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The Field Guide for Identifications of Fishes of the Emperor Seamount Chain (ESC) Captured by Bottom Fisheries

by

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The Field Guide for Identifications of Fishes of the Emperor Seamount Chain (ESC) Captured by Bottom Fisheries

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Introduction

This field guide is an internal document of NPFC designed to help in the identification of the fishes of the Emperor Seamount Chain (ESC) captured by bottom trawlers. It contains 128 species that were captured through surveys conducted by the Fishery Agency of Japan in 2005–2017. The specimens are deposited in the fish specimen collection of the Japan Fisheries Research and Education Agency (SNFR).

When attempting to identify specimens using this field guide, first refer to the "*List of Pictures*" that shows all the species in this field guide. Species are arranged following the systematic classification of Nelson et al. (2016).

When you find the picture that is similar to your specimen, refer to the "*Annotations of Species*". Species are listed in this section in the same order as in the "*List of Pictures*". Compare your specimen with the "Diagnosis" that summarize the characters useful for identification. "*Counts*" are primarily based on the data provided by references (e.g., Nakabo 2013) because the number of our examined specimens was limited. Following are abbreviations used in "*Counts*": *D*, dorsal-fin rays; *A*, anal-fin rays; *P1*, pectoral-fin rays; *P2*, pelvic-fin rays; *GR*, gill rakers; *LL*, lateral-line scales; *SAL*, scale rows above lateral line (usually between the dorsal-fin origin and the lateral line); *LR*, scales in longitudinal row along lateral line; *vert*, vertebrae. In "*Distribution*", the geographic distribution of the species is summarized based on cited references, and the depth information is primarily based on the collection data of the deposited specimens. If necessary, a "Remarks" section is provided to explain the taxonomic issues and the characters that are especially useful to distinguish closely related species. Terminology of body parts are indicated in **Fig. 1**.

"FAO Code" indicated by three characters below the scientific name of each species is the "3-alpha code" of Garibaldi and Busilacchi (2002).

The specimens supporting the publication of this field guide were provided by the surveys planned and funded by "*Research and assessment program for internationally managed fisheries resources, the Fishery Agency of Japan*", and conducted by the fishing vessels *Shoshin-maru No. 88*, *Tomi-maru No. 58*, *Kaiyo-maru No. 38, Kaiyo-maru No. 51, Yokei-maru No. 5, Oumi-maru*, and *Dairin-maru No. 5*. We appreciate the efforts of Drs. Yanagimoto T., Hayashibara T., Yonezaki S., Okuda T., Nishida K., and Miyamoto M., who promoted the surveys and collected the specimens. We are grateful to Dr. J. W. Orr (University of Washington) for his critical reading and English corrections of the manuscript. We are thankful for the advice of NPFC members Drs. C. Rooper, A. Zavolokin, and D.-Y Moon.

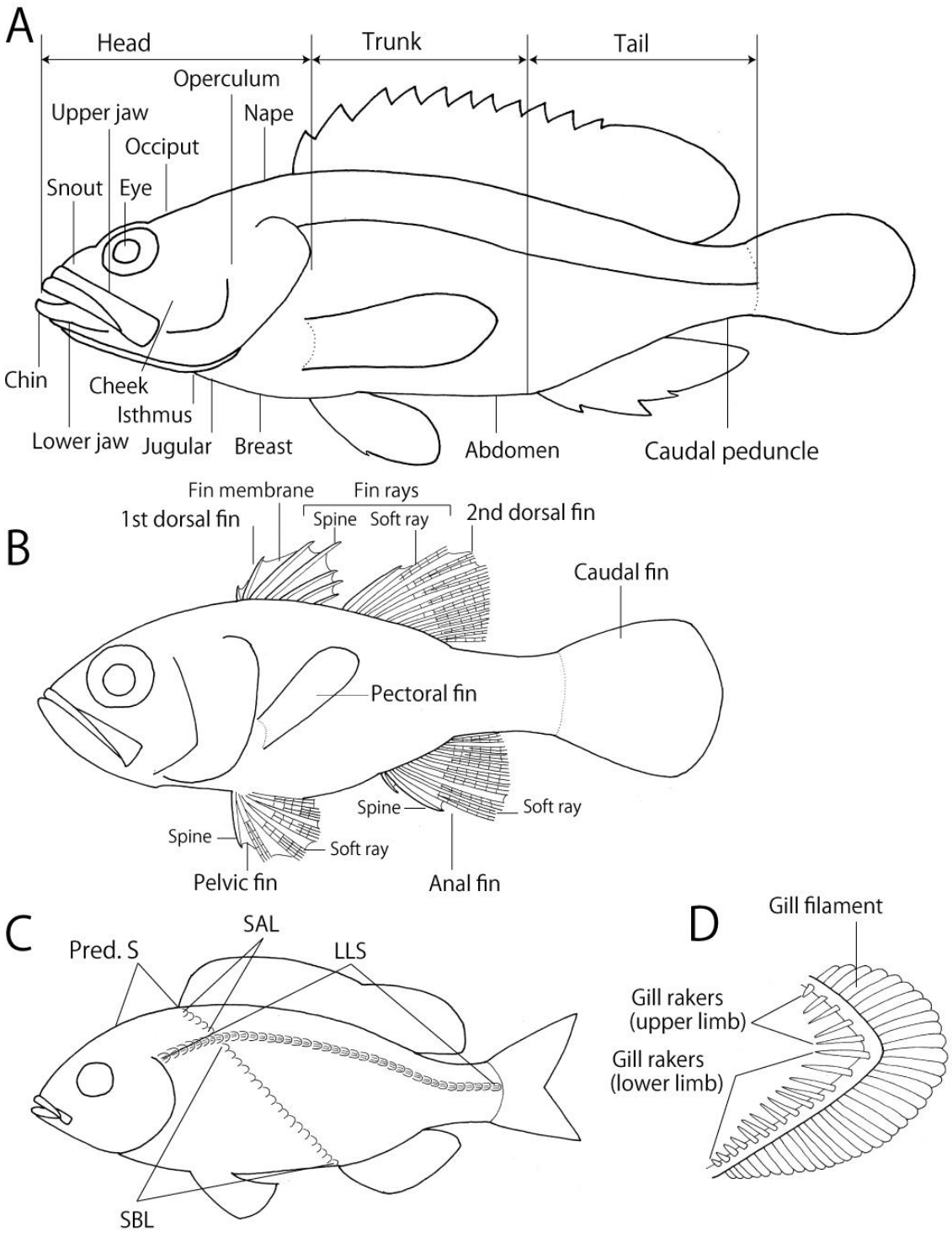

Fig. 1. Terminology of body parts and methods of counts (cited from Matsuura and Hoshino 2016). **A**: terminology of major parts of body; **B**: terminology of fins; **C**: counts of scales; **D**: terminology of gill arch. **LLS**–lateral-line scales; **Pred. S**–predorsal scales; **SAL**–scales above lateral line; **SBL**–scales below lateral line.

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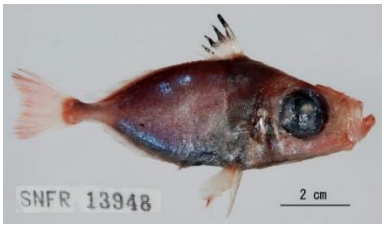

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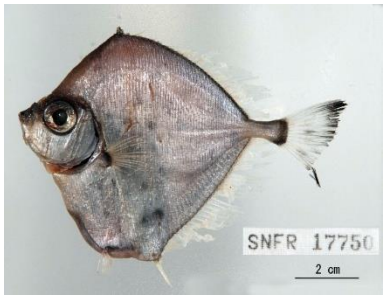

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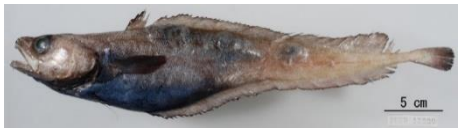

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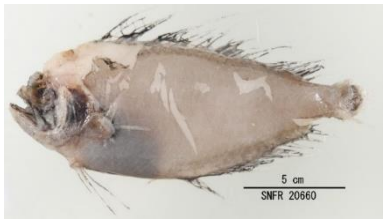

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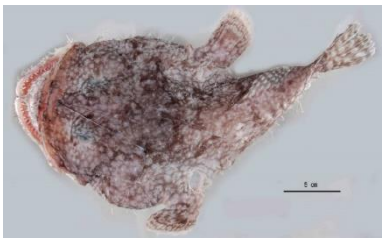

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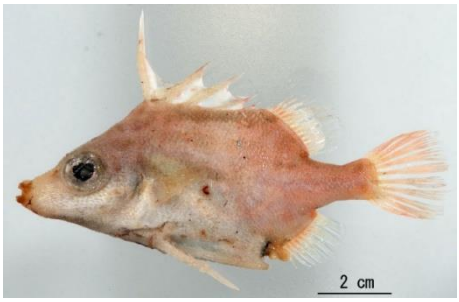

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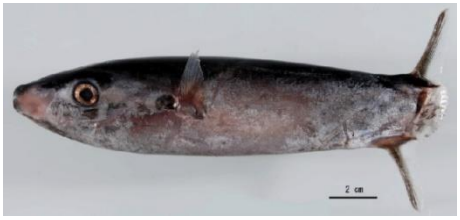

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Annotation of species

1. Chimaeriformes (Chimaeras)

1) *Chimaera owstoni* Tanaka, 1905（Chimaeridae) A kind of chimaera

FAO Code: CMW

Diagnosis: Body high at trunk, tapering at tail. End of tail with a filament. Head large. Mouth inferior. First dorsal fin high, with a long, stout anterior spine. Second dorsal-fin base long. Pectoral fin large, wing-like. Anal fin small. Vermiculated blotches on body side. Attaining 70 cm PAL.
Distribution: Japan and Emperor Seamount Chain. At depths of ca. 280–380 m in the Emperor Seamount Chain (ESC).
Remarks: The genus *Chimaera* can be distinguished from *Hydrolagus* in having an anal fin (vs. lacking in *Hydrolagus*). Vermiculated blotches are unique to this species in the genus of the Northwest Pacific.

2) *Hydrolagus purpurescens* (Gilbert, 1905) (Chimaeridae) Purple chimaera

FAO Code: CHV

Diagnosis: Body weakly compressed, high at trunk, tapered at tail. Head large. Snout somewhat projecting. Mouth small, inferior. Pectoral fin large, wing-like. First dorsal fin with a short, stout anterior spine; posterior margin of spine smooth. Second dorsal fin without a notch at middle, its base long. Anal fin absent. Body uniformly dark purple, without conspicuous blotches. Attaining 80 cm PAL.
Distribution: Western and central North Pacific from Japan to Hawaiian Islands. At depths of ca. 580–760 m in the ESC.

2. Carcharhiniformes (Ground sharks)

3) *Apristurus fedorovi* Dolganov, 1983 (Scyliorhinidae) Deep-water catshark

FAO Code: API (as *Apristurus* spp.)

Diagnosis: Body elongate, slender, somewhat compressed. Snout spatula-like in shape, long, projected. Distance from snout tip to anterior margin of anterior nostril shorter than interorbital width. Length of groove of upper lip subequal to that of lower lip. Two dorsal fins without a spine. Origin of first dorsal fin behind that of pelvic fin. Anal fin present. Dermal denticles minute, elevated, not overlapping, unicuspid. Body uniformly dark brown. Attaining 70 cm TL.
Distribution: Northwest Pacific. Depth at ca. 850 m in the ESC.

3. Hexanchiformes (Frilled and cow sharks)

4) *Chlamydoselachus anguineus* Garman, 1884 (Chlamydoselachidae) Frilled shark

FAO Code: HXC

Diagnosis: Body elongate, cylindrical. Head small. Mouth large, terminal. Teeth on both jaws with three strong cusps. Gill openings six; first continuous across throat. Dorsal fin single, on posterior part of body. Anal fin larger than dorsal fin. Caudal fin long; its upper lobe oriented upward. Body uniformly dark brown to gray. Attaining 2 m TL.
Distribution: Worldwide in deep seas; occasionally shallow. Depths at ca. 780–970 m in the ESC.

4. Squaliformes (Dogfish sharks, etc.)

5) *Squalus mitsukurii* Jordan & Snyder, 1903 (Squalidae) Shortspine spurdog

FAO Code: QUK

Diagnosis: Snout somewhat pointed. Two dorsal fins with a stout spine anteriorly. Origin of first dorsal spine over posterior margin of pectoral fin. Anal fin absent. Caudal-fin margin white but darker at notch. Body gray, lighter ventrally. Attaining 1.3 m TL.
Distribution: Worldwide in temperate and subtropical seas. Depths at 270–430 m in the ESC.
Remarks: Current identification is based on Chen et al. (1979), Last et al. (2007) and White and Iglésias (2011). Recently, Daly-Engel et al. (2018) described *Squalus hawaiiensis* as a new species from the waters of the Hawaiian Archipelago, and Dolganov (2019) described *S. boretzi* from the Emperor Seamount Chain. Further study is needed to determine if the present specimens represent either of these species or not.

6) *Centroscyllium excelsum* Shirai & Nakaya, 1990 (Etmopteridae) Highfin dogfish

FAO Code: YCX (as *Centroscyllium* spp.)

Diagnosis: Snout somewhat long. Eye large. Teeth on both jaws minute, arranged quincuncially, with a prominent central cusp and a pair of short lateral cusps. Two dorsal fins well separated, armed with a spine anteriorly. Anal fin absent. Dermal denticles distributed sparsely, present only on upper surface of head and trunk. Caudal fin large. Body uniformly dark brown. Attaining 64 cm TL.

Distribution: Emperor Seamount Chain. Depths at ca. 410–1,000 m (Shirai and Nakaya 1990; present study).

7) *Etmopterus* sp. (Etmopteridae) Lanternshark

FAO Code: SHL (as *Etmopterus* spp.)

Diagnosis: Snout moderately long. Upper-jaw teeth with a slender central cusp and smaller lateral cusps; lower-jaw teeth with a cusp strongly inclined distally. Two small dorsal fins, well separated, armed with a spine anteriorly. Anal fin absent. Dermal denticles arranged in rows, forming striations on body. Dark flank mark above pelvic fin with an anterior and a posterior branch, anterior one longer. Body uniformly dark. Attaining 40 cm TL.

Distribution: Emperor Seamount Chain. Depths at ca. 340–590 m.

Remarks: Five specimens here originally identified as *E. lucifer* Jordan & Snyder, 1912 differed from the latter in having a shorter anterior branch of the flank mark (9.4–12.4% TL vs. 12.7–14.0%) and a scaleless area on the ventral surface of snout (vs. uniformly scaled) (Ebert et al., 2011, 2017; present study). The present specimens also differ from *E. lailae* Ebert, Papastamatiou, Kajiura & Wetherbee, 2017, described from the Emperor Seamounts, in having more lower-jaw teeth (38–40 vs. 26–28), a shorter first dorsal-fin spine (1.3–1.7% TL vs. 3.0–3.4%) and other characters. These specimens might represent an undescribed species, but further study based on more specimens is needed.

8) *Etmopterus pusillus* (Lowe, 1839) (Etmopteridae) Smooth lanternshark

FAO Code: ETP

Diagnosis: Snout short, round. Upper-jaw teeth with a slender central cusp and smaller lateral cusps; lower-jaw teeth with a cusp strongly inclined distally. Two small dorsal fins, well separated, armed with a spine anteriorly. Anal fin absent. Dermal denticles truncated, irregularly arranged, not

forming striations. Dark flank mark above pelvic fin with an anterior branch but without a posterior one. Body uniformly dark. Attaining 50 cm TL.

Distribution: Pacific coast of Japan, South Pacific Ocean, West Indian Ocean, Atlantic Ocean. Depths at ca. 340–850 m in the ESC.

9) *Dalatias licha* (Bonnaterre, 1788) (Dalatiidae) Kitefin shark

FAO Code: SCK

Diagnosis: Snout short and blunt. Eye small. Trunk robust. Tail somewhat slender. Mouth small, with thick and fringed lips. Dorsal fins two, without spines. First dorsal fin at middle of body. Anal fin absent. Body uniformly dark brown. Attaining 2 m TL.

Distribution: Worldwide, sporadically distributed in the warm-temperate and tropical seas of continental and insular shelves. Depth at ca. 400 m in the ESC.

10) *Euprotomicrus bispinatus* (Quoy & Gaimard, 1824) (Dalatiidae) Pygmy shark

FAO Code: EUP

Diagnosis: Snout moderately long and round. Body cigar-shaped. Mouth inferior. Dorsal fins two, without spines, at posterior part of body. Base of second dorsal fin much longer than that of first dorsal fin. Anal fin absent. Pectoral fin large, white. Caudal fin with large dorsal and smaller ventral lobes, with white margin. Body uniformly dark. A small species, attaining 30 cm TL.

Distribution: Central Pacific, East Pacific, Atlantic, and Indian oceans. Depths below 400 m but occasionally at the surface at night (Compagno and Niem 1998).

11) *Isistius brasiliensis* (Quoy & Gaimard, 1824) (Dalatiidae) Cookie cutter shark

FAO Code: ISB

Diagnosis: Body elongate, cylindrical. Teeth of lower jaw very large, blade-like, interlocked, with a high and broad cusp. Snout short, round. Dorsal fins two, without spines, at posterior part of body. Anal fin absent. Length of second dorsal-fin base short, about equal to that of first dorsal fin. Pelvic fin small, below of middle of first and second dorsal fin. Body uniformly dark brown. A transverse bar in front of pectoral-fin base. A small species, attaining 56 cm TL.

Distribution: Tropical to temperate waters of the world. Depths at ca. 290–620 m in the ESC.

5. Anguilliformes (Eels, morays, congers)

12) *Gymnothorax intesi* (Fourmanoir & Rivaton, 1979) (Muraenidae) A kind of moray eel

FAO Code: AXZ (as *Gymnothorax* spp.)

Diagnosis Body robust anteriorly. Tail cylindrical. Mouth large, not arched. Teeth with serrated edge. Snout short. Gill opening small, at vertically middle of body. Pectoral fin absent. Ground color of body brown, with small white spots or irregular-shaped white blotches. Attaining 1.2 m TL.
Distribution Indo-Pacific. At depth of ca. 280 m in the ESC.

13) *Dysomma anguillare* Barnard, 1923 (Synaphobranchidae) Shortbelly eel

FAO Code: SDA

Diagnosis Body remarkably elongate, somewhat compressed. Eye rudimentary, located above middle of gape. Vomerine teeth large, in one row. Gill openings below pectoral fin and well separated from each other. Pectoral fin small. Anus in anterior part of body, just in front of anal-fin origin. Scales absent. Body blackish. Dorsal and anal fins with white margins. Attaining 52 cm TL.
Distribution Western Pacific from Indonesia to Japan, Taiwan, Hawaii, Emperor Seamount Chain, Indian Ocean, western North Atlantic. At depth of ca. 430 m in the ESC.
Remarks This species resembles *Meadia abyssalis* but differs in having a smaller rudimentary eye located above middle of gape (vs. not rudimentary, located above posterior part of gape).

14) *Meadia abyssalis* (Kamohara, 1938) (Synaphobranchidae) Abyssal cutthroat eel

FAO Code: SMY

Diagnosis Body elongate, somewhat compressed. Eye not rudimentary, above posterior part of gape. Gill openings below base of pectoral fin, well separated from each other. Vomerine teeth large, conical, in two rows. Anus at anterior part of body, just in front of anal-fin origin. Scales absent. Dorsal and anal fin with white margin. Body light brown. Attaining 73 cm TL.
Distribution Southern Japan, West Pacific, South Pacific, Indian Ocean, Emperor Seamount Chain, Hawaiian Islands. At depths of ca. 340–420 m in the ESC.

15) *Gnathophis* sp. (Congridae) A kind of conger eel

FAO Code: COX (as Congridae)

Diagnosis Body elongate. Snout pointed, long. Eye large. Upper jaw projecting beyond lower jaw. Teeth of upper and lower jaws forming bands. Pores of lateral line above pectoral fin opening upward. Body light gray. Dorsal-fin margin dark. Anal fin white (sometimes with weak dark margin). Upper lobe of caudal fin with a dark blotch. Attaining 40 cm TL.
Distribution Emperor Seamount Chain. At depths of ca. 340–430 m in the ESC.
Remarks Although previously identified as *Gnathophis nystromi nystromi* (Iwai 1976), these ESC specimens differ in having a typically uniform white anal fin (vs. anal fin always with a dark margin in *G. n. nystromi*) and 11 pores in the preoperculomandibular canal (POM) (vs. 10). No other congeners agree in these characters with the present species, which thus may represent an undescribed species.

16) *Nettastoma parviceps* Günther, 1877 (Nettastomatidae) Duck-billed eel

FAO Code: N/A

Diagnosis Body remarkably elongate. Tail slender, attenuated posteriorly. Snout and jaw elongate.

Posterior nostril large, circular, located above posterior margin of eye. Gill opening below dorsal-fin origin. Pectoral fin absent. Body light brown. Posterior part of dorsal- and anal-fin margin dark. Attaining 80 cm SL.

Distribution Japan, Hawaiian Islands, Emperor Seamount Chain, East Australia, New Zealand, Southeast Africa. At depths of ca. 350–1,300 m in the ESC.

Remarks This species can be distinguished from *Nettastoma solitarium* by the position of the posterior nostril located above the posterior margin of eye (vs. anterior margin of eye).

17) *Nettastoma solitarium* Castle & Smith, 1981 (Nettastomatidae) Solitary duckbill eel

FAO Code: NNS

Diagnosis Body remarkably elongate. Tail slender, attenuated posteriorly. Snout and jaw elongate. Posterior nostril located above anterior margin of eye. Gill opening below dorsal-fin origin. Pectoral fin absent. Body light brown. Posterior part of dorsal- and anal-fin margins dark. Attaining ca. 75 cm SL.

Distribution Japan, Kyushu-Palau Ridge, Taiwan, Philippine, Australia, Hawaiian Islands, Emperor Seamount Chain, Indian Ocean. At depths of ca. 360–460 m in the ESC.

Remarks This species can be distinguished from *N. parviceps* by the position of the posterior nostril located above the anterior margin of eye (vs. posterior margin of eye).

6. Aulopiformes (Grinners)

18) *Paraulopus filamentosus* (Okamura, 1982) (Paraulopidae) A kind of Cucumber fish

FAO Code: N/A

Counts D 11–12; A 8–10; P1 17–19; P2 9

Diagnosis Body slender, cylindrical. Eye large, its diameter greater than snout length. Mouth oblique. Lower jaw tip slightly projecting beyond upper jaw. Dorsal fin single, its base short; 2–3 soft rays elongate, filament-like. Adipose fin above anal fin. Caudal fin forked. Three to four light brown blotches on side of body. Dorsal and caudal fins with dark margins. Attaining 125 mm SL.

Distribution Kyushu-Palau Ridge, Emperor Seamount Chain. At depths of ca. 280–400 m in the ESC.

19) *Chlorophthalmus imperator* Fujiwara, Wada & Motomura, 2019 (Chlorophthalmidae) A kind of greeneye

FAO Code: GRE (as Chlorophthalmidae)

Counts D 10–11; A 8–9; P1 15–16; P2 9

Diagnosis Body slender, cylindrical. Snout pointed. Eye large, its diameter greater than snout length. Lower-jaw tip projecting beyond upper-jaw tip; lower-jaw teeth exposed at anterior tip with several large thorn-shaped teeth. Dorsal-fin base short; dorsal-fin rays not elongate. Small adipose fin above anal fin. Caudal fin forked. Body generally faint gray, darker anteriorly. Attaining 17 cm SL.

Distribution Emperor Seamount Chain. At depths of 340–480 m in the ESC.

Remarks This species resembles *Chlorophthalmus proridens* Gilbert & Cramer, 1897, known from the Hawaiian Islands, but can be distinguished from the latter by morphometric characters, including smaller head length (23.6–28.8% vs. 30.8–32.2% of SL) and smaller eye diameter (10.0–11.1% vs. 13.1–14.7% of SL).

7. Lampridiformes (Velifers, tube-eyes and ribbonfishes)

20) *Desmodema lorum* Rosenblatt & Butler, 1977 (Trachipteridae) A kind of ribbonfish

FAO Code: TRX (as Trachipteridae)

Counts D 187–215; C 4–7; P1 11–13; P2 9–10

Diagnosis Body and head compressed. Body deep at trunk. Tail elongate and becoming abruptly attenuate behind anus. Snout longer than eye diameter. Dorsal fin originating above opercle, continuous to just in front of caudal fin. Pelvic fins absent in adult (long and fan-like in young). Caudal fin very small, not upturned. Body uniformly silvery. Attaining 1.1 m SL.

Distribution North Pacific (mesopelagic zone).

Remarks Abruptly attenuated body behind the anus and the caudal fin not upturned are diagnostic to the genus *Desmodema* (see Rosenblatt and Butler 1977) and useful to distinguish it from

Trachipterus ishikawae, which has a gently attenuated body with an upturned caudal fin. Because trachipterids are mesopelagic, the captured depth is unclear from our bottom trawl data.

21) *Trachipterus ishikawae* Jordan & Snyder, 1901 (Trachipteridae, Lampridiformes) Slender ribbonfish

FAO Code: TWK

Counts D 164–190; C 8; P1 8–13

Diagnosis Body remarkably compressed, elongate, gradually attenuated. Mouth protrusible. Dorsal fin originating above opercle, continuous to just in front of caudal fin. Anal fin absent. Pelvic fin rudimentary. Caudal fin small, upturned. Body uniformly silvery. Small tubercles along ventral margin of body. Attaining 1.2 m SL.

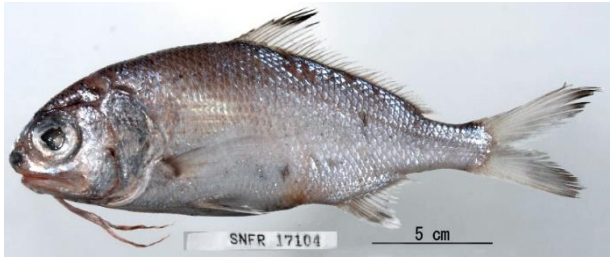
Distribution Japan, Kuril Islands, Hawaiian Islands, Emperor Seamount Chain.

Remarks The captured depth of this mesopelagic species is unclear in bottom trawl data, as for *Desmodema lorum*.

8. Polymixiiformes (Beardfishes)

22) *Polymixia* cf. *berndti* (Polymixiidae) Pacific beardfish?

FAO Code: N/A



Counts D IV–V, 34–36; A IV, 15–16; P1 17–18; GR 13–16; LLS 33; SAL 12–14

Diagnosis Body compressed, oval. Snout round, somewhat projecting beyond upper jaw. A pair of barbels at chin. Pelvic fin, when depressed, reaching a vertical through pectoral-fin tip. Caudal fin deeply forked. Head and body silvery. Dorsal-fin lobe dark at its tip. Tips of upper and lower lobes of caudal fin dark.

Distribution Emperor Seamount Chain. At depths of ca. 320–460 m in the ESC.

Remarks This form agrees with *Polymixia berndti* Gilbert, 1905 in its somewhat projecting snout and relatively low body depth (35–38% of SL) but differs in having higher counts of dorsal-fin soft rays (34–36 vs. 28–32: Kotlyar 1984) and scale rows between the dorsal-fin origin and lateral line (SAL 12–14 vs. 10–13: Kotlyar 1984). The taxonomic identities of the three forms (viz. geographic

variations or distinct species) of the polymixiids herein are not clear, because they differ in morphology from each of the most similar species. The taxonomy of this family needs major revision as indicated by the molecular phylogeny of Borden et al. (2019).

23) *Polymixia* cf. *japonica* (Polymixiidae) Silver eye?

FAO Code: N/A

Counts D V, 33–34; A IV, 14–16; P1 16; GR 11–13; LLS 30–32; SAL 14

Diagnosis Body compressed, oval. Snout round, not projecting beyond upper jaw. A pair of barbels at chin. Pelvic fin, when depressed, reaching a vertical through pectoral-fin tip. Caudal fin deeply forked. Head and body silvery. Anterior part of dorsal fin dark at its tip. Anal fin blackish (but pale in some specimens). Attaining 21 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 340–480 m in the ESC.

Remarks This form agrees with *Polymixia japonica* Günther, 1877 in having a snout not projecting beyond upper jaw, a dark spot on the dorsal fin lobe and each tip of the upper and lower lobes of the caudal fin (not clear in some specimens). However, it differs in having a blackish blotch on the anal fin (pale in some specimens) and fewer lateral line scales (30–32 vs. 34–39: Kotlyar 1984). Further study is needed to establish the taxonomic identity of this form.

24) *Polymixia* cf. *sazonovi* (Polymixiidae) A kind of beardfish

FAO Code: N/A

Counts D V, 34–37; A III–IV, 14–16; P1 17–18; GR 13; LLS 32–34; SAL 12–14

Diagnosis Body compressed, oval. Snout round, not projecting (or very slightly projecting) beyond upper jaw. A pair of barbels at chin. Pelvic fin, when depressed, extending beyond vertical through pectoral-fin tip. Caudal fin deeply forked. Head and body silvery. Tip of dorsal-fin lobe dark. Pelvic and anal fins dark. Tips of upper and lower lobes of caudal fin without dark blotches. Attaining 19 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 340–430 m in the ESC.

Remarks This form agrees with *Polymixia sazonovi* Kotlyar, 1992 originally described from Kyushu Palau Ridge, in the high count of dorsal-fin rays (34–37), blackish anal and pelvic fins, and the pelvic fin extending beyond the vertical through the pectoral-fin tip. It differs, however, in having a dark spot on the dorsal fin lobe (vs. absent: Kotlyar 1993), and higher count of gill rakers (13 vs. 11: Kotlyar, 1993). The identity of this form awaits further taxonomic study.

9. Zeiformes (dories, oreo dories and related groups)

25) *Allocyttus folletti* Myers, 1960 (Oreosomatidae) Oxeye oreo

FAO Code: AHX (as *Allocyttus* spp.)

Counts D VI–VII,30–33; A II–IV,29–32; P1 19–21; P2 I,6

Diagnosis Body oval, compressed, its depth about 50–55% of SL. Caudal peduncle slender, posteriorly deeper. Eye very large. Mouth protrusile. Dorsal- and anal-fin bases long, with a series of enlarged scales with spinules. Pectoral and pelvic fins short. Dorsal-, anal-, and pelvic-fin spines robust, striated. Caudal fin rounded. Body uniformly dark brown. Attaining 50 cm SL.

Distribution North Pacific (off U. S. Pacific coast, Alaska, Japan, Emperor Seamount Chain). At depths of ca. 360–890 m in the ESC.

Remarks The oreosomatid of the western North Pacific was often confused with *Allocyttus verrucosus* (Gilchrist, 1906) of the Southern Hemisphere and North Atlantic, but Hoshino et al. (2022) established its taxonomic identity as *A. folletti*.

26) *Cyttopsis rosea* (Lowe, 1843) (Parazenidae) Red dory

FAO Code: ZCD

Counts D VII–VIII,28–30; A I–II,28–30; P1 13–15; P2 8–10

Diagnosis Body deep, strongly compressed. Head large. Mouth oblique, strongly protrusile. Pectoral fin small. Pelvic fin much longer than pectoral fin, extending beyond anal-fin origin when depressed. Five buckler-like scutes on ventral midline of isthmus and breast forming a partially

discontinuous keel. Body and fins reddish. Pelvic-fin membrane dark. Attaining 15 cm SL.
Distribution West Pacific, Indian, and Atlantic oceans. At depths of ca. 340–360 m in the ESC.
Remarks This species resembles the parazenid *Stethopristes eos* but differs from the latter by having a partially discontinuous keel along the ventral midline (vs. continuous in *S. eos*), in which a few buckler scales are not overlapping (vs. nearly all buckler scales strongly overlapping) (Tyler et al. 2003).

27) *Stethopristes eos* Gilbert, 1905 (Parazenidae)

FAO Code: N/A

Counts D VI–VII,27–28; A I,27–28; P1 13–14; P2 9
Diagnosis Body deep, strongly compressed. Head large. Mouth oblique, strongly protrusile. Pectoral fin small. Pelvic fin much longer than pectoral fin, extending to middle of anal fin when depressed. Nine or ten buckler-like scutes on ventral midline of isthmus and breast strongly overlapping, forming a continuous keel. Body and fins reddish. Pelvic-fin membrane dark. Attaining 22 cm SL.
Distribution Hawaiian Islands, Emperor Seamount Chain, off Chile. At depths of ca. 350–600 m in the ESC.
Remarks See *Cyttopsis rosea* to distinguish from that species.

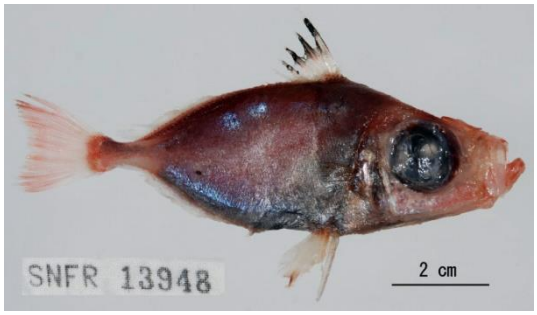
28) *Parazen pacificus* Kamohara, 1935 (Parazenidae) Parazen

FAO Code: PZP

Counts D VI–VIII,26–30; A I,28–34; P1 12–16; P2 7
Diagnosis Body elongated oval, compressed. Snout longer than eye diameter. Mouth large, oblique, protrusile. Pectoral and pelvic fins small, subequal in length. Caudal fin slightly emarginate. Body light reddish. First dorsal-fin margin dark. Attaining 25 cm SL.
Distribution Japan, Kyushu-Palau Ridge, Emperor Seamount Chain, Indian Ocean, Atlantic Ocean. At depths of ca. 330–440 m in the ESC.

29) *Zenion japonicum* Kamohara, 1934 (Zeniontidae) Japanese dory

FAO Code: MZJ



Counts D VI–VII,23–29; A I,23–26; P1 15–17; P2 I,5–6

Diagnosis Body oval, elongate, compressed. Head large. Eye large, its diameter about 1/2 of head length. Preopercle with a large spine at angle. Mouth protrusile, almost vertical when closed. Second spine of dorsal fin elongate, serrated. Pectoral fin small. Pelvic-fin spine strong, serrate. Margin of first dorsal fin dark. Attaining 10 cm SL.

Distribution Japan, Kyushu-Palau Ridge, Australia, Emperor Seamount Chain. At depths of ca. 270–370 m in the ESC.

30) *Grammicolepis brachiusculus* Poey, 1873 (Grammicolepididae) Thorny tinselfish

FAO Code: GMG

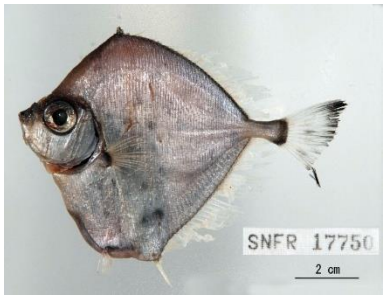
Counts D VI–VII,32–34; A II–III,33–38; P1 14–15; P2 I,6

Diagnosis Body oval, deep, strongly compressed. Head small. Mouth very small, terminal, oblique, somewhat projecting. Dorsal- and anal-fin bases long, with a series of spinules. Pectoral and pelvic fins small. Scales narrow and greatly elongate vertically, forming many vertical striations. Caudal fin large, round. Body silvery with dark blotches. Attaining 32 cm SL.

Distribution West Pacific, Indian and Atlantic oceans. At depths of ca. 350–540 m in the ESC.

31) *Xenolepidichthys dalgleishi* Gilchrist, 1922 (Grammicolepididae) Spotted tinselfish

FAO Code: XED



Counts D IV–VI,27–31; A II,27–29; P1 14; P2 I,6

Diagnosis Body very deep, rhomboid, strongly compressed. Mouth very small, terminal, pointed, oblique. Pectoral and pelvic fins small. Caudal fin triangular, not emarginated. Scales narrow and greatly elongate vertically. Body silvery, with small black blotches sparsely scattered. Posterior half of caudal fin dark, other fins transparent.

Distribution Pacific, Indian and Atlantic oceans. At depths of ca. 340–540 m in the ESC.

32) *Zenopsis nebulosa* (Temminck & Schlegel, 1845) (Zeidae) Mirror dory

FAO Code: XED

Counts D VIII–X,25–27; A III,24–27; P1 11–13

Diagnosis Body deep, strongly compressed. Head with concave dorsal profile. Mouth large, oblique, protrusile. Dorsal-fin spines slender, elongate. Bony plates in a series at bases of dorsal and anal fins. Pelvic fin long, dark. Pectoral fin small. Body silvery, with an indistinct dark spot on middle of body. Attaining 50 cm SL.

Distribution Pacific and Indian oceans. At depths of ca. 290–360 m in the ESC.

10. Gadiformes (Cods)

33) *Bathygadus bowersi* (Gilbert, 1905) (Bathygadidae)

FAO Code: N/A

Counts D1 II,8; P1 17; P2 9

Diagnosis Body elongate, tapering posteriorly. Head very wide and deep, with developed mucous canal. Mouth large, strongly oblique, terminal. Upper jaw extending beyond posterior margin of orbit. Dorsal- and anal-fin bases very long. Second dorsal fin higher than anal fin. Pelvic fin with its outermost ray elongate. Chin barbel absent. Light organ on midventral line absent. Body brown. Visceral cavity dark. Attaining 47 cm TL.

Distribution Hawaii, Emperor Seamount Chain. A depth of 1,000 m in the ESC.

Remarks The family Bathygadidae comprises two genera, *Bathygadus* and *Gadomus*. *Bathygadus* differs from *Gadomus* in a small (or absent) chin barbel (vs. distinct in *Gadomus*) (Iwamoto 1990).

34) *Coelorinchus anisacanthus* Sazonov, 1994 (Macrouridae) A kind of grenadier

FAO Code: CWX (as *Coelorinchus* spp.)

Counts D1 II,7–9; P1 i,16–19; P2 7

Diagnosis Body elongate, tapering posteriorly. Head large, its length about 1/4 of total length. Snout long, acutely pointed, its tip at same level as lower margin of orbit. Suborbital ridge well developed. Mouth small, inferior. Chin barbel short. Ventral surface of snout scaleless. Anterior margin of first dorsal fin smooth. Light organ on midventral line short. Anus close to anal-fin origin. No remarkable patterns on body. Attaining 34 cm TL.

Distribution Emperor Seamount Chain. At depths of ca. 360–760 m in the ESC.

35) *Coelorinchus matsubarai* Okamura, 1982 (Macrouridae) A kind of grenadier

FAO Code: CWX (as *Coelorinchus* spp.)

Counts D1 II,8–9; P1 16–21; P2 7

Diagnosis Body elongate, tapering posteriorly. Snout long, acutely pointed, its scaleless area on the dorsal surface small. Underside of head mostly scaleless. Mouth small, inferior. Suborbital ridge

well developed. Chin barbel short. Anterior margin of first dorsal fin smooth. A dark circular blotch above pectoral fin. Light organ on midventral line long, extending from anus to isthmus. Anus close to anal-fin origin. Attaining 33 cm TL.

Distribution Kyushu-Palau Ridge, Emperor Seamount Chain. At depths of ca. 280–530 m in the ESC.

36) *Coryphaenoides longifilis* Günther, 1877 (Macrouridae) Longfin grenadier

FAO Code: CLY

Counts D1 II,12–14; P1 15–19; P2 9–10

Diagnosis Body elongate, tapering posteriorly. Snout short, bluntly rounded. Suborbital ridge weak. Mouth subterminal, upper jaw extending to posterior 1/3 of orbit or beyond. Chin barbel tiny. Anterior margin of first dorsal fin serrated. Outer pelvic-fin rays remarkably prolonged, longer than head length. Light organ on midventral line absent. Anus close to anal-fin origin. Body uniformly brown, fins darker. Attaining 86 cm TL.

Distribution From Japan to the Bering Sea, Emperor Seamount Chain. At depths of ca. 580–760 m in the ESC.

37) *Malacocephalus boretzi* Sazonov, 1985 (Macrouridae) A kind of softhead grenadier

FAO Code: QKX (as *Malacocephalus* spp.)

Counts D1 II,9–11; P1 17–20; P2 7–8

Diagnosis Body elongate, tapering posteriorly. Tail prolonged. Head small and deep, almost totally covered with scales including gill membrane. Snout short, somewhat pointed. Eye large, its diameter slightly longer than snout. Suborbital ridge weak. Mouth inferior. Small conical teeth in 2–4 rows on both jaws. Chin barbel present. Anterior margin of first dorsal fin not serrated. Pectoral fin slightly shorter than head length. Light organ on midventral line small, located between pelvic-fin bases. Attaining 47 cm TL or larger.

Distribution Emperor Seamount Chain, Hawaiian Islands. At depth of 340 m in the ESC.

38) *Mataeocephalus acipenserinus* (Gilbert & Cramer, 1897) (Macrouridae) Sturgeon grenadier

FAO Code: MLE

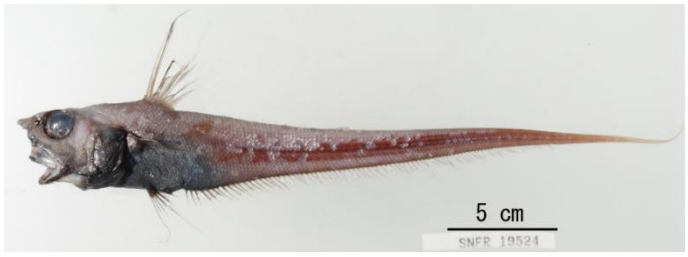
Counts D1 II,8–9; P1 i,20–24; P2 8–9

Diagnosis Body elongate, tapering posteriorly. Snout longer than eye diameter, pointed with a bifid terminal scale at tip. Suborbital ridge well developed. Ventral surface of head almost scaleless. Mouth small, inferior. Chin barbel minute. Anterior margin of first dorsal fin sparsely serrated. Light organ on midventral line short, somewhat extended forward from anus. Anus closer to anal-fin origin than to pelvic-fin base. Body light yellowish, without notable markings. Attaining 30 cm TL.

Distribution Pacific and Indian oceans. At depths of 400–730 m.

39) *Nezumia obliquata* (Gilbert, 1905) (Macrouridae) A kind of grenadier

FAO Code: QMX (as *Nezumia* spp.)



Counts D1 II,9–11; P1 20–22; P2 11–13; SAL 8–9 (between second dorsal-fin origin and lateral line)

Diagnosis Body elongate, tapering posteriorly. Snout short, pointed, with a projection at its tip. Suborbital ridge well developed. Mouth inferior. Ventral surface of snout and gill membrane scaleless. Chin barbel long, its length about 1/2 of eye diameter or longer. Anterior margin of first dorsal fin roughly serrated. Pectoral fin long, extending much beyond anal-fin origin. Outermost ray of pelvic fin prolonged. Light organ on midventral line small, located between pelvic-fin bases. Attaining 33 cm TL.

Distribution Emperor Seamount Chain, Hawaiian Islands. At depth of ca. 800 m in the ESC.

40) *Nezumia spinosa* (Gilbert & Hubbs, 1916) (Macrouridae) A kind of grenadier

FAO Code: QMX (as *Nezumia* spp.)

Counts D1 II,8–12; P1 19–23; P2 8–9; SAL 9 (between second dorsal-fin origin and lateral line)
Diagnosis Body elongate, tapering posteriorly. Snout pointed with a projection at its tip. Suborbital ridge well developed. Mouth small, inferior. Chin barbel short. Ventral surface of snout and upper jaw scaleless. Second spine of first dorsal fin longer than head length, its anterior margin serrated. Pelvic-fin rays 8–9. Light organ on midventral line between pelvic fin bases. Anus distant from anal-fin origin. Scales with dense spines. Body brown. Visceral cavity dark. Attaining 35 cm TL.
Distribution Japan, Philippines, Emperor Seamount Chain, Australia, New Caledonia, West Indian Ocean. At depths of 580–630 m in the ESC.

41) *Nezumia tinro* Sazonov, 1985 (Macrouridae) A kind of grenadier

FAO Code: QMX (as *Nezumia* spp.)

Counts D1 II,9–11; P1 i,16–23; P2 11–13; SAL 9.5–11 (between second dorsal-fin origin and lateral line)
Diagnosis Body elongate, tapering posteriorly. Tail very long and narrow. Head deep. Snout short, with its tip projecting. Eye large, its diameter about 1/3 of head length. Suborbital ridge well developed. Mouth small. Chin barbel very short. Second spine of first dorsal fin forming strongly and sparsely serrated anterior margin of fin, as long as head length. Outermost pelvic-fin ray thread-like, elongate. Light organ on midventral line located slightly posterior to pelvic-fin origin. Anus distant from anal-fin origin, much closer to pelvic-fin base. Body uniformly brown, but visceral cavity dark. Attaining 36 cm TL or larger.
Distribution Emperor Seamount Chain, Hawaiian Islands. At depth of ca. 850 m in the ESC.

42) *Gadella jordani* (Böhlke & Mead, 1951) (Moridae) Jordan's cod

FAO Code: MOR (as Moridae)

Counts D 7–9+67–74; A 65–75; P1 20–26; P2 6
Diagnosis Body elongate, compressed. Snout round. Mouth large; upper jaw posteriorly reaching vertical through posterior end of eye. Chin barbel absent. First dorsal-fin rays not elongate. Second dorsal and anal fins with long bases, anal-fin origin below second dorsal-fin origin. Outer two rays of pelvic fin elongate. A dark spot-like light organ on midventral line, its position closer to anus

than to pelvic-fin base. Attaining 28 cm SL.

Distribution South Japan, Kyushu-Palau Ridge, Emperor Seamount Chain, South Pacific, Indian Ocean. At depths of 290–320 m in the ESC.

Remarks The absence of a chin barbel distinguishes the genus *Gadella* from *Physiculus*, in which the chin barbel is present (Paulin 1989). *Gadella molokaiensis* Paulin, 1989 is distinguished from *G. jordani* by the characters including a larger head (25.3–29.1% vs. 20.8–24.0% of SL) and a larger orbit diameter (5.1–5.8% vs. 4.2–5.1% of SL), but the examined specimens (189.3–296.9 mm SL) show intermediate values (HL: 23.3–25.8% of SL; orbit diameter: 4.5–5.2% of SL). Mundy (2005) also noted that *Gadella* specimens from the Hancock Seamount were intermediate in character states. We provisionally regard *G. molokaiensis* as a junior synonym of *G. jordani*, following the suggestion of Sazonov and Shcherbachev (2000), who pointed out that the former was indistinct from the latter.

43) *Halargyreus johnsonii* Günther, 1862 (Moridae) Slender codling

FAO Code: MHJ

Counts D 6–9+47–60; A 39–53; P1 14–20; P2 5–6

Diagnosis Body elongate, compressed. Snout length subequal to eye diameter. Mouth large. Lower jaw somewhat projecting beyond upper-jaw tip. Chin barbel absent. First dorsal-fin rays not greatly elongate. Anal fin concave at middle, its origin much behind a vertical through second dorsal-fin origin. Pelvic fin without elongate rays. Light organ on midventral line absent. Body brown, fins darker. Attaining 50 cm SL.

Distribution Japan, Emperor Seamount Chain, South Pacific, Atlantic Ocean. At depth of ca. 850 m in the ESC.

44) *Laemonema filodorsale* Okamura, 1982 (Moridae) A kind of codling

FAO Code: MOR (as Moridae)

Counts D 4–5+52–56; A 49–52; P1 28–30; P2 2; SAL 17–19 (between middle of 1st dorsal-fin base and lateral line)

Diagnosis Body deep, compressed. Head rather large. A chin barbel present. Anal-fin origin behind a vertical through second dorsal-fin origin. Pelvic fin with two elongate rays, not reaching anal-fin

origin. Ventral light organ absent. Snout scaled dorsally. Body reddish brown, fins dark brown. Attaining 29 cm SL.

Distribution Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 400–460 m in the ESC.

Remarks The pelvic fin with two elongate rays and the absence of the ventral light organ are diagnostic to the genus *Laemonema*. Meléndez and Markle (1997) tentatively treated *L. filodorsale* as a junior synonym of *L. robustum* Johnson 1862, essentially because meristic characters of the two forms agreed. However, they did not discuss other characters used by Okamura (1982) to separate the two species, including a scaled snout in *L. filodorsale* (vs. scaleless in *L. robustum*), more scale rows between the middle of the first dorsal-fin base and lateral line (17–19 vs. 13), and the pelvic-fin tip falling short of the anal-fin origin (vs. reaching 4th anal-fin ray). Accordingly, *L. filodorsale* is herein treated as valid.

45) *Laemonema longipes* Schmidt, 1938 (Moridae) Longfin codling

FAO Code: LMG

Counts D 5–6+49–53; A 45–51; P1 15–18; P2 2

Diagnosis Body elongate, compressed. Head small, its length about 22% of SL. Lower jaw slightly projecting beyond upper jaw. Chin barbel absent. First dorsal fin without an elongate filament. Anal-fin origin slightly behind a vertical through second dorsal-fin origin. Pelvic fin with two elongate rays, extending beyond anal-fin origin when depressed. Ventral light organ absent. Body light brown. Attaining 50 cm SL.

Distribution North Pacific. At depths of ca. 300–370 m in the ESC.

46) *Laemonema rhodochir* Gilbert, 1905 (Moridae) A kind of codling

FAO Code: MOR (as Moridae)

Counts D 5+61–65; A 57–62; P1 22–23; P2 2.

Diagnosis Body elongate, compressed. Head small, its length about 25% of SL. Chin barbel present. Origin of anal fin behind a vertical through second dorsal-fin origin. Pelvic fin with two elongate rays, reaching anal-fin origin. Light organ on midventral line absent. Body light brown, fins darker. Attaining 19 cm SL.

Distribution Kyushu-Palau Ridge, Hawaii, Emperor Seamounts, Sala-y-Gomez Ridge. At depths of

ca. 350–620 m in the ESC.

Remarks Okamura (1982) described *Laemonema palauense* based on the specimens from Kyushu-Palau Ridge, but Parin (1985) considered that *L. palauense* as a junior synonym of *L. rhodochir*.

47) *Lepidion inosimae* (Günther, 1887) (Moridae) A kind of *Lepidion* codling

FAO Code: LEV (as *Lepidion* spp.)

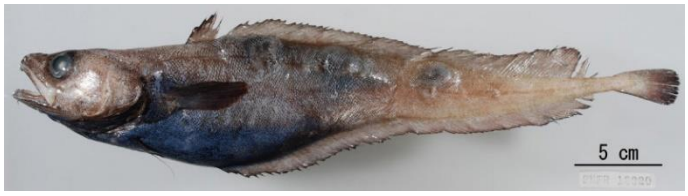
Counts D 5–6+55–62; A 49–55; P1 21–23; P2 7.

Diagnosis Body elongate, compressed. Head large, its length about 25% of SL. Chin barbel short. Second ray of first dorsal-fin greatly elongate and filamentous (first ray very short and hidden in skin). Anal fin with concave margin. Outer pelvic-fin rays elongate extending to or close to anus when depressed. Light organ on midventral line absent. Body grayish brown. Pectoral and caudal fins mostly (except pale basally), and margins of dorsal and anal fins dark brown. Attaining 1 m SL.

Distribution Japan, Hawaiian Islands, Emperor Seamount Chain, South Pacific. At depths of ca. 590–850 m in the ESC.

48) *Physiculus cynodon* Sazonov, 1986 (Moridae) A kind of codling

FAO Code: PQO (as *Physiculus* spp.)



Counts D 9–10+70–79; A 78–85; P1 24–25; P2 6–7

Diagnosis Body elongate, deep at trunk. Head length about 25% of SL. Teeth of outer row large canine on both jaws. Chin barbel present. Origin of anal-fin below origin of second dorsal fin. Outermost ray of pelvic fin elongate, not reaching anus. Dark spot-like light organ on midventral line, somewhat closer to anus than to pelvic-fin base. Scales very fine, about 200 in longitudinal series. Attaining 36 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 350–530 m in the ESC.

49) *Physiculus rhodopinnis* Okamura, 1982 (Moridae) A kind of codling

FAO Code: PQO (as *Physiculus* spp.)

Counts D 6–9+69–76; A 70–80; P1 21–24; P2 5.

Diagnosis Body deep at trunk. Chin barbel present. Fin rays of first dorsal fin not elongate. Origin of anal-fin below origin of second dorsal fin. Outermost ray of pelvic fin elongate, not reaching anal-fin origin. Light organ on midventral line closer to pelvic-fin base than to anus. Body reddish brown, fins deep red. Attaining 21 cm SL.

Distribution Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain, Palau Islands, New Caledonia, Mozambique. At depth of ca. 450 m in the ESC.

11. Trachichthyiformes (Roughies)

50) *Anoplogaster cornuta* (Valenciennes, 1833) (Anoplogastridae) Common fangtooth

FAO Code: AGW

Counts D 17–18; A 7–8; P1 14–15; P2 7

Diagnosis Body deep, compressed. Head large, its length about 1/3 of SL. Snout obtuse. Eye small. Mouth very large, oblique. Upper jaw extending posteriorly beyond eye. Both jaws with fangs. Fins without spines. Anal-fin base much shorter than dorsal-fin base. Scales small, with spinules, not overlapping. Body uniformly dark. Attaining 9 cm SL.

Distribution Temperate zone of Pacific, Indian and Atlantic oceans. At depths of 470–680 m in the ESC.

51) Diretmichthys parini (Post & Quéro, 1981) (Diretmidae) Parin's spinyfish

FAO Code: SFN

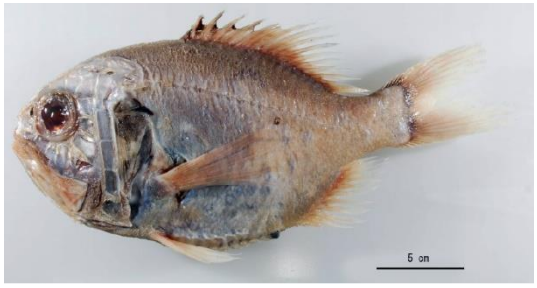
Counts D 26–30; A 20–23; P1 16–19; P2 I,6

Diagnosis Body ovate, deep, compressed. Snout short, obtuse. Eye large, its diameter greater than snout length. Mouth large, oblique. Lower jaw protruding beyond upper jaw. Dorsal and anal fins without spinous rays; fin membranes with a small opening near base of each ray; each ray with a basal spinule. Pelvic fin large, reaching anal-fin origin when depressed. Scales small, with spinules. Head dark, body and fins lighter. Attaining 28 cm SL.

Distribution Temperate zone of Pacific, Indian and Atlantic oceans. At depths of ca. 490–630 m in the ESC.

52) *Hoplostethus crassispinus* Kotlyar, 1980 (Trachichthyidae) A kind of rouphy

FAO Code: TRC (as Trachichthyidae)



Counts D VI,13; A III,9–10; P1 16–17; P2 I,6

Diagnosis Body deep, its depth about 1/2 of SL, compressed. Head large, its length about 40% of SL. Mouth large, oblique. Deep mucous cavities well developed in head bones, especially around eye. Dorsal-, anal-, and pelvic-fin spines stout and striated. Pectoral fin long, reaching or extending beyond anal-fin origin. A series of 11–12 enlarged scales with scutes on abdomen from pelvic-fin origin to anus. Scale ctenoid, adherent. Lateral-line scales enlarged, buckler-like. Body and head silvery. Each fin reddish when fresh. Attaining 25 cm SL.

Distribution Japan, Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 340–450 m in the ESC.

12. Beryciformes

53) *Beryx decadactylus* Cuvier, 1829 (Berycidae) Alfonsino

FAO Code: BXD

Counts D IV,18–20; A IV,25–30; P1 15–18; P2 I,8–11

Diagnosis Body deep (depth about 50% of SL), oval, compressed. Eye large, its diameter greater than snout length. Mouth large, oblique. Anal-fin base longer than dorsal-fin base. Caudal fin

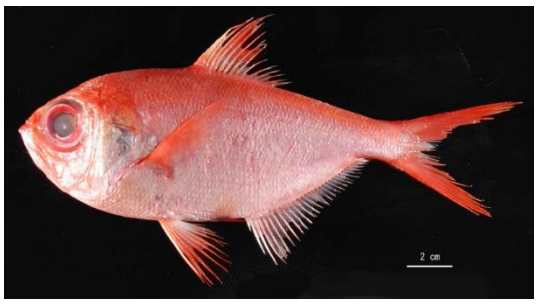
deeply forked. Pectoral fin long, oblique, pointed. Scales small, ctenoid. Body and fins reddish. Attaining 30 cm SL.

Distribution Pacific (except eastern North Pacific), Indian and Atlantic oceans. At depths of ca. 280–360 m in the ESC.

Remarks This species can be distinguished from *Beryx splendens* by its deeper body and more dorsal-fin soft rays.

54) *Beryx splendens* Lowe, 1834 (Berycidae) Splendid alfonsino

FAO Code: BYS



Counts D IV,13–15; A IV,26–30; P1 16–18; P2 I,9–11

Diagnosis Body moderately deep (depth about 35–40% of SL), oval, compressed. Eye large, its diameter greater than snout length. Mouth large, oblique. Anal-fin base longer than dorsal-fin base. Caudal fin deeply forked. Pectoral fin long, oblique, pointed. Scales small, ctenoid. Body and fins reddish. Attaining 50 cm SL.

Distribution Pacific (except eastern North Pacific), Indian and Atlantic oceans. At depths of ca. 340–600 m in the ESC.

Remarks See *Beryx decadactylus* to distinguish it from *B. splendens*.

13. Ophidiiformes

55) *Ophidion asiro* (Jordan & Fowler, 1902) (Ophidiidae) A kind of cusk-eel

FAO Code: OPH (as Ophidiidae)

Counts D 147–158; A 118–126; P1 23–25; P2 2

Diagnosis Body elongate, compressed. Head round. Upper jaw reaching posteriorly to a vertical through posterior margin of eye. Dorsal and anal fins with long bases, continuous with caudal fin. Pelvic fin jugular, its origin below eye. Body scales minute, elongate, at oblique angles to each other. Body pale brown. Dorsal and anal fins with dark margin. Attaining 20 cm SL.

Distribution Japan, Indian Ocean, Emperor Seamount Chain. At depth of ca. 280 m in the ESC.

Remarks The examined specimen had 157 dorsal- and 122 anal-fin rays, falling within the ranges of

O. asiro (147–158 and 118–126, respectively) but outside those of *Ophidion muraenolepis* Günther, 1880 (164–167 and 127–133, respectively) (Nakabo 2002).

56) *Bidenichthys* sp. (Bythitidae) A kind of freetail brotula

FAO Code: N/A

Counts D 66–70; A 44–45; P1 21; P2 1; GR 3–4+21–23=25–26; Vert 45–46

Diagnosis Body deep, compressed. Head large. Opercle with a spine. Jaws with conical teeth. Pectoral fin fan-like in shape. Pelvic fin with one short ray; its origin anterior to pectoral-fin base. Caudal fin small, separated from dorsal and anal fins. Scales small, covering body but absent on head. Body with irregular white blotches. Male with a pair of intromittent organs. Attaining 20 cm SL.

Remarks The present specimens were originally identified as *Fiordichthys* sp. The change in generic name follows Møller and Nielsen (2015) who synonymized the latter with *Bidenichthys*. Five species are recognized in the genus (Nielsen et al. 1999; Møller and Nielsen 2015), but this form disagrees with all of them in meristics, body color, and other characters. It may represent an undescribed species.

Distribution Emperor Seamount Chain. At depths of ca. 370–560 m in the ESC.

14. Carangiformes

57) *Naucrates ductor* (Linnaeus, 1758) (Carangidae) Pilotfish

FAO Code: NAU

Counts D IV–V-I,25–29; A II-I,15–17; P1 i,18; P2 I,5

Diagnosis Body elongate, cylindrical. Profile of head convex. Snout blunt. Upper jaw extending slightly beyond vertical through anterior margin of eye. Caudal peduncle with a well-developed lateral, fleshy keel on each side. First dorsal fin with short spines but without membranes. Anal fin with two spines slightly separated from rest of fin. Pectoral and pelvic fins short. Caudal fin deeply forked. Body with 6 or 7 dark bands against light background. Tips of caudal fin lobes white. Attaining 50 cm SL.

Distribution Tropical to temperate waters of the world. Pelagic (Smith-Vaniz 1999): probably captured near the surface when the bottom trawl net was lifted upward.

15. Pleuronectiformes

58) *Microstomus bathybius* (Gilbert, 1890) (Pleuronectidae) Deep-sea sole

FAO Code: EBH

Counts D 108–120; A 93–102; P1(ocular side) 10–13; P2 (ocular side) 5

Diagnosis Body oval, very deep, with dorsal and ventral thirds very compressed. Both eyes on right side. Eyes scaled. Interorbital narrow. Snout short, shorter than eye diameter. Mouth small, larger on blind side. Teeth developed on both sides. Caudal fin round. Lateral line nearly straight, weakly arched above pectoral fin. On ocular side, body dark brown with dense patches of white to blue spots forming several transverse bands. On blind side, body brown, darker at margin. Attaining 50 cm SL.

Distribution From Hokkaido to southern California, Emperor Seamount Chain. At depths of ca.580–760 m in the ESC.

Remarks Generic affiliation follows Cooper and Chapleau (1998), although some authors place this species in the genus *Embassichthys* (e.g., Sakamoto 1984).

59) *Microstomus shuntovi* Borets, 1983 (Pleuronectidae) A kind of lemon sole

FAO Code: N/A

Counts D 83–92; A 63–76; P1(ocular side) 8–10; P2 (ocular side) 5

Diagnosis Body oval. Both eyes on right side. Eyes large, scaled. Snout short, shorter than eye diameter. Interorbital narrow. Mouth small. Teeth of both jaws developed on both sides. Caudal fin rounded. Lateral line nearly straight, weakly arched above pectoral fin. Ocular side uniformly dark brown; blind side white, but vertical fins light brown. Attaining 33 cm SL.

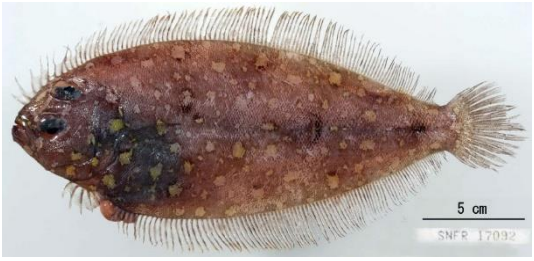
Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 280–940 m in the ESC.

60) *Chascanopsetta prorigera* Gilbert, 1905 (Bothidae) A kind of pelican flounder

FAO Code: N/A

Counts D 119–125; A 85–89; P1(ocular side) 14–15; P1(blind side) 13; P2 (ocular side) 6
Diagnosis Body elongate, strongly compressed, flexible. Both eyes on left side. Interorbital wide, concave. Snout short, blunt. Mouth oblique, large. Upper jaw much longer than 1/2 of head length. Pelvic fin of ocular side on midventral ridge, its base longer than that of blind side. Caudal fin rounded. Lateral line developed on both sides. Body pale brown, scattered with many small dark spots. Attaining 36 cm SL.
Distribution Hawaiian Islands, Emperor Seamount Chain, Atlantic Ocean. At depths of ca. 280–1020 m in the ESC.

61) *Parabothus coarctatus* (Gilbert, 1905) (Bothidae) A kind of lefteye flounder
FAO Code: N/A



Counts D 106–117; A 87–95; P1 (ocular side) 13–14; P2 (ocular side) 6
Diagnosis Body elongate, oval, deepest at middle of body. Both eyes on left side. Lower eye slightly in advance of upper one. Interorbital space wide, concave. Upper jaw extending posteriorly beyond anterior margin of eye. Caudal fin rounded. Pelvic fin of ocular side on midventral ridge, its base longer than that of blind side. Lateral line on ocular side curved above pectoral fin, absent on blind side. Yellow round spots scattered on ocular side. Yellow bars between eyes.
Distribution Japan, Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 280–790 m in the ESC.

16. Syngnathiformes

62) *Macroramphosus gracilis* (Lowe, 1839) (Macroramphosidae) Slender snipefish
FAO Code: MFG

Counts D V–VI-11–12; A 18–19; P1 15–16; P2 5

Diagnosis Body elongate oval, shallow, strongly compressed. Snout prolonged, tubular. Mouth small, located at tip of snout. Second spine of dorsal fin elongate but not reaching caudal-fin base when depressed; its posterior margin serrated. Pelvic fin small, abdominal. Attaining 19 cm SL.
Distribution Temperate to tropical waters of the world. At depths of ca. 270–620 m in the ESC.
Remarks In the Emperor Seamount Chain, as in Japan and other areas, two forms of *Macroramphosus* are recognized: one form (*M. gracilis*) has a relatively shallow body and shorter second spine in the spinous dorsal fin; the other form (*M. scolopax*) has a deeper body and longer second spine in the spinous dorsal fin. Herein, the scientific name for each form follows Mundy (2005). However, in molecular phylogenetic studies, no genetic deviation was found among the deep-bodied, slender, and intermediate forms in Portugal and Japan, indicating that described differences between the forms in each geographic area represent intraspecific variation (Robalo et al. 2009; Noguchi et al. 2015). On the other hand, genetic deviation was found between the Japanese and Portuguese populations (each includes deep-bodied, slender, and intermediate forms), suggesting that the genus *Macroramphosus* is not monotypic (Noguchi et al. 2015). Further study is needed to establish the taxonomic identities of the two forms in the Emperor Seamounts Chain.

63) *Macroramphosus scolopax* (Linnaeus, 1758) (Macroramphosidae) Longspine snipefish
FAO Code: SNS

Counts D V–VI-12; A 18–19; P1 15–16; P2 5
Diagnosis Body elongate oval, deep, strongly compressed. Snout prolonged, tubular. Mouth small, located at tip of snout. Second spine of dorsal fin stout and long, reaching caudal-fin base when depressed; its posterior margin serrated. Pelvic fin small, abdominal. Attaining 14.5 cm SL.
Distribution Temperate to tropical waters of the world. At depths of 270–620 m in the ESC.
Remarks See *Macroramphosus gracilis* for the taxonomic problems related to the two forms of the genus.

17. Callionymiformes

64) *Synchiropus kanmuensis* (Nakabo, Yamamoto & Chen, 1983) (Callionymidae) A kind of dragonet
FAO Code: YVX (as Callionymidae)

Counts D IV-8; A 7; P1 19–21; P2 I,5

Diagnosis Body elongate and somewhat depressed. Eye large. Mouth small. Upper jaw protractile. Gill opening very small, oval, located anterior to top of pectoral-fin base. Posterior tip of preopercular spine strongly curved upward. Two separate dorsal fins. Lower caudal-fin rays elongate in males. Body reddish dorsally, without distinct transverse bars. Fins with yellow spots or transverse bands. First dorsal fin without a distinct dark blotch. Attaining 16 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 290–450 m.

Remarks See *Synchiropus kinmeiensis* for the distinction with that species. The generic affiliation follows Fricke (2000).

65) *Synchiropus kinmeiensis* (Nakabo, Yamamoto & Chen, 1983) (Callionymidae) A kind of dragonet

FAO Code: YVX (as Callionymidae)

Counts D IV-8; A 7; P1 19–21; P2 I,5

Diagnosis Body elongate and somewhat depressed. Eye large. Mouth small. Upper jaw protractile. Gill opening very small, oval, located anterior to top of pectoral-fin base. Posterior tip of preopercular spine straight and not curved upward. Two separate dorsal fins. Lower caudal-fin rays elongate in males. Body reddish dorsally, with three broad, transverse, deep-red bands at bases of first and second dorsal fins and at caudal peduncle. Fins with yellow spots or transverse bands. A dark blotch on first dorsal fin between third and fourth spines. Attaining 13 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 280–380 m in the ESC.

Remarks This species can be distinguished from *Synchiropus kanmuensis* by the presence of three broad transverse bars on back (vs. absent in *S. kanmuensis*), a distinct dark blotch in the first dorsal fin (vs. absent), and the posterior tip of preopercular spine straight (vs. strongly curved upward). The generic affiliation follows Randall (1999).

66) *Centrodraco otohime* Nakabo & Yamamoto, 1980 (Draconettidae)

FAO Code: N/A

Counts D III-14; A 13; P1 22–24; P2 I,5

Diagnosis Body elongate, cylindrical. Snout pointed. Upper jaw projecting beyond lower jaw. Mouth small, narrow. Two large spines on opercular region, one on opercle and another on subopercle. Preopercle spineless. Two dorsal fins: first one short based, its first spine longest; second one long

based, its anterior rays elongate in males. Anal fin long based. Caudal fin rounded. Body reddish, with yellow or pale vermicular marks with dark margin. Attaining 13 cm SL.

Distribution Kyushu-Palau Ridge, Emperor Seamount Chain. At depths of ca. 270–620 m in the ESC.

Remarks This species (a member of the family Draconettidae) resembles *Synchiropus kanmuensis* and *S. kinmeiensis* (members of the Callionymidae) but can be easily distinguished by familial characters, including a much larger gill opening (vs. very small, oval opening in the Callionymidae), opercle and subopercle each with a strong spine (vs. spineless), and the spineless preopercle (vs. with a strong spine).

18. Scombriformes

67) *Lepidocybium flavobrunneum* (Smith, 1843) (Gempylidae) Escolar

FAO Code: LEC

Counts D VIII–X-16–19+4–6; A 12–15+4–5; P1 15–17; P2 I,5

Diagnosis Body semifusiform, somewhat compressed. Snout long, pointed. Two pairs of fangs at anterior tip of upper jaw. Caudal peduncle slender, with a strong lateral keel flanked with 2 smaller keels above and below. First dorsal fin much lower than second. Second dorsal and anal fins falcate, followed by several finlets. Caudal fin forked. Lateral line single, sinuous. Body uniformly dark brown. Attaining 1.3 m SL.

Distribution Temperate to tropical waters of the world. At depths of ca. 390 m in the ESC.

68) *Nesiarchus nasutus* Johnson, 1862 (Gempylidae) Black gemfish

FAO Code: NEN

Counts D XIX–XXI-I,19–24; A II,18–21; P1 12–14; P2 I,5

Diagnosis Body elongate, sword-like in shape, strongly compressed. Snout sharply pointed. Lower jaw projecting beyond upper jaw. A fleshy conical process at tip of each jaw. Base of first dorsal fin about 2.5 times longer than that of second one. Pelvic fin small, shorter than pectoral fin. Lateral line single, nearly straight. Caudal-peduncle keel absent. Body uniformly black. Attaining 1.3 m.

Distribution Western North Pacific, South Pacific, Atlantic and Indian oceans. At depths of ca. 340–350 m in the ESC.

69) *Promethichthys prometheus* (Cuvier, 1832) (Gempylidae) Roudi escolar

FAO Code: PRP

Counts D XVII–XIX-I,18–20+2; A II,15–18+2; P1 14–15; P2 I,0–1
Diagnosis Body elongate and compressed. Head large, snout pointed. Tip of both jaws without fleshy processes. Fang-like teeth on both jaws. Base of first dorsal fin about 2.5 times longer than that of second one. Two finlets behind each of dorsal and anal fin. Pelvic fin reduced with growth, rudimentary or absent in adult. Lateral line single, abruptly curved downward above pectoral fin. Caudal peduncle without a lateral keel. Body uniformly blackish. Attaining 43 cm SL.
Distribution Tropical and warm temperate waters of all oceans but unknown from East Pacific. At depths of ca. 200–350 m in the ESC.

70) *Ruvettus pretiosus* Cocco, 1833 (Gempylidae) Oilfish
FAO Code: OIL

Counts D XIII–XV-16–20+2; A II,15–18+2; P1 13–15; P2 I,5
Diagnosis Body semifusiform, slightly compressed. Mouth large. Tip of both jaws without fleshy processes. Fang-like teeth on both jaws. Mid-ventral keel on abdomen. First dorsal-fin spines shorter than rays of second fin. Two finlets behind dorsal and anal fins. Caudal fin large, deeply emarginated. Body covered with minute spiny tubercles, making skin very rough. Body uniformly brown to dark brown. Attaining 1.5 m in the ESC.
Distribution Tropical to temperate waters of the world. At depth of ca. 290 m in the ESC.

71) *Benthodesmus pacificus* Parin & Becker, 1970 (Trichiuridae) A kind of Frostfish
FAO Code: BEH (as *Benthodesmus* spp.)

Counts D XLIV–XLVI,99–104 (142–148 fin elements); A II,90–94; P1 12, P2 I,1
Diagnosis Body extremely elongate and compressed. Dorsal profile of head nearly flat, not rising from snout to dorsal-fin origin. Snout long, pointed. Lower jaw projecting beyond upper jaw; a fleshy projection at its tip. Fang-like teeth on both jaws. Pelvic fin rudimentary. Caudal fin small, forked. Body silvery. Attaining 112 cm SL.
Distribution North Pacific. At depths of ca. 330–420 m in the ESC.

72) *Lepidopus calcar* Parin & Mikhailin, 1982 (Trichiuridae, Scombriformes)

FAO Code:

Counts D 91–93; A II,44–47; P1 12; P2 I,1

Diagnosis Body elongate and compressed, sword-like in shape. Dorsal profile of head gently rising from snout tip to middle of eye, more steeply to dorsal-fin origin. Snout long, pointed. Eye large, close to dorsal profile. Lower jaw projecting beyond upper jaw. Fang-like teeth on upper jaw. Second anal-fin spine spur-like, very stout. Pelvic fin very small, located below and slightly behind pectoral-fin base. Caudal fin small, forked. Body silvery. Attaining 90 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 270–650 m in the ESC.

73) *Scomber australasicus* Cuvier, 1832 (Scombridae) Blue mackerel

FAO Code: MAA

Counts D XI–XII-I,11–12+5; A I,11–13+5; P1 18–21; P2 I,5

Diagnosis Body elongate and fusiform. Caudal peduncle slender. Head large. Snout pointed. Eye large, covered by a developed adipose eyelid. Mouth large, oblique. Teeth in both jaws small and conical. Pectoral and pelvic fins small. Two dorsal fins widely separated. Five finlets behind second dorsal and anal fins. Caudal fin deeply forked. Dark bars on back undulated. Small dark spots scattered on white abdomen. Attaining 50 cm TL.

Distribution Pacific Ocean; pelagic. The specimen was probably captured near the surface when the bottom trawl net was lifted.

Remarks This species resembles *Scomber japonicus* Houttuyn, 1782, but the latter can be distinguished from *S. australasicus* by its fewer dorsal-fin spines (9–10 vs. 11–12) and absence of dark spots on white abdomen.

74) *Hyperoglyphe japonica* (Döderlein, 1884) (Centrolophidae) Pacific barrelfish

FAO Code: CEN (as Centrolophidae)

Counts D VII–VIII,22–26; A III,17–19; P1 21–23; P2 I,5

Diagnosis Body oval, elongate, compressed. Snout round, short. Eye diameter subequal to snout length. Upper jaw extending posteriorly beyond anterior margin of eye. Small teeth in one row on both jaws. Dorsal-fin spines very short, spines of dorsal fin much shorter than soft-rays. Pectoral fin large, nearly reaching above anus posteriorly. Pelvic fin much smaller than pectoral fin. Caudal fin large, deeply forked. Body dark brown, blueish dorsally. Attaining 72 cm SL.

Distribution Japan, Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 290–400 m in the ESC.

75) *Cubiceps capensis* (Smith, 1845) (Nomeidae) Cape fathead

FAO Code: UBP

Counts D XI-I,20–22; A III,19–22; P1 20–24; P2 I,5

Diagnosis Body elongate, elliptical, compressed. Snout blunt, round, scaleless. Eye large. Small conical teeth in one row on both jaws. Vomer and tongue with teeth in one row. Two dorsal fins: first spinous, short based, high; second long based and low. Pectoral fin falcate, long, extending posteriorly well beyond anal-fin origin. Caudal fin deeply forked. Scales deciduous. Body uniformly brown. Attaining 1 m SL.

Distribution Temperate to tropical waters of the world. At depths of ca. 330–370 m in the ESC.

Remarks This species resembles *Cubiceps baxteri* McCulloch, 1923 (reported from the ESC [Mundy, 2005] but not included in this Field Guide) but differs in having wider naked area on snout extending posteriorly well beyond nostrils.

76) *Psenes cyanophrys* Valenciennes, 1833 (Nomeidae) Freckled driftfish

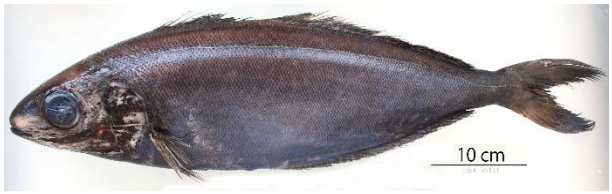
FAO Code: PSC

Counts D IX–XI-I,23–28; A II–III,24–28; P1 17–20; P2 I,5

Diagnosis Body deep, oval, compressed. Snout round, short, projecting somewhat beyond upper jaw. Eye diameter subequal to snout length. Two dorsal fins: first short based, second long based. Pectoral fin falcate, longer than head length, reaching posteriorly to middle of anal fin. Pelvic fin small. Caudal fin deeply forked. Body brown, with many horizontal lines. Attaining 20 cm SL.
Distribution Temperate to tropical waters of the world. At depths of ca. 390–420 m in the ESC.

77) *Psenes pellucidus* Lütken, 1880 (Nomeidae) Bluefin driftfish

FAO Code: VTX (as Nomeidae)



Counts D IX–XII-I–II,27–32; A II–III,26–35; P1 18–20; P2 I,5; LLS ca. 120
Diagnosis Body flabby, ovate, compressed. Teeth minute, in one row on both jaws. Two dorsal fins: first relatively short based; second long based. Pectoral fin short, paddle-like. Scales very small, deciduous, extending onto head to level of eyes. Dorsal surface of snout to interorbital space and area above opercle scaleless. Body uniformly deep bluish purple. Attaining 42 cm SL.
Distribution Temperate to tropical waters of Pacific, Indian and Atlantic oceans. At depths of ca. 340–360 m in the ESC.

78) *Ariomma lurida* Jordan & Snyder, 1904 (Ariommatidae) A kind of driftfish

FAO Code: DRK (as *Ariomma* spp.)

Counts D XI-I,15; A II,15; P1 21–22; P2 I,5
Diagnosis Body elongate, somewhat compressed. Caudal peduncle short, slender, with a pair of low, fleshy keels. Snout blunt, round. Eye remarkably large, its diameter about 1/3 of head length. Adipose eyelid covering posterior part of eye. Mouth small. Upper jaw not reaching posteriorly below anterior margin of eye. Two dorsal fins: first much higher than second; base of second longer than that of first. Pectoral fin falcate, shorter than head, not reaching anus. Caudal fin deeply forked. Scales deciduous. Body silvery, darker dorsally. Attaining 35 cm SL.
Distribution North Pacific, Atlantic and Indian oceans. At depths of ca. 280–380 m in the ESC.

19. Trachiniformes

79) *Parapercis roseoviridis* (Gilbert, 1905) (Pinguipedidae) A kind of sandperch

FAO Code: N/A

Counts D V,23–24; A I,19–21; P1 19–21; P2 I,5; LLS 54–57

Diagnosis Body elongate, subcylindrical. Caudal peduncle deep, compressed. Head wide and depressed. Mouth oblique. Upper jaw extending posteriorly to a vertical through anterior margin of pupil. Opercle with a spine. Spiny part of dorsal fin low, dark. Bases of dorsal and anal fins long. Caudal fin slightly rounded. About ten yellow transverse bands on side of body. Attaining 16 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 280–350 m in the ESC.

Remarks Yamakawa (1982) identified specimens of *Parapercis* from Kyushu-Palau Ridge as *P. roseoviridis*, but they were later described as *Parapercis phenax* Randall & Yamakawa, 2006. The two species are remarkably similar in general appearance, most counts and measurements, and color pattern, but *P. phenax* can be distinguished from *P. roseoviridis* by having more lateral-line scales (60–64 vs. 54–57), more gill rakers on the lower limb of the 1st arch (10–13 vs. 8–10), and larger size (up to 180 mm SL vs. 159 mm SL) (Randall and Yamakawa 2006).

80) *Bembrops filiferus* Gilbert, 1905 (Percophidae) A kind of duckbill

FAO Code: JIX (as Percophidae)

Counts D VI-15; A 16–17; P1 26–29; P2 I,5; LLS 60–64

Diagnosis Body elongate, cylindrical. Head strongly depressed. Snout long, paddle-like in shape. Upper jaw with a well-developed tentacle at posterior tip. Lower jaw projecting beyond upper jaw. Two diverging spines on opercle. Two dorsal fins: first one short based, anteriorly dark, its first spine elongate; second one long based. Eight to ten oblique dark bars on side of body in males (left picture); one or two rows of elliptical dark blotches in females (right picture). Yellow blotches on opercle and dorsum conspicuous in males, obscure in females. One dark blotch at upper part of caudal fin (absent in some specimens). Anal-fin margin dark in males, white in females. Attaining 22 cm SL.

Distribution Western North Pacific, Hawaiian Islands, Emperor Seamount Chain, Java Island, Northwest Australia. At depths of ca. 290–940 m in the ESC.

Remarks The sexual dimorphism observed in the present specimens agrees with that reported by Okamura (1985) based on the specimens from Okinawa Trough, Japan.

20. Labriformes

81) *Bodianus* sp. (Labridae) A kind of hogfish

FAO Code: BDY (as *Bodianus* spp.)

Counts D XII,10–11; A III,11; P1 16–17; P2 I,5

Diagnosis Body elongate, slender. Dorsal profile at dorsal-fin base nearly straight. Snout blunt. Lips thick. Both jaws with canine-like teeth anteriorly. Dorsal fin single, long based. First two soft rays of pelvic fin elongate, filamentous, reaching anus posteriorly when depressed. Caudal fin truncated. Body reddish dorsally, pale ventrally. Upper and lower margins of caudal fin yellow. Pelvic fin yellow. Attaining 15 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 290–590 m.

Remarks The present form is most similar to *Bodianus cylindriatus* (Tanaka, 1930), but differs in its shallower body depth at middle of dorsal-fin base, absence of a red blotch at caudal peduncle and elongate pelvic-fin rays. Further study is needed to establish the identity of the present form. "*Bodianus cylindriatus*" reported by Randall and Chen (1985) from Kanmu Seamount agrees well with the present form, but the pelvic-fin rays are not elongate.

21. Perciformes

82) *Symphysanodon maunaloae* Anderson, 1970 (Symphysanodontidae) A kind of slope bass

FAO Code: N/A

Counts D IX,9–10; A III,7; P1 15–17; P2 I,5

Diagnosis Body elongate, compressed. Snout short, blunt, projected somewhat beyond upper jaw. Eye large, its diameter longer than snout. Two opercular spines present. Dorsal fin single without a conspicuous notch, its base long. Outermost pelvic-fin soft ray elongate in male, reaching caudal peduncle when depressed; short and not reaching anus in female. Caudal fin deeply forked; dorsal and ventral lobes elongate and filamentous in male; less elongate in female. Body reddish dorsally, lighter ventrally. Attaining 17 cm SL.

Distribution Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of ca.

280–370 m in the ESC.

83) *Epigonus denticulatus* Dieuzeide, 1950 (Epigonidae) Pencil cardinal

FAO Code: EGD

Counts D VII-I,10; A II,9; P1 19–20; P2 I,5

Diagnosis Body slender, slightly compressed. Snout short, round. Eye large, elliptical, its diameter greater than snout length. Mouth large, oblique. Opercle without a spine. Dorsal fins two, widely separated. Caudal fin deeply forked. Scales deciduous. Body uniformly dark brown. Attaining 20 cm SL.

Distribution Temperate to subtropical waters of Pacific, Indian and Atlantic oceans, and Mediterranean Sea. At depths of ca. 290–490 m in the ESC.

84) *Epigonus pectinifer* Mayer, 1974 (Epigonidae) A kind of cardinal fish

FAO Code: CDL (as *Epigonus* spp.)

Counts D VII-I,9; A II,9; P1 15–17; P2 I,5

Diagnosis Body slender, slightly compressed. Snout short, round. Eye large, its diameter greater than snout length. Mouth large, oblique. A strong spine on opercle. Dorsal fin two, widely separated. Caudal fin deeply forked. Scales deciduous. Body uniformly dark brown. Attaining 16 cm SL.

Distribution Japan, Hawaiian Islands, Emperor Seamount Chain, Australia, temperate to subtropical waters of western North Atlantic, Indian Ocean. At depths of 380–460 m in the ESC.

Remarks This species can be distinguished from *E. denticulatus* in having a strong spine on the opercle.

85) *Pentaceros japonicus* Steindachner, 1883 (Pentacerotidae) Japanese armorhead

FAO Code: N/A

Counts D XI,13–15; A IV–V,8–10; P1 16–18; P2 I,5

Diagnosis Body ovoid, very deep, strongly compressed. Snout pointed. Mouth small. Head covered with rugose, striated bones. Dorsal-, anal- and pelvic-fin spines sharp and robust. Scales ctenoid, adherent, covering body and cheek. Caudal fin small, slightly emarginated. Body greyish brown, pelvic fin dark. Attaining 25 cm SL.

Distribution Japan, Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 260–660 m in the ESC.

Remarks This species can be distinguished from *Pentaceros wheeleri* in having a deeper body (52–59% vs. 32–37% of SL), fewer dorsal-fin spines (11 vs. 13–14) and smaller body size.

86) *Pentaceros wheeleri* (Hardy, 1983) (Pentacerotidae) Slender armorhead

FAO Code: EDJ

Counts D XIII–XIV,8–10; A IV,7–8; P1 17–19; P2 I,5

Diagnosis Body oval, strongly compressed. Snout long, pointed, longer than eye diameter. Mouth small. Head covered with rugose, striated bones. Dorsal-, anal- and pelvic-fin spines sharp and robust. Scales ctenoid, adherent, covering body and cheek. Caudal fin small, somewhat emarginated. Attaining 50 cm SL.

Distribution North Pacific. At depths of ca. 280–430 m in the ESC.

Remarks This species was placed in the genus *Pseudopentaceros* (e.g., Hardy 1983; Humphreys et al. 1989), but that genus was relegated to a junior synonym of *Pentaceros* by the phylogenetic study of Kim (2012).

87) *Plectranthias kelloggi kelloggi* (Jordan & Evermann, 1903) (Serranidae)

FAO Code: N/A

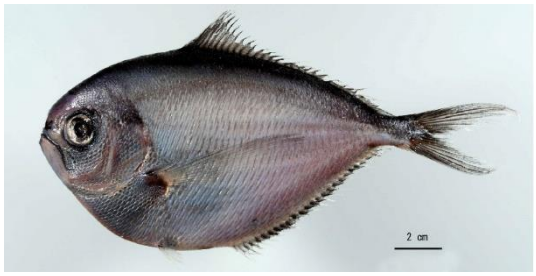
Counts D X,14–16; A III,7; P1 14–16; P2 I,5

Diagnosis Body deep, compressed. Dorsal profile of body arched. Head large. Snout pointed, as long as eye diameter. Mouth large, nearly horizontal. Upper jaw extending beyond a vertical through midpoint of eye. A stout, protruding canine teeth at anterior corner on each side of upper jaw. A protruding canine tooth at anterior tip, and a recurved canine tooth at side of lower jaw. Three spines on opercle. Second soft ray of dorsal fin an elongate filament. Reddish bars from middle of body side to dorsal fin. One reddish spot at upper part of caudal fin base. Attaining 15 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 260–790 m in the ESC.

88) *Brama orcini* Cuvier, 1831 (Bramidae) Bigtooth pomfret

FAO Code: IQV



Counts D 32–36; A 28–30; P1 20–22; P2 I,5; LR 48–55

Diagnosis Body oval, very deep, strongly compressed. Profile of head convex. Mouth large, strongly oblique. Dorsal and anal fins scaly, not depressible. Anal fin not lobed. Pectoral fin long, falcate, positioned relatively high on side. Pelvic fin small. Caudal fin deeply forked; upper lobe somewhat longer than lower lobe. Scales cycloid, adherent, vertically elongate on body side. Body uniformly silvery or brownish, darker dorsally. Attaining 45 cm SL.

Distribution Widespread in tropical Indian and Pacific oceans. At depths of ca. 350–460 m in the ESC.

89) *Pteraclis aesticola* (Jordan & Snyder, 1901) (Bramidae) Pacific fanfish

FAO Code: TEE

Counts D 46–55; A 40–43; P1 15–20; P2 I,4

Diagnosis Body elongate, strongly compressed, tapering posteriorly. Snout round, projected beyond upper jaw. Mouth strongly oblique. Dorsal and anal fins enormous, sail-like, without scales and wholly depressible. Dorsal-fin origin forward of eye. Anal-fin origin in advance of pectoral-fin base. Pelvic fin small, located just in front of anal-fin origin. Caudal fin deeply forked. Scales large. Body greyish. Dorsal and anal fins black. Attaining 45 cm SL.

Distribution Warm-temperate and tropical Pacific Ocean. Depths at ca. 370–420 m in the ESC.

90) *Pterycombus petersii* (Hilgendorf, 1878) (Bramidae) Prickly fanfish

FAO Code: BPY

Counts D 47–59; A 36–40; P1 19–22; P2 I,5

Diagnosis Body oblong oval, deepest at thorax. Head and body strongly compressed. Snout short, blunt. Mouth strongly oblique. Dorsal and anal fins enormous, sail-like, without scales and wholly depressible. Dorsal-fin origin above eye or behind. Anal-fin origin below pectoral fin. Pelvic fin very short. Caudal fin deeply forked. Scales large, adherent. Body greyish. Dorsal and anal fins black. Attaining 40 cm SL.

Distribution North Pacific, Hawaiian Islands, Emperor Seamount Chain. Depths at ca. 410–470 m in the ESC.

91) *Taractes asper* Lowe, 1843 (Bramidae) Rough pomfret

FAO Code: TAS

Counts D 26–35; A 20–30; P1 16–20; P2 I,5

Diagnosis Body oval, compressed. Profile of head nearly straight. Snout blunt. Mouth large, nearly vertical. Lower jaw projected. Dorsal fin originating behind head. Anterior part of dorsal and anal fins elongate, falcate. Dorsal and anal fins scaly, not depressible. Pectoral fin long, extending posteriorly beyond anal-fin origin. Caudal fin deeply forked. Scales large, stiff and adherent. Scales on caudal peduncle not greatly enlarged, not forming a keel. Attaining 45 cm SL.

Distribution Pacific, Atlantic and Indian oceans. At depths of ca. 350–460 m in the ESC.

Remarks The congener *Taractes rubescens* (Jordan & Evermann, 1887) can be distinguished from *T. asper* in having greatly enlarged scales forming a keel on the caudal peduncle.

92) *Taractichthys steindachneri* (Döderlein, 1883) (Bramidae) Sickle pomfret

FAO Code: TST

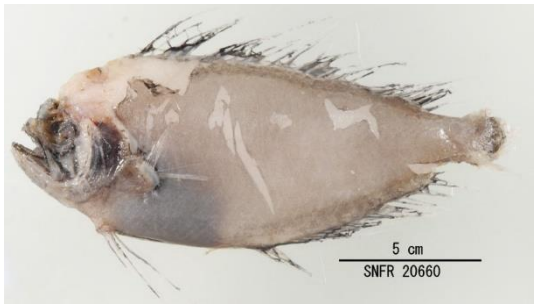
Counts D 33–37; A 26–28; P1 19–22; P2 I,5

Diagnosis Body oval, very deep and compressed. Profile of head convex. Mouth large, strongly oblique. Lower jaw projected beyond upper jaw. Snout round, as long as eye diameter. Dorsal fin originating behind head. Anterior parts of dorsal and anal fin elongate, falcate in shape. Dorsal and anal fins scaly, not depressible. Pectoral fin long, posteriorly reaching middle of anal fin. Caudal fin lunate, with its margin white. Scales large, stiff, adherent. Body greyish. Attaining 60 cm SL.

Distribution Pacific and Indian oceans. At depth of ca. 340 m in the ESC.

93) *Platyberyx andriashevi* (Kukuev, Parin & Trunov, 2012) (Caristiidae) A kind of manefish

FAO Code: N/A



Counts D 31–35; A 20–22; P1 17–20; P2 I,5; Vert 36–39

Diagnosis Body deep, oval. Mouth large. Space between orbit and mouth narrow. Upper jaw reaching a vertical through posterior margin of eye or slightly in short. Teeth of both jaws moderate in size, in one series. Vomerine and palatine teeth present. Dorsal fin high with a long base, comprising only soft rays, its origin above eye. Pelvic fin long, reaching anal-fin origin when

depressed. Lateral line conspicuous with large, pored scales, running near base of dorsal fin. Body light brown. Peritoneum black. Attaining 20 cm SL.

Distribution Mesopelagic zone of tropical to temperate waters of Pacific, Indian and Atlantic oceans. At depths of ca. 590–600 m in the ESC.

94) *Cookeolus japonicus* (Cuvier, 1829) (Priacanthidae) Longfinned bullseye

FAO Code: CJN

Counts D X,12–13; A III,12–13; P1 17–19; P2 I,5

Diagnosis Body oval, deep, strongly compressed. Eye large, its diameter longer than snout length. Mouth large, strongly oblique. Lower jaw projected beyond upper jaw. Pelvic fin very large, its end reaching soft-rayed part of anal fin when depressed. Soft-rayed part of dorsal and anal fins long and pointed. Scales small, ctenoid; surface of body rough. Body uniformly reddish. Pelvic-fin membrane dark. Attaining 25 cm SL.

Distribution Tropical to temperate waters of the world. At depths of 280–820 m in the ESC.

95) *Priacanthus alalaua* Jordan & Evermann, 1903 (Priacanthidae) A kind of bigeye

FAO Code: BIG (as *Priacanthus* spp.)

Counts D X,12–14; A III,13–14; P1 17–19; P2 I,5

Diagnosis Body oval, compressed. Eye large, its diameter slightly longer than snout length. Mouth large, strongly oblique. Lower jaw projected beyond upper jaw. Soft-rayed part of dorsal and anal fins rounded. Pelvic fin long, reaching anal-fin origin when depressed. Caudal fin truncate. Scales small, ctenoid, adherent. Body crimson. Fins reddish. Distal part of pelvic fin dark. Attaining 26 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain, eastern North Pacific. Depth data in the ESM are not available.

22. Scorpaeniformes

96) *Adelosebastes latens* Eschmeyer, Abe & Nakano, 1979 (Scorpaenidae)

FAO Code: AQL

Counts D XII–XIII,12–13; A III,5; P1 20–23; P2 I,5

Diagnosis Body deep, somewhat compressed. Head large. Head with strong and sharp spines. A transverse bony ridge below eye. Mouth large. Pectoral fin large, notched. Pectoral fin rays below notch thick, finger-like, free at tips. Dorsal-fin base long. Anal-fin base short. Caudal fin small, somewhat round. Body cardinal red. Branchial, buccal and visceral cavities dark. Attaining 30 cm SL.

Distribution Emperor Seamount Chain, Eastern North Pacific. At depths of ca. 590–1,200 m in the ESC.

97) *Ectreposebastes imus* Garman, 1899 (Scorpaenidae) Midwater scorpionfish

FAO Code: ERM

Counts D XI–XII,9–10; A III,5–7; P1 17–21; P2 I,5

Diagnosis Body oval, deep, compressed, flabby. Head large. Mouth large. Upper jaw extending below posterior border of orbit. A longitudinal ridge on upper jaw (maxillary). Five spines on preopercle. Pectoral fin long, extending beyond anal-fin origin. Lateral line trough-like. Scales small, deciduous. Body and fins uniformly dark. Attaining 18 cm SL.

Distribution Circumglobal from tropical to temperate waters. At depths of ca. 330–610 m in the ESC.

98) *Helicolenus avius* Abe & Eschmeyer, 1972 (Scorpaenidae) A kind of rosefish

FAO Code: ROK (as *Helicolenus* spp.)

Counts D XII,13–14; A III,6; P1 18–20; P2 I,5; LLS 50–55

Diagnosis Body elliptical, somewhat compressed. Head large. Head spines small. Five spines on preopercle. Mouth large. A pair of dentigerous knobs at anterior tip of upper jaw projecting strongly when mouth closed. Pectoral fin large, its upper lobe truncate. Caudal fin slightly forked. Lateral line nearly straight. Body lightly reddish, dark red lines just above and below lateral line, running parallel to it. Attaining 24 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 290–400 m in the ESC.

99) *Helicolenus fedorovi* Barsukov, 1973 (Scorpaenidae) A kind of rosefish

FAO Code: ROK (as *Helicolenus* spp.)

Counts D XII,12; A III,5; P1 18–19; P2 I,5; LLS 31

Diagnosis Body elliptical, somewhat compressed. Head large. Head spines small. Five spines on preopercle. A pair of dentigerous knobs at anterior tip of upper jaw projecting weakly when mouth closed. Pectoral fin large, its upper lobe truncate. Caudal fin slightly emarginated. Lateral line nearly straight. Body light reddish, dark red lines just above and below lateral line, running parallel to it. Attaining 27 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 340–940 m in the ESC.

Remarks This species resembles *Helicolenus avius* but can be distinguished by the weaker dentigerous knobs of upper jaw and fewer lateral-line scales (Barsukov 1973).

100) *Hozukius guyotensis* Barsukov & Fedorov, 1975 (Scorpaenidae) A kind of rockfish

FAO Code: SCO (as Scorpaenidae)

Counts D XII–XIII,11–12; A III,5–6; P1 17–18; P2 I,5

Diagnosis Body deep, compressed. Head large. Head spines developed. Snout, both jaws and lower part of preopercle scaleless. Mouth large. Lower-jaw tip somewhat projected. Pectoral fin large, rounded. Caudal fin truncate. Body brightly reddish, with four irregularly shaped transverse bands on back. Attaining 50 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 360–1,000 m in the ESC.

101) *Idiastion pacificum* Ishida & Amaoka, 1992 (Scorpaenidae) A kind of rockfish

FAO Code: SCO (as Scorpaenidae)

Counts D XII,9; A III,5; P1 17–19; P2 I,5

Diagnosis Body deep, compressed. Dorsal profile of body strongly arched. Head large, about 45% of SL in length. Mouth large. Villiform teeth on both jaws. Head spines developed. Interorbital space covered with fine scales. Pectoral fin large, extending beyond anus. Caudal fin rounded. Body reddish dorsally, lighter ventrally. Two reddish oblique bands from eye to cheek and preopercle. No dark bands and blotches on body. Attaining 15 cm SL.

Distribution Kyushu-Palau Ridge, Emperor Seamount Chain. At depths of ca. 360–580 m in the ESC.

102) *Plectrogenium kanayamai* Uesaka, Yamakawa, Matsunuma & Endo, 2021 (Scorpaenidae) A kind of stinger flathead

FAO Code: N/A

Counts D XII,7; A III,5; P1 19–21; P2 I,5

Diagnosis Body elongate, somewhat compressed. Snout short, pointed. Mouth small, horizontal. Upper jaw reaching anterior part of eye. Eye large, elliptical, its diameter greater than snout length. Many small serrae above and below eye. Dorsal fin deeply notched. Pectoral fin notched. Body reddish, with pale cross band on caudal peduncle. Caudal fin pale, with dark margin. Soft-rayed part

of dorsal fin reddish with white margin. Attaining 6 cm SL.

Distribution Kyushu-Palau Ridge, Emperor Seamount Chain. At depths of ca. 390–540 m in the ESC.

Remarks This species was reported as *Plectrogenium* sp. from the Kyushu-Palau Ridge (Kanayama 1982). Matsunuma et al. (2021) described *P. kanayamai* as a new species. This species can be distinguished from *Plectrogenium nanum* Gilbert, 1905 (an Hawaiian Islands endemic: Matsunuma et al. 2021) in having fewer pectoral-fin rays (19–21 vs. 22–24), and melanophores on inner side of pectoral fin absent (vs. present) (Matsunuma et al. 2021).

103) *Setarches guentheri* Johnson, 1862 (Scorpaenidae) Channeled rockfish

FAO Code: SVG

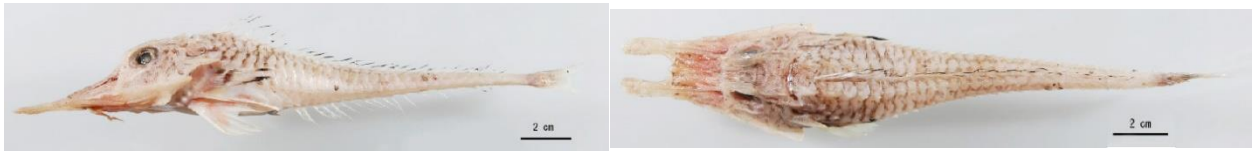
Counts D XI–XIII,9–11; A III,4–6; P1 20–25; P2 I,5

Diagnosis Body elliptical, somewhat compressed. Snout long, its length greater than eye diameter. Mouth large, upper jaw reaching below posterior margin of orbit. Preopercular spines five, enlarged; upper three spines subequal in size. Three spines on ventral margin of lachrymal. Pectoral fin long, reaching anal-fin origin. Caudal fin truncate. Lateral line trough-like. Body reddish purple. A dark band on midline of abdomen from pelvic-fin origin to anus. Attaining 23 cm SL.

Distribution Circumglobal in deep water. At depths of ca. 280–410 m in the ESC.

104) *Peristedion liorhynchus* (Günther, 1872) (Peristediidae) Armoured gurnard

FAO Code: PTQ



Counts D VIII,21–22; A 19–21; P1 14; P2 I,5

Diagnosis Body slender, covered with bony plates. Head large, stiff, depressed. Rostral projections broad, spatulated, not pointed at tip. Mouth inferior. Many short tentacles on lower jaw; longest one not reaching below posterior margin of eye. Preopercular angle without a spine. Single strong spine on opercle. Two thick detached pectoral-fin rays. Body light brown. Margin of bony plate brown, forming a net-like pattern. Margin of dorsal and anal fins dark. Attaining 30 cm SL.

Distribution Pacific Ocean from Japan to Australia, East and South China Seas, Celebes Sea, Indian Ocean off Western Australia and Indonesia. At depths of ca. 350–360 m in the ESC.

105) *Scalicus hians* (Gilbert & Cramer, 1897) (Peristediidae) A kind of Armored searobin

FAO Code: N/A

Counts D VI–VII,20–22; A 20–22; P1 13–16+2; P2 I,5

Diagnosis Body slender, covered with bony plates. Head large, stiff, depressed. Rostral projections flat, shaped as equilateral triangles. Mouth inferior. Ten pairs of tentacles on lower jaw; outermost pair longest, extending posteriorly beyond posterior margin of eye. Angle of preopercle with two long spines, outer one longer. Lower two pectoral-fin rays free, thick. Body brightly reddish. First dorsal and pectoral fins dark. Attaining 22 cm SL.

Distribution Tropical to temperate waters from western Indian Ocean to Japan and Hawaii. At depth of ca. 420 m in the ESC.

Remarks *Scalicus amiscus* (Jordan & Starks 1904), treated as valid in Yamada and Yagishita (2013), is a junior synonym of *S. hians* (see Kawai 2019).

106) *Scalicus engyceros* (Günther, 1872) (Peristediidae) A kind of Armored searobin

FAO Code: N/A

Counts D VI–VII,19–22; A 19–22; P1 13–16+2; P2 I,5

Diagnosis Body elongate, covered with bony plates. Head large, stiff, depressed. Rostral projections slender, with a ball-like fleshy mass at its tip. Mouth inferior. Eight pairs of short tentacles on lower jaw; outermost longest, not extending posteriorly past posterior margin of eye. Angle of preopercle with single long spine. Lower two pectoral-fin rays free, thick. Body bright reddish. Pectoral fins dark. Dorsal fin with a dark margin. Attaining 25 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 330–430 m in the ESC.

Remarks The previous records of this species from Japan are based on misidentifications of *Scalicus quadratorostratus* (Fourmanoir and Rivaton, 1979) or *S. paucibarbatus* Kawai, 2019 (Kawai 2019).

107) *Bembradium roseum* Gilbert, 1905 (Bembridae)

FAO Code: BMR

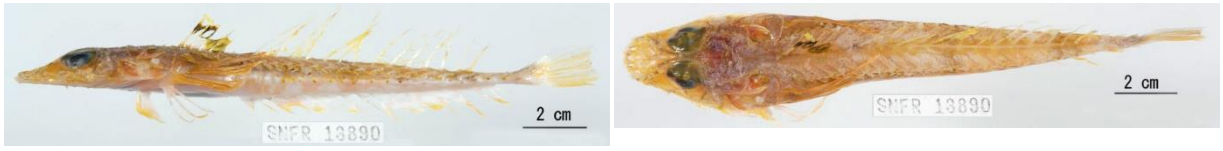
Counts D VIII–IX-12; A 10–11; P1 24–27; P2 I,5

Diagnosis Body cylindrical, slender. Head large, depressed. Many small spines on head. Snout long, projected. Mouth large. Upper jaw extending beyond a vertical through anterior margin of pupil. Pectoral fin large, reaching anus. Caudal fin truncated or slightly rounded. Body uniformly reddish dorsally, white ventrally. Anal-fin margin cardinal red. Attaining 11 cm SL.

Distribution Southern Japan, Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain. At depths of 280–1020 m in the ESC.

108) *Hoplichthys citrinus* Gilbert, 1905 (Hoplichthyidae) Lemon ghost flathead

FAO Code: HBX (as *Hoplichthys* spp.)



Counts D VI-15; A 17; P1 12+3; P2 I,5

Diagnosis Body elongate. Head broad, strongly depressed, its lateral margin lobed, strongly spinose, with a distinct gap between spine rows below eye. Interorbital space very narrow, its width shorter than 1/3 of eye length. Last spine of preopercle very long, curved inward. Body scaleless, but a row of bony plates along lateral line, each plate bearing a strong backward scute, covering much of back and upper half of sides. Lower three pectoral-fin rays free, shorter than longest joined pectoral-fin rays. Body bright lemon yellow. A dark blotch on first dorsal fin. Attaining 17 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain, South Pacific. At depth of ca. 370 m in the ESC.

Remarks In males, the first dorsal-fin spine and the first four dorsal-fin soft rays (or some of them) are elongate and filamentous (Gilbert 1905).

109) *Hoplichthys filamentosus* Matsubara & Ochiai, 1950 (Hoplichthyidae) Longray ghost flathead

FAO Code: HBX (as *Hoplichthys* spp.)

Counts D VI-14–15; A 17; P1 13+3; P2 I,5

Diagnosis Body elongate. Head broad, strongly depressed, its lateral margin spinose. Last spine of preopercle strong, curved inward. Interorbital space somewhat broad, about 40% of eye length, deeply concave. Body scaleless, but a row of bony plates along lateral line, each plate bearing a

strong backward scute, covering much of back and upper half of sides. Upper pectoral-fin rays elongate, filamentous. Lower three pectoral-fin rays free. Two dark bands on caudal fin. Attaining 30 cm SL.

Distribution Japan, East China Sea, Emperor Seamount Chain, Western Australia. At depths of ca. 350–510 m in the ESC.

110) *Erilepis zonifer* (Lockington, 1880) (Anoplopomatidae) Skilfish

FAO Code: ESZ

Counts D XII–XIV-I–II,15–17; A II–III,11–14; P1 16–19; P2 I,5

Diagnosis Body stout, deep. Head large, rounded in dorsal profile. Eye small, its diameter shorter than snout length. Dorsal fins two, separated by a narrow space. Pectoral fin large, rounded. Caudal fin large, slightly emarginated. Head, back of body and fins dark, with 4–5 large white vertical bands on body side; small white spots scattered on side of body in young. Attaining 1.5 m or larger.

Distribution Subboreal waters of North Pacific. At depths of ca. 580–600 m in the ESC.

111) *Marukawichthys pacificus* Yabe, 1983 (Ereuniidae) A kind of deepwater bullhead sculpin

FAO Code: N/A

Counts D X–XI,14–16; A 12–13; P1 15; P2 I,4

Diagnosis Body elongate, tapering into a long, slender caudal peduncle. Head large, stiff. Snout longer than eye diameter. Eye large, somewhat projected beyond dorsal profile of head. Skin of body and head rough, covered with minute prickles. Six rows of spiny scales on body. First and second dorsal fins set very close. Pectoral fin large, its lowermost four rays separated each other. Pelvic fin short, its length slightly shorter than eye diameter. Head and body uniformly dark brown. Dorsal and anal fins with two rows of white blotches. Caudal fin translucent with dark margin. Attaining 27 cm SL.

Distribution Endemic to Emperor Seamount Chain. At depths of ca. 350–530 m in the ESC.

23. Acanthuriformes

112) *Emmelichthys struhsakeri* Heemstra & Randall, 1977 (Emmelichthyidae) Golden redbait

FAO Code: EMT (as Emmelichthyidae)

D X–XI-I,11–12; A III,9–10; P1 19–21; P2 I,5

Diagnosis Body fusiform, elongate and cylindrical. Head small. Opercle with two flat spines. Mouth small, oblique. Upper jaw protrusile, extending posteriorly beyond a vertical through anterior margin of orbit. Lower jaw projecting somewhat beyond upper jaw when mouth closed. No teeth on upper jaw; minute teeth at tip of lower jaw. Dorsal fins two, separated by a gap with 1–3 isolated spines. Caudal fin deeply forked. A fleshy projection at upper part of gill opening. Head and body covered with small ctenoid scales. Body uniformly reddish orange. Attaining 27 cm SL.

Distribution West Pacific, Hawaiian Islands, Emperor Seamount Chain. Depths at 280–370 m in the ESC.

Remarks This species can be distinguished from *Erythrocles scintillans* in having isolated spines in a wide gap separating the first and second dorsal fins, shallower body (20–25 vs. 27–31% of SL), and smaller head (26–29 vs. 29–34% of SL).

113) *Erythrocles scintillans* (Jordan & Thompson, 1912) (Emmelichthyidae) Golden kali kali

FAO Code: ERZ

D X-I,10–11; A III,10–11; P1 18–19; P2 I,5

Diagnosis Body elongate, elliptical, compressed. Head relatively large. Opercle with two flat spines. Mouth oblique. Upper jaw protrusile; posteriorly extending below center of eye. Lower jaw projecting somewhat beyond upper jaw when mouth closed. Minute teeth at tips of both jaws. No fleshy projection at gill opening. Gap between first and second dorsal fins narrow, without isolated spines. Head and body covered with small ctenoid scales. Body uniformly reddish orange. Attaining 29 cm SL.

Distribution Southern Japan, Hawaii, Emperor Seamounts, Tahiti. At depths of ca. 290–400 m in the ESC.

Remarks See *Emmelichthys struhsakeri* to distinguish the species.

24. Spariformes

114) *Grammatonotus laysanus* Gilbert, 1905 (Callanthiidae) A kind of long-tailed groppo

FAO Code: N/A

D XI,9; A III,9; P1 19–21; P2 I,5

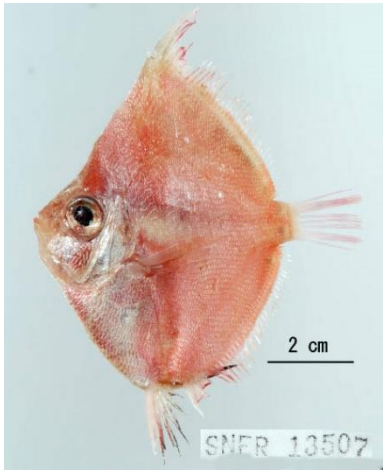
Diagnosis Body elongate, compressed. Snout very short, round. Eye large, its diameter greater than snout length. One spine on opercle. Mouth oblique. Scale large, ctenoid, deciduous. Dorsal fin not notched. Caudal fin rounded, with elongate outer rays. Lateral line running along base of dorsal fin. Body red dorsally, pale ventrally; dorsal fin and outer margins of caudal fin yellow.

Distribution Hawaiian Islands, Emperor Seamount Chain, off Chile (Sala y Gomes Ridge). Depths at ca. 280–450 m in the ESC.

25. Caproiformes

115) *Antigonia capros* Lowe, 1843 (Caproidae) Deepbody boarfish

FAO Code: ZAC



Counts D VIII,35–39; A III,32–36; P1 14; P2 I,5

Diagnosis Body rhomboid, deeper than long, strongly compressed. Dorsal profile from head to dorsal-fin origin very steep. Caudal peduncle very short, deeper than long. Snout very short, shorter than eye diameter. Mouth small, nearly vertical. Dorsal-, anal- and pelvic-fin spines robust. First and second dorsal-fin spines small, third longest. Caudal fin truncated. Scales small, ctenoid, adherent, covering head and body. Body reddish. Margin of pelvic fin dark. Attaining 25 cm SL.

Distribution Western North Pacific, South Pacific, Indian Ocean. At depths of ca. 270–620 m in the ESC.

Remarks The dark margin of the pelvic fin in ESC specimens has not been reported in *Antigonia capros* from other areas (e.g., Ida 1982; Machida 1985; Heemstra 2016). Further study is needed to reveal the significance of this difference.

116) *Antigonia rubescens* (Günther, 1860) (Caproidae) Indo-Pacific boarfish

FAO Code: ZAI

Counts D VIII–XI,25–30; A III,25–27; P1 13; P2 I,5

Diagnosis Body very deep, its depth about equal to SL, rhomboid, strongly compressed. Head profile concave, steep behind middle of eye. Snout projecting, pointed. Caudal peduncle very short, deeper than long. Mouth small, nearly horizontal. Dorsal-, anal- and pelvic-fin spines robust. First two dorsal-fin spines small, third longest, gently curved. Caudal fin truncate. Scales small, ctenoid, adherent. Body reddish. Attaining 25 cm SL.

Distribution Northwest Pacific, South Pacific, Indian Ocean, Emperor Seamount Chain. At depths of ca. 400–410 m in the ESC.

Remarks This species can be distinguished from *Antigonia capros* and *A. rubicunda* by the concave head profile, nearly horizontal mouth, and longer snout.

117) *Antigonia rubicunda* Ogilby, 1910 (Caproidae) A kind of boarfish

FAO Code: BOR (as Caproidae)

Counts D VIII–IX,26–30; A III,25–28; P1 13–14; P2 I,5

Diagnosis Body round, deep, slightly longer than deep, strongly compressed. Mouth small, nearly vertical. Dorsal-, anal- and pelvic-fin spines robust. First and second dorsal-fin spines short, third one longest. Caudal fin truncate. Scales small, ctenoid, adherent, covering head and body. Body reddish orange. Attaining 11 cm SL.

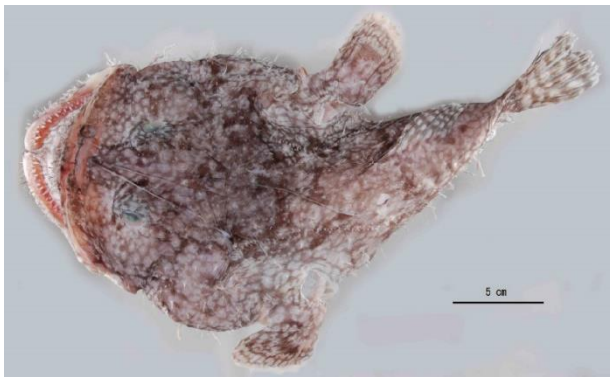
Distribution Western North Pacific, Emperor Seamount Chain, South Pacific. At depths of ca. 300–430 m in the ESC.

Remarks This species can be distinguished from *Antigonia capros* by its fewer dorsal- and anal-fin rays and shallower body.

26. Lophiiformes

118) *Lophiodes bruchius* Caruso, 1981 (Lophiidae) A kind of anglerfish

FAO Code: ANF (as Lophiidae)



Counts D II-I-II-7–8; A 6; P1 20–22; P2 6

Diagnosis Head large, depressed, its length about 60% of SL. Body short. Mouth large. Both jaws with many sharp conical teeth. Gill opening extending below, behind, and in front of pectoral-fin base. First dorsal-fin spine (illicium) long, lightly pigmented. Esca at tip of illicium leaf-like, distally dark. Head and body with many flaps. Body dark brown with many white blotches dorsally, whitish ventrally. Attaining 39 cm SL.

Distribution Kyushu-Palau Ridge, Hawaiian Islands, Emperor Seamount Chain, Marquesas Islands, Indonesia. At depths of ca. 290–410 m in the ESC.

Remarks This species resembles *Lophiodes miacanthus* Gilbert, 1905 (type locality: Hawaii) but can be distinguished by a lightly pigmented illicium (vs. black in *L. miacanthus*), and a leaf-like and distally dark esca (vs. esca bulb-like, bearing a single apical cirrus, light in color in *L. miacanthus*) (Caruso 1981).

119) *Chaunax umbrinus* Gilbert, 1905 (Chaunacidae) A kind of sea toad

FAO Code: N/A

Counts D III-11–12; A 7; P1 12–14; P2 5

Diagnosis Head large, globose. Body shorter than head. Skin very loose and flaccid, densely covered with numerous spinules. Mouth nearly vertical. A short illicium with a terminal esca between eyes. Anal-fin base short. Pectoral fin fan-like in shape. Pelvic fin short. A small gill opening slightly behind pectoral-fin base. Body reddish with many small yellow blotches when fresh. Attaining 27 cm SL.

Distribution Hawaiian Islands, Emperor Seamount Chain. At depths of ca. 290–400 m depth in the

ESC.

Remarks *Chaunax fimbriatus* Hilgendorf, 1879 was also reported from the Emperor Seamount Chain and Hawaiian Islands (e.g., Chave and Mundy 1994). That species differs from *C. umbrinus* in having two large yellow blotches at the dorsal midline, one at the soft-dorsal fin origin, and another at the middle of head (Okamura 1984).

120) *Dibranchus japonicus* Amaoka & Toyoshima, 1981 (Ogcocephalidae) Japanese seabat

FAO Code: N/A

Counts D 5–6; A 4; P1 13–15; P2 5

Diagnosis Head strongly depressed, disc-like, nearly circular in shape. Snout rounded, somewhat projecting beyond jaws. Esca in deep illicial cavity of snout. Head and body thickly covered with numerous small spinules. Three rows of prominent spines on tail region. Body blackish brown. All fins black. Attaining 15 cm SL.

Distribution Japan, Australia, South Africa, Emperor Seamount Chain. At depths of ca. 580–760 m in the ESC.

121) *Malthopsis* cf. *tiarella* (Ogcocephalidae) A king of batfish

FAO Code: N/A

Counts D 6–7; A 4; P1 11–13; P2 I,5

Diagnosis Body disc strongly depressed, markedly triangular. Rostral spine (a horn-like projection at snout tip) directed upward and forward. Illicial cavity, a small triangular cave, at front of snout. Dorsal surface of disc and tail covered with large plate-like modified scales (bucklers). Ventral surface of disk covered with minute spinules. Anal fin slightly extending beyond caudal-fin base when appressed. A dark transversal bar on caudal fin. Attaining 6 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 340–450 m in the ESC.

Remarks The ESC specimens (n=6) agreed with *M. tiarella* Jordan, 1902 in counts and several characters proposed by Ho and Koeda (2019) (see Diagnosis) but disagree in other characters, including dorsal surface of disk uniformly covered with bucklers and spinules (vs. largely naked) and throat well covered with bucklers (vs. largely naked). Further study is needed to establish the taxonomic identity of this form.

122) *Malthopsis* cf. *jordani* (Ogcocephalidae) A king of batfish

FAO Code: N/A

Counts D 5; A 4–5; P1 13–15; P2 I,5

Diagnosis Body disc strongly depressed, markedly triangular. Rostral spine short, directed upward. Eye relatively large (14.4–14.5 % of SL). Illicial cavity at front of snout. Lateral process of disc with one spine directed forward and another directed backward. Dorsal and ventral surface of disc densely covered with bucklers but without spinules. Dorsal- and anal-fin bases short. Attaining 7 cm SL.

Distribution Emperor Seamount Chain. At depths of ca. 470–680 m in the ESC.

Remarks The ESC specimens (n=2, 56.6–66.0 mm SL) agree with *M. jordani* Gilbert, 1905 in several diagnostic characters proposed by Ho and Shao (2010) (see Diagnosis) but differ in other characters including a wider interorbital space (9.2–9.4% vs. 4.4–6.1% of SL in *M. jordani*) and ventral surface of disc densely covered with buckers (vs. mostly naked with relatively few bucklers). Further study is needed to establish the identity of this form.

123) *Himantolophus sagamius* (Tanaka, 1918) (Himantolophidae) Pacific footballfish

FAO Code: JEX (as *Himantolophus* spp.)

Counts D 5–6; A 4; P1 15–18

Diagnosis (of female) Body nearly globular. Dozens of bony plates, scattered on skin, each bearing a medial spine. Mouth large, with numeral conical teeth. Eye minute. Illicium stout. Escal bulb

globular, with about 10 branched filaments. Dorsal and anal fins small, very close to caudal fin. Pelvic fin absent. Body uniformly dark brown. Attaining 60 cm SL.

Distribution North Pacific. At depths of ca. 380–450 m in the ESC.

124) *Cryptopsaras couesii* Gill, 1883 (Ceratiidae) Triplewart seadevil

FAO Code: CTQ

Counts D 4–5; A 4; P1 14–18

Diagnosis (of female) Body elliptical. Cleft of mouth nearly vertical. Eye rudimentary. Dorsal tentacle single, long Three fleshy oval projections (caruncles) on back in front of soft-dorsal fin. Dorsal and anal fins small, very close to caudal fin. Pelvic fin absent. Male much smaller, parasitic on female. Attaining 30 cm SL.

Distribution Circumglobal. At depths of ca. 410–600 m in the ESC.

27. Tetraodontiformes

125) *Macrorhamphosodes uradoi* (Kamohara, 1933) (Triacanthodidae) Trumpetsnout

FAO Code: N/A

Counts D VI-13–15; A 12–14; P1 13–14; P2 I,1

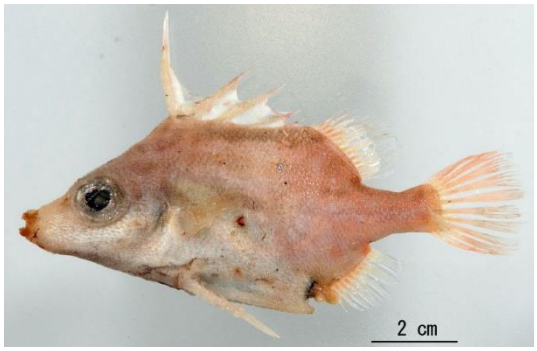
Diagnosis Body elongate, compressed. Snout very long, tubular. Mouth very small, oriented upward at tip of snout. Gill opening small, opening just in front of pectoral-fin base. Two dorsal fins well separated. Three dorsal-fin spines well developed, first longest. Pelvic-fin spine well developed. Caudal fin round. Body reddish, ventrally pale. Attaining 17 cm SL.

Distribution Japan, Kyushu-Palau Ridge, Emperor Seamount Chain. At depths of ca. 370–550 m in the ESC.

Remarks This species superficially resembles the snipefishes of the genus *Macroramphosus* (family Macroramphosidae) but can be easily distinguished by the well-developed pelvic-fin spine and much smaller gill opening.

126) *Paratriacanthodes retrospinis* Fowler, 1934 (Triacanthodidae) Sawspine spikefish

FAO Code: N/A



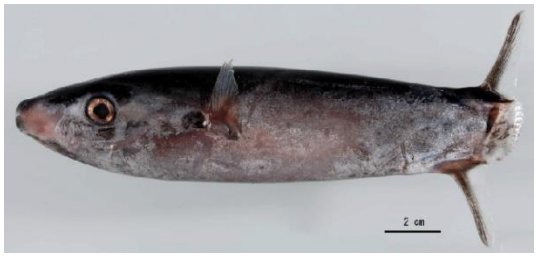
Counts D VI-14–15; A 13; P1 13–15; P2 I,1

Diagnosis Body deep at trunk, abruptly tapered posteriorly. Mouth small. Snout projecting. Two dorsal fins. Dorsal-fin spines robust, first longest, gradually becoming shorter posteriorly. Pelvic-fin spine robust, long. Pectoral fin small. Caudal fin rounded. Body covered with fine scales, rough in texture. Body reddish, with three transverse bars dorsally. Attaining 12 cm SL.

Distribution West Pacific, South Africa, Emperor Seamount Chain. At depths of ca. 390–700 m in the ESC.

127) *Ranzania laevis* (Pennant, 1776) (Molidae) Slender sunfish

FAO Code: RZV



Counts D 17–19; A 18–19; P1 13

Diagnosis Body strongly compressed, elongate but becoming deeper (depth about 1/2 of body length) with growth. Mouth small. Lips funnel-like, enclosing a vertical slit. Gill opening smaller than pectoral-fin base length, just anterior to and above pectoral-fin base. Dorsal and anal fins short-based, tall and very narrow. Clavus (tail, formed by modified posterior parts of dorsal and anal fins) truncate. Pectoral fin elongate, pointed. Pelvic fin absent. Body dark dorsally, silvery ventrally. Attaining 80 cm SL.

Distribution Tropical and temperate seas of the world. At depths of ca. 150–160 m in the ESC.

Remarks *Ranzania laevis* can be distinguished from other sunfishes (genera *Mola* and *Masturus*) in its shallower body (54% of SL or shallower vs. 58–86% of SL) and long pointed pectoral fin (vs. round).

128) *Sphoeroides pachygaster* (Müller & Troschel, 1848) (Tetraodontidae) Blunthead puffer

FAO Code: TSP

Counts D 7–9; A 8–9; P1 14–17

Diagnosis Body oval, transverse section round. Belly soft, with many fine vertical fleshy striations. Body surface smooth, no spines. Mouth small, beak-like, with a pair of teeth in each jaw. Gill opening small, just in front of pectoral-fin base. Dorsal and anal fins very small, located at rear of body. Pelvic fin absent. Caudal fin truncated or slightly emarginate. Body dark greenish grey dorsally, white ventrally. Attaining 41 cm SL.

Distribution Temperate waters of the world. At depths of ca. 280–420 m in the ESC.

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