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Research Article

Acanthopsaron (Teleostei: Hemerocoetidae), a new genus and two new species of signalfishes from the Grand Passage off northern New Caledonia, southwestern Pacific Ocean

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Abstract

A new signalfish from the Grand Passage north of Grande Terre, New Caledonia, *Acanthopsaron striatum* n. gen. n. sp., is described, characterized by 7 spines in the first dorsal, anal-fin rays mostly branched, branched caudal-fin rays 10, scales small compared to other signalfishes, cycloid, lateral-line scales 60, peripheral ctenoid; pelvic fin short, not reaching to anus when adpressed; snout terminal, neither jaws projecting; maxillary tentacle absent; maxillary spine absent; maxillary notch present, weakly developed; opercle with a single, strong spine; subopercle with a weak spine; barbel on lower-jaw tip absent; anterior-nostril projections absent; iris flap absent. *Pteropsaron flavissimum* n. sp. is also described from a single specimen also trawled in the Grand Passage of New Caledonia, characterised by having 6 spines in the first dorsal fin, 18 rays in the second dorsal fin, ca. 22 rays in the anal fin, gill rakers 0 + 8, 46 lateral-line scales, first dorsal fin low, without filaments; anal fin normal, without extended rays; head length 3.6 in SL, preorbital length 1.7 in eye diameter; pelvic fin extending to fifth anal-fin membrane when adpressed; body colour rosy-pink, with wide yellow streak dorsally extending from tip of snout to upper caudal-fin base; first dorsal fin pale, without black markings. The new species are compared with allied species. A key to the genera and species of the family Hemerocoetidae is presented.

Keywords: Signalfishes, Coral Sea, New Caledonia, systematics, new species, distribution

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Introduction

The Signalfishes (family Hemerocoetidae) are a small group of benthic fishes usually occurring on soft bottoms of the continental slopes and on submarine ridges and seamounts. Hemerocoetid species are distributed in tropical and southern temperate waters of the Indo-West Pacific and the southeastern Pacific, roughly between 35°N and 50°S. Most of the hemerocoetids are considered to be rare; several species are known only from less than five specimens.

The Hemerocoetinae were originally described by Kaup (1873: 79, 80) as a subfamily of Platycephalidae. Jordan (1923: 229) raised the Hemerocoetidae to family level in the series Percophidiformes, but only included the type genus *Hemerocoetes* Valenciennes 1837 (Valenciennes in Cuvier & Valenciennes 1837: 311), while he classified the other species in a family Pteropsaridae Jordan & Evermann 1903 (which has, however, been originally described for the pinguipedid genus *Osurus* (Jordan & Evermann 1903: 206). Ginsburg (1955) lumped all of these in the family Percophididae Swainson 1839 (named Percophidae by later authors). Nelson (1982: 10) revised this group, and treated them as a subfamily Hemerocoetinae in family Percophidae. The Hemerocoetidae was again raised to family level by Thacker et al. (2015: 178), confirmed by Betancur-R. et al. (2017: 11). Dornburg & Near (2021: Table S1, p. 13) and Near & Tacker (2024: 172).

Odani & Imamura (2011) recognized the Hemerocoetinae as a monophyletic clade, supported by 15 osteological synapomorphies: the absence of a basisphenoid, the lower jaw and hyoid arch connected by ligament, ectopterygoid rod-like, first pharyngobranchial absent, medial supratemporal absent, posttemporal and epiotic connected by ligament, anterior cartilages of pelvic bones fused, pleural ribs absent, ventral margin of first proximal-middle pterygiophore of anal fin with a single soft ray, middle pterygiophores of dorsal and anal fins absent, hemal spine and third preural centrum fused, first and second hypurals fused, uroneural absent, upper caudal lobe with four branched rays, and transversus dorsalis anterior comprising only transversus epibranchialis 2.

A total of 27 valid species in 8 genera are currently known in the family Hemerocoetidae (Fricke et al. 2024a). A checklist of these species is provided in Table 1.

Recent oceanographic expeditions around New Caledonia resulted in the capture of two undescribed species of hemerocoetid fishes. They are described and illustrated in the present paper.

Table 1. Checklist of the species of the family Hemerocoetidae

Species	Original description	Primary types	Type locality	Distribution	Depth (m)	Synonyms
Acanthaphritis barbata (Okamura & Kishida 1963)	Okamura & Kishida 1963: 43, figs. 1-2 as *Spinapsaron barbatus*	Holotype: FAKU 35855	Bungo Channel, Ehime Pref., Japan	Myanmar to Philippines, Japan and N Australia	82-427	
Acanthaphritis grandisquamis Günther1880	Günther 1880: 43, pl. 18, fig. A	Lectotype: BMNH 1879.5.14.198 (designated by Suzuki & Nakabo 1996: 447)	Kai Islands, E Indonesia	E Indonesia east to Papua New Guinea, north to South China Sea	135-505	
Acanthaphritis ozawai (McKay 1971)	McKay 1971: 41, fig. 1 as *Branchiopsaron ozawai*	Holotype: WAM P.19153-001	17°17'00"S-119°57'00"E	W Australia and Gilbert Is., E Indian Ocean and SW Pacific	108-494	
Acanthaphritis unoorum Suzuki & Nakabo 1996	Suzuki & Nakabo 1996: 452, fig. 5	Holotype: FAKU 61500	35°40'17"N 134°22'-20"E to 35°41'30"N-134°30'38"E	Philippines north to Japan, south to Papua New Guinea, W Pacific	82-398	
Dactylopsaron dimorphicum Parin & Belyanina 1990	Parin & Belyanina in Parin1990: 9 [77], fig. 3	Holotype: ZIN 49195	25°04.8'S 97°27.7'W	Nazca and Sala-y-Gomez Ridges, SE Pacific	240-345	
Enigmapercis acutirostris Parin 1990	Parin 1990: 7 [74], fig. 2	Holotype: ZIN 49194	25°01'S, 97°35'W	Sala-y-Gomez Ridge, SE Pacific	485-470	
Enigmapercis reducta Whitley 1936	Whitley 1936: 19	Holotype: AMS IA.7024	Collaroy, New South Wales, Australia	Southern Australia, SE Indian Ocean, SW Pacific	3-238	
Hemerocoetes artus Nelson 1979	Nelson 1979: 594, fig. 1 d	Holotype: NMNZ P.1748	45°38.5'S, 171°02'E	New Zealand region SW Pacific	27-549	
Hemerocoetes macrophthalmus Regan 1914	Regan 1914: 15	Syntypes: BMNH 1913.12.4.35-36 (2)	Cape North, New Zealand	New Zealand region, SW Pacific	18-480	*H. waitei* Regan1914 (Regan 1914: 18)
Hemerocoetes monopterygius (Schneider 1801)	Schneider in Bloch & Schneider 1801: 41 as *Callionymus monopterygius*	No types known	Pickersgill Harbour, Dusky Sound, South	New Zealand region, SW Pacific	0-500	*H. microps* Waite 1911 (Waite 1911: 247, pl. 54, fig. 2)
Hemerocoetes morelandi Nelson 1979	Nelson 1979: 591, fig. 1 b	Island, New Zealand Holotype: NMNZ P.5043	50°52'S 166°42'E	New Zealand region, SW Pacific	18-280	
Hemerocoetes pauciradiatus Regan 1914	Regan 1914: 15	Syntypes: BMNH 1913.12.4.33-34 (2)	Cape North, New Zealand	New Zealand region, SW Pacific	15-550	
Matsubaraea fusiformis (Fowler 1943)	Fowler 1943: 87, fig. 23 as *Roxasella fusiforme*	Holotype: USNM 99517	Aparri, Cagayan Province, Luzon, Philippines	Thailand east to Philippines, north to Japan	0-5	*M. setouchiensis*Taki1953 (Taki [I.] 1953: 202, figs. 1-6, pl. 1)
Osopsaron formosense Kao & Shen 1985	Kao & Shen 1985: 175, figs. 1-2 as *Osopsarpn formosensis*	Holotype: TMF 00165	Tachi harbor [Kuei-shan Island], NE Taiwan	Taiwan to southern Japan; New Ireland (Papua New Guinea), W Pacific	46-397	
Osopsaron karlik Parin 1985	Parin 1985: 358, fig. 1	Holotype: ZIN 46748	25°48'S 86°13'W	Nazca Ridge, SE Pacific	300-395	

Species	Original description	Primary types	Type locality	Distribution	Depth (m)	Synonyms
Osopsaron verecundum (Jordan & Snyder 1902)	Jordan & Snyder 1902: 472, fig. 3	Holotype: USNM 50009	Suruga Bay, Japan	Southern Japan, W Pacific	?	
Pteropsaron dabfar Iwamoto 2014	Iwamoto 2014: 252, figs. 1-3	Holotype: CAS 236400	13.905833°N-120.35433°E	Philippines, W Pacific	82-86	
Pteropsaron evolans Jordan & Snyder 1902	Jordan & Snyder 1902: 471, fig. 2	Holotype: USNM 50008	Sagami Sea, Japan	Southern Korea and Japan, NW Pacific	110-199	
Pteropsaron heemstrai Nelson 1982	Nelson 1982: 2, figs. 1-2	Holotype: SAIAB 15926	30°20'S-30°44'E	South Africa north to Somalia W Indian Ocean	75-175	
Pteropsaron incisum Gilbert 1905	Gilbert 1905: 647, pl. 87	Holotype: USNM 51621	Laysan Is., Hawaiian Islands	Hawaiian Islands, central Pacific	156-402	
Pteropsaron indicum Victor & Kumar 2019	Victor & Kumar 2019: 72, figs. 1-7	Holotype: ZSI 3980	8.16°N 73.4°E	Kerala, India, W Indian Ocean	70	
Pteropsaron levitoni Iwamoto 2014	Iwamoto 2014: 255, figs. 4-6	Holotype: CAS 236401	13.905833°N-120.35433°E	Philippines to Papua New Guinea, W Pacific	60-285	
Pteropsaron longipinnis Allen & Erdmann 2012	Allen & Erdmann 2012: 1158, figs. 1-5	Holotype: MZB 20604	2°54.652'S-134°58.744'E	Eastern Indonesia east to Fiji, W Pacific	70-75	
Pteropsaron natalensis (Nelson 1982)	Nelson 1982: 4, figs. 3-4 as *Osopsaron natalensis*	Holotype: SAIAB 11779	Kosi Bay, KwaZulu-Natal, South Africa	South Africa and East Africa, W Indian Ocean	100	
Pteropsaron neocaledonicus Fourmanoir & Rivaton 1979	Fourmanoir & Rivaton 1979: 419, fig. 11	Holotype: MNHN 1978-0688	S of Ile des Pins, New Caledonia	New Caledonia region, SW Pacific	300	
Pteropsaron springeri Smith & Johnson 2007	Smith & Johnson 2007: 365, figs. 1B, 2-5	Holotype: USNM 367912	9°36'58"N-123°10'05"E	Indonesia, Philippines, Palau, Papua New Guinea, W Pacific	18-86	
Squamicreedia obtusa Rendahl 1921	Rendahl 1921: 20, figs. 5-6	Holotype: NRM 10283	WSW Cape Jaubert, NW Australia	N Australia, E Indian Ocean and SW Pacific	9-22	

Materials and Methods

The type material was collected during the cruise SPANBIOS (2021), which was part of the Tropical Deep Sea Benthos (TDSB) Exploration Programme, carried out by MNHN (Paris) and IR (Nouméa) since the 1970s. It was preformed with RV Alis around northern Grande Terre, New Caledonia, between 26 June 2021 and 31 July 2021. The survey used dredges and French beam trawls.

Methods follow Nelson (1982); fin-ray counts follow Fricke (1983). The classification follows Fricke et al. (2024b). The starting point for length measurements is the mid of the upper lip. The predorsal (1) length is measured from the mid of the upper lip to the base of the first spine of the first dorsal fin; the predorsal (2) length correspondingly to the base of the first ray of the second dorsal fin. Proportions in the descriptions are given as parts per thousand of the standard length (SL), in the tables as percentage of SL; in the diagnosis, proportions ('in SL') are given, to make it better comparable with previous studies. The following abbreviations are used in the text: A anal fin counts; C&S cleared and stained specimen; D1 counts of first dorsal fin; D2 counts of first dorsal fin; P1 pectoral fin counts; P2 pelvic fin counts; RV research vessel; SL standard length. References and journals follow Fricke (2024) and Fricke and Eschmeyer (2024a); abbreviations of museum collections (see below) follow Fricke and Eschmeyer (2024b).

Results

Systematics

The present paper follows the classifications provided by Nelson et al. (2016), Fricke et al. (2024b) and Laan et al. (2014):

Superclass Gnathostomata
Subclass Neopterygii
Division Teleostei
Order Acropomatiformes
Family Hemerocoetidae Kaup 1873

Genus *Acanthopsaron* new genus (Figures 1-2)

Type species: *Acanthopsaron striatum* n. sp.

Diagnosis: A genus of hemerocoetid fishes with the first dorsal present with 7 spines, anal-fin rays mostly branched, branched caudal-fin rays 10, scales small compared to other signalfishes, cycloid, lateral-line scales 60, peripheral ctenoid; pelvic fin short, not reaching to anus when adpressed; snout terminal, neither jaws projecting; maxillary tentacle absent; maxillary spine absent; maxillary notch

present, weakly developed; opercle with a single, strong spine; subopercle with a weak spine; barbel on lower-jaw tip absent; anterior-nostril projections absent; iris flap absent.

Figure 1. *Acanthopsaron striatum* n. gen, n. sp., MNHN 2024-0429, Southwestern Pacific Ocean, Grand Passage (New Caledonia), southern side, 186 km north-northwest of Koumac (holotype, 44.2 mm SL). Lateral view of fresh specimen. (Photograph: Sarah Samadi).

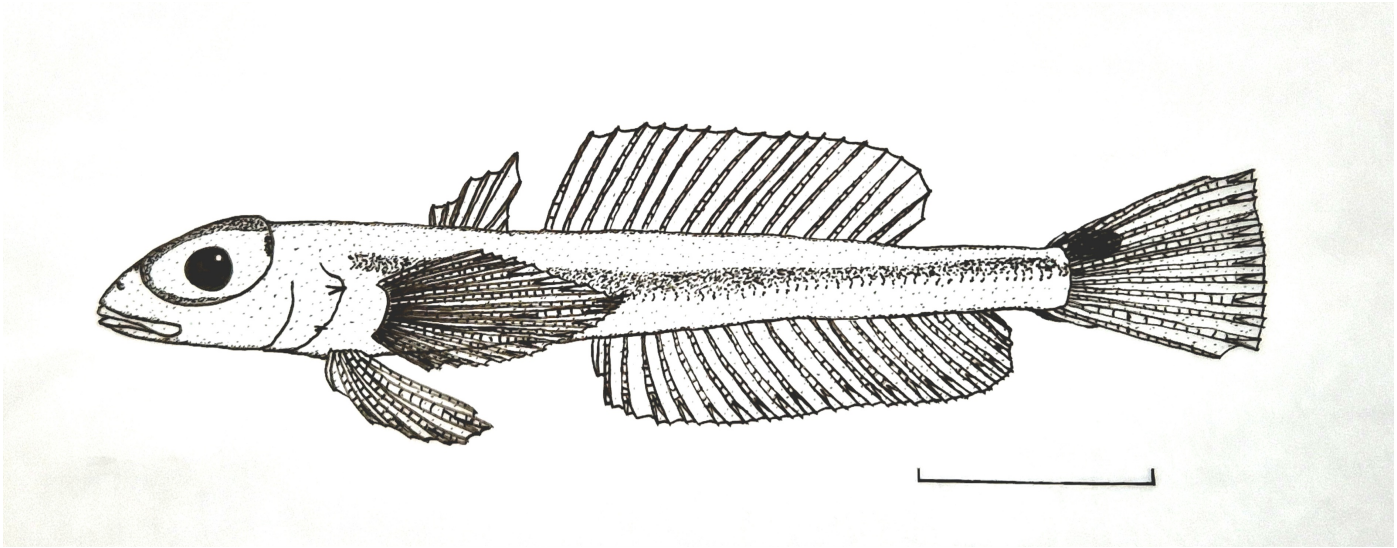

Figure 2. *Acanthopsaron striatum* n. gen, n. sp., MNHN 2024-0429, Southwestern Pacific Ocean, Grand Passage (New Caledonia), southern side, 186 km north-northwest of Koumac (holotype, 44.2 mm SL). Lateral view of preserved specimen.

Description: D VII + ca. xviii ; A ca. i,21,i ; P1 i,15,i (total 17); P2 I,5; C (iii),i,10,i,(iii). Gill rakers 2 + 7 Lateral-line scales 60; scale rows above lateral line, below 6. Predorsal scales 7.
Body elongate and depressed. Head slightly depressed. Opercle with a single strong spine, subopercle with a weak spine, preopercle without spines. First dorsal fin low, fifth spine longest. Caudal fin truncate.
Distribution: This new genus is known only from the type locality of the single known species, which was trawled on the southern side of the Grand Passage north of the Belep Islands (New Caledonia), at a depth of 277-292 m (Figure 3).
Etymology: From the Greek '*Acanthos*' meaning spine. The name refers to the spines in the opercular region, and '*psaron*' for the external similarity to the genera *Osopsaron* and *Pteropsaron*. The gender is neuter.

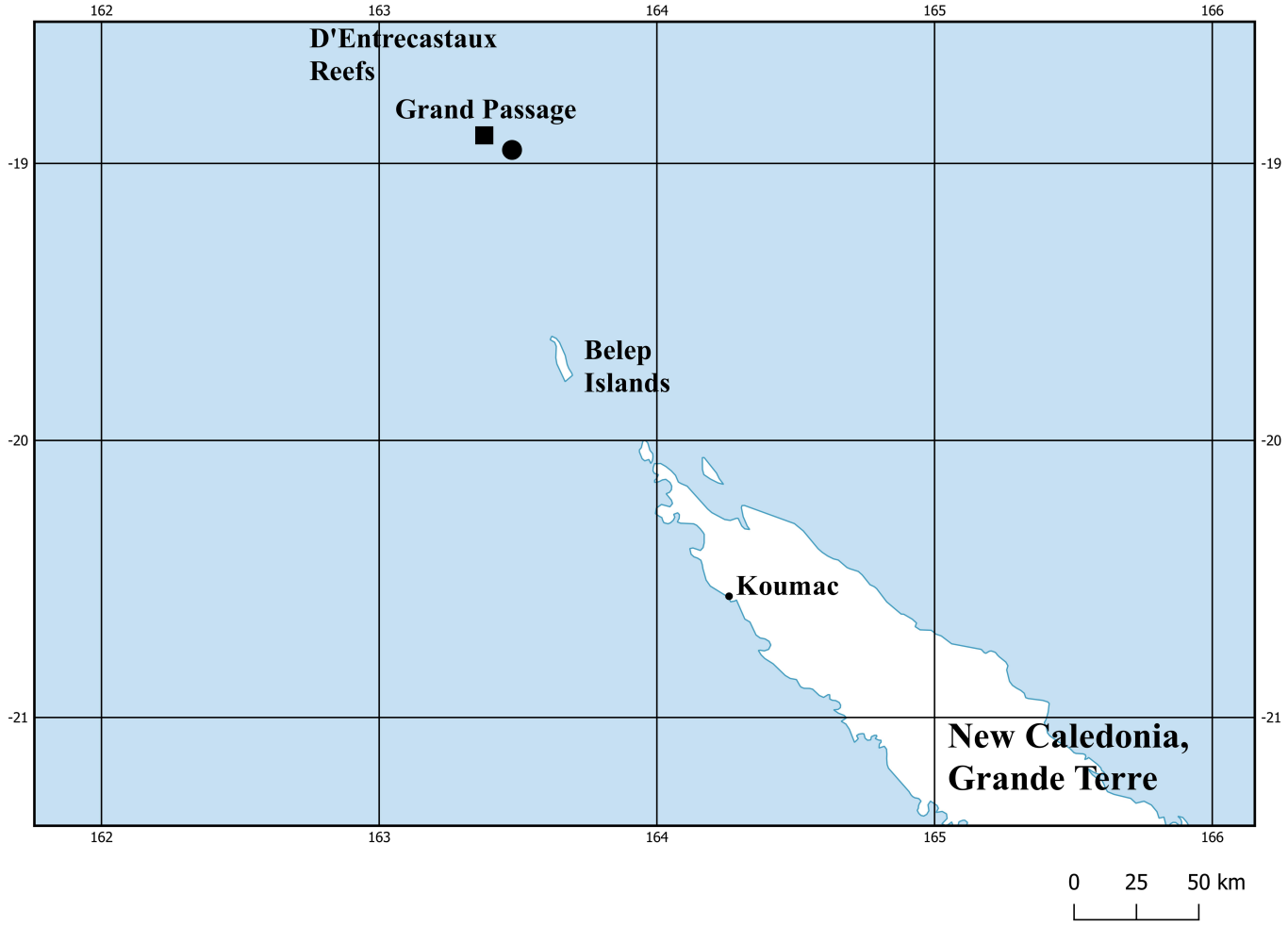

Figure 3. Map of the New Caledonia region indicating the type localities of *Acanthopsaron striatum* n. gen, n. sp. (circle) and *Pteropsaron flavissimum* n. sp. (square).

Comparison: The genera of the family Hemerocoetidae are compared in Table 2. *Acanthopsaron* n. gen. differs from other genera by the first dorsal fin present bearing 7 spines (versus absent in *Hemerocoetes* and *Squamicreedia*, and present but with 2-6 spines in the other genera), the anal-fin rays mostly branched (vs. all unbranched in *Dactylopsaron*), lateral-line scales 60 (vs. 30-52 in the other genera); jaws terminal, neither projecting (vs. upper jaw projecting in *Acanthaphritis, Hemerocoetes, Matsubaraea*; in *Hemerocoetes morelandi* lower jaw projecting in juveniles, becoming slightly shorter than upper in adults), maxillary barbel off tip of upper jaw absent (vs. present in *Acanthaphritis*), maxillary spine absent (vs. present in *Acanthaphritis, Hemerocoetes, Osopsaron, Pteropsaron*), opercular spine present and strong (vs. absent in *Dactylopsaron, Enigmapercis, Hemerocoetes, Squamicreedia*), subopercular spine present but weakly developed (vs. absent in *Acanthaphritis, Dactylopsaron, Enigmapercis, Hemerocoetes, Matsubaraea, Pteropsaron, Squamicreedia*), and the anterior nostril projections absent (vs. present in *Enigmapercis, Squamicreedia*).

***Acanthopsaron striatum* new species** (Figures 1-2)
Banded duckbill
Holotype: MNHN 2024-0429, 44.2 mm SL, Southwestern Pacific Ocean, Grand Passage (New Caledonia), southern side, 186 km north-northwest of Koumac, 19º01'S 163º26'E - 19º00'S 163º26'E, 277-292 m depth, coarse sand with starfish, trawl, St. DW5172, Sarah Samadi, RV Alis, Cruise SPANBIOS, 8 July 2021.
Diagnosis: As for the genus.

Table 2. Comparison of the genera of Hemerocoetidae. Characters differing from *Acanthopsaron* n. gen.are printed in **bold face**

	***Acanthopsaron* n. gen.**	***Acanthaphritis***	***Dactylopsaron***	***Enigmapercis***	***Hemerocoetes***	***Matsbaraea***	***Osopsaron***	***Pteropsaron***	***Squamicreedia***
D1 spines	VII	IV-VI	III-V	II	**None**	III	IV-VI	III-VI	**None**
D2 rays	ca. 17	20-26	20-22	21	36-43	16-17	17-20	14-27	28
A	ca. 23	24-31	23-25	25	33-42	25	22-25	22-29	23
A rays branched/unbranched	mostly branched	branched	**unbranched**	mostly branched	mostly branched	branched	mostly branched	mostly branched	?
P1	17	18-21	17-20	21	20	15	16-20	17-19	?
C branched rays	10	8	8	8	8	8	8	8	8
Gill rakers (total)	9	8-12	12-14	14		(ca. 100)	9-14	8-15	?
Lateral-line scales	60	32-39	32-34	32	44-52	33-36	30-33	33-47	ca. 30
Scales	small, cycloid, LLat ctenoid	large, cycloid, Llat ctenoid	large, cycloid	large, cycloid	moderate, cycloid, LLat ctenoid	large, cycloid	large, cycloid	moderate to large, cyloid; LLat ctenoid	large, cycloid, LLat ctenoid
P2 extending to	before anus	before anus	**anal-fin base**	before anus	before anus to anterior anal-fin base	before anus	**anterior anal-fin base**	**Anterior anal-fin base or further**	before anus
Jaws	both terminal, none projecting	**upper jaw projecting**	both terminal, none projecting	upper jaw slightly projecting	**upper jaw projecting**	**upper jaw projecting (rarely lower jaw projecting)**	upper jaw slightly projecting	upper jaw slightly projecting	upper jaw slightly projecting
Maxillary tentacle	absent	**present**	absent	absent	**present** or absent	absent	absent	present or absent	absent
Maxillary spine	absent	**present, strong**	absent	absent	**present**	absent	**present**	**present**	absent
Opercular spines	present, single, strong	present,single, strong	**absent**	**absent**	**absent**	present, single, blunt	present, single,weak	present, single	**absent**
Subopercular spine	present, weak	**absent**	**absent**	**absent**	**absent**	**absent**	present, weak	**absent**	**absent**
Maxillary notch (posteriorly)	present, weak	present	present, deep	present, deep		?	present, weak	present	?
Barbel on lower-jaw tip	absent	present or absent	absent	absent	absent	absent	absent	absent	absent
Anterior nostril projections	absent	absent (tube)	absent (tube)	**2 present**	absent (tube)	absent	absent (tube)	absent (tube)	**1 present**
Iris flap	absent	**present**	absent	absent	absent or present	absent	absent	absent or present	**present**
Head length in standard length (SL)	3.9	2.9-3.5	2.4-2.6	2.6	3.6-4.5	3.0	2.6-3.1	2.9-3.7	4.0
Preorbital length in eye diameter	2.6	1.1-1.8	1.25	1.4	0.9-1.6	1.4	1.1-2.0	1.5-2.0	1.3
Distribution	Grand Passage (New Caledonia), SW Pacific Ocean, SW)	E Indian Ocean, W Pacific	Nazca and Sala-y-Gomez Ridges, SE Pacific	S Australia; Sala-y Gomez Ridge (S Pacific)	New Zealand region (SW Pacific)	Thailand to Philippines and Japan	South Africa to Nazca Ridge, Indo-Pacific (NW Pacific)	South Africa to Philippines (Indo-West Pacific)	N Australia E Indian Ocean
Depth range (m)	228-292	77-600	240-345	3-485	15-550	0-50	46-516	18-402	9-22

Description: D VII + ca. xviii (damaged); A ca. i,21,i (damaged); P1 i,15,i (total 17); P2 I,5; C (iii),i,10,i,(iii). Gill rakers 2 + 7. Lateral-line scales 60; scale rows above lateral line, below 6. Predorsal scales 7. Measurements and proportions provided in Table 3 are part of this description.

Body elongate and depressed. Head slightly depressed, head length 258. Eye diameter 129. Preorbital length 50. Interorbital distance 18. Upper jaw length 86. Opercle with a single strong spine, subopercle with a weak spine, preopercle without spines. Body depth 106. Body width 152. Preanus length 446. Caudal peduncle length 93. Caudal peduncle depth 68.

First dorsal fin lower than second, fifth spine longest; length of 1st spine 5, 2nd spine 14, 3rd spine 29, fourth spine 68, fifth spine 81. Predorsal (1) length 344. Second dorsal fin distally slightly convex, rays unbranched. First ray of second dorsal fin 109, fifth ray ca. 113, last ray 32. Predorsal (2) length 459. Anal fin beginning on vertical through 3rd membrane of second dorsal fin. Anal fin rays branched except for the first and the last. First ray of anal fin 34, fifth ray 93, last ray 52. Preanal fin length 514. Pectoral fin long, reaching to base of 3rd anal-fin membrane when adpressed, pectoral-fin length 247. Prepectoral fin length 287. Pelvic fin spine 48, pelvic fin length 183. Prepelvic fin length 244. Caudal fin truncate; caudal fin length 199.

Colour immediately after collection (see Figure 1). Head and body whitish, dorsal parts of head rose, snout yellowish orange, sides of body with faint yellow bars and an elongate dark grey streak. Eye dorsally bluish grey, central and lower parts bright yellow, pupil black. Belly and lower parts of body silvery white. Fins translucent or whitish; upper caudal fin basally with a dark grey blotch in continuation of the grey body streak.

Colour in preservative (after two years of preservation). Head and body yellowish, sides of body with a dark grey streak, upper caudal-fin base with a dark grey blotch; eyes dark grey.

Table 3. *Acanthopsaron striatum* n. sp., MNHN 2024-0429, holotype, 44.2 mm SL: Measurements and proportions

	Measurement (mm)	Proportion (% of SL)
Total length	53.0	-
Standard length (SL)	44.2	-
Head length	11.4	25.8
Body depth	4.7	10.6
Body width	6.7	15.2
Eye diameter (left)	5.7	12.9
Preorbital length	2.2	5.0
Interorbital distance	0.8	1.8
Upper-jaw length	3.8	8.6
Predorsal(1) length	15.2	34.4
Predorsal(2) length	20.3	45.9
Preanal length	22.7	51.4
Preanus length	19.7	44.6
Prepectoral length	12.7	28.7
Prepelvic length	10.8	24.4
Caudal-peduncle length	4.1	9.3
Caudal-peduncle depth	3.0	6.8
Length of first D1 spine	0.2	0.5
Length of second D1 spine	0.6	1.4
Length of third D1 spine	1.3	2.9
Length of fourth D1 spine	3.0	6.8
Length of fifth D1 spine	3.6	8.1
Length of first D2 ray	4.8	10.9
Length of 5th D2 ray	ca. 5.0	ca. 11.3
Length of last D2 ray	1.4	3.2
Length of first A ray	1.5	3.4
Length of fifth A ray	4.1	9.3
Length of last A ray	2.3	5.2
Pectoral-fin length	10.9	24.7
Length of pelvic spine	2.1	4.8
Pelvic-fin length	8.1	18.3
Caudal-fin length	8.8	19.9

Distribution: This new species is known only from the holotype, which was trawled in the southern part of the Grand Passage north of Belep Islands (New Caledonia), at a depth of 277-292 m (Figure 3).
Etymology: From the Latin '*Striatus*' meaning striped or banded, referring to the dark band on the sides of the body. It is an adjective with a neuter ending when in genus *Acanthopsaron*.
Comparison: The new species, in the monotypic genus *Acanthopsaron* n. gen., is compared with other genera above, and in Table 2.

***Pteropsaron* Jordan & Snyder 1902**

Pteropsaron Jordan & Snyder 1902: 470 (type species: *Pteropsaron evolans* Jordan & Snyder 1902; type by original designation, also monotypic; gender: neuter).
Diagnosis: A genus of hemerocoetid fishes with the first dorsal spine present with 3-6 spines, anal-fin rays mostly branched, branched caudal-fin trays 8, scales moderate to large, cycloid, lateral-line scales 33-47, peripheral ctenoid; pelvic fin long, reaching to anus, anal-fin base or even C base when adpressed; snout sub-terminal, upper jaw slightly projecting; maxillary tentacle present or absent; maxillary spine present; maxillary notch present; opercle with a single spine; subopercular spine absent; barbel on lower-jaw tip absent; anterior-nostril projections absent; iris flap present or absent.

***Pteropsaron flavissimum* new species** (Figures 4-5)

Yellow duckbill
Holotype: MNHN 2024-0430, 30.6 mm SL, Southwestern Pacific Ocean, Grand Passage (New Caledonia), southern side, 186 km north-northwest of Koumac, 19º05'S 163º22'E - 19º04'S 163º21'E, 228-239 m depth, sand with boulders, trawl, St. DW5203, Sarah Samadi, RV Alis, Cruise SPANBIOS, 16 July 2021.
Diagnosis: A species of *Pteropsaron* with 6 spines in the first dorsal fin, 18 rays in the second dorsal fin, ca. 22 rays in the anal fin, gill rakers 0 + 8, 46 lateral-line scales, first dorsal fin low, without terminal filaments; anal fin about as high as second dorsal fin, without projecting rays; head length 3.6 in SL, preorbital length 1.7 in eye diameter; pelvic fin extending to fifth anal-fin membrane when adpressed; body colour rose, with wide yellow streak dorsally extending from tip of snout to upper caudal-fin base; first dorsal fin pale, without black markings.

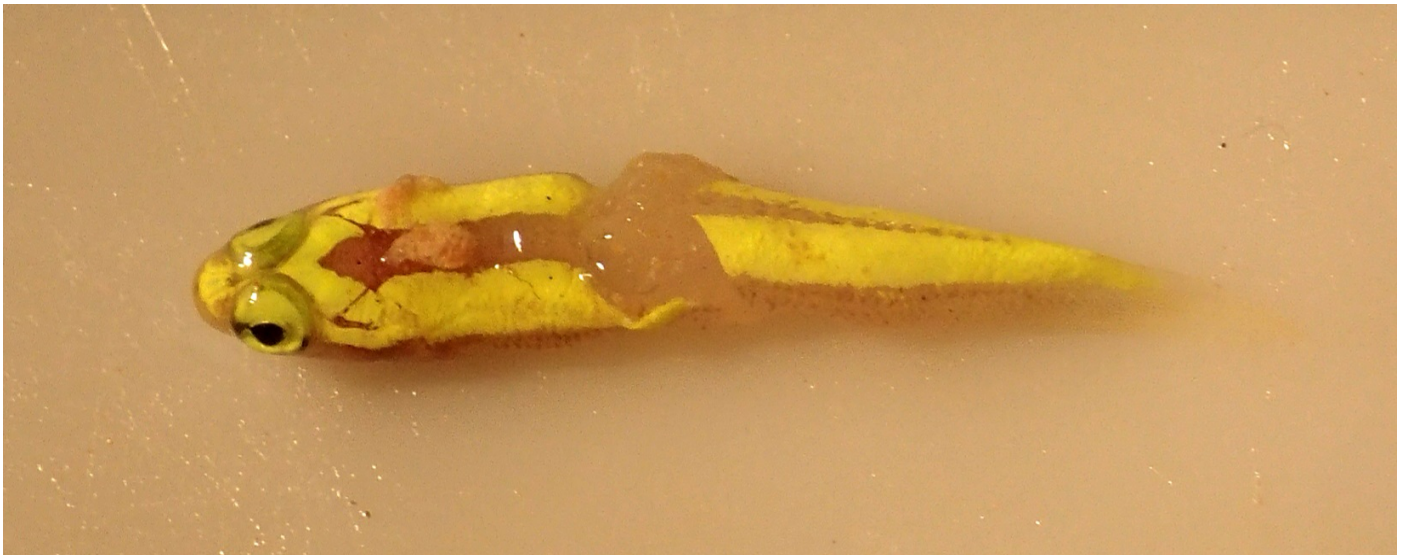

Figure 4. *Pteropsarum flavissimum* n. sp., MNHN 2024-0430, Southwestern Pacific Ocean, Grand Passage (New Caledonia), southern side, 186 km north-northwest of Koumac (holotype, 30.6 mm SL). Lateral view of fresh specimen. (Photograph: Sarah Samadi).

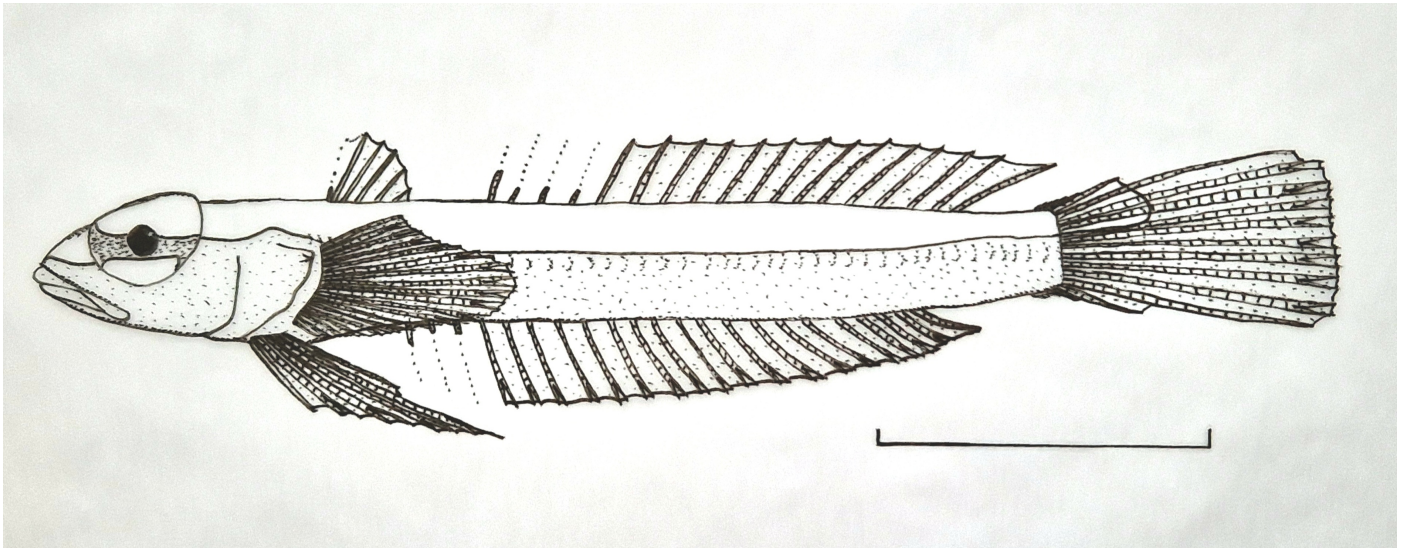

Figure 5. *Pteropsarum flavissimum* n. sp., MNHN 2024-0430, Southwestern Pacific Ocean, Grand Passage (New Caledonia), southern side, 186 km north-northwest of Koumac (holotype, 30.6 mm SL). Lateral view of preserved specimen.

Description: D VI + xviii; A ca. i,20,i; P1 i,17,i (total 19); P2 I,5; C (vi),ii,8,ii,(vi). Gill rakers 0 + 8. Lateral-line scales 46; scale rows above lateral line 5, below 6. Predorsal scales 8. Measurements and proportions provided in Table 4 are part of this description (the holotype was severely damaged dorsally, which may compromise some of the measurements).

Body elongate and depressed. Head slightly depressed, head length 274. Eye diameter 98. Preorbital length 59. Interorbital distance 29. Upper-jaw length 108. Opercle with a single spine, subopercle and preopercle without spines. Body depth 118. Body width 173. Preanus length 415. Caudal-peduncle length 140. Caudal-peduncle depth 82.

First dorsal fin low, second and third spines longest; length of 1st spine 3+, 2nd spine 56, 3rd spine 56, fourth spine 49, fifth spine 36. Predorsal (1) length 284. Second dorsal fin distally straight, rays unbranched. First ray of second dorsal fin 3+, fifth ray 59, last ray 114. Predorsal (2) length 438. Anal fin beginning on vertical just behind last ray of first dorsal fin. Anal fin rays branched except for the first and the last. First ray of anal fin 59, last ray 203. Preanal fin length 353. Pectoral fin long, reaching to base of 5th anal-fin membrane when adpressed, pectoral-fin length 203. Prepectoral fin length 271. Pelvic fin spine 95, pelvic fin length 261. Prepelvic fin length 244. Caudal fin truncate; caudal fin length 245.

Table 4. *Pteropsaron flavissimum* n. sp., MNHN 2024-0430, holotype, 30,6 mm SL: Measurements and proportions

	Measurement (mm)	Proportion (% of SL)
Total length	38.1	-
Standard length (SL)	30.6	-
Head length	8.4	27.4
Body depth	3.6	11.8
Body width	5.3	17.3
Eye diameter (left)	3.0	9.8
Preorbital length	1.8	5.9
Interorbital distance	0.9	2.9
Upper-jaw length	3.3	10.8
Predorsal(1) length	8.7	28.4
Predorsal(2) length	13.4	43.8
Preanal length	10.8	35.3
Preanus length	12.7	41.5
Prepectoral length	8.3	27.1
Prepelvic length	6.6	21.6
Caudal-peduncle length	4.3	14.0
Caudal-peduncle depth	2.5	8.2
Length of first D1 spine	0.1+ (damaged)	0.3+
Length of second D1 spine	1.7	5.6
Length of third D1 spine	1.7	5.6
Length of fourth D1 spine	1.5	4.9
Length of fifth D1 spine	1.1	3.6
Length of first D2 ray	0.6	2.0
Length of 5th D2 ray	0.1+ (damaged)	0.3+
Length of last D2 ray	1.8	5.9
Length of first A ray	3.5	11.4
Length of fifth A ray	0.1+ (damaged)	0.3+
Length of last A ray	1.8	5.9
Pectoral-fin length	6.2	20.3
Length of pelvic spine	2.9	9.5
Pelvic-fin length	8.0	26.1
Caudal-fin length	7.5	24.5

Colour immediately after collection (see Figure 4). Head and body colour rosy-pink, margins of scales on sides of body grey; head and body dorsally bright yellow; yellow zone extending from tip of snout through the dorsal parts of the eyes to the dorsal part of the caudal-fin base, leaving an area between mid-occiput to the middle of the second dorsal-fin base rose. Eye dorsally yellow, narrow central strip grey, lower part yellow, pupil black. Fins translucent.

Colour in preservative (after 2 years of preservation). Head and body whitish, sides of body light grey; head and sides of body dorsally bright yellow, leaving an area from the occiput to the mid-base of the second dorsal fin whitish. Eye dark grey. Fins pale or translucent.

Distribution: This new species is known only from the holotype, which was trawled on the southern side the Grand Passage, north of the Belep Islands (New Caledonia), at a depth of 228-239 m (Figures 3, 6).

Etymology: From the Latin '*Flavissimus*' meaning extremely yellow, referring to the bright yellow dorsal colouration of this species that is still persistent and bright after two years of preservation. It is an adjective with a neuter ending when in genus *Pteropsaron*.

Comparison: Species in the genus *Pteropsaron* are compared in Table 5. *Plteropsaron flavissimus* n. sp. differs from other species by having 6 spines in the first dorsal fin (versus 5 spines in *P. dabfar, P. heemstrai, P. incisum*, 4 or 5 spines in *P. levitoni, P. natalensis*, 4 spines in *P. neocaledonicus*, 3 spines in *P. indicum, P. longipinnis, P. springeri*), second dorsal fin with 18 rays (vs. 14 or 15 rays in *P. neocaledonicus*, 21 or more rays in *P. evolans, P. indicum, P. longipinnis*), anal-fin rays ca. 22 (vs. 25 or more in *P. evolans, P. indicum, P. longipinnis*), 8 gill rakers on lower arch (vs. 10 or more in *P. heemstrai, P. indicum*), lateral-line scales 46 (vs. 40 or less in all other species), pelvic fin etending to 5th anal-fin membrane when laid back (vs. to anus in *P. heemstrai*; to 1st or 2nd anal-fin membrane in *P. evolans, P. indicum, P. levitoni, P. natalensis*; to caudal-fin base in *P. longipinnis*); head length 3.6 in SL (vs. 3.3 or less in *P. evolans, P. heemstrai, P. incisum, P. levitoni, P. longipinnis, P. natalensis, P. neocaledonicus*), preorbital length 1.7 in eye diameter (vs. 1.3 or less in *P. evolans*, *P. heemstrai*, *P. incisum*, *P. longipinnis*, *P. neocaledonicus*; 3.1 in *P. levitoni*), body rosy-pink, dorsally with a wide yellow streak extending from tip of snout to upper caudal-fin base (vs. another colour pattern in the other species); first dorsal fin low (vs. much higher than second dorsal fin in *P. dabfar*, male *P. evolans, P. heemstrai, P. indicum, P. levitoni, P. longipinnis, P. springeri*), first dorsal fin pale, without dark markings (vs. black or with black markings in female *P. evolans*, *P. heemstrai, P. incisum, P. levitoni*, female *P. longipinnis, P. natalensis*, female *P. springeri*), and

anal fin as high as second dorsal fin, none of its rays longer than caudal-fin length (vs. very long, median rays longer than caudal-fin length, in *P. evolans, P. heemstra*i).

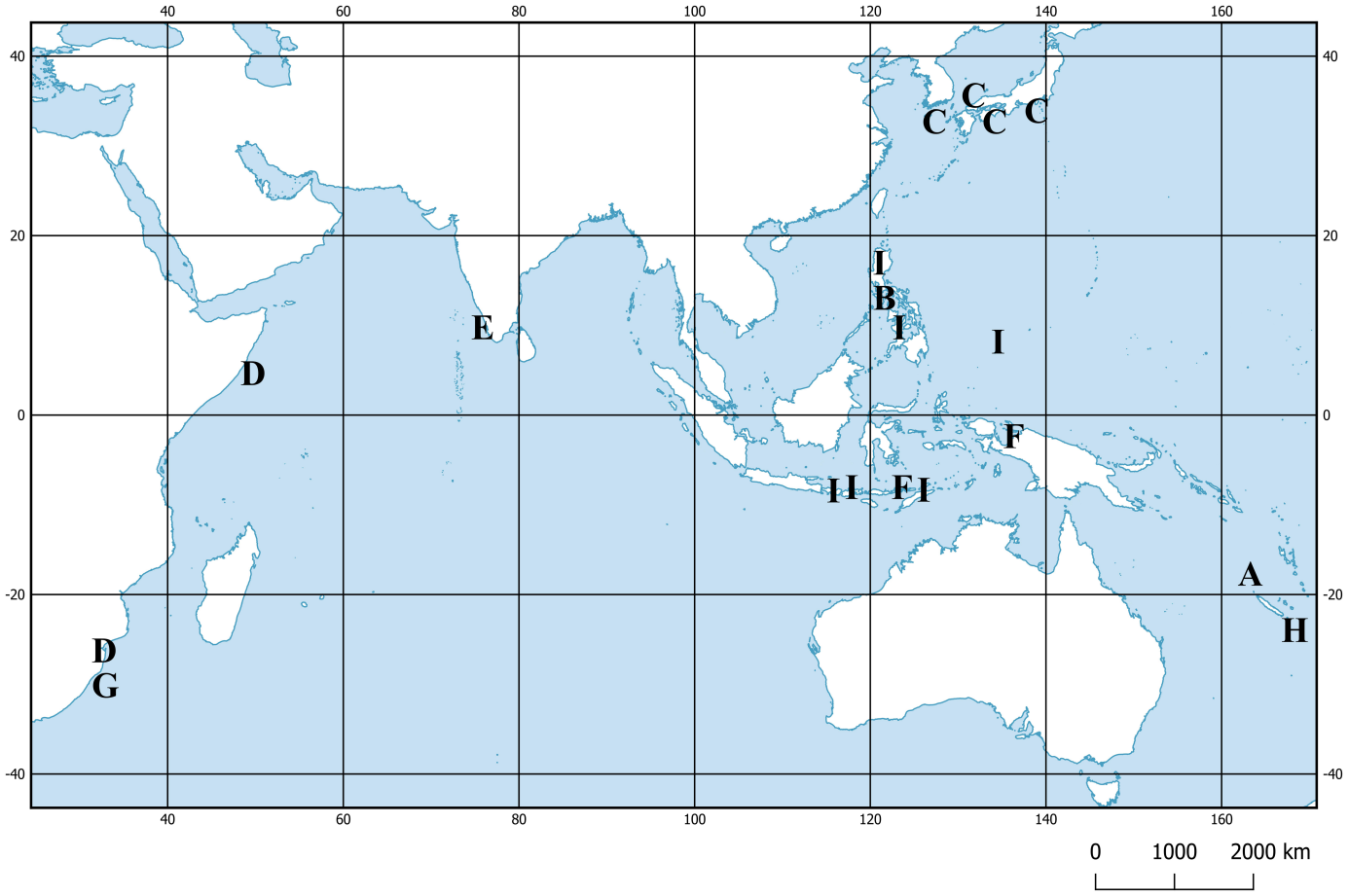

Figure 6. Geographical distribution of species of the genus *Pteropsaron* in the Indo-West Pacific; **A** *Pteropsaron flavissimum* n. sp.; **B** *P. dabfar, P. levitoni*; **C** *P. evolans*; **D** *P. heemstrai*; **E** *P. indicum*; **F** *P. longipinnis*; **G** *P. natalensis*; **H.** *P. neocaledonicus*; **I.** *P. springeri*.

Table 5. Comparison of the species of the genus *Pteropsaron* Jordan & Snyder 1902. Characters differing from *P. flavissimum* n. sp. are printed in **bold face**

	***P. flavissimum* n. sp.**	***P. dabfar***	***P. evolans***	***P. heemstrai***	***P. incisum***	***P. indicum***	***P. levitoni***	***P. longipinnis***	***P. natalensis***	***P. neocaledonicus***	***P. springeri***
D1 spines	VI	**V**	VI	**V**	**V**	**III**	**IV-V**	**III**	**IV-V**	**IV**	**III**
D2 rays	18	20	**21-22**	20-22	18-20	**27**	19-20	**22-23**	19-20	**14-15**	20-23
A	ca. 22	24	**25-27**	24-27	22-23	**29**	24-25	**27**	23-25	23	24-25
P1		19	17-19	19	?	17-18	19	17	18-19	18	17
Gill rakers	0 + 8	0 + 8-10	0 + 9	**0 + 10-11**	?	**2 + 13**	0 + 9-10	?	0 + 9	?	?
Lateral-line scales	46	**33**	**32**	**32-33**	**30**	**40**	**30-32**	**38**	**31-33**	**31**	**36-37**
P2 extending to	5th A membrane	ca. 3rd A membrane	**ca. 2nd A membrane**	**anus**	3rd A membrane	**base of 1st A ray**	**2nd A membrane**	**C base**	**2nd A membrane**	?	**12th A membrane**
Head length in standard length (SL)	3.6	3.4	**3.3**	**2.5-3.1**	**2.9**	3.7	**3.2**	**2.7-3.3**	**3.1**	**2.8**	3.0-4.2
Preorbital length in eye diameter	1.7	1.5	**1.0**	**1.2-1.3**	**1.1**	1.7-1.9	**3.1**	**1.3**	2.0	**1.2-1.3**	1.3-1.4
Body colouration	rose, dorsally bright yellow	**rose, sides w/ 6 yellow blotches**	**pale, w/ 5-7 dusky dorsal bars**	**pale, w/ 6 broad dark dorsal bands**	**pale, side w/row of 4 yellow spots**	**grey, w/ 2 horizontal yellow bars**	**Yellowish, back w/ 3 faint dark**	**pale, back w/ row or brown spots**	**pale**	**rose, sides w/ 3 yellow blotches**	**pale, w/ 2 rows of blue blotches**

	***P. flavissimum* n. sp.**	***P. dabfar***	***P. evolans***	***P. heemstrai***	***P. incisum***	***P. indicum***	***P. levitoni***	***P. longipinnis***	***P. natalensis***	***P. neocaledonicus***	***P. springeri***
D1	low	**high**	**male high,** female low	**high**	low	**high**	**high**	**high**	moderately high	low	**high**
D1 colouration	pale	grey, tip orange	male light, **female black bar**	**black bar**	**black**	pale, basal yellow spot	**black**	male white, **female black**	**black**	pale	male white, **female black**
A rays	normal	normal	**very long** (shorter than C)	**very long** (longer than C)	**very long**	normal	normal	normal	normal	normal	normal
C colouration	pale, upper base bright yellow	**grey, basally orange**	**pale**	**pale**	**pale**	pale, w/ yellow stripe	**pale**	**pale**	**pale**	pale, yellow spot at base	**pale**
Distribution	N of New Caledonia (SW Pacific)	Philippines (W Pacific)	Japan, Korea (NW Pacific)	South Africa, East Africa (W Indian Ocean)	Hawaiian Is. (U.S.A.) (Central Pacific)	SW India (W Indian Ocean)	Philippines, Papua New Guinea (W Pacific)	West Papua, Indonesia (W Pacific)	South Africa (W Indian Ocean)	Grande Terre, Philippines Solomon Is. (E Indian Ocean, W Pacific)	Indonesia, New Caledonia (SW Pacific)
Depth range (m)	228-239	82-86	100-199	75-175	156-402	70	82-86	70-72	100	300	5-86

Key to genera and species of Hemerocoetidae

Remarks: The key to species of *Acanthaphritis* is based on Suzuki & Nabako (1996), that of *Hemerocoetes* on Stewart & Smith (2015).

1a. First dorsal fin absent, only second dorsal fin present 2
1b. First dorsal fin present, with 2-7 spines 8
2a. Maxillary spine absent; maxillary barbel off tip of upper jaw absent; anterior nostril with one projection; iris flap present ..... genus *Squamicreedia* Rendahl 1921; only species: *S. obtusata* Rendahl 1921 (northern Western Australia)
2b. Maxillary spine present; maxillary barbel off tip of upper jaw present; anterior nostril projections absent; iris flap absent (New Zealand region) ..... genus *Hemerocoetes* Valenciennes 1837; 3
3a. Lower jaw projecting beyond upper (juveniles only); maxilla with a fleshy tentacle extending from posterior end ..... *Hemerocoetes morelandi* Nelson 1979
3b. Upper jaw projecting beyond lower; maxilla without a fleshy tentacle 4
4a. Bony interorbital space narrow, 2.0–9.1% of eye diameter; snout length less than or equal to orbit length (equal in larger specimens) 5
4b. Bony interorbital space wide, 10.0–20.0% of eye diameter; snout length greater than or equal to orbit length (equal in larger specimens) 6
5a. Tips of at least some dorsal-fin rays branched ..... *Hemerocoetes macrophthalmus* Regan 1914
5b. Bony interorbital space wide, 10.0–20.0% of eye diameter; snout length greater than or equal to orbit length (equal in larger specimens) ..... *Hemerocoetes artus* Nelson 1979
6a. Anal-fin rays 33-36; mature males with third branched caudal-fin ray elongate; tip of upper lip with a barbel ..... *Hemerocoetes pauciradiatus* Regan 1914
6b. Anal-fin rays 36-42; mature males with second branched caudal-fin ray elongate; tip of upper lip with or without barbel 7
7a. Dorsal iris flap present; mature males without barbel on tip of upper lip; dorsal-fin rays approximately equal in length; body with 7 dorsal saddles ..... *Hemerocoetes monopterygius* Schneider in Bloch & Schneider 1801
7b. Dorsal iris flap absent; mature males with barbel on tip of upper lip; anterior dorsal-fin rays elongate in mature specimens, becoming shorter posteriorly; head pores large with a white rim on a dark background; body with 6 dorsal saddles ..... *Hemerocoetes morelandi* Nelson 1979
8a. Anal-fin rays all unbranched (Nazca and Sala-y-Gomez Ridges, southeastern Pacific) ..... *Dactylopsaron* Parin 1990; only species: *D. dimorphicum* Parin & Belyanina in Parin 1990
8b. Anal-fin rays mostly branched 9
9a. Opercular spine present, sharp 10

9b. Opercular spine absent or blunt 28
10a. Subopercular spine present 11
10b. Subopercular spine absent 14
11a. Pelvic fin not reaching to anus; jaws both terminal, none projecting; scales small, lateral-line scales 60 ..... genus *Acanthopsaron* n. gen.; only species: *A. striatum* n. sp. (northern New Caledonia)
11b. Pelvic fin extending at least to anterior anal-fin base when adpressed; upper jaw slightly projecting beyond lower jaw; scales moderate to large, lateral-line scales 33-47 ..... genus O*sopsaron* Jordan & Starks 1904; 12
12a. Vomerine teeth absent; first dorsal fin with 4 spines (southern Japan) ..... *Osopsaron verecundum* (Jordan & Snyder 1902)
12b. Vomerine teeth present; first dorsal fin with 5 or 6 spines 13
13a. Head length 3.2–3.7 in SL; snout 2.1–2.3 in eye diameter; first dorsal fin high, pale (Taiwan to southern Japan; New Ireland) ..... *Osopsaron formosense* Kao & Shen 1985
13b. Head length 2.6–2.8 in SL; snout 1.3–1.7 in eye diameter; first dorsal fin low, with black spot (Nazca Ridge, southeastern Pacific) ..... *Osopsaron karlik* Parin 1985
14a. Pelvic fin not extending to anus when adpressed ..... genus *Acanthaphritis* Günther 1880; 15
14b. Pelvic fin at least extending to anus when adpressed (sometimes to caudal-fin base) ..... genus *Pteropsaron* Jordan & Snyder 1902; 18
15a. Second dorsal-fin rays 20 or 21; anal-fin rays 24 or 25; lateral-line scales 32-35 16
15b. Second dorsal-fin rays 23-26; anal-fin rays 28-30; lateral-line scales 37-39 17
16a. Maxillary spine sharp, slightly curved upward; second dorsal-fin spine longest (South China Sea to Papua New Guinea) ..... *Acanthaphritis grandisquamis* Günther 1880
16b. Maxillary spine blunt, slightly curved downward; first dorsal-fin spine longest (Myanmar to Japan, Philippines and Papua New Guinea) ..... *Acanthaphritis barbata* (Okamura & Kishida 1963)
17a. Opercle with a spine; maxillary spine sharp, directed forward; barbel on snout tip in males very short (Western Australia, Gilbert Islands/Kiribati) ..... *Acanthaphritis ozawai* (McKay 1971)
17b. Opercle without a spine; maxillary spine blunt, slightly curved downward; barbel on snout tip in males long (Japan and Korea to Philippines and Papua New Guinea) ..... *Acanthapritis unoorum* Suzuki & Nakabo 1996
18a. First dorsal-fin spines 6 19
18b. First dorsal-fin spines 2-5 20
19a. Second-dorsal fin rays 21 or 22; lateral-line scales 32; head and body pale, with 5-6 dusky dorsal bars (Japan and southern Korea) ..... *Pteropsaron evolans* Jordan & Snyder 1902
19b. Second-dorsal fin rays 18; lateral-line scales 46; dorsal parts of head and body bright yellow (off northern New Caledonia) ..... *Pteropsaron flavissimum* n. sp.
20a. First dorsal-fin spines 3 21
20b. First dorsal-fin spines 4 or 5 23
21a. Second dorsal-fin rays 19-23; body and dorsal-fin bases without horizontal yellow streaks; pelvic fins extending to mid of anal-fin base or caudal-fin base when adpressed 22
21b. Second dorsal-fin rays 27; body and dorsal-fin bases with 3 horizontal yellow streaks; pelvic fins extending to beginning of anal-fin base when adpressed (southwestern India) ..... *Pteropsaron indicum* Victor & Kumar 2019
22a. Anal-fin rays 27; pelvic fins extending to caudal-fin base (Cenderawasih Bay, West Papua Indonesia) ..... *Pteropsaron longipinnis* Allen & Erdmann 2012
22b. Anal-fin rays 24 or 25; pelvic fins extending to 12th anal-fin membrane (Indonesia, Philippines and Palau) ..... *Pteropsaron springeri* Smith & Johnson 2007
23a. Dorsal-fin rays 14 or 15 (New Caledonia) ..... *Pteropsaron neocaledonicus* Fourmanoir & Rivaton 1979
23b. Dorsal-fin rays 18-22 24
24a. Pelvic fins extending to anus when adpressed (South Africa and East Africa) ..... *Pteropsaron heemstrai* Nelson 1982
24b. Pelvic fins extending to anal-fin base when adpressed 25
25a. Preorbital length in eye diameter less than 1.6 26
25b. Preorbital length in eye diameter more than 1.9 27

26a. Anal-fin rays 22 or 23; lateral-line scales 30; sides of body with 4 yellow blotches; first dorsal fin low (Hawaiian Islands) ..... *Pteropsaron incisum* Gilbert 1905
26b. Anal-fin rays 24; lateral-line scales 33; sides of body with 6 yellow blotches; first dorsal fin high (Philippines) ..... *Pteropsaron dabfar* Iwamoto 2014
27a. Snout length 5.6–6.9% of SL; interorbital distance 0.9–1.8% of SL; caudal-peduncle depth 6.4–7.1% of SL; first dorsal-fin height 25.8–51.3% of SL (Philippines to Papua New Guinea) ..... *Pteropsaron levitoni* Iwamoto 2014
27b. Snout length 5.2–5.6% of SL; interorbital distance 0.5–0.6% of SL; caudal-peduncle depth 5.9–6.3% of SL; first dorsal-fin height 12.0–22.5% of SL (South Africa and East Africa) ..... *Pteropsaron natalensis* (Nelson 1982)
28a. First dorsal-fin spines 2; second dorsal-fin rays 21; pectoral-fin rays 21; opercular spine absent ..... *Enigmapercis* Whitley 1936; 29
28b. First dorsal-fin spines 3; second dorsal-fin rays 16 or 17; pectoral-fin rays 15; opercular spine present, blunt (Thailand to Philippines and Japan) ..... *Matsubaraea* Taki 1953; only species *M. fusiformis* (Fowler 1943)
29a. Second dorsal fin with 21 rays; dorsal opercular lobe absent (Sala-y-Gomez Ridge, southeastern Pacific) ..... *Enigmapercis acutirostris* Parin 1990
29b. Second dorsal fin with 18 rays; dorsal opercular lobe present (southern Australia) .... *Enigmapercis reducta* Whitley 1936

Discussion

Besides three species of hemerocoetids recorded under the family name Percophidae from New Caledonia (*Acanthaphritis grandisquamis* Günther 1880; *Pteropsaron* sp.; *Pteropsaron neocaledonicus* Fourmanoir & Rivaton 1979) by Fricke et al. (2011: 422), the two new species described herein now brings a total of five species from the region. A total of 29 species in nine genera is now known in the family, and 17% of these inhabit New Caledonia. Both new species have been trawled in deep water on the southern side of the Grand Passage north of the Belep Islands (northern Grande Terre group).

The genera within the family Hemerocoetidae are so far only defined with traditional morphological methods. The rarity of most species, and the small size of the two new species that are each only represented by a single specimen each, prevent the application of molecular analysis for comparison.

The known depth distribution of the two new species (277-292 m, and 228-239 m) well corresponds with that of other species in the genus, which are found on soft bottoms of continental and insular shelves and slopes or on submarine ridges and seamounts, at depths of 0-550 m (see Table 1).

The distribution of fishes on islands and ridges in the southwestern Pacific was analysed by Fricke et al. (2011). They reported a total of 2328 species from New Caledonia, including 1029 fish species from the Loyalty Ridge including the Loyalty Islands. Fricke (2015) and Fricke et al. (2015) provided 22 additional records from the New Caledonian EEZ. Recent cruises provided several additional records and undescribed species, which will be subject of forthcoming publications.

Currently, other endemic species known from the Grande Passage north of New Caledonia include five species, *Parmaturus albipenis* Séret & Last 2007 (Pentanchidae), *Yirrkala insolitus* McCosker 1999 (Ophichthidae), *Coloconger saldanhai* Quéro 2001 (Colocongridae), *Lepidotrigla vaubani* del Cerro & Lloris 1997 (Triglidae), and *Plagiopsetta gracilis* Mihara & Amaoka 2004 (Samaridae). The two new species increase the endemism to seven species. As the region is poorly known, additional endemic species are expected to be found.

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