

Specimens of the family Scombridae (Actinopterygii: Teleostei) deposited in the Department of Zoology, The University Museum, The University of Tokyo

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Abstract

A list of specimens of Scombridae deposited in the Department of Zoology, The University Museum, The University of Tokyo included a total of 368 specimens, representing 21 species. Two partial specimens were not identifiable. No types for the family were found.

Introduction

The Scombridae, variously known as mackerels, tunas, or bonitos, and comprising 15 genera and 51 species (Collette and Graves 2019), has been regarded traditionally as closely related to the families Gempylidae and Trichiuridae (e.g., Matsubara 1955; Nakamura and Parin 1993), although recent studies have shown scombrids to be more closely related to Nomeidae and Ariommatidae, families previously included within the suborder Stromateoidei, together with several other families, including Arripidae (Australian salmon) and Pomatomidae (Bluefish) (Miya et al. 2013; Betancur-R 2017).

Scombrid fishes are widely consumed the world over because many of them are large and form large schools. Several species are included in the top 15 species in the world's total fish catch, that of *Katsuwonus pelamis* (Linnaeus, 1758), in particular, amounting to 4% of the total catch (FAO 2022). In recent years, there have been concerns about the decline of many scombrid species due to overfishing, with some species, such as *Thunnus maccoyii* (Castelnau, 1872) and *Thunnus orientalis* (Temminck & Schlegel, 1844), for which global demand is increasing, being threatened with extinction (Collette et al. 2021a, b).

On the other hand, several new cryptic scombrid species have been found, as well as new distributional records reported, in recent years (e.g., Abdussamad et al. 2016; Hata et al. 2020; Shimose and Imai 2021; Barabanshchikov et al. 2021; Jeena et al. 2022), and the family still includes some taxonomic issues. A list of specimens of Scombridae, comprising at least 21 species, deposited in the Department of Zoology, The University Museum, The University of Tokyo, is given below to aid future taxonomic studies and clarify some distributional records.

Materials and Methods

Specimens of Scombridae in the Department of Zoology, The University Museum, The University of Tokyo (abbreviated as ZUMT) were identified during the present study, following Collette and Nauen (1983), Collette (2001), Nakabo and Doiuchi (2013), and Collette and Graves (2019).

Contents included in parentheses following registration numbers are as follows: number of specimens (if more than 1), standard length, collection locality, collection date, and collector. Collection data of specimens are omitted if the same as that for the following specimen.

The ZUMT specimens listed herein were primarily stored in Room 406 (specimen storage room) in the museum building. Most were stored in shelved containers, although some larger specimens were stored in a glass tank in the same room, with the glass lid sealed with a silicon adhesive (as of July 2022). Although some of the ZUMT specimens, collected by Dr. Tokiharu Abe, had not been registered into the ZUMT collection, with the

collection data of most missing, they are listed herein together with their ZUMT ABE number (number with underbar written on the specimen label), in the hope that Dr Abe's catalog books with collection data will be rediscovered in the future. Additionally, specimens with catalogue numbers ZUMT ABE 2700 to 6000 were collected from Palau by Dr. Abe between 1936 and 1937 (Koeda et al. 2022).

Results

A total of 331 lots, including 368 specimens representing 21 scombrid species, plus two partial specimens of the genera *Scomber* and *Thunnus* that could not be identified, were confirmed in the ZUMT fish collection. No types for the family were found in the collection.

Species accounts

Family Scombridae サバ科

Acanthocybium solandri (Cuvier, 1832) カマスサワラ

JAPAN

ZUMT 31330 [approx. 613 mm (divided into two parts); Matsue City, Shimane Pref.]

LOCALITY UNKNOWN

ZUMT 64220 (475.7 mm; no data)

Allothunnus fallai Serventy, 1948

AUSTRALIA

ZUMT 52314 (divided into three parts), ZUMT 52315 (fork length given as 82 cm in the ledger, but only the head remains; off Tasmania)

Auxis rochei rochei (Risso, 1810) マルソウダ

JAPAN

HOKKAIDO

ZUMT 13758 (297.2 mm; Muroran City Sept. 1924; coll. by S. Katsuki)

MIYAKI PREF.

ZUMT 16380 (257.3 mm; Ishinomaki City; 14 Sept. 1925; coll. by G. Toba)

SHIZUOKA PREF.

ZUMT 54922 (207.3 mm; Mera, Minamiizu Town; 12 Sept. 1981; coll. by M. Aizawa)

WAKAYAMA PREF.

ZUMT 20200 (227.7 mm; Wakayama Pref.; Jan. 1920)

NIIGATA PREF.

ZUMT 46643 (316.1 mm; Niigata Pref.; Aug. 1923)

TOYAMA PREF.

ZUMT 41208 (206.6 mm), ZUMT 41213 (205.8 mm), ZUMT 41221 (209.2 mm), ZUMT 41222 (197.9 mm), ZUMT 41223 (198.0 mm), ZUMT 41224 (197.2 mm), ZUMT 41249 (210.8 mm), ZUMT 41250 (209.5 mm), ZUMT 41251 [approx. 198 mm (caudal peduncle damaged)], ZUMT 41252 (205.8 mm), ZUMT 41253 (215.1 mm), ZUMT 41254 (187.4 mm), ZUMT 41255 (206.0 mm), ZUMT 41256 (196.2 mm), ZUMT 41282 (206.1 mm), ZUMT 41283 (202.1 mm), ZUMT 41284 (197.0 mm; Uozu or Namerikawa City; coll. by I. Tomiyama)

FUKUI PREF.

ZUMT 55829 (208.4 mm; Hayase, Mihama Town; 1 Nov. 1986; coll. by M. Aizawa, H. Senou, and T. Urano et al.)

FUKUOKA PREF.

ZUMT 51365 (237.7 mm; obtained at Fukuoka Fish Market; 3 Dec. 1959)

NAGASAKI PREF.

ZUMT 50407 (232.1 mm; Motoura, Ikitsuki-jima Island, Hirado City)

KIRIBATI

ZUMT 48766 [73.9 mm; approx. 55 km southwest of Banaba (1°16'01.2"S 169°14'24.0"E) (temperature 30.0 degrees, sea temperature 27.2 degrees); 3 Apr. 1956; coll. by Z. Maekawa and S. Suzuki]

Auxis thazard thazard (Lacepède, 1800) ヒラソウダ

JAPAN**HOKKAIDO**

ZUMT 13744 (301.3 mm; Muroran City; Sept. 1924; coll. by S. Katsuki)

TOYAMA PREF.

ZUMT 41220 (190.1 mm), ZUMT 41228 (199.4 mm), ZUMT 41257 [approx. 198 mm (caudal peduncle damaged); Uozu or Namerikawa City]

KANAGAWA PREF.

ZUMT ABE 10110 (313.5 mm; Manazuru Town; 31 Oct. 1954; coll. by set net),

SHIZUOKA PREF.

ZUMT 54923 (248.0 mm), ZUMT 54924 (240.4 mm; Mera, Minamiizu Town; 12 Sept. 1981; coll. by M. Aizawa)

SHIMANE PREF.

ZUMT 31281 (320.4 mm), ZUMT 31286 (290.0 mm; Matsue City)

NAGASAKI PREF.

ZUMT 2475 [approx. 222 mm (caudal peduncle damaged); Nagasaki Pref.; Aug. 1909]

ZUMT 50160 [266.3 mm; Arikawa, Shinkamigoto Town (Nakadori-jima Island, Goto Islands); 17 Oct. 1953; coll. by I. Tomiyama]

KAGOSHIMA PREF.

ZUMT 23751 (240.5 mm; Taniyama, Kagoshima City; 20 July 1930)

ZUMT 23977 (203.6 mm; Shibushi City)

OKINAWA PREF.

ZUMT 16740 (256.6 mm), ZUMT 17104 (263.1 mm; Onna Village, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; coll. by S. Tanabe)

LOCALITY UNKNOWN

ZUMT 64227 (215.3 mm), ZUMT ABE 57-255 (222.4 mm; no data)

Euthynnus affinis (Cantor, 1849) スマ

JAPAN

ZUMT 16737 (286.6 mm), ZUMT 17102 [228+ mm (caudal peduncle damaged); Onna Village, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; coll. by S. Tanabe]

ZUMT 38881 (269.3 mm; Hachijo-jima Island, Izu Islands)

ZUMT 41938 [239.2 mm; probably from Hachijo-jima Island, Izu Islands; col. by Y. Uchiyama (Hachijo-jima Island)]

TAIWAN

ZUMT 2359 (160.0 mm), ZUMT 40117 (135.8 mm; Keelung)
ZUMT 13660 (118.5 mm; Keelung, coll. by T. Aoki)
ZUMT 14984 (272.0 mm; Tainan; coll. by T. Aoki)

PHILIPPINES

ZUMT 42330 (302.8 mm), ZUMT 42331 (284.0 mm), ZUMT 42345 (290.5 mm; Basilan; 1926; coll. by U. Yamamura)

LOCALITY UNKNOWN

ZUMT 64224 (271.9 mm; no data)

Gasterochisma melampus* Richardson 1845*AUSTRALIA**

ZUMT 52312 (head only; off Tasmania; 1963)

URUGUAY

ZUMT 52313 (head only; off Uruguay; July 1965)

Grammatorcynus bilineatus* (Rüppell, 1836) ニジョウサバ*JAPAN**

ZUMT 13983 [302.1 mm; probably collected from Okinawa Pref.; coll. by S. Sakaguchi (Okinawa Prefectural Daiichi Junior High School)]
ZUMT 16738 (354.5 mm; Onna Village, Okinawa-Jima Island, Okinawa Islands, Ryukyu Archipelago; S. Tanabe)
ZUMT 52381 [approx. 478 mm (caudal peduncle damaged); Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago; 4 June 1966]

Gymnosarda unicolor* (Rüppell, 1836) イソマグロ*JAPAN**

ZUMT ABE 83-520 (160.2 mm; Tomiura, Minamiboso City, Chiba Pref.; 5 Oct. 1983)
ZUMT 12020 (131.4 mm; obtained at Tokyo Market, Tokyo Met.; 1 Sept. 1922)
ZUMT 12311 (196.1 mm), ZUMT 12312 (199.1 mm), ZUMT 12313 (190.4 mm), ZUMT 12314 (187.7 mm),
ZUMT 12322 [181.1 mm; obtained at Tokyo (caught in Izu, Shizuoka Pref.)]
ZUMT 44114 (184.7 mm; Hachijo-jima Island, Izu Islands; Sept. 1922)
ZUMT 46623 (173.6 mm; Hachijo-jima Island, Izu Islands)

LOCALITY UNKNOWN

ZUMT 38699 (134.6 mm), ZUMT 38700 (132.0 mm), ZUMT 40118 (136.5 mm), ZUMT 40119 (122.2 mm),
ZUMT 40120 (132.5 mm), ZUMT 40121 (118.2 mm; locality unknown; coll. by Y. Haneda)

Katsuwonus pelamis (Linnaeus, 1758) カツオ

JAPAN

- ZUMT 5891 (gill arche only; obtained at Tokyo Market, Tokyo Met; 30 July 1912)
ZUMT 17103 (295.3 mm; Onna Village, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; coll. by S. Tanabe)
ZUMT 17281 (285.2 mm; Yaeyama Islands, Ryukyu Archipelago; coll. by S. Tanabe)
ZUMT 23767 (233.4 mm; Taniyama, Kagoshima City, Kagoshima Pref.; 20 July 1930) ZUMT 31285 (323.0 mm; Matsue City, Shimane Pref.)
ZUMT 46620 (254.4 mm; Hachijo-jima Island, Izu Islands)

Rastrelliger brachysoma (Bleeker, 1851)

PHILIPPINES

- ZUMT 40768 (152.9 mm), ZUMT 40786 (135.6 mm), ZUMT 40841 (143.4 mm), ZUMT 40851 (146.9 mm; Manila, Luzon; 11 Feb. 1909; coll. by I. Iijima and K. Aoki)
ZUMT 42387 (153.2 mm; Basilan; 1936; coll. by U. Yamamura)

Rastrelliger faughni Matsui, 1967

TAIWAN

- ZUMT 14964 (109.3 mm; Tainan; coll. by T. Aoki)

Rastrelliger kanagurta (Cuvier, 1816) グルクマ

JAPAN

- ZUMT 11165 (163.9 mm), ZUMT 11166 [168.9 mm; probably from Okinawa Pref.; coll. by S. Sakaguchi (Okinawa Daiichi Junior High School)]
ZUMT 17406 (184.3 mm; Naha, Okinawa Pref.; coll. by S. Tanabe and Y. Hiyane),
ZUMT 18148 (232.3 mm), ZUMT 18149 (282.0 mm), ZUMT 18150 (288.3 mm), ZUMT 18151 (281.1 mm),
ZUMT 18152 [243.3 mm; probably from Okinawa Pref.; coll. by K. Tashiro (Okinawa Prefectural Fisheries Experimental Station)]

EAST CHINA SEA

- ZUMT 51415 (166.6 mm; East China Sea; Dec. 1959)
ZUMT 51430 (176.2 mm; East China Sea)

TAIWAN

- ZUMT 8102 (126.5 mm; Penghu Islands)
ZUMT 12848 (101.4 mm; Keelung; coll. by T. Aoki)
ZUMT 14965 (160.7 mm; Tainan; coll. by T. Aoki),
ZUMT 22600 (209.5 mm; Kaohsiung; coll. by S. Yamada)
ZUMT 37428 (150.9 mm; Keelung; July 1908)

PHILIPPINES

- ZUMT 12645 (219.3 mm), ZUMT 12646 (207.1 mm), ZUMT 12647 (196.0 mm; Philippines; coll. by U. Yamamura)

ZUMT 42316 (156.2 mm), ZUMT 42333 (157.9 mm), ZUMT 42371 (155.6 mm), ZUMT 42388 (155.9 mm; Basilan; 1936; coll. by U. Yamamura)

INDONESIA

ZUMT 64233 [120.6+ mm (caudal peduncle damaged); Menado, Sulawesi; Mar. 1918; coll. by K. Aoki]

PALAU

ZUMT ABE 2892 (288.5 mm), ZUMT ABE 3759 (285.5 mm), ZUMT ABE 3772 (125.5 mm), ZUMT ABE 5982 (208.9 mm), ZUMT 42736 (120.9 mm), ZUMT 42737 (117.7 mm; Palau)
ZUMT 63061 (135.5 mm; Palau; coll. by Y. Haneda)

LOCALITY UNKNOWN

ZUMT 46402 (204.6 mm), ZUMT 46403 (206.0 mm), ZUMT 64228 (204.4 mm), ZUMT 64229 (200.0 mm; no data)

ZUMT 62563 (107.0 mm; locality unknown; 3 Oct. 1929; tagged as “P-4121”)

Sarda orientalis (Temminck & Schlegel, 1844) ハガツオ

JAPAN

HOKKAIDO

ZUMT 13745 (261.0 mm; Muroran City; Feb. 1924; coll. by S. Katsuki)

IWATE PREF.

ZUMT 13057 (169.4 mm), ZUMT 13058 (134.2 mm; Miyako Bay; coll. by S. Tanabe)

TOKYO MARKET

ZUMT 10032 (4 specimens, 145.6–157.3 mm; landed at Tokyo Market, Tokyo Met.; July 1921)

ZUMT 12018 (160.6 mm), ZUMT 12019 (126.3 mm; landed at Tokyo Market, Tokyo Met.; 1 Sept. 1922)

SHIMANE PREF.

ZUMT 31267 (395 mm; Matsue City)

KOCHI PREF.

ZUMT 47116 (72.5 mm; probably from Kochi Pref.)

KAGOSHIMA PREF.

ZUMT 19993 (142.0 mm; Kagoshima City)

LOCALITY UNKNOWN

ZUMT ABE 61-1067 (187.3 mm; no data)

Scomber australasicus Cuvier, 1832 ゴマサバ

JAPAN

AOMORI PREF.

ZUMT 13194 (113.3 mm; Same, Hachinohe City; coll. by S. Tanabe)

IWATE PREF.

ZUMT 13132 (161.3 mm; Miyako Bay; coll. by S. Tanabe)

MIYAGI PREF.

ZUMT 13884 (185.4 mm; Kesen, Rikuzentakata City; 20 Dec. 1924; coll. by G. Toba)

FUKUSHIMA PREF.

ZUMT 26292 (201.0 mm), ZUMT 26294 (199.9 mm), ZUMT 26295 (248.2 mm), ZUMT 26296 (225.3 mm),

ZUMT 26297 (248.0 mm), ZUMT 26298 (242.4 mm), ZUMT 37674 (174.8 mm; Onahama, Iwaki City)

TOKYO MARKET

ZUMT 26348 (314.3 mm; probably obtained at Tokyo Market)

KANAGAWA PREF.

ZUMT 19065 (238.4+ mm), ZUMT 19069 (242.0+ mm; Koajiro Bay, Aburatsubo, Miura City; coll. by K. Aoki)
ZUMT 20639 (197.1 mm), ZUMT 24869 (261.6 mm), ZUMT 24871 (253.4 mm; Misaki, Miura City)
ZUMT 62765 (344.9 mm), ZUMT 62766 (201.2 mm), ZUMT 62767 (336.3 mm; Sagami Bay; 23 Oct. 2021;
line fishing, coll. by K. Koeda on *R/V Kaimei*)
ZUMT 64231 (85.6 mm), ZUMT 64232 (212.1 mm; Yuiga-hama Beach, Kamakura City; 31 Mar. 1932; coll.
by T. Abe)

SHIZUOKA PREF.

ZUMT 33862 (53.0 mm; river in Shizuura, Numazu City)

WAKAYAMA PREF.

ZUMT 20203 (227.7 mm; Wakayama Pref.; Jan. 1920; coll. by N. Ui)

TOYAMA PREF.

ZUMT 25815 [226.3 mm; probably form Toyama Pref.; coll. by K. Kikuchi (Toyama High School)]

SHIMANE PREF.

ZUMT 31175 (292.0 mm; Matsue City)

NAGASAKI PREF.

ZUMT 50211 (185.3 mm), ZUMT 50212 (192.3 mm), ZUMT 50213 (179.5 mm; Madara-jima Island, Ojika
Islands; 20 Oct. 1953; coll. by I. Tomiyama)

ZUMT 50323 (195.5 mm; Hirado City; 10 June 1953; coll. by I. Tomiyama)

ZUMT 50564 (316.5 mm; obtained at Nagasaki Fish Market; 27 Aug. 1959; coll. by Y. Tominaga)

OGASAWARA ISLANDS

ZUMT 8064 (129.1 mm; Ogasawara Islands; donation from Tokyo Metropolitan Ogasawara Islands Branch
Office)

TAIWAN

ZUMT 40105 (119.4 mm), ZUMT 40106 (112.8 mm), ZUMT 40107 (112.6 mm), ZUMT 40108 (115.8 mm),
ZUMT 40109 (130.8 mm), ZUMT 40110 (113.5 mm), ZUMT 40111 (114.6 mm), ZUMT 40112 (107.7 mm),
ZUMT 40113 (98.1 mm), ZUMT 40114 (95.4 mm; Penghu Islands)

ZUMT 63278 (61.0 mm), ZUMT 63279 (53.3 mm; Tamsui, Taiwan)

LOCALITY UNKNOWN

ZUMT ABE 2046 (73.7 mm), ZUMT ABE 2223 (2 specimens, 87.5–92.0 mm), ZUMT ABE 2344 (96.2 mm),
ZUMT ABE 57-396 (269.5 mm), ZUMT 39324 (217.5 mm), ZUMT 64230 [155.5+ mm (head missing); no
data]

Scomber japonicus* Houttuyn, 1782 マサバ*JAPAN****HOKKAIDO**

ZUMT 10833 (154.9 mm), ZUMT 10852 (161.5 mm), ZUMT 10857 (158.5 mm), ZUMT 10860 (153.6 mm;
probably collected from around Otaru City; 4 Nov. 1922, donation from Takashima Fisheries Research
Institute)

AOMORI PREF.

ZUMT 12916 (129.5 mm), ZUMT 12917 (117.5 mm; Koen-maehama, Aomori City; 4 Nov. 1923; coll. by S.
Tanabe)

ZUMT 13189 (144.3 mm), ZUMT 13190 (140.4 mm), ZUMT 13191 (148.2 mm), ZUMT 13192 (115.4 mm),
ZUMT 13193 (134.3 mm), ZUMT 13195 (118.9 mm), ZUMT 13196 (163.3 mm; Same, Hachinohe City;
coll. by S. Tanabe)

ZUMT 41749 (272.7 mm), ZUMT 41788 (68.2 mm; Asamushi, Aomori City; coll. by S. Tanabe)

IWATE PREF.

ZUMT 13122 (95.6 mm), ZUMT 13123 (133.5 mm), ZUMT 13124 (111.7 mm), ZUMT 13125 (142.0 mm);
Sokei, Miyako City; coll. by S. Tanabe)
ZUMT 13863 (177.1 mm; Kesen Region; 20 Dec. 1924; coll. by G. Toba)
ZUMT 13885 (147.4 mm; Kesen Region; 15 Dec. 1924; coll. by G. Toba)
ZUMT 16309 (62.4 mm; Kesen Region; 20 Aug. 1925; coll. by G. Toba)

FUKUSHIMA PREF.

ZUMT 26290 (222.9 mm), ZUMT 26291 (212.2 mm), ZUMT 26293 (272.9 mm), ZUMT 32452 (96.4 mm),
ZUMT 32453 (76.0 mm; Onahama, Iwaki City)
ZUMT 46808 (94.1 mm; Onahama, Iwaki City; 1933; coll. by H. Tsunoda)

IBARAKI PREF.

ZUMT 59382 (220.3 mm; Nakaminato Port, Hitachinaka City; 29 Oct. 1988)

TOKYO MARKET

ZUMT 26350 (362.0 mm), ZUMT 46732 (367.9 mm; collected from Shimonoseki City, Yamaguchi Pref., landed
at Tokyo Market, Tokyo Met.; 6 Nov. 1917)
ZUMT 46731 (305.3 mm; Tokyo Market, Tokyo Met.)

KANAGAWA PREF.

ZUMT 18886 [256.4+ mm (left side of trunk only)], ZUMT 18887 [281.0+ mm (left side of trunk only); Misaki,
Miura City; coll. by K. Aoki]
ZUMT 18916 [307.0+ mm (without caudal peduncle)], ZUMT 18917 [approx. 363 mm (caudal peduncle
detached)], ZUMT 18918 (351.0 mm), ZUMT 18919 (363.1 mm; Misaki, Miura City; 30 Apr. 1929)
ZUMT 23669 (33.1 mm), ZUMT 23670 (331.2 mm; Misaki, Miura City; May 1931; coll. by K. Aoki)
ZUMT 24870 (252.9 mm), ZUMT 24872 (254.6 mm; Misaki, Miura City; Aug. 1932; coll. by K. Aoki)
ZUMT 55651 (202.4 mm; obtained at Misaki Fish Market, Misaki, Miura City; 29 July 1986)
ZUMT 62768 (189.9 mm; Sagami Bay; 23 Oct. 2021; coll. with line fishing by K. Koeda on *R/V Kaimei*),

SHIZUOKA PREF.

ZUMT 17725 (108.7 mm; Enoura, Numazu City; coll. by N. Kuroda)

MIE PREF.

ZUMT 23133 (93.3 mm), ZUMT 23134 (123.7 mm; Kada Bay, Owase City; 1 Aug. 1922; coll. by Y. Tsuchiga)
ZUMT 23211 (93.8 mm), ZUMT 23212 (131.9 mm; Kimoto, Kumano City; 18 May 1930; coll. by Y. Tsuchiga)

WAKAYAMA PREF.

ZUMT 20202 (209.1 mm; Wakayama Pref.; Jan. 1920; coll. N. Ui)

OKAYAMA PREF.

ZUMT 16424 (174.0 mm; Kanaura, Kasaoka City; coll. by K. Matsuhima)

EHIME PREF.

ZUMT 8122 [385.7 mm; probably from Ehime Pref.; coll. by K. Otsuki (Uchiumi, Ainan Town)]

KAGOSHIMA PREF.

ZUMT 23790 (191.6 mm), ZUMT 24035 (185.5 mm), ZUMT 24036 (188.7 mm; Taniyama, Kagoshima City)
ZUMT 23912 (187.5 mm), ZUMT 24110 (199.9 mm; Kushikino, Ichikikushikino City)
ZUMT 43018 [53.9 mm; probably from Kagoshima Pref.; donated by K. Hamana (Makurazaki Fisheries)]

NIIGATA PREF.

ZUMT 24416 (166.8 mm; Niigata Pref.)

TOYAMA PREF.

ZUMT 44173 [106.3 mm; probably from Toyama Pref.; donation from Toyama Uozu Fisheries Training Center]
ZUMT 46225 (170.3 mm; probably from Uozu or Namerikawa City)

ISHIKAWA PREF.

ZUMT 34187 (67.8 mm), ZUMT 34188 (76.0 mm), ZUMT 34189 (68.1 mm; Shoin, Suzu City)

KYOTO PREF.

ZUMT 24324 (351.6 mm; Miyazu City; Nov. 1931)

SHIMANE PREF.

ZUMT 31165 (254.7 mm; Matsue City)

YAMAGUCHI PREF.

ZUMT 62890 (9 specimens, 108.8–140.0 mm), ZUMT 62893 (6 specimens, 116.4–155.4 mm; off Futami, Hohoku, Shimonoseki City, Yamaguchi Pref.; 19 Aug. 1991; coll. by set net)

FUKUOKA PREF.

ZUMT 62571 (105.3 mm; Fukuoka Pref., Japan; 26 Aug. 1931)

NAGASAKI PREF.

ZUMT 27130 (51.2 mm), ZUMT 27131 (50.1 mm; Nagasaki Pref.)

ZUMT 48233 [35.8 mm; Tamanoura, Goto City (Fukue-jima Island, Goto Islands); 23 May 1953; coll. by I. Tomiyama]

ZUMT 49909 [123.3 mm; Fukue, Goto City (Fukue-jima Island, Goto Islands); 10 June 1953; coll. by I. Tomiyama]

ZUMT 50544 (282.0 mm; obtained at Nagasaki Fish Market; 26 Aug. 1959)

PRECISE LOCALITY UNKNOWN

ZUMT 38294 (86.4 mm), ZUMT 38295 [57.1 mm; Japan (precise locality unknown)]

EAST CHINA SEA

ZUMT 51148 (174.2 mm; East China Sea; Dec. 1959)

KOREA

ZUMT 26349 (373.0 mm; Ulleung-do Island, Gyeongsangbuk-do)

CHINA

ZUMT 54498 (196.0 mm), ZUMT 54499 [210.5 mm; approx. 180 km east of Yancheng City, Jiangsu Province (34°15'N, 122°15'E); 12 Oct. 1984; coll. by RV *8th Ten-yo-maru*]

TAIWAN

ZUMT 12847 (102.4 mm; Keelung; coll. by T. Aoki)

ZUMT 13667 (116.9 mm; probably from Taiwan; coll. by T. Aoki at Government-General of Taiwan)

ZUMT 37453 (124.2 mm; Penghu Islands; Aug. 1908)

UNITED STATES

ZUMT 17642 (286.2 mm), ZUMT 17649 (280.0 mm), ZUMT 17650 (297.8 mm; California State)

LOCALITY UNKNOWN

ZUMT ABE 2108 (45.1 mm), ZUMT ABE 2109 (76.4 mm), ZUMT ABE 2110 (83.9 mm), ZUMT ABE 2127 (6 specimens, 58.7–75.2 mm), ZUMT ABE 2171 (2 specimens, 87.0–95.3 mm), ZUMT ABE 2200 (2 specimens, 99.8–109.1 mm), ZUMT ABE 2201 (108.1 mm), ZUMT ABE 2215 (14 specimens, 62.9–93.6 mm), ZUMT ABE 57-392 (259.9 mm), ZUMT ABE 57-393 (282.7 mm), ZUMT ABE 57-395 (246.6 mm), ZUMT ABE 57-397 (283.3 mm), ZUMT ABE 57-400 (261.1 mm), ZUMT ABE 57-402 (242.3 mm), ZUMT ABE 57-404 (237.7 mm), ZUMT ABE 61-874 (103.1 mm), ZUMT ABE 61-1068 (166.0 mm), ZUMT ABE 61-1069 (151.0 mm), ZUMT ABE 62-312 (218.0 mm), ZUMT ABE 62-313 (199.1 mm), ZUMT 45637 (67.6 mm), ZUMT 45639 (68.0 mm), ZUMT 46528 (201.1 mm), ZUMT 46984 (134.9 mm), ZUMT 64223 (252.4 mm), ZUMT 64226 [278.6 mm (right side only); no data]

ZUMT 38695 (133.9 mm; no locality data; donated by K. Nishio)

ZUMT 62504 (81.3 mm; locality unknown; 31 Mar. 1932; coll. by T. Abe)

Scomber scombrus Linnaeus, 1758

UNITED KINGDOM

ZUMT 12288 (291.0 mm; United Kingdom)

Scomber sp. サバ属未同定種

JAPAN

ZUMT 19067 [96.3 mm+ (head only); Koajiro, Misaki, Miura City, Kanagawa Pref.; coll. by K. Aoki]

Scomberomorus commerson (Lacepède, 1800) ヨコシマサワラ

JAPAN

ZUMT 17095 (247.3 mm), ZUMT 17096 (258.8 mm), ZUMT 17097 (138.1 mm), ZUMT 17098 (165.0 mm),
ZUMT 17099 (143.9 mm; Baten Port, Baten, Nanjo City, Okinawa-jima Island, Okinawa Pref.; coll. by S.
Tanabe)

TAIWAN

ZUMT 19696 [84.3 mm; probably collected from Taiwan; donated by H. Sato (Taipei Keelung Junior High
School)]

PHILIPPINES

ZUMT 42317 (230.5 mm), ZUMT 42346 (234.6 mm), ZUMT 42347 (241.2 mm), ZUMT 42370 (247.9 mm;
Basilan; 1926; coll. by U. Yamamura)

Scomberomorus guttatus (Bloch & Schneider, 1801) タイワンサワラ

JAPAN

ZUMT 12350 (409.3 mm; landed at Tokyo Market, collected from Shimonoseki City, Yamaguchi Pref.; 23 June
1922)

EAST CHINA SEA

ZUMT 51390 (255.4 mm; East China Sea; 26 Oct. 1959)

TAIWAN

ZUMT 14992 (244.0 mm; Tainan; coll. by T. Aoki)
ZUMT 22609 (106.7 mm; Kaohsiung)

Scomberomorus niphonius (Cuvier, 1832) サワラ

JAPAN

ZUMT 2480 (281.3 mm; Nagasaki Pref.; Aug. 1909)
ZUMT 64225 [139.8+ mm (head only); obtained at Tokyo Market, Tokyo Met.]

CHINA

ZUMT 41202 (400.0 mm; probably from China)

ZUMT 54416 (334.1 mm), ZUMT 54417 [309.4 mm; Yellow Sea, approx. 200 km east of Yancheng, Jiangsu Province (34°47'N 122°20'E), 24 m depth; 15 Oct. 1984; coll. by RV *8th Ten-yo-maru*]

LOCALITY UNKNOWN

ZUMT 64222 [337.2+ mm (no head; right side only); no data]

Thunnus albacares (Bonnaterre, 1788) キハダ

JAPAN

ZUMT 13980 [307.0 mm; probably from Okinawa Pref.; coll. by S. Sakaguchi (Okinawa Daiichi Junior High School)]

LOCALITY UNKNOWN

ZUMT 26252 (386.1 mm; locality unknown; 1 Aug. 1933)

ZUMT 64221 [approx. 370 mm (body evenly bisected); no data]

Thunnus orientalis (Temminck & Schlegel, 1844) クロマグロ

JAPAN

ZUMT 17290 (218.5 mm; Yaeyama Islands, Ryukyu Archipelago; coll. by S. Tanabe)

ZUMT 23766 (228.0 mm; Taniyama, Kagoshima City, Kagoshima Pref.; 20 July 1930)

ZUMT 31283 (283.3 mm; Matsue City, Shimane Pref.)

ZUMT 41285 (226.4 mm; Uozu or Namerikawa City, Toyama Pref.; coll. by I. Tomiyama)

ZUMT 46622 (186.5 mm; Hachijo-jima Island, Izu Islands)

Thunnus sp. マグロ属未同定種

LOCALITY UNKNOWN

ZUMT 63425 (tail only; no data)

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