

## List of the specimens of the family Anguillidae (Actinopterygii: Anguilliformes) deposited in the Department of Zoology, The University Museum, The University of Tokyo

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### Abstract

During the survey of the fish collection in the Department of Zoology, The University Museum, The University of Tokyo (ZUMT), four anguillid eels (*Anguilla anguilla*, *Anguilla japonica*, *Anguilla luzonensis*, and *Anguilla marmorata*) including 247 specimens of the yellow- and silver-eel stage and numerous glass eels of were confirmed. In the collection, *A. japonica* is most abundant, collected from Japan, Korean Peninsula, China, and Taiwan, the Japanese specimens through 20 prefectures, from Hokkaido to Okinawa. One of two specimens of Dr. Tokiharu Abe's personal collection kept at ZUMT collection room is identified as *A. luzonensis*. It represents as the first reliable record of the species from Palau.

### Introduction

The freshwater eels, the family Anguillidae, are known as a most common eels in the order Anguilliformes. The taxon is the most important fishery resources as food, several species are aquacultured. Due to the high pressure of the fishery, especially the glass eels for aquaculture, most of congeners are included in the International Union for Conservation of Nature's Red List (IUCN Red List) (IUCN 2022). The fish collection in the Department of Zoology, The University Museum, The University of Tokyo (ZUMT) is characterized as an early academic fish collection, consist of many fishes donated from various people and/or institutions, including local researchers, which is started from 1904 (Koeda et al. 2022). During the investigation of ZUMT collection, 247 specimens of yellow- and silver-eel stage and numerous glass eels of Anguillidae were found/identified. These were listed below with distributional notes.

### Materials and methods

All specimens of Anguillidae in the Department of Zoology, The University of Museum, The University of Tokyo (abbreviated as ZUMT) were identified. Identification of the eel collections follows Smith (1999), Silfvergrip (2009), and Watanabe et al. (2009).

The Japanese standard names of *Anguilla anguilla* Linnaeus, 1758 and *Anguilla luzonensis* Watanabe, Aoyama & Tsukamoto, 2009 follow Fish Information Center and Museum (<http://www.osakana-center.com/wamei/wamei2021.pdf> accessed 26 April 2022) and Kita et al. (2020), respectively. Total lengths (TL) were measured by a 1000 mm ruler nearest to 1 mm, and others for identification by a digital caliper nearest to 0.1 mm. When the specimen was cut or damaged, expressed as “XXX mm+” with a short note (cf., tail tip damaged). For identification, vertebrae were counted by soft X-ray photos for partial specimens.

The ZUMT specimens herein listed were stored in the Room 407 of the building of the museum. Although Dr. Tokiharu Abe’s personal collection (Abe’s collection) had not been registered into the ZUMT collection except for early collection, they are herein listed together with their ZUMT ABE number (number written on the label). Unfortunately, most of collection data of Abe’s collection were missing, specimens with his personal catalog number 2700 to 6000 (=ZUMT ABE 2700 to 6000) are recognized as specimens collected from Palau between 1936 and 1937 (Koeda et al. 2022). The following list includes the ZUMT catalog number, TL, number of specimens in parentheses when more than one, local name in parentheses when noted, collection locality, collection or donated date, and collector or donator as much as possible. Wherever possible, we have included the Japanese text of the local name, locality and collector or donor wrote in the ZUMT specimen ledger in parentheses. Some specimens lack collection locality record, but we have written a possible location that could be inferred from the name of the collector and/or donor. The collection year and collector for some specimens was estimated by following Koeda et al. (2022).

## Result and discussion

We confirmed 178 catalog numbers including 245 yellow/silver eels and numerous glass eels, and two specimens of Abe’s collection. At least 25 catalogued specimens and uncatalogued specimen, the holotype of *Anguilla remifera* Jordan & Evermann, 1902 (now synonymized under *Anguilla japonica* Temminck & Schlegel, 1846), were not found (Aizawa et al. 2022). Although ZUMT 42394 and ZUMT 43363 are catalogued as *Caranx* and *Hippocampus* in the specimen ledger, respectively, both were identified as *Anguilla japonica*. It may be caused by misreading.

The present collection of *A. japonica* consists of various Japanese localities including 20 prefectures. Although most of these are growing stage (yellow eel) and elver stage (glass eel), several mature stage eels (silver eel) collected from Ibaraki (ZUMT 17951, ZUMT 17952, ZUMT 17953, ZUMT 17954, dressed by the staff of a local eel wholesaler), Niigata (ZUMT 25311, 491 mm TL), and Fukuoka prefectures or the East China Sea (ZUMT 51221, 679 mm TL) are included. The northernmost specimen was collected from Utonato-numa (=Lake Utonai), Hidaka region of Hokkaido in 1919 (ZUMT 11319, 572 mm TL). The water of Lake Utonai flows into the Pacific Ocean through Yufutsu-gawa and Abira-gawa rivers which is the river where glass eels were recently recorded (Morita and Kuroki 2021). The present collection also includes very rare localities, e.g., mountain rivers and lakes, but since *A. japonica* has long been released into various rivers and lakes for commercial fishing, it is very difficult to use museum specimens for estimation of past natural distributions.

*Anguilla marmorata* Quoy & Gaimard, 1824 is confirmed from Honshu, Ryukyu Archipelago, Ogasawara Islands of Japan and Taiwan, Philippines and Palau. It is known as a tropical and subtropical species, transported from the tropical region to the coast of Japan by the Kuroshio current, north to Tone-gawa River, Ibaraki Prefecture (Mizuno and Nagasawa, 2009). The northernmost record was based on glass-eel specimens collected from estuary of Tone-gawa River in 1964 and 1965 by Nakamura and Kimura (1967), however, no yellow eels have been recorded. Therefore, ZUMT 16207 (675 mm TL) collected from Aino-kawa River is an only yellow-eel stage specimen from the system.

Jordan and Evermann (1902) reported four specimens of *Anguilla* from Formosa (=Taiwan), based on the specimens kept in the Imperial University of Tokyo (=University of Tokyo). Although three of four were not found including the holotype of *A. remifera*, the specimen recorded as *Anguilla manilensis* Bleeker, 1864 (a junior synonym of *A. marmorata*) was found (ZUMT 22106, 474 mm TL), which is reidentified as *A. luzonensis*.

From Abe's collection collected from Palau, two specimens of *Anguilla* were found. One (ZUMT ABE 3857, 771 mm TL) is identified as *A. luzonensis*, and another (ZUMT ABE 3744, 752 mm TL) as *A. marmorata*. *Anguilla luzonensis* is the newest species of the genus, yellow-stage eels of the species have been recorded only from Luzon Island of Philippines and Lanyu Island of Taiwan (Teng et al. 2009; Watanabe et al. 2009; Chen 2012). Although Barth et al. (2020) indicated its distribution including Palau based on the Global Biodiversity Information Facility database (GBIF) and their personal collections, no reliable records from Palau have been published (Abe 1939; Herre 1939; Bright and June 1981; Hibino and Mochioka 2018). Silfvergrip (2009) included Palau into the distributional region of *Anguilla celebesensis* Kaup, 1856, however it might be also regarded as *A. luzonensis*.

**Family Anguillidae** ウナギ科  
**Genus *Anguilla*** Schrank, 1798 ウナギ属

***Anguilla anguilla*** (Linnaeus, 1758)  
ヨーロッパウナギ

**[No locality]**

ZUMT 12236, 270 mm TL, ZUMT 12237, 253 mm TL, donated by the British Museum, UK.  
ZUMT 63996, 576 mm TL, donated by F. Guitel, L'Université de Rennes, France (Fig. 1A).

***Anguilla japonica*** Temminck & Schlegel, 1846  
ニホンウナギ

**[Japan: Hokkaido]**

ZUMT 11319, 572 mm TL (local name Unaki ウナギ), Utonaito-numa (=Lake Utonai) (ウトナイト沼), Oct. 1919, M. Tsuda (津田美津彦/北海道水産試験場室蘭支場).

**[Japan: Honshu]**

- ZUMT 1549, 249–256 mm TL (2), Gifu Pref. (岐阜), before 1908.
- ZUMT 1565, ca. 50 mm TL (numerous, glass eel), a river of Numazu, Shizuoka Pref. (駿州沼津ノ川), 2 Mar. 1899, K. Aoki (青木熊吉).
- ZUMT 3030, 162 mm TL, Ogori, Yamaguchi Pref. (周防小郡), 24 Aug. 1911, T. Oda (小田常太郎／山口県立農業学校).
- ZUMT 6911, 251 mm TL, Itakura-numa Pond, Gunma Pref. (板倉沼), 26 Jan. 1916, S. Takano (高野貞助／群馬県館林農業高校).
- ZUMT 8662, 278 mm TL (local name Kaya カヤ), Yamada-gawa River, Kuji-gawa River system, Ibaraki Pref. (久慈川支流山田川), before 1919, E. Sasuga (流石英治／茨城師範学校).
- ZUMT 8663, 340 mm TL (local name Goma ゴマ), probably Ibaraki Pref. (donated with ZUMT 8662), before 1919, E. Sasuga (流石英治／茨城師範学校).
- ZUMT 9144, 295 mm TL, probably Himeji, Hyogo Pref. (donated by Himeji, Hyogo Pref.), before 1919, R. Abe and C. Sakamoto (阿部良平・坂本長蔵).
- ZUMT 9858, 231 mm TL, Hyogo Pref., before 1920, K. Yamadori (山鳥吉五郎).
- ZUMT 9877, 280 mm TL, Suo-oshima Island, Yamaguchi Pref. (大島), before 1920, T. Yamahara (山原種逸／山口県岩国中学校).
- ZUMT 10022, 419 mm TL, Kayu-kawa River, Nagara-gawa River system, Gifu Pref. (長良川支流粥川谷), before 1921, S. Yamada (山田修一郎／高山尋常小学校).
- ZUMT 10514, 140 mm TL, a small river nearby Yaita, Tochigi Pref. (塩谷郡矢板町), before 1922, S. Arakawa (荒川重理／栃木県立矢板町県立農林学校).
- ZUMT 10607, 157 mm TL, Tonda-gawa River, Wakayama Pref. (紀州西牟婁郡富田川), 22 Sept. 1922, H. Kuroiwa (黒岩 恒).
- ZUMT 13486, 188 mm TL, probably Fukushima Pref., before 1924, M. Kanno (菅野美芳).
- ZUMT 17951, 95 mm (head only), ZUMT 17952, 556 mm+ (teared body without head), ZUMT 17953, 664 mm+ (teared body without head), ZUMT 17954, 325 mm+ (teared body without most of tail), Tsuchiura, Ibaraki Pref. (茨城土浦), before 1928, K. Hattori (服部兼松) (Fig. 1B, C, D).
- ZUMT 18034, 315 mm TL, probably Yamanashi Pref., before 1928, K. Yajima (矢島種次／甲府中学校).
- ZUMT 18588, 326 mm TL, about 12 km from river mouth of Hiki-gawa River, Wakayama Pref. (紀州日置川), rec. 10 Dec. 1928, S. Sakaguchi (坂口総一郎／和歌山県師範学校).
- ZUMT 19926, ca. 80 mm TL (7, dried), Tokyo Pref. (=currently Tokyo Met.), coll. and rec. before 21 Apr. 1930, S. Furuta (古田正吉).
- ZUMT 21007, 283 mm TL, Tokyo Market, Tokyo Pref. (=currently Tokyo Met.), before 1930.
- ZUMT 21397, 255 mm TL, ZUMT 21398, 214 mm TL, ZUMT 21471, 142 mm TL, Atsugi, Kanagawa Pref. (厚木), rec. 28 Apr. 1929, T. Senba (仙波高尚／神奈川県立厚木中学校).
- ZUMT 22446, 329 mm TL, Tanabe, Wakayama Pref. (紀州田辺), rec. 11 Aug. 1920, N. Ui (宇井縫蔵).
- ZUMT 23024, 149 mm TL, Lake Hamana, Shizuoka Pref. (浜名湖), id. 27 Sept. 1930, S.

- Omori (大恵尚一／浜松市立高等女学校).
- ZUMT 23123, 212 mm TL (local name Unagi ウナギ), ZUMT 23124, 174 mm TL (local name Unagi ウナギ), ZUMT 23125, 175 mm TL (local name Unagi ウナギ), Arii and others, Mie Pref. (有井村その他), Aug. 1927, Y. Tsuchiga (槌賀安平／木本中学校).
- ZUMT 24855, 203 mm TL (白黄化), Katase-gawa River, nearby Fujisawa, Kanagawa Pref. (相州片瀬川藤沢町付近), before 1931, N. Sato (佐藤尚勝／湘南中学校).
- ZUMT 25311, 491 mm TL, off Niigata Pref. (新潟沖), before 1931, S. Yoshihara (吉原七司)
- ZUMT 26096, 316 mm TL (local name Unagi ウナギ), ZUMT 26097, 320 mm TL (local name Unagi ウナギ), Toyo-gawa River, nearby Shinshiro, Aichi Pref. (豊川上流新城付近), 24 July 1932, S. Yoshida (吉田関子).
- ZUMT 26136, 596 mm TL (local name Goma-unagi ゴマウナギ), Mikawa-shinshiro, Aichi Pref. (三河新城), July 1932, S. Yoshida (吉田関子).
- ZUMT 26210, 167–350 mm TL (12), Kuji-gawa River, Tanakura, Fukushima Pref. (磐城棚倉町久慈川), before 1933, H. Tsunoda (角田春彦／小名濱小学校).
- ZUMT 26691, 187 mm TL, Hashimoto, Wakayama Pref. (橋本町), before 1934.
- ZUMT 28291, 172 mm TL, ZUMT 28292, 139 mm TL, ZUMT 28293, 193 mm TL, ZUMT 28294, 119 mm TL, ZUMT 28328, 60 mm TL (glass eel), Chiba Pref., 1927, S. Kohama (小浜 秀／千葉県女子師範学校).
- ZUMT 29173, 149 mm TL, ZUMT 29174, 243 mm TL, Chiba Pref., before 1934, T. Suzuki (鈴木寅之助).
- ZUMT 30854, 329 mm TL, Hi-numa Pond, Ibaraki Pref. (涸沼), before 1935.
- ZUMT 31241, 33.2 mm+ (tail tip damaged), Matsue, Shimane Pref. (松江), before 1935, R. Yanai (柳井隆一／松江高等学校).
- ZUMT 34561, ca. 40–180 mm TL (9, dried), Hi-numa Pond, Ibaraki Pref. (涸沼), 22 May 1935, S. Tanaka (田中茂穂).
- ZUMT 35260, 186 mm TL, probably Shizuoka Pref., before 1936, S. Araki (荒木精一／浜松市立高等女学校).
- ZUMT 37576, 407 mm TL, ?Misaki or Ushimado, Kanagawa Pref. (三崎？牛窓か？), before 1936, S. Miyoshi (三好 晋／水戸高等学校).
- ZUMT 37763, 167 mm TL, probably Fukushima Pref., before 1937, T. Saito (斎藤知賢).
- ZUMT 38583, 320 mm TL, a lake of Nagano Pref., 1915, A. Tanaka (田中阿歌麿).
- ZUMT 39146, 309 mm TL, ZUMT 39147, 273 mm TL, pond reared specimens, Kyoto Pref., June 1937, S. Tsuji (辻 季吉／河守蚕業学校).
- ZUMT 41822, 351 mm TL, ZUMT 41823, 324 mm TL, Asamushi, Aomori Pref. (浅虫), before 1942, S. Tanabe (田辺貞夫).
- ZUMT 43950, 252 mm TL, ZUMT 43952, 201 mm TL, ZUMT 43953, 221 mm TL, Kofu, Yamanashi Pref. (甲府), before 1942.
- ZUMT 43992, 163 mm TL, ZUMT 43993, 189 mm TL, ZUMT 43994, 157 mm TL, Kamogawa River, Kyoto Pref. (賀茂川), before 1942.
- ZUMT 44489, 105 mm TL (local name Meso メソ), ZUMT 44490, 82 mm TL (local name Meso メソ), probably Chiba Pref., before 1943, Y. Imai and H. Ichihara (今井雪雄・市原浜夫).
- ZUMT 44515, 185 mm TL, ZUMT 44516, 176 mm TL, ZUMT 44517, 229 mm TL, ZUMT

- 44678, 131 mm TL, ZUMT 44679, 199 mm TL, Sumoto, Awaji-shima Island, Hyogo Pref. (淡路島洲本), before 1943.
- ZUMT 44711, 292 mm TL, ZUMT 44712, 209 mm TL, nearby Kofu, Yamanashi Pref. (甲府付近), rec. 21 July 1921.
- ZUMT 44747, 62–101 mm TL (8), Chiba, Chiba Pref., 1925.
- ZUMT 44958, 193 mm TL, ZUMT 44959, 245 mm TL, probably Chiba Pref., before 1943, T. Suzuki (鈴木寅之助).
- ZUMT 45268, 314 mm TL, Kabura-gawa River, Tone-gawa River system, Gunma Pref. (上州鐺川), before 1943.
- ZUMT 45541, 193 mm TL, ZUMT 45542, 291 mm TL, Tochigi Pref., rec. Sept. 1931.
- ZUMT 56828, 119 mm TL, ZUMT 56829, 433 mm TL, inner part of Koajiro Bay, Misaki, Kanagawa Pref. (三崎町小網代湾奥部), 1 Aug. 1987.
- ZUMT 63994, 359 mm TL, nearby Iga-ueno, Nara Pref. (伊賀上野).
- ZUMT 57316, 117 mm TL, Yokosuna, Shimizu, Shizuoka Pref. (清水市横砂地先), 30 Oct. 1987, M. Aizawa and K. Mochizuki (藍澤正宏・望月賢二).
- ZUMT 57434, 77–92 mm TL (2), mouth of Haya-kawa River, Odawara, Shizuoka Pref., 22 Nov. 1987, M. Aizawa and H. Senou (藍澤正宏・瀬能 宏).

#### [Japan: Shikoku]

- ZUMT 1367, 219–267 mm TL (2), probably Ehime Pref., May 1907, Y. Shimizu (清水保之／松山商業学校).
- ZUMT 43462, 292 mm TL, Kochi Pref, before 1942.

#### [Japan: Kyushu]

- ZUMT 1564, ca. 60 mm TL (numerous, glass eel), Oyodo-gawa River, Miyazaki Pref. (日向大淀川), Jan. 1900, T. Ogura (小倉孝治／宮崎中学校).
- ZUMT 1566, ca. 60 mm TL (numerous, glass eel), Oyodo-gawa River, Miyazaki Pref. (日向大淀川), 6 Nov. 1900, T. Ogura (小倉孝治／宮崎中学校).
- ZUMT 2295, 174 mm TL, Nagasaki Pref., before 1909.
- ZUMT 5901, 342 mm TL, a small river of Shimokoshi-shima Island, Kagoshima Pref. (下甕島), 24 July 1899.
- ZUMT 18091, 655 mm TL, ZUMT 18092, 565 mm TL (local name Kuro 黒), ZUMT 18093, 475 mm TL (local name Ao 青), ZUMT 18095, 516 mm TL (local name Aka 赤), Ariake-kai Sea, before 1928, Fukuoka Prefectural Fisheries Experimental Station (福岡県水産試験場).
- ZUMT 32099, 250 mm TL, Kagoshima Pref., before 1936.
- ZUMT 33734, 166 mm TL, ZUMT 33735, 260 mm TL, probably Sendai, Kagoshima Pref., before 1936, T. Arii (有井徳之丞／鹿児島県川内中学校).
- ZUMT 35194, 258 mm TL, Ariake-kai Sea, Okinohata, Fukuoka Pref. (沖端), 26–31 May 1931, I. Tomiyama (富山一郎).
- ZUMT 35666, 192 mm TL, ZUMT 35667, 220 mm TL, ZUMT 35668, 219 mm TL, ZUMT 35669, 226 mm TL, ZUMT 35676, 233 mm TL, Ariake-kai Sea, Oct. 1931, I. Tomiyama (富山一郎).

ZUMT 41120, 315 mm TL, Kagoshima Bay, Kagoshima Pref., rec. June 1938, K. Ogawa (小川一男／鹿児島女子師範学校).

ZUMT 51221, 679 mm TL, East China Sea or Fukuoka, Fukuoka fishmarket, Dec. 1959.

**[Japan: Ryukyu Archipelago]**

ZUMT 9482, 477 mm TL, Okinawa Pref., before 1920, H. Kuroiwa (黒岩 恒).

ZUMT 14033, 331 mm TL, ZUMT 14034, 306 mm TL, ZUMT 14035, 277 mm TL, ZUMT 14036, 311 mm TL, ZUMT 14037, 284 mm TL, ZUMT 14038, 313 mm TL, ZUMT 14039, 322 mm TL, probably Okinawa-jima Island, 1925, H. Yahiro (屋代弘孝／沖縄県産業課).

ZUMT 45890, 53–61 mm TL (15, glass eel), probably Okinawa Pref., before 1943.

ZUMT 58140, 96 mm TL, mountain torrent of Nakama-gawa River, Iriomote-jima Island (西表島仲間川), 10 July 1988, M. Aizawa and H. Senou (藍澤正宏・瀬能 宏).

ZUMT 60170, 134 mm TL, middle part of Aira-gawa River, Iriomote-jima Island (西表島相良川), 19 Aug. 1989.

**[Japan: Izu Islands]**

ZUMT 41915, 423 mm TL, probably Hachijo-jima Island, before 1942, K. Uchiyama (内山吉五郎).

**[Japan: Ogasawara Islands]**

ZUMT 1548, 300 mm TL, before 1908, C. O. Whitman.

**[Japan: locality details unknown]**

ZUMT 34803, 264 mm TL; ZUMT 34804, 272 mm TL; ZUMT 34805, ca. 50–110 mm TL (22, dried).

**[Korean Peninsula: locality details unknown]**

ZUMT 12882, 501 mm TL; ZUMT 12883, 326 mm TL; ZUMT 12884, 330 mm TL; ZUMT 12885, 466 mm TL, ZUMT 12886, 292 mm TL, before 1924.

ZUMT 38061, 222 mm TL, before 1937.

**[Taiwan]**

ZUMT 2509, 350 mm TL, Kee-lung (基隆), 18 Mar. 1908, K. Akamatsu (赤松邦太郎).

ZUMT 19011, 338 mm TL, ZUMT 19012, 342 mm TL, ZUMT 19013, 314 mm TL, ZUMT 19014, 375 mm TL, ZUMT 19015, 318 mm TL, Taipei Market (台北市場), Apr. 1929, H. Sato (佐藤春吉／台湾基隆中学校).

ZUMT 23611, 205 mm TL, freshwater of Taipei (台北), S. Arakawa (荒川重理／台北高等学校).

ZUMT 25129, 297 mm TL, ZUMT 25130, 249 mm TL, ZUMT 25131, 315 mm TL, Xindian River (淡水河新店), Tansui River system, Aug. 1929, M. Imai (今井倭武／台北医学専門学校).

**[China]**

ZUMT 12355, 598 mm TL; ZUMT 20732, 343 mm TL, nearby Beijing (北京); ZUMT 31107, 263 mm+ (tail tip damaged), Manchuria and China (満州及び支那), before 1925.  
ZUMT 63995, 917 mm TL, Longwangtang, Dalian, Liaoning (旅順管内龍王塘水源地), 10 Sept. 1934.

**[No locality]**

ZUMT 17597, 241 mm TL; ZUMT 42394, 241 mm TL; ZUMT 43363, 80 mm TL; ZUMT 63992, 543 mm TL; ZUMT 63993, 630 mm TL; ZUMT 64027, 167 mm TL; ZUMT 64028, 330 mm TL; ZUMT 64030, ca. 110 mm TL (6), dried; ZUMT 64031, ca. 300 mm TL, dried; ZUMT 64032, ca. 200 mm TL (2), dried.

*Anguilla luzonensis* Watanabe, Aoyama & Tsukamoto, 2009

ウグマウナギ

**[Taiwan]**

ZUMT 22106, 474 mm TL, Lan-yu Island (Orchid Island), originally written as Kotosho.

**[Palau]**

ZUMT ABE 3857, 771 mm TL, 1936 (Fig. 1E, G).

**Remarks on morphological features.** Proportional characters of ZUMT ABE 3857 are following: head 16.5% TL; predorsal length 35.6%; preanal length 42.9% TL; trunk length 26.6% TL; horizontal distance between verticals through dorsal-fin origin and anus 7.8% TL; length of gape 47.2% of head length. In addition, tooth on maxilla of the present specimen is arranged as a broad band. The present specimen agrees with *A. celebesensis*, *Anguilla interioris* Whitley, 1938, *A. luzonensis* and *Anguilla megastoma* Kaup, 1856 in having broad, undivided tooth bands and mottled pattern on skin, but distributional ranges of *A. interioris* and *A. megastoma* are restricted in New Guinea and southern Indonesia, not overlapped with that of *A. celebesensis* and *A. luzonensis*, separated by currents. *Anguilla luzonensis* is closely similar to *A. celebesensis*, eight key characters including six proportional and two meristic characters of the species are overlapped with those species. However, the former was described as a distinguishable species by Watanabe et al. (2009) because means of those characters are slightly different. Although those characters are deeply overlapped between both species, the present specimen was tentatively identified as *A. luzonensis* because predorsal length and length of gape is remarkably larger than that of *A. celebesensis* provided by Watanabe et al. (2009). The result is also supported by Barth et al. (2020). More abundant morphological information of *A. celebesensis* and *A. luzonensis* are required with molecular evidences.



*Anguilla marmorata* Quoy & Gaimard, 1824

オオウナギ

**[Japan: Honshu]**

ZUMT 16207, 675 mm TL, Aino-kawa River, Tone-gawa River system, Hanyu, Satama Pref., 16 July 1924, K. Matsumura (松村 清).

ZUMT 20399, 344 mm TL, Tanabe, Wakayama Pref. (紀州田辺), before July 1920, N. Ui (宇井縫藏).

**[Japan: Ryukyu Archipelago]**

ZUMT 8805, 366 mm TL, freshwater of Yaeyama Islands, May 1919, H. Kuroiwa (黒岩 恒).

ZUMT 11163, 523 mm TL, ZUMT 11164, 342 mm TL, ZUMT 15337, 410 mm TL, Okinawa-jima Island, S. Sakaguchi (坂口総一郎／沖縄県立第一中学校).

ZUMT 38157, 143 mm TL, Okinoerabu-jima Island, Kagoshima Pref. (沖永良島), Aug. 1937, K. Ogawa (小川一男／鹿児島女子師範学校).

ZUMT 60169, 95 mm TL, ZUMT 60185, 54–68 mm TL (3), middle part of Aira-gawa River, Iriomote-jima Island, 19 Aug. 1989.

**[Japan: Ogasawara Islands]**

ZUMT 1561, 45–148 mm TL (9), freshwater of Chichi-jima Island, 25 Mar. (Y unknown), before 1908.

**[Taiwan]**

ZUMT 19016, 285 mm TL, ZUMT 19017, 292 mm TL, ZUMT 19018, 285 mm TL, Taipei Market (台北市場), May 1929, H. Sato (佐藤春吉／台湾基隆中学校).

ZUMT 25147, 280 mm TL (老鰻 ローマー), ZUMT 25148, 261 mm TL (老鰻 ローマー), Tansui River (淡水河), M. Imai (今井倭武／台北医学専門学校).

**[Philippines]**

ZUMT 42637, 159 mm TL, ZUMT 42638, 168 mm TL, ZUMT 42639, 305 mm TL, ZUMT 42640, 232 mm TL, ZUMT 48518, 253 mm TL, ZUMT 48528, 401 mm TL, Basilan Island, 1926, U. Yamamura (山村樞次郎).

**[Palau]**

ZUMT 3744, 752 mm TL, 1936 (Fig. 1F, H).

**[No locality]**

ZUMT 63997, 425 mm TL.

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Figure 1. Featured specimens of *Anguilla* in ZUMT collection. A, *Anguilla anguilla*, ZUMT 63996, 576 mm TL; B, C, D, teared specimens of *Anguilla japonica*, ZUMT 17952, 556 mm+ (B), ZUMT 17953, 664 mm+ (C), ZUMT 17954, 325 mm+ (D), Tsuchiura, Ibaraki Pref.; E, whole body of *Anguilla luzonensis*, ZUMT ABE 3857, 771 mm TL, Palau; F, whole body of *Anguilla marmorata*, ZUMT ABE 3744, 752 mm TL, Palau; G, lateral view of head, *A. luzonensis*, ZUMT ABE 3857, 771 mm TL; H, lateral view of head, *A. marmorata*, ZUMT ABE 3744, 752 mm TL.