



Rec. zool. Surv. India : 108(Part-1) : 17-24, 2008

FIRST EVER RECORD OF AN ENDANGERED FISH, *CHACA CHACA* (HAM.-BUCH.) FROM ARUNACHAL PRADESH : A BIODIVERSITY HOT SPOT

KESHAV KR. JHA, TAPAN KR. GHOSH* AND J. S. DATTA MUNSHI*

*Fish Germplasm Explorations Laboratory, Department of Zoology,
Jawaharlal Nehru College, Pasighat, Arunachal Pradesh -791 103*

**Ichthyology Research Laboratory, University Department of Zoology,
T. M. Bhagalpur University, Bhagalpur-812 007*

INTRODUCTION

Arunachal Pradesh – the land of the down lit mountains, is the bit of paradise that remained on earth at the top of the North-Eastern part of India. The geography of the state is so varied with variation of mountainous ranges. Elewin (1999) has pointed out that it is so mountainous, so cut about chopped up and divided by countless streams.

The East Siang District with its headquarter at Pasighat is located between 27° 43' and 29° 20' N latitude, 94° 40' to 95° 35' E longitude. It is bounded by West Siang District in the west, Upper Siang District in the north and Lower Dibang Valley and Dibang Valley Districts in the east of Arunachal Pradesh and south to Dhemaji District of Assam. Down the middle of East Siang District the mighty Siang River flows from Tibet and thereby gives its name to the District. The altitude of the District varies from 13 mts to 273 mts from the sea level.

As regards the information of Ichthyofauna of Arunachal Pradesh, works of Jayaram (1963), Jayaram and Sen (1977), Dutta Choudhary and Sen (1977), Dutta Choudhary (1978, 1980, 1981 and 1994), Jhingran and Sehgal (1978), Sinha (1994), Nath and Dey (1985 and 2000), Sarkar and Ponniah (2000), Sen (2000), Sen (2006) and Tamang *et al.* (2006) are with mentioning. A perusal of the available literature suggests that *Chaca chaca* (Hamilton-Buchanan) has not been reported earlier from the aquatic habitat of Arunachal Pradesh.

In the present paper the fish species *Chaca chaca* collected from Tango Epong stream in the village Motum. On the basis of its different characteristics the fish has been identified as

Chaca chaca (Hamilton-Buchanan) and is commonly known as *Chaca*. The fish is locally known as Hitaduke by Adi Tribals. The specimens were further confirmed as *Chaca chaca* (Hamilton-Buchanan) by the Zoological Survey of India (ZSI), Kolkata.

MATERIALS AND METHODS

The fish were collected from Tango Epong stream in Motum village under Mebo Block of East Siang District of Arunachal Pradesh (Map-1). The collected specimens were fixed in 6% formalin. In order to avoid damage to the caudal fin, the fixed specimens were kept in cylindrical transparent container in an upside down position. Some of specimens have been kept in the Fish Germplasm Explorations Laboratory, Department of Zoology, Jawaharlal Nehru College, Pasighat, Arunachal Pradesh and few in Ichthyology Research Laboratory, University Department of Zoology, T.M. Bhagalpur University, Bhagalpur. The identification has been made with the help of meristic, morphometric characteristics and X-Ray studies of the specimens using the available literatures and further confirmed as *Chaca chaca* (Hamilton-Buchanan) by the Freshwater Section, Zoological Survey of India (ZSI), Kolkata.

KEY TO THE SPECIES

A robust large size ugly fish with head and body ahead of anal fin depressed, Barbels six, feebly developed. Gill opening mainly some/what contracted, lateral line complete, marked by a prominent papillated and tuberculated ridge. Caudal fin rounded with a large procurrent dorsal and a shorter ventral part at the end of the tail only.

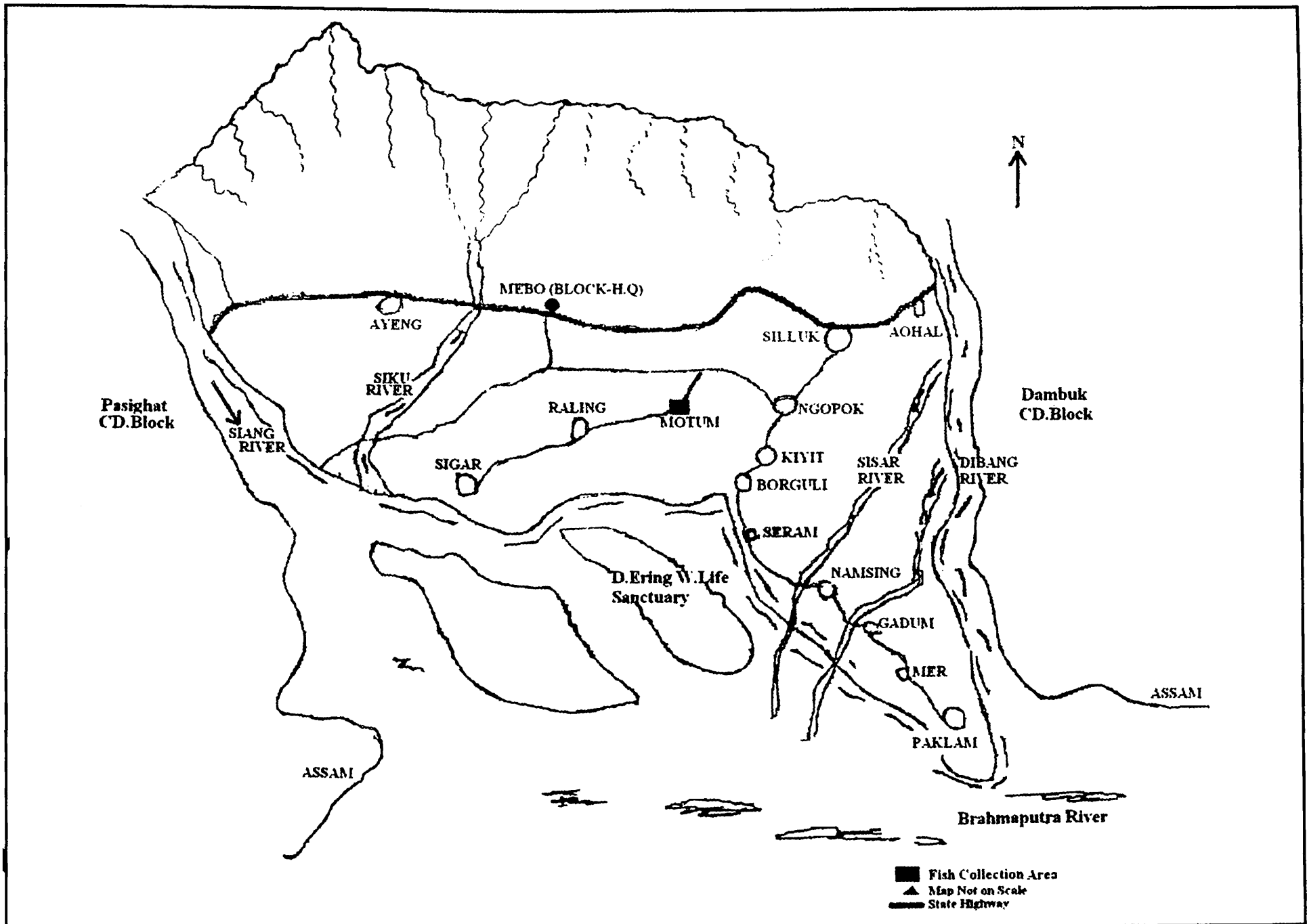
SYSTEMATIC ACCOUNT

Order SILURIFORMES

Family CHACIDAE

Chaca chaca (Hamilton-Buchanan)

1822. *Platystacus chaca* (Hamilton), *Fish Ganges*, pp. 140, 374, Pl.-XXVIII, fig. 43.
1831. *Chaca gray*, *Zool. Misc.*, p. 9, 138.
1878. *Chaca lophioides* (Day), *Fish India*, p. 481, Pl. CXII, fig. 2.
1889. *Chaca lophioides* (Day), *Fish Brit. India*, pp. 111-112; fig. 46.
1937. *Chaca chaca* (Shaw and Shebbeare), *J. Roy Asiat. Soc. Bengal Sci.*, III, p. 85, fig. 82.
1964. *Chaca chaca* (Jayram and Majumdar), *Proc. Zool. Soc. Calcutta*, 17(2), p.178.
1968. *Chaca chaca* (Srivastava), *Fishes of U.P and Bihar*, p. 122, fig. 77.
1980. *Chaca chaca* (Jayram), *Occ. Papers, ZSI*, No. 23, p. 15.



Map 1 : Mebo Block of East Siang district.

1981. *Chaca chaca* (Jayram), *Hand book : Freshwater fishes of India*, pp. 274-275.
1988. *Chaca chaca* (Datta Munshi and Srivastava), *Nat. Hist. Fish. Syst. Freshwater fishes*. pp. 275-276, Pl.XXXIII, fig. 4.
1991. *Chaca chaca* (Jhingran), *Fish and Fisheries of India*, pp. 15-16, Pl.1.IV, fig. 14.
2002. *Chaca chaca* (Vishwanath), *Fishes of North-East India*. A field guide to species identification. Pub. Dept.of Life Sci. Manipur University, pp. 160-161.
2006. *Chaca chaca* (Gupta and Gupta), *General and applied Ichthyology : Hill-stream fishes*, pp. 288-321, fig. 14.8(d).

MATERIALS EXAMINED

D.1/3; P.1/9; V.9; A.9; Barbels, 3 pairs 2/1. Pre-orbital distance 12 to 13 mm, length of head 42 to 44 mm, standard length of the body 132 to 157 mm, total length of the body 147 to 170 mm, width of the body 48 to 53 mm and anal opening 1.5 to 2 mm.

In the fresh condition the colour appears dark brown, the tip of lower jaw was dark red on its inner margin which disappeared after preservation.

Body stout, depressed ahead of anal fin, but strongly compressed, slightly tapering behind abdomen. The whole upper surface is covered with tubercles and soft spines which are found along the edge of lower lip also. Head flat, very large and strongly depressed dorsoventrally, gape of mouth very wide, lower jaw prominent, eye minute, barbels-minute 3 pairs, one pair maxillary and 2 pairs mandibular, teeth on both the jaws, chin is provided with an adhesive apparatus. Dorsal and pectoral fins provided with strong spines. Rayed dorsal fin short with three rays and a strong spine. It is slightly serrated on both sides but the pectoral fin with short and strong spines and are serrated internally. Pelvic fin with six rays, Anal fin short with nine rays. Caudal fin rounded along procurrent dorsal and a shorter ventral part which is recognized as second dorsal and second anal fin by Srivastava (1968), confluent with caudal fin. Lateral line long, some what cardiform in shape, concave anteriorly lying across the bodies of the anterior vertebrae and enclosed in bone. The colour and black and white Photographs have been shown in Plate : I, Fig. a & b and Plate : II, Fig. a & b respectively.

DISCUSSION

The earlier workers such as Dutta Choudhary (1978, 1980a & b, 1994) Dutta Choudhary and Sen (1977), Jhingran and Sehgal (1978) during their investigation did not report *Chaca chaca* from Arunachal Pradesh. Srivastava (1968) reported that it is distributed in the rivers of North India. Datta Munshi and Srivastava (1988) reported that *Chaca chaca* is distributed in the rivers of Northern India, Bihar, West Bengal and Assam in India. Sinha (1994) recorded 230 fish species

from seven North-East states of region. Out of this 139 fish species were recorded from Arunachal Pradesh. With regards to the family *Chacidae* of species *Chaca chaca*, out of seven states only three of North-East states of India showed its presence namely Assam, Meghalaya and Tripura whereas it has not been reported from Arunachal Pradesh, Manipur, Mizoram and Nagaland. Sinha (1992a) has listed thirteen threatened coldwater fish species from this region but it is not listed in it.

Nath and Dey (2000) reported 131 ichthyospecies from the river systems of Arunachal Pradesh but they have not reported *Chaca chaca* from any type of water from Arunachal Pradesh. Sarkar and Ponniah (2000) reported 172 fish species in the water system of seven North-Eastern states but they have not reported *Chaca chaca* in any states of this region and cited it in an endangered condition. Sen (2000) reported that out of seven states of North-Eastern region *Chaca chaca* is present in Meghalaya, Assam and Tripura only. Vishwanath (2002) reported that it is found in the Northern part of India, Manipur and Assam and the maximum standard length is 13.5 cm. Nautiyal (2005) reported that *Chaca chaca* is only found in Central-Nepal Himalaya (CNH) and Himalaya (H) whereas it is absent in Western Himalaya (WH) Eastern Himalaya (EH) and Western Ghats (WG). The richness of the family *Chacidae* and species *Chaca chaca* are located only in Central Nepal Himalaya (CNH) and Himalaya (H). Gupta and Gupta (2006) reported that the distribution of *Chaca chaca* is in North Bengal and Assam. Sen (2006) reported 143 ichthyospecies from the water system of different districts of Arunachal Pradesh, but he has not reported *Chaca chaca* from any districts of Arunachal Pradesh. Silas (2006) reported that the family *Chacidae* and species *Chaca chaca* is reported in Assam and North Bengal in North-Eastern region of India.

SUMMARY

Arunachal Pradesh once described as the “Hidden Land” by virtue of its geographical position, climatic conditions and altitudinal variations is a Biodiversity rich region in the top of the North-Eastern part of India. The entire state is almost wholly a rugged mountainous terrain, with beautiful green vallies drained by innumerable streams, rivulets descending down from upper elevation to the plains of Assam to meet the mighty river Brahmaputra. Arunachal Pradesh is the 18th hot spot of biological and habitat diversity (Baishya *et al.*, 2001). Till date limited work has been done in relation to Ichthyofaunal diversity in the state. Sarkar and Ponniah (2000) reported that the fish *Chaca chaca* is in endangered condition. The present finding of *Chaca chaca* require its conservation in its natural habitat and more investigation should be done in the field of ichthyofaunal diversity so that real Gene Pool, Germplasm exploration, Cataloguing and conservation can be done in future.

ACKNOWLEDGEMENTS

The first author is thankful to Dr. J.R.B. Alfred, Director, Dr. P. Mukhopadhyay, Officer-in-Charge, Technical Section, Dr. R.A. Khan, Addi. Director, Identification & Advisory Division and Dr. A.K. Karmakar, Officer-in-Charge, Freshwater Fish Section of Zoological Survey of India (ZSI), Kolkata for permission and identification of specimens. The first author is thankful to Dr. W.S. Lakra, Director NBFGR, Lucknow for encouraging the work, Authors are thankful to Miss Olek Borang and villager of Motum village for helping during collection, Dr. V.K. Srivastava, Head, Department of Zoology Jawaharlal Nehru College, Pasighat helping during preparation of map, Aman-Abhishek and Mamta helping during the process of recording the characteristics of fish.

REFERENCES

- Baishya, A.K., Haque, S., Bora, P.J and Kalita, N. 2001. Flora of Arunachal Pradesh : an over view. *Arunachal Forest News*, **19**(1 & 2) : 1-25.
- Datta Munshi, J.S. and Srivastava, M.P. 1988. *Natural History of fishes and systematics of freshwater fishes of India*. Narendra Publishing House, Delhi, P, 403.
- Dutta, A.K. and Barman, R.P. 1984a. On a new species of *Noemachelius* (*Pisces* : *Cobitidae*) from Arunachal Pradesh, India. *Bull. Zool. Surv. India*, **6**(1-3) : 275-277.
- Dutta, A.K. and Barman, R.P. 1984b. On a new species of the genus *Garra* Hamilton (*Pisces cyprinidae*) from Nandapha Wild Life sanctuary, Arunachal Pradesh, India. *Bull. Zool. Surv. India*, **6**(1-3) : 283-287.
- Dutta, A.K. and Barman, R.P. 1985. Fauna of Namdapha, Arunachal Pradesh (*Pisces*). *Res. Zool. Surv. India*, **6**(1-3) : 275-277.
- Dutta, A.K. and Sen, T.K. 1977. *Schizopygopsis stolickzae* Steindachner recorded from Arunachal Pradesh, India with observation on the extension in the geographical range. *Ibid.* **3**(4) : 143-144.
- Dutta Choudhary, S. 1978. General fauna, freshwater fish. *Arunachal Pradesh District Gazetteers, Lohit District*. Pub. Director of Information and Public Relation, Government of Arunachal Pradesh, pp 16-22.
- Dutta Choudhary, S. 1980. Invertebrates and fish fauna, *Arunachal Pradesh District Gazetteers, Tirap District*. Pub. Director of Information and Public Relation, Government of Arunachal Pradesh, pp 17-19.
- Dutta Choudhary, S. 1981. General fauna, freshwater fish. *Arunachal Pradesh District Gazetteers, Subansiri District*. Pub. Director of Information and Public Relation, Government of Arunachal Pradesh, pp 41-42.

- Dutta Choudhary, S. 1994. General fauna, fishes. *Arunachal Pradesh District Gazetteers East Siang and West Siang District*. Pub. Director of Information and Public Relation, Government of Arunachal Pradesh, pp. 15-21.
- Dutta Choudhary, S. and Sen, N. 1977. On a collection of fish from Arunachal Pradesh with some new records. *News Let. Zool. Surv. India*, 3(4) : 217-223.
- Elewin, V. 1999. *A Philosophy for NEFA (Arunachal Pradesh)*. Directorate of Research, Government of Arunachal Pradesh, Itanagar P. 296.
- Gupta, S.K. and Gupta, P.C. 2006. *General and applied Ichthyology*. S. Chand & Co. Ltd, New Delhi, P. 1130.
- Jayaram, K.C. 1963. A new species of *sisoried* from the Kaming Frontier Division (NEFA). *J. Zool. Soc. India*, 15(1) : 85-87.
- Jayaram, K.C. and Mazumdar, N. 1964. On a collection of fish from the Kaming Frontier Division, NEFA. *J. Bombay Nat. Hist. Soc.*, 61(2) : 264-280.
- Jhingran, V.G. and Sehgal, K.L. 1978. *Coldwater Fisheries of India*. Pub. Inland Fish. Soc. India, Barrackpore, P. 239.
- Nath, P. and Dey, S.C. 1985. Capture fisheries, an unfocused treasure of Arunachal Pradesh. *Fishing Chimes*, 5(4) : 22-25.
- Nath, P. and Dey, S.C. 2000. *Fish and Fisheries of North-East India (Arunachal Pradesh)*. Narendra Publishing House, Delhi, P. 217.
- Nautiyal, P. 2005. Taxonomic richness in the fauna of the Himalaya, Central Highlands and Western Ghats (Indian Sub continent). *Int. J. Eco. Environ. Sci.*, 31(2) : 73-92.
- Sarkar, U.K. and Ponniah, A.G. 2000. Evaluation of North-East Indian fishes for their potential as cultivable, sport and ornamental fishes alongwith their conservation and endemic status, p. 11-30. In A.G. Ponniah and U.K. Sarkar (eds.). *Fish Biodiversity of North-East India*. NBFGR. NATP Publ. 2, 228 p.
- Sen, N. 2000. Occurrence, distribution and status of diversified fish fauna of North East India, p. 31-48. In A.G. Ponniah and U.K. Sarkar (eds.). *Fish Biodiversity of North-East India*. NBFGR. NATP Publ. 2, 228 p.
- Sen, T.K. 2006. *Fauna of Arunachal Pradesh, State Fauna Series (Pisces)*. Zoological Survey of India, Kolkata, 13(Part-I) : pp. 317-396.
- Silas, E.G. 2006. Checklist of finfish species endemic to the North-Eastern India. A Workshop on fish germplasm exploration, cataloguing and conservation for North-Eastern region : New Initiatives, ICAR Complex, Shillong, May 5th-6th, Organised by NBFGR, Lucknow, p. 1-4.
- Sinha, M. 1992a. Fisheries development of the North-Eastern states. North-Eastern Council, Shillong. pp 62-76.

- Sinha, M. 1992b. Coldwater fishes of North-Eastern region of India. National Seminar on Endangered Fishes of India. Allahabad, April 25th–26th.
- Sinha, M. 1994. Fish Genetic Resources of the North-Eastern region of India. *J. Inland Fish. Soc. India*, **26**(1) : 1-19.
- Srivastava, C.B. 1966. On a collection of fishes from Tirap Frontier Division (NEFA), India. *J. Zool. Soc. India*, **18** : 122-128.
- Srivastava, G.J. 1968. Fishes of Eastern Uttar Pradesh, Vishwavidyalaya Prakashan, Varanasi, pp. xxii + 163.
- Tamang, L., Chaudhry, S. and Choudhory, D. 2006. On New record of freshwater fish *Pseudolaguvia shawi* (Hora) from Arunachal Pradesh, India (Teleostomi : Erethistidae). *Zoos' Print. J.*, **21**(11) : 2443-2446.
- Vishwanath, W. 2002. *Fishes of North-Eastern India*, NATP, NBFGR, Lucknow. Pub. Department of Life Sciences, Manipur University, India, pp. 160-161.