntius* sp.), Mola (*Amblypharyngodon mola*), Gutum (*Lepidocephalichthys guntea*) and Guchi Baim (*Mastacembalus pancalus*) were the highest available SIS during the investigation period in terms of their quantity and seasonal abundance. The abundance of Bacha (*Eutrupiichthys vacha*), Ghaura (*Clupisoma garua*), Elang (*Rasbora Elanga*), Shilong (*Silonia Silondia*) and Piali (*Aspidoparia morar*) were in the least position. According to IUCN-Redbook (2000) Shorpunti (*Puntius sarana*) was listed as a critically endangered species in perspective of the whole country. But in this investigation Shorpunti was found in a noticeable amount.

Seasonal variations in the abundance of SIS were observed during the investigation period. Tengra (*Mystus* sp.), Titpunti (*Puntius ticto*), Jatipunti

(*Puntius sophore*), Mola (*Amblypharyngodon mola*), Gutum (*Lepidocephalichthys guntea*) were found throughout the year abundantly. Kachki (*Corica soborna*), Beti (*Botia dario*), chela (*Chela* sp., *Salmostoma* sp.), and chanda (*Chanda* sp., *Parambassis sp.*) were available in the post-monsoon period when the water area started to decline. Taki (*Channa* sp.), koi (*Anabas testudineus*), shing (*Heteropnuestes fossilis*), magur (*Clarias batrachus*), pholi (*Notopterus notopterus*), kajoli (*Ailia coila),* Kholisa (*Colisa* sp.), bheda (*Nandus Nandus*) were found in their highest amount in winter when the water bodies mostly dried up. The rest of the species were available in the monsoon period.

The catch of SIS observed during the study period, was the highest in August-September and was the lowest in March showing a seasonal variation. The abundance of SIS increases with rainy season when rivers, floodplain areas, beels, ponds, ditches are fulfilled with water. Availability of SIS starts to decrease after post monsoon again. In winter, water area declines. In that period SIS are easy to harvest. Thus, it was observed that, the catch of SIS increases in December. Karim (2003) found that the abundance of fishes started to increase with rainy season and the pick harvesting season was in the late monsoon which also coincides with the present findings.

It was observed that the abundance of SIS was varied in number, size and in kind at different investigation sites. Some were plenty in one site, whereas some were rare. The reason behind these variations depends on the basin topography, food availability and fishing intensity (Huda *et al.* 2009). At Fatema Nagar and Balipara landing centers the highest 51 species of SIS were found during the investigation period. At Balipara this number was 51. These two landing centers are situated beside the Old Brahmaputra river. Catch from the river are directly brought to these landing centers making them rich in SIS. At Trishal Bazar, Mathbari Bazar, and at Harirampur the total number of SIS observed were 48, 45 and 43, respectively.

In this investigation only 54 SIS were found; whereas Ali (1997) listed 143 species as SIS in Bangladesh. The water body of Trishal is very little comparing to the total aquatic area of Bangladesh. So, it could be predictable that the abundance of SIS would be little in comparison to the whole country.

CONCLUSION

The investigation provided an overview on the outstanding richness and diversity of small indigenous species of fish at Trishal, Mymensingh. As the data were collected in five selected sites, there might be some rare species in other area which were not explored. An extensive sampling using variety of gears and

techniques all year round at every possible catchment area might explore more species. The information obtained in the present investigation may be useful for further study of fish biodiversity and may be helpful for proper management, development and conservation strategy to restore SIS.

LITERATURE CITED

Ali, M.Y. 1997. Small indigenous fish species culture in Bangladesh. Proceedings of national workshop on small indigenous fish culture in Bangladesh. IFADEP-SP2, Dhaka, Bangladesh.

BACKIEL, T. and WELCOMME, R.L. 1980. Guidelines for sampling fish in inland waters. *EIFAC Tech. Pap.* **33**: 175

BANGLAPEDIA. 2004. *National Encyclopedia of Bangladesh,* 1st edn. Asiatic Society of Bangladesh, Dhaka.

DAY, F. 1878. The fishes of India: being a natural history of the fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon. *Fishes India* Part 4, i-xx + 553-779

FELTS, R.A., RAJTS, F. and AKHTERUZZAMAN, M. 1996. Small indigenous fish species culture in Bangladesh. In: *Development of Inland Fisheries.* Technical Brief. IFADP Sub-project 2, pp. 41.

FISHBASE. 2009. World wide web electronic publication (eds. Froese, R. and Pauly, D.). www.fishbase.org.

HAMILTON, F. 1822. An account of the fishes found in the river Ganges ind its branches. *Fishes Ganges*. Edinburgh & London. i-vii + 1-405

HOSSAIN, M.A., AFSANA, K. and AZAD, A.K.M. 1999. Nutritional value of some Small Indigenous fish Species (SIS) of Bangladesh. *Bangladesh J. Fish.* **3**(1): 16-20.

HOSSAIN, M.A. and AFROZE, S. 1991. Small fish as a resource in rural Bangladesh. *Fishbyte* **9**(2): 16-18.

HUDA, A.T.M.N., SHAH, M.S., HASANUZZAMAN, A.F.M., and AZAM, M.R. 2009. An investigation on the ichthyofauna of the Gorai-Madhumati river system. *Bangladesh J. Zool.* **37**(1): 11-24

JAYARAM, K.C. 1981. *The freshwater fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka- A handbook.* Zoological Survey of India, Calcutta.

KARIM, M. S. 2003. Discussion on the causes of reduction of fisheries resources in Chalan beel. In: *Fisheries Fortnight* (Matshaya Pakkhaya in Bengali). Department of Fisheries, Ministry of Fisheries and Livestock, Bangladesh, pp. 95-96.

KOHINOOR, A.H.M. 2000. *Development of culture technology of three small indigenous fish – Mola (Amblypharyngodon mola),* Punti *(Puntius sophore)* and Chela *(Chela cahius)* with notes on some aspects of their biology. Ph. D. Thesis, Department of Fisheries, BAU, Mymensingh.

RAHMAN, A. K. A. 1989. *Freshwater fishes of Bangladesh.* Zoological Society of Bangladesh, Dhaka, pp. 264.

(Manuscript received on January 7, 2010; revised on June 2, 2010)