

A list of the specimens of Synodontidae (Actinopterygii: Aulopiformes) deposited in the Department of Zoology, The University Museum, The University of Tokyo

Mahiro Fukatani^{1*}, Ryusei Furuhashi², Keita Koeda³, Hidetoshi Wada⁴, Masahiro Aizawa⁴, Kazuo Sakamoto^{4,5}, Rei Ueshima^{4,6}

¹Faculty of Agriculture, The University of Tokyo, 1-1-1 Yayoi, Bunkyo-ku, Tokyo 113-8657, Japan

²The United Graduate School of Agricultural Sciences, Kagoshima University, 1-21-24 Korimoto, Kagoshima, Kagoshima 890-0065, Japan

³Faculty of Science, University of Ryukyus, 1 Senbaru, Nishihara, Okinawa 902-0213, Japan

⁴The University Museum, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

⁵Fish Information Center and Museum, 6-6 Toyosu Koto-ku, Tokyo 135-0061, Japan

⁶Department of Biological Sciences, Graduate School of Science, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

*Corresponding author (e-mail: mahirofukatani@g.ecc.u-tokyo.ac.jp)

Abstract

Detailed investigation on the Synodontidae (lizardfish) specimens deposited in the Department of Zoology, The University Museum, The University of Tokyo (ZUMT) revealed that there are 383 catalog numbers including 668 specimens representing 27 species and four genera. Type specimens confirmed are as follows: the holotype and two paratypes of *Saurida isarankurai* Shindo & Yamada, 1972; two syntypes of *Saurida macrolepis* Tanaka, 1917; a paratype of *Saurida micropectoralis* Shindo & Yamada, 1972; the holotype of *Saurida wanieso* Shindo & Yamada, 1972; the holotype of *Synodus hoshinonis* Tanaka, 1917; the three syntypes of *Synodus macrops* Tanaka, 1917. One of the syntypes of *Saurida macrolepis* and the holotype of *Synodus fuscus* Tanaka, 1917, which are thought to be stored in ZUMT, were not found in the present study.

Introduction

The lizardfishes (family Synodontidae) are bottom-living, carnivorous fish which mainly feeds small fishes and crustaceans (Russell, 1999). Some of them are commercially important, and often harvested in Indo-Pacific countries using bottom trawling or other traditional ways (Russell, 1999; Kalhor et al., 2013; Yang et al., 2021). The family includes four genera, *Harpadon*, *Saurida*, *Synodus*, and *Trachinocephalus*. In Japanese waters, two species of *Harpadon*, 10 species of *Saurida*, 16 species of *Synodus*, and one species of *Trachinocephalus* are known today (Randall, 1998; Yamada and Yagishita, 2013; Nakamura and Motomura, 2020; Nakayama and Tamai, 2020; Furuhashi et al., 2022).

This catalogue provides information attained from the specimens and the ledgers on the collection of lizardfishes in the Department of Zoology, The University Museum, The University of Tokyo (ZUMT). The collection treated here consists of specimens collected mainly from Japan, and Southeast Asia, and partly from Hawaii, Papua New Guinea, and Suriname.

Material and Methods

The specimens of Synodontidae deposited in the Department of Zoology, The University Museum, The University of Tokyo (abbreviated as ZUMT) were identified following Shindo and Yamada (1972), Ueno and Aizawa (1983), Inoue and Nakabo (2006), Yamada and Yagishita (2013), Ozawa (2014), Polanco et al. (2016), Furuhashi and Motomura (2022a, b, c), and Furuhashi et al. (2022). Japanese names of the species also follow these studies. Type attributes follow Aizawa et al. (2022). For some specimens without collecting dates in the ledgers or specimen tags, according to Koeda et al. (2022), the numbers of years before which the specimen was collected were estimated by their specimen numbers. During the study, we needed to register specimens anew. Such specimens were assigned to numbers of ZUMT 62000–65000.

In this list, the ZUMT specimens are described as “ZUMT XXXX”, while the specimens of “ABE collection”,

which was collected by Tokiharu ABE (阿部 宗明) and once registered aside from ZUMT collection, are described as “ZUMT ABE XXXX.” After ZUMT numbers, the following data are given when available: type attributes (abbreviated for non-type); standard length (SL) measured to the nearest 0.1 mm; locality; collecting date; collectors; donators; local names; collecting methods; remarks. For specimens whose localities are not clearly described in the ledgers but are able to be inferred from other information such as collectors, donators, or localities of specimens in the same lot, an asterisk (*) is put before the ZUMT number. Species are arranged in alphabetical order.

Results and Discussion

During the study, a total of 668 lizardfish specimens from 27 species and four genera were discovered in the ZUMT collection. While the following type specimens were verified [the holotype and two paratypes of *Saurida isarankurai* Shindo & Yamada, 1972; two syntypes of *Saurida macrolepis* Tanaka, 1917; a paratype of *Saurida micropectoralis* Shindo & Yamada, 1972; the holotype of *Saurida wanieso* Shindo & Yamada, 1972; the holotype of *Synodus hoshinonis* Tanaka, 1917; the three syntypes of *Synodus macrops* Tanaka, 1917], we could not find one of the syntypes of *Saurida macrolepis* and the holotype of *Synodus fuscus* Tanaka, 1917.

The reason the number of specimens was much larger than that of catalog numbers is that some bottles with one ZUMT number included lots of larvae, especially for *Synodus* sp. (unidentified, see remarks in Species Accounts) and *Trachinocephalus trachinus* (Temminck & Schlegel, 1846). These larvae were mostly collected by the research vessels of ORI (Ocean Research Institute, current AORI), Tansei-maru (淡青丸) and Hakuho-maru (白鳳丸), with plankton nets in East China Sea and Pacific ocean off the coasts of southern Japan, and by someone (probably including T. Abe) with landing nets in Papua New Guinea. Because most of them had not to be registered to ZUMT, they were newly registered and assigned to ZUMT numbers from 62000 to 65000.

For the species distributed in Japanese waters, two species of *Harpadon* (100 % of total), nine of *Saurida* (90 %), seven of *Synodus* (43.75 %), and one of *Trachinocephalus* (100 %) were confirmed. Lizardfishes of the genus *Synodus* include several species whose localities are very limited in Japan (e.g. *Synodus lobeli* Waples & Randall, 1988; *Synodus orientalis* Randall and Pyle, 2008)(Senou et al., 1995), or species with few specimens from Japan to date (e.g. *Synodus rubromarmoratus* Russell & Cressey, 1979; *Synodus usitatus* Cressey, 1981)(Cressey, 1981; Randall, 1998). The small number of the species of *Synodus* in ZUMT is thus reasonable for some extent. However, there remains a question as to the reason some apparently common species (e.g. *Synodus jaculum* Russell & Cressey, 1979; *Synodus variegatus* (Lacepède 1803))(Moyer and Sano, 1985; Iwatsuki et al., 2017; Motomura and Harasaki, 2017) were hardly or not at all found in the ZUMT collection. One possibility is that these lizardfish species have recently spread widely and settled in the Japanese waters (note that at least the specimens with catalog numbers <40000 were collected before the World War II). Another possibility is that the selectivity of the collecting may have affected these.

Species Accounts

Synodontidae エソ科

Harpadon Lesueur, 1825 ミズテング属

Harpadon microchir Günther, 1878 ミズテング

[JAPAN]

Tokyo Met.

ZUMT 21043: 392.3 mm; Tokyo Market (東京市場).

Kanagawa Pref.

ZUMT 64450: 346.0 mm; Odawara (小田原); 22 Jan. 2022; donated by M. Fukatani (深谷真央); Gill net.

[Locality unknown]

ZUMT 52332: 590.0 mm, ZUMT 64408: 201.0 mm, ZUMT 64409: 209.2 mm, ZUMT 64410: 126.9 mm, ZUMT 64411 (2 specimens): 24.8–34.0 mm, ZUMT ABE 60-1161: 44.7 mm.

Harpadon nehereus (Hamilton, 1822) テナガミズテング

[JAPAN]

East China Sea

ZUMT 51325: 238.3 mm, **ZUMT 51326**: 229.2 mm; Sept. 1959 to Feb. 1960; coll. by Y. Tominaga (富永義昭).

ZUMT 52001: 238.1 mm, **ZUMT 52002**: 198.9 mm; off Shanghai, China. Norin-kaiku 337 or 328 (農林 337 or 328 区); 7–16 July 1960; offshore pair-trawl fishery in the East China Sea (以西底曳網); coll. by Y. Tominaga, Ten'yo-maru No.51 (第 51 天洋丸).

ZUMT 52266: 219.2 mm; Norin-kaiku 319 (農林 319 区); 23 May 1960; coll. by Y. Tominaga, Ten'yo-maru No.31 (第 31 天洋丸).

Saurida Valenciennes, 1850 マエソ属
Saurida caribbaea Breder, 1927 カリブエソ

[SURINAME]

ZUMT 64379: 105.1 mm; coll. by R/V Nisshin.maru No. 201 (第 201 日進丸).

Saurida elongata (Temminck & Schlegel, 1846) トカゲエソ

[JAPAN]

Niigata Pref.

***ZUMT 2131**: 206.0 mm; donated by Echigo Shibata Junior High School (越後新発田中学校).

ZUMT 23444: 274.0 mm, **ZUMT 24471**: 170.2 mm.

Remarks: ZUMT 23444 is stored in a large glass tank (211-B).

Toyama Pref.

ZUMT 41226: 258.0 mm, **ZUMT 41227**: 197.0 mm, **ZUMT 41264**: 190.0 mm, **ZUMT 41265**: 188.8 mm, **ZUMT 41266**: 190.0 mm; Uozu (魚津) or Namerikawa (滑川); coll. by I. Tomiyama (富山一郎).

Remarks: ZUMT 41226 is stored in a large glass tank (211-B).

ZUMT 45800: 133.4 mm; Uozu (魚津); 1921.

ZUMT 46158: 225.0 mm, **ZUMT 46208**: 287.0 mm; Uozu (魚津) or Namerikawa (滑川).

Remarks: ZUMT 46208 is stored in a large glass tank (211-B).

Kyoto Pref.

ZUMT 38304: 130.0 mm; Miyazu Bay (宮津湾); 7 July 1903; coll. by Iizuka (飯塚).

Shimane Pref.

ZUMT 31253: 146.1 mm; Matsue (松江); donated by T. Yanai (柳井隆一) (Matsue High School) (松江高校).

Shizuoka Pref.

ZUMT 57817: 260.5 mm; Numazu Fish Market (沼津魚市場); 10 Oct. 1988; coll. by Aizawa (藍澤), Senou (瀬能), Mochizuki (望月), and Urano (浦野).

Wakayama Pref.

ZUMT 20286: 181.5 mm.

Hyogo Pref.

ZUMT 25068: 150.2 mm, **ZUMT 25069**: 148.2 mm, **ZUMT 25070**: 232.2 mm; Shikanose (鹿之瀬), Akashi (明石); 24 June 1930; coll. by T. Saito (斉藤敏夫) (Akashi Fisheries Experimental Station) (明石水産試験場); received on 23 Jan. 1933.

ZUMT 25071: 151.1 mm, **ZUMT 25072**: 152.8 mm; Ako (赤穂); 18 Oct. 1932; coll. by T. Saito (斉藤敏夫) (Akashi Fisheries Experimental Station) (明石水産試験場); received on 23 Jan. 1933.

ZUMT 44672: 91.7 mm; Sumoto (洲本), Awaji (淡路).

Okayama Pref.

ZUMT 16440: 166.0 mm; Kanaura (金浦); Kasaoka (笠岡); coll. by K. Matsushima (松島克生) (Kojo Junior High School) (岡山県後月郡西江原町興讓中学校).

ZUMT 37518: 102.0 mm; Misaki (三崎) or Ushimado (牛窓); coll. by S. Miyoshi (三好 晋) (Mito High School) (水戸高等学校); written down by Tomiyama (富山) on 25 May 1937.

Ehime Pref.

ZUMT 24948: 211.0 mm; the coast of Horie (堀江海岸), Matsuyama (松山); Oct. 1931; coll. by J. Ishikawa (石川重治郎) (Matsuyama Womens High School) (松山高等女学校); checked on 1 Nov. 1931.

Fukuoka Pref.

ZUMT 35778: 156.5 mm, **ZUMT 35779:** 126.6 mm, **ZUMT 35780:** 130.2 mm, **ZUMT 35781:** 96.0 mm, **ZUMT 35782:** 195.0 mm; Okinohata (沖端), Yanagawa (柳川); Oct. 1931; coll. by I. Tomiyama (富山一郎); donated by Ariakekai research center (有明海研究所), local name Eso (エソ).

ZUMT 50591: 218.0 mm; Fukuoka Fish Market (福岡魚市場); Aug. 1959; coll. by Y. Tominaga (富永義昭).

Nagasaki Pref.

ZUMT 2350: 213.0 mm; 20 June 1909.

Remarks: ZUMT 2350 is stored in a large glass tank (211-B).

ZUMT 48120: 300.0 mm; Fukue (福江) Fish Market, Minamimatsuura (南松浦); May 1953; coll. by I. Tomiyama (富山一郎).

ZUMT 50414: 290.2 mm; Ichibu (壱部), Itsuki (生月町), Hirado (平戸); 25 Oct. 1953; coll. by I. Tomiyama (富山一郎); Itsuki Fish. Corp. (生月漁業協同組合), triangular set net (大敷網).

ZUMT 50441: 302.0 mm; Sasebo Fish Market (佐世保魚市場); 30 Oct. 1953; coll. by I. Tomiyama (富山一郎).

Remarks: ZUMT 50441 is stored in a large glass tank (211-B).

East China Sea

ZUMT 51533: 226.0 mm; Norin-kaiku 314–304–305 (農林 314–304–305 区); 30 Mar. 1960.

Remarks: ZUMT 51533 is stored in a large glass tank (211-B).

ZUMT 54537: 135.5 mm; [34°05'N, 122°33'E], Norin-kaiku 342 (農林 342 区), depth 25 m; 13 Oct, 1984; Ten'yo-maru No.8 (第 8 天洋丸).

[TAIWAN]

***ZUMT 19664:** 137.2 mm; coll. by H. Sato (佐藤春吉) (Taipei Keelung Junior High School) (台北基隆中学校).

[Locality unknown]

ZUMT 64218: 333.0 mm, **ZUMT 64366:** 426.6 mm.

Remarks: ZUMT 64218 and ZUMT 64366 are stored in a large glass tank (211-B).

Saurida gracilis (Quoy & Gaimard, 1824) マダラエソ

[JAPAN]

Kagoshima Pref.

ZUMT 29611: 95.8 mm; Naze (名瀬), Amami-Oshima Island (奄美大島); 10 Sept. 1910; Amami-Oshima Junior High School (奄美大島中学校); donated by K. Enoya (榎屋兼武) (Kagoshima Prefectural Oshima Junior High School) (鹿児島県立大島中学校).

Okinawa Pref.

ZUMT 14434: 127.5 mm; S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received on 24 Mar. 1925.

ZUMT 15324: 163.6 mm; before 1926; S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校).

ZUMT 16977: 135.2 mm, **ZUMT 16978:** 179.3 mm; Itoman (糸満); before 1926; S. Tanabe (田辺貞夫).

ZUMT 39986: 77.2 mm, **ZUMT 40344:** 122.6 mm; S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received in Mar. 1925.

ZUMT 45834: 130.0 mm; S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received in Mar. 1925.

ZUMT 47252: 114.0 mm, **ZUMT 47253:** 120.1 mm, **ZUMT 47254:** 113.5 mm, **ZUMT 47255:** 129.1 mm, **ZUMT 47256:** 119.5 mm; donated by G. Ogawa (小川銀太郎) (Okinawa Prefectural Normal School) (沖縄県師範学校).

ZUMT 60683: 192.1 mm; Kabira Bay (川平湾), Ishigaki Island (石垣島); 28 Aug. 1989.

***ZUMT 64963:** 116.6 mm; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received in Mar. 1925; probably the same lot as ZUMT 40342.

[PHILIPPINES]

ZUMT 11025: 169.9 mm; before 1923; coll. by U. Yamamura (山村樞次郎).

ZUMT 42062: 76.4 mm; 1926; U. Yamamura (山村樞次郎).

[PALAU]

ZUMT 43187: 92.9 mm; Y. Haneda (羽根田弥太); received in Jan. 1938.

ZUMT 55303: 87.5 mm; Caroline Island; Aug. 1935; Y. Haneda (羽根田弥太).

[Locality unknown]

ZUMT 46385: 210.1 mm, **ZUMT 46386:** 241.0 mm, **ZUMT 64359:** 115.8 mm, **ZUMT ABE 2919:** 180.0 mm, **ZUMT ABE 3047:** 120.0 mm, **ZUMT ABE 3776:** 161.8 mm, **ZUMT ABE 5959:** 140.4 mm.

Saurida isarankurai Shindo & Yamada, 1972

[THAILAND]

ZUMT 52501 (holotype): 109.2 mm, **ZUMT 54347 (Paratype):** 100.7 mm, **ZUMT 54348 (Paratype):** 106.7 mm; Prachambkirikan Prov., the Gulf of Thailand.

Remarks: ZUMT 52501 is currently stored in room 407 in the museum building, while ZUMT 54347 and ZUMT 54348 are in shelved containers (not large glass tanks) in room 406.

ZUMT 65836: 99.0 mm, **ZUMT 65837:** 114.5 mm; southwestern part of the Gulf of Thailand; 22 Aug. 1985.

ZUMT 65841: 87.7 mm, **ZUMT 65842:** 90.6 mm, **ZUMT 65843:** 81.0 mm, **ZUMT 65844:** 87.6 mm, **ZUMT 65845:** 79.7 mm, **ZUMT 65846:** 73.3 mm, **ZUMT 65847:** 76.8 mm, **ZUMT 65848:** 81.8 mm, **ZUMT 65849:** 74.2 mm; off Songkhla Prov., southwestern part of the Gulf of Thailand; 9 July 1985.

Saurida macrolepis Tanaka, 1917 マエソ

[JAPAN]

Toyama Pref.

ZUMT 23263: 104.0 mm; Toyama Bay (富山湾); before 1930; coll. by K. Kikuchi (菊池勘左衛門) (Toyama High School) (富山高等学校).

Remarks: ZUMT 23263 represents the first reliable record of the species from Toyama Bay, and was collected before 16 Dec. 1930 (Fukatani, 2023).

Kyoto Pref.

ZUMT 38305: 110.0 mm, **ZUMT 38363:** 110.0 mm, **ZUMT 38306:** 109.7 mm, **ZUMT 38307:** 116.1 mm; Miyazu Bay (宮津湾); 7 July 1903; coll. by Iizuka (飯塚).

Shimane Pref.

ZUMT 31216: 193.4 mm; Matsue (松江); before 1935; donated by T. Yanai (柳井隆一) (Matsue High School) (松江高校).

Yamaguchi Pref.

ZUMT 10096: 158.5 mm, **ZUMT 10144:** 121.0 mm; Senzaki (仙崎), Nagato (長門); before 1922; coll. by S. Tanaka (田中茂穂).

Tokyo Met.

ZUMT 7477 (syntype, lost), ZUMT 7478 (syntype): 197.3 mm, **ZUMT 7479 (syntype):** 195.1 mm; Tokyo Market; before 1917.

Remarks: ZUMT 7477 was previously regarded as the holotype of *S. macrolepis* (Inoue and Nakabo, 2006), but the specimen is one of the syntypes of the species with ZUMT 7478 and ZUMT 7479 (Aizawa et al., 2022). However, ZUMT 7477 is missing (Inoue and Nakabo, 2006; Aizawa et al., 2022) and was not found in this study.

ZUMT 21006: 151.4 mm; Tokyo market (東京市場); before 1930.

ZUMT 21036: 149.3 mm; before 1930.

Kanagawa Pref.

ZUMT 20843: 154.6 mm; Misaki (三崎); before 1930.

ZUMT 64442: 143.8 mm; Sagami Bay (相模湾), depth 72–74 m; 3 Nov. 2021; coll. by A. Kato (加藤 晃); donated by M. Fukatani (深谷真央).

Wakayama Pref.

***ZUMT 8085:** 105.5 mm; before 1917; coll. by N. Ui (宇井縫藏).

ZUMT 20242: 115.1 mm, **ZUMT 20287:** 151.4 mm; before 1930.

ZUMT 22528: 94.2 mm, **ZUMT 22529:** 78.0 mm, **ZUMT 22571:** 53.0 mm, **ZUMT 22574:** 74.4 mm; Tanabe (田辺); Jan. 1920; coll. by N. Ui (宇井縫藏).

ZUMT 41832: 91.5 mm; Tatsugahama (辰ヶ浜), Shirahama (白浜); 10 Apr. 1942; coll. by M. Inoue (井上光雄).

Hyogo Pref.

ZUMT 2256: 174.5 mm; Awaji Fukura Fish Market (淡路福良魚市場); 15 June 1909; coll. by R. Uchiyama (内山柳太郎).

Kochi Pref.

ZUMT 17622: 167.0 mm; off the coast of Tosa (土佐沖); 14 May. 1927; Y. Yamamoto (山本義光) (Oita Prefectural Normal School) (大分師範学校).

ZUMT 21921: 159.7 mm; before 1930; coll. by Kochi prefectural Susaki Fisheries Experimental Station (高知県須崎水産試験場).

ZUMT 23272: 182.5 mm; Urado (浦戸); 11 July 1930; T. Kamohara (蒲原稔治) (Kochi High School) (高知高等学校).

ZUMT 33666: 138.4 mm, **ZUMT 33667:** 143.2 mm, **ZUMT 33668:** 133.0 mm, **ZUMT 33669:** 148.5 mm, **ZUMT 33670:** 126.3 mm, **ZUMT 33671:** 144.1 mm; before 1936; coll. and donated by Kochi prefectural Susaki Fisheries Experimental Station (高知県須崎水産試験場).

ZUMT 47023: 126.0 mm.

Nagasaki Pref.

ZUMT 47895: 124.2 mm, **ZUMT 47896:** 145.7 mm, **ZUMT 47897:** 134.1 mm, **ZUMT 47898:** 111.0 mm, **ZUMT 47899:** 127.0 mm, **ZUMT 47900:** 118.1 mm, **ZUMT 47901:** 105.0 mm, **ZUMT 47902:** 107.0 mm; Tamanoura (玉之浦), Minamimatsuura (南松浦); 23–24 May 1953; coll. by I. Tomiyama (冨山一郎).

ZUMT 48273: 111.1 mm; Tamanoura (玉之浦), Minamimatsuura (南松浦).

ZUMT 50075: 165.1 mm, **ZUMT 50076:** 147.4 mm, **ZUMT 50077:** 174.9 mm, **ZUMT 50078:** 147.5 mm, **ZUMT 50079:** 92.0 mm, **ZUMT 50080:** 155.8 mm; Tamanoura (玉之浦), Minamimatsuura (南松浦); 14 Oct. 1953; coll. by I. Tomiyama (冨山一郎); Tamanoura Fish. Corp. (玉之浦町漁業協同組合).

ZUMT 50183: 149.7 mm; Arikawa (有川), Minamimatsuura (南松浦); 18 Oct. 1953; coll. by I. Tomiyama (冨山一郎); Arikawa Fish. Corp. (有川町漁業協同組合).

ZUMT 50204: 173.9 mm; Arikawa (有川), Minamimatsuura (南松浦); 19 Oct. 1953; coll. by I. Tomiyama (冨山一郎); Arikawa Fish. Corp. (有川町漁業協同組合).

ZUMT 50326: 193.1 mm; Hirado (平戸); 10 June 1953; coll. by I. Tomiyama (冨山一郎); Hirado Fish. Corp. (平戸漁業協同組合).

ZUMT 50342: 232.0 mm; Usuka (薄香), Hirado (平戸); 20 Oct. 1953; coll. by I. Tomiyama (冨山一郎); Usuka Fish. Corp. (薄香漁業協同組合).

ZUMT 50416: 169.0 mm; Ichibu (一部), Itsuki (生月), Hirado (平戸); 25 Oct. 1953; coll. by I. Tomiyama (富山一郎); Itsuki Fish. Corp. (生月漁業協同組合), triangular set net (大敷網).

ZUMT 50421: 213.0 mm; Kasegawa (加勢川), Itsuki (生月), Hirado (平戸); 26 Oct. 1953; coll. by I. Tomiyama (富山一郎).

ZUMT 50539: 211.1 mm; Nagasaki Fish Market (長崎魚市場); 26 Aug. 1959; coll. by Y. Tominaga (富永義昭).

ZUMT 50630: 174.5 mm; Nagasaki Fish Market (長崎魚市場); 27 Aug. 1959; coll. by Y. Tominaga (富永義昭).

Miyazaki Pref.

ZUMT 18819: 99.2 mm, **ZUMT 18838:** 90.0 mm; before 1928.

ZUMT 21766: 94.0 mm; Miyazaki (宮崎); before 1930; coll. by S. Tanaka (田中茂穂).

Kagoshima Pref.

ZUMT 5163: 175.2 mm, **ZUMT 5164:** 225.0 mm, **ZUMT 5165:** 199.1 mm; before 1915.

***ZUMT 5166:** 178.0 mm; probably Kushikino (串木野); before 1915; local name Kishi (キシ).

ZUMT 23883: 234.8 mm; Taniyama (谷山); before 1931.

ZUMT 24144: 113.2 mm; Kushikino (串木野); before 1932; local name Eso (エソ).

East China Sea

ZUMT 51142: 90.5 mm; Dec. 1959; offshore pair-trawl fishery in the East China Sea (以西底曳網).

[PHILIPPINES]

ZUMT 39517: 120.5 mm; before 1939; coll. by U. Yamamura (山村樸次郎).

[THAILAND]

ZUMT 65850: 131.5 mm; off Songkhla Prov., southwestern part of the Gulf of Thailand; 22 Aug. 1985.

ZUMT 65862: 219.8 mm, **ZUMT 65863:** 144.3 mm, **ZUMT 65864:** 181.7 mm, **ZUMT 65865:** 129.0 mm,

ZUMT 65866: 135.7 mm, **ZUMT 65868:** 112.8 mm, **ZUMT 65869:** 108.5 mm, **ZUMT 65870:** 121.3 mm; off Songkhla Prov., southwestern part of the Gulf of Thailand; 9 July 1985.

[Locality unknown]

ZUMT 46907: 171.0 mm, **ZUMT 62910:** 159.0 mm, **ZUMT 62911:** 170.5 mm, **ZUMT 62912:** 169.8 mm,

ZUMT 64365: 230.8 mm, **ZUMT ABE 61-878:** 168.0 mm.

Remarks: ZUMT 64365 is stored in a large glass tank (211-B).

Saurida microlepis Wu & Wang, 1931 コウカイトカゲエソ

[JAPAN]

East China Sea

ZUMT 50550: 344.0 mm; 28 July 1959; coll. by Y. Tominaga (富永義昭).

Remarks: ZUMT 50550 is stored in a large glass tank (211-B).

ZUMT 51029: 240.0 mm; 16 Mar. 1960; offshore pair-trawl fishery in the East China Sea (以西底曳網), Ten'yo-maru No. 35, 38 (35, 38 天洋丸), unloading at Fukuoka Fish Market (福岡魚市場).

Remarks: ZUMT 51029 is stored in a large glass tank (211-B).

ZUMT 51245: 224.0 mm, **ZUMT 51291:** 245.0 mm; 24 Dec. 1959; coll. by Y. Tominaga (富永義昭); offshore pair-trawl fishery in the East China Sea (以西底曳網), unloading at Fukuoka Fish Market (福岡魚市場).

Remarks: ZUMT 51245 and ZUMT 51291 are stored in a large glass tank (211-B).

Saurida micropectoralis Shindo & Yamada, 1972 コソデエソ

[JAPAN]

Okinawa Pref.

ZUMT 14435: 252.0 mm, **ZUMT 14436:** 180.2 mm; before 1925; S. Sakaguchi (坂口総一郎); received on 24. Mar. 1925.

*ZUMT 15364: 180.4 mm; before 1926; S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校).

ZUMT 17133: 163.2 mm, ZUMT 17134: 87.8 mm, ZUMT 17135: 157.0 mm; Baten (馬天), Nanjo (南城); before 1926; coll. by S. Tanabe (田辺貞夫).

[TAIWAN]

ZUMT 14932: 233.0 mm, ZUMT 14933: 223.1 mm; Tsuausei (嗅青), around Tainan (台南); before 1926; T. Aoki (青木赳雄).

ZUMT 37427: 158.0 mm; Taipei (台北); July 1908.

[PHILIPPINES]

ZUMT 12635: 303.0 mm; before 1926; coll. by U. Yamamura (山村樞次郎); stored in a large glass tank (211-B).

ZUMT 39518: 131.0 mm; before 1939; coll. by U. Yamamura (山村樞次郎).

ZUMT 40849: 108.9 mm; Manila; 11 Feb. 1909; coll. by I. Iijima (飯島 魁), K. Aoki (青木熊吉).

ZUMT 42150: 162.1 mm; 1926; coll. by U. Yamamura (山村樞次郎).

ZUMT 42374: 194.0 mm; Basilan; 1926; coll. by U. Yamamura (山村樞次郎).

[CHINA]

ZUMT 22824: 116.0 mm; Hainan (海南); before 1930.

[THAILAND]

ZUMT 52503 (holotype): 188.6 mm, ZUMT 54349 (paratype): 125.9 mm; Prachambkirikan Prov., the Gulf of Thailand.

Remarks: ZUMT 52503 and ZUMT 54349 are stored in room 407.

ZUMT 65855: 94.6 mm, ZUMT 65856: 114.5 mm, ZUMT 65857: 77.1 mm, ZUMT 65858: 103.2 mm; off Songkhla Prov., southwestern part of the Gulf of Thailand.

[Locality unknown]

ZUMT 64364: 131.5 mm.

Saurida nebulosa Valenciennes, 1850 ウチウミマダラエソ

[JAPAN]

Kagoshima Pref.

ZUMT 22241: 144.1 mm; Naze (名瀬); Amami-oshima Island (奄美大島); 2 Apr. 1922; coll. by K. Enoya (榎屋兼武) (Kagoshima Prefectural Oshima Junior High School) (鹿児島県立大島中学校); received in Aug. 1922; local name Norokujira (ノロクジラ).

Okinawa Pref.

ZUMT 5155: 102.5 mm; Ishigaki-jima Island (石垣島); Apr. 1899; "is taken at lowtide O.C.", donated by Owston on 14 Dec. 1899.

*ZUMT 11215: 137.0 mm, *ZUMT 11216: 109.0 mm; before 1923; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校).

*ZUMT 13933: 125.2 mm; before 1926; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校).

ZUMT 17233: 123.0 mm, ZUMT 17234: 86.5 mm; Unten (運天), Nakijin (今帰仁); before 1926; coll. by S. Tanabe (田辺貞夫) (沖縄学生採), local name Shirahamaino (シラハマイン).

ZUMT 58472: 29.4 mm; inner part of Amitori Bay (網取湾), Iriomote Island (西表島), depth 1–3 m; 14 July 1988.

*ZUMT 64959: 79.3 mm; Itoman (糸満); coll. by S. Tanabe (田辺貞夫); probably the same lot as ZUMT 16977.

*ZUMT 64961: 114.4 mm; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received in Mar. 1925; probably the same lot as ZUMT 40342.

[PHILIPPINES]

ZUMT 40946: 93.3 mm, ZUMT 40947: 60.1 mm, ZUMT 40982: 74.0 mm; Jolo; Feb. 1909; coll. by I. Iijima (飯島 魁), K. Aoki (青木熊吉). [Locality unknown]

ZUMT 64360: 99.7 mm, ZUMT 64361: 109.2 mm, ZUMT 64362: 140.6 mm, ZUMT 64363: 144.3 mm.

Saurida normani Longley, 1935 ノルマンエンソ

[SURINAME]

ZUMT 64380: 151.3 mm, ZUMT 64381: 127.0 mm; coll. by R/V Nisshin-maru No. 201 (第 201 日進丸).

Saurida cf. tumbil (Bloch, 1795)

[PHILIPPINES]

ZUMT 40865: 91.0 mm; Manila; 11 Feb. 1909; coll. by I. Iijima (飯島 魁) and K. Aoki (青木熊吉).

ZUMT 42239: 131.4 mm; 1926; coll. by U. Yamamura (山村樞次郎).

Remarks: ZUMT 40865 and 42239 are similar to *Saurida tumbil*, which is only distributed in the Indian Ocean, by having 50 and 52 lateral-line scales (50–53 in *S. tumbil*), respectively. However, these specimens seem to be different species, because the specimens are collected from the Philippines (Russell, 1999, 2011, 2015; Fricke et al., 2022). In the western Pacific Ocean, the specimens are most similar to *Saurida micropectoralis*, but this species is distinct because it has more than 54 lateral-line scales (Miyahara et al. 2002). Therefore, the specimens are assigned to *Saurida cf. tumbil* in this study.

Saurida umeyoshii Inoue & Nakabo, 2006 クロエンソ

[JAPAN]

Nagasaki Pref.

ZUMT 50271: 246.0 mm, ZUMT 50276: 192.1 mm; Sasebo Fish Market (佐世保魚市場), Sasebo (佐世保); 22 Oct. 1953; coll. by I. Tomiyama (富山一郎).

Remarks: ZUMT 50271 and ZUMT 50276 were probably collected from the East China Sea.

East China Sea

ZUMT 51762: 142.0 mm; East China Sea; coll. by Ten'yo-maru (天洋丸), which came back to the port in early Sept. 1959.

ZUMT 52379: 294.0 mm, 25 May 1968; [start: 26°55'00"N, 125°00'50"E; finish: 26°56'60"N, 125°02'50"E], depth 120 m; coll. by Hakuho-maru (白鳳丸); Otter trawl.

Remarks: ZUMT 52379 is stored in a large glass tank (211-B).

ZUMT 57646: 191.5 mm, East China Sea; 9 May 1968.

[Locality unknown]

ZUMT 64375: 161.3 mm.

Saurida cf. undosquamis (Richardson, 1848) ツケアゲエンソ

[TAIWAN]

ZUMT 13672: 99.0 mm; Keelung (基隆); before 1926; coll. by T. Aoki (青木赳雄) (Taiwan Government General Fishery Division (台湾総督府水産課)).

Remarks: This species was first recorded from Japan by Nakamura and Motomura (2020) as *S. undosquamis*, but because the type locality of *S. undosquamis* is northwestern Australia and is genetically distinct from the Japanese species, Furuhashi et al. (2022) considered them to be distinct species and assigned the Japanese

species to *S. cf. undosquamis*. ZUMT 13672 is considered morphologically the same species as those from Japan and is therefore assigned to *S. cf. undosquamis* in this study.

Saurida wanieso Shindo & Yamada, 1972 ワニエソ

[JAPAN]

Fukui Pref.

*ZUMT 16048: 247.0 mm; before 1926; coll. by Fukui Prefectural Fisheries Experimental Station (福井県水産試験場).

Kyoto Pref.

ZUMT 24325: 293.0 mm, ZUMT 24348: 159.2 mm; Miyazu (宮津); Nov. 1931; Kyoto Fisheries Training Institute (京都府水産講習所).

Remarks: ZUMT 24325 is stored in a large glass tank (211-B).

ZUMT 55338: 160.8 mm; Maizuru Market (舞鶴市場); 4 Nov. 1985; set net (定置網).

ZUMT 55842: 118.5 mm; Maizuru Market (舞鶴市場); 3 Nov. 1986.

Wakayama Pref.

*ZUMT 8086: 83.1 mm; before 1918; coll. by N. Ui (宇井縫蔵).

ZUMT 22001: 99.0 mm; Jan. 1920.

Nagasaki Pref.

ZUMT 35389: 72.0 mm ZUMT 35390: 51.0 mm; before 1936.

ZUMT 50438: 301.0 mm; Sasebo Fish Market (佐世保魚市場); 30 Oct. 1953; coll. by I. Tomiyama (冨山一郎).

Remarks: ZUMT 50438 is stored in a large glass tank (211-B).

Miyazaki Pref.

ZUMT 22393: 77.1 mm; before 1930; coll. by S. Tanaka (田中茂穂).

East China Sea

ZUMT 52502 (holotype): 289.4 mm.

ZUMT 50565: 296.0 mm; 13 Sept. 1959; coll. by Y. Tominaga (富永義昭); Ten'yo-maru (天洋丸).

Remarks: ZUMT 50565 is stored in a large glass tank (211-B).

ZUMT 51145: 140.0 mm; Dec. 1959; offshore pair-trawl fishery in the East China Sea (以西底曳網).

[TAIWAN]

ZUMT 5148: 225.8 mm; Keelung (基隆); Sept. 1896; coll. by T. Tada (多田綱輔).

ZUMT 13673: 125.2 mm; Keelung (基隆); before 1926; T. Aoki (青木尙雄) (Taiwan Government General Fishery Division (台湾総督府水産課)).

[CHINA]

ZUMT 21237: 232.2 mm; before 1930.

[Locality unknown]

ZUMT 40647: 108.1 mm, ZUMT 40648: 87.8 mm; "Morioka? (盛岡か?)."

Saurida sp.

[JAPAN]

Wakayama Pref.

ZUMT 22572: 49.2 mm, ZUMT 22573: 44.0 mm; Tanabe (田辺); Jan. 1920; coll. by N. Ui (宇井縫蔵).

Kochi Pref.

ZUMT 47246: 46.4 mm.

Nagasaki Pref.

ZUMT 43539: 46.7 mm; 12 Feb. 1912.

ZUMT 43750: 56.9 mm.

Kagoshima Pref.

ZUMT 39180: 43.9 mm; Kawajiri (川尻), Ukitsu (浮津), Tarumi (垂水); before 1938; probably coll. by S. Tanaka (田中茂穂); casting net.

East China Sea

ZUMT 65099: 26.5 mm; Southern East China Sea, Norin-kaiku 504 (農林 504 海区)[start: 28°01'18"N, 124°59'00"E; finish: 28°02'00"N, 124°58'42"E], depth 103 m; 23 May 1968; coll. by Hakuho-maru (白鳳丸).

[PAPUA NEW GUINEA]

ZUMT 64400: 39.3 mm; 3 Nov. 1969.

[Locality unknown]

ZUMT 45641 (2 specimens): 37.3–39.0 mm, **ZUMT ABE 60-366** (43 specimens): 42.4–49.3 mm.

Remarks: The above specimens could not be identified, because they are larvae and do not have developed traits enough for species level identification.

Synodus Scopoli, 1777 アカエソ属
Synodus dermatogenys Fowler, 1912 ミナミアカエソ

[JAPAN]

Kagoshima Pref.

ZUMT 29610: 104.4 mm; Naze (名瀬), Amami-Oshima Island (奄美大島); 10 Sept. 1910; coll. by Kagoshima Prefectural Oshima Junior High School (鹿児島県立大島中学校); donated by K. Enoya (榎屋兼武) (Kagoshima Prefectural Oshima Junior High School).

ZUMT 29694: 109.0 mm; Naze (名瀬), Amami-Oshima Island (奄美大島); 10 July 1910; donated by Mr. Miyashita (宮下).

ZUMT 64451: 142.9 mm; Furusato (古里), Wadamari (和泊), Okinoerabu-jima Island (沖永良部島); 23 Mar. 2022; coll. by T. Namikawa (浪川大誠); donated by M. Fukatani (深谷真央).

Remarks: ZUMT 64451 represents the first record of the species from Okinoerabu-jima Island

Okinawa Pref.

ZUMT 14308: 159.7 mm; Naha (那覇); 6 Feb. 1925; coll. by H. Yashiro (屋代弘孝) (Naha Market) (那覇市場).

Remarks: The location is a shallow water of coral reef around Naha. A fisherman from Itoman (糸満) caught the specimen with a logboat (独木舟) and a small net.

ZUMT 14433: 152.5 mm; before 1926; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received on 24 Mar. 1925.

ZUMT 15177: 124.7 mm, **ZUMT 15323:** 133.4 mm; before 1926; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校).

ZUMT 16891: 188.9 mm; Onna (恩納); before 1926; coll. by S. Tanabe (田辺貞夫).

ZUMT 16976: 185.0 mm; Itoman (糸満); before 1926; coll. by S. Tanabe (田辺貞夫).

ZUMT 39730: 128.5 mm, **ZUMT 39731:** 135.1 mm, **ZUMT 39732:** 111.6 mm; before 1939.

ZUMT 40342: 70.9 mm, **ZUMT 40343:** 46.8 mm; coll. by S. Sakaguchi (坂口総一郎); received in Mar. 1925.

***ZUMT 64962:** 130.0 mm; coll. by S. Sakaguchi (坂口総一郎) (Okinawa Prefectural Daiichi Junior High School) (沖縄県立第一中学校); received in Mar. 1925; probably the same lot as ZUMT 40342.

[Locality unknown]

ZUMT 64367: 95.8 mm, **ZUMT 64964:** 141.9 mm.

Synodus foetens (Linnaeus, 1766) キツネアカエソ

[SURINAME]

ZUMT 64376: 215.2 mm, ZUMT 64377: 237.7 mm; coll. by R/V Nisshin.maru No. 201 (第 20 1 日進丸).

Synodus fuscus Tanaka, 1917 スナエソ

[JAPAN]

Shimane Pref.

ZUMT 31229: 208.0 mm; Matsue (松江); before 1935; donated by T. Yanai (柳井隆一) (Matsue High School) (松江高校).

Remarks: ZUMT 31229 represents the first record of the species from Shimane Pref.

Yamaguchi Pref.

ZUMT 10137: 133.1 mm; Senzaki (仙崎), Nagato (長門); before 1923; coll. by S. Tanaka (田中茂穂).

Tokyo Met.

ZUMT 7472 (holotype, lost): Tokyo Market (東京魚市場); before 1915.

Remarks: ZUMT 7472 is missing (Aizawa et al., 2022) and was not found in this study.

Kanagawa Pref.

ZUMT 48306: 149.4 mm; around Aburatsubo (油壺); 1935; coll. by T. Abe (阿部宗明).

Wakayama Pref.

*ZUMT 7565: 124.6 mm; before 1915; coll. by I. Hoshino (星野伊三郎) [Hiro (広), Arida (有田)].

ZUMT 20288: 134.7 mm; before 1930.

Kochi Pref.

ZUMT 47159: 128.5 mm.

Synodus hoshinonis Tanaka, 1917 ホシノエソ

[JAPAN]

Kanagawa Pref.

ZUMT 64439: 156.3 mm, ZUMT 64440: 161.5 mm; Sagami Bay (相模湾), depth 45 m; 17 Mar. 2022; coll. by A. Kato (加藤 晃); donated by M. Fukatani (深谷真央).

ZUMT 64441: 181.9 mm; Sagami Bay, depth 45 m; 2. Apr. 2022; coll. by A. Kato (加藤 晃); donated by M. Fukatani (深谷真央).

Wakayama Pref.

ZUMT 7476 (Holotype): 134.9 mm; before 1918; Hiro (広), Arida (有田); coll. by I. Hoshino (星野伊三郎); once identified by M. Aizawa (藍澤正宏) on 11 June 1983.

Kochi Pref.

ZUMT 47198: 105.5 mm.

Nagasaki Pref.

ZUMT 2302: 194.4 mm; 11 July 1909.

ZUMT 2485: 212.0 mm; Aug. 1909.

ZUMT 33547: 79.0 mm, ZUMT 33548: 68.0 mm; before 1936; donated by I. Kaneko (金子一狼).

ZUMT 50069: 210.0 mm Fukue-jima Island (福江島), Goto (五島); 14 Oct. 1953; coll. by I. Tomiyama (富山一郎); Tamanoura Fish. Corp. (玉之浦漁業組合); local name Gataeso (ガタエソ).

ZUMT 50132: 77.2 mm, ZUMT 51033: 121.2 mm; Fukue-jima Island (福江島), Goto (五島); 15 Oct. 1953; coll. by I. Tomiyama (富山一郎); Tamanoura Fish. Corp. (玉之浦漁業組合).

[THAILAND]

ZUMT 65851: 114.0 mm, ZUMT 65852: 120.5 mm, ZUMT 65853: 117.8 mm, ZUMT 65854: 89.8 mm; southwestern part of the Gulf of Thailand; 22 Aug. 1985.

ZUMT 65859: 124.1 mm, **ZUMT 65860:** 76.2 mm, **ZUMT 65861:** 99.6 mm; off Songkhla Prov., southwestern part of the Gulf of Thailand; 9 July 1985.

Synodus kaianus (Günther, 1880) ハナトゴエソ

[JAPAN]

Kochi Pref.

ZUMT 47024: 175.6 mm.

Synodus macrops Tanaka, 1917 チョウチョウエソ

[JAPAN]

Tokyo Met.

ZUMT 7473 (Syntype): 144.3 mm, **ZUMT 7474 (Syntype):** 154.3 mm, **ZUMT 7475 (Syntype):** 137.2 mm; before 1918; Tokyo Market (東京市場); once identified by M. Aizawa (藍澤正宏) on 14 May 1983.

Remarks: ZUMT 7473 was previously regarded as the holotype of *S. macrops*, but the specimen is one of the syntypes of the species with ZUMT 7474 and ZUMT 7475 (Aizawa et al., 2022).

Kanagawa Pref.

ZUMT 20606: 126.9 mm; Misaki (三崎), Miura (三浦); before 1930.

ZUMT 26707: 85.6 mm; Aburatsubo (油壺), Miura (三浦); Oct. 1903.

ZUMT 43639: 89.4 mm; Misaki (三崎), Miura (三浦).

Mie Pref.

ZUMT 23380: 125.3 mm; Owase (尾鷲); before 1930; coll. by K. Nakahara (中原鋼作) (Mie Prefectural Owase Womens High School) (三重県尾鷲町尾鷲高等女学校).

Wakayama Pref.

ZUMT 21979: 167.7 mm; around Wakayama (和歌山); Jan. 1920.

Kochi Pref.

ZUMT 47025: 156.4 mm.

Nagasaki Pref.

ZUMT 56925: 142.6 mm, **ZUMT 56926:** 174.3 mm, **ZUMT 56927:** 128.1 mm; a southeastern coast of Tsushima Island (対馬)[34°23'10"N, 129°51'00"E], depth 116 m; 10 July 1987; coll. by Y. Tominaga (富永義昭) and M. Aizawa (藍澤正宏); Ten-yo maru No.36 (第36天洋丸).

East China Sea

ZUMT 53911: 102.4 mm, **ZUMT 53197:** 94.6 mm, **ZUMT 53922:** 92.0 mm, **ZUMT 53923:** 88.6 mm; Southern East China Sea[start: 26°55'00"N, 125°00'50"E; finish: 26°56'60"N 125°02'50"E], Norin-kaiku 497 (農林 479 区), depth 120 m; 24 May 1968; coll. by Y. Tominaga (富永義昭); Hakuhou-maru (白鳳丸).

[Locality unknown]

ZUMT 63412: 118.2 mm, **ZUMT 64373:** 88.6 mm, **ZUMT 64374:** 161.3 mm.

Synodus poeyi Jordan, 1887 オトガイアカエソ

[SURINAME]

ZUMT 64378: 121.3 mm; coll. by R/V Nisshin.maru No. 201 (第201日進丸).

[Locality unknown]

ZUMT 64728: 115.2 mm, **ZUMT 64729:** 123.5 mm.

Synodus ulae Schltz, 1953 アカエソ

[JAPAN]

Chiba Pref.

ZUMT 64404: 44.2 mm; 27 May 1960; Kominato (小湊), Kamogawa (鴨川).

Tokyo Met.

ZUMT 19163: 230.9 mm; Hachijo-jima Island (八丈島); 6 July 1929; coll. by Y. Otsuki (大槻洋四郎); spear; local name Kamatsuka (カマツカ).

ZUMT 19421: 215.9 mm; Hachijo-jima Island (八丈島); before 1929; coll. by Y. Oshizu (押津義雄).

ZUMT 40552: 257.0 mm; Hachijo-jima Island (八丈島); before 1939.

ZUMT 65699: 123.5 mm; East coast of Mikura Island (御蔵島); depth 60–90 m; 27 July 2023; coll. by H. Wada (和田英敏), K. Munakata (棟方航平), T. Maeda (前田達郎) and S. Nishikawa (西川志朗).

Kanagawa Pref.

ZUMT 32571: 235.2 mm; Enoura (江の浦); Aug. 1930; S. Watanabe (渡辺洲三) (Shimomeguro) (下目黒); before 1936.

Kochi Pref.

ZUMT 18662: 129.5 mm; 28 Nov. 1928; coll. by T. Kamohara (蒲原稔治) (Kochi Prefectural High School) (高知高等学校); sent on 1 Dec. 1928.

ZUMT 18776: 103.5 mm; 12 Mar. 1905; Kashiwa-jima Island (柏島), Otsuki (大月); K. Tago (田子勝弥).

ZUMT 18979: 176.4 mm; Kashiwa-jima Island (柏島), Otsuki (大月); before 1929; T. Kamohara (蒲原稔治); (Kochi Prefectural High School) (高知高等学校); once identified on 14 June 1929.

ZUMT 47094: 144.7 mm.

Miyazaki Pref.

ZUMT 21148: 135.6 mm; Fukushima (福島); before 1930; coll. by Fukushima Fish. Corp. (福島村漁業組合).

ZUMT 22671: 157.4 mm; before 1930.

Okinawa Pref.

ZUMT 16890: 151.7 mm; Onna (恩納); before 1926; coll. by S. Tanabe (田辺貞夫).

ZUMT 16979: 165.9 mm; Itoman (糸満); before 1926; coll. by S. Tanabe (田辺貞夫).

ZUMT 64960: 164.2 mm; Itoman (糸満); coll. by S. Tanabe (田辺貞夫); probably the same lot as ZUMT 16977.

Remarks: ZUMT 16890, ZUMT 16979 and ZUMT 64960 are the first reliable records of the species from Okinawa Pref.

[Locality unknown]

ZUMT 64368: 248.5 mm, ZUMT ABE 60-1545: 264.0 mm.

Synodus variegatus (Lacepède 1803) ヒトスジエソ

[JAPAN]

Kagoshima Pref.

ZUMT 20198: 190.7 mm; before 1930.

Synodus sp.

[JAPAN]

Wakayama Pref.

*ZUMT 9637: 83.8 mm; before 1920; coll. by N. Ui (宇井縫藏).

Remarks: ZUMT 9637 is similar to *Synodus dermatogenys* by following characters: lateral-line scales 59; dorsal-fin rays 12; anal-fin rays 8; pectoral-fin rays 12; anterior palatine teeth longer than posterior palatine

teeth; not scaled on posterior end of preopercle (Cressey, 1981; Waples and Randall, 1988). However, the specimen has 4.5 scale rows above lateral line (5.5 in *S. dermatogenys*), so it is a different species from *S. dermatogenys*. Although there are some species of *Synodus* (for example *S. houlti* or *S. fasciapelvicus*) with 4.5 scale row above lateral line in the western Pacific Ocean (Waples and Randall, 1988; Randall, 2009), this specimen was assigned to *Synodus* sp. in this study, because it could not be accurately identified due to the lack of information on its coloration when fresh.

Hiroshima Pref.

ZUMT 4966: 30.7 mm; Tomo (鞆); July 1882.

Kagoshima Pref.

ZUMT 39181: 36.1 mm; Kawajiri (川尻), Ukitsu (浮津), Tarumi (垂水); before 1938; probably coll. by S. Tanaka (田中茂穂); casting net.

[PAPUA NEW GUINEA]

ZUMT 64382 (36 specimens): 27.8–37.2 mm, **ZUMT 64384** (14 specimens): 31.7–34.5 mm, **ZUMT 64385** (16 specimens): 25.7–32.2 mm; Lamassa Str.; 2 Nov. 1969; hand net.

***ZUMT 64386** (4 specimens): 31.5–34.0 mm; Nuguria; hand net.

ZUMT 64387 (5 specimens): 30.1–34.3 mm; Nuguria; hand net.

ZUMT 64399 (2 specimens): 37.8–38.9 mm; Buka Island; 3 Nov. 1969, St.2.

ZUMT 64402 (8 specimens): 30.9–34.8 mm, **ZUMT 64403:** 24.6–34.6 mm (13 specimens); New Ireland.

[Locality unknown]

ZUMT 64393 (7 specimens): 30.5–39.9 mm, **ZUMT 64394:** 32.7 mm; hand net.

Remarks: The above specimens except ZUMT 9637 could not be identified, because they are larvae and do not have developed traits enough for species level identification.

Trachinocephalus Gill, 1861 オキエソ属

Trachinocephalus myops (Forster, 1801)

[SURINAME]

ZUMT 64371: 148.0 mm, **ZUMT 64372:** 157.7 mm; coll. by R/V Nisshin.maru No. 201 (第201日進丸).

Trachinocephalus trachinus (Temminck & Schlegel, 1846) オキエソ

[JAPAN]

Toyama Pref.

ZUMT 46652: 218.0 mm; probably Uozu (魚津), Namerikawa (滑川).

Remarks: ZUMT 46652 is stored in a large glass tank (211-A).

Kyoto Pref.

ZUMT 55336: 158.0 mm, **ZUMT 55337:** 186.0 mm; Maizuru Market (舞鶴市場); 4 Nov. 1985; coll. by M. Aizawa (藍澤正宏); set net (定置網).

Remarks: ZUMT 55336 and ZUMT 55337 are stored in a large glass tank (211-A).

Hyogo Pref.

ZUMT 9857: 99.5 mm; Mikage (御影), Kobe (神戸); Oct. 1919; coll. by K. Yamadori (山鳥吉五郎).

Shimane Pref.

ZUMT 2471: 258.0 mm; Masuda (益田); July 1909.

Remarks: ZUMT 2471 is stored in a large glass tank (211-A).

***ZUMT 31480:** 134.0 mm; before 1935; sent by T. Yanai (柳井隆一) (Matsue High School) (松江高校) in Nov. 1935.

Chiba Pref.

ZUMT 27559: 67.3 mm; Boshu (房州); before 1934.

Tokyo Met.

ZUMT 19462: 297.0 mm; before 1928; coll. by Y. Oshizu (押津義雄) (Hachijo-jima Island) (八丈島).
Remarks: ZUMT 19462 is stored in a large glass tank (211-A).

Kanagawa Pref.

ZUMT 34027: 32.0 mm; Yokohama (横浜) or Ninomiya (二宮); before 1936.

ZUMT 38300: 81.0 mm; Misaki (三崎), Miura (三浦); before 1937; local name Eso (エソ).

ZUMT 48307: 156.0 mm; around Aburatsubo (油壺), Misaki (三崎); 1935; coll. by T. Abe (阿部宗明).

Remarks: ZUMT 48307 is stored in a large glass tank (211-A).

ZUMT 64396: 38.6 mm; Sagami Bay (相模湾); 22 Nov. 1971; 2130–2200; coll. by Tansei-maru (淡青丸); fishing light.

ZUMT 64397: 16.8 mm; Sagami Bay (相模湾)[start: 35°08'10"N, 139°19'80"E; finish: 35°07'60"N, 139°18'80"E], depth 25 m; 26 Nov. 1970; coll. by Tansei-maru (淡青丸); plankton net.

ZUMT 64398 (2 specimens): 33.9–38.7 mm; Suruga Bay (駿河湾); 24 Nov. 1971; coll. by Tansei-maru (淡青丸); fishing light.

ZUMT 64956: 72.7 mm, **ZUMT 64957:** 267.0 mm; Aburatsubo (油壺); 18 Aug. 1932.

Shizuoka Pref.

ZUMT 16488: 56.0 mm; Shizuura (静浦), Numazu (沼津); before 1926; coll. by N. Kuroda (黒田長礼); local name Okaeso (オカエソ).

ZUMT 17746: 99.5 mm; Enoura (江の浦), Numazu (沼津); before 1927; coll. by N. Kuroda (黒田長礼).

ZUMT 33859: 57.0 mm, **ZUMT 33860:** 69.0 mm; Shizuura (静浦), Numazu (沼津); before 1936; donated by N.. Kuroda (黒田長礼).

Mie Pref.

ZUMT 23195: 167.0 mm, **ZUMT23196:** 135.0 mm; Kinomoto (木本), Kumano (熊野); 3 May 1929; coll. by Y. Tsuchiga (槌賀安平) (Kinomoto Junior High School) (木本中学校); 48. Donated by T. Koide (小出哲夫); local name Shieso (シエソ).

Wakayama Pref.

***ZUMT 8058:** 74.0 mm, ***ZUMT 8059:** 80.0 mm, ***ZUMT 8060:** 88.0 mm; before 1918; coll. by I. Hoshino (星野伊三郎) (Hiro (広), Arida (有田)).

ZUMT 22441: 73.0 mm; Tanabe (田辺); N. Ui (宇井縫蔵); received on 11 Aug. 1920.

Kochi Pref.

ZUMT18686: Kashiwa-jima Island (柏島), Otsuki (大月); Oct. 1928; coll. by T. Kamohara (蒲原稔治) (Kochi High School) (高知高等学校); sent on 1 Dec. 1928; local name Hoshieso (ホシエソ).

Fukuoka Pref.

ZUMT 51405: 224.0 mm; East China Sea or Fukuoka Fish Market (福岡魚市場); Oct. 1959.

Remarks: ZUMT 51405 is stored in a large glass tank (211-A).

ZUMT 51460: 249.0 mm; Fukuoka Fish Market (福岡魚市場); 10 Dec. 1959; Sanno-maru (山王丸) (Shimonoseki) (下関).

Remarks: ZUMT 51460 is stored in a large glass tank (211-A).

Nagasaki Pref.

ZUMT 27136: 39.5 mm, **ZUMT 27137:** 37.7 mm, **ZUMT 27138:** 41.0 mm; before 1934; donated by Mr. Kaneko (金子氏) (Nagasaki Pref.) on 8 June 1911.

ZUMT 43540: 42.8 mm, **ZUMT 43541:** 58.0 mm, **ZUMT 43542:** 54.5 mm; 12 Feb. 1912.

ZUMT 50081: 153.0 mm; Tamanoura (玉之浦), Fukue (福江); 14 Oct. 1953; coll. by I. Tomiyama (富山一郎); Tamanoura Fish. Corp. (玉之浦町漁業協同組合); local name Gataeso (ガタエソ).

Oita Pref.

***ZUMT 13798:** 145.0 mm; before 1926; coll. by N. Nakayama (中山直紀) (Oita Prefectural Yokkaichi Agricultural School) (大分県四日市農学校); local name of Buzen (豊前), Torahaze (トラハゼ).

Miyazaki Pref.

***ZUMT 21165:** 83.0 mm; before 1930; coll. by Fukusima Fish. Corp., Miyazaki Pref. (宮崎県福島村漁業組合).

ZUMT 52167: 130.0 mm; Totoro (土々呂), Nobeoka (延岡); 4 Aug. 1960; Shirasu net (シラス網).

ZUMT 64388 (5 specimens): 25.5–36.8 mm; 17 May 1968; 2107–2137; Hyuga-nada (日向灘)[start: 32°01'20"N, 131°58'90"E; finish: 31°58'90"N, 131°58'80"E]; coll. by Hakuho-maru (白鳳丸); surface net.

Kagoshima Pref.

ZUMT 5168: 168.0 mm; Kagoshima Bay (鹿児島湾); before 1915; local name Etsu (エツ).

ZUMT 40730: 105.5 mm, **ZUMT 40731**: 90.5 mm; Amami-Oshima Island (奄美大島); coll. by K. Enoya (榎屋兼武) (Kagoshima Prefectural Oshima Junior High School) (鹿児島県立大島中学校); received in Nov. 1922.

ZUMT 23796: 169.0 mm; Taniyama (谷山); 20 July to 15 Aug. 1930; local name Eso (エソ).

ZUMT 23936: 213.0 mm; Taniyama (谷山); before 1931; local name Eso (エソ).

Remarks: ZUMT 23936 is stored in a large glass tank (211-A).

ZUMT 64405 (6 specimens): unmeasurable; 18 May 1968; 2105–2135; southwest off Yakushima Island (屋久島)[start: 30°11'00"N, 130°13'70"E; finish: 31°12'10"N, 130°12'00"E]; coll. by Hakuho-maru (白鳳丸); surface net.

Okinawa Pref.

ZUMT 17130: 94.0 mm, **ZUMT 17131**: 130.5 mm, **ZUMT 17132**: 96.0 mm; Baten (馬天), Nanjo (南城); before 1923; coll. by S. Tanabe (田辺貞夫).

East China Sea

ZUMT 64391 (2 specimens): 10.1–11.5 mm; 22 May 1968; south of East China Sea [start: 28°46'80"N, 126°44'00"E; finish: 28°48'00"N, 126°41'20"E]; coll. by Hakuho-maru (白鳳丸); surface net.

Details unknown

ZUMT 27917: 79.0 mm; before 1934; probably southern Japan.

ZUMT 40357: 190.0 mm; before 1939; probably the Ryukyu Islands.

Remarks: ZUMT 40357 is stored in a large glass tank (211-A).

[TAIWAN]

ZUMT 14864: 124.0 mm, **ZUMT 14865**: 129.0 mm, **ZUMT 14866**: 123.0 mm; around Tainan (台南); before 1926; T. Aoki (青木赳雄).

ZUMT 18456: 92.0 mm, **ZUMT 18457**: 105.5 mm; Keelung (基隆); July 1928; coll. by H. Sato (佐藤春吉) (Keelung Junior High School) (基隆中学校); “土名 魚生公.”

ZUMT 64369: 165.2 mm; Keelung (基隆).

[PHILIPPINES]

ZUMT 14617: 108.0 mm; before 1926.

ZUMT 42258: 123.0 mm; 1926; coll. by U. Yamamura (山村樞次郎).

[THAILAND]

ZUMT 65838: 188.1 mm, **ZUMT 65839**: 123.5 mm, **ZUMT 65840**: 115.7 mm; off Songkhla Prov., southwestern part of the Gulf of Thailand; 9 July 1985.

[PAPUA NEW GUINEA]

ZUMT 64383 (15 specimens): 36.9–39.1 mm; New Ireland, Lamassa Str.; 2 Nov. 1969; hand net.

ZUMT 64401 (3 specimens): 31.4–37.5 mm; New Ireland.

[U.S.A.]

ZUMT 57557: 266.5 mm, **ZUMT 57558**: 221.0 mm, **ZUMT 57559**: 179.5 mm; 600 feet off Puako, Hawaii; 10 Apr. 1987; coll. by Bill Cuccaro.

Remarks: ZUMT 57557, ZUMT 57558 and ZUMT 57559 are stored in a large glass tank (211-A).

[Locality unknown]

ZUMT 46529: 155.0 mm, **ZUMT 46530**: 152.0 mm, **ZUMT 64370**: 162.0 mm.

Remarks: ZUMT 46530 is stored in a large glass tank (211-A).

***Trachinocephalus* sp.**

[Locality unknown]

ZUMT 63566 (59 specimens): 14.9–38.2 mm.

ZUMT 64389 (10 specimens): 30.6–38.1 mm; Sept. 1964.

ZUMT 64390 (4 specimens): 38.2–39.0 mm; 6 June 1970; hand net.

ZUMT 64392 (3 specimens): 35.6–36.5 mm; hand net.

ZUMT 64395: 35.7 mm, **ZUMT 64406**: unmeasurable, **ZUMT 64407**: 31.0 mm.

Remarks: The above specimens could not be identified, because they are larvae and do not have any locality information.

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