List of specimens of the families Diodontidae and Molidae (Actinopterygii: Tetraodontiformes) deposited in the Department of Zoology, The University Museum, The University of Tokyo

Takayuki Sonoyama[1)], Hidetoshi Wada[2,3)], Masahiro Aizawa[3)], Kazuo Sakamoto[3,4)], Rei Ueshima[3,5)]

[1)]Enoshima Aquarium, 2-19-1 Katasekaigan, Fujisawa, Kanagawa 251-0035, Japan
[2)]Kanagawa Prefectural Museum of Natural History, 499 Iryuda, Odawara, Kanagawa 250-0031, Japan
[3)]The University Museum, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
[4)]Fish Information Center and Museum, 6-6 Toyosu, Koto-ku, Tokyo 135-0061, Japan
[5)]Department 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: lubricogobius@gmail.com)

Abstract

The identifications of specimens of Diodontidae and Molidae (Actinopterygii: Tetraodontiformes) held in the Department of Zoology, The University Museum, The University of Tokyo (ZUMT) were reassessed. For Family Diodontidae, 81 lots were identified, including 96 specimens comprising three genera and seven species. For Family Molidae, 14 lots were identified, including 14 specimens comprising three genera and three species. There are no type specimens of species in this collection. Lots ZUMT 48961, 48962 and 48963 are larval specimens.

Introduction

The porcupine-fish Family Diodontidae is includes 18 species in seven genera described from around the World (Niem, 2001; Matsuura, 2015). Fishes in this family are found among coral or rocky reefs and mud bottoms to a depth of 150 m. The body is wide, capable of great inflation and covered with massive spines, which may be quite long (Matsuura, 2015).

The ocean sunfish Family Molidae is composed of several species in just three genera (Nyegaard et al. 2018; Sawai et al. 2018; Matsuura, 2022). They are usually pelagic and occur in warm temperate and tropical seas (Matsuura, 2015). Fishes in Family Molidae are large, with a total length up to 1 m. *Mola alexandrini* (Ranzani, 1839) is the largest species and is known as the world's heaviest bony fish. The largest specimen to date measured 325 cm in total length, 359 cm body depth and 86 cm maximum width (measured at mid-body), and weighed 2,744 kg. It was captured off the Azores, Portugal (Gomes-Pereira et al., 2022). Larva less than 5 mm prominent spines on body (Fujita and Matsuura, 2014; Matsuura, 2022).

Materials and Methods

Specimens of Diodontidae and Molidae in the ZUMT collections were identified by the first and second author, with reference to Leis (2006), Hatooka and Hagiwara (2013) and Fujita and Matsuura (2014) and the standard length (SL) of each specimen was measured. The species are listed below in alphabetical order, including ZUMT number, SL (number of specimens in parentheses when there are two or more), type (abbreviated when non-type), collection locality (with Japanese language equivalent in parentheses). collection depth, collection date, collecting method, collector or donator and affiliation, and remarks when applicable. Registration numbers after ZUMT 62000 were assigned during the present study. The year of collection and collector for some specimens have been estimated following Koeda et al. (2022). The ZUMT specimens listed here were stored in Room 406 (specimen storage room) in the museum building. Species are arranged in alphabetical order.

Collection of Diodontidae in ZUMT

The ZUMT Diodontidae collection is composed of 96 specimens in 81 lots, comprising seven species. Specimens were collected from 1898 to 1989, mostly between 1922 and 1953. Many were collected from Sagami Bay or off

Hachijo-jima Island. There are no species type specimens of species in this family included the ZUMT collection.

Diodontidae　ハリセンボン科

Chilomycterus Brisout de Barneville, 1846　イシガキフグ属

Chilomycterus reticulatus (Linnaeus, 1758)　イシガキフグ

ZUMT 19120: 228.0 mm SL, Mitsune (三根) coast, Hachijo-jima Island, Izu Islands, Tokyo Pref., 2 July 1929, spear, coll. by Y. Otsuki (大槻洋四郎), local name "Barafugu (バラフグ)".
ZUMT 19177: 229.0 mm SL; **ZUMT 19178**: 267.0 mm SL, Hachijo-jima Island, Izu Islands, Tokyo Pref., 7 July 1929, spear, coll. by Y. Otsuki.
ZUMT 19245: 251.0 mm SL, Hachijo-jima Island, Izu Islands, Tokyo Pref., before 22 July 1929, coll. by Y. Oshizu (押津義雄).
ZUMT 19313: 232.0 mm SL, Mitsune, Hachijo-Island, Izu Island, Tokyo Pref. Japan, July, 1929, Y. Oshizu.
ZUMT 19443: 237.0 mm SL, before 1929, Y. Oshizu.
ZUMT 19491: 293.0 mm SL, Mitsune, Hachijo-Island, Izu Island, Tokyo Pref., Japan, before 1929, Y. Oshizu.
ZUMT 46792: 257.0 mm SL; **ZUMT 46794**: 129.0 mm SL, Onahama (小名浜), Iwaki (いわき), Fukuoka Pref., Japan, 36°56'10"N 140°53'45"E, 1933, H. Tsunoda (角田春斉).
ZUMT 66437: 263.0 mm SL, details unknown.
ZUMT ABE 7865: 290.0 mm SL, detail unknown, coll. by T. Abe (阿部宗明).
ZUMT ABE 58-214: 243.0 mm SL; **ZUMT ABE 59-690**: 209.0 mm SL; **ZUMT ABE 60-1646**: 228.0 mm SL; **ZUMT ABE 60-44**: 228.0 mm SL; **ZUMT ABE 60-734**: 207.0 mm SL, Japan (probably Sagami Bay, Manazuru, Kanagawa Pref.), coll. by T. Abe.

Chilomycterus schoepfii (Walbaum, 1792)

ZUMT 1034: 74.6 mm SL, locality unknown, before 1911.

Chilomycterus spinosus (Linnaeus, 1758)

ZUMT 65768: 46.6 mm SL, detail unknown.

Cyclichthys Kaup, 1855　メイタイシガキフグ属

Cyclichthys orbicularis (Bloch, 1785)　メイタイシガキフグ

ZUMT 30749: 84.4 mm SL, off Nagasaki Pref., Japan, trawl, before 1935, T. A. Glover (倉場富三郎).
ZUMT 66119: 92.7 mm SL, Sounthwest of Thailand Bay, Thailand, 22 Aug. 1985, trawl.

Diodon Linnaeus, 1758　ハリセンボン属

Diodon holocanthus Linnaeus, 1758　ハリセンボン

ZUMT 1020: 35.6 mm SL, Sagami Bay, Misaki (三崎), Miura (三浦), Kanagawa Pref., Japan, 1910.
ZUMT 1021: 107.2 mm SL, Taiza (間人), Kyoto Pref., Japan, written as Takeno (竹野),Tango (丹後), 14 Aug. 1902, B. Azuma (東　文治), Introduction toY. Tanaka (田中芳男).
ZUMT 1040: 43.7 mm SL, "44 fathom of Mochi-yama" (local fishing ground: モチ山 44 尋), Sagami Bay, off Miura Pen., Kanagawa Pref., Japan, before 1911, K. Aoki (青木熊吉).
ZUMT 1392: 68.1 mm SL, Otsu (大津), Kitaibaraki (北茨城), Ibaraki Pref., Japan, 12 Oct. 1907, M. Komatsuzaki

(小松崎三枝; 茨城県大津水産学校).

Remarks: ZUMT 1392 is referenced in Tanaka (1907).

ZUMT 1945 (6): 35.4–84.6 mm SL, Sagami Bay, Misaki, Miura, Kanagawa Pref., Japan, 1908, K. Aoki.

ZUMT 5948: 34.5 mm SL, Sagami Bay, Misaki, Miura, Kanagawa Pref., 14 Dec. 1899, donated from A. Owston.

ZUMT 7135: 112.9 mm SL, Pearl oyster farm, Uchiumi (内海), Minamiuwa (南宇和), Ehime Pref., Japan, 5 Aug. 1915, K. Ootsuki (大月菊男; 愛媛県水産試験場).

ZUMT 11094: 48.6 mm SL, Basilan Island, Philippines, before 1923, U. Yamamura and Y. Yamamura (山村楳次郎・山村八重子).

ZUMT 13093: 91.2 mm SL, Miyako Bay (宮古湾), Shirahamazaki (白浜崎) and Fudozaki (不動崎), Iwate Pref., Japan, before 1926, S. Tanabe (田辺貞夫).

ZUMT 13987: 146.0 mm SL, before 1926, S. Sakaguchi (坂口総一郎; 沖縄県立第一中学校).

ZUMT 19179: 170.0 mm SL; **ZUMT 19180**: 175.0 mm SL, 7 July 1929, spear, coll. by Y. Otsuki, local name "Barafugu (バラフグ)".

ZUMT 19252: 220.0 mm SL, 22 July 1929, Y. Oshizu.

ZUMT 19444: 216.0 mm SL, **ZUMT 19445**: 235.0 mm SL, before 1929, Y. Oshizu.

ZUMT 25105: 101.5 mm SL, inside the port of Keelung Bay, Taiwan, July 1930, M. Imai (今井倭武; 台北医学専門学校), local name "fugu (フグ)".

ZUMT 30748: 137.0 mm SL, Hachijo-jima Island, Tokyo Pref., Japan, before 1935.

ZUMT 30752: 114.2 mm SL; **ZUMT 30753**: 82.4 mm SL; **ZUMT 30754**: 84.9 mm SL, before 1935.

ZUMT 38841: 142.0 mm SL, **ZUMT 38842**: 145.0 mm SL, **ZUMT 38843**: 184.0 mm SL, Hachijo-jima Island, Tokyo Pref., Japan, Sept. 1922, M. Uchiyama (内山　操).

ZUMT 46795: 62.6 mm SL, Onahama, Iwaki, Fukushima Pref., Japan, 36°56'10"N, 140°53'45"E, 1933, before 1952, H. Tsunoda.

ZUMT 48341: 53.7 mm SL, Tokyo Market, Nov. 1952.

ZUMT 49301: 170.4 mm SL, Ota River (太田川), Doi (土居), Togouchi (戸河内), Yamagata (山縣), Hiroshima Pref., Japan, 20 Aug. 1958, (水岡繁登; 広島大学東雲分校生物).

ZUMT 49946: 59.0 mm SL, Fukue (福江), Nagasaki Pref., Japan, 10 June 1953, I. Tomiyama (冨山一郎), Requested to Fukue fisheries cooperative.

ZUMT 50062: 131.3 mm SL, Miraku (三井楽), Minamimatsuura (南松浦), Nagasaki Pref., Japan, 13 Oct. 1953, Requested to Miraku fisheries cooperative, local name "Igebuku (イゲブク)".

ZUMT 50320: 126.5 mm SL, Hirado (平戸), Nagasaki Pref., Japan, 10 June 1953, I. Tomiyama, Requested to Hirado fisheries cooperative.

ZUMT 51345: 121.8 mm SL, Fukuoka Market, Dec. 1959.

ZUMT 54100: 111.4 mm SL, Kuji (久慈), Amami-Oshima Island, Kagoshima Pref., Japan, 20 May 1966, Y. Tominaga (富永義昭).

ZUMT 66113: 119.2 mm SL, **ZUMT 66114(2)**: 23.5–39.9 mm SL, Sagami Bay, Misaki, Miura, Kanagawa Pref., Japan, 1910.

ZUMT 66115: 56.5 mm SL, Tokyo Market?, 1910.

ZUMT 66116(3): 36.4–41.9 mm SL, Tokyo Market, Otsu, Yokosuka, Kanagawa Pref., Japan, 18 Oct. 1952.

ZUMT 66120: 124.8 mm SL, Yellow Sea, 35°52'N 122°48'E, 27 Aug.

ZUMT ABE 4834: 75.0 mm SL; **ZUMT ABE 9003**: 73.1 mm SL; **ZUMT ABE 9890(3)**: 81.4–102.3 mm SL, Japan (detail unknown), T. Abe.

ZUMT ABE 59-706: 123.0 mm SL; **ZUMT ABE 61-950**: 33.9 mm SL; **ZUMT ABE 61-951**: 29.0 mm SL; **ZUMT ABE 61-952**: 26.6 mm SL; **ZUMT ABE 61-953**: 37.1 mm SL; **ZUMT ABE 61-975**: 30.5 mm SL, probably Sagami Bay, Manazuru, Kanagawa Pref., Japan, 1959–1961.

Diodon hystrix Linnaeus, 1758　ネズミフグ

ZUMT 22177: 270.0 mm SL, Tokyo Market, 28 Dec. 1907, H. Kasagawa (笹川秀吉; 浅草).

ZUMT 66438: 357.0 mm SL, **ZUMT 66439**: 264.0 mm SL, **ZUMT 66440**: 238.0 mm SL, **ZUMT ABE 2843**:

294.0 mm SL, details unknown.
ZUMT ABE 2844: 345.0 mm SL, **ZUMT ABE 2929**: 209.0 mm SL, probably Palau, 1937, T. Abe.

Diodon liturosus Shaw, 1804　ヒトヅラハリセンボン

ZUMT 12696: 145.0 mm SL, Basilan Island, Philippines, 6°42'06" N, 121°57'30" E, Aug. 1924, U. Yamamura and Y. Yamamura.
ZUMT 14698: 186.0 mm SL, Yaeyama Islands, Okinawa Pref., Japan, before 1926, H. Yashiro (屋代弘孝; 琉球).
ZUMT 15290: 150.0 mm SL, Japan, before 1926, S. Sakaguchi.
ZUMT 16999: 160.3 mm SL, **ZUMT 17000**: 150.0 mm SL, Itoman (糸満), Okinawa Pref., Japan, before 1926, S. Tanabe.
ZUMT 62215: 174.0 mm SL, Palau, 1937, T. Abe.
ZUMT 62668: 128.7 mm SL, probably around Sarawak, Borneo, coll. before 1960, originally registered in Sarawak Museum (paper tag P-2998), donated in 1960 by Tom Harrison to I. Tomiyama.
ZUMT ABE 2977: 176.0 mm SL, **ZUMT ABE 5992**: 171.0 mm SL, Palau, 1937, T. Abe.

Collection of Molidae in ZUMT

Examination of the ZUMT collections revealed 14 specimens of Family Molidae in 14 lots, comprising three species. The specimens were collected between 1914 and 1956. However, many specimens lack collection data. There are no types specimens of any molid species in this collection. Specimens with registrations ZUMT 48961, 48962 and 48963, are larval specimens.

Molidae　マンボウ科
Masturus Gill, 1884　ヤリマンボウ属
Masturus lanceolatus (Liénard, 1840)　ヤリマンボウ

ZUMT 48961: 6.68 mm SL; **ZUMT 48962**: 6.58 mm SL; **ZUMT 48963**: 5.73 mm SL, 16 Aug. 1956, Z. Maekawa and T. Suzuki (前川善四郎・鈴木貞次郎).
ZUMT 66443: 471 mm SL, locality unknown.
ZUMT ABE 5708: 168.3 mm SL, Palau, 1937, T. Abe.

Mola Koelreuter, 1766　マンボウ属
Mola mola (Linnaeus, 1758)　マンボウ

ZUMT 66441: 515 mm SL, Tokyo Market, 3 Nov. 1914.
ZUMT 66442: 291 mm SL, locality unknown.

Ranzania Nardo, 1840　クサビフグ属
Ranzania laevis (Pennant, 1776)　クサビフグ

ZUMT 23033: 183.97 mm SL, off Tanabe, Wakayama Pref., Japan, 6 Oct. 1930, K. Kinoshita (木下虎一郎; 和歌山県水産試験場).
ZUMT 43083: 223.6 mm SL, Sagami Bay, Kozu, Odawara, Kanagawa Pref., Japan, 9 Oct. 1942, K. Minoshima (簑島清夫).
ZUMT 66117: 223.6 mm SL, locality unknown.
ZUMT ABE 10842: 129.2 mm SL; **ZUMT ABE 10843**: 146.0 mm SL; **ZUMT ABE 10844**: 128.6 mm SL;

ZUMT ABE 10845: 119.9 mm SL, locality unknown, T. Abe.

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