CHAPTER 2

NEW SPECIES DESCRIPTION OF PUNTIUS POOKODENSIS (CYPRINIDAE:CYPRININAE) FROM WAYANAD, KERALA, INDIA

2.1 INTRODUCTION

The genus *Puntius* Hamilton belonging to the family Cyprinidae, represented by small to tiny fishes are widely distributed in south and Southeast Asia. The species of this genus have usually a single pair of maxillary barbels or none and the principal dorsal spiny ray may be smooth, osseous or serrated. During a survey of the Kerala waters for ornamental species an interesting colourful *Puntius* species from a remote lake in the pristine Wayanad hills in Kerala has been collected. This, on further study turned out to be new to science and is described here. Because of the attractive coloration of the male fish this will enrich the list of endemic ornamental fishes of the Western Ghats. Based on earlier studies viz. Day 1875-78, 1889; Talwar & Jhingran, 1991; Jayaram, 1991,1999; Menon, 1999; Pethiyagoda, 1991 and recent descriptions by
Vishwanath and Laisram, 2004, there are 17 species in the Indian subcontinent sharing common features with the new species viz. absence of barbels and serrated principal spiny ray of dorsal fin. A key to all these species is provided, mostly based on colour pattern, since this character seems to be species specific. Southeast Asia is generally considered to have become the centre of cyprinid evolution because the cyprinids are extraordinarily numerous and diverse there as well as on the Indian subcontinent (Cech and Moyle, 2000).
Pookode Lake

It is a natural fresh water lake, brimmed with ever green mountains in the district of Wayanad. Wayanad lies between north latitude 11 degree 26'28" and 11 degree 48'22" and east longitude 75 degree 46'38" and 76 degree 26'11". The weather here is salacious; the scenic beauty, hypnotising and the nature, unspoiled. The lake has an area of 8.5 ha. and the maximum water depth is 6.5 m. (Fig. 2.1).
2.2 MATERIALS AND METHODS

Descriptions are based on 27 specimens, 22 of them deposited in the fish collections of the Zoological Survey of India, Southern Regional Station, Chennai and 5 in Zoological Survey of India, Calicut. Collections were made through cast net operations, especially in the early morning and late evening hours. Measurements follow standard practices and the mean values followed by range in parenthesis are provided.

*Puntius pookodensis* sp. nov. (Plate 2.1, Fig.1 & 3) & (Plate 2.2)

**Holotype:** F.7635, ZSI/SRS (Zoological survey of India/ Southern Regional Station) 40 mm standard length (SL), Pookode Lake 76°01’E, 76°18’E and 11°07’N, 11°42’N, Wayanad District, Kerala, India, collected by Anna Mercy and Eapen Jacob, Nov. 2004.

**Paratype:** F.7636, ZSI/SRS, 21 exs. 26.0-42.0 mm. SL., data same as for holotype. 5exs in the Zoological Survey of India, Calicut.

**Diagnosis:** An elongate *Puntius* species not more than 43.0 mm SL, without barbels and with an osseous principal spiny dorsal ray and mostly with seven branched rays; an incomplete lateral line with 6-8 pored scales, 22-23 lateral scale rows, with 4 ½ / 3 ½ lateral transverse scales; 18 circumferential scales, a shoulder spot on the lateral line and one or two spots on the caudal peduncle.

**Description:** D. iii /6(2), 7(21), 8(2); P.1 /12-13; V. 1/7/I; A.iii/5; C.19. Body elongate, its depth 3.87 (3.97-4.27) in total length (TL), 3.10 (2.83-3.27) in standard length (SL); its width 2.21 (1.83-2.44) in its depth; head small, its length 4.46 (3.90-4.90) in TL, 3.49 (3.10-3.80) in SL; Eyes large, its diameter 3.08 (2.75-3.75) in head.
length (HL), 1.07 (1.00-1.43) in interorbital width, 0.88 (0.71-1.17) in snout; snout pointed 3.54 (2.86-4.00) in HL; pectoral short, 1.36 (1.25-1.57) in HL; caudal peduncle slender, its depth 1.46 (1.30-1.60) in its length, Gill rakers 6 on the lower arm of the first gill arch and 2-3 on the upper arm.

Scales large, lateral line incomplete, pored scales ceasing after 6th or 8th scales; scales along lateral line 22-23; 4 rows in lateral transverse series from dorsal fin origin to lateral line, 3.5 from lateral line to pelvic fin base; predorsal scales 8-9; post dorsal 10-10 ½; prepelvic 9-10; circumferential scales 18, circumpeduncular scales 12. Maximum length observed: 43.0 mm SL.

**Colour:** Fresh specimens with an iridescent silver body and yellowish fins; a shoulder spot of 2 mm diameter on the 3rd to 4th scale along lateral line and another prominent spot on the 16th to 17th scale and sometimes a faint spot on the 19th and 20th scales, a thin dark line extends from the anterior to the posterior spot. The male fish showed more brilliant colorations and it will be in its maximum during courting. The optic rim was deep red in both the sexes. Dorsal, caudal and anal fins yellowish in females, reddish in males. Pectoral and pelvic fins hyaline.

**Distribution:** India: Kerala, Wayanad District, Pookode Lake.

**Etymology:** The new species is named after the collection locality.

**Habitat:** The major substrate was soft and with rich vegetation of aquatic flora like *Ceratophyllum, Hydrilla and Nymphaea* and it provided an ideal lentic habitat. The lake is fed by pristine streams from the surrounding hills. The water temperature of the
particular habitats ranged from $23^0\text{C}$ to $27^0\text{C}$ during winter and $25^0\text{C}$ to $30^0\text{C}$ in the remaining months.

**Vernacular names**: Pookode Paral

**Comparative material**: (Plate 2.1)

*Puntius ticto*: F 6034 ZSI/SRS, 8 exs. 29.0-35.0 mm SL; 8.10.98 Singaperumal koil paddy field, Chennai, Coll. M.B. Raghunatham; F.6620, 7 exs. 25.0-34.0 mm SL, 18.4.2004, Singaperumal koil paddy field coll. M.B. Raghunathan.

*Puntius punctatus*: 2 exs., 47.0-49.0 mm SL. Muvattupuzha River, Coll. Anna Mercy & Eapen Jacob.

**Remarks**: Several *Puntius* species, to be specific 17, share certain common characters viz. absence of barbels and a serrated principal spiny ray of the dorsal fin. However, each bears some unique features by which they can be differentiated from the rest (see key to species). The new species bears close resemblance to the two spotted species, *Puntius ticto* and *Puntius punctatus*, the former known to be widely distributed in India and replaced by the latter in the south western tip of Peninsular India and perhaps also in Sri Lanka. However, the new species differs from *punctatus* in its incomplete lateral line system and in the position of the spots. The shoulder spot being present on one scale row below the lateral pored scale and presence of a larger spot in the middle of the caudal peduncle in *punctatus* vs. shoulder spot on the L.I. row and the caudal spot at the anterior half of the caudal peduncle in the new species. From *ticto* the new species can be separated in its less deep body, circumferential scales. 18 vs. 22 in *ticto*.
The species further bears some resemblance in the lesser number of branched dorsal rays (7) and paired caudal spots to *P. shalynius* found in the streams, lakes and pools in the Khasi & Jaintia Hills, Meghalaya. However, the new species differs from the same in the presence of a variable number of branched rays in the dorsal (6-8), the presence of a shoulder spot and in the caudal spots which is paired and of equal size in *P. shalynius* but in the new species the anterior caudal spot is larger and the posterior spot is fainter or absent in many specimens. The new species seems to have evolved in isolation in Pookode Lake in the pristine Wayanad Hills in Southern Western Ghats from the same stock as the widespread *P. ticto*, as would have its congener *shalynius* in the Khasi & Jaintia Hills in the North East.

Key to the *Puntius* species with a strong, osseous and serrated primary dorsal fin ray and without barbels.

1. Lateral line scales (L.l.) more than 30 … … 2
   Lateral line scales (L.l.) less than 30 … 3

2. Scales large, L.l 31-33, no spots on body … *P. nangalensis*
   Scales small, L.l 36-39, a spots near caudal base. *P. guganio*

3. Body with vertical bands … … 4
   Body without vertical bands but with one or two spots/ blotches. … 11

4. Body with 4 vertical bands … *Puntius phutunio*
   Body with 3 or less number of vertical bands … 5

5. L.l complete, body with 3 vertical bands … … 6
   L.l mostly incomplete, body with variable number
of bands

6 Body deep, 2 in SL, L.tr. 5/4 ... P. nigrofasciatus

Body less deep, 2.5 in SL, L.tr. 4.5/3.5 P. setnai

7. Shoulder band absent, bands only on caudal peduncle ... 8

Shoulder band always present ... 9

8 Two vertical bands on caudal peduncle: Dorsal and anal base dark, L.l. incomplete Puntius gelius

Body with a single band around caudal peduncle, fin bases not dark, L.l. complete or incomplete P. ornatus

9 Dark saddle shaped band between eyes; Dorsal, ventral and anal fins dark, L.tr. scales between L.l and pelvic fin about 4 ½

Colouration not as above; Dorsal with bands or spots, L.tr. scales rows less than 4 ½ ... 10

10 Circumpeduncular scales 12 ... P. bizonatus

Circumpeduncular scales 8-10 P. cumingii

11. Two spots on body, a shoulder spot and one on caudal peduncle ... 12

Shoulder spot absent ... 16

12. Lateral line complete; shoulder spot not on L.l ... 13

Lateral line incomplete; shoulder spot on L.l row ... 14

13. Shoulder spot one row above 3rd scale of L.l.; dorsal fin not spotted P. stoliczkanus

Shoulder spot one row below L.l. row; dorsal fin spotted in rows P. punctatus

14. Body slender, circumferential scales less than 20 ... 15
Body deeper, circumferential scales 22  \[ P. \text{ticto} \]

15. Dorsal fin with 8 branched rays, L.tr.3 ½ / 3 ½ \[ P. \text{manipurensis} \]
caudal spot above tip of anal fin

Dorsal usually with 7 branched rays rarely 8; L.tr. 4-4 ½ /3 ½; caudal spot above anal fin, another faint spot posterior to this. \[ P. \text{pookodensis} \]

16. Two spots on caudal peduncle \[ P. \text{shalynius} \]
A single blotch on caudal peduncle \[ P. \text{conchonius} \]

2.3 DISCUSSION

Report of this new species \[ P. \text{pookodensis} \] enriched the ichthyofaunal diversity of the Western Ghats. This species enjoyed an extremely limited distribution mainly in the Pookode lake of Wayanad district, Kerala and adjacent connected water bodies. Here arises the importance of conservation and to take right measures to protect the species from the threat of extinction. The colourful male of the species further expands the list of hopeful ornamental fishes from the Western Ghats, even though further studies are needed to go into the suitability of the fish to aquarium conditions. The most unique characters distinguish this species from other closely related ones is the number of branched fin rays in the dorsal fin, number of circumferential scales, the position of the shoulder spot and body colouration. It is assumed that this species may have affinity towards the special altitude range at of the Pookode lake, which in turn led to the speciation.
Fig. 1 *Puntius pookodensis* sp. nov.
Holotype, 40 mm SL, F. 7635

Fig. 2 *Puntius punctatus* (Day)
Fig. 3 *Puntius pookodensis* sp. nov.
Fig. 4 *Puntius ticto* (Hamilton)
Plate 2.2 *Puntius pookodensis* sp. nov.

Fig. 1 Male

Fig. 2 Female