



Rediscovery of *Pristolepis marginata* Jerdon (Teleostei: Percomorpha: Pristolepididae) after one and a Half Century

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Abstract

Pristolepis marginata Jerdon has long been placed in synonymy with *Pristolepis malabarica* Guenther. An examination of the specimens of the *P. marginata* collected recently from its type locality in Kerala shows however, that it exhibits many valid differences from *P. malabarica*. Jerdon's *Pristolepis* is distinguished from its relative species by having dorsal fin soft rays- 12 ; dorsal spines- XV; anal fin spines- IV; anal fin soft rays- 7- 8; lateral line scales –19-21/12-15; pre orbital with 9 strong teeth; pre opercle angle with 18 serrae; Meristic and morphometric characters are analyzed well based on the topotypic materials.

Keywords: Mananthavady River, percoid fish, *Catopra tetracantha*, interrupted lateral line.

Introduction

The genus *Pristolepis* Jerdon comprises moderate-sized percomorph fishes having laterally compressed body with dorsal, ventral and anal fins with strong spines. They can be further recognized among other percomorphs by their greatly enlarged basibranchial tooth plate, studded with globular teeth that bite against a similar tooth patch on the parsphenoid¹.

Pristolepis marginata was the first species of *Pristolepis* described from the Mananthavady River of Wayanad district, Kerala, India². In 1864 Guenther described *Catopra malabarica* from hill ranges of Travancore; it was based on one specimen received by Francis Day from Rev. Henry Baker (Junior) who collected it from (Manimala River) Mundakkayam, Kottayam district of Kerala^{3,4}.

Many taxonomists from Jerdon⁵ to Britz et al.⁶ consider *Catopra malabarica* as a synonym of *Pristolepis marginata*. Recently this author could collect eight specimens of *Pristolepis marginata* from its type locality, examination of which revealed that it is a different species from its closely related species.

Material and Methods

Fishes were collected using cast nets and preserved in 10% formalin. Methods used are those of Jayaram^{7,8} and measurements follow standard practices. Specimens of *Pristolepis marginata* collected by this author from its type locality and which are utilized for the present study are deposited in the national museum of Zoological Survey of India, Kolkata, West Bengal; different specimens of *Pristolepis malabarica* and *P. rubripinnis*, collected by the author as comparative materials are deposited in the museum of ZSI, Kolkata, ZSI/WGRC, Kozhikode and UOK/AQB, Thiruvananthapuram.

Abbreviations: ZSI- Zoological Survey of India, Kolkata, West Bengal; ZSI/ WGRC- Zoological Survey of India, Western Ghats Regional Centre, Kozhikode, Kerala; UOK/AQB- University of Kerala, Department of Aquatic biology and fisheries, Kariavattom, Kerala; F- fish; HL- head length; IOW- inter orbital width; LLS- Lateral line scales; LL/D- Scales between lateral line and dorsal fin; LL/V- Scales between lateral line and ventral fin; OLS- Overlapping scales.

Results and Discussion

Diagnosis: *Pristolepis marginata* differs from all other congeners by its colour pattern, meristic and morphometric characters. Its body and fins greenish; inter spinous membrane of dorsal fin orange colored. It differs further from its south Indian congeners *P. malabarica* and *P. rubripinnis* in having 4 anal spines and 15 dorsal spines (vs. 3 anal spines and 14 dorsal spines).

Description: Body roughly rectangular in outline, strongly laterally compressed; body depth 2.4 to 2.5 in SL, body width 2.0- 2.1 in its depth; dorsal contour rising gradually from snout towards the dorsal front, convex along the dorsum, abruptly attenuated at caudal peduncle; ventral contour slightly convex up to ventral fin base, then almost straight to anal fin base and strongly attenuated at caudal base.

Head moderate to large, its length 2.6 to 3.1 and depth 2.7 to 3.1 in SL, pointed towards the snout. Eyes inserted in the dorso-anterior half of head, its diameter 3.5 to 4.4 in HL and 0.8 to 1.3 in IOW. Posterior nostril a round opening, located close to orbit, anterior naris at the end of a short tube, in the middle of upper lip and orbit.



Figure-1

A freshly collected specimen of *Pristolepis marginata*, collected from Valloorkkavu of the Mananthavady River, Wayanad dt, Kerala, the type locality (ZSI FF 4935)



Figure-2

A formalin preserved specimen of *Pristolepis marginata* (ZSI FF 4935)

Mouth upturned, its width 2.9 to 3.3 in HL, maxilla ending at vertical, a little in front of anterior margin of orbit; opercle with two spines posteriorly, both of equal length and strength; pre opercle angle moderately serrated with 18 serrae; junction of inter and sub opercle slightly serrated; pre orbital with 9 strong teeth on its lower edge.

Anterior base of spinous dorsal fin located above the base of pectoral fin and just in front of ventral fin; dorsal fin rays XV, 12; pectoral fin reaching 9th scale row; in smaller specimens pectorals reach anus, in larger ones it reach near to anal opening; pectoral fin rays 13-14; Pelvic fins originate just behind pectoral fin base; pelvic fin rays I, 5; third anal spine longer than other three spines; anal rays IV, 7-8; caudal rounded; caudal fin rays 14.

Scales comparatively large, small scales present on chest, around the bases of soft dorsal, anal and posterior part of caudal fin; tiny scales on the bases of fin rays of dorsal, caudal and anal fins. Scales between ventral rim of orbit and ventral edge of pre opercle- 5-6; pre dorsal scales 15- 17; lateral line scales 19-21/12-15; scales between dorsal and ventral branch of lateral

line $\frac{1}{2}$ 2 $\frac{1}{2}$; lateral transverse scales $4\frac{1}{2}$ / $9\frac{1}{2}$; scales between lateral line and dorsal fin $4\frac{1}{2}$; scales between lateral line and ventral fin $9\frac{1}{2}$; scales between lateral line and anal fin $9\frac{1}{2}$ - $10\frac{1}{2}$; pre pelvic scales 14- 15; pre anal scales 28-30; lateral line dorsal branch scales 19-21; lateral line ventral branch scales 6-9; overlap between dorsal and ventral branches 1- 4 scales; scales between dorsal branch of lateral line and base of middle of spinous dorsal fin $3\frac{1}{2}$; scales between dorsal branch of lateral line and anterior base of spinous anal fin $9\frac{1}{2}$; scales on caudal peduncle 7.

Lateral line interrupted, dorsal branch extending from shoulder girdle in convex longitudinal line to vertical through base of anterior most soft anal fin ray or in front of the anal spine; dorsal lateral line branch forming a horizontal line from the anterior base or just behind soft dorsal fin to base of caudal fin and from there in a straight line to base of caudal fin;

Colouration: Dorsal and lateral sides green; ventral side white or brownish white; inter spinous membrane of dorsal fin orange; remaining fins greenish; a dark band may often present on the soft dorsal, soft anal and caudal fins; base of caudal fin deep black. After preservation in formalin the fish specimens acquire a black color.

Distribution: Currently known only from Mananthavady River, Wayanad, Kerala, India.

Comparisons: *Pristolepis malabarica* (figures 3 and 4; tables 1 and 2) and *P. rubripinnis* are the related species of *Pristolepis marginata*. *Pristolepis malabarica* was described firstly by Guenther based on one specimen received by Francis Day from Rev. Henry Baker (Junior) who collected it from Mundakkayam (Kottayam district, Kerala) on the hill-ranges of Travancore. Due to absence of a collection of *P. marginata* and *P. malabarica* from their type localities, *P. malabarica* was erraneously considered as a synonym of the former. To solve this problem, this author collected 14 specimens of *Pristolepis malabarica* from Manimala River at Mundakkayam (type locality) and 8 specimens of *P. marginata* from Manantavady River of Wayanad (type locality); it revealed the relevant taxonomical details of *malabarica* and *marginata*. It was understood from the study that in colour, morphometric and in many valid meristic characters (Table 2) *Pristolepis malabarica* differs from *P. marginata*. In *P. marginata* lateral line scales are 19-21/12-15 (vs. 19- 23/ 8-11 in *P. malabarica*), dorsal spines XV (vs. XIV in *P. malabarica*), pre opercle strongly serrated with 18 teeth (vs. pre opercle roughened or slightly serrated); pre orbital with 9 strong teeth on its lower edge (vs. pre orbital smooth), pectoral tip rounded (vs. pectoral tip pointed), membrane between spinous portion of dorsal fin orange (vs. hyaline to light green), body and fins green (vs. yellowish), posterior most part of ventral branch of lateral line straight (vs. posterior most part of ventral branch of lateral line bends downwards to caudal base), body width at dorsal origin 19.0-20.8 (vs. 21.1- 23.1 in *P. malabarica*), length of base of pectoral

fin 5.9- 7.0 (vs. 7.2- 9.2), depth of caudal peduncle 14.0- 15.3 (vs. 16.9- 18.5) and distance from anal to vent 3.8- 5.4 (vs. 6.4- 7.7) all in percent of standard length. Most relevant difference

spines 4 anal spines. A synonymy was created between *P. malabarica* and *P. marginata* only because of the failure of procuring these two species from their type localities. The current study reveals that *Pristolepis marginata* and *P. malabarica* are two different species.

This author collected 4 specimens of *P. rubripinnis* (Figures 5 and 6; Table 2) from Pampa River at Edathua, its type locality. Examination of it revealed that *rubripinnis* differs greatly in meristic and morphometric characters from *marginata*. In *P. rubripinnis*, unlike *P. marginata*, distal parts of soft dorsal, anal and caudal fins are orange red (vs.



Figure-3

A freshly collected specimen of *Pristolepis malabarica* from Manimala River at Mundakkayam, Kottayam Dt of Kerala, the type locality (ZSI/WGRC/IR/2373)



Figure-4

A formalin preserved specimen of *Pristolepis malabarica* (ZSI FF 4937)

between *marginata* and *malabarica* is the possession of four anal spines in *marginata*; in *malabarica* only three anal spines present. Jerdon who described *P. marginata* firstly, mentioned the occurrence of four anal spines in it. Day^{9,10,11} assigned both, *malabarica* and *marginata*, to *Pristolepis* and distinguished them based on differences in the number of dorsal and anal-fin spines, listing 15–16 dorsal spines and 4 anal-fin spines for *marginata* and 14 dorsal spines and 3 anal-fin spines for *malabarica*. But many taxonomists including Britz et al. tried to prove that the *P. marginata* bears only three anal spines. But they collected their “*Pristolepis marginata*” from the Valappattanam River of Kannur District, and not from Mananthavady River, its type locality, to support their argument. The present study revealed that *P. malabarica* has 14 dorsal spines and 3 anal spines and *P. marginata* has 15 dorsal



Figure-5

Freshly collected specimen of *Pristolepis rubripinnis* from Edathua, Alappuzha Dt, Kerala, its type locality (STC/DOZ/55)



Figure-6

A formalin preserved specimen of *Pristolepis rubripinnis* (STC/DOZ/55)

greenish in *P. marginata*) dorsal spines are XIV (vs. XV), dorsal soft rays 14 (vs. 12), anal spines 3 (vs. 4), anal soft rays 9 (vs. 7-8), lateral line scales 20-22/9-10 (vs. 19-21/12-15), body height at dorsal origin 48.6- 54.4 (vs. 40.0- 42.1), pre dorsal length 34.5- 37.6 (vs. 38.5- 41.8), length of caudal peduncle 4.7- 5.6 (vs. 10.7- 14.9) all in percent of SL and snout length 16.2- 20.2 (vs. 26.7- 31.4) in percent of HL.

Table-1
Morphometric features of *Pristolepis marginata* and *P. malabarica*

SI No	Characters	<i>Pristolepis marginata</i> (n= 8) ZSI FF 4935			<i>Pristolepis malabarica</i> (n=14) ZSI FF4937, ZSI/WGRC 2373, UOK/AQB 112, 113		
		Range	Mean	SD	Range	Mean	SD
2	Standard Length (mm)	79.0- 107.0	93.8	11.9	63.0- 88.0	68.0	10.1
Percentage of Standard Length							
3	Head length	32.7-38.0	34.6	2.1	33.6- 36.5	35.2	1.1
4	Head depth	32.2- 37.1	35.0	1.6	31.0- 40.9	33.4	3.7
5	Head width	17.7- 20.0	18.9	1.0	18.3- 20.8	19.2	1.1
6	Body depth at dorsal origin	40.0- 42.1	41.3	0.8	41.4- 45.5	43.4	1.5
7	Body depth at anal origin	40.5- 43.6	41.7	1.3	42.3- 46.6	44.9	1.7
8	Body width at dorsal origin	19.0- 20.8	19.8	0.7	21.1- 23.1	22.3	0.8
9	Body width at anal origin	12.1- 15.0	13.4	1.0	12.7- 15.4	13.4	1.0
10	Pre dorsal length	38.5- 41.8	40.3	1.2	37.1- 40.9	39.3	1.7
11	Post dorsal length	64.5- 70.2	66.6	2.2	63.6- 68.3	66.9	1.7
12	Pre pectoral length	35.7- 39.7	37.4	1.4	32.3- 38.1	36.1	2.5
13	Pre pelvic length	41.1- 45.8	43.2	1.8	40.0-45.7	43.1	2.7
14	Pre anal length	68.6- 73.3	70.9	1.9	69.2-74.6	72.9	2.2
15	Length of soft dorsal fin	17.7- 21.0	19.7	1.3	20.0-25.0	23.3	2.2
16	Length of spinous dorsal fin	11.6- 14.3	12.6	1.0	11.4-14.3	13.4	1.2
17	Length of pectoral fin	22.8- 24.4	23.7	0.6	23.6-28.4	26.2	1.8
18	Length of pelvic fin	20.2- 23.8	22.2	1.6	20.6-23.3	21.7	1.5
19	Length of soft anal fin	13.3- 20.3	18.4	2.5	16.7-22.7	18.4	2.2
20	Length of spinous anal fin	12.6- 15.2	13.5	1.1	10.1-15.4	14.4	1.9
21	Length of base of spinous dorsal fin	42.4- 46.4	43.7	1.6	43.2- 48.3	45.2	1.9
22	Length of base of soft dorsal fin	17.3- 19.8	18.8	0.9	13.6-20.0	17.4	2.7
23	Length of base of spinous anal fin	10.7- 12.7	11.9	0.8	9.5- 11.3	10.5	0.7
24	Length of base of soft anal fin	12.4- 17.7	13.9	1.9	11.0- 16.5	13.2	1.8
25	Length of base of pectoral fin	5.9- 7.0	6.5	0.4	7.2-9.2	8.2	0.8
26	Length of base of pelvic fin	4.2- 6.3	5.1	0.7	5.1-6.2	5.4	0.5
27	Distance from pelvic to anal	28.6- 31.7	29.8	1.3	27.2- 31.4	29.3	2.9
28	Length of caudal fin	22.8- 25.9	24.6	1.1	24.3-28.7	26.5	3.1
29	Length of caudal peduncle	10.7- 14.9	12.2	1.6	7.9- 13.6	10.5	2.3
30	Depth of caudal peduncle	14.0- 15.3	14.8	0.5	16.9- 18.5	17.7	0.7
31	Width of caudal peduncle	5.0- 5.9	5.5	0.4	3.2- 6.2	4.0	1.2
32	Distance from ventral to vent	25.0- 27.7	26.3	1.2	22.8- 26.2	24.5	1.4
33	Distance from anal to vent	3.8- 5.4	4.7	0.5	6.4- 7.7	6.7	0.5
34	Head length (mm)	30.0- 35.0	32.3	2.4	22.0-31.0	23.9	3.7
Percentage of Head Length							
35	Head depth	91.8- 111.4	101.7	9.2	90.9- 96.8	93.0	2.8
36	Head width	46.7- 60.6	55.0	5.6	50.0-60.0	53.6	2.6
37	Eye diameter	22.8- 28.6	25.3	2.5	25.8- 26.7	26.2	0.5
38	Inter orbital width	23.3- 30.3	25.8	2.8	26.1- 33.3	28.8	3.3
39	Inter narial width	16.4- 21.2	17.8	1.8	17.4- 22.2	19.1	2.0
40	Snout length	26.7- 31.4	29.4	2.0	28.3- 30.6	29.2	0.8
41	Width of gape of mouth	30.0- 34.4	31.9	1.8	27.6- 31.1	29.3	1.5

Table-2
Meristic characters of *Pristolepis marginata* and its relative species

Sl. No	Characters	<i>P. marginata</i>	<i>P. malabarica</i>	<i>P. rubripinnis</i>
1	Dorsal fin spines	XV	XIV	XIV
2	Dorsal fin rays	12	11- 12	14
3	Pectoral rays	13- 14	12- 14	14
4	Pelvic rays	I, 5	I, 5	I, 5
5	Anal soft rays	7- 8	8-9	9
6	Anal spines	IV	III	III
7	LLS	19-21/12-15	19- 23/8- 11	20- 22/9-10
8	LL/D	4½	3½	4-5
9	LL/V	9½	8½ -10½	10
10	OLS	1-4	0-3	2- 4

Pristolepis tetracantha of Guenther^{12,13} was described from East Indies. Day considered it as a junior synonym of *Pristolepis marginata*, who speculated that they might be the types of Jerdon's *Pristolepis*. Even though their "*P. marginata*" differs (with different number of dorsal and anal spines) considerably from *P. tetracantha*, Britz et al. considered it as a synonym of the latter species. But the examination of syntypes of *P. tetracantha* by Britz et al. helped to reveal the detailed taxonomy of it. From the present study of *P. marginata* from the type locality, from the accounts of Britz et al. and from the details given by the Guenther, who originally described it, *P. tetracantha* can be considered as synonym of the *P. marginata*. Both the species show no difference in the dorsal and anal spines and rays (15 dorsal spines, 12 dorsal soft rays, 4 anal spines and 7-8 anal soft rays).

Conclusion

The redescription of *Pristolepis marginata* Jerdon re-emphasizes the necessity of collection of fishes from their type locality and the impending mistake in discarding the original description without sufficient reasons while creating synonymy in fish taxonomy.

Comparative Material: *Pristolepis malabarica*: ZSI/WGRC/IR/2373, 10 exs, 63- 88 mm SL, Mundakkayam, Manimala River, Kerala, collected by Mathews Plamoottil, 8.10.2011, 9.12.2011 and 9.12.2012; ZSI FF 4937, 2 exs, 65.0-69.0 mm SL, Mundakkayam, Manimala River, Kerala, collected by Mathews Plamoottil, 14.10.2012; UOK/AQB/F/112 and 113, 2 exs, 60.0- 65.0 mm SL, Mundakkayam, Manimala River, Kerala, collected by Mathews Plamoottil, 14.10.2012.

***Pristolepis marginata*:** ZSI FF 4935, 8 exs, 82.0 mm- 103.0 mm SL, Valloorkavu, Mananthavady River, Wayanad, Kerala, collected by Mathews Plamoottil, 20.03.2013.

***Pristolepis rubripinnis*:** STC/DOZ/55, 4 exs, 100- 136 mm SL, Edathua, Pampa River, Kerala, collected by Mathews Plamoottil, 10.01.2013.

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