

Iniistius bakunawa, a new species of razor wrasse (Teleostei: Labridae) from the Philippines and Western Australia

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Abstract. *Iniistius bakunawa*, new species, is described on the basis of nine specimens consisting of the holotype and six paratypes collected from fish markets in the islands of Panay, Cebu, Bohol, and Jolo in the Philippines, and two paratypes from the Dampier Archipelago, Western Australia. The new species is distinctive in having a pale yellowish to jade green body with a large concentric black and white ellipsoid ocellus on the posteriormost edge of its dorsal fin. Aside from live colouration details, the new species is readily diagnosed from congeners in having the following combination of characters: 7 horizontal rows of scales on cheek; gill rakers 4–6 + 8–11 = 12–17; gill rakers short, bearing teeth; and tubed lateral line scales 23–26. Assignment of the new species to the genus *Iniistius* is accompanied with a brief discussion of the currently inadequate diagnosis of the genus from *Xyrichtys*.

Key words. coral reefs, fish markets, Labridae, Novaculini, taxonomy, systematics

INTRODUCTION

Gill (1862) erected the genus *Iniistius* for *Xyrichtys pavo* based on the following combination of characters that differ from *Xyrichtys* and related labrid genera: cheeks naked; and dorsal fin continuous but with a deep incision between anteriormost first two dorsal spines from all remaining spines and rays. Both genera were further distinguished on the basis of osteological details (Nguyen, 1974), including: palatine overlapping ectopterygoid in *Iniistius* vs. separate in *Xyrichtys*; absence of dorsal fin pterygiophores in second interneural space in *Iniistius* vs. two in *Xyrichtys*; and proportionally taller skull in *Iniistius* vs. *Xyrichtys*.

Subsequent classification of *Iniistius*, *Xyrichtys* and allied novaculin genera has been confusing. The tribe Novaculini, which include the genera *Ammolabrus*, *Cymolutes*, *Iniistius*, *Novaculichthys*, *Novaculoides*, *Novaculops*, and *Xyrichtys*, comprise a major lineage within the Labridae notable for having species with highly compressed bodies and a

preference for wide sandy channels or rubble zones away from coral reefs. Although several of these genera have received taxonomic attention in recent years (see Randall & Earle, 2004; Fukui, 2019, 2020) classification for some of the aforementioned genera have been unsatisfactory, particularly for *Iniistius* and *Xyrichtys*.

Following the establishment of *Iniistius* by Gill (1862) and redefinition of the genus by Nguyen (1974), Randall (1986) placed *Iniistius* within the synonymy of *Xyrichtys*, though justification for the synonymy was not provided. In a review of Hawaiian razorfishes, Randall & Earle (2002) recognised *Iniistius* as valid, resurrecting it for species of *Xyrichtys* occurring in the Indo-Pacific. They restricted *Xyrichtys* sensu stricto for species occurring only in the Atlantic and Eastern Pacific, except for *Iniistius pavo*, which occurs widely across the Indo-Pacific and the Eastern Pacific. Justification for the recognition of both genera (and their constituent species) by Randall & Earle (2002) was based on the incised dorsal fin condition initially proposed by Gill (1862), as well as one additional character: “distance between the posteriormost edge of orbit and the origin of the dorsal fin over or less than half the orbit diameter in *Iniistius* vs greater than orbit diameter in *Xyrichtys*”. The wording describing the second character is unclear, and presumably they meant that the dorsal-fin origin is less than a half orbit diameter behind the posteriormost edge of the orbit.

The relationships between *Iniistius* and *Xyrichtys* have not been well interrogated, particularly those concerning their monophyly, and their relationships with other novaculin taxa. Although molecular phylogenetic studies of labrid relationships have recovered *Iniistius* and *Xyrichtys* as separate, monophyletic lineages (*Iniistius* sharing a sister relationship with *Cymolutes*, and with both genera together

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sharing a sister relationship to *Xyrichtys* [Westneat & Alfaro, 2005; Hughes et al., 2023]), representation of novaculin genera in these studies were inadequate, as was taxon coverage (including representation of type species) for both *Iniistius* and *Xyrichtys*. On the basis of morphology, several of the proposed characters diagnosing *Iniistius* and *Xyrichtys* do not appear to be synapomorphic for either genus. For example, the anterior dorsal-fin notch is variable among species, with some species (or even individuals within a species) of *Iniistius* not having a pronounced notch. The same applies to the degree of squamation of the cheek. For example, *I. dea* and *I. pavo* lack cheek scales, but the remaining species in the genus have varying coverage of cheek scales. It is likely that classification of species in both genera may be subject to change pending more exhaustive studies. In any case, both genera require critical re-evaluation and redefinition. Until such time, placement of the new species in the genus *Iniistius* is regarded as provisional (discussed below).

Wrasses of the genus *Iniistius* are medium to large fishes (usually between 100–350 mm SL), and typical of other novaculin labrids, are frequently associated with sandy habitats such as sea-grass meadows or wide sand channels away from coral reefs. Adults are usually modestly coloured with pale reflective scales to match the sandy habitats in which they frequent. In contrast, juveniles employ protective mimicry by mimicking dead leaves and other floating debris (Kuitert, 2010). Very small juveniles are particularly convincing, adopting a languid, wafting style of swimming with their prolonged anterior dorsal-fin spines leading to a highly irregular silhouette. When startled or in the presence of predators, they plunge headfirst into the substrate and bury themselves using rapid undulatory axial body movements (Randall & Earle 2002; Tatom-Naecker & Westneat, 2018). Species of *Iniistius* are of small commercial interest and are taken as food fish throughout their range, though mostly by small scale artisanal fisheries in island nations.

In 2018, the first author obtained a specimen of an unidentified *Iniistius* from a public fish market in Loay, Bohol, Philippines. The specimen differed from all known species of *Iniistius* in having a large concentric black and white ellipsoid ocellus on the posteriormost edge of its dorsal fin. Two additional specimens were obtained in 2019 from a fish market in Jolo, Sulu Archipelago, Philippines. Further examination of *Iniistius* specimens stored in museum collections revealed the presence of other specimens sharing this unique colouration pattern – four specimens also from fish markets in the Philippines, and two trawl specimens from the Dampier Archipelago, Western Australia. The purpose of this manuscript is to describe the aforementioned specimens as a new species, *Iniistius bakunawa*.

MATERIAL AND METHODS

Methods for counting and measuring mostly follow Randall & Cornish (2000) and Fukui (2019), except gill raker counts were counted as upper (epibranchial) + lower

(ceratobranchial) on the anterior surface of the first arch, with the angle raker included in the second count. Measurements were made with digital callipers, recorded to the nearest 0.1 mm. Standard length (SL) was measured from the snout tip to the posterior end of the hypural plate. Body depth was measured at its greatest. Predorsal, preanal, and prepelvic lengths were measured from the snout tip to the base of the anteriormost spine of the relevant fin. Head length was measured from the snout tip to the upper edge of the opercular membrane. Snout length was the least distance between anteriormost point on the upper lip and anterior margin of orbit. Orbit diameter was the maximum horizontal diameter of orbit. The lateral line is interrupted: the anterior section from above gill opening to middle of dorsal body region, the posterior section from midlateral body region to caudal-fin base, defined here as anterior and posterior series of the lateral line, respectively.

In the description of the new species, data are presented first for the holotype, followed by data for the paratypes in parentheses where variation was noted. Where counts were recorded bilaterally, both counts are given and separated from each other by a slash; the first count presented is the left count. Type specimens are deposited in the Australian Museum, Sydney (AMS); Commonwealth Scientific & Industrial Research Organisation, National Research Collections Australia, Australian National Fish Collection, Hobart (CSIRO); Kagoshima University Museum, Korimoto (KAUM); the National Museum of the Philippines, Manila (PNM); and the Smithsonian Institution, National Museum of Natural History, Washington D.C. (USNM). Institutional codes follow Sabaj (2020).

TAXONOMY

Family Labridae

Genus *Iniistius*

Iniistius bakunawa, new species

Eclipse-spot Razor Wrasse
(Figs. 1–3; Table 1)

Iniistius sp. (Fukui, 2017): 184 (colour photograph of specimen from Panay Island, Philippines [reproduced here in Fig. 1A; KAUM-I. 80684]).

Holotype. PNM 15676, 151.2 mm SL, purchased from public fish market in Loay, Bohol, Philippines, K.E.S. Sorgon et al., 20 April 2018.

Paratypes. AMS I.50830-001, 151.9 mm SL, 129.6 mm SL, purchased from public fish market in Jolo, Sulu, Philippines, C.L. Nañola et al., 3 August 2019; CSIRO H 1488-1, 129.8 mm SL, specimen trawled from northwest of Dampier Archipelago, Western Australia, 20°05'S, 116°09'E, 54 m, 26 September 1988 (Fig. 2A); CSIRO H 1506-1, 144.5 mm SL, specimen trawled from north of Dampier Archipelago, Western Australia, 19°39'S, 116°31'E, 57 m, 6 October

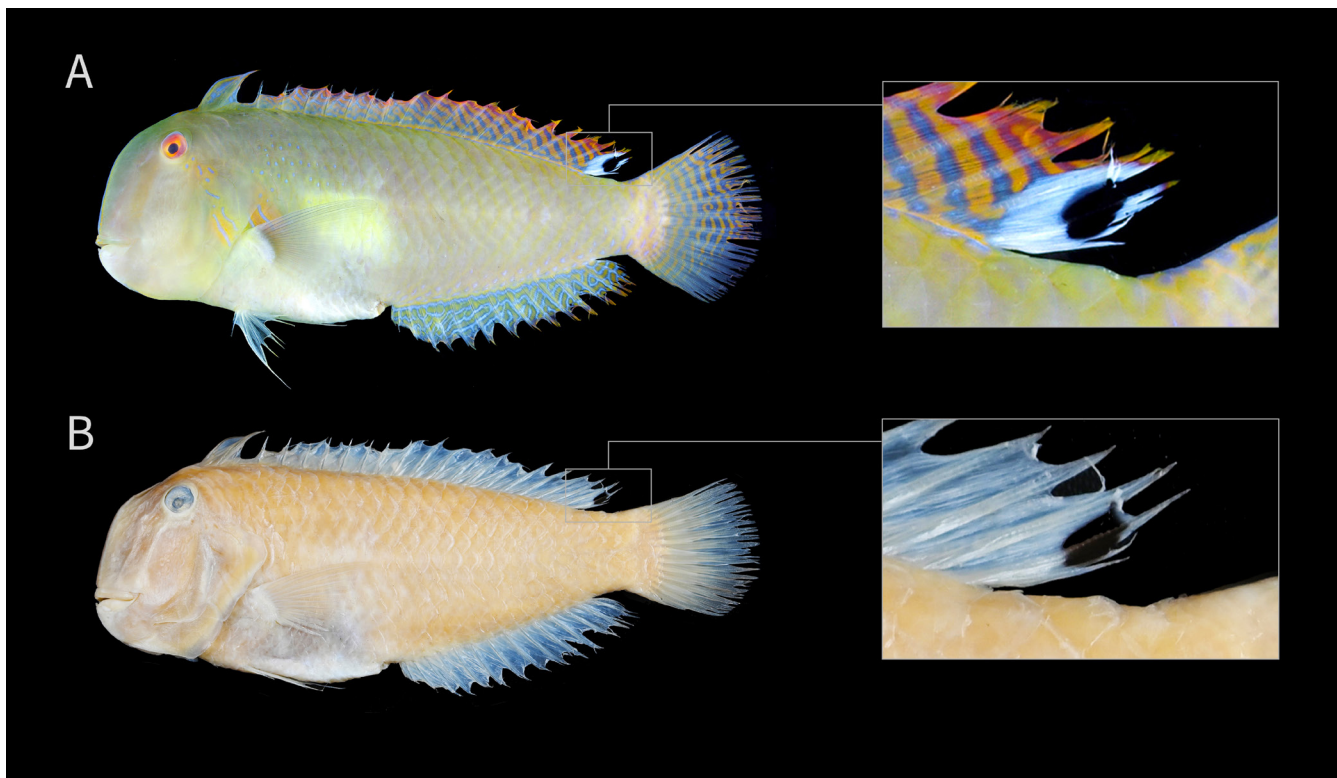


Fig. 1. *Iniistius bakunawa* new species, KAUM-I. 80684, paratype, 172.0 mm SL, Panay Island, Philippines. A, Freshly dead specimen showing colouration in life; B, same specimen in preservation. Note the concentric black and white ellipsoid dorsal-fin ocellus characteristic of this species. Photographs by H. Motomura (A) and Y.K. Tea (B).

1988 (Fig. 2B); KAUM-I. 80684, 172.0 mm SL, purchased from Tigbauan Market, Iloilo, Panay Island, Philippines, H. Motomura, 10 November 2015 (Fig. 1); PNM 15711, 129.6 mm SL, same data as AMS I.50830-001; USNM 435404, 162.4 mm SL, purchased from public fish market in Daanbantayan, Cebu, Philippines, K.E. Carpenter et al., 29 January 2015 (Fig. 3A); USNM 437745, 155.1 mm SL, purchased from Estancia fish landing site, Iloilo, Panay Island, Philippines, J.T. Williams et al., 16 July 2015 (Fig. 3B); USNM 4357747, 158.8 mm SL, same data as USNM 4357745 (Fig. 3C).

Diagnosis. A species of *Iniistius* distinct from all congeners based on the following combination of characters and live colouration details: 7 horizontal rows of scales on cheek; gill rakers 4–6 + 8–11 = 12–17; gill rakers short, bearing teeth; pored lateral line scales 19–20 + 4–6 = 23–26; 2 scales dorsoanteriorly on opercle; body yellowish to jade green; posteriormost dorsal fin with a large black centred white ellipsoid ocellus.

Description. Dorsal-fin rays IX,12, first 3–5 segmented rays unbranched, all remaining segmented rays branched (first 7 unbranched in PNM 15711), last ray branched to base; anal-fin rays III,12, all segmented rays branched except first ray unbranched (all rays branched in USNM 437745 and USNM 437747), last ray branched to base; pectoral-fin rays 12, uppermost two rays unbranched, first ray rudimentary; pelvic-fin rays I,5; principal caudal-fin rays 6+6, the upper and lowermost unbranched; upper procurrent caudal-fin rays 6; lower procurrent caudal-fin rays 5; lateral line interrupted,

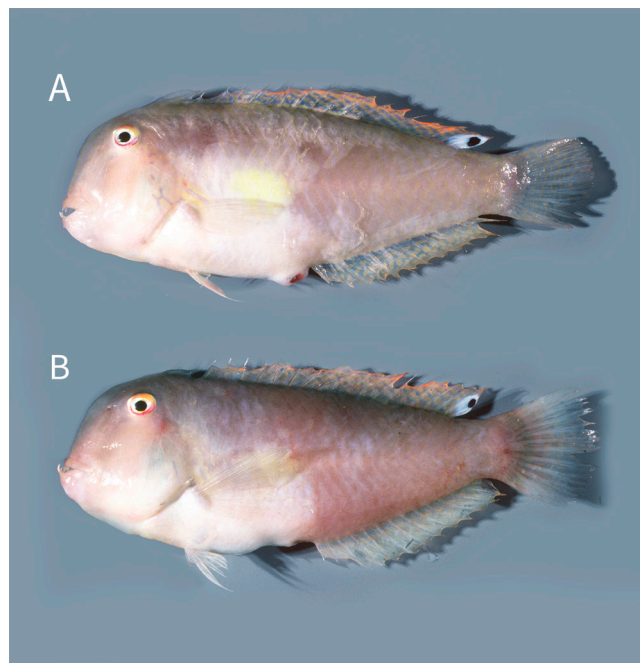


Fig. 2. *Iniistius bakunawa* new species, freshly dead paratypes from Dampier Archipelago, Western Australia, showing colouration in life. A, CSIRO H 1488-1, paratype, 129.8 mm SL; B, CSIRO H 1506-1, paratype, 144.5 mm SL. Note the concentric black and white ellipsoid dorsal-fin ocellus characteristic of this species. Photographs by G. Johnson, CSIRO. Images provided by CSIRO Australian National Fish Collection.

Table 1. Proportional measurements of specimens of *Iniistius bakunawa*, new species, expressed as percentage of standard length.

	Holotype				Paratypes (n=8)							
	PNM 15676	AMS I.50830-001	CSIRO H 1488-1	CSIRO H 1506-1	KAUM-I.80684	PNM 15711	USNM 435404	USNM 437745	USNM 437747			
Standard length (mm)	151.2	151.9	129.8	144.5	172	129.6	162.4	155.1	158.8			
Body depth	37	36.5	39.5	39.7	36.1	36.3	37.6	36.6	36.8			
Body width	10.5	12.5	12.5	12.5	10.9	11.3	13.1	11	11.9			
Head length	33.7	32.3	32.7	30.7	32.6	33.9	32.5	30.9	30.8			
Snout length	11.2	11.3	13.3	14.6	10.7	11.2	12.9	10.4	9.8			
Upper jaw length	9.3	9.2	9.5	9.3	9.2	9.3	9.4	9.1	7.6			
Orbit diameter	6.5	6.6	6.9	6.5	5.8	7.1	6.2	6.4	6.7			
Interorbital width	5.4	5.3	6.3	5.6	5.2	5.5	5	5.2	5.2			
Caudal-peduncle depth	13.2	13.2	13.4	13.1	12.4	12.2	14.2	13.1	13.5			
Caudal-peduncle length	7.9	7.8	8.2	6.8	8.1	9.1	7.9	7.8	7.1			
Predorsal length	29.2	29	29.7	30.2	28	27.2	29.8	27.7	29			
Preanal length	54.4	52.2	57.5	60.4	56	55.6	55	54.2	56.7			
Prepelvic length	31	31.2	30.4	34.1	30.5	31.6	32.3	32.9	29.5			
Base of dorsal fin	72.7	73.7	71.3	68.9	70.1	73.8	69.6	72.3	76.9			
1 st dorsal-fin spine length	14.7	14	11.4	9.2	9.8	13.9	16.5	14.2	16.1			
2 nd dorsal-fin spine length	12	13.6	11.5	broken	10.7	12	13.4	12.3	13.4			
3 rd dorsal-fin spine length	6.7	6.9	4.2	broken	6	5.6	6.8	5.9	7.1			
9 th dorsal-fin spine length	7.2	8.8	6.2	6.7	6.6	8.5	7.5	7	7.7			
11 th dorsal-fin ray length (longest)	12	11.1	11.2	12	11.6	10.9	12.5	12.1	12			
Base of anal fin	39	37	38.4	37.8	37.7	35.8	38.2	38.8	34.2			
1 st anal-fin spine length	2.8	3.4	2.9	3	2.8	2.3	3.2	2.9	broken			
2 nd anal-fin spine length	5	5.8	4.5	4.5	3.9	4.8	5.5	broken	5.5			
3 rd anal-fin spine length	7.5	7.2	6.1	6.4	6.5	7.9	7.5	6.2	8.2			
11 th anal-fin ray length (longest)	11.9	11.2	11.8	11	10	11.5	12.9	11.7	11.9			
Caudal-fin length	22.4	21.7	19.7	21.6	22.4	20	22.7	21.1	23			
Pectoral-fin length	21.5	20.3	22.7	23.9	23.4	21.6	26.7	19.7	24.1			
Pelvic-spine length	5.9	7.4	5.4	5.3	6.4	7.7	5.7	5.5	6.4			
Pelvic-fin length	18.4	17.8	19.3	15.1	17.8	15.9	17.2	17.3	14.6			

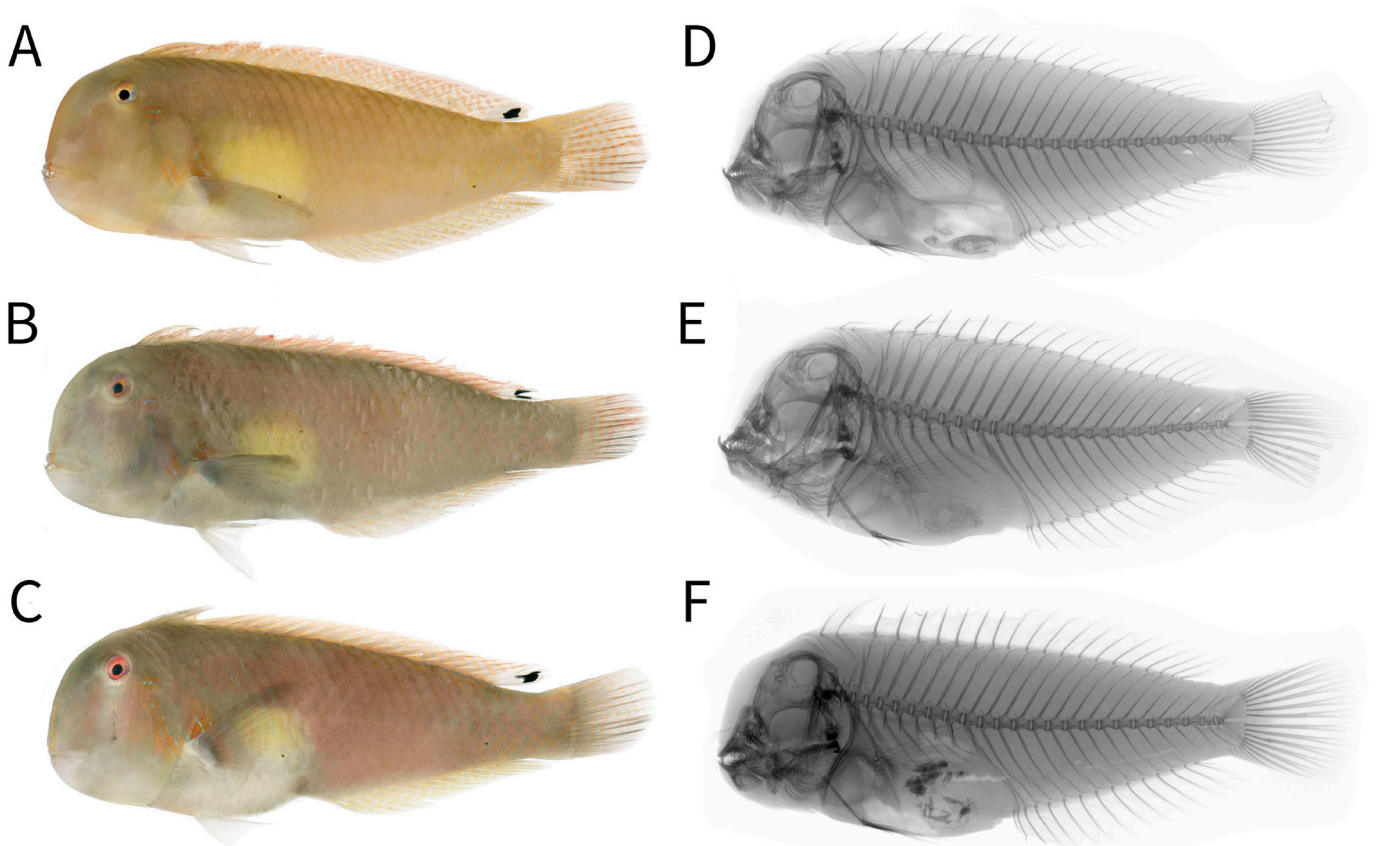


Fig. 3. *Iniistius bakunawa*, new species, A–C, freshly dead specimens showing colouration in life; and D–F, X-rays. A, USNM 435404, paratype, 162.4 mm SL, Cebu Island, Philippines; B, USNM 437745, paratype, 155.1 mm SL, Panay Island, Philippines; C, USNM 437747, paratype, 158.8 mm SL, Panay Island, Philippines; D, CSIRO H 1488-1, paratype, 129.8 mm SL, off northwest Dampier Archipelago, Western Australia; E, CSIRO H 1506-1, paratype, 144.5 mm SL, off northern Dampier Archipelago, Western Australia; F, KAUM-I. 80684, paratype, 172.0 mm SL, Panay Island, Philippines. Photographs by J.T. Williams. X-rays provided by K. Parkinson.

with dorsoanterior series of pored scales 20/19 (19–20) and midlateral posterior peduncular series 6/5 (4–6); first pored scale on posterior peduncular series often pitted; total number of scales in lateral line 26/24 (23–26); scales above lateral line to origin of dorsal fin 4; scales above lateral line to middle of dorsal fin 2; scales below lateral line to origin of anal fin 9; circumpeduncular scales 16; gill rakers 6 (4–6) + 11 (8–11) = 17 (12–17); branchiostegal rays 5; vertebrae 9+16.

Body depth 2.7 (2.5–2.8) in SL. Body extremely compressed, width 3.5 (2.9–3.3) in body depth; head length (HL) 3.0 (3.0–3.3) in SL; dorsal profile of snout nearly vertical, the remaining profile of head before and above eye strongly convex; snout length 3.0 (2.1–3.1) in HL; edge of snout a sharp ridge, this continuing through interorbital space to origin of dorsal fin; chin also with a sharp anterior ridge; eye set high on head at level of nostril, fleshy orbit diameter 5.2 (4.6–5.6) in HL; interorbital width 6.2 (5.2–6.5) in HL; caudal-peduncle depth 2.5 (2.3–2.8) in HL; caudal-peduncle length 4.2 (3.7–4.5) in HL.

Mouth small, a little oblique, upper-jaw length 3.6 (3.3–4.1) in HL; a pair of long slender slightly incurved canines at front of each jaw extending well beyond lips with mouth closed, lower pair fitting inside the upper; upper pair of canines curving laterally, lower canines more forward-projecting and flaring only slightly to side; side of jaws with a row of 6–11 strong conical teeth. Tongue slightly pointed, set far

back in mouth. Lips thin, the lower with a prominent flap on side of mandible. Gill rakers thick and short, less than half width of orbit, bearing teeth (Fig. 4); anterior rakers on epibranchial of first gill arch with 2 teeth on each side, those on ceratobranchial with 4–5 teeth on each side.

Posterior edge of preopercle free to about an eye diameter below lower edge of orbit; ventral edge of preopercle free nearly to below posterior end of maxilla. Anterior nostril a tiny aperture, overlain by flap from anterodorsal edge; posterior nostril short, slightly oblique. Suborbital sensory canal with 6–7 short branches, each ending with single pore. Scales cycloid, thin and membranous; lateral-line scales with a single horizontal tubule ending in a posterior pore; scales on side of thorax about half height of scales on side of body; head naked except for 2 small scales dorsally at base of opercle and a broad zone of small scales on cheek from below eye to slightly below corner of mouth, these scales in about 7 small narrowly spaced rows (scales not in regular rows, so difficult to count); no scales basally on dorsal or anal fins; small scales basally on caudal fin extending nearly $\frac{1}{3}$ distance to posterior margin; pelvic fins without an axillary scale; a single scale extending posteriorly from between base of pelvic fins, its length about $\frac{1}{3}$ length of pelvic spine.

Origin of dorsal fin above posterior edge of orbit, predorsal length 3.4 (3.3–3.7) in SL; dorsal spines slender and flexible; dorsal fin incised between 2nd and 3rd dorsal spines, gap

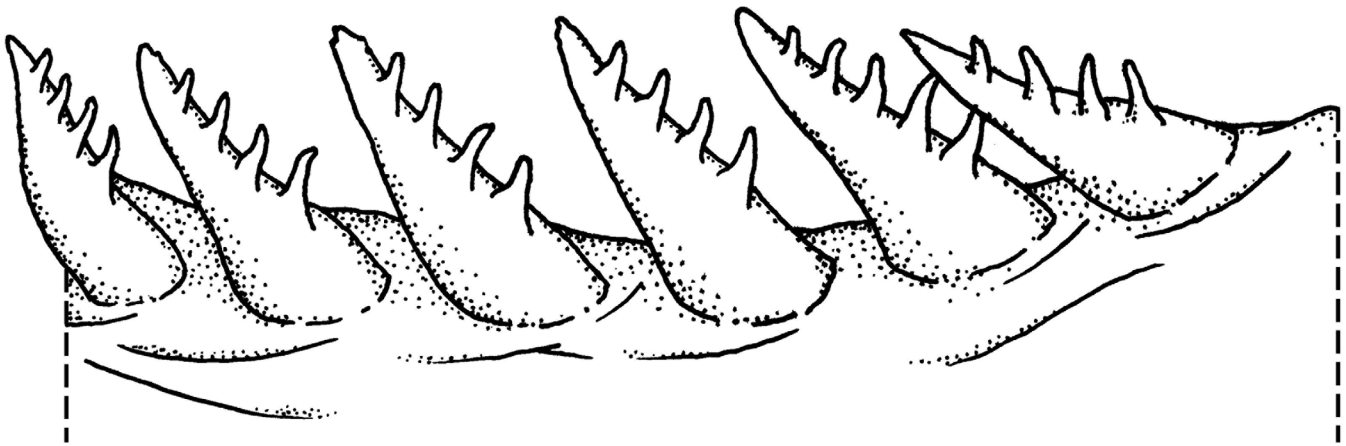


Fig. 4. Anterior gill rakers on a portion of the ceratobranchial of the first gill arch of *Iniistius bakunawa*, new species. Illustration based on the KAUM-I. 80684 paratype. Scale bar represents 2 mm.

between base of 2nd and 3rd spines about 1.7 (1.6–1.8) times larger than gap between 3rd and 4th dorsal spines; first two dorsal spines flexible, the 1st dorsal spine longest, 2.3 (1.9–3.4) in head length; 2nd dorsal spine 2.8 (2.3–3.0) in head length; 3rd to 9th dorsal spines pungent; 3rd dorsal spine 5.0 (4.4–7.7) in head length; 9th dorsal spine 4.7 (3.7–5.3) in HL; penultimate soft dorsal ray longest, 2.8 (2.6–3.1) in HL; origin of anal fin below base of 1st dorsal soft ray, preanal length 1.8 (1.7–1.9) in SL; 1st anal spine 12.1 (9.4–14.6) in HL, the 2nd spine 6.8 (5.6–8.4) in HL; 3rd anal spine 4.5 (3.7–5.4) in HL; penultimate anal soft ray longest, 2.8 (2.5–3.3) in HL; caudal fin rounded, its length 4.5 (4.3–5.1) in SL; pectoral fins 4.7 (3.8–5.1) in SL; pelvic fins not reaching anus, pelvic spine 5.7 (4.4–6.1) in HL, 1st soft ray longest, 5.4 (5.2–6.8) in SL.

Osteology. Vertebrae 9+16; first vertebral centrum about half width of subsequent centra, bearing a relatively short neural spine; second neural spine blade like and angled about 40° toward third neural spine, its length longer than the first but about 2/3 that of the third neural spine; third neural spine (third and fourth in CSIRO H 1506-1) with well-developed plate-like shelf with distal groove to accommodate associated pterygiophore; single supraneural, proximal to supraoccipital crest, inserted in preneural space; first dorsal pterygiophore bearing one supernumerary spine and one serial spine, inserted along with second pterygiophore in first interneural space; no pterygiophores in second interneural space; second interneural space narrow; remaining dorsal pterygiophores insert one per interneural space, except for 19th interneural space with two pterygiophores (two pterygiophores in 18th interneural space in KAUM-I. 80684); precaudal centra with thick, unornamented pre-zygapophyses (see Tatom-Naecker & Westneat, 2018); first anal pterygiophore bearing two supernumerary spines and one serial spine, inserted anterior to first haemal spine; subsequent anal pterygiophores each bear a serially associated segmented ray and inserted one per interhaemal space, except for two pterygiophores in 10th

interhaemal space (two pterygiophores in 11th interhaemal space in CSIRO H 1506-1); ribs present on vertebrae 3 through 9; epineurals present on vertebrae 1 through 11–12 (to vertebrae 11 in CSIRO H 1488; to vertebrae 12 in CSIRO H 1506-1 and KAUM-I. 80684); preural 2 haemal spine autogenous, with prominent anterior flange; hypurals 1 and 2 undifferentiated from each other; hypurals 3 and 4 undifferentiated from each and from urostylar complex, distal portion with a broad shelf; hypural 5 absent; parhypural autogenous without apparent hypurapophysis (Fig. 3D–F).

Colour in life. Based on colour photographs of type specimens (Figs. 1A, 2, 3A–C): head and body pale yellowish to jade green, becoming increasingly pale ventrally towards breast; posterior margin of scales on body very slightly darker in colour, appearing faintly crosshatched; anterior body behind opercle, anal-fin base and caudal-fin base with metallic blue spots; anteromedial portion of body behind pectoral fin with a pale, slightly metallic yellowish green blotch; iris orange suffused with purple, inner portion a yellow ring around pupil; predorsal ridge from upper lip to base of anteriormost dorsal-fin spine lined with metallic blue and orange; opercle and anteriormost body just behind free margin of opercle with two orange bands, their margins indistinct and very suffused, first from 5 o'clock position of orbit to edge of opercle at level horizontal to pectoral fin base, second from free margin of opercle to inner edge of pectoral fin axil; each orange band with a series of broken metallic blue spots and stripes arranged somewhat obliquely, these variable and sometimes absent or very attenuate; dorsal fin orange-yellow with metallic blue vermiculate markings, those anteriorly frequently broken into spots, becoming increasingly anastomosed and sinuous posteriorly; posterior most edge of dorsal fin with a large black centred white ellipsoid ocellus; caudal fin similar to dorsal fin, except blue sinuous markings arranged more vertically; anal-fin similar to dorsal-fin; pectoral fins translucent; pelvic fins greenish hyaline.

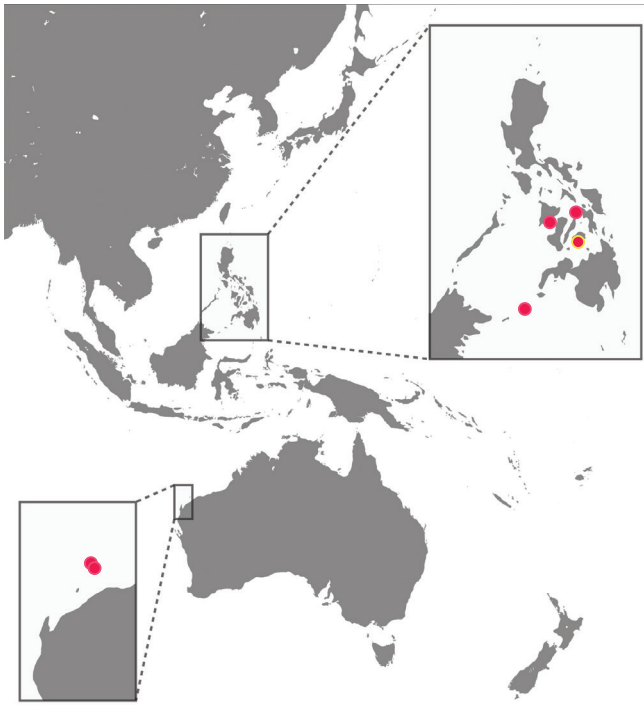


Fig. 5. Known locality records for type specimens of *Iniistius bakunawa*, new species. The type locality is represented by an outlined symbol. Records from the Philippines are based on material obtained from fish markets.

Colour in preservation. Body uniformly light tan; pectoral fin base and orbital rim pale cream, almost white; metallic blue markings on opercle and anterior body now dark tan; white portion of ellipsoid ocellus on posterior dorsal fin indistinct from rest of fin, black central portion remains; all fins translucent hyaline (Fig. 1B).

Habitat and distribution. *Iniistius bakunawa* is known only from seven specimens collected from artisanal fish markets in Panay, Cebu, Bohol, and Jolo in the Philippines, and two specimens trawled from the Dampier Archipelago, Western Australia at depths of 54–57 m (Fig. 5). Although species of *Iniistius* are of some commercial interest, their preference for soft sediment and sand channels away from coral reefs means that they are often overlooked in faunistic surveys. These habitats are often overlooked by divers (De Brauwer et al., 2017; De Brauwer & Burton, 2018), resulting in the patchy distribution records for many species of *Iniistius* and other novaculin genera. It is likely that the species occurs elsewhere in the Indo-West Pacific, particularly between Philippines and Western Australia.

Etymology. The specific epithet is given after Bakunawa, a serpentine or draconic figure in Visayan mythology believed to be responsible for causing an eclipse by devouring the moon. The common name is given after the black centred white ellipsoidal ocellus on the posterior dorsal fin. The name *bakunawa* is treated as a noun in apposition. Species of *Iniistius* are known by a variety of common names, including razor wrasse, cleaver wrasse, and razorfish. The first two names are sometimes used for other novaculin species in the genera *Novaculops* and *Xyrichtys*, whereas razorfish is sometimes used for *Centriscus* and *Aeoliscus*

(Syngnathiformes; Centriscidae; also known as shrimpfish). To maintain consistent terminology with other members of the Novaculini and to avoid confusion with the Centriscidae, we recommend razor wrasse as the preferred common name when referring to species in the genus *Iniistius*.

Comparisons. Randall et al. (2002) classified Indo-Pacific *Iniistius* into two groups. The first group, consisting of *I. pavo* and *I. dea*, is distinguished from congeneric species in having naked cheeks and the first two dorsal-fin spines greatly prolonged and separate from the rest of the fin. The second group consists of the remaining species and is diagnosed in having scales on the cheek, and in having the first two dorsal-fin spines not greatly prolonged and separated but still connected to the rest of the fin by a deep notch in the interspinous membrane. The degree of cheek squamation for this latter group varies from just a few (e.g., in *I. aneitensis* and *I. cyanifrons*), to numerous scales arranged in rows.

Iniistius bakunawa belongs to the latter group with an anterior dorsal-fin notch and in having numerous cheek scales arranged in rows. It is, however, readily separated from all congeneric species in having the combination of 7 rows of cheek scales, teeth on its gill rakers, and a large concentric black and white ellipsoid ocellus on the posteriormost edge of its dorsal fin. Of the known species of *Iniistius*, only *I. baldwini* occasionally approaches this colouration pattern, with specimens sometimes having a small black spot in the same position as *I. bakunawa* (see BPBM 37237 specimen of *I. baldwini*). This pattern, however, does not appear to be diagnostic for *I. baldwini*, with most specimens lacking this posterior dorsal-fin spot. *Iniistius baldwini* is readily separated from *I. bakunawa* in having a large black blotch on its dorsum below the sixth to ninth dorsal-fin spines, and in lacking iridescent blue markings on the opercle and pectoral fin axil.

Iniistius bakunawa also closely resembles *I. bimaculatus* and *I. pentadactylus*, with all three species having a pale yellow to jade green body colouration, sinuous markings on the median fins, and in having numerous small scales on the cheek arranged in horizontal rows. The three species differ in other aspects of colouration. In *I. bimaculatus*, the ventral half of the body is lined with numerous rows of bright orange spots, and there is a dark blotch situated in the middle of the body behind the pectoral fin base. In *I. pentadactylus*, the postorbital region is adorned with three to seven (usually five) scarlet scales arranged in an oblique series, and the posterior body is lined with rows of bright orange spots. The pale anteromedial patch of scales behind the pectoral fin typical of the genus is sometimes crosshatched with red, and immediately above there is usually a dark blotch. *Iniistius pentadactylus* further differs from *I. bakunawa* in lacking teeth on its gill rakers.

Remarks. Placement of the new species in the genus *Iniistius* is here regarded as provisional. The new species possesses several of the characters in agreement with Gill's (1862) and Nguyen's (1974) generic definition of *Iniistius*, such as in having the first two dorsal-fin spines separated from

the remainder of the fin by a deep notch and in having no dorsal-fin pterygiophores in the second interneural space. It, however, possesses numerous rows of cheek scales. Randall & Earle (2002) proposed an additional character separating *Iniistius* from *Xyrichtys*: dorsal-fin origin less than half orbit diameter behind posteriormost edge of orbit. This character is true at least for our examined material of *I. dea*, *I. jacksonensis*, *I. melanopus*, *I. opalus*, *I. pavo*, *I. pentadactylus*, and *I. bakunawa*, new species (see list of material examined).

Two of the characters do not appear to be diagnostic for *Iniistius*. They are presence of cheek scales, and presence of an anterior dorsal fin notch. Aside from *I. dea* and *I. pavo*, all other species of *Iniistius* possess some degree of cheek squamation. If *Iniistius* (as currently defined) is indeed monophyletic, then the absence of cheek scales in *I. dea* and *I. pavo* can be considered apomorphic. In contrast, species of *Xyrichtys* (Atlantic and eastern Pacific) do not appear to possess cheek scales.

Presence or absence of an anterior-dorsal fin notch is variable in *Iniistius*. In *Iniistius*, the anteriormost first and second dorsal-fin spines are displaced forward from the remaining radial elements, resulting in the insertion of the first two pterygiophores in the first interneural space instead of the second. This displacement of the anterior dorsal-fin spines results in the second interspinous space being wider than all other interradsial spaces along the dorsal fin. In most species of *Iniistius*, it is the widening of this space that results in the notching of the second interspinous membrane. The notch is, however, not always apparent, with some specimens having uninterrupted membranes across the anterior radial elements. Since notching of the interspinous membrane appears to be a variable consequence of the first and second dorsal-fin spines being displaced, we do not recommend its use as a diagnostic character. Displacement of the anteriormost first and second dorsal-fin spines is, however, consistent across our examined material of *Iniistius* and appears to be a synapomorphy diagnosing the genus. Notwithstanding the evaluation of the aforementioned characters, we exercise restraint in redefining *Iniistius* and *Xyrichtys*, in part due to lack of adequate comparative material, and that it goes beyond the scope of the current study.

Material examined. *Iniistius dea* (n=1): AMS I.19604-001, 231.3 mm SL, Sudbury Reef, QLD, Australia; *Iniistius jacksonensis* (n=6): AMS E.1615, 155.1 mm SL, off Fraser Island, QLD, Australia; AMS E.2087, 117.6 mm SL, Cape Byron, NSW, Australia; AMS I.3978, 153.0 mm SL, off Cape Hawke, NSW, Australia; AMS I.34143-001, 165.4 mm SL, off Cape Hawke, NSW, Australia; AMS I. 21556-001, Middle Head, Sydney Harbour, NSW, Australia; AMS I.31249-001, 154.4 mm SL, Cape Banks, Botany Bay, NSW, Australia; *Iniistius melanopus* (n=2): USNM 437839, 160.6 mm SL, purchased from Iloilo City “Super” fish market, Iloilo, Panay Island, Philippines, J.T. Williams et al., 18 July 2015; USNM 437893, 145.8 mm SL, purchased from Dumaguete Fish Market, Dumaguete City, Negros Oriental, Philippines, J.T. Williams et al., 21 July 2015; *Iniistius opalus* (n=1): AMS

I. 50704-001, 141.5 mm SL, Cape Bossut, Kimberley, WA, Australia; *Iniistius pavo* (n=1): AMS I.46345-001, 151.1 mm SL, Mauritius; *Iniistius pentadactylus* (n=10): AMS I. 37919-006, 45.0 mm SL, Vanua Lava, Vanuatu; AMS I. 37933-010, 6, 61.2–105.0 mm SL, Vanua Lava, Vanuatu; AMS I.37937-013, 2, 70.7–83.1 mm SL, Ambrym Island, Vanuatu; AMS I.37937.013, dissected cleared and stained specimen, Ambrym Island, Vanuatu.

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