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A preliminary checklist of the fishes of Yercaud, Shevroy Hills, Eastern Ghats, Tamil Nadu, southern India

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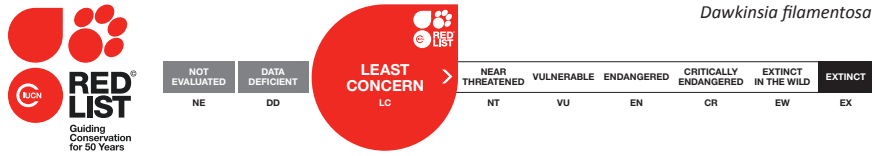
Unlike the Western Ghats, the Eastern Ghats are not a continuous range of mountains but a series of broken and weathered relicts of the peninsular plateau of India represented as a series of isolated hills (Mani 1974). This discontinuous line of hills is further divisible into two major divisions: the part lying above the Godavari River which is called the Orissa Hills and the other just below the Krishna to which the term Eastern Ghats could be more appropriately used (Menon 1951). Menon (1951) found a total absence of Malayan elements in the fish fauna of the Eastern Ghats and also the absence of any endemicity, which was subsequently supported by surveys of Devi et al. (2007, 2008). This is contrary to the fish fauna of the Western Ghats where of the known 290 species, more than 65% (189 species) are endemic (Dahanukar et al. 2013). Various hill streams of the Eastern Ghats have been sampled for ichthyofaunal constituents (for example, Hora 1938, 1940; Indra et al. 2011; Prasad & Rao 1999; Devi et al. 2005, 2008; Venkateswarulu & Bakde 1986) but only a few have been surveyed in the Tamil Nadu side. The only hill streams and lakes I am aware of where surveys have been undertaken in Tamil Nadu are Javadi, Yelagiri and Chennakesava (Sathanur) hill ranges (Lazarus et al. 1988; Misra 1938; Devi 1992; Devi & Raghunathan 1999; Devi et al. 2006, 2007). The Shevroy Hill range was not sampled earlier and this effort makes an attempt to provide a preliminary checklist of the freshwater fishes of Yercaud Lake and its adjacent hill streams.

Materials and Methods

Yercaud is a small hill station in Salem District of Tamil Nadu located at an altitude of 1,515m in the Shevroy (or Servarayan) Hills of the Eastern Ghats. A popular boating facility exists at Yercaud Lake which is also called Emerald Lake (11^{0}47’41.93”N & 78^{0}12’1.30”E). This lake is overgrown with *Eichhornia crassipes* and is also used by the fisheries department of Tamil Nadu for stocking cultivable fish species. A stream leading away from this lake winds through Wild Orchid Resorts (11^{0}47’18.23”N & 78^{0}12’9.33”E) leading on to Kiliyur Falls (11^{0}47’41.77”N & 78^{0}12’1.56”E). This river confluences with the Vappady River which in turn joins the east flowing Ponnaiyar River. Hill streams



Dawkinsia filamentosa

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at Manjakuttai (11^{0}48'33.66"N & 78^{0}13'21.76"E) and Puthur (11^{0}47'36.58"N & 78^{0}14'20.30"E) around Yercaud were also sampled (Fig. 1). The latter hill streams join the Vaniyar River which in turn joins the Ponnaiyar River.

Fish sampling in shallow waters involved the use of dip nets, drag nets and cast nets while in deeper waters fishes were caught using gill nets, and hook and line.

Four surveys were undertaken covering all seasons of the year: viz.: May 2011 (average precipitation 66mm), September 2011 (average precipitation 160mm), February 2012 (average precipitation 69mm) and June 2012 (average precipitation 175mm). Each survey lasted for three days. Specimens were collected, preserved in 10% formaldehyde solution and deposited at the Pitchandikulam Bioresource Centre in Auroville, Tamil Nadu. Unfortunately, Cyclone Thane destroyed most of the collections and a further survey was undertaken in August 2012 (average precipitation 434mm) and these specimens belonging to all previously recorded taxa were preserved in 100% ethanol and deposited in the repository of Wildlife Information and Liaison Development (WILD) in Coimbatore, India. Species identification was according to established literature (Daniels 2002; Jayaram 1981, 2006, 2010).

Results and Discussion

Twenty-one species of fishes were recorded during the survey of which the majority (19 species) were recorded from Yercaud Lake (Table 1; Images 1–21). Ten species were collected in the hill stream leading away from the lake to Kiliyur Falls, while six species were recorded in Manjakuttai, and eight at Puthur streams.

A notable finding was *Devario* cf. *aequipinnatus*. The specimens collected showed overlapping characters of both *D. aequipinnatus* and *D. malabaricus* (K. Rema Devi, J.D. Marcus Knight pers. comm. 2012).

Two exotic fish species, *Poecilia reticulata* and *Oreochromis mossambicus* were recorded from the study area. In addition the Tamil Nadu State Fisheries Department had introduced the Indian Major Carp, *Gibelion catla* for improving fish production of the lake. Fingerlings of this species have been continually released since these translocated species do not breed naturally in the lake. It is reported that the fisheries department also stock *Cirrhinus mrigala* and *Labeo rohita* but no signs of these species were found during this survey (pers. obs.).

Eighteen native species were recorded during four phases of this survey lasting for 12 days. While 147 native fish species have been recorded in the entire Eastern Ghats both in Tamil Nadu and Andhra Pradesh (Devi et al. 2007) a survey of the Javadi Hills resulted in the collection of only 14 native species (Devi 1992). This shows that while diversity is great throughout the entire Eastern Ghats, each hill range has only a limited number of species. Furthermore, it is pertinent to note that only three species were common to the Shevroy and nearby Javadi Hills - viz., *Garra mullya*, *Lepidocephalichthys*

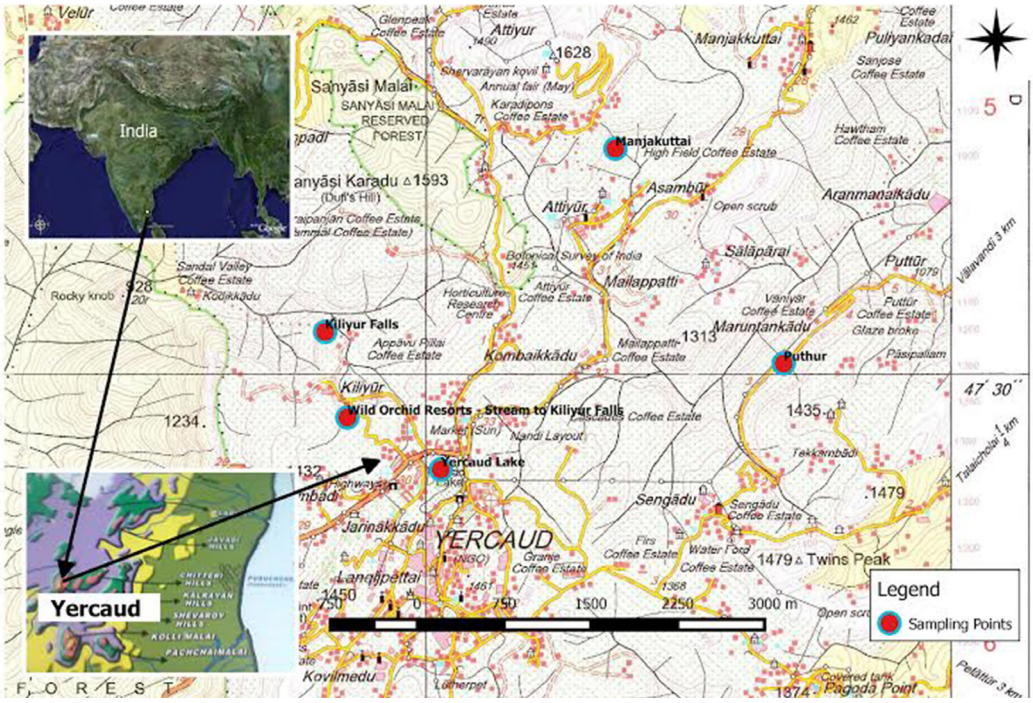

Figure 1. Study area

Table 1. Fishes of Yercaud

	Species	Yercaud Lake	Stream to Kiliyur Falls	Manjakuttai	Puthur
1	**Order: Osteoglossiformes** **Family: Notopteridae** *Notopterus notopterus* (Pallas, 1769)	+	-	-	-
2	**Order: Cypriniformes** **Family: Cyprinidae** *Puntius bimaculatus* (Bleeker, 1863)	+	+	+	+
3	*Puntius chola* (Hamilton, 1822)	+	+	+	+
4	*Pethia conchonius* (Hamilton, 1822)	+	-	-	-
5	*Dawkinsia filamentosa* (Valenciennes, 1844)	+	+	+	+
6	*Devario* cf. *aequipinnatus* (McClelland, 1839)	+	+	+	+
7	*Gibelion catla* (Hamilton, 1822)	+	-	-	-
8	*Cirrhinus cirrhosus* (Bloch, 1795)	+	-	-	-
9	*Garra mullya* (Sykes, 1839)	-	-	-	+
10	**Family: Cobitidae (Loaches)** *Lepidocephalicthys thermalis* (Valenciennes, 1846)	+	+	-	-
11	**Family: Nemacheilidae** *Schistura denisoni* (Day, 1867)	-	-	+	-
12	**Order: Siluriformes (Catfishes)** **Family: Bagridae** *Mystus vittatus* (Bloch, 1794)	+	+	-	-
13	**Family: Siluridae** *Ompok bimaculatus* (Bloch, 1794)	+	-	-	-
14	**Order: Cyprinodontiformes** **Family: Poeciliidae** *Poecilia reticulata* Peters, 1859	+	+	+	+
15	**Order: Synbranchiformes** **Family: Mastacembelidae** *Mastacembelus armatus* (Lacepede, 1800)	+	-	-	-
16	**Order: Perciformes** **Family: Ambassidae** *Chanda nama* Hamilton, 1822	+	-	-	-
17	**Family: Cichlidae** *Pseudetroplus maculatus* (Bloch, 1795)	+	+	-	-
18	*Oreochromis mossambicus* (Peters, 1852)	+	+	-	-
19	**Family: Gobiidae** *Glossogobius giuris (Hamilton, 1822)*	+	-	-	+
20	**Family: Belontiidae** *Pseudosphromenus cupanus* (Cuvier, 1831)	+	+	-	-
21	**Family: Channidae** *Channa gachua* (Hamilton, 1822)	+	-	-	+
	TOTAL	**19**	**10**	**6**	**8**

Image 1. *Notopterus notopterus*

Image 2. *Puntius bimaculatus*

Image 3. *Puntius chola*

Image 4. *Pethia conchonius*

Image 5. *Dawkinsia filamentosa*

Image 6. *Devario* cf. *aequipinnatus*

Image 7. *Gibelion catla*

Image 8. *Cirrhinus cirrhosus*

Image 9. *Garra mullya*

Image 10. *Lepidocephalicthys thermalis*

Image 11. *Schistura denisoni*

Image 12. *Mystus vittatus*

Image 13. *Ompok bimaculatus*

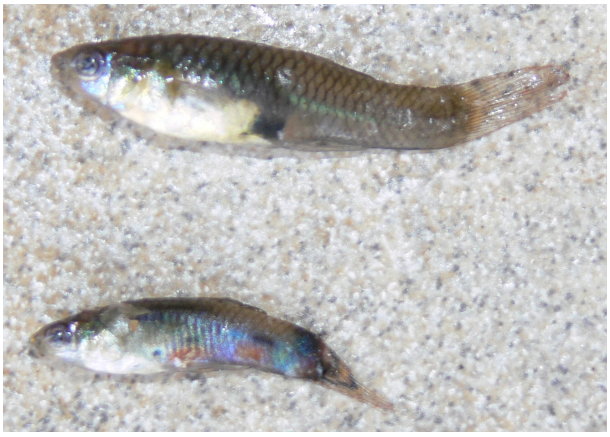

Image 14. *Poecilia reticulata*

Image 15. *Mastacembelus armatus*

Image 16. *Chanda nama*

Image 17. *Pseudetroplus maculatus*

Image 18. *Oreochromis mossambicus*

Image 19. *Glossogobius giuris*

Image 20. *Pseudosphromenus cupanus*

Image 21. *Channa gachua*

thermalis and *Glossogobius giuris*. This is pertinent because it shows how diverse ichthyofaunal communities are, even between hill ranges that are close to each other.

As per the IUCN Red List of Threatened Species, *Ompok bimaculatus* is listed as Near Threatened (Ng et. al. 2010) and *Cirrihinus cirrhosus* listed as Vulnerable (Devi & Ali 2013).

The threat of alien invasive species taking over freshwater habitats is a reality, as during the present survey the population of *Poecilia reticulata* was alarming and they outnumbered native species in catches. *Oreochromis mossambicus* was encountered in rather low numbers in Yercaud Lake and only a couple of specimens were found in the stream at Wild Orchid Resorts. This is different from the conditions elsewhere where they can account for a biomass of 56.1% of fishermen's catches (e.g., Adyar Estuary Ramanujam et. al. 2010). Eight alien species have been reported from the Eastern Ghats including *P. reticulata* and *O. mossambicus* (Devi et al. 2007). This is of great concern because it has been substantiated that invasive alien species are the second major cause of extinctions of native and endemic species around the world (Wilcove et al. 1998). *Poecilia reticulata* could have been introduced as an ornamental / larvivorous species to some pond from where it found its way to the lakes and hill streams of Yercaud where it now dominates the community structure. This is bound to alter the ecology by resource competition. Introduced aquarium fish represent a major source of ecological destruction that may be locally alarming if ignored (Liang et al. 2006). In addition alien fish that have taken advantage of the aquarium trade are emerging as the most important threat to fragile aquatic habitats in peninsular India (Knight 2010).

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