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*SPECIAL PUBLICATION*

No. 47

**A NEW SPECIES OF ANTHIINE FISH OF THE GENUS  
*RABAULICHTHYS* (PERCIFORMES: SERRANIDAIE)  
FROM THE MALDIVE ISLANDS**

by

**John E. Randall & Robert M. Pyle**

July 1989

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ISBN 0-86810-185-0

# A NEW SPECIES OF ANTHIINE FISH OF THE GENUS *RABaulichthys* (PERCIFORMES: SERRANIDAE) FROM THE MALDIVE ISLANDS

by

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## ABSTRACT

*Rabaulichthys stigmaticus* is described as a new species of serranid fish of the subfamily Anthiinae from four male specimens collected in 35 m on a rubble bottom off Ari Aroll in the Republic of Maldives. It is distinct from the only other known species of the genus, *R. altipinnis* Allen from New Britain, in having a longer snout (6.7-7.1%SL, versus 5.5-6.4%SL), a higher dorsal fin in the adult male (30-39% SL), a large quadrangular dark spot on the side of the body above the anal fin, and an elongate black blotch in the soft portion of the dorsal fin. Specimens of a possible third species taken in a dredge at Condor Reef, Caroline Islands are discussed.

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## INTRODUCTION

Allen (1984) described a new genus and species of Anthiinae, *Rabaulichthys altipinnis*, from six specimens, 34.8-45.5 mm SL, taken in 35 m near Rabaul, New Britain, Papua New Guinea. He noted that this new genus is allied to *Luzonichthys* Herre, differing principally in having a single dorsal fin (very elevated in the male), in contrast to two dorsal fins in *Luzonichthys*.

Unknown to Allen, the Bishop Museum had 40 specimens of *Rabaulichthys* which were taken by dredging in 37-46 m at Condor Reef, Caroline Islands in 1972 by the Honolulu Laboratory of the National Marine Fisheries Service. Because of their poor condition and lack of information on life colour a description of this new species was postponed, pending the availability of better material.

In March 1988, the authors and associates of the Ministry of Fisheries of the Republic of Maldives discovered an aggregation of a species of *Rabaulichthys* in 35 m on a rubble bottom well isolated from the outer fringing reef of Ari Atoll, Maldives. The fish were difficult to approach, but the junior author managed to take some distant photographs, and rotenone station was attempted two days later at the same site. However, because of the strong current, no specimens were obtained. These four specimens represent a new species which is described herein.

## METHODS

The methods of counting and measuring specimens follow Randall and Ralston (1984). Gill raker counts are given in Table 1. Proportional measurements of the type specimens are presented in Table 2 as percentages of the standard length (SL). Ratios relative to standard length, depth, and head length, which are given in the text, are rounded to the nearest 0.05. Data in parentheses in the description refer to paratypes.

Type specimens have been deposited at the Bernice P. Bishop Museum, Honolulu (BPBM); J.L.B. Smith Institute of Ichthyology, Grahamstown (RUSI); and U.S. National Museum of Natural History Washington, D.C. (USNM).

### ***Rabaulichthys stigmaticus*, sp. n.**

Figs. 1 & 2

**HOLOTYPE:** BPBM 32751, male, 49.8 mm SL, Republic of Maldives, Ari Atoll, reef north of Bathala Island, east side, rubble in 35 m; rotenone, John E. Randall and M. Shiham Adam, 6 March 1988.

**PARATYPES:** BPBM 32752, male 38.0 mm SL; RUSI 28149, male, 46.1 mm SL; USNM 298470, 40.5 mm SL -- all with same data as holotype.

**DIAGNOSIS:** Dorsal rays X, 16; anal rays 11, 7; pectoral rays 20; lateral-line scales 52-55; gill rakers 9 + 23-24; body depth 3.8-3.9 in SL; spinous portion of dorsal fin of adult male very elevated, the longest spine 2.55-3.35 in SL. Body organish brown, pink ventrally, with a large, pale-edged, dark orangish brown, quadrangular blotch on side of body between soft portion of dorsal and anal fins; spinous portion of dorsal fin pale bluish gray with yellow spines and a yellow margin, the soft portion pale pink with a horizontally elongate black spot; caudal fin brownish pink; pelvic fins reddish black.

**DESCRIPTION:** Dorsal fin rays X, 16, anal fin rays 11, 7, all dorsal and anal soft-rays branched, the last to base; pectoral fin rays 20, the upper two and lowermost rays unbranched; pelvic fin rays 1, 5; principal caudal rays 15, the upper and lower unbranched; upper and lower procurent caudal rays 9; lateral-line scales 55 (52-55); scales above lateral line to origin of dorsal fin 5; scales above lateral line to base of middle dorsal spines 3-1/2; scales below lateral line to origin of anal fin 15 (15-17); circumpeduncular scales 28 (28-29); diagonal rows of scales on cheek 6-1/2; gill rakers 9 + 23 (23-24); pseudobranchial filaments of holotype 11; branchiostegal rays 7; vertebrae 10 + 16; predorsal bones 2.

Body elongate, the depth 3.9 (3.8-3.9) in SL, and moderately compressed, the width 1.75 (1.65-1.8) in depth; head length 3.35 (3.25-3.35) in SL; snout 4.45 (4.35-4.5) in head; orbit diameter 3.55 (3.35-3.45) in head; bony interorbital width 4.15 (4.0-4.4) in head; least depth of caudal peduncle 2.6 (2.6-2.7) in head; length of caudal peduncle 1.35 (1.35-1.4) in head.

Mouth terminal, oblique, forming an angle of about  $40^\circ$  to horizontal axis of body; maxilla reaching to or slightly posterior to a vertical through rear edge of pupil, the upper jaw length 2.25 (2.2-2.3) in head; no supramaxilla; lips slender, not overlapping maxilla. A large, forward projecting, caniniform tooth (or close-set pair of teeth) on each side at front of upper jaw; a band of small, slender, conical teeth medial to caniniform tooth in 2 irregular rows (the teeth of outer row larger), narrowing to a single row posteriorly on side of jaw; a stout, laterally-projecting caniniform tooth on each side at front of lower jaw (medial to upper caniniform teeth when mouth closed); a band of small conical teeth in about 3 irregular rows medial to lower caniniform tooth, soon narrowing to a single row along side of jaw; teeth of anterior half of row on side of lower jaw curving posteriorly and those on posterior half curving anteriorly (one posteriorly curved tooth near midpoint of side of jaw some times enlarged); symphysis of jaws edentate; vomer and palatines edentate. Tongue slender, pointed, the upper surface finely papillate. Gill membranes free from isthmus. Gill rakers long and slender, the longest (at angle) about equal to longest gill filaments on first arch.

Edge of posteroventral half of orbit with a series of 16 (14-16) fleshy papillae. Anterior nostril in a short membranous tube, the posterior edge higher, located anterior to upper edge of pupil; posterior nostril dorsoposterior to anterior nostril, the aperture larger than that of the anterior. Three flat spines on opercle, the middle one (at level of center of eye) largest and slightly closer to lower than upper spine; upper opercular spine obtuse and not well-developed; upper margin of preopercle with 35 (23-29) small serrae, the one at angle often slightly enlarged; lower margin of preopercle with 1 to 3 small serrae near angle; margins of subopercle and interopercle smooth (with a few small serrae in 46.1 mm paratype). Prominent pores of the lateralis system on head include a large one above eye in alignment with nostrils, one anterior and medial to each nostril, 4 in mandibular series, the circumorbital series, and the preopercular series.

Scales ctenoid; no auxiliary scales; head fully scaled except lips, a broad area on side of snout which includes nostrils, and a narrow zone at front of snout above upper lip; lateral line following contour of back, descending gradually to straight peduncular portion; last pored scale of lateral line slightly anterior to end of hypural plate; no scales on dorsal and anal fins; caudal fin with small scales extending more than three-fourths distance to posterior margin; pectoral fins with small scales on basal third; narrow bands of scales extending about half way out on pelvic fins; a median scaly process between base of pelvic fins, its length about two-fifths length of pelvic spine.

Origin of dorsal fin slightly anterior to upper end of gill opening; dorsal spines slender and flexible, the first about half length of second, and the second about two-fifths length of third; fourth or fifth dorsal spines longest, 3.3 (2.55-4.1) in SL; first dorsal soft ray longest, 2.0 (1.6-2.55) in head; third anal spine longest (though not as stout as second), 3.3 (3.05-3.25) in head; second anal soft ray longest, 2.15 (1.85-2.0) in head; caudal fin deeply forked, the tips filamentous, the fin length 2.8 (2.7-3.4) in SL; caudal concavity 1.35 (1.45-2.05) in head; central pectoral-fin rays longest, 1.15 (1.1-1.15) in head; pelvic fins short, 1.45 (1.25-1.5) in head.



Colour of holotype in alcohol: upper two-thirds of postorbital head and body dusky, lower third pale, with a large, pale-edged, darker quadrangular blotch on side within the dark zone between anal fin and posterior part of dorsal fin; caudal peduncle paler than body; snout pale; median and pectoral fins pale except for an elongate black band with rounded ends in outer part of soft portion of dorsal fin; pelvic fins blackish except spine which is pale.

Colour of holotype when fresh (see Fig. 1): body and postorbital head orangish brown dorsally, shading through brownish yellow to pink on about ventral third; a large, dark orangish brown, quadrangular blotch (broader ventrally) on side of body between anal fin and posterior part of dorsal fin, this blotch with a pale yellow margin except on lower edge; a broad yellow band from front of snout, narrowing as it passes to upper pectoral base, this band edged in pale lavender except upper edge on snout where pink, the pink grading to pinkish brown on top of head; spinous portion of dorsal fin pale bluish gray with yellow spines and a narrow yellow margin except the first two spines and associated membrane which are largely pink; soft portion of dorsal fin pink (except some of anterior part coloured like spinous portion) with an elongate submarginal black band above middle of fin between the 6th and 12th rays; a faint, elongate, dusky blotch on middle of dorsal fin (from 9th spine to 7th soft-ray) and almost touching the fin base; anal fin pale bluish gray; caudal fin pink, shading to pale bluish posteriorly (except lobe tips); pectoral fins pale yellowish; pelvic fins reddish black except spine which is pale pink.

The underwater photograph of Figure 2 shows a male in what is believed to be its courtship coloration. The caudal fin, anal fin, posterior dorsal fin, dorsoposterior part of body, anterior and posterior edges of the large dark blotch on side of body, and the edges of the yellowish band on the head are all bright blue.

**REMARKS:** It is regretted that we collected only males of this species. Judging from the description of the female form of *Rabaulichthys altipinnis* by Allen (1984), the female of this species can be expected to lack the elevated spinous portion of the dorsal fin.

We name the species *Rabaulichthys stigmaticus* in reference to the two distinctive dark markings, the pale-edged dark blotch posteriorly on the side of the body and the black band in the soft portion of the dorsal fin.

*R. stigmaticus* is differentiated from *R. altipinnis* by having a more slender body (25.5-26.5% SL, compared to 26.6-29.7% for *altipinnis*), the males with a higher dorsal fin (30-39% SL for the three largest males, compared to 25.3-26.2% SL for *altipinnis*), longer snout (6.7-7.1% SL versus 5.5-6.4% SL) and in colour. *R. altipinnis* males are red-orange, shading to lavender below, without any dark markings.

The specimens of *Rabaulichthys* from Condor Reef mentioned above may represent another undescribed species. Counts were made of the dorsal soft rays and gill rakers of 17 of the 40 specimens. Fifteen had 16 dorsal soft rays, and two had 15 rays. The gill-raker counts are shown in Table 1. Because many scales are missing from all of the specimens and none have their lateral lines fully intact, only five counts could be made of the lateral-line scales; these range

from 52-58. None of these counts differentiate these specimens from *R. altipinnis* and *R. stigmaticus* with the exception of the gill-raker count being slightly lower than that of *stigmaticus*. The height of the dorsal fin of males of the Condor Reef specimens approximates that of *altipinnis* (the height of the longest dorsal spine of males, 41-44.5 mm SL, varied from 18.9-26.3% SL). In one feature, however, the Condor Reef fish seem distinct: the body is more slender (body depth of 10 specimens, 41-45.5 mm SL, varies from 20.9-22.8% SL).

In view of the poor condition of the Condor Reef specimens, the lack of information on life colour, and the single character to separate this form from *R. altipinnis*, we prefer to wait for additional material to decide on its status.

### ACKNOWLEDGEMENTS

We thank the International Centre for Ocean Development of Halifax, Nova Scotia for providing support for the field work in the Republic of Maldives which resulted in valuable collections of fishes, including the specimens of *Rabaulichthys* described above. Richard L. Pyle took radiographs for us. The manuscript was reviewed by P.C. Heemstra and G.R. Allen.

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- RANDALL, J.E. and S. RALSTON. 1984. A new species of serranid fish of the genus *Anthias* from the Hawaiian Islands and Johnston Island. *Pacific Science* 38(3): 220-227.

Table 1. Gill-raker counts of species of *Rabaulichthys*

	Upper Limb		Lower Limb			
	8	9	21	22	23	24
<i>R. altipinnis</i> <sup>1</sup>	2	4	2	4		
<i>R. stigmaticus</i>		4			3	1
<i>Rabaulichthys</i> sp.	1	16	3	10	4	

<sup>1</sup>Counts from Allen (1984)

TABLE 2. Measurements of type specimens of *Rabaulichthys stigmaticus* expressed as a percentage of the standard length

	Holotype	Paratypes		
	BPBM 32751	BPBM 32752	USNM 298470	RUSI 28149
Standard length (mm)	49.8	38.0	40.5	46.1
Body depth	25.5	25.8	26.5	26.0
Body width	14.4	15.5	14.9	15.6
Head length	29.9	30.8	30.0	30.5
Snout length	6.7	7.1	6.8	6.8
Orbit diameter	8.4	9.2	8.9	8.8
Bony interorbital width	7.2	7.0	7.1	7.6
Upper jaw length	13.4	13.5	13.1	13.7
Least depth of caudal peduncle	11.6	11.9	11.4	11.3
Length of caudal peduncle	22.0	22.4	22.6	21.7
Predorsal length	26.3	27.6	27.7	26.3
Preanal length	61.5	60.3	60.6	61.2
Prepelvic length	31.2	32.0	30.9	31.5
Length of first dorsal spine	7.7	7.4	10.1	7.8
Length of longest dorsal spine	30.1	24.5	37.1	39.0
Length of last dorsal spine	19.3	15.8	20.5	21.6
Length of longest dorsal ray	15.1	12.1	19.0	16.3
Length of dorsal fin base	60.2	57.8	60.5	59.9
Length of first anal spine	4.7	5.2	5.0	4.8
Length of third anal spine	9.0	9.6	9.8	9.4
Length of longest anal ray	14.0	15.2	16.2	15.1
Length of anal fin base	17.3	17.0	18.1	17.3
Caudal fin length	35.8	29.4	36.8	35.1
Caudal concavity	21.9	15.0	20.5	21.4
Pectoral fin length	25.9	26.4	26.7	26.0
Pelvic spine length	12.5	13.6	14.6	13.5
Pelvic fin length	20.6	20.7	23.9	22.4





Figure 1. Holotype of *Rabaulichthys stigmaticus*, BPBM 32751, male, 49.8 mm SL, Maldives Islands (John E. Randall)



Figure 2. Underwater photograph of male *Rabaulichthys stigmaticus* apparently in courtship coloration, at type locality in 35 m (Robert M. Pyle).