

New records and redescription of *Labracinus atrofasciatus* (Herre, 1933) (Teleostei: Pseudochromidae)

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Abstract. The pseudochromid *Labracinus atrofasciatus* (Herre, 1933) is redescribed based on examination of the holotype from Culion, Calamian Islands, and three newly acquired non-type specimens from a fish landing site in Barangay Sandoval, Municipality of Taytay, northern Palawan, Philippines. Prior to this, the species was known only from the holotype; from a photograph of a putative female taken in Lajo Island, Busuanga, Calamian Islands; and from observations at Lajo Island and Tangat Island, Calamian Islands. The new specimens from Macua Island appear to be males, and their live colouration is reported here for the first time. We also briefly comment on the restricted distribution of other pseudochromids and coral-reef fishes in the Palawan region of the Philippines.

Key words. dottedback, Philippines, endemic, Palawan, Calamian Islands, Culion, Taytay

INTRODUCTION

Herre (1933) described *Dampiera atrofasciatus* from the holotype and only known specimen from Culion in the Calamian Islands (or Calamianes Group of Islands), Philippines. No live colouration or habitat details for the species was provided in his description. Schultz (1967) subsequently redescribed and illustrated the holotype, recognising it as a valid species in the genus *Labracinus* Schlegel, 1858. Gill (1999) included the species in his key to Central West Pacific pseudochromid species, and subsequently redescribed and illustrated the holotype in his revision of pseudochromine pseudochromids (Gill, 2004). The species remained known only from the holotype until Allen et al. (2003) published a photo of an individual taken in the Calamian Islands. The same photograph was also reproduced in Allen & Erdmann (2012). Gerald R. Allen (pers. comm. to ACG, 2020) communicated that he observed and photographed the species at two localities between northern Culion and southern Busuanga, at Lajo Island

(11°59.19'N, 119°57.64'E) and Tangat Island (11°57.59'N, 120°03.56'E).

In late 2019, one of us (VB) noted several individuals of an unfamiliar, striking red fish with black oblique bars among other fishes landed in Barangay Sandoval, Municipality of Taytay, northern Palawan. He showed the photo to YKT, who initially identified it as the pseudochromid *Labracinus atrofasciatus*. Subsequent correspondence with ACG confirmed the identity of the fish, and three specimens were obtained with the help of KESS. The purpose of the present contribution is to report on the new specimens, documenting character variation and live colouration notes. We also briefly discuss other reef-fish species with restricted distributions in northern Palawan and the Calamian Islands.

MATERIAL AND METHODS

Three specimens of *Labracinus atrofasciatus* were obtained from a fish landing site in Barangay Sandoval, Municipality of Taytay, northern Palawan, Philippines (Fig. 1). Prior to preservation, photographs and tissue samples were taken for all specimens (Fig. 2). Specimens are deposited in the Australian Museum (AMS) and the National Museum of the Philippines (PNM). Institutional codes follow Sabaj (2020).

Tissue samples were obtained from the right pelvic fin, preserved in 100% ethanol, and stored at -20°C prior to extraction. DNA was extracted using the DNeasy Blood and Tissue kit (Qiagen) following the manufacturer's protocol and sequenced de novo. Mitochondrial cytochrome c oxidase subunit I (*COI*) was amplified from extracted gDNA using the polymerase chain reaction (PCR). Primer sets and PCR conditions follow Chang et al. (2017). Sanger sequencing was outsourced to Macrogen (Seoul, South Korea). Forward and

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Fig. 1. Two specimens of *Labracinus atrofasciatus* (approximately 150 and 190 mm TL) amongst catch of other reef fishes at a fish landing site in Barangay Sandoval, Municipality of Taytay, northern Palawan, Philippines. Specimens not retained. Photograph by V. Brun.

reverse contigs were aligned and trimmed separately using GENEIOUS Prime 2019.1.1 (Biomatters). Mitochondrial *COI* barcodes for all three specimens are publicly available on GenBank (MZ753670–72).

Methods of counting and measuring follow Gill (2004). In the description below, data is first presented for the holotype, followed where different by minimum to maximum values for the three non-type specimens in parentheses. Where data were recorded bilaterally for the holotype, the left and right values are presented, respectively, separated by a slash. Frequency distributions for selected meristic characters are provided in Table 1.

TAXONOMY

Labracinus atrofasciatus (Herre, 1933)

Black-barred dottyback
(Figs. 1–3, 4A, 5; Tables 1, 2)

Dampiera atrofasciatus Herre, 1933: 17 (type locality: Culion, Philippines); 1934: 47 (list); 1953: 370 (list); Roxas & Martin, 1937: 123 (list); Böhlke, 1953: 69 (list).

Labracinus atrofasciatus – Schultz, 1967: 40, fig. 8 (description); Gill, 1999: 2561 (key); 2004: 24, figs. 12, 13 (redescription); Allen et al., 2003: 273 (colour photograph); Allen & Erdmann, 2012: vol. 1, 324 (colour photograph).

Material examined. CAS SU 25518, 105.5 mm SL (holotype), Culion, Culion Island, Calamian Group, Philippine Islands, A.W. Herre, April 1931.

AMS I.49470-001 (GenBank MZ753670), 134.4 mm SL, fishery landing site in Barangay Sandoval, Municipality of Taytay, northern Palawan, Philippines, 11°06'38"N, 119°32'24"E, V. Brun, 30 November 2019. — PNM 15645 (GenBank MZ753671), 146.5 mm SL, collected with AMS I.49470-001. — PNM 15646 (GenBank MZ753672), 142.0 mm SL, same data as AMS I.49470-001, except collected 5 January 2020.

Diagnosis. *Labracinus atrofasciatus* differs from congeners in having a series of narrow, dark blue to black oblique bars on the body. It also differs in having relatively high numbers of horizontal scale rows above the anal-fin origin (24–27 + 1 + 4–5 = 30–33), pseudobranch filaments (22–24), and circumpeduncular scales (30–32).

Description (data first for the holotype, followed where different by minimum and maximum values for non-types in parentheses). Dorsal-fin rays II,25, all segmented rays branched; anal-fin rays III,14, all segmented rays branched; pectoral-fin rays 20/20 (19–20); upper procurrent caudal-fin rays 6; lower procurrent caudal-fin rays 5; total caudal-fin rays 28; scales in lateral series 60/60 (58–62); anterior lateral-line scales 53/51 (47–53); anterior lateral line terminating beneath segmented dorsal-fin ray 19/19 (17–21); posterior lateral-line scales 18 + ?/19 + 2 (19–21 + 2); scales between lateral lines 7/7 (6–8); horizontal scale rows above anal-fin

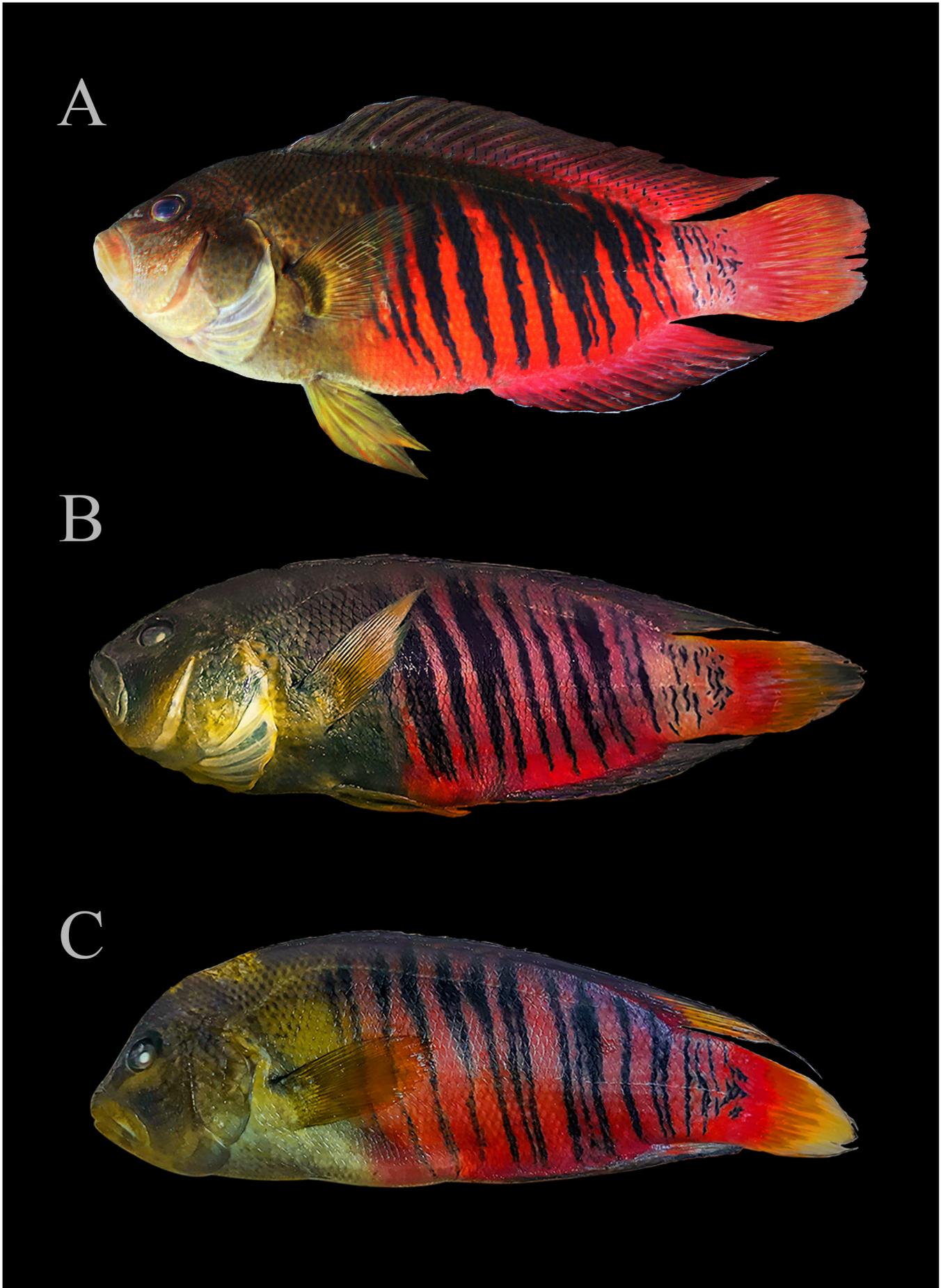


Fig. 2. Freshly dead *Labracinus atrofasciatus* specimens from Macua Island, northern Palawan, Philippines. A, PNM 15645, 146.5 mm SL; B, PNM 15646, 142.0 mm SL; C, AMS I.49470-001, 134.4 mm SL. Photographs by V. Brun (A) and K. E. S. Sorgon (B, C).

Table 1. Frequency distributions of counts for selected meristic characters of *Labracinus atrofasciatus*. (*) indicates where bilateral counts are included.

Pectoral rays*		Scales in lateral series*					Anterior lateral-line scales*									
19	20	58	59	60	61	62	47	48	49	50	51	52	53			
3	5	2	1	4	-	1	1	-	-	1	2	1	3			
Termination of anterior lateral line (beneath dorsal segmented ray)*					Scales in peduncular portion of posterior lateral line*				Scales between lateral lines*			Circumpeduncular scales				
17	18	19	20	21	18	19	20	21	6	7	8	30	31	32		
1	2	3	1	1	1	3	2	2	2	5	1	1	-	3		
Horizontal scale rows below anterior lateral line*					Horizontal scale rows above anterior lateral line*			Predorsal scales								
24	25	26	27		4	5			31	32	33	34	35	36	37	38
2	3	1	2		1	7			1	-	1	1	-	-	-	1
Scales behind eye			Scales to preopercular angle			Pseudobranch filaments*			Upper gill rakers*			Lower gill rakers*		Total gill rakers*		
2	3	4	9	10	11	22	23	24	5	6	7	13	14	18	19	20
1	1	2	3	-	1	2	2	1	1	3	1	3	2	1	1	3

origin 24 + 1 + 5/25 + 1 + 5 (24–27 + 1 + 4–5 = 30–33); circumpeduncular scales 32 (30–32); predorsal scales 34 (31–38); scales behind eye 2 (3–4); scales to preopercular angle 9 (9–11); gill rakers 6 + 14/7 + 13 (5–6 + 13–14 = 18–20); pseudobranch filaments 23/24 (22–23).

Lower lip complete; dorsal and anal fins with well-developed scale sheaths; predorsal scales extending anteriorly to mid AIO pores (mid AIO to posterior nasal pores); opercle relatively smooth, without distinct serrations; teeth of outer ceratobranchial-1 gill rakers with well-developed teeth running most of length of upper rakers, these becoming restricted to distal halves and raker tips of lower rakers; anterior dorsal-fin pterygiophore formula S/S/S + 3/1 + 1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1 + 1 (S/S/S + 3/1 + 1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1 + 1); dorsal-fin spines slender, tips flexible; anal-fin pterygiophore formula 3/1 + 1/1/1/1/1/1 + 1/1/1 + 1/1 + 1 (3/1 + 1/1/1/1/1/1 + 1/1/1 + 1/1 + 1 or 3/1 + 1/1/1/1/1 + 1/1/1/1 + 1/1 + 1); anal-fin spines relatively stout and pungent, second spine slightly stouter than third; pelvic-fin spine slender, tip weakly pungent; second segmented pelvic-fin ray longest or equal to third (second or third ray longest); caudal fin rounded; vertebrae 11 + 17; epineurals 14 (12–14); epurals 3 (Fig. 3).

Upper jaw with 2 (1–2) pairs of curved, enlarged caniniform teeth anteriorly, and about 5 (at symphysis) to 1–2 (on sides of jaw) irregular rows of small conical teeth, outermost of rows of teeth much larger and more curved than those of inner rows; lower jaw with 2 (1) pairs of curved, enlarged caniniform teeth anteriorly, and about 3 (at symphysis) to 1 (on sides of jaw) inner rows of small conical to caniniform teeth, those on middle of jaw enlarged and caniniform; vomer with 1–2 rows of small conical teeth arranged in chevron; palatine with 1 row of small conical teeth, more or less

contiguous anteriorly with posterolateral arm of vomerine tooth patch; ectopterygoid edentate; tongue moderately pointed and edentate. Morphometric data are summarised in Table 2.

Live colouration. Based on specimens from Taytay, Palawan (Figs. 1, 2): head grey-brown to olive, paler ventrally, becoming brownish red behind eye and on upper part of cheek; scales on upper part of head each with blue to dark olive spot; dark blue curved mark extending around posterior rim of orbit to middle of upper lip, mark broadest behind eye, becoming indistinct ventrally and anteriorly; blue curved mark narrowly bordered ventrally with bright red; iris red to orange-yellow with blue sub-oval ring around pupil; anterior body, nape, and dorsal part of body grey-brown to olive, becoming paler and more yellowish on breast and near pectoral-fin base, each scale within grey-brown to olive region with basal blue to dark olive spot; remainder of body olive-pink to bright orange-red, sometimes abruptly paler on caudal peduncle, with about 9–15 narrow to broad dark blue-black bars extending from anterior lateral line or dorsal-fin base to ventral part of body, these variously anastomosing dorsally; caudal peduncle sometimes pale, with narrow dark blue-black bars or intermittent streaks; dorsal fin olive-grey, becoming red basally behind middle part of fin, the red area gradually expanding posteriorly to full length of terminal few rays; distal margin of anterior part of fin narrowly bright blue; dorsal fin with fine blue spots, these aligning to form curved marks on red part of fin, and to form short streaks distally on grey part of fin; anal fin pinkish grey to bright red with narrow bright blue distal margin; caudal fin pinkish olive to orange-red or crimson; pectoral fins greyish to yellowish hyaline, with dark grey mark on axil and base of fin; pelvic fins olive-yellow with pinkish-grey rays. See Comparative notes below for live colouration of females.

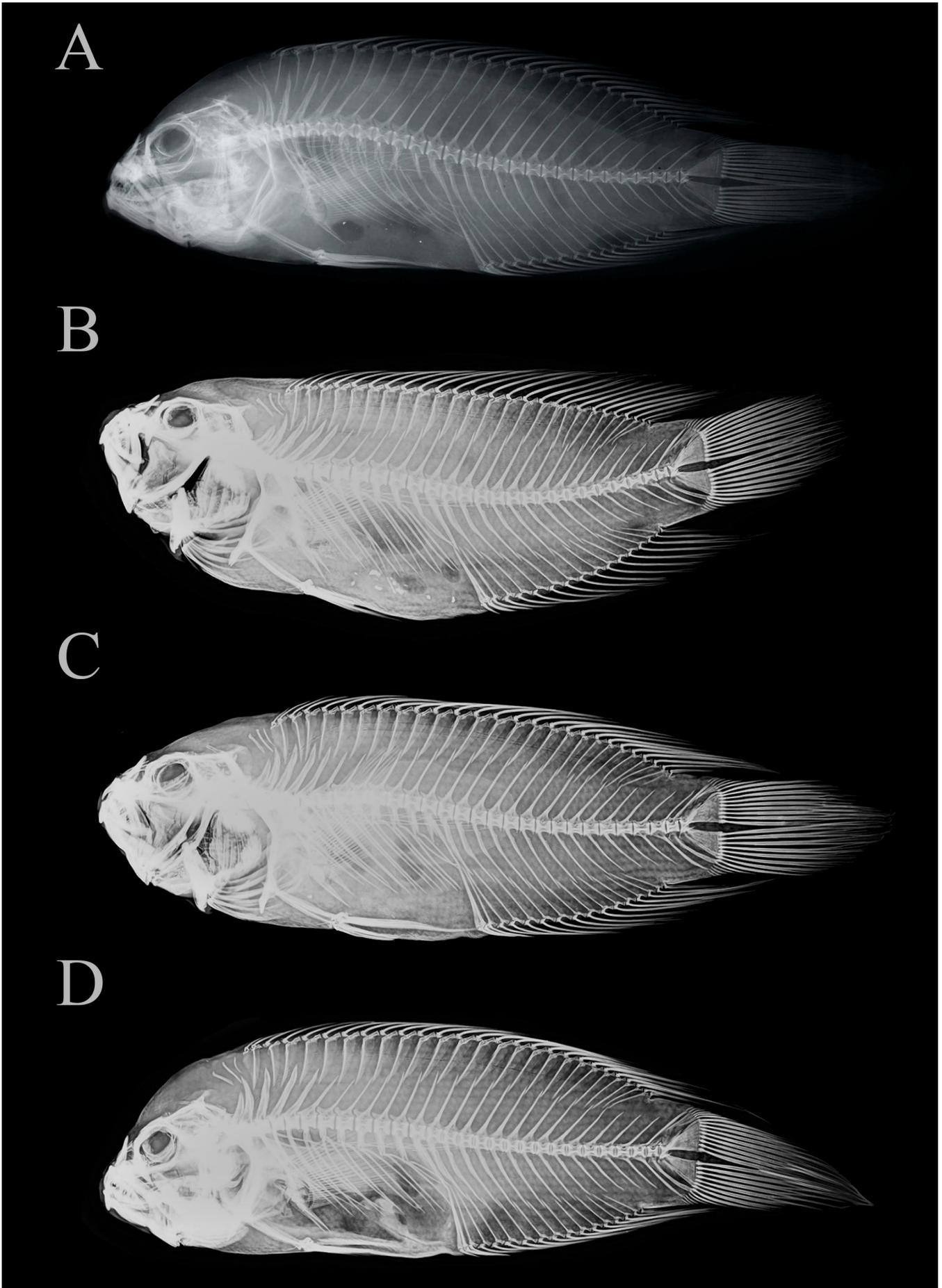


Fig. 3. X-radiographs of *Labracinus atrofasciatus*. A, CAS-SU 25518, 105.5 mm SL holotype (via Smithsonian Division of Fishes); B, PNM 15645, 146.5 mm SL; C, PNM 15646, 142.0 mm SL; D, AMS I.49470-001, 134.4 mm SL. Radiographs by K. Parkinson (B–D).

Table 2. Morphometric values for specimens of *Labracinus atrofasciatus*. Values are expressed as percentage of standard length (SL). (*) indicates where measurements have distortion artefacts (owing to the head being angled upwards during preservation).

Morphometric characters	CAS SU 25518 (Holotype)	PNM 15645	PNM 15646	AMS I.49470-001
SL (mm)	105.5	146.5	142.0	134.4
Head length	25.8	25.0	24.6	25.6
Orbit diameter	6.9	5.9	6.4	6.3
Snout length	8.0	9.2	8.0	7.9
Fleshy interorbital width	6.7	6.8	7.0	6.7
Bony interorbital width	4.5	5.7	5.5	5.6
Body width	13.8	14.9	15.8	14.9
Snout tip to posterior tip of retroarticular bone	17.3	17.2	17.7	17.6
Predorsal length	32.4	30.9	29.4	31.3
Prepelvic length	36.5	41.5*	42.1*	35.9
Posterior tip of retroarticular bone to pelvic-fin origin	21.5	31.4*	30.7*	20.4
Dorsal-fin origin to pelvic-fin origin	36.4	32.9	35.8	36.5
Dorsal-fin origin to middle dorsal-fin ray	38.7	31.9	35.8	39.0
Dorsal-fin origin to anal-fin origin	52.2	48.9	49.5	50.9
Pelvic-fin origin to anal-fin origin	26.7	31.1	24.3	27.0
Middle dorsal-fin ray to dorsal-fin termination	29.5	28.5	30.4	30.9
Middle dorsal-fin ray to anal-fin origin	35.2	36.4	35.8	37.4
Anal-fin origin to dorsal-fin termination	42.0	41.5	40.1	41.4
Anal-fin base length	32.5	32.8	31.5	31.4
Dorsal-fin termination to anal-fin termination	17.3	18.1	18.3	18.3
Dorsal-fin termination to caudal peduncle dorsal edge	8.7	8.2	8.5	8.9
Dorsal-fin termination to caudal peduncle ventral edge	17.6	18.4	17.9	18.7
Anal-fin termination to caudal peduncle dorsal edge	18.7	19.7	19.8	20.3
Anal-fin termination to caudal peduncle ventral edge	9.7	8.5	9.6	9.3
First dorsal-fin spine	3.1	2.1	2.2	3.7
Second dorsal-fin spine	5.3	4.0	4.8	5.2
First segmented dorsal-fin ray	13.2	13.0	14.4	15.2
Fourth last segmented dorsal-fin ray	25.5	24.5	24.3	29.4
First anal-fin spine	3.2	2.5	2.7	2.9
Second anal-fin spine	5.2	3.9	4.6	4.4
Third anal-fin spine	6.5	5.3	6.3	broken
First segmented anal-fin ray	12.3	13.2	12.3	12.5
Fourth last segmented anal-fin ray	22.5	21.7	23.0	18.5
Third pectoral-fin ray	17.9	18.5	18.8	17.6
Pelvic-fin spine	10.6	9.2	11.6	7.0
Second segmented pelvic-fin ray	24.9	24.3	24.3	25.4
Caudal-fin length	28.6	26.6	28.9	30.6

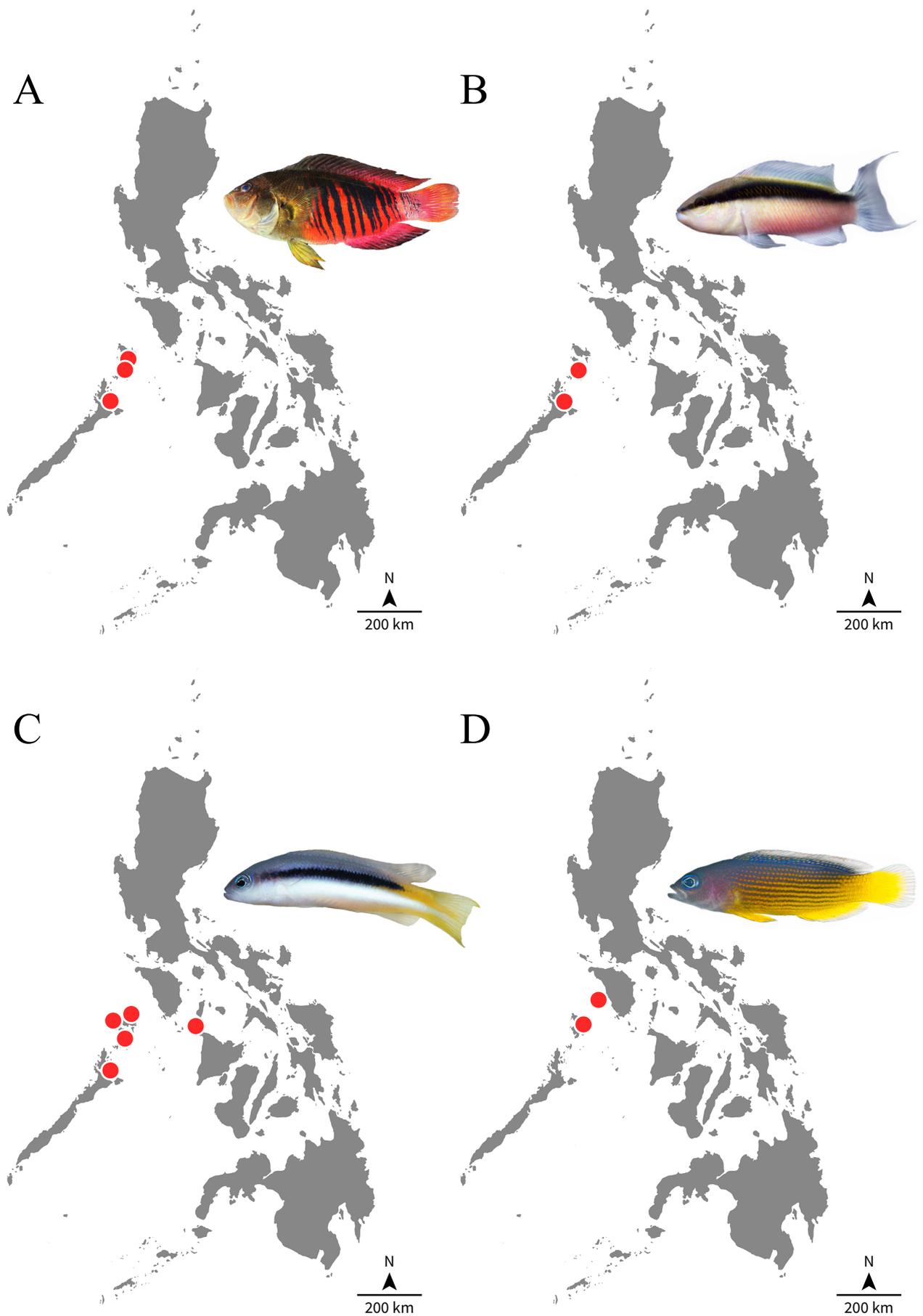


Fig. 4. Map of the Philippines, showing distribution records for selected species of pseudochromids endemic to the Calamian Islands and Palawan regions. A, *Labracinus atrofasciatus*, photograph of PNM 15645; B, *Pseudochromis colei*, photograph of aquarium specimen (not retained); C, *P. eichleri*, photograph of AMS I.45651-001 (paratype); D, *Manonichthys scintilla*, photograph of USNM 382744 (paratype). Photographs by V. Brun (A), Y. K. Tea (B), G. R. Allen (C), and J. T. Williams (D).

Preserved colouration. Similar to live colouration; grey-brown to olive areas on head, body, and fins become brown; blue to dark olive spots on head and body scales become dark brown; red areas on body and fins become tan; dark blue-black bars and streaks on body and caudal peduncle become dark grey-brown; blue spots on fins become dark brown.

Etymology. The specific epithet is derived from the Latin ‘atrum’, black, and ‘fascia’, band, in reference to the striking markings on the body of this species. *Labracinus atrofasciatus* is known locally as ‘akot’ in Cuyonon, a language spoken mostly in Cuyo Islands and coastal areas of Palawan in the Philippines, where it shares the local name with the congeneric *L. cyclophthalmus*.

Habitat and distribution. We extend the known distribution of *L. atrofasciatus* from Culion in the Calamian Islands southward to Taytay, Palawan (Fig. 4A). Herre (1933) did not include habitat details for the holotype, and we also lack details for the Taytay specimens. However, Allen (pers. comm. to ACG, 2020) provided the following details for his Lajo and Tangat Island observations:

“1. Lajo Island, 11°59.19’N, 119°57.64’E: area with freshwater runoff due to a spring at the shoreline; limestone reef development about 50 m from shore; patchy mangroves along shore with some *Enhalus* seagrass in shallows; *L. atrofasciatus* (about 10 individuals) seen on the shallow flat between the reef and shore, consisting of sand, rubble, and patches of dead coral. Photo taken here (Fig. 5A).”

“2. Tangat Island, 11°57.59’N, 120°03.56’E: fringing reef on edge of steep, high cliffs forming south-western Tangat Island, fringing reef about 20 m in width before dropping steeply to 20 m depth. One individual seen.”

Comparative notes. Gill (2004) recognised three species of *Labracinus* in his revision of the Pseudochrominae: *L. atrofasciatus* and *L. cyclophthalmus* (Müller & Troschel, 1849) from throughout the West Pacific (Japan to northwest Australia and east to Papua New Guinea), and *L. lineatus* (Castelnau, 1875) from Western Australia. However, White et al. (2013) recognised two species from Indonesian waters based on apparent differences in live colouration (and also in *COI* barcode sequences; W. T. White pers. comm. to ACG), and Ito et al. (2021) recognised *L. ocelliferus* (Fowler, 1946) as a valid species based on morphological and colouration characters, as well as differences in 12S ribosomal RNA sequences. In spite of the recognition of *L. ocelliferus* (considered a synonym of *L. cyclophthalmus* by Gill, 2004), the likelihood that *L. cyclophthalmus* is a complex of similar species, and the new information on variation in *L. atrofasciatus*, the characters provided by Gill (2004) still mostly hold as diagnostic for *L. atrofasciatus*: relatively high number of horizontal scale rows above the anal-fin origin (24–27 + 1 + 4–5 = 30–33 versus 16–25 + 1 + 3–6 = 21–30, usually 17–23 + 1 + 3–5 = 21–28 in the other species); relatively high number of pseudobranch filaments (22–24 versus 12–20); relatively high number of circumpeduncular

scales (30–32 versus 24–30); and presence of dark blue to black oblique bars on the sides of the body. An exception is the presence of a large (subequal to pupil) black spot on the posterior part of the dorsal fin. This marking is obvious in the holotype (Fig. 5B) and also apparent in Allen et al. (2003) and Allen & Erdmann’s (2012) photograph of the individual from Lajo Island (Fig. 5A). It is absent, however, in each of the Taytay specimens.

Dorsal fin colouration appears to be sexually dimorphic in *Labracinus* species (Schultz, 1967; Gill, 2004). Other aspects of the dorsal fin colouration of the holotype and individual photographed from Lajo Island suggest that they are females, whereas the specimens from Taytay, Palawan, appear to be males. Aside from the presence of a posterior dorsal-fin spot, the presumed female photographed from Lajo Island differs in having an olive-brown body with a translucent yellow caudal fin. Both sexes appear to have a pale cream caudal peduncle (more abruptly so in the putative female than males) and oblique black bars on the body (more prominent in the males). However, given the paucity of specimens in museums, possibility of ontogenetic colouration differences, and poorly documented nature of this species, further study with additional fresh material of both sexes is needed to corroborate these differences.

Comparisons of mitochondrial *COI* sequences of *L. atrofasciatus* with other publicly available pseudochromid sequences recovers *L. cyclophthalmus* as its closest relative (14.2–15.7% uncorrected pairwise distance). We note however that several comparative sequences included in the above analysis retrieved from GenBank appear to be erroneous. These include two sequences of *Pseudochromis jamesi* (MW630777 and KT883614), and one of *Labracinus lineatus* (KU943558), all three of which are most likely misidentifications of *L. cyclophthalmus*. We provisionally recognise *Labracinus* sp. 1 and sp. 2 from Indonesia (JN312221 and GU674050) as *L. cyclophthalmus*, pending further research concerning the taxonomy of *L. cyclophthalmus*. Until more appropriate sequences of related species are made available (including the Western Australian *L. lineatus*), we refrain from putting emphasis on *Labracinus* relationships. Nonetheless, we take the opportunity to include new, previously unavailable mitochondrial *COI* sequences of *L. atrofasciatus*.

Remarks. One of the Taytay specimens (PNM 15646) exhibits two unusual osteological features: the first caudal vertebra (12th vertebra) possesses a haemal spine and paired parapophyses (versus a haemal spine and no parapophyses), and the second last vertebra (pu2) has an elongate neural spine (versus short neural spine). We are not aware of similar modification of the first caudal vertebra in pseudochromids, although similar morphology occurs in some anthiadine fishes (Baldwin, 1990; Pogonoski & Gill, 2021). Variation in the length of the pu2 neural spine in pseudochromids was reviewed by Gill (2013), and is known in two genera: *Anisochromis* Smith, 1954, and *Assiculoides* Gill & Hutchins, 1997.

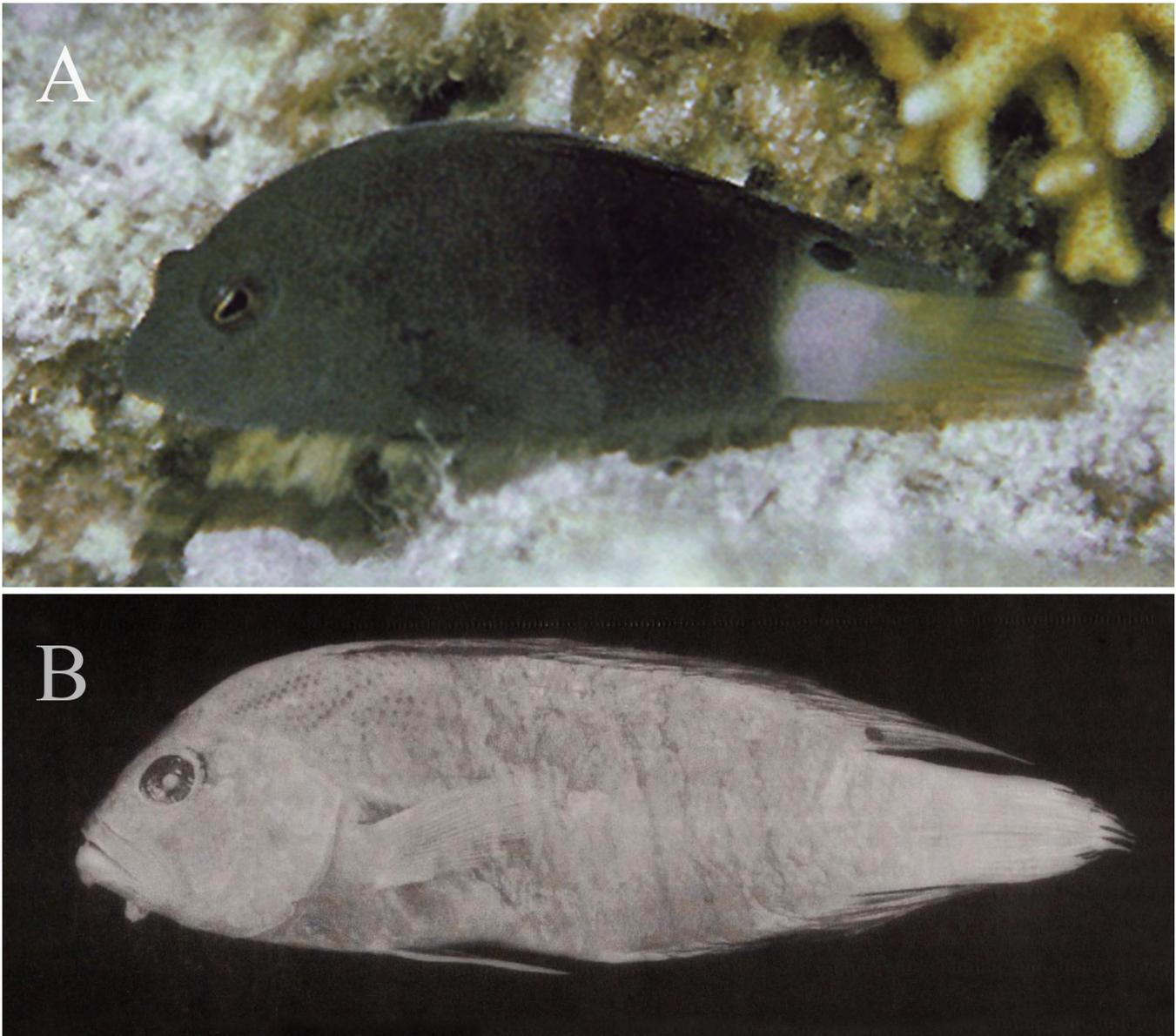


Fig. 5. A, putative female of *Labracinus atrofasciatus*, in situ photograph taken in Lajo Island, Palawan, Philippines; B, holotype of *L. atrofasciatus*, CAS-SU 25518, 105.5 mm SL holotype (image adapted from Gill, 2004). Note the posterior dorsal-fin spot and faint vertical bars in both specimens. Photographs by G. R. Allen & M. V. Erdmann (A) and P. Crabb (B).

DISCUSSION

The distribution shown by *L. atrofasciatus* is remarkably similar to that of several pseudochromid species (Fig. 4), in particular *Pseudochromis colei* Herre, 1933 (Fig. 4B), *P. eichleri* Gill, Allen & Erdmann, 2012 (Fig. 4C), and *Manonichthys scintilla* Gill & Williams, 2011 (Fig. 4D). *Pseudochromis colei* was originally described from the holotype from Culion, but later recorded from Iorigue Channel, northeast Palawan, by Gill et al. (2012). *Pseudochromis eichleri* was described from the holotype from Galoc Island in the Calamian Islands and four paratypes from northeast Palawan; it was also recorded from several other localities in the Calamian Islands and from Boracay Island in the northeast Sulu Sea. *Manonichthys scintilla* was described from the holotype from Apo Reef in Mindoro province and two paratypes from Apo Reef and Coron Island in the Calamian Islands. Several other fish species have

distributions either restricted to the Calamian Islands and northeast Palawan area or centred on that area, extending into the northern Sulu Sea. These include the atherinids *Atherinomorus regina* (Seale, 1910) and *A. crenolepis* (Schultz, in Schultz et al., 1953); the blenniids *Ecsenius kurti* Springer, 1988, and *Istiblennius colei* (Herre, 1934); and the three species in the pomacentrid genus *Altrichthys* Allen, 1999 (Bernardi et al., 2017). These distributions suggest that the Calamian Islands and northeast Palawan may constitute an area of endemism. We therefore anticipate that further study of the fauna, particularly the re-evaluation of widespread species that may represent species complexes, will result in the discovery of additional species endemic to the area.

The occurrence of *L. atrofasciatus* along with other reef-associated fishes landed in Taytay, Palawan (Fig. 1), indicate the importance of this species in small-scale artisanal fisheries on the island and possibly throughout its geographic range.

The conservation status of *L. atrofasciatus* has not yet been evaluated. Alava et al. (2009) briefly noted *L. atrofasciatus* in their Red List assessment of marine endemic bony fishes in the Philippines, but did not assess the species. The range extension of *L. atrofasciatus* detailed in this study will contribute to future Red List assessments of this endemic, range-restricted pseudochromid, as well as other coral reef fishes in Palawan, Philippines.

ACKNOWLEDGEMENTS

We thank the Barangay Captain of Barangay Sandoval, M. Legion, and the community of Barangay Sandoval in Taytay, Palawan, Philippines, for providing consent for specimen collection. R. Cabalda of Barangay Sandoval assisted with collecting *L. atrofasciatus* at the fishery landing site and contributed additional information about the specimens. Support was given by the Palawan Council for Sustainable Development (PCSD) through issuance of wildlife gratuitous and local transport permits with permit numbers 2019-39 and 2020-01-004, respectively. The Bureau of Fisheries and Aquatic Resources (BFAR) provided the export commodity clearance (2020-04641). We thank J. Meren for her curatorial assistance at PNM. We thank A. Hay, K. Parkinson, and S. E. Reader for curatorial assistance, access to facilities at AMS, and x-radiographs. G. R. Allen generously shared his field notes on *L. atrofasciatus* observations in the Calamian Islands. H. H. Tan and J. T. Williams reviewed the submitted manuscript.

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