

## Specimens of the genus *Parupeneus* (Actinopterygii: Teleostei: Mullidae) deposited in the Department of Zoology, The University Museum, The University of Tokyo

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### Abstract

A list of *Parupeneus* (Mullidae) deposited in the Department of Zoology, The University Museum, The University of Tokyo, including 196 specimens (187 lots) of 11 species, is provided. No types for the genus were located in the collection.

### Introduction

*Parupeneus* Bleeker, 1863, a genus of Indo-Pacific goatfishes (Mullidae), is characterized by the following characters: 27–32 lateral-line scales; 2 or 3 scale rows between the dorsal fins; moderately large, bluntly conical, and well-spaced rows of teeth in both jaws; no teeth on the vomer or palatines (Randall 2004; Hatooka and Doiuchi 2013). Mullid fishes, including *Parupeneus*, are well known for having a pair of barbels on their lower jaws, utilized for various behavioral activities, including stirring sand and poking into holes in searches for prey, and courtship movements. Moreover, the barbels have also been suggested as used in agonistic displays between males (Gosline 1984; Filkovsky and Springer 2010).

Although a well-known group, many new species of Mullidae have been described recently (Shibuya and Motomura 2020; Uiblein 2021), as well as new distributional records (Koeda et al. 2018; Bandai et al. 2018a, b, 2019a; Nakashimada et al. 2021), in addition to non-taxonomic studies (Bandai et al. 2019b). For an aid to future taxonomic studies, a specimen list of the genus *Parupeneus* in the Department of Zoology, The University Museum, The University of Tokyo is provided herein.

### Materials and Methods

Specimens of *Parupeneus* in the Department of Zoology, The University Museum, The University of Tokyo (abbreviated as ZUMT) were identified during the present study following Randall (2004) and Hatooka and Doiuchi (2013). Parentheses following registration numbers include standard length (in mm), specimen numbers (if more than one included in lot), collection locality, collection date, collector, and remarks (if applicable). The collection year and collector for some specimens was estimated by following Koeda et al. (2022). Collection data of specimens are omitted when matching that of immediately following specimens. The ZUMT specimens listed herein were stored in Room 406 (specimen storage room), in the museum building. Most were stored in bottles on shelves, although some large specimens were stored in a glass tank, with the glass lid sealed with a silicon adhesive in Room 406 (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.

## Results

Eleven species of *Parupeneus* were confirmed in the ZUMT fish collection. No type specimens of the genus were found in the collection. In addition, the ZUMT collection of fish specimens were collected from a wide range of localities in Japan between 1900 and 1940. However, in the present investigation of genus *Parupeneus*, some species were not collected from the mainland of Japan until around 1940, even though their distribution had been reported from there as of 2023. For examples, *P. heptacanthus* [observed only from Ryukyu Archipelago in this study (three specimens collected from Wakayama Prefecture in 1975) vs. currently known from south of Miyagi and Kyoto prefectures] and *P. multifasciatus* (Kagoshima Prefecture and Ryukyu Archipelago vs. south of Chiba and Yamaguchi prefectures) (Hatooka and Doiuchi 2013; Tashiro et al. 2017; Sonoyama et al. 2020; Motomura 2023) which are similar trends have been shown in Chaetodontidae (Koeda et al. 2022). This suggests that some species for the genus *Parupeneus* have been obtained from more northerly localities after about 1940. Whether this is due to abortive migration or change of environments is not clear and requires further study.

## Species accounts

### Genus *Parupeneus* ウミヒゴイ属

#### *Parupeneus barberinoides* (Bleeker, 1852) インドヒメジ

#### JAPAN

ZUMT 17431 (144.8 mm; Naha City, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe and Y. Hiyane)

#### PHILIPPINES

ZUMT 11024 (131.4 mm; Philippines; 1920's; coll. by U. Yamamura)

#### PALAU

ZUMT ABE 4089 (135.7 mm; Palau; 1936–1937)

#### *Parupeneus barberinus* (Lacepède, 1801) オオスジヒメジ

#### JAPAN

ZUMT 17268 (9 specimens, 29.1–32.3 mm; Unten, Nakijin Village, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe)

ZUMT 22857 (147.2 mm; before 1930; Ryukyu Archipelago)

#### PALAU

ZUMT ABE 2988 (181.6 mm; Palau; 1936–1937)

ZUMT 55313 (83.6 mm; Palau; Aug. 1935; coll. by Y. Haneda)

#### LOCALITY UNKNOWN

ZUMT ABE 1879 (93.9 mm), ZUMT ABE 1880 (91.5 mm), ZUMT ABE 1881 (109.8 mm), ZUMT 64350 (107.6 mm; no data)

#### *Parupeneus biaculeatus* (Richardson, 1846) ミナベヒメジ

#### JAPAN

ZUMT 32993 (128.2 mm; probably from Yamaguchi Pref.; donated by I. Tanaka)

ZUMT 50538 (213.0 mm; obtained at Nagasaki Fish Market, Nagasaki Pref.; 26 Aug. 1959; coll. by Y. Tominaga)

**LOCALITY UNKNOWN**

ZUMT 52204 (198.5 mm; no data)

*Parupeneus chrysopleuron* (Temminck & Schlegel, 1843) ウミヒゴイ

**JAPAN**

ZUMT 3884 (cloth tag labelled No. 104 “写生百四号”) (237.4 mm; obtained at Tokyo Fish Market; before 1914)

**LOCALITY UNKNOWN**

ZUMT 64348 (108.7 mm; no data)

**Remarks.** Tanaka (1914) described and figured this species based on a single specimen collected from Tokyo Fish Market, Japan (ZUMT 3884, 306 mm total length).

*Parupeneus ciliatus* (Lacepède, 1802) ホウライヒメジ

**JAPAN**

ZUMT 12100 (cloth tag labelled No. 542 “写生第五四二号”) (110.3 mm; Misaki, Miura City, Kanagawa Pref.; 1920's)

ZUMT 15275 (163.8 mm), ZUMT 15277 (143.5 mm), ZUMT 39819 (100.0 mm), ZUMT 39994 (58.5 mm), ZUMT 39995 [91.2 mm, probably from Okinawa Pref.; coll. by S. Sakaguchi (Okinawa Prefectural Daiichi Junior High School); 1920's]

ZUMT 16765 (159.6 mm), ZUMT 16766 (103.4 mm; Onna Village, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe)

ZUMT 17066 (91.2 mm; Itoman City, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe)

ZUMT 19158 [294.8 mm; probably from Hachijo-jima Island, Izu Islands; 6 July 1929; coll. by Y. Otsuki (Hachijo-jima Island)]

ZUMT 19367 (259.4 mm), ZUMT 19368 (333.5 mm), ZUMT 19369 (316.1 mm) ZUMT 19498 [261.7 mm; probably from Hachijo-jima Island, Izu Islands; 1920's; coll. by Y. Oshizu (Hachijo-jima Island)]

ZUMT 21734 (217.0 mm; Wakayama Pref.; 22 Jan. 1906)

ZUMT 23903 (162.7 mm; Kushikino, Ichikikushikino City, Kagoshima Pref.)

ZUMT 34349 (32.7 mm; Okitsu, Katsuura City, Chiba Pref.; Aug. 1930, coll. by S. Masuda)

ZUMT 40534 (192.3 mm; Hachijo-jima Island, Izu Islands)

ZUMT 41123 (128.7 mm; Kagoshima Bay, Kagoshima Pref.; coll. by K. Ogawa)

ZUMT 41926 [290.2 mm; probably from Hachijo-jima Island, Izu Islands; coll. by Y. Uchiyama (Hachijo-jima Island)]

ZUMT 42835 (58.9 mm), ZUMT 42837 (57.9 mm), ZUMT 42838 (45.3 mm), ZUMT 42839 [37.3 mm; probably from Hachijo-jima Island, Izu Islands; Sept. 1922; coll. by M. Uchiyama (Hachijo-jima Island)]

ZUMT 53409 (113.6 mm; Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago)

ZUMT 56745 (90.5 mm; tidepool on Okino-shima Island, Tateyama City, Chiba Pref.; 16 Apr. 1987; coll. by M. Aizawa, H. Senou and Y. Sato)

**PALAU**

ZUMT ABE 4083 (214.4 mm), ZUMT ABE 4092 (118.8 mm; Palau; 1936–1937)

**TANZANIA**

ZUMT 62057 (46.0 mm; probably from Tanzania; 18–19 July 1972; coll. by Y. Taki)

**LOCALITY UNKNOWN**

ZUMT ABE 2676 (113.0 mm), ZUMT ABE 2677 (97.7 mm), ZUMT ABE 61-1066 (188.5 mm), ZUMT 64358 (66.0 mm; no data)

***Parupeneus cyclostomus* (Lacepède, 1801) マルクチヒメジ****JAPAN**

ZUMT 11200 (165.4 mm), ZUMT 11241 (167.2 mm), ZUMT 15355 [139.5 mm; probably from Okinawa Pref.; 1920's; coll. by S. Sakaguchi (Okinawa Prefectural Daiichi Junior High School)]

ZUMT 17284 (186.9 mm, Yaeyama Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe)

ZUMT 23542 (171.7 mm; probably from Okinawa Pref.; July (before 1931); coll. by Okinawa Prefectural Fisheries Experimental Station)

ZUMT 23914 (235.0 mm; probably obtained at Naya Fish Market, Kagoshima City, Kagoshima Pref.; before 1931)

ZUMT 54107 (137.8 mm; obtained at fish market on Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago; 4 June 1966; coll. by Y. Tominaga)

**TAIWAN**

ZUMT 46835 (284.0 mm; probably from Taipei)

**PALAU**

ZUMT ABE 3700 (183.7 mm), ZUMT ABE 3752 (191.5 mm), ZUMT ABE 3795 (237.4 mm), ZUMT ABE 4007 (138.3 mm), ZUMT ABE 4093 (125.0 mm; Palau; 1936–1937)

**LOCALITY UNKNOWN**

ZUMT 31703 [256.1 mm; Southeast Asia (precise locality unknown); labelled as「南洋」(“nan-yo”)]

ZUMT 40441 (139.2 mm), ZUMT 46389 (210.8 mm), ZUMT 64346 (132.2 mm), ZUMT 64351 (202.9 mm; no data)

***Parupeneus heptacanthus* (Lacepède, 1802) タカサゴヒメジ****JAPAN**

ZUMT 17155 (77.7 mm; Baten Port, Nanjo City, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; coll. by S. Tanabe; 1920's)

ZUMT 19657 (280.0 mm; probably from Okinawa Pref.; July 1928; coll. by Okinawa Prefectural Fisheries Experimental Station)

ZUMT 54071 (115.0 mm), ZUMT 54087 (118.0 mm; Kuji, Amami-oshima Island, Amami Islands, Ryukyu Archipelago; 20 May 1966; coll. by Y. Tominaga)

ZUMT 55528 (90.7 mm), ZUMT 55529 (72.0 mm), ZUMT 55530 (80.0 mm), ZUMT 55531 (87.4 mm; Kii Peninsula, Wakayama Pref.; July 1975)

**PALAU**

ZUMT ABE 3771 (193.3 mm), ZUMT ABE 3794 (218.1 mm), ZUMT ABE 4094 (142.5 mm; Palau)

**LOCALITY UNKNOWN**

ZUMT 64353 (70.1 mm; no data)

*Parupeneus indicus* (Shaw, 1803) コバンヒメジ

**JAPAN**

- ZUMT 19076 (211.8 mm; probably from Okinawa Pref.; 14 May 1928; coll. by Okinawa Prefectural Fisheries Experimental Station)  
ZUMT 40346 (74.0 mm; Ryukyu Archipelago; 1920's; coll. by S. Sakaguchi)  
ZUMT 53888 (273.7 mm; probably from Naha City, Okinawa Pref.; 1975; coll. by T. Sato)  
ZUMT 54105 (129.2 mm; obtained at fish market on Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago; 4 June 1966; Y. Tominaga)  
ZUMT 64171 (124.3 mm; Kadogawa Bay, Kadogawa, Miyazaki Pref.; 26 Oct. 2021; set net; coll. by M. Wada)

**PALAU**

- ZUMT ABE 4090 (190.0 mm; Palau; 1936–1937)

**LOCALITY UNKNOWN**

- ZUMT ABE 53 (2 specimens; 67.5–82.0 mm; no data)

*Parupeneus multifasciatus* (Quoy & Gaimard, 1825) オジサン

**JAPAN**

- ZUMT 11198 (94.1 mm), ZUMT 11199 (133.5 mm), ZUMT 15130 (102.8 mm), ZUMT 15132 (96.1 mm), ZUMT 15139 (134.2 mm), ZUMT 15206 (109.2 mm), ZUMT 15207 (89.2 mm), ZUMT 15208 (87.3 mm), ZUMT 15232 (115.5 mm), ZUMT 15233 (147.7 mm), ZUMT 15234 (167.7 mm), ZUMT 15235 (167.4 mm), ZUMT 15236 (178.2 mm), ZUMT 15281 (124.8 mm), ZUMT 15376 (97.7 mm), ZUMT 15377 [92.1 mm; probably from Okinawa Pref.; 1920's; coll. by S. Sakaguchi (Okinawa Prefectural Daiichi Junior High School)]  
ZUMT 14104 [168.7 mm; probably from Okinawa Pref.; 1920's; coll. by H. Yashiro (Okinawa Pref.)]  
ZUMT 14321 (70.1 mm), ZUMT 14322 (87.9 mm; Naha Fish Market, Naha City, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 6 Feb. 1925; coll. by H. Yashiro)  
ZUMT 16990 (113.3 mm), ZUMT 16991 (68.1 mm), ZUMT 17008 (64.1 mm), ZUMT 17052 (95.6 mm; Itoman City, Okinawa Pref.; coll. by S. Tanabe)  
ZUMT 17197 (136.9 mm; Onna Village, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe)  
ZUMT 17294 (157.7 mm; Yaeyama Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe)  
ZUMT 17434 (126.0 mm; Naha City, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 1920's; coll. by S. Tanabe and Y. Hiyane)  
ZUMT 22739 (116.3 mm; Okinawa Pref.; before 1930)  
ZUMT 23827 (144.7 mm), ZUMT 23857 (177.0 mm), ZUMT 23941 (171.5 mm), ZUMT 23942 (151.7 mm; probably obtained at Naya Fish Market, Kagoshima City, Kagoshima Pref.; before 1931)  
ZUMT 39378 (134.2 mm; southern Japan; before 1939)  
ZUMT 39809 (103.6 mm), ZUMT 39811 (92.7), ZUMT 39820 (115.9 mm), ZUMT 39821 (130.5 mm), ZUMT 39822 (125.0 mm), ZUMT 39906 (97.2 mm), ZUMT 39907 (91.8 mm), ZUMT 39918 (98.9 mm), ZUMT 39919 (87.2 mm), ZUMT 39920 (99.8 mm), ZUMT 39921 (94.0 mm), ZUMT 39996 (107.0 mm), ZUMT 45783 (96.6 mm; Ryukyu Archipelago; before 1939; coll. by S. Sakaguchi)  
ZUMT 40012 (70.7 mm; Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 8 July 1936; coll. by S. Inuo)  
ZUMT 40712 (140.7 mm; Amami-oshima Island, Amami Islands, Ryukyu Archipelago; coll. by K. Enokiya)  
ZUMT 41187 (145.2 mm), ZUMT 41188 (115.0 mm; Naze, Amami City, Amami-oshima Island, Amami Islands, Ryukyu Archipelago; coll. by K. Enokiya)  
ZUMT 45913 (172.5 mm; Ogasawara Islands)

ZUMT 49731 (126.9 mm), ZUMT 49732 (104.5 mm; Oshima Strait, Setouchi Town, Amami-oshima Island, Amami Islands, Ryukyu Archipelago; Mar. 1956)  
ZUMT 53410 (143.3 mm), ZUMT 53418 (81.7 mm; Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago)  
ZUMT 54083 (148.8 mm), ZUMT 54084 (130.2 mm; Kuji, Amami-oshima Island, Amami Islands, Ryukyu Archipelago; 20 May 1966; coll. by Y. Tominaga)  
ZUMT 54108 (128.5 mm; obtained at fish market on Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago; 4 June 1966; coll. by Y. Tominaga)  
ZUMT 55560 (117.7 mm), ZUMT 55562 (104.2 mm), ZUMT 55563 (111.5 mm; obtained at fish market on Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 16 Sept. 1986; coll. by H. Senou)  
ZUMT 64354 (60.0 mm; off Amami-oshima Island, Amami Islands, Ryukyu Archipelago; coll. by K. Enokiya)

#### **HAWAIIAN ISLANDS**

ZUMT 55192 [175.7 mm; originally registered as BPBM (Bishop Museum, Honolulu, Hawaii) 4061; probably from Oahu, Hawaii; 1898–1927; coll. by J. W. Thompson; donated from Bishop Museum]

#### **PALAU**

ZUMT ABE 2803 (120.1 mm), ZUMT ABE 3884 (112.8 mm), ZUMT ABE 4084 (161.9 mm), ZUMT ABE 4085 (114.3 mm), ZUMT ABE 4086 (141.5 mm), ZUMT ABE 4087 (112.6 mm), ZUMT ABE 4088 (118.7 mm; Palau)

#### **LOCALITY UNKNOWN**

ZUMT ABE 1876 (118.0 mm), ZUMT 44064 (103.0 mm), ZUMT 64264 (200.6 mm), ZUMT 64265 (156.0 mm), ZUMT 64266 (134.8 mm), ZUMT 64267 (140.3 mm), ZUMT 64347 (124.5 mm), ZUMT 64349 (110.7 mm; no data)

**Remarks.** Tanaka (1915) described and figured this species based on a single specimen collected from Bonin Island, Ogasawara Islands, Japan (ZUMT 4189, 260 mm total length). However, that specimen was not found during the present investigation.

### *Parupeneus pleurostigma* (Bennett, 1831) リュウキュウヒメジ

#### **JAPAN**

ZUMT 17432 (119.4 mm, Naha City, Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; before 1925; coll. by S. Tanabe and Y. Hiyane)  
ZUMT 23540 (168.0 mm; probably from Okinawa Pref.; July 1928; coll. by Okinawa Prefectural Fisheries Experimental Station)  
ZUMT 39922 (95.5 mm; Ryukyu Archipelago; coll. by S. Sakaguchi)  
ZUMT 54112 (123.3 mm; obtained at fish market on Ishigaki-jima Island, Yaeyama Islands, Ryukyu Archipelago; 4 June 1966; coll. by Y. Tominaga)

#### **PALAU**

ZUMT ABE 4091 (164.0 mm; Palau; 1936–1937)

#### **PITCAIRN ISLANDS**

ZUMT 55190 (204.5 mm), ZUMT 55191 (174.3 mm; off Bounty Bay, Pitcairn Island, approx. 30–40 m (100–130 feet) depth; 26 Dec. 1970; coll. by J. Randall, D. Cannoy and D. Bryant)

#### **LOCALITY UNKNOWN**

ZUMT 64260 (134.8 mm; no data)

*Parupeneus spilurus* (Bleeker, 1854) オキナヒメジ

**JAPAN**

- ZUMT 7894 (cloth tag labelled No. 540 “写生第五四〇号”) [111.4 mm; probably from Ehime Pref.; 1910's; coll. by K. Otsuki (Uchiumi, Ainan Town, Ehime Pref.)]  
ZUMT 9519 [203.9 mm; probably from Wakayama Pref.; before 1920; coll. by N. Ui (Tanabe City, Wakayama Pref.)]  
ZUMT 31615 (167.4 mm; Kagoshima Pref.; donated by Y. Miyoshi on Mar. 1936)  
ZUMT 39993 (62.0 mm; Ryukyu Archipelago; 1920's; coll. by S. Sakaguchi)  
ZUMT 40014 (34.9 mm; Okinawa-jima Island, Okinawa Islands, Ryukyu Archipelago; 8 July 1936; coll. by S. Inuo)  
ZUMT 42840 (46.9 mm; Hachijo-jima Island, Izu Islands; Sept. 1922; coll. by M. Uchiyama)  
ZUMT 46440 (246.1 mm; Takamatsu City, Kagawa Pref.)  
ZUMT 48123 [263.0 mm; Fukue Fish Market, Fukue, Goto City (Fukue-jima Island, Goto Islands); May 1953; coll. by I. Tomiyama]  
ZUMT 49105 (198.0 mm; Misaki, Miura City, Kanagawa Pref.; 1956; coll. by I. Tomiyama)  
ZUMT 50043 [178.4 mm; Miiraku, Fukue, Goto City (Fukue-jima Island, Goto Islands); 10 June 1953]

**PHILIPPINES**

- ZUMT 11023 (156.3 mm; Philippines; 1920's; coll. by U. Yamamura)  
ZUMT 42369 (192.0 mm), ZUMT 42379 (169.6 mm; Basilan; 1926; coll. by U. Yamamura)

**LOCALITY UNKNOWN**

- ZUMT ABE 60-1060 (149.9 mm; no data)

**Remarks.** Tanaka (1916) described and figured this species based on a single specimen collected from Saiki City, Bungo Province (currently Oita Pref.), Japan (343 mm total length). However, that specimen was not found during this study.

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