Two New Hemerocoetine Trichonotidae Fishes (Teleostei, Perciformes) from the Philippines

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The California Academy of Sciences Hearst Philippine Expedition of 2011 included a deep-sea phase aboard the 60-m long Philippine Bureau of Fisheries and Aquatic Resources research ship M/V *DA-BFAR*. Beam trawls, otter trawls, and fish traps were used during this phase to collect in off-shore waters between the islands of Luzon and Mindoro in the Verde Island and Calavite passages, around the Lubang Islands, and out to the continental shelf of the South China Sea. At station HEPD-026 northeast of Lubang Island, a highly successful drag was made with the beam trawl in 82–86 m over a sandy-rocky bottom. Among the many fishes collected were 12 small specimens of trichonotid fishes belonging to an enigmatic group, the "*Pteropsaron*-like" Hemerocoetinae, as defined by Smith and Johnson (2007). One of the collected specimens was identified as *Pteropsaron springeri* Smith and Johnson, 2007. The others could not be readily categorized into a genus because they displayed characters that appeared to bridge the gap between genera. Three of the specimens were brightly colored males of what appear to be representatives of either *Pteropsaron* or *Acanthaphritis* Günther, 1880.

Acanthaphritis Günther, 1880 is represented by four species (Suzuki and Nakabo 1996) and is distinguished from other *Pteropsaron*-like hemerocoetines by having scaled cheeks, short dorsal spines, well-developed maxillary spines, and a fleshy barbel at the tip of the snout. The three brightly colored HEPD specimens have greatly elongated dorsal spines, no scales on cheeks, strong maxillary spines, and a snout barbel. The other eight specimens appear to be most similar to *Pteropsaron natalensis* (Nelson, 1982) in morphometry and meristic values, but their cheeks are scaled, the relative lengths of their dorsal spines and rays are slightly shorter, and the upper jaw extends to below the posterior margin of the pupil (vs. below posterior margin of orbit). Based on the character mix in these newly collected specimens, it is apparent that this distinctive group of Hemerocoetinae is greatly in need of revision. As stated by Smith and Johnson (2007:370), "A definitive solution to the generic placement of these species will require further morphological and phylogenetic analysis." For the purposes of this paper, the two new species are placed in the genus *Pteropsaron*.

Material and methods

Specimens are deposited in the ichthyology collections of the California Academy of Sciences (CAS). In addition to the type specimens of the two new species, the following specimens of other hemerocoetine Trichonotidae were examined for comparison: *Pteropsaron evolans* Jordan and Snyder (CAS 1017158, 2 paratypes, 57.0–59.9 mm SL, Owari Bay, Japan); *P. incisum* Gilbert (CAS 120166, paratype, 30.5 mm SL; Laysan I., Philippines); *Spinapsaron barbatus* Okamura and Kishida (CAS 88795, 3 spec., 81.0–91.2 mm SL; San Bernardino Strait, e. coast Luzon I., Philippines, 382–376 m); *Matsubaraea setouchiensis* Taki ([as recorded in Iwamoto 1980] CAS 32846, 10 spec., 50.8–66.7 mm SL; CAS 34695, 4, 54.4–67.4 SL; Gulf of Thailand; CAS 35531, 3 paratypes, 46.1–55.5 mm SL; Takamatsu Fish Market, Japan).

The reader is referred to Eschmeyer's *Catalog of Fishes* website for complete reference to genera and species names used here: *http://research.calacademy.org/research/ichthyology/catalog/fishcatmain.asp*

Family Trichonotidae
Subfamily Hemerocoetinae

Genus *Pteropsaron* Jordan and Snyder, 1902

Pteropsaron dabfar **Iwamoto sp. nov.**
Figures 1–3, Table 1.

Type specimens.— Holotype: CAS 236400 (33.6 mm SL); Philippines, 13.905833°N, 120.35433°E, between Luzon and Mindoro islands; 45–47 fm (82–86 m) over hard, sandy, rocky bottom; M/V *DA-BFAR*; beam trawl; 2 June 2011; Hearst Philippines Expedition sta. HEPD-026. Paratypes: CAS 236667 (33.0 mm SL, DC-1508, preserved in 95% ethyl alcohol) and CAS 236560 (30.0 mm SL, body damaged, slightly squashed), collected with holotype.

Diagnosis.— D V + 20; A 24; P 17–19; V I,5. Spinous-dorsal-fin spines closely set creating a narrow base, first spine greatly elongated, reaching to middle of caudal fin; dorsal lobe of caudal fin with filamentous tip. Tubed lateral-line scales about 33, their posterior margin narrowly incised or crenulated. A short, curved spine (maxillary spine) at anterior end of each maxilla. Short rostral barbel.

Description of holotype.— (paratype characters in parentheses, if different).— Head cylindrical, slightly depressed, body long and slender, compressed posteriorly (Figs. 1, 2) Snout sharply pointed in lateral view, about ⅔ orbit diameter; barbel short, 0.6 mm long (Fig. 3) at tip of upper jaw (a male character). Orbits large, deeply incised into top of skull, pupil with a prominent aphakic space anteriorly, and a slightly developed pupillary lappet (= dorsal operculum); bony interorbital very narrow, about 1/10 orbit diameter. Upper jaw projecting slightly beyond lower jaw; maxilla extending to below posterior ⅓ of orbit. Maxillary spine (Fig. 3) curved ventrally, 0.4 mm long. Anterior nostril a short raised tube; posterior nostril a simple pore, no cirri or flaps on margin of nostrils. Opercular flap membranous, overlapping entire base of pectoral fin; a narrow bony ridge without protruding spine dorsally on opercle; margins of opercular bones entire. Tongue long, narrow, with spatulate tip. Gill rakers short, broad based, 9 or 10 on lower limb of first arch (8 or 9 in paratypes); pseudobranchs well developed. Branchiostegal rays 7.

Figure 1. Fresh coloration of *Pteropsaron dabfar* sp. nov. CAS 236400 (holotype, 32.6 mm SL); Philippines: between Luzon and Mindoro islands in 82-86 m. (Photograph by T. Iwamoto.)

Scales: Scales cycloid, absent on head except dorsally posterior to orbits. Lateral-line scales about 33 (35); tubed, with posterior margin incised or irregularly crenate, partly to accommodate the raised lateral-line tube midlaterally. Other body scales with entire margins, lacking any projections or serrations.

Fins: First dorsal fin short-based, 5 spinous rays, tightly clustered at base; first three spines elongated, the first spine longest, extending to caudal fin; fin origin about on same vertical as that of pectoral fin and between those of pelvic and anal fins. Second dorsal fin well separated from first, long-based with 20 rays, last split to base, all rays unbranched, none prolonged, longest rays at posterior third of fin, slightly longer than postorbital length of head. Anal fin long-based with 24

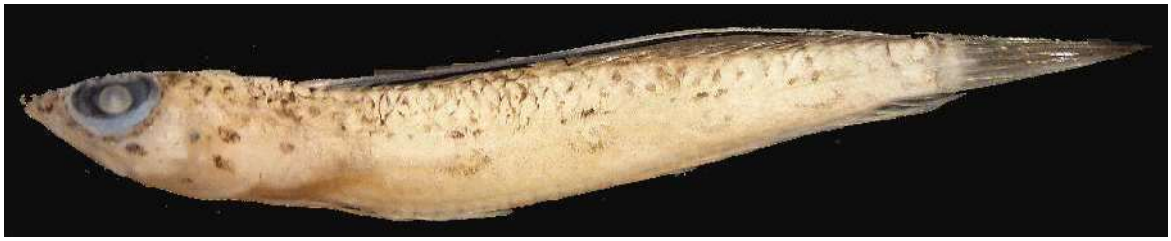

FIGURE 2. *Pteropsaron dabfar* sp. nov. Holotype (CAS 236400) after preservation in alcohol. (Photograph by Alan E. Leviton.)

rays (last split to base), all but first and last ray branched; no elongated rays, height of fin less than that of second dorsal fin. Pectoral fin broad based, rounded; rays 19 (left) and 17 (right) (17 for all fins in paratypes). Pelvic fin thoracic, origin about under preopercle, well anterior to that of pectoral fin, a short fleshy spine and 5 segmented rays, first 4 rays branched, 4th ray longest, its tip extending to between 3rd and 4th anal rays. Caudal fin with 8 branched rays, posterior margin somewhat emarginate, upper rays longer, first branched ray of dorsal lobe filamentous (13 mm long).

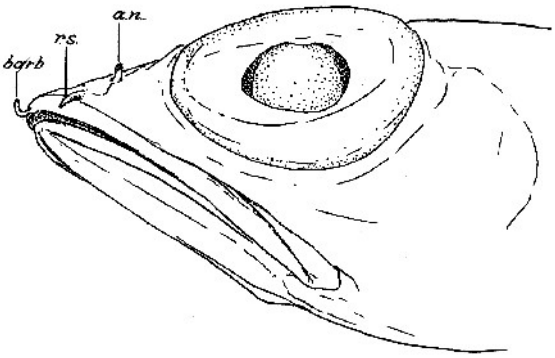

FIGURE 3. *Pteropsaron dabfar* sp. nov. Holotype (CAS 236400) ventrolateral view of snout region to show barbel (barb), anterior nostril (a.n.), and maxillary spine (r.s.).

Dentition: Small conical teeth in 2 or 3 rows in both jaws; inner row of dentary teeth larger than those of outer row(s), retrose anteriorly, highly recumbent and directed inwardly along lateral and posterior parts of jaw. Small patch of teeth on each side of vomer, the two patches broadly separated mesially.

Color in life: Body pale olive with margins of scale pockets on dorsal half irregularly and thinly outlined in black. Small black spots scattered on snout and interorbital and parts of head and dorsal body surfaces. Side of body just below midlateral line with six bright metallic-yellow oval spots, each spot somewhat larger than eye pupil with bright blue streaks or dashes above and below spots. Sides of head marked with bright spots and short dashes of metallic yellow and a dash of bright blue under posterior half of orbit and smaller, fainter spots on preopercle. Elongated first spinous dorsal ray dull chartreuse near base, becoming black along middle of ray, then bright orange distally to tip. Inter-radial membranes of first dorsal fin black. Anal fin more or less chartreuse anteriorly, becoming orange along posterior two-thirds, with tips of rays dark reddish-orange and chartreuse near posterior end of fin. Pectoral fin clear. Second dorsal fin chartreuse on inter-radial membranes, but rays themselves blackish. Caudal fin chartreuse at base of fin, dorsal lobe blackish, distal tip of uppermost branched rays and filamentous tip black; ventral lobe chartreuse at base blending to orange, with distal tips reddish.

ETYMOLOGY.— The new species is named for the research vessel M/V *DA-BFAR* of the Philippine Bureau of Fisheries and Aquatic Resources, Department of Agriculture.

REMARKS AND COMPARISONS.— The generic placement of this beautiful little fish is problematic and symptomatic of the confused state of the generic classification within this hemerocoetine group. The genus *Hemerocoetes* Valenciennes, 1837 has been well characterized by Nelson (1979) and can be eliminated as closely related to the new species based on *Hemerocoetes* lacking a spinous dorsal fin, and having a flap or cirri on the anterior nostril and more rays in the second dorsal and anal fins. The genus *Acanthaphritis*, revised by Suzuki and Nakabo (1996), agrees relatively

well with the new species in having in common a barbel on the snout tip, maxillary spines present, anterior nostril in a raised tube, posterior nostril simple, lateral-line scales with an incised ("serrated") posterior margin, vomerine teeth present, five dorsal-fin spines, and seven branchiostegal rays. *Acanthaphritis* disagrees in having cheek scales and a short spinous dorsal fin, longest spine when depressed not or barely extending to second dorsal fin. Suzuki and Nakabo (1996) synonymized *Spinapsaron* Okamura and Kishida, 1963, and *Branchiopsaron* McKay, 1971, with *Acanthaphritis*. The apparent absence of cheek scales in *Pteropsaron dabfar* may be misleading owing to the thin cycloid scales in this species and the shallow scale pockets on the cheek, which could result in easy loss of scales without subsequent detection of their former presence. The holotype and one paratype, CAS 236667, are, however, in good condition with most body scales intact and scale pockets visible in most places where scales are missing.

TABLE 1. Counts and measurements of type specimens of *Pteropsaron dabfar* sp. nov.

CAS cat. No.	236400	236667	236560
SL (mm)	33.6	33.0	30.0
MEASUREMENTS (%SL)			
HL	32.7	32.1	32.0
Head width	15.2	17	12.3
Orbit diam	9.2	10.3	10.7
Snout len	6	6.7	5.0
Postorbital	16.4	18.2	18.7
Interorb width	0.8	1.5	1.0
Up jaw len	14.6	13.9	14.3
Body depth	14	15.2	–
Pre-D	28.3	29.4	28.3
Pre-2D	45.5	47	–
Pre-A	39.9	40.3	34.3
C ped depth	7.4	7.3	6.7
Ht 1D	83.3	84.8	73.3
Ht A	8.3	12.1	10.7
P len	19.9	19.7	22.0
V len	17.9	21.2	23.3
longest 2D ray	20.8	14.2	12.7
COUNTS			
D	IV+20	V+20	IV+20
A	24	24	24
P	19/17	17/17	17/17
Caudal rays	iv4+4iii	iii4+4ii	iv4+4ii
Lateral line scales	33	35	–
GR lower limb	9 to 10	9	8 or 9

Two other genera that are closely related to *Acanthaphritis* are *Pteropsaron* Jordan and Snyder, 1902 and *Osopsaron* Jordan and Starks, 1904. Nelson (1982) characterized these two genera in his paper describing two new species, *Pteropsaron heemstrai* and *Osopsaron natalensis*. *Pteropsaron dabfar* agrees closely with *P. heemstrai* in general features, including absence of scales on the head, exposed margin of body scales entire (except for those of lateral line, which have short projections or crenulations posteriorly), short rostral spine, and elongated dorsal fin spines. The new species differs in having five, not six, dorsal spines, and the first spine is the longest (vs. fourth spine in *P. heemstrai* and *P. evolans* Jordan and Snyder, 1902 from Japan), tip of pelvic fin reaching past anal-fin origin (vs. not reaching anal fin), no elongated rays in anal fin (vs. middle rays elevated), presence of a pupillary lappet, snout barbel, and filamentous tips in dorsal lobe of caudal fin (all absent in *P. heemstrai* and *P. evolans*). *Pteropsaron dabfar* agrees in most characters with *P. natalensis* (Nelson, 1982), especially in meristic characters and in those features that are not in agreement with *P. heemstrai*, aside from the last two characters listed (snout barbel and filamentous caudal-fin lobe). The shorter, blunter snout, shorter maxillary spines, and the absence of a snout barbel serve to differentiate *P. natalensis* from the new species. There may be other characters (especially fresh coloration) that would allow better differentiating the two

species, but the poor state of the known specimens of *P. natalensis* and the three specimens of *P. dabfar* preclude any statement as such until additional specimens of both species can be compared. *Pteropsaron formosensis* (Kao and Shen, 1985) also agrees in many respects with the new species. The major differences appear to be in the absence in that species of a snout barbel, shorter dorsal spines, and a rounded caudal fin (vs. emarginated with upper lobe elongated). Fresh coloration is also quite different between the two species, most notably with *P. formosensis* having a bright longitudinal yellow stripe along the midbody bordered above and below with blue stripes and a broken yellow stripe dorsolaterally (see Suzuki, Senou, and Nomura 1996: figs. 1–2).

***Pteropsaron levitoni* Iwamoto, sp. nov.**
Figures 4–6, Tables 2, 3.

Type specimens.— Holotype: CAS 236401 (23.7 mm SL); HEPD–026 (data as for *P. dabfar*). Paratypes: CAS 236399 (6, 19.8–27.9 mm SL); same data as for holotype. Non-type specimen: CAS 236402 (1, 24.5 mm SL; cleared and stained); same data as for holotype.

Diagnosis.— D IV-V + 19–20; A 24–25; P 19; V I,5; vertebrae 33 including hypural, gill rakers on lower limb of first arch 9 or 10. Spinous dorsal fin elongated, first spine reaching to middle of second dorsal fin or somewhat beyond. None of soft-dorsal or anal-fin rays elongated. Tubed lateral line scales about 30–32; slightly crenulated or incised above and below lateral-line tube. Short obtuse spine at anterior end of each maxilla scarcely or not protruding through skin; no barbel at tip of upper jaw. Small patch of teeth laterally at tip of vomer, separated mesially by a large gap; palatine teeth absent.

Description.— Body moderately compressed anteriorly over trunk, becoming more compressed towards tail (Figs. 4–6); head cylindrical, slightly depressed, wider than deep. Snout pointed, 0.5–0.6 of orbit diameter. Orbits large, deeply incised into top of skull, pupil with narrow aphakic space anteriorly, and a small pupillary lappet; bony interorbital very narrow, at narrowest point about $\frac{1}{10}^{th}$ of orbit diameter. Upper and lower jaws about equal; maxilla extending to below middle of orbit. Anterior nostril a short raised tube; posterior nostril a simple pore. Opercular flap membranous, overlapping entire base of pectoral fin; two narrow bony ridges dorsally on opercle converging posteriorly in a tiny spine, scarcely if at all piercing skin; posterodorsal margin of opercular bones minutely or scarcely fringed. Tongue narrow with spatulate tip. Gill rakers short, broad based, about 9 or 10 on lower limb of first arch; pseudobranchs well developed. Branchiostegal rays 7.

Figure 4. *Pteropsaron levitoni* sp. nov. CAS 236401 (holotype, 23.7 mm SL); Philippines: between Luzon and Mindoro islands in 82-86 m. (Upper) Lateral view (photograph by Jon D. Fong); (lower) dorsolateral view (photograph by Alan E. Leviton)

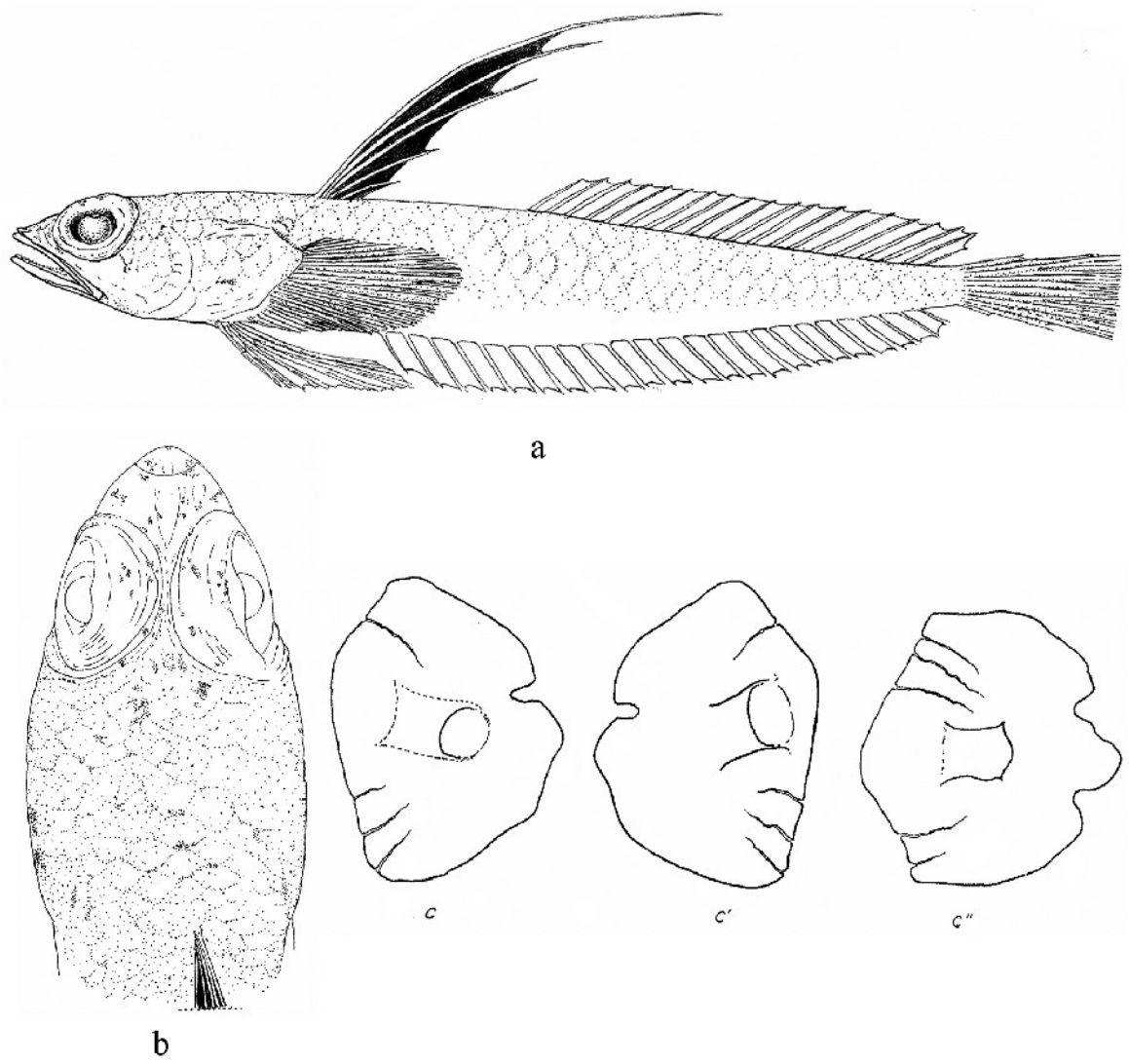

FIGURE 5. *Pteropsaron levitoni* sp. nov. (a) Composite drawing using specimens 1, 3 & 5 (as numbered in Table 2) (scales and fin rays partially reconstructed); (b) dorsal view of head of holotype; (c) lateral-line scales of cleared-and-stained specimen CAS 236402: c — lateral view of scale, anterior to left; c'—medial view of same scale, anterior to right; c" — lateral view of another scale, anterior to left.

Scales: Scales large, cycloid, some large scales dorsally on preopercle and opercle; snout and ventral parts of head lacking scales; scales present on chest and isthmus. Lateral-line scales about 30–32; tubed, with midlateral parts of posterior margin incised or irregularly crenate (Fig. 5). Other body scales with margins entire, lacking any projections or serrations.

Fins: First dorsal fin short-based, 5 spinous rays, tightly clustered at base; first three spines elongated, the first spine longest, extending about to middle of soft dorsal fin; fin origin slightly behind vertical of pectoral-fin origin and between those of pelvic and anal fins. Second dorsal fin well separated from first, long-based with 19–20 rays, last split to base, all rays unbranched, none prolonged. Anal fin long-based with 24–25 rays (last split to base), all but first ray branched; no elongated rays, height of fin less than that of second dorsal fin. Pectoral fin broad based, rounded; with 19 rays. Pelvic fin thoracic, origin about under preopercle, well anterior to that of pectoral fin,

TABLE 2. Counts and measurements of type specimens of *Pteropsaron levitoni* sp. nov.

Spec. number	#1(holotype)	#2	#3	#4	#5	#6	#7 (C&S)*	#8
SL	23.7	21.8	23.2	23.7	27.9	21.5	24.5	19.8
% SL								
HL	38	36.7	37.5	35	33.3	34.9	39.6	35.4
Head width	20.3	21.1	21.1	19	19	19.1	18.4	25.8
Orbit diam	12.7	11.5	11.6	10.5	10.8	11.6	11	11.6
Snout len	0	6.9	6.9	6.3	5.7	6	6.5	5.6
Postorbital	21.5	18.8	19.4	18.1	19	17.7	18	20.2
Interorb width	1.3	1.8	1.7	1.3	1.1	0.9	1.2	1
Up jaw len	16	16.1	15.5	15.2	13.6	18.6	15.1	13.6
Body depth	14.3	15.6	15.1	15.6	13.6	14	15.5	14.1
Pre-D	34.6	34.4	36.6	34.6	33	32.6	32.7	35.4
Pre-2D	54.4	53.2	52.6	52.3	53	48.4	49	50.5
Pre-A	48.5	44.5	43.1	43.9	42.7	42.8	44.5	40.4
C ped depth	6.8	6.4	6.5	6.8	6.8	6.5	6.9	7.1
Ht 1D	49.8	29.8	34.5	32.5	51.3	26.5	35.5	25.8
Ht A	15.2	10.1	9.5	11.4	9.7	11.6	10.2	
P len	22.4	21.1	20.7	21.1	22.2	24.7	21.2	21.2
V len	21.9	19.7	22.4	20.3	21.5	19.5	21.6	20.7
longest 2D ray	13.5	12.8	13.4	13.9	13.6	12.6	12.2	12.1
COUNTS								
D	V+20	V+20	V+20	V+19	IV+20	V+19	V+20	V+20
A	24	24	24	24.5	24.5	25	24	24.5
P	19	19	19	19	19	19	19	19
Caudal rays	iv4+4ii	iv4+4ii	iv4+4ii	iii4+4ii	iii4+4ii	0	0	iii4+4ii
Lateral-line scales	30			31			32	31
GR lower limb	10	9	9	9		9		
* — Cleared & stained								

a short spinous ray and 5 segmented rays, first 4 rays branched, 4th ray longest, extending to 4th anal rays. Caudal fin with 8 branched rays, posterior margin emarginate.

Dentition: Small conical teeth in 2 or 3 rows in both jaws; inner teeth slightly larger than outer teeth. Small band of teeth on each side of vomer, the two bands separated mesially, each band followed by a row of what appears to be papillae.

Color pattern: Live coloration not available. Ventral half of body and head almost entirely pale. About six small clusters of melanophores along lateral midline of body. Some irregular brown blotches on dorsum of head and body. Margins of scale pockets usually marked with brownish pigmentation. Tips of premaxillaries with two dark spots, ventral orbital margin with one small dark

spot; blackish spots or dashes on top of snout and interorbital space, including dorsal aspect of cornea of eye. Dark brownish spots on occipit immediately behind orbits. Mouth and gill cavities pale. First dorsal fin black except pale at immediate base of first spine and distal tip of same. All other fins without pigmentation.

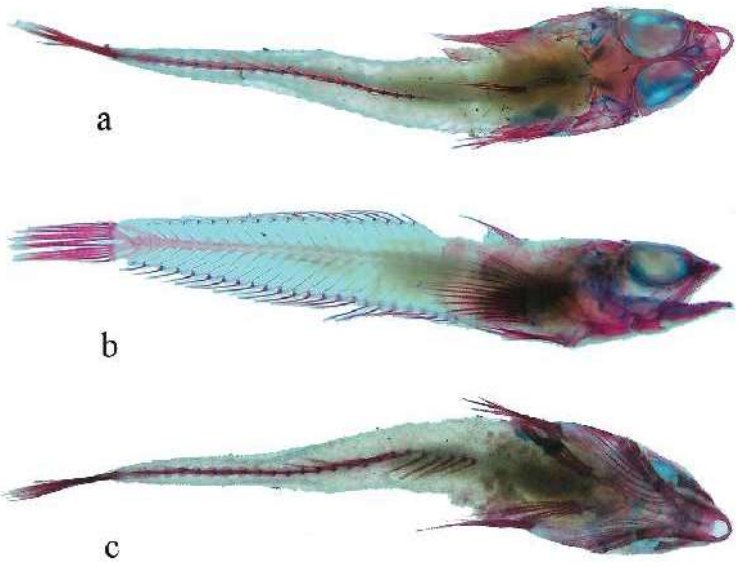

FIGURE 6. *Pteropsaron levitoni* sp. nov. Photographs of cleared-and-stained specimen, CAS 236402 (24.5 mm SL). (a) dorsal view; (b) lateral view); (c) ventral view.

ETYMOLOGY.— It is a pleasure to name this fish after Alan E. Leviton, Curator Emeritus of the California Academy of Sciences, who strongly promoted this Hearst Expedition volume, used his considerable technical knowledge of desk-top publishing to produce this work, and who provided much advice and support with this paper.

REMARKS AND COMPARISONS.— These specimens are closely similar in most characters to *P. natalensis*, with only a few morphometric differences noted in caudal-peduncle depth, and pectoral and pelvic fin lengths (Table 3). The type specimens of *P. natalensis* were not in the best shape: fins were damaged and not fully intact, and no scales or color pattern remained. Three other specimens recorded by Smith and Johnson (2007:374) have provided information on lengths of median-fin rays and expanded the range of counts of second dorsal-fin and anal-fin rays. The HEPD specimens are, in all likelihood, subadults and thus may not display features characterizing mature individuals.

DISCUSSION

The genera of hemerocoetine Trichonotidae have been inadequately defined and a further shuffling of taxa within this group is likely, but it is beyond the scope of this paper to attempt such an undertaking. Nelson (1982:7) recognized a close relationship among the three genera, *Acanthaphritis, Pteropsaron,* and *Osopsaron*, and discussed the relationships of that clade to other percophids. Smith and Johnson (2007) further developed his concept of relationships and removed the Hemerocoetinae and Creediidae from the Percophidae and recognized them as subfamilies in the expanded family Trichonotidae.

That three different species of Hemerocoetinae, two of which are new, were collected in a single haul of a beam trawl in the Philippines makes it appear likely that many more species will be discovered in the Indo-West Pacific with more collecting at appropriate depths and bottom substratum. Because of their small adult size, cylindrical body shape, and probable cryptic sand-dwelling habits, they have avoided capture and are possibly much more abundant and wide-spread than is apparent from museum specimens alone. Current developing efforts in collecting in deeper waters with SCUBA should add markedly to the number of known species in this group.

TABLE 3. Comparison of counts and measurements of species of *Osopsaron* and *Pteropsaron*. Data for *P. natalensis* and *P. heemstrai* from Nelson (1982), with additions to counts of second dorsal and anal-fin rays from Smith and Johnson (2007). Data for other species taken from literature (*P. evolans, P. formosensis, P. incisum*, and *O. verecundum*) or specimens examined.

Genus	*Pteropsaron*						*Osopsaron*
Species	*levitoni*	*natalensis**	*formosensis*	*incisum***	*heemstrai*	*evolans*	*verecundum****
No. of specimens	8	3	20	1	2	2	2?
SL	19.8-34.5	21.4-29.6	35.9-47.8	30.5-52.0	38.3-44.7	57.4-59.3	40.6-00?
	% SL						
HL	33.3-39.6	32.8-36.0	27.2-30.8	34.6-35.0	32.6-34.0	31.5-31.5	32.3
Head width	18.4-25.8	18.9-20.9	13.3-15.4	18	16.4-17.8	15.3-16.5	
Orbit diam	10.5-12.7	10.0-11.4	8.8-11.3	11.0-12.4	10.2-10.3	9.1-9.6	9.2
Snout len	5.6-6.9	5.2-5.6	4.1-4.9	9.0-9.2	7.8-8.5	8.5-10.1	8.5
Postorbital	17.7-21.5	17.7-19.3		16	15.7-15.9	15.7-15.9	
Interorb width	0.9-1.8	0.5-0.6	0.5-0.6	0.7-1.0	1.5	1.7-1.9	
Up jaw len	13.6-18.6	13.0-13.8	10.9-12.3	15.0-15.0	14.0-15.2	13.1-13.8	
Body depth	13.6-15.6	13.4-15.9	11.6-13.6	12.0-17.6	13.2	13.1-13.5	13.9
Pre-D	32.6-36.6	32.5-34.3	25.9-28.6	40.0-41.5	32.5-32.9	30.3-30.9	
Pre-2D	48.4-54.4	47.8-54.2	41.4-46.8	53.9	46.7-47.7	44.1-44.4	
Pre-A	40.4-48.5	38.5-45.8	33.1-38.2	50	45.7-46.6	42.7-42.8	
C ped depth	6.4-7.1	5.9-6.3	4.6-5.7	5.0-5.9	5.2-5.5	5.2-5.6	5.4
Ht 1D	25.8-51.3	12.0-22.5	40.2-54.9		13.4-49.2	51.4-51.4	
Ht A	9.5-15.2	9.6-10.5	7.1-9.5		10.7-34.9	24.4-38.8	
P len	20.7-24.7	19.6-21.9		20	19.1-20.8	21.1	19.2
V len	19.5-22.4	18.9-19.6		27	15.1-17.0	17.4-19.2	23.1
longest 2D ray	12.1-13.9	9.3-12.6	15.2-22.1		11.5-25.7	19.2-50.8	9.2
COUNTS							
D	IV-V+19-20	IV-V+19-20	V+20-22	IV-V+17-19	VI+21-22	VI+20	IV-V+18-19
A	24-25	23-25	24-27	22-23	25	26	22-23
P	19	18-19	18-19	19	19	17-18	18-19
Caudal rays	iii-iv4+4ii	iv4+4ii	8 to 9			ii4+4ii	
Lateral-line scales	30-32		32.35	30-30	32-33	35-36	30-32
GR lower limb	9 to 10	9 to 10	10 to 12	9 to 10	10 to 11	12	

* Smith & Johnson (2007:374) recorded three other specimens, one Somali specimen had 18 D rays and 22 A rays, otherwise counts were similar (no measurements given).

** Data from Gilbert (1905:647) and CAS 120166 (30.6 mm SL)

*** Data from original description and Okamura in Masuda et al (1984:290)

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Literature Cited

Gilbert, Charles H. 1905. The deep-sea fishes of the Hawaiian Islands. Section II, The Aquatic resources of the Hawaiian Islands. *Bulletin of the United States Fish Commission* 23:577–713.

Günther, Albert. 1880. Report on the shore fishes procured during the voyage of H.M.S. Challenger in the years 1873–1876. *Report on the scientific results of the voyage of H.M.S. Challenger, Zoology*, 1(6):1–82, pls. 1–32.

Iwamoto, Tomio. 1980. *Matsubaraea* Taki, a senior synonym of *Cirrinasus* Schultz (Percophididae). *Japanese Journal of Ichthyology* 27(2):111–114.

Jordan, David S., and John O. Snyder. 1902. A review of the trachinoid fishes and their supposed allies found in the waters of Japan. *Proceedings of the United States National Museum* 24(1263):462–497.

Jordan, David S., and Edward C. Starks. 1904. List of fishes dredged by the steamer Albatross off the coast of Japan in the summer of 1900, with descriptions of new species and a review of the Japanese Macrouridae. *Bulletin of the United States Fish Commission* 22:577–630.

Kao, Hsiao-Wei, and Shih-Chieh Shen. 1985. A new percophidid fish, *Osopsaron formosensis* (Percophidae: Hemerocoetinae) from Taiwan. *Journal of the Taiwan Museum* 38(1):175–178.

Masuda, Hajime, Kunio Amaoka, Chuichi Araga, Teruyo Uyeno, and Tetsuo Yoshino, eds. 1984. *The Fishes of the Japanese Archipelago*. Tokai University Press, Tokyo, Japan. Pages 1–437 (text), plates 1–70.

McKay, Roland J. 1971. Two new genera and five new species of percophidid fishes (Pisces: Percophididae) from Western Australia. *Journal of the Royal Society of Western Australia* 54(Pt 2): 40–46.

Nelson, Joseph S. 1979. Revision of the fishes of the New Zealand genus *Hemerocoetes* (Perciformes: Percophididae), with descriptions of two new species. *New Zealand Journal of Zoology* 6:587–599.

Nelson, Joseph S. 1982. *Pteropsaron heemstrai* and *Osopsaron natalensis* (Perciformes: Percophidae), new fish species from South Africa, with comments on *Squamicreedia obtusa* from Australia and on the classification of the subfamily Hemerocoetinae. *J.L.B. Smith Institute of Ichthyology Special Publication* (25):1–11.

Okamura, Osamu, and Shuzo Kishida. 1963. A new genus and species of the bembroid fish collected from the Bungo Channel, Japan. *Bulletin of the Misaki Marine Biological Institute, Kyoto University* 4:43–48.

Parin, Nicholai V. 1985. A new hemerocoetine fish, *Osopsaron karlik* (Percophidae, Trachinoidei) from the Nazca Submarine Ridge. *Japanese Journal of Ichthyology* 3:358–361.

Smith, David G., and G. David Johnson. 2007. A new species of *Pteropsaron* (Teleostei: Trichonotidae: Hemerocoetinae) from the western Pacific, with notes on related species. *Copeia* 2007(2):364–377.

Suzuki, Toshiyuki, and Tetsuji Nakabo. 1996. Revision of the genus *Acanthaphritis* (Percophidae) with the description of a new species. *Ichthyological Research* 43(4):441–454.

SUZUKI, TOSHIYUKI, AND TETSUJI NAKABO. 1997. Notes on the life and fresh colors of *Acanthaphritis unoorum* and *A. barbata* (Percophidae). *I.O.P. Diving News* 8(11):2–4, figs. 1–8

SUZUKI, TOSHIYUKI, HIROSHI SENOU, AND TOMOYUKI NOMURA. 1996. New record of a percophid fish *Osopsaron formosensis* (Perciformes; Percophidae) from Japan. *I.O.P. Diving News* 7(3):2–4, figs. 1–2.

TAKI, I. 1953. On two new species of fishes from the Inland Sea of Japan. J*ournal of Science of Hiroshima University*, B. Div. 1, 14(1):201–210, pl. 1, figs. 1–7.

PLATE 10. Tomio Iwamoto (left) and John McCosker (right) aboard the M/V *DA-BFAR*. Photo by Terrence M. Gosliner.