

## Species of the anglerfish genus *Chaunax* from Indonesia, with descriptions of two new species (Lophiiformes: Chaunacidae)

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**Abstract.** The species of *Chaunax* are reported from the eastern Indian Ocean side of Indonesia based on a recent collection made in 2004 and 2005. Two new species from the genus *Chaunax* are described from Indonesia and the Philippines, both belonging to the *Chaunax abei*-species group. *Chaunax gomoni* sp. nov. is distinguished by its white peritoneum and the following combination of characters: large irregular green spots on dorsal surface when freshly dead, spots turning dark brown when preserved; head length 39.5–40.8% SL; 10 rakers on second gill arch; 11–14 neuromasts in pectoral series and 29–38 in lateral-line proper. *Chaunax brachysomus* sp. nov. is distinguished by its uniform pink body when freshly dead, mixed broad-based and narrow-based spines on its ventral surface, large head and short tail resulting a relatively stout body; 12 or 13 neuromasts in pectoral series and 33 in lateral-line proper; and, 9 rakers on the second gill arch. Three additional species are reported for the first time from Indonesia.

**Key words.** Taxonomy, Teleostei, Pieces, *Chaunax gomoni* sp. nov., *Chaunax brachysomus* sp. nov.

### INTRODUCTION

The family Chaunacidae, also commonly known as sea toads or coffinfishes, is a group of small bottom-dwelling fishes that can be found from 200 m to more than 2000 m deep along the continental slopes of major oceans. The family, comprising two genera and 21 species (Ho et al., 2013; Ho & Last, 2013; this study), is characterised by having a large head, globose body, body entirely covered by small and spiny scales, and lateral-line neuromasts on head and body forming canal networks. The genus *Chaunax* differs from its sister genus *Chaunacops* by having more lateral-line neuromasts, broader space among the dermal spinules, narrower head (intersphenotic width), and usually 1 more fin ray in dorsal and anal fins (Caruso, 1989, Ho & McGrouther, 2015).

In 2004 and 2005, the Overseas Fishery Cooperation Foundation, Japan (OFCF) and the Agency for Marine and Fisheries Research and Development, Republic of Indonesia (AMFRD) conducted the Japan and Indonesia Deep Sea Fishery Resources Joint Exploration Project in the deep waters of eastern Indian Ocean off the islands of

Sumatra and Java. The aim of this joint exploration was to investigate and develop unused deep-sea fishery resources in these areas. Two cruises during 1 September and 30 October 2004 and three cruises during 2 May and 14 August, 2005 were undertaken by the Indonesian research vessel, Baruna Jaya IV. More than 400 fish species were collected from these cruises. Of these, five *Chaunax* species were collected: including *Chaunax apus* Lloyd, 1909, *Chaunax penicillatus* McCulloch, 1915, *Chaunax nebulosus* Ho & Last, 2013 and the two new species described herein.

*Chaunax gomoni* sp. nov. is described from 8 types and 7 non-type specimens collected from Indonesia and the Philippines. *Chaunax brachysomus* sp. nov. is described from a single specimen collected in Indonesia. Both these new species belong to the *Chaunax abei*-species group that is characterised by having mainly 1 or 3 spinules on each side of lateral-line neuromasts, no cirri on supraocular membrane and green spots on body surface, except for some with uniformly pinkish body (Ho & Shao, 2010) but differ from their congeners in colouration, squamation and body proportions. All five species are first records for Indonesia. A key to these species is provided.

### MATERIAL AND METHODS

Abbreviations for standard length (SL) and head length (HL) are used throughout. Methods for taking measurements and counts follow Caruso (1989), as in part modified by Ho et al. (2013). Counts of lateral-line neuromasts also follow Caruso (1989) with the minor modifications of Ho et al. (2013: fig. 1). Gill raker counts were taken on the right side of all specimens with dissection. Rakers on the first gill arch (GR1) were counted on the outer side (upper limb) + inner side

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(lower limb); those on the second (GRii) and third gill arches (GRiii) are paired and were counted on the outer side only; rakers on the fourth gill arch (GRiv) were counted only from the row on the outer side. Type specimens are deposited in the Hokkaido University, Hakodate (HUMZ), Natural History Museum, London (BMNH), National Museum of Natural History, Smithsonian Institution, Washington D.C. (USNM), California Academia of Sciences, San Francisco (CAS), and Museum Zoologicum Bogoriense, Cibinong (MZB).

**TAXONOMY**

**Family Chaunacidae**

**Genus *Chaunax* Lowe, 1846**

Type species: *Chaunax pictus* Lowe, 1846 (by monotypy; type locality: Madeira, NW Africa).

***Chaunax gomoni* sp. nov.**

New English name: Gomon's frogmouth  
(Figs. 1A, B, 2A, B; Tables 1, 2)

**Holotype.** HUMZ 193991 (1, 174), Baruna Jaya IV, st. 21, 8°15.5'S, 110°22.0'E, 8°14.8'S, 110°20.3'E, off Java, Indonesia, eastern Indian Ocean, 290–295 m, 11 May 2005.

**Paratype.** BMNH 1986.9.29.18 (1, 134), S of Java and Bali, Indonesia, E Indian Ocean, coll. P. Whitehead. CAS 34598 (1, 121), E of Dilao Point, Batangas Bay, the Philippines, 294–329 m, 1 August 1966, coll. J.E. Norton. HUMZ 191207 (1, 181), HUMZ 191208 (1, 126), HUMZ 191209 (1, 87), MZB 22712 (formerly HUMZ 191210, 1, 126), Baruna Jaya IV, st. 2, 8°6.17'S, 108°34.5'E, 8°4.22'S, 108°34.0'E, 180–210 m, 6 September 2004. USNM 168256 (1, 138), Albatross, st. 5117, 13°52'22"N, 120°46'22"E, Balayan Bay and Verde Island, 216 m, 21 January 1908 (from dark green mud).

**Non-types.** HUMZ 193631 (1, 68), Baruna Jaya IV, st. 1, 8°4.7'S, 108°24.7'E, 8°4.4'S, 108°23.4'E, off Java, 246–263 m, 4 May 2005. HUMZ 193992 (1, 30), same as holotype. HUMZ 194739 (5, 23–30), Baruna Jaya IV, st. 24, 8°27.2'S, 110°39.3'E, 8°27.0'S, 110°37.6'E, off Java, 353–359 m, 11 May 2005.

**Diagnosis.** A species of the *Chaunax abei*-group with a unique un-pigmented peritoneum and the following combination of characters: irregular green spots on dorsal surface when freshly dead, turning into dark brown when preserved; head length 39.5–40.8% SL; 10 gill rakers on second gill arch; 12 or 13 pectoral fin rays; 29–38 neuromasts on lateral-line proper and 11–14 on pectoral series.

**Description.** Morphometric and meristic data are given in Table 1; the following data is that of the holotype, followed by variations in paratypes, if different, enclosed by parentheses.

Dorsal-fin rays III, 12; pectoral-fin rays 13 (12 or 13); anal-fin rays seven; caudal-fin rays nine. Head length 2.5 in SL;



**A.**



**B.**

Fig. 1. *Chaunax gomoni* sp. nov., holotype, HUMZ 193991, 174 mm SL, fresh colour after freezing. A. lateral view. B. dorsal view. Photo by T. Kawai.



**A.**



**B.**

Fig. 2. *Chaunax gomoni* sp. nov.. A. holotype, HUMZ 193991, 174 mm SL, lateral view, preserved. B. paratype, BMNH 1986.9.29.18, 134 mm SL, dorsal view, preserved. Photo by H.-C. Ho.

head width 6.3 (5.8–6.3) in SL and 2.5 (2.3–2.5) in HL; pre-dorsal length 2.0 (1.9–2.1) in SL; pre-gill-opening length 1.7 (1.6–1.9) in SL; pre-preopercular length 3.9 (3.5–3.9) in SL and 1.6 (1.4–1.6) in HL; upper jaw 5.0 (4.7–5.0) in SL and 2.0 (1.9–2.0) in HL; illicial length 8.9 (6.8–9.8) in HL; eye diameter 5.3 (5.0–6.8) in HL; post-dorsal fin length 5.5 (5.1–6.2) in SL and 2.2 (2.0–2.5) in HL; post-anus length 3.2 (3.0–3.8) in SL and 1.3 (1.2–1.5) in HL; post-anal fin length 5.9 (5.7–6.7) in SL and 2.4 (2.3–2.6) in HL; caudal peduncle depth 4.5 (4.4) in HL; caudal-fin length 3.5 (3.1–3.6) in SL and 1.4 (1.2–1.4) in HL.

Head globular, skull elevated above body posteriorly; trunk and tail robust, weakly compressed, tapering posteriorly

Table 1. Morphometric data of two new species and three *Chaunax* species newly recorded from Indonesia.

	<i>C. gomoni</i> sp. nov.		<i>C. brachysomus</i> sp. nov.	<i>C. nebulosus</i>	<i>C. penicillatus</i>	<i>C. apus</i>
	Holotype	Paratypes	Holotype	HUMZ 191534	HUMZ 194508	HUMZ 194508
SL (mm)	174		177	69	131	212
Proportion (% SL)		Mean (range)				
Head length	40.3	40.1 (38.8–41.8)	44.4	43.4	41.2	37.7
Head width	15.9	17.1 (15.7–20.5)	20.5	22.3	18.7	14.1
Prepreopercular length	25.8	27.3 (25.8–28.4)	30.6	40	30	25.2
Eye diameter	7.5	7.1 (5.8–8.0)	8.6	9.4	8.2	7.6
Illicial length	4.5	5.1 (4.0–6.9)	4.2	4	3.4	3.4
Illicial trough length	7.4	7.2 (5.9–8.8)	7	9.1	4.2	5.1
Pre-illicial length	4.2	4.2 (3.4–5.2)	5.2	6.2	3.4	4.7
Upper jaw	20	21.0 (20.0–22.2)	23.8	22.4	22	19.6
Predorsal length	49.8	49.7 (47.8–52.2)	54.3	53.2	49.7	46.2
Pre-gill opening length	58.7	59.8 (52.5–62.9)	63.6	69.1	62.2	60.4
Post-anus length	31.1	32.0 (30.4–34.8)	24.2	29.8	31.4	30.3
Post-dorsal length	18.1	17.6 (16.0–19.5)	16	14.9	17.8	17.1
Post-anal length	17	15.9 (13.8–17.4)	14.4	15.6	16.1	15.5
Caudal peduncle depth	7.7	8.1 (7.3–8.7)	9.6	9	8.8	6.9
Caudal fin length	28.5	29.9 (27.4–32.2)	28.3	33.5	31.8	25.4

to caudal-fin base; ventral surface of belly flattened; skin thick, loose and flaccid; caudal peduncle short. Eyes rounded, directed laterally; covered by dermal membrane, broadly connected to adjoining skin, forming clear window; interorbital space broad, convex.

Illicium relatively slender, its length less than eye diameter; esca depressed, forming a large central plate bearing many dark brown cirri; second dorsal-fin spine close to illicium, embedded under skin and not detectable externally; third dorsal-fin spine situated at about midpoint of predorsal distance, embedded beneath skin. Illicial trough oval, slightly concave, uniformly narrow, its length about twice its width. Origin of soft dorsal fin slightly behind midpoint of body; pectoral fin emerging laterally near middle of body,

slightly anterior to vertical through gill opening; pelvic fin on breast, well anterior to pectoral fin; anus situated about third-fourths of way along body; anal-fin origin about four-fifths of way along body, tip nearly reaching caudal-fin base when depressed.

Both nostrils anterior to eye; anterior nostril surrounded by fleshy membrane, its posterior part taller than anterior portion; posterior nostril a circular depression; mouth wide, superior, its opening nearly vertical; lower jaw robust, protruding slightly in front of upper jaw; maxilla tapering, narrow dorsally, broadly expanded ventrally; blunt symphyseal spine on symphysis of lower jaw.

Broad transparent membrane on first gill arch; first

Table 2. Meristic data of two new species and three *Chaunax* species newly recorded from Indonesia. Values are provided as right side/left side when different.

	<i>C. gomoni</i> sp. nov.		<i>C. brachysomus</i> sp. nov.	<i>C. nebulosus</i>	<i>C. penicillatus</i>	<i>C. apus</i>
	Holotype	All types	Holotype	HUMZ 194367	HUMZ 191534	HUMZ 194508
Dorsal fin rays	12	12	12	12	12	12
Pectoral fin rays	13	12–13	13	14	12	13
Anal fin rays	7	7	7	7	7	7
Lateral line neuromasts						
AB	12/11	11–12 (mainly 11)	11;	11	10	11
AC	8	8	8	8	8	8
BD	2	2	2	2	2	3
CD	7/6	6–7	6	6	6	6
DG	3	3	4	3	3	3
EF	6	6	6	6	6	6
FG	3	3	3	3	3	3
GH	13	12–14	12–13	11	12	15
BB	6	6	6	6	6	6
BB'	4	4	4	5	5	4
BI	32/35	32–38	33	31	36	37/36
Gill rakes						
GRi	14	13–15	14	14	13	16
GRii	10	10	9	9	10	11
GRiii	10	10–11	10	10	10	12
GRiv	8	7–8 (mainly 8)	7	7	7	8

ceratobranchial well connected to opercular wall and first epibranchial entirely free from it; gill filaments present on second to fourth gill arches, two rows of gill filaments on second and third gill arches, single row of gill filaments on fourth gill arch; filaments on inner rows of third and fourth gill arches about two-thirds length of filaments on other arches; inner surface of fourth gill arch completely connected to body. Single row of 14 (13–14) rakers on first gill arch, four on upper limb and 10 (9–11) on lower limb, 10 rakers on outer row of second arch, 11(10–11) rakers on outer row of third arch, and single row of eight (seven to eight) rakers on fourth arch.

Distance between lateral-line neuromast complex longer than width of the complex; three to four (mainly three) pairs of short spines bridging each neuromast. Lateral-line neuromast counts: supraorbital (AB) 11 on right side/12 on left side (11–12); premaxillary (AC) eight; upper preopercular (BD) two; infraorbital (CD) seven on right side/six on left side (six or seven); lower preopercular (DG) three; mandibular (EF) six; hyomandibular (FG) three; pectoral (GH) 13 (11–14);

anterior lateral-line proper (BB') four; supratemporal (BB) six; and lateral-line proper (BI) 32/35 (19–38), including two to four on caudal-fin base.

Dorsal surface covered by simple, stout spinules, except for eye window, lips, distal fifth of dorsal surface, entire ventral surface of pectoral fin, distal half of dorsal surface, entire ventral surface of pelvic fin, entire anal fin and its base, membranes of dorsal fin, anus, and caudal-fin rays. Narrow band of single row spinules anterior to illicial trough (naked medially in some smaller specimens). Ventral surface covered by slightly shorter, firm spinules (one paratype with scattered spinules centrally on belly). Jaws and body margin along lateral line densely covered with simple, stout cirri; cirri absent from the head, jaws and ventral surface.

**Colouration.** When freshly dead, many irregular large green spots, some more elongate, on rosy background, 5 bars radiating from eye; ventral surface paler. When preserved, spots deep brown; background light greyish to pale. Mouth cavity, gill chamber and peritoneum pale and unpigmented.

**Distribution.** Known from the eastern Indian Ocean off Indonesia and western Pacific Ocean off the Philippines. Found at depth between 180 m and 359 m.

**Etymology.** We are pleased to name this fish after Dr. Martin F. Gomon, Senior Curator of Fishes, Museum Victoria, Melbourne, Australia, for his great contribution to fish taxonomy and for his long-term friendship with the authors.

**Comparison.** *Chaunax gomoni* sp. nov. is the only species found to have un-pigmented peritoneum which readily distinguishes it from all known congeners. It is similar to several species in *C. abei*-group that have spots on dorsal surface, including *C. abei* Le Danois, 1978, *C. endeavouri* Whitley, 1929, *C. breviradius* Le Danois, 1978 and *C. nudiventer* Ho & Shao, 2010. Although most similar to *C. abei* and *C. endeavouris* in having spots of similar size on the dorsal surface, *C. gomoni* sp. nov. can be distinguished from these two species in having only simple spinules covering the body (vs. bifurcate mixed with simple spinules on dorsal surface). Moreover, it can be distinguished from *C. breviradius* in having relatively large spots which become larger and more widely spaced with growth (vs. spots uniformly small and dense spots at all sizes) and relatively stout spinules on the body; and from *C. nudiventer* in having the ventral surface covered by fine spinules (vs. a large naked area on the ventral surface) and relatively few neuromasts in the upper preopercular series (two, vs. three to five), in the pectoral series (11–14, vs. 15–19), and in the pectoral series (29–38, vs. 39–50).

***Chaunax brachysomus* sp. nov.**

New English name: Short-body frogmouth  
(Fig. 3A–C; Tables 1, 2)

**Holotype.** HUMZ 193943 (1, 177), Baruna Jaya IV, st. 67, 2°51.8'N, 95°5.3'E, 2°50.9'N, 95°4.3'E, off Sumatra, 519–581 m, 13 June 2005.

**Diagnosis.** A species of the *Chaunax abei*-group with uniform pink body when fresh, mixture of broad-based and narrow-based spinules on ventral surface and combination of the following characters: pectoral-fin rays 13; large head, head length 44.4% SL and width 20.5% SL; short tail (tail length 1=24.2% SL, tail length 2=16.0% SL and tail length 3=14.4% SL); nine rakers on second gill arch; and 12 or 13 lateral line neuromasts in pectoral series and 33 in lateral-line proper.

**Description.** Morphometric and meristic details are given in Table 1.

Dorsal-fin rays III, 12; pectoral-fin rays 13; anal-fin rays seven; caudal-fin rays nine. Head length 2.3 in SL; head width 4.9 in SL and 2.2 in HL; pre-dorsal length 1.8 in SL; pre-gill-opening length 1.6 in SL; pre-preopercular length 3.3 in SL and 1.5 in HL; upper jaw 4.2 in SL, 1.9 in HL; illicial length 10.4 in HL; eye diameter 5.2 in HL; post-dorsal-fin length 6.3 in SL and 2.8 in HL; post-anus length 4.1 in SL



Fig. 3. *Chaunax brachysomus* sp. nov., holotype, HUMZ 193943, 177 mm SL. A, fresh colour after freezing, lateral view. B, preserved, lateral view. C, ventral surface of abdomen showing squamation (anterior to left). Photo by T. Kawai (A) and H.-C. Ho (B, C).

and 1.8 in HL; post-anal-fin length 6.9 in SL and 3.1 in HL; caudal-peduncle depth 4.6 in HL; caudal-fin length 3.5 in SL and 1.6 in HL.

Head globular, skull elevated above body posteriorly; trunk robust, tail relatively thin, weakly compressed, tapering posteriorly to caudal-fin base; ventral surface of belly flattened; skin thick, loose and flaccid; caudal peduncle short. Eyes rounded, directed laterally; covered by dermal membrane, broadly connected to adjoining skin, forming clear window; interspace between eyes broad and flat.

Illicium relatively slender, its length less than eye diameter; esca depressed, forming a large central plate with many pale cirri, many of these with brown tip; second dorsal-fin spine close to illicium, embedded under skin and not detectable externally; third dorsal-fin spine situated at about midpoint of predorsal distance, embedded beneath skin. Illicial trough oval, slightly concave, posterior half slightly broader than

anterior half, its length about 1.3 times its width. Origin of soft dorsal fin slightly behind middle of body; pectoral fin emerging laterally near middle of body, slightly anterior to vertical through gill opening; pelvic fin on breast, well anterior to pectoral fin; anus situated about three-fourths of way along body; anal-fin origin about four-fifths of way along body, tip nearly reaching caudal-fin base when depressed.

Both nostrils anterior to eye; anterior nostril surrounded by fleshy membrane, its posterior part taller than anterior part; posterior nostril a circular depression; mouth wide, superior, its opening nearly vertical; lower jaw robust, protruding slightly in front of upper jaw; maxilla tapering, narrow dorsally, broadly expanded ventrally; blunt symphyseal spine on symphysis of lower jaw.

Broad transparent membrane on first gill arch; first ceratobranchial well connected to opercular wall, and first epibranchial entirely free of it; gill filaments present on second to fourth gill arches, two rows of gill filaments on second and third gill arches, single row of gill filaments on fourth gill arch; filaments on inner rows of third and fourth gill arches about two-thirds length of filaments on other arches; inner surface of fourth gill arch completely connected to body. Single row of 14 rakers on first gill arch, five on upper limb and nine on lower limb, nine rakers on outer row of second arch, 10 rakers on outer row of third arch, and single row of seven rakers on fourth arch.

Distance between lateral-line neuromast complex slightly longer than width of the complex; three or four (mainly three) pairs of short spines bridging each neuromast. Lateral-line neuromast counts: supraorbital (AB) 11; premaxillary (AC) eight; upper preopercular (BD) two; infraorbital (CD) six; lower preopercular (DG) three; mandibular (EF) six; hyomandibular (FG) three; pectoral (GH) 13 on right side/12 on left side; anterior lateral-line proper (BB') four; supratemporal (BB) six; and lateral-line proper (BI) 33, including three or four on caudal fin.

Dorsal surface covered by simple, moderately slender spinules, except on eye window, lips, distal fifth of dorsal surface and entire ventral surface of pectoral fin, distal half of dorsal surface, entire ventral surface of pelvic fin, entire anal fin and its base, and membranes of dorsal fin, anus, and caudal-fin rays. Dermal spinules mixed with dense narrow-based and scattered broad-based spinules, the last easily seen by the contraction of its colouration without magnification, e.g., more transparent than the rest. (Fig. 2C). Narrow band of 4 irregular rows of spinules in front of illicial trough. Squamation on ventral surface similar to that on dorsal surface, but spinules shorter and mostly straight. Jaw and body margins along lateral line densely covered with simple, stout cirri; cirri absent from head, jaws and ventral surface.

**Colouration.** Uniformly pink when freshly dead; uniformly creamy white when preserved.

**Distribution.** Represented only by the holotype collected from off Sumatra at depth 519–581 m.

**Etymology.** The specific name is combination of two Greek words, *brachys* short and *soma* body, referring to its relatively short and stout body.

**Comparison.** *Chaunax brachysomus* sp. nov. is one of four *Chaunax* species that have a uniformly pink or red colour when fresh and are uniformly pale when preserved, the other three species being *C. russatus*, *C. mulleus* and *C. apus* (long-term preservation may cause loss of colour pattern in other species as well). It can be easily distinguished from the above-mentioned species by its large head, short tail, and few gill rakers (see Table 2 for detailed comparison).

Although *C. nudiventer* was characterised by its large irregular greenish spots (Ho & Shao, 2010), some individuals were found to be uniformly pinkish (Ho, pers. obser.). It differs from *C. brachysomus* sp. nov. in having a large naked area on the ventral surface and relatively more lateral-line neuromasts in the lateral-line proper (39–57, vs. 33 in *C. brachysomus*), upper preopercular series (three to five, vs. two), and pectoral series (15–17, vs. 12 or 13).

The presence of mixed broad- and narrow-based spinules on the dorsal surfaces is common in members of *Chaunax*. These broad-based spinules are usually difficult to see without magnification, except for these pinkish species which have contract colouration among these two forms of spinules (e.g., more transparent, compared to these narrow-based spinules which are creamy white) and are easy to see. Thus far, *C. brachysomus* sp. nov. is the only member with mixed broad- and narrow-based spinules on the ventral surface. All other *Chaunax* species are either naked in this region or have uniformly short spinules.

#### *Chaunax nebulosus* Ho & Last, 2013

(Fig. 4A; Tables 1, 2)

*Chaunax nebulosus* Ho & Last, 2013: 437, figs. 1A, B, 2A–D (type locality: North of Monte Bello Islands, Western Australia, 19°36'S, 115°27'E, depth 245 m).

**Material.** HUMZ 194367 (1, 69), Baruna Jaya IV, st. 126, 5°21.6'N, 94°5.7'E, 5°22.6'N, 94°4.7'E, off Sumatra, 384–426 m, 3 August 2005.

**Remarks.** This species described recently from Western Australia is reported for the first time in Indonesia.

#### *Chaunax penicillatus* McCulloch, 1915

(Fig. 4B; Tables 1, 2)

*Chaunax penicillatus* McCulloch, 1915: 167, pl. 33, fig. 2 (type locality: Cape Everard, Victoria, Australia, depth 160–200 fms [293–366 m]). Ho & Shao, 2010: 53. Ho et al., 2013: 99. Ho & Last, 2013: 444.

**Material.** HUMZ 191534 (1, 131), Baruna Jaya IV, st. 15, 5°46.52'S, 102°41.25'E, 5°46.02'S, 102°39.53'E, off Java, 546–639 m, 26 September 2005. HUMZ 194739 (2, juveniles, 30–35), Baruna Jaya IV, st. 24, 8°27.2'S, 110°39.3'E, 8°27.0'N, 110°37.6'E, off Java, 353–359 m, 12 May 2005.



Fig. 4. A, *Chaunax nebulosus* Ho & Last, 2013, HUMZ 194367, 69 mm SL; B, *Chaunax penicillatus* McCulloch, 1915, HUMZ 191534, 131 mm SL; C, *Chaunax apus* Lloyd, 1909, HUMZ 194508, 212 mm SL. Photo by T. Kawai.

**Remarks.** A widespread species in the Indo-west Pacific Ocean, our specimens represent the first record for Indonesia.

***Chaunax apus* Lloyd, 1909**  
(Fig. 4C; Tables 1, 2)

*Chaunax apus* Lloyd, 1909: 169 (type locality: Bay of Bengal, Myanmar, 530 fms [969 m]. Ho & Last 2013: 444.

**Material.** HUMZ 194508 (1, 212), Baruna Jaya IV, st. 11, 8°7.1'S, 109°50.4'E, 8°6.9'N, 109°48.8'E, off Java, 454–460 m, 7 May 2005. HUMZ 194282 (1, 76), HUMZ 194283 (1, 68), HUMZ 194284 (1, 45), Baruna Jaya IV, st. 30, 8°30.0'S, 110°46.8'E, 8°30.4'N, 110°45.1'E, off Java, 395–400 m, 14 May 2005.

**Remarks.** Our specimens represent the first record for

Indonesia. This is one of the oldest nominal species of *Chaunax*, being the fourth described. Ho & Last (2013) confirmed it to be a valid species and the senior species in the *C. abei*-species group. A redescription of this species is being prepared by the first author.

**Key to species of *Chaunax* in Indonesia**

1. Illicial trough black, deeply concave; illicium short, bearing many stout cirri ..... *C. penicillatus*
- Illicial trough same colour as body, shallow; illicium long, bearing many thin cirri.....2
2. Filamentous cirri present on head; usually more than three spinules bridging the lateral-line neuromast complex; dense greyish-green irregular spots and five large blackish markings on dorsal surface ..... *C. nebulosus*
- No cirri on head; usually three or less spinules bridging the lateral-line neuromast complex; large scattered greenish spots on dorsal surface or uniformly pinkish.....3
3. Greenish spots on dorsal surface; peritoneum white .....  
..... *C. gomoni* sp. nov.
- Dorsal surface uniformly pinkish when fresh, creamy white when preserved; peritoneum black .....4
4. Head small, 37.7% SL; three neuromasts on upper preopercular (BD), more than 15 on pectoral series (GH); 11 or more rakers on second gill arch ..... *C. apus*
- Head large, 44.4% SL; two neuromasts on BD, 12 or 13 on GH; nine rakers on second gill arch.....  
..... *C. brachysomus* sp. nov.

**Comparative material.** *Chaunax abei*: NMHN 1977-48 (81.3), holotype, 34°28'59"N, 136°52'59"E, Toba, Mie, Japan, 180 m, coll. T. Abe. MNHN 1978-3112 (90.9), paratype, same as holotype. AMS I.13499 (1, 102), Tokyo, Japan. CSIRO H.6294-04 (121), Taiwan. *Chaunax breviradius*: MNHN 1977-762 (111.4), holotype, 14°01'01"N, 120°19'59"E, SW Luzon Island, west of Philippines, 182–200 m, 19 March 1976. MNHN 1977-763 (90.6), paratype, 14°01'59"N, 120°18'00"E, 182–187 m, 19 March 1976. MNHN 1977-764 (72.2), paratype, 14°01'59"N, 120°18'00"E, 180–194 m, 19 March 1976. MNHN 1977-765 (3, 28.6-40.0), paratype, 13°49'01"N, 120°01'59"E, 415–510 m, 25 March 1976. MNHN 1977-1100 (27.9), paratype, 14°00'00"N, 120°18'00"E, 189–209 m, 22 March 1976. MNHN 1977-1101 (30.6), paratype, 14°00'00"N, 120°19'01"E, 188–192 m, 22 March 1976. *Chaunax endeavouri*: AMS E.4627 (102), holotype, 39°57'S, 148°20'E, E of Flinders Island, SE Australia, 182 m, 4 December 1913. AMS I.37972-003 (1, 192), 33°35'S, 151°58'E, off Broken Bay, Sydney, SW Australia, 324–329 m, 26 September 1996. AMS I.25808-008 (3, 126-129), 17°59'S, 147°06'E, NE of Hinchinbrook Island, NE Australia, 300–306 m, 11 January 1986. AMS 15976-012 (3, 103-113), 32°50'S, 152°43'E, E of New Castle, SE Australia, 585 m, 7 May 1971. AMS I.25809-006 (2, 104-123), 17°59'S, 147°06'E, NE of Hinchinbrook Island, NE Australia, 300 m, 11 January 1986. *Chaunax penicillatus*: AMS E.5488 (83.0), holotype, 38°10'S, 148°50'E, 60 km southwest of Cape Everard, Victoria, Australia, 365 m, 19 September 1914. AMS I.13605 (1, 54.5), paratype, 37°37'S, 149°55'E, S from Gabo Island, Victoria, Australia, 183–274 m, 16 December 1912.

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