

Catalogue of Invertebrate Collection deposited in the Department of Zoology, the University Museum, the University of Tokyo. Phylum Annelida (Classes Polychaeta and Myzostomida): A catalogue of Akira Izuka's type and non-type polychaete collection in the University Museum, the University of Tokyo

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Abstract

A set of polychaete specimens, collected and studied by Professor Akira Izuka from 1880s to 1910s (Meiji to Taisho Era), was discovered in The University Museum, The University of Tokyo, Japan. A total of 157 lots, including 71 species from 26 families, were found in the collection. Twenty-seven lots were judged as the type material of the following species: *Panthalis mitsukurii* Izuka, 1904; *Nereis ijimai* Izuka, 1912; *Nereis dyamusi* Izuka, 1912; *Nereis japonica* Izuka, 1907; *Ceratocephale osawai* Izuka, 1903; *Aphrodite watasei* Izuka, 1912; *Glycera hasidatensis* Izuka, 1912; *G. chirori* Izuka, 1912; *G. onomichiensis* Izuka, 1912; *Hemipodus yenouraensis* Izuka, 1912; *Goniada japonica* Izuka, 1912; *Coelobranchus papillosus* Izuka, 1912; *Marphysa iwamushi* Izuka, 1907; *Diopatra sugokai* Izuka, 1907; *Polygordius ijimai* Izuka, 1904. Here we provide a catalogue of the Izuka's collection with related bibliographical, geographical, and taxonomic information. Four lots of Myzostomida are also included in the sample.

Introduction

Taxonomy is dependent upon access to literature, specimens, and data. Unfortunately, few collections have inventories that provide detailed information on the taxonomic, geographical and temporal distribution of their holdings. This condition forces taxonomists to spend significant time and resources travelling the world, and visiting various collections in search of additional material that would help validate their conclusions (Speers and Edwards, 2008). Cataloging forgotten old collections/specimens, particularly those including type material, and allowing an open access to the information will reduce the costs associated with of taxonomist's determining the material location and obtaining access to this material, and may facilitate taxonomic and related research.

The polychaete collection of Professor Akira Izuka, the first polychaete taxonomist,

accumulated from 1884 to 1919 (Meiji to Taisho Era) is housed in the University Museum, the University of Tokyo (abbreviated as UMUTZ-Ann-Pc). The collection consists of 157 jars in total, 116 of which are classified into 71 taxa, 89 lots are identified into 43 species. The remaining 41 lots are not identified to the genus level because some samples are in a poor state of preservation or completely dried out, and others lack labels at all or the label information is missing. Those specimens were collected from 1884 to 1919, mostly off the Japanese coasts from Hokkaido to Okinawa, and some from foreign countries, such as Russia (Sakhalin Island, Baltic Sea) and Martha's Vineyard, U.S.A. Some labels in the jars have collector's name as "A. Izuka" or "飯塚"(Fig. 1B-D, G).

Professor Akira Izuka was born in Gunma Prefecture on 16 June, 1868. He graduated in 1897 from and then worked as an associate professor (1900-1905) at the College of Science, Tokyo Imperial University (= currently the University of Tokyo). After being awarded the Doctor of Science degree in 1910 based on his intensive study of polychaetes, he worked as a professor of Gakushuin University (1910-1930) and as the director of the National Science Museum (1930-1938). Professor A. Izuka died on 10 December, 1938 (Mukai, 1985). He was the first Japanese polychaete researcher, because before his studies, the only paper on polychaete biology published by a Japanese researcher was that of Oka (1895). Professor Izuka's studies of taxonomy and life history of errant polychaetes from 1880s to 1910s (late Meiji to Taisho era) were summarized in a large monograph (Izuka, 1912). Before this monograph was published, 74 errant species had been known from Japan (Grube, 1870; Marenzeller, 1879; McIntosh Challenger Report: Moore, 1903; Moore and Bush 1904; Izuka, 1912). He added 50 newly recorded species, including 32 new species, in his monograph (Izuka, 1912). Although Izuka (1912) might have overlooked some papers (e. g., Marenzeller 1884, 1902a, b), and, for example, the description of *Coelobranchus papillosus* Izuka, 1912 was done without seeing Marenzeller's description of the same species, some species have been considered to be valid up to now.

The Professor A. Izuka's collection has not been re-examined after his death and was overlooked for a long time until Imajima (1972) had noted the Izuka's material (see below). Professor A. Izuka's contributions to the polychaete biology have been published in *Zoological Magazine* (= currently *Zoological Science*), *Annotationes Zoologicae Japonenses*, *The Journal of College of Science*, Tokyo Imperial University. He also contributed to a wide area of zoology, e.g., general zoology (1899a, b, c), bioluminescence (1897a), reproduction (1904b, 1906, 1930), local fauna (1896a, b, 1897b, 1919a, 1915, 1927), and introduction of alien species (1898, 1904d, e, 1908d, 1910b, c, 1912a, 1913). We summarize his contribution to the polychaete biology in the references, including his famous books on *Zoology and Developmental Biology* (Izuka, 1906, 1907, 1931). His contributions to ornithology and other areas of science are not considered here.

The Professor A. Izuka's collection is important because it contains a large number of type specimens of the Japanese polychaete species belonging to e.g., families Nereididae, Glyceridae and Acoetidae (=Polyodontidae). The non-type specimens also have both taxonomical and historical importance, especially for our knowledge of the original

distributions of certain species in Japan. Because large areas of recent Japanese coasts are re-claimed and access to many places is restricted, we cannot collect useful material in some coastal and offshore areas. Additionally, recently many alien polychaetes were found in the Japanese waters (Nishi & Tanaka, 2009). The knowledge of the species distribution in older era is very important when we decide whether a certain species is a Japanese native species or an invader. For example, the Izuka's collection contained a colony of a tubicolous invasive serpulid *Hydroides elegans* (Haswell), the oldest record of this species collected as fouling organisms in 1907 (=Meiji 41) on the hull of the battleship "Iki".

In his review of Nereidae, Imajima (1972: 46) was the first to note a part of the Izuka's collection when he cited the material of *Tylorrhynchus heterochaetus* (Quatrefages, 1865) as "A. Izuka coll." (Sumida River, Tokyo, X-1910, (3). A. Izuka coll.). Miura (1986: 269) found the Izuka's collection and shortly noted that "some of the type specimens studied by Izuka are now deposited at the University Museum, the University of Tokyo". The first author (E.N.) also found some Izuka's specimens and reported a scaleworm *Panthalis mitsukurii* Izuka (Nishi, 1996). Nishi had informed M. Sato about the presence of some Izuka's Nereididae specimens (Sato and Nakashima, 2003). Some specimens had been studied by H. Paxton, M. Boeggeman, and R. Barnich through E. Nishi during 2000 to 2005 (Paxton, 1998; Boggemann, 2002, 2005).

Among the Professor A. Izuka's specimens, some myzostomid specimens were found. The Myzostomes had belonged to the Class Polychaete, but recently this unique parasitic taxon has been considered to be a member of Class Myzostomida (e.g., Grygier, 2000, Bleidorn et al., 2007, Lanterbec et al., 2009). Here we treat it as the Class Myzostomida.

During our examination of the specimens deposited at of the University Museum, the University of Tokyo from 1995 to 2005, and continuous to 2010, we discovered 157 lots of the Izuka's polychaete collection, 26 families and 71 species, including type material of fifteen species. Unfortunately, the types of other species could not be found, possibly because they were discarded or destroyed by the Great Kanto Earthquake of 1923. We present here the catalogue of the Professor A. Izuka's collection with the current status of each specimen and the related bibliographical, geographical and taxonomic information. Some specimens have been dried out or damaged, and some lots have useless labels or no label at all. However, we deposited and catalogued all available specimens for further taxonomic research. The current paper is a first attempt to catalogue classic Japanese polychaete collections. Out of 38 species described by Professor A. Izuka, we report specimens (marked with asterisk) of 15 species clearly judged as types.

List of Professor A. Izuka's original description

(* showed type specimens present in UMUT)

Family Acoetidae

**Panthalis mitsukurii* Izuka, 1904

Panthalis jogasimae Izuka, 1912

Family Alciopidae

Vanadis grandis Izuka, 1914

Callizona japonica Izuka, 1914

Family Amphinomidae

Euprosyne magnoculata Izuka, 1912

Notopygos mitusukurii Izuka, 1910

Family Aphroditidae

**Aphrodite watasei* Izuka, 1912

Family Chaetopteridae

Chaetopterus kagosimensis Izuka, 1911

Chaetopterus takahashii Izuka, 1911

Family Eunicidae

Eunice flavopicta Izuka, 1912

**Marphysa iwamushi* Izuka, 1907

Family Glyceridae

**Glycera onomichiensis* Izuka, 1912

**Glycera chirori* Izuka, 1912

**Glycera hashidatensis* Izuka, 1912

Glycera misakiensis Izuka, 1912

**Hemipodus yenouraensis* Izuka, 1912

Family Goniadidae

**Goniada japonica* Izuka, 1912

Family Iphitimidae

**Coelobranchus papillosus* Izuka, 1912

Family Maldanidae

Climene harai Izuka, 1902

Maldane gotoi Izuka, 1902

Family Nereididae

**Ceratocephale osawai* Izuka, 1903

**Nereis dyamusi* Izuka, 1912

**Nereis ijimai* Izuka, 1912

**Nereis japonica* Izuka, 1908

Nereis ezoensis Izuka, 1912

Nereis shishidoi Izuka, 1912

Family Onuphidae

**Diopatra sugokai* Izuka, 1907

Family Phyllodocidae

Notophyllum sagamianum Izuka, 1912

Family Polygordiidae

**Polygordius ijimai* Izuka, 1903

Family Polynoidae

Polynoe ijimai Izuka, 1912

Polynoe microsetosa Izuka, 1912

Polynoe longissima Izuka, 1912

Polynoe sagamiana Izuka, 1912

Harmothoe yendoi Izuka, 1912

Harmothoe holothuricola Izuka, 1912

Harmothoe sinagawaensis Izuka, 1912

Scalisetosus pacificus Izuka, 1912

Iphione hirotai Izuka, 1912

Family Syllidae

Amblyosyllis speciosa Izuka, 1912

Trypanposyllis misakiensis Izuka, 1906

Family Tomopteridae

Tomopteris pacifica Izuka, 1919

Material examined

All specimens have been stored in glass bottles. Alcohol remained in some bottles (noted as wet - good), but it completely evaporated in others, making the specimens dried out.

The scientific names were determined by us based on examination of specimen's external morphologies and by reference to the label data. Some specimens were studied and identified by other scientists who are noted in the remarks.

The list was compiled according to the recent system WoRMS (World Register of Marine Species) database found at <http://www.marinespecies.org/aphia.php>. For each specimen or lot, the scientific name and collecting information are provided in the following order: 1, current name (as identified by us); 2, reference to the original description (=reference) in type specimens; 3, registration number of UMUTZ-Ann-Pc; 4, type status; 5, collecting locality; 6, collecting date; 7, collector(s) name; 8, number of specimens in the jar; 9, original label data (if it is written by Japanese, English translation and original Japanese are noted; if we cannot identify the written word(s), it is expressed as ○); 10, specimen condition as good (wet), dried, rotten or dissolved (wet); 11, remarks; 12, reference(s). When the lot had no label, collecting locality, collecting date, collector's name, label data, remarks and references were omitted. But when specimens were identified or information was obtained from the literature, remarks and references were added. Some scanned labels are shown in Figures 1(B-J) and 2.

Decisions about type series

Many type specimens were discovered in the marine organism collections of UMUTZ. Among the materials, some specimens of Porifera were labeled as "types" (Ogawa et al., 2010) and others have not been labelled as "type" or "holotype". In the Sipunculidan specimens of UMUTZ, there are no designation of "type" and "holotype" in labels, and instead, some jars contained labels where species names were followed by "n. sp." written by the author of the original description (Nishikawa and Ueshima, 2006). When the label information was consistent with the original descriptions, the specimens in such jars were regarded as name-bearing types (Nishikawa and Ueshima, 2006). In the polychaete materials deposited in UMUTZ, some jars had labels with the species name followed by "n. sp", possibly hand-written in pencil by Professor A. Izuka. Those hand-written signature (e.g., Fig. 1C) were thought to be same as one appeared in Izuka (1931: Fig. 1A) - Izuka Developmental Zoology, Hakubunkan, Tokyo.

Digitization and databasing

The information of Professor A. Izuka's specimens catalogued in the present study was compiled in a Microsoft Excel format and submitted to the University Museum, the University of Tokyo, to facilitate online publication from the database <<http://umdb2.um.u-tokyo.ac.jp/DDoubutu/TDoubutu.htm>>.

List of Myzostomida and Polychaeta specimens deposited in the UMUTZ

Family Acoetidae

Eupolyodontes mitsukurii (Izuka, 1904)

Panthalis mitsukurii Izuka, 1904: Izuka, 1904, 23.

UMUTZ-Ann-Pc-109

Type status: Syntype

Locality: Enoshima?

Date:

Collector:

No. of specimen: 1 specimen

Label information: Loc. Misaki 江ノ島にて採集せりと土軒町動物標本社より
[sic]

Condition: Good

Remarks: The body length of this specimen is 270 mm, number of segments is 120.
It is probably "Specimen A" of izuka (1904) judged from the body size and the
number of segments.

Reference: Pettibone (1989), Nishi (1996), Fiege and Barnich (1998).

UMUTZ-Ann-Pc-112

Type status: Syntype

Locality: Enoshima

Date: August, Meiji 31(=1898)

Collector:

No. of specimens: 1 specimen

Label information: 産地 Yenoshima 明治 31 年 8 月採集 オーストン氏寄贈
O/C5500 [sic]

Condition: Good

Remarks: It is possibly "Specimen B" of Izuka (1904: 24)

Reference: Izuka (1904a, 1909), Pettibone (1989), Nishi (1996), Fiege and Barnich
(1998).

Family Alciopidae

Naiades cantrainii delle Chiaje, 1828

UMUTZ-Ann-Pc-40

Type status: Non-type

Locality: Misaki

Date: March 1931

Collector:

No. of specimens: 1 specimen

Label information: Mr Izuka Errantia Polychaeta [sic]
Condition: Dried
Remarks: It is possibly *Alciopa cantrainii* Chiaje, 1828 recorded in Izuka (1914)
Reference: Izuka (1914).

UMUTZ-Ann-Pc-80

Type status: Non-type
Locality: Misaki
Date: December, 1901
Collector:
No. of specimens: 1 specimen
Label information: 1901年12月 三崎 [sic]
Condition: Dried
Remarks:
References: Izuka (1914)

Torrea candida (delle Chiaje, 1841)

UMUTZ-Ann-Pc-44

Type status: Non-type
No. of specimens: 1 specimen
Condition: Dried
Remarks: It is possibly *Asterope candida* (Delle Chiaje, 1841) from Izuka (1914) or *Alciopa candida delle* Chiaje, 1841 from Izuka (1914).
Reference: Izuka (1914)

Family Amphinomidae
Chloeia flava Quatrefages, 1866

UMUTZ-Ann-Pc-11

Type status: Non-type
Locality: Fushiki, Toyama
Date: July Meiji 17(=1884)
Collector:
No. of specimens: 1 specimen
Label information: *Chloeia flava* (Pallas) 越中伏木 明治17年7月[sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-124

Type status: Non-type
Locality: Off Nagai, Soushu Province (= Sagami Province)

Date: July Meiji ?
Collector:
No. of specimens: 1 specimen
Label information: *Chloea flava* (Pallas) 相州長井ノ沖明治○三年七月[sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-126

Type status: Non-type
Locality: Tanabe, Wakayama
Date: 8 August, 1917
Collector: Ikeda
No. of specimens: 12 specimens
Label information: 和歌山縣田辺 1917、明治 8 年 8 月池田採集[sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-127

Type status: Non-type
Locality:
Date: 30 July, 1889
Collector:
No. of specimens: 1 specimen
Label information:○ 州富嶋 ? [sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-128

Type status: Non-type
Locality: Hososhima Bay, Hyuga (=Miyazaki)
Date: 15 March, 1899
Collector:
No. of specimens: 1 specimen
Label information: 日向細島湾 15/3/1899 [sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-92

Type status: Non-type
No. of specimens: 1 specimen
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-139

Type status: Non-type
Locality: Nanao, Noto
Date:
Collector:
No. of specimens: 2 specimens
Label information: *Chloeia flava* (Pallas) 能登七尾 [sic]
Condition: Good
Remarks:
References:

Amphinome rostrata (Kinberg, 1867)

UMUTZ-Ann-Pc-81

Type status: Non-type
No. of specimens: 1 specimen
Condition: Good
Remarks:
References:
Eurythoe sp.

UMUTZ-Ann-Pc-94

Type status: Non-type
Locality: Kuratu, Bingo (=Kura-no-ura, Hiroshima)
Date:
Collector:
No. of specimens: 1 specimen
Label information: Eurythoe sp. 和名未詳 備後鞍津 [sic]
Condition: Good
Remarks:
References:

Amphinomidae sp.

UMUTZ-Ann-Pc-20

Type status: Non-type
No. of specimens: 1 specimen
Condition: Dried
Remarks:
References:

Family Aphroditidae
Aphrodita watasei Izuka, 1912

UMUTZ-Ann-Pc-68

Type status: Syntype
Locality:
Date:
Collector:
No. of specimens: 1 specimen
Label information: 〇 ta wat -??〇 [sic]
Condition: Dried
Remarks: The dried specimen attached to the label.
Reference: Izuka (1912)

Laetmonice japonica McIntosh, 1885

UMUTZ-Ann-Pc-10

Type status: Non-type
Locality: Misaki
Date: August, Meiji 33(=1900)
Collector:
No. of specimens: 5 specimens
Label information: 三浦半島三崎 明治 33 年 8 月 採集 飯塚 [sic]
Condition: Good
Remarks:
References: Izuka (1912)

Family Arenicolidae
Arenicola brasiliensis Nonato, 1958

UMUTZ-Ann-Pc-29

Type status: Non-type
Locality:
Date:
Collector: Aoki Kumakichi
No. of specimens: 1 specimen
Label information: 三崎湾クマ [sic]
Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-73

Type status: Non-type

Locality: Asamushi, Aomori

Date: 27 July Meiji 33 (=1900)

Collector: Ikeda

No. of specimens: 1 specimen

Label information: 浅虫 (青森湾) 明治 33 年 7 月 27 日 採集 池田氏 [sic]

Condition: Good

Remarks:

References: Izuka (1927)

UMUTZ-Ann-Pc-137

Type status: Non-type

Locality: Baltic Sea

Date:

Collector:

No. of specimens: 1 specimen

Label information: *Arenicola marina* Baltic Sea [sic]

Condition: Good

Remarks:

Reference: Izuka (1912a, 1910).

UMUTZ-Ann-Pc-145

Type status: Non-type

Locality: Goishi-ura

Date: July, Meiji 32 (=1899)

Collector:

No. of specimens: 1 specimen

Label information: 産地 碁石浦 明治 32 年 7 月 [sic]

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-146

Type status: Non-type

Locality: Tomo, Bingo

Date: Meiji 33?(=1900)

Collector:

No. of specimens: 1 specimen

Label information: Tomo, Bingo 明治 33 年 飯塚 (朱印)

Condition: Good

Remarks: The collecting locality, “Kura, Bingo” is possibly “Kura-machi, Hiroshima Prefecture” on a current map.

References:

Arenicola sp.

UMUTZ-Ann-Pc-129

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: 241 Arenicolidae *Arenicola piscatorum* [sic]

Condition: Good

Remarks:

Reference:

Family Chaetopteridae

Chaetopterus cautus Marenzeller, 1879

UMUTZ-Ann-Pc-72

Type status: Non-type

Locality: Misaki

Date: 4 March, Taisho 8(=1919)

Collector: Izuka

No. of specimens: 1 specimen, 1 tube

Label information: 相州三崎 大正 8 年 4 月 4 日 採集 飯塚 [sic]

Condition: Good

Remarks: In WoRMS it is a synonym of *Chaetopterus variopedatus*.

References: Izuka (1911)

UMUTZ-Ann-Pc-49

Type status: Non-type

Locality: Tateyama, Boso Peninsula

Date:

Collector: Kuwano

No. of specimens: a tube

Label information: 安房国館山柏崎 明治 35 年 4 月 12 日 採集桑野 [sic]

Condition: Good

Remarks: Izuka (1911: 433, Fig. 1 of a tube) recorded *Chaetopterus variopedatus* Renier in Tateyama, Boshu. This specimen was collected by Mr Kuwano. “産地房州館山（桑野久任氏採集）”.

Reference: Izuka (1911)

Mesochaetopterus minutus Potts, 1914

UMUTZ-Ann-Pc-96

Type status: Non-type

No. of specimens: a colony (possibly tubes only)

Condition: Dried

Family Cirratulidae

Cirriformia tentaculata (Montagu, 1808)

UMUTZ-Ann-Pc-142

Type status: Non-type

Locality: Jogashima, Miura

Date: August, Meiji 23(=1890)

Collector:

No. of specimens: 2? specimens

Label information: Family Cirratulidae *Cirratulus* sp. (*grandis*?)

明治 27 年 8 月相州三浦城ヶ島遊ヶ岬[sic] (Fig1J)

Condition: Good

Remarks:

References: Marenzeller (1879)

UMUTZ-Ann-Pc-5

Type status: Non-type

Locality: Koajiro

Date: 30 June, 1938

Collector:

No. of specimens: 1? specimen

Label information: *Audouinia comosa* Polychaeta koajiro June 30, '38 [sic]

Condition: Good

Remarks:

References:

Cirratulidae sp.

UMUTZ-Ann-Pc-144

Type status: Non-type

No. of specimens: many specimens

Condition: Good

Remarks:
References:

UMUTZ-Ann-Pc-155

Type status: Non-type
Locality: Misaki, Sagami
Date: August, Meij 23 (=1890)
Collector:
No. of specimens: many specimens
Label information: Fm. Cirratulidae *Audouinia* sp.明治 23 年 8 月相州三崎六合
[sic]
Condition: Good
Remarks:
References:

Family Eunicidae

Eunice aphroditois (Pallas, 1788)

UMUTZ-Ann-Pc-123

Type status: Non-type
Locality: Izu-Oshima Island
Date: 6 October, Meiji 33(=1900)
Collector:
No. of specimens: 1 specimen
Label information: *Eunice aphroditois* (Pallas) 伊豆大嶋 明治 33 年 10 月 6 日[sic]
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-125

Type status: Non-type
Locality: Misaki
Date: May, 1939
Collector: Mr. Tutimikado
No. of specimens: 1 specimen
Label information: *Eunice aphroditois* (Pallas) Misaki, May 1939 [sic]
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-118

Type status: Non-type
Locality: Natsui, Hyuga (= Miyazaki)
Date: 13 April, Meiji 29 (= 1896)
Collector: Mitsukuri and Hara
No. of specimens: 1 specimen
Label information: *Eunice aphroditois* Pallas [sic]
明治 29 年 4 月 13 日日向有明夏井汀 箕作・原 [sic]
Condition: Good
Remarks: The jaws of the specimen are dissected.
Reference:

UMUTZ-Ann-Pc-122

Type status: Non-type
Locality: Misaki
Date: 28 July, Meiji 34 (= 1901)
Collector:
No. of specimens: 2 specimens
Label information: Misaki 明治 34 年 7 月 28 日 [sic]
Condition: Good
Remarks:
Reference:

Eunice cf. palauensis Okuda, 1937

UMUTZ-Ann-Pc-138

Type status: Non-type
Locality: Sagami Bay
Date:
Collector:
No. of specimens: 1 specimen
Label information: *Eunice tibiana* (Pourtales, 1867) Sagami Bay, 100 fathoms "Golden Hind" [sic]
Condition: Good
Remarks: This characteristic zig-zag shaped tube was shown in Izuka (1912: Plate II-3). UTMZ-Ann-Pc-138 is possibly a different specimen from the one shown in Izuka (1912).
Reference: Izuka (1912), Okuda (1937), Hartman-Schroder (1998)

Eunice indica Kinberg, 1865

UMUTZ-Ann-Pc-77

Type status: Non-type
Locality: Jinmiyo-ura, Shima (=Mie)

Date:
Collector:
No. of specimens: 1 specimen
Label information: 志摩神明浦 三一年八月[sic]
Condition: Dried
Remarks:
References:

Eunice sp. 1

UMUTZ-Ann-Pc-22

Type status: Non-type
Locality:
Date: January, Meiji 30 (=1897)
Collector:
No. of specimens: 1 specimen
Label information: 明治 30 年 1 月 多田綱輔[sic]
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-32

Type status: Non-type
No. of specimens: 1 specimen
Condition: Good
Remarks:
References:

Eunice sp. 2

UMUTZ-Ann-Pc-34

Type status: Non-type
Locality: Johgashima
Date: 5 April, Meiji 36(=1903)
Collector:
No. of specimens: 1 specimen
Label information: 産地 城ヶ嶋もぐり 明治 36 年 4 月 5 日[sic]
Condition: Good
Remarks:
Reference:

Eunice mucronata Moore, 1903

UMUTZ-Ann-Pc-87

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: *Eunice mucronata* Moore Nakano-Yodomi, off Misaki,
350-500 feet 20 IV 99 [sic]

Condition: Dried

Remarks: This specimen is possibly the one cited in Izuka (1912: 125) as
“ Nakano-Yodomi, in Sagami Bay, about 80 fathoms”.

Reference: Izuka (1912)

Lysidice collaris Grube, 1870

UMUTZ-Ann-Pc-35

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1? specimen

Label information: (on outside of the bottle) Tatoku- *Eunice collaris* [sic]

Condition: Good

Remarks: In Izuka (1912:135), habitat of *L. collaris* was noted as – Tatoku-jima in
Prov. Shima[sic]. This collection site is possibly Tatokujima, Jinmyo-ura,
Ago-machi, Mie Prefecture.

Reference: Izuka (1912)

UMUTZ-Ann-Pc-149

Type status: Non-type

Locality: Misaki

Date: 27 August, 1897

Collector:

No. of specimens: 3 specimens

Label information: *Lysidice collaris* Grube 三崎 1897年8月27日 [sic]

Bishamon Eunicidae [sic]

Condition: Good

Remarks: Only a new label.

References:

Marphysa iwamushi Izuka, 1907

UMUTZ-Ann-Pc-119

Type status: Syntype?

Locality: Komegawaki, Mikuni, Sakai, Fukui

Date: August, Meiji 34(=1901)

Collector: ?Hiki

No. of specimens: 1 specimen

Label information: 越前郡坂井郡雄嶋村米ヶ脇 明治三四年八月 採集 比企忠[sic] (Fig.1F)

Condition: Good

Remarks: Izuka (1912b: 133) recorded the habitat as “Komegawaki in Prov. Echizen”. Izuka (1907a) described *Marphysa iwamushi* in Japanese, and later re-described it as “n. sp.” in English in Izuka (1912b). In the original description by Izuka (1907: 143) 「越前坂井郡雄島村米力脇」 appeared. The original species name is “*Marphysa iwamushi*” Izuka, in 1907, thus, the “*iwamusi*” in Izuka (1912b) is treated as a misspelling. The species name “*iwamusi*” in Izuka (1912b) may be a misspelled “*iwamushi*” of Izuka (1907a).

Reference: Izuka (1907a, 1912b)

UMUTZ-Ann-Pc-136

Type status: Syntype?

Locality: Onomichi, Bingo (=Hiroshima)

Date: 9 December, Meiji 33(=1900)

Collector: Izuka

No. of specimens: 1 specimen

Label information: 備後尾道 明治33年12月9日 採集 飯塚 [sic] (Fig. 1G)

Condition: Good

Reference: Izuka (1907a, 1912b)

UMUTZ-Ann-Pc-143

Type status: Syntype?

Locality:

Date:

Collector:

No. of specimens: 7 specimens

Label information: (a label outside of the tube is decomposed)

Condition: Good

Remarks: The jaws of specimens are dissected.

References:

Family Glyceridae

Glycera nicobarica Grube, 1868

Glycera chirori Izuka, 1912: Izuka, 1912, 245-246, Pl. 2, fig. 8, Pl. 24, fig. 13.

UMUTZ-Ann-Pc-106

Type status: Syntype

Locality: Kanazawa, Kanagawa

Date: April, 1899

Collector: Goto

No. of specimens: 1 specimen

Label information: *Glycera chirori* Izuka, ○○○

産地 神奈川県金沢 明治 1899 年 4 月 ○日 coll. Goto [sic]

Condition: Good

Remarks: Izuka (1912b: 246) noted the habitat [sic] as “Kanazawa in prov. Musashi”.

Reference: Boggemann (2002)

UMUTZ-Ann-Pc-108

Type status: Syntype

Locality: Kasaoka, Okayama

Date: 28 November, Meiji 33(=1900)

Collector: Izuka

No. of specimens: 1 specimen

Label information: 産地岡山県笠岡 明治 33 年 11 月 28 日 採集 Iiz [sic]

(another label) 産地 備中笠岡 明治三三年十一月二八日 採集 飯塚 [sic]

Condition: Good

Remarks: Izuka (1912b: 246) noted the habitat above as “Kasaoka in prov. Bittyu (!)”. The exclamation sign (!) means it was collected by the author (=Dr. Izuka).

Reference: Boggemann (2002).

Glycera hasidatensis Izuka, 1912; Izuka, 1912, 246-247, Pl. 24, figs. 12-15.

UMUTZ-Ann-Pc-99-I

Type status: Syntype of *Glycera hasidatensis* Izuka, 1912

Locality: Mizoshiri, Miyazu, Tango (=Kyoto, Miyazu Bay)

Date: 8 July, 1903

Collector: A. Izuka

No. of specimens: 1 complete specimen.

Label information: 丹後宮津湾内溝尻 採集 Izuka 明治 36 年 7 月 8 日 [sic]

Glycera hasidatensis Iz. [sic](Fig. 1B, C, D)

Condition: Good

Remarks: Izuka (1912b: 247) recorded the habitat [sic!] as “West side of Hashidate in Prov. Tango, 8 July, 1908”. This is a specimen included in the lot of *Glycera hasidatensis*. This lot had specimens of 3 different species: *Glycera nicobarica*, *Glycera macintoshi*, and *G. onomichiensis* (see below and Boggemann, 2002). It was identified based on size and number of chaetigers noted in Boggemann (2002)

–UMUTZ-Ann-Pc-99-I, *Glycera nicobarica* (complete specimen, body length 56 mm, body width 2 mm.

Reference: Izuka (1912b), Boggemann (2002)

***Glycera macintoshi* Grube, 1877**

Glycera hasidatensis Izuka, 1912; Izuka, 1912, 246-247, Pl. 24, figs. 12-15.

UMUTZ-Ann-Pc-99-II

Type status: Syntype of *Glycera hasidatensis* Izuka, 1912

Locality: Mizoshiri, Miyazu, Tango (=Kyoto, Miyazu Bay)

Date: 8 July, 1903

Collector: A. Izuka

No. of specimens: 1 complete specimen, 2 anterior fragments.

Label information: 丹後宮津湾内溝尻 採集 Izuka 明治 36 年 7 月 8 日[sic]

Glycera hasidatensis Iz. [sic] (Fig. 1B, C, D)

Condition: Good

Remarks: Izuka (1912b: 247) recorded the habitat as “West side of Hashidate in Prov. Tango, 8 July, 1903” [sic]. This specimen is included in a lot of *Glycera hasidatensis*. The lot contained specimens of 3 different species: *Glycera nicobarica*, *Glycera macintoshi*, and *G. onomichiensis* (Boggemann, 2002). It was identified based on size and number of chaetigers noted in Boggemann (2002) –UTMZ-Ann-Pc-99-II, *G. macintoshi* (anterior fragment, body length 67 mm, body width 4 mm).

Reference: Izuka (1912b), Boggemann (2002)

***Glycera onomichiensis* Izuka, 1912**

Glycera onomichiensis Izuka, 1912: 244-245, Pl. 24, figs. 10-12.

UMUTZ-Ann-Pc-105

Type status: Syntype

Locality: Onomichi, Hiroshima

Date: 9 December, Meiji 33(=1900)

Collector: A. Izuka

No. of specimens: 1 specimen

Label information: *Glycera onomichiensis* n. sp. 産地 尾道 明治 33 年 12 月 9 日 採集 Izuka [sic]

Condition: Good

Remarks: Izuka (1912b) noted the habitat of *G. onomichiensis* as “Onomichi in Prov. Bing, on sandy shore between the tide-marks (!).” The exclamation sign (!) indicated that the material was collected by the author (A. Izuka, 1912: 262).

Reference: Izuka (1912b), Boggemann (2002)

UMUTZ-Ann-Pc-100

Type status: Syntype

Locality: Kagoshima Bay, Nukumi, off Kiire, 15-33 m deep.

Date:

Collector: Mitsukuri and Hara

No. of specimens: 1 specimen

Label information: 鹿児島湾薩摩喜入 箕作 原 生見沖 8-18 ヒロ[sic]

Condition: Dried

Remarks: Izuka (1912b: 244) noted the habitat of *G. onomichiensis* as “Gulf of Kasoghima in Prov. Satsuma.”

Reference: Izuka (1912)

Glycera hasidatensis Izuka, 1912: 246-247, Pl. 24, figs. 12-15.

UMUTZ-Ann-Pc-99-III

Type status: Syntype of *Glycera hasidatensis* Izuka, 1912

Locality: Mizoshiri, Miyazu, Tango (=Kyoto, Miyazu Bay)

Date: 8 July, 1903

Collector: A. Izuka

No. of specimens: 1 anterior fragment

Label information: 丹後宮津湾内溝尻 採集 Izuka 明治 36 年 7 月 8 日[sic]

Glycera hasidatensis Iz. [sic!] (Fig. 1B, C, D)

Condition: Good

Remarks: Izuka (1912b:247) noted its habitat [sic] as “West side of Hashidate in Prov. Tango, 8 July, 1908”. This is a specimen included in the lot of *Glycera hasidatensis*. The lot has specimens from 3 different species: *Glycera nicobarica*, *Glycera macintoshi*, and *G. onomichiensis* (see above and Boggemann, 2002). It was identified as *G. onomichiensis* based on size and number of chaetigers noted in Boggemann (2002) (anterior fragment, body length 57 mm, body width 3.9 mm).

Reference: Izuka (1912b), Boggemann (2002)

Glycera sp. 1

UMUTZ-Ann-Pc-101

Type status: Non-type

No. of specimens: 1 specimen

Condition: Good

Remarks:

References:

Glycera sp. 2

UMUTZ-Ann-Pc-102

Type status: Non-type

Locality:

Date:

Collector:
No. of specimens: 1 specimen
Label information: *Glycera formosana*? Errantiate Polychaeta
Condition: Good
Remarks:
Reference:

***Glycera* sp. 3**

UMUTZ-Ann-Pc-103

Type status: Non-type
Locality:
Date:
Collector:
No. of specimens: 1 specimen
Label information: *Glycera opisthobranchia* Marenzeller [sic]
Condition: Good
Remarks: this specimen is possibly a *Glycera opisthobranchiata* noted in Izuka, 1912b: 240.
Reference: Izuka (1912b)

***Glycera* sp. 4**

UMUTZ-Ann-Pc-104

Type status: Non-type
Locality:
Date:
Collector:
No. of specimens: 1 specimen
Label information: *Glycera capitata* Chepissani, Sakhalin 明治 1906 年 8 月 14 日採集 Prof. Iijima [sic]
Condition: Dried
Remarks: This specimen is *Glycera capitata* noted in Izuka (1912b: 250); its collection data are recorded as “Chepissani in Sakhalin Island (Prof. I. Ijima)”. Izuka (1913) also noted the *Glycera capitata* in “樺太チビサニ[sic!]”
Reference: Izuka (1912b,1913)

***Hemipodia yenouraensis* (Izuka, 1912)**

Hemipodus yenouraensis Izuka, 1912: 250, Pl. 23, Figs.14-15.

UMUTZ-Ann-Pc-62

Type status: Syntype
Locality: Misaki

Date: 3 April, Meiji 36(=1903)

Collector: Izuka

No. of specimens: Many specimens

Label information: 産地 三崎 明治 36 年 4 月 3 日 採集 Izuka

Hemipodus yenouraensis n. sp.産地 Misaki 明治 36 年 4 月 3 日 採 [sic]

Condition: Good

Remarks: Many specimens are decomposed but some jaws are visible. There are three labels in the jar. Boggemann (2002) revalidated the genus *Hemipodia* Kinberg, 1865 as the senior synonym of *Hemipodus* Quatrefages, 1866.

Reference: Izuka (1912b), Boggemann (2002)

Family Goniadidae

Goniada japonica Izuka, 1912

Goniada japonica Izuka, 1912: 232, Pl. 23, Figs. 1–6

UMUTZ-Ann-Pc-107

Type status: Syntype

Locality: Goishi-ura, Naruto, Tokushima, Shikoku

Date: 22 July, 1899

Collector:

No. of specimens: 1 specimen

Label information: 産地 碁石浦 明治 32 年 7 月 27 日 [sic]

Condition: Good

Remarks: Boggemann (2005) marked this specimen as “Type material: *Goniada japonica*: Japan, Tokushima Prefecture, Goishi-ura, Kita-nada Cho, Naruto-shi, 22.vii.1899; ?syntype: cs/ length of specimen in mm140/ number of chaetigers 370/ width 4.0/ width excluding parapodia 1.5 (UMUT) (Boggemann 2005: 46). The syntype from Misaki was described as 225 mm long with 327 segments (Izuka 1912b).

Reference: Boggemann (2005)

***Goniada* sp.**

UMUTZ-Ann-Pc-23

Type status: Non-type

Locality: Yodo, Sagami Bay, 50 hiro (=50 fathoms)

Date: 27 July, Meiji 40(=1907)

Collector: Aoki Kumakichi

No. of specimen: 1 specimen, dissected

Label information: 産地 淀 50Hiro 明治 40 年 7 月 27 日 採集 熊 [sic]

Condition: Good

Remarks:

Reference:

Family Hesioniidae

Hesione reticulata Marenzeller, 1894

UTMZ-Ann-Pc-89

Type status: Non-type

Locality: Yokohama

Date:

Collector: Prof. Mitsukuri

No. of specimens: 1 specimen

Label information: *Hesione reticulata* Yokohama, by Prof. Mitsukuri [sic]

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-140

Type status: Non-type

Locality:

Date:

Collector: A. Izuka

No. of specimens: 3 specimens

Label information: *Hesione reticulata* Marenz. Loc. Bay o Iiz.[sic]

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-141

Type status: Non-type

Locality: Yokohama

Date:

Collector: Prof. Mitsukuri

No. of specimens: 3 specimens

Label information: *Hesione reticulata* Yokohama, by Prof. Mitsukuri [sic]

Condition: Good

Remarks:

References:

Family Iphitimidae

Iphitime doderleini Marenzeller, 1902

Coelobranchus papillosus Izuka, 1912:135, Pl. 15, figs 1-7.

UMUTZ-Ann-Pc-50

Type status: Syntypes

Locality:

Date:

Collector:

No. of specimen: a colony (many specimens)

Label information: タカアシガニ[sic]

Condition: Good

Remarks: *Coelobranchus papillosus* Izuka is considered to be a synonym of *I. doderleini* Marenzeller, 1902a (Imajima and Hartman, 1964; Paiva and Nonato, 1991). Izuka might have overlooked Marenzeller (1902a)'s description. Izuka (1912b: 137) noted the collection data as "This species was found creeping on the gills of *Macrocheira kaempferi* De Haan brought up from a depth of 300-350 fathoms in Sagami Bay".

References: Marenzeller (1902), Izuka (1912), Paiva and Nonato (1991)

Family Lumbrineridae

***Lumbrineris* sp.**

UMUTZ-Ann-Pc-36

Type status: Non-type

No. of specimens: 1 specimen

Condition: Good

Family Maldanidae

***Maldanidae* sp.**

UMUTZ-Ann-Pc-116

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Condition: Good

Label information: (a label had decomposed) O.C.5510B [sic]

Remarks:

Reference: Izuka (1902a, b)

Myzostomida

***Myzostoma ijimai* Hara and Okada, 1921**

UMUTZ-Ann-Pc74 (= UMUTZ-Ann-Myz-1)

Type status: Non-type

Locality: Misaki
Date: June 25, 1938
Collector:
No. of specimens: ?
Label information: (on outside of the bottle) misaki june 25 '38[sic]
Condition: Dissolved?
Remarks:
References: Hara and Okada (1921), Grygier (2000)

Myzostoma sp. 1

UMUTZ-Ann-Pc-91 (=UMUTZ-Ann-Myz-2)

Type status: Non-type
Locality: Misaki
Date:
Collector:
No. of specimens: 1?
Label information: Myzostoma Myzostomida Misaki [sic] This species is called *Myzostoma ambiguum* von Graff, 1887 in most Japanese literature. However, it is actually not that species, and is really an undescribed species. Mark J. Grygier, VII-1989. [sic]
Condition: Good
Remarks:
Reference: Grygier (2000)

Myzostoma sp. 2

UMUTZ-Ann-Pc-88 (=UMUTZ-Ann-Myz-3)

Type status: Non-type
Locality: Misaki
Date:
Collector:
No. of specimens: 1?
Label information: Myzostomum on Comatula, No. 2, Misaki [sic]
Condition: Dried
Remarks:
Reference:

UMUTZ-Ann-Pc-93 (=UMUTZ-Ann-Myz-4)

Type status: Non-type
Locality: Misaki
Date:
Collector:

No. of specimens: 1? specimen
Label information: Myzostomum on Comatula, No. 1, aug 6/ 93 Misaki [sic]
Condition: Dissolved?
Remarks:
Reference:

Family Nereididae

Tylorrhynchus osawai (Izuka, 1903)

Ceratocephale osawai Izuka, 1903: 1; Izuka, 1912: 179.

UMUTZ-Ann-Pc-51

Type status: Syntype?
Locality: Hojo, Boso Peninsula
Date: 26 December Meiji 32 (=1899)
Collector:
No. of specimens: 6? specimens
Label information: 北条海岸の近き所 三十二年十二月二六日[sic] (Fig. 2I)
Condition: Good
Remarks:
References: Izuka (1903a, 1904c, 1905a, b, 1907b), Khlebovich (1996), Sato et al. (2006)

UMUTZ-Ann-Pc-130

Type status: Syntype?
Locality: Sumida
Date: 5 June, Meiji 33(=1900)
Collector:
No. of specimens: 23? specimens
Label information:
Condition: Good
Remarks: These specimens were in the same bottle as of UMUTZ-Ann-Pc-114 (Hediste sp.)
References:

UMUTZ-Ann-Pc-133

Type status: Syntype?
Locality: ? River
Date: 14 October, Meiji 34 (=1901)
Collector:
No. of specimens: 51? specimens
Label information: 産地 隅?田川 明治三十四年十月十四日 hikifune [sic] (Fig.

2L)
Condition: Good
Remarks:
References: Izuka (1905a, b, 1907b)

UMUTZ-Ann-Pc-56

Type status: Non-type
No. of specimens: 31 specimens
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-86

Type status: Non-type
No. of specimens: 5 specimens
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-131

Type status: Non-type
Locality: Kojima Bay, Okayama Prefecture
Date: 17 November, Meiji 38 (=1905)
Collector:
No. of specimens: 7 specimens
Label information: Ceratocephala osawai Iz. 岡山縣兒嶋湾内 バチ
富(藤?)田政勝 [sic] (Fig. 2J, K)
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-132

Type status: Non-type
No. of specimens: many specimens
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-134

Type status: Non-type
No. of specimens: 9 specimens

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-135

Type status: Non-type

No. of specimens: 33 specimens

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-150

Type status: Non-type

No. of specimens: many specimens

Condition: Good

Remarks: Identified by Dr. M. Sato

References:

UMUTZ-Ann-Pc-151

Type status: Non-type

No. of specimens: many specimens

Condition: Good

Remarks: Identified by Dr. M. Sato

References:

Neanthes virens (Sars, 1835)

Nereis dyamusi Izuka, 1912: 169-171, pl. 18, figs. 1-7.

UMUTZ-Ann-Pc-60

Type status: Syntype

Locality: Hakodate, Hokkaido

Date: 18 May, Meiji 36 (=1903)

Collector: Dr. Endo

No. of specimens: 35 specimens (separated into 2 bottles by E.N. (Dec. 2010)

Label information: 北海道函館湾夜間採集遠藤氏による[sic]

Condition: Good

Remarks: *Neanthes virens* is a widely distributed species in the Northern Hemisphere (Breton et al., 2003). Breton et al. (2004) reported that morphological distinctions among three distinct groups separating 1) Canadian 2) Europe/USA and 3) Japanese populations, represents morphological variation of ecotypes of a single widely distributed species.

Reference: Izuka (1912b), Breton et al. (2003, 2004)

Nereis ijimai Izuka, 1912

Nereis ijimai Izuka, 1912: 174-176, Pl. 19, figs. 1-9.

UMUTZ-Ann-Pc-54

Type status: Syntype

Locality: Off Jogashima, 45 fathoms

Date: 2 June, 1889

Collector:

No. of specimens: 1 complete specimen

Label information: 城ヶ島沖 45 fathoms [sic]

Condition: Good

Remarks: 1 female

Reference: Izuka (1912b, 1919b)

Hediste japonica (Izuka, 1908)

Nereis japonica Izuka, 1908a: 295; Izuka, 1912b: 163, Pl. 17, figs. 12-16, 18.

UMUTZ-Ann-Pc-55

Type status: Syntype (Lectotype)

Locality: Hachihama, Kojima Bay, Okayama

Date: 17 December, 1906

Collector:

No. of specimens: 8 specimens

Label information: *Nereis japonica* Izuka 岡山県児嶋湾八濱[sic] (Fig. 2F, G)

Condition: Good

Remarks:

Reference: Izuka (1908a, b, c, 1912b), Sato and Nakashima (2003)

UMUTZ-Ann-Pc-84

Type status: Syntype

Locality: Kojima Bay, Bizen (=Okayama)

Date: 31 October, Meiji 41 (=1908)

Collector: Eitaro Iwaki

No. of specimens: 1 specimen

Label information: 児嶋湾備前 明治41年10月31日 岩城榮太郎

Condition: Good

Remarks: The label was partly decomposed, so the label information was taken from Sato and Nakashima (2003).

References: Sato and Nakashima (2003).

UMUTZ-Ann-Pc-113

Type status: Syntype

Locality:
Date: 24 December, Meiji 29 (=1896)
Collector:
No. of specimens: 15 specimen
Label information: 24 December, Meiji 29
Condition: Good
Remarks:
References: Sato and Nakashima (2003)

UMUTZ-Ann-Pc-114

Type status: Syntype
Locality: Sumida River
Date: 5 June, December, Meiji 33 (=1900)
Collector:
No. of specimens: 22 specimens
Label information: 産地 Sumida 明治 33 年 6 月 5 日[sic] (Fig. 2H)
Condition: Good
Remarks:
References: Sato and Nakashima (2003)

UMUTZ-Ann-Pc-115

Type status: Non-type
No. of specimens: 248 specimens
Condition: Good
Remarks:
References:

Perinereis sp. 1

UMUTZ-Ann-Pc-3

Type status: Non-type
Locality:
Date: 21 August, 1903
Collector:
No. of specimens: 1 specimen
Label information: (on outside of the bottle) 21 aug. 1903 [sic]
Condition: Good
Remarks: Identified by M. Sato, 2009.
References: Izuka (1903c)

Perinereis sp. 2

UMUTZ-Ann-Pc-111

Type status: Non-type
No. of specimens: 1 specimen
Condition: Good
Remarks: this specimen is identified as “Iso-gokai” by Dr. M. Sato (December, 2010)
Reference: Izuka (1903c).

Nereididae sp.

UMUTZ-Ann-Pc-148

Type status: Non-type
Locality: Baltic Sea
Date:
Collector:
No. of specimens: 1 specimen
Label information: *Nereis dumerilii* Aud. M. Edw. Loc. Baltic Sea, Jas. Sahedel(?)
No. 77 Yokohama ○ [sic]
Condition: Good
Remarks:
References:

Nereididae sp.

UMUTZ-Ann-Pc-37

Type status: Non-type
Locality: Yodomi, Sagami Bay
Date: 8 November, 1919
Collector:
No. of specimens: 1 specimen
Label information: Yodomi 8/XI/1919 [sic]
Condition: Good
Remarks:
Reference:

Nereididae sp.

UMUTZ-Ann-Pc-110

Type status: Non-type
Locality:
Date:
Collector:
No. of specimens: 1 specimen
Label information: on the label “*Nereis cultrifera* (Gr.)” [sic] (written in pencil)
On another label, “*Nereis longisetosa* 明治 23 年 7 月相模モロイソ

(smallest one)“ [sic] written in Chinese ink-sumi.

Condition: Good

Remarks:

Reference:

Nereididae sp.

UMUTZ-Ann-Pc-4

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: (label damaged and decomposed)

Condition: Dissolved?

Remarks:

References:

Nereididae sp.

UMUTZ-Ann-Pc-7

Type status: Non-type

Locality: Koajiro

Date:

Collector:

No. of specimens: 2 specimens

Label information: *Nereis mictodonta* Loc. Koajiro○年八月三 iiz.[sic]

Condition: Dried

Remarks: *Nereis mictodonta* Marenzeller, 1879 is considered to be a synonym of *Perinereis brevicirrus* (Grube, 1869)

References: WoRMS (2010).

Nereididae sp.

UMUTZ-Ann-Pc-8

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: (label damaged and is not readable)

Condition: Good

Remarks:

References:

Nereididae sp.

UMUTZ-Ann-Pc-69

Type status: Non-type

Locality: Miyazu Bay, Tango

Date:

Collector:

Label information: 丹後國宮津湾 明治 36 年 7 月 7 日 採集 飯塚 [sic]

No. of specimens: 3? specimens

Condition: Good

Remarks:

References:

Nereididae sp.

UMUTZ-Ann-Pc-12, 13, 14, 16, 17, 18, 31, 38, 39, 42, 45, 47, 52, 53, 58, 59, 61, 67, 70, 71, 75, 76, 79, 98, 152

Type status: Non-type

No. of specimens: many specimens

Condition: Good in 12, 13, 14, 16, 17, 18, 31, 38, 39, 42, 45, 47, 52, 53, 61, 67, 70, 71, 75, 76, 79, 98, 152, Dried in 58, 59.

Family Nephtyidae

Nephtys sp.

UMUTZ-Ann-Pc-19

Type status: Non-type

No. of specimens: 1 specimen

Condition: Dried

Remarks:

References:

Family Onuphidae

Hyalinoecia artifex Verrill, 1880

UMUTZ-Ann-Pc-26

Type status: Non-type

Locality: Off Martha's Vineyard (Mass., USA), 150-400 fathoms

Date:

Collector:

No. of specimens: many tubes

Label information: "108 *Hyalinoecia artifex* Verrill Tubes. Off Marthas Vineyard, 150 to 400 fath." [sic]

Condition: Good

Remarks:

References:

Nothria conchylega (Sars, 1835)

UMUTZ-Ann-Pc-64

Type status: Non-type

No. of specimens: 1 specimen

Condition: Dried

Remarks:

References:

UMUTZ-Ann-Pc-78

Type status: Non-type

Locality: Long Island Sound (Connecticut and Long Island, USA) 4 fathoms

Date:

Collector:

No. of specimens: 1 specimen

Label information: *Nothria conchylega* Malmgren [sic]

Condition: Good

Remarks:

References:

Diopatra sugokai Izuka, 1907

Diopatra sugokai Izuka, 1907: 139 ; Izuka, 1912, 110.

UMUTZ-Ann-Pc-120

Type status: Lectotype

Locality: Misaki

Date: 31 March, 1903

Collector: Yamada

No. of specimens: 1 specimen

Label information: 明治 36 年 3 月 31 日 産地 三崎 山田氏 南 [sic](Fig.1 I)

Condition: Good

Remarks: A new label by Dr. Miura states "it is a syntype of *Diopatra sugokai*". Dr. H. Paxton selected this specimen as a lectotype for *Diopatra sugokai* (Paxton, 1998: 46)

References: Paxton (1998)

UMUTZ-Ann-Pc-121

Type status: Paralectotype

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: No label

Condition: Good

Remarks: Paxton (1998) noted: "The jar containing the specimen does not have any label. The original label was completely decomposed. The jaws of specimen were dissected and several parapodia were removed, presumably during the preparation of the description, making it part of the type material." Paxton (1998: 47) selected this specimen as paralectotype.

References: Paxton (1998)

UMUTZ-Ann-Pc-85

Type status: Non-type?

Locality: Misaki

Date: 31 March, Meiji 36(=1903)

Collector: Mr. Yamada

Label information: 産地 三崎 明治 36 年 3 月 31 日 山田氏 [sic]

No. of specimens: 1 posterior fragment

Condition: Dissolved

Remarks: The specimen was collected with lectotype (UTMZ-Ann-Pc-120, see above) and it may be a syntype.

References: Paxton (1998)

UMUTZ-Ann-Pc-117

Type status: Syntype?

Locality: Misaki

Date: 31 October, Meiji 36(=1903)

Collector:

No. of specimens: 1 specimen

Label information: 三崎 明治 36 年 3 月 31 日 [sic]

Condition: Good

Remarks: The specimen was collected with lectotype (UTMZ-Ann-Pc-120, see above) and it may be a syntype.

References:

Onuphis geophiliformis (Moore, 1903)

UMUTZ-Ann-Pc-21

Type status: Non-type

No. of specimens: 1 specimen

Condition: Good

Remarks:
References:

Paradiopatra willemoesii (McIntosh, 1885)

UMUTZ-Ann-Pc-33

No. of specimen: 1 (tube only)
Condition: Good
Remarks:
References:

UMUTZ-Ann-Pc-147

No. of specimen: 1 (tube only)
Condition: Good
Remarks:
References:

Family Oweniidae
Oweniidae sp.

UMUTZ-Ann-Pc-43

Type status: Non-type
Locality:
Date:
Collector:
No. of specimens: 1 specimen
Label information: Mitraria [sic]
Condition: Good
Remarks:
Reference:

Family Polygordiidae
Polygordius ijimai Izuka, 1903

UMUTZ-Ann-Pc-83

Type status: Syntype
Locality: Misaki
Date: April, 1903
Collector:
No of specimens: 5 specimens
Label information: *Polygordius ijimai* Izuka, Misaki April, 1903 Archiannelida,
Annelida [三崎 April 1903][sic](label is attached to the outside of the bottle)
Condition: Good

Remarks:

References: Izuka (1903)

Family Polynoidae

Paralepidonotus ampullifera (Grube, 1878)

UMUTZ-Ann-Pc-25

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: *Harmothoe lamellifera* (Mar.) [sic]

Condition: Dried

Remarks: Identified by Dr. R. Barnich in April 2001.

References:

Hermilepidonotus helotypus (Grube, 1877)

UMUTZ-Ann-Pc-65

Type status: Non-type

Locality: Jogashima, Misaki

Date: April, Meiji 38 (=1905)

Collector:

No. of specimens: 1 specimen

Label information: *Polynoe gymnonotus* Marenzeler, 1879 [sic] (Fig. 2D)

採集 三崎 城ヶ嶋 明治 38 年 4 月 [sic] (Fig. 2C)

Condition: Good

Remarks: Identified by Dr. R. Barnich in April 2001.

References:

UMUTZ-Ann-Pc-90

Type status: Non-type

Locality:

Date: April, Meiji 38 (=1905)

Collector:

No. of specimens: 1 specimen

Label information: POLYNOE GYMNONOTUS Mar. Errantia Polychaeta
coll. by 飯塚[sic]

Condition: Dried

Remarks: Identified by Dr. R. Barnich in April 2001 as “Possibly *Hermilepidonotus helotypus*”.

References:

Lepidonotus sagamianus (Izuka, 1912)

UMUTZ-Ann-Pc-82

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: *Polynoe clava*, Mont. [sic] (Fig. 2E)

Condition: Dried

Remarks: Identified as “possibly *Lepidonotus sagamianus*” by Dr. R. Barnich in April 2001.

References:

UMUTZ-Ann-Pc-6

Type status: Non-type

Locality: Sagami Bay

Date:

Collector: Aoki Kumakichi

No. of specimens: 1 specimen

Label information: Sagami Bay 250 hiro 採集 熊[sic]

Condition: Dried

Remarks: Identified by R. Barnich in April, 2001.

References:

Harmothoe sp.

UMUTZ-Ann-Pc-66

Type status: Non-type

Locality: Shiokubi in Province Oshima, Hokkaido

Date: April, Meiji 38 (=1905)

Collector: Mr. N. Yanagi

No. of specimens: 1 specimen

Label information: 柳君モグリニヒロ 北海道渡島国亀田郡汐首明治41年7月 [sic] (Fig. 2A, B)

Condition: Dried

Remarks: Identified by Dr. R. Barnich in April 2001. The locality is currently “Shiokubi, Toi-machi, Kameda, Hakodate City, Hokkaido”. The Japanese word “hiro” is a unit of length, and equal “fathoms”, thus 2 hiro equal 2 fathoms (= 12 feet). This specimen is probably a *Harmothoe imbricata* (L.) cited in Izuka (1912: 48); its collection data are recorded as “Shiokubi in Province Oshima, Hokkaido (Mr.

N. Yanagi)".

References: Izuka (1912)

UMUTZ-Ann-Pc-97

Type status: Non-type

Locality: Shikanoshima (Fukuoka Prefecture)

Date:

Collector:

No. of specimens: 1 specimen

Label information: *Harmothoe imbricata* L. 志賀嶋 [sic]

Condition: Good

Remarks: This specimen is probably *Harmothoe imbricata* (L.) cited in Izuka (1912: 47); its collection data are recorded as "Shikanoshima in Province Chikuzeu" [sic] "Chikuzeu" is correctly "Chikuzen" in page 262, errata of Izuka (1912).

References: Izuka (1912)

Lepidonotus sp.

UMUTZ-Ann-Pc-2

Type status: Non-type

Locality: Sunosaki, Boshu (= Boso Peninsula)

Date: 8 November, Meiji 33(=1900)

Collector: Aoki Kumakichi

No. of specimens: 1 specimen

Label information: *Polynoe squamata* L. 産地房州州ノ崎 明治 33 年 11 月 8 日
採集 熊 [sic]

Condition: Dried

Remarks: Identified by R. Barnich in April, 2001.

References:

Lepidasthenia sp.

UMUTZ-Ann-Pc-57

Type status: Non-type

No. of specimens: 1 specimen

Condition: Dried

Polynoidae sp.

UMUTZ-Ann-Pc-1

Type status: Non-type

Locality:

Date:

Collector:

No. of specimens: 1 specimen

Label information: (on the outside of the bottle) *Polynoe* sp. Polychaeta
misaki june 26, 1938 [sic]

Condition: Dried

Remarks:

References:

Family Sabellidae

Pseudopotamilla myriops (Marenzeller, 1884)

UMUTZ-Ann-Pc-9

Type status: non-type

No. of specimens: tubes only

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-48

Type status: Non-type

Locality:

Date: 1 August, Meiji 34(=1901)

Collector:

No. of specimens: only a tube

Condition: Good

Label information: *Pseudopotamilla myriops* 明治 34 年 8 月 1 日 採集 飯塚
産地 Shi○○ Misaki [sic]

Remarks:

Reference:

Pseudopotamilla sp.

UMUTZ-Ann-Pc-28

Type status: Non-type

No. of specimens: many (a colony)

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-30

Type status: Non-type

No. of specimens: 5 specimens with tubes

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-41

Type status: Non-type

No. of specimens: a colony

Condition: Good

Remarks:

References:

Sabellidae sp.

UMUTZ-Ann-Pc-27

Type status: Non-type

No. of specimens: 1 specimen

Condition: Good

Remarks:

References:

UMUTZ-Ann-Pc-46

Type status: Non-type

No. of specimens: many specimen

Condition: Good

Family Serpulidae

Hydroides elegans (Haswell, 1883)

UMUTZ-Ann-Pc-15

Type status: Non-type

Locality:

Date: 20 January, Meiji 41 (=1908)

Collector:

No. of specimens: a colony (many specimens)

Label information: 軍艦 壱岐 明治 41 年 1 月 20 日[sic] (Fig.1 H)

Condition: Good

Remarks: One big colony on the hull of the battleship “Iki”. It is the oldest record of this alien species in Japan. Later, Fauvel collected this species on 1928 at Seto, Wakayama (Nishi & Tanaka, 2008).

References:

Spirorbinae sp.

UMUTZ-Ann-Pc-63

Type status: Non-type

No. of specimens: 2 specimens

Condition: Good
Remarks: Attached to a shell fragment
References: Izuka (1908d)

Family Sternaspidae
Sternaspis sculata Ranzani, 1817

UMUTZ-Ann-Pc-24

Type status: Non-type
Locality:
Date:
Collector:
No. of specimens: 1 specimens
Label information: ダルマゴカイ [sic]
Condition: Rotten or dissolved
Remarks: Izuka (1919c) first reported this species from Misaki and used a Japanese name “Daruma-gokai”.
Reference: Izuka (1919c)

Family Syllidae
Syllis ramosa McIntosh, 1879

UMUTZ-Ann-Pc-95

Type status: Non-type
Locality: Sagami Bay
Date: 18 August, Meiji 33(=1900)
Collector: Aoki Kumakichi
No. of specimens: many? (a colony in a sponge)
Label information: (on a new label) 東よどみ 300 尋 採集熊明治 33 年 8 月 18 日 [sic]
Condition: Dissolved
Remarks: Izuka (1912) recorded the collection data as “Sagami Bay, about 100 fathoms (Mr. K. Aoki)”.
Reference: Izuka (1912)

Family Terebellidae
Thelepus japonicus Marenzeller, 1884

UMUTZ-Ann-Pc-153

Type status: Non-type
Locality: Nagai, Tokyo Bay

Date: Collector: No. of specimen: 1
Label information: Thelepus japonicus Marenz. 193 Terebellidae Sedentaria,
Polychaeta 長井 [sic]
Condition: Dried
Remarks:
Reference: Sato (2000)

Terebellidae sp.

UMUTZ-Ann-Pc-154

Type status: Non-type
Locality: Shimokoshiki Island, Kyushu
Date: 18 March, Meiji 32 (=1899)
Collector: Takashima?
No. of specimen: many
Label information: Terebellidae sp. 下甕島○○○(泥中) 明治三二年七月一八日 採
集 高島 [sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-156

Type status: Non-type
Locality: Koajiro, Misaki, Sagami Bay
Date: July, Meiji 23 (=1890)
Collector:
No. of specimen: Many
Label information: ? Thelepus sp. 相州三浦小網代 明治二三年七月
[sic]
Condition: Good
Remarks:
Reference:

UMUTZ-Ann-Pc-157

Type status: Non-type
No. of specimen: Many
Condition: Good

Discussion

Professor A. Izuka's material contains 15 type specimens, and based on this material, validity and synonymies will be studied in the future. Some species of this type series have been already studied (Boggemann, 2002; Nishi, 1996; Sato and Nakashima, 2003), and some work on Nereididae samples is currently being done by Dr. Sato, M. (Sato et al. 2006). Because some jars had no labels, it was impossible to determine the collection data from those samples. We will continue studying these materials based on the literature.

An interesting finding in these samples is the oldest records of them, especially those of *Hydroides elegans* (Haswell, 1883) collected from the hull of the battleship "Iki". *Hydroides elegans* (Haswell, 1883) is probably the most widespread harbour-fouling serpulid in tropical and subtropical areas in both Old and New World (ten Hove, 2003) and one of the most famous alien fouling species in worm waters world-wide (e.g., NIMPIS, 2002, Pettengill et al. 2007, Masterson, 2007, Read, 2009). Although it is very difficult to reconstruct its center of origin, ten Hove (2003) hypothesized that the Australian origin the most likely because the natural occurrence of the species on certain sea-weeds and the depth in 20 m at the time of its discovery in 1883 (Allen, 1953). And it had been introduced in harbours from the natural populations within Australia, then further in Mediterranean etc. In Mediterranean harbours, the oldest record of *H. elegans* is at Naples goes back to 1888 (Zibrowius, 1992). In Japan and adjacent waters, the oldest record was at Seto, Wakayama in 1928 (Nishi & Tanaka, 2008), and now at an unknown localities in 1908 (this study). Taxonomy of this species was studied by Bastida-Zavala & ten Hove (2003) and it is proposed as a model organism for biofouling research by Nedved & Hadfield (2009). *Hydroides elegans* has relatively limited larval dispersal, but its wide distribution in the Atlantic, Pacific, and Indian Oceans and in the Mediterranean Sea has been achieved by regular and consistent transport of adults and larvae on the hulls and in the ballast water of ships, respectively (Pettengill et al., 2007). This species was possibly widely distributed in Japanese and adjacent waters even in Meiji era around 100 years ago, thus, fouling was an effective strategy of extending its distribution range.

World Register of Marine Organisms (WoRMS) lists many Japanese polychaetes. Based on the WoRMS database and recent taxonomic papers, the following 16 species described by Professor A. Izuka are valid:

- 1) *Notophyllum sagamianum* Izuka, 1912 (WoRMS)
- 2) *Glycera onomichiensis* Izuka, 1912 (WoRMS)
- 3) *Aphrodita watasei* Izuka, 1912 (WoRMS)
- 4) *Diopatra sugokai* Izuka, 1907 (WoRMS)
- 5) *Notopygos mitsukurii* Izuka, 1910 (WoRMS)
- 6) *Polygordius ijimai* Izuka (1903), accepted as the original name (Rota & Carchini, 1999)
- 7) *Panthalis mitsukurii* Izuka, 1904, accepted as *Eupolyodontes mitsukurii* (Izuka, 1904), however, Fiege & Barnich (1998) have recorded as synonym of *E. gulo*.

- 8) *Panthalis jogasimae* Izuka, 1912 accepted as *Acoetes jogasimae* (Izuka, 1912) (WoRMS)
- 9) *Harmothoe holothuricola* Izuka, 1912 (valid?)
- 10) *Harmothoe yendoi* Izuka, 1912 (WoRMS)
- 11) *Harmothoe sinagawaensis* Izuka, 1912 - accepted as *Arctonoella sinagawaensis* (Izuka, 1912) (Buzhinskaja, 1967)
- 12) *Tomopteris (Johnstonella) pacifica* (Izuka, 1914) accepted as *Tomopteris pacifica* Izuka, 1914 (WoRMS)
- 13) *Nereis japonica* Izuka, 1908 accepted as *Hediste japonica* (Izuka, 1908) (Sato and Nakashima, 2003)
- 14) *Nereis ijimai* Izuka, 1912 accepted as *Nectoneanthes ijimai* (Izuka, 1912) (WoRMS)
- 15) *Ceratocephale osawai* Izuka, 1903 is accepted as *Tylorrhynchus osawai* (Izuka, 1903) in Sato et al. (2006)
- 16) *Polynoe microsetosa* Izuka, 1912 - *Lepidasthenia microsetosa* (Izuka, 1912) as *Showapolyne microsetosa* (Izuka, 1912) – Imajima (1997).

And following twelve species described by Professor A. Izuka are not valid:

- 1) *Lepidasthenia longissima* (Izuka, 1912) accepted as *Lepidasthenia izukai* Imajima & Hartman, 1964 - non-valid? - Fauvel (1936)
- 2) *Glycera chirori* Izuka, 1912 is a synonym of *G. nicobarica* Grube, 1868 (Boggemann, 2002)
- 3) *Glycera hasidatensis* Izuka, 1912 is a synonym of *G. macintoshi* Grube, 1877 (Boggemann, 2002)
- 4) *Glycera misakiensis* Izuka, 1912 is a synonym of *G. pacifica* Kinberg, 1865 (Boggemann, 2002) or accepted as *G. americana* Leidy, 1855 (WoRMS)
- 5) *Nereis ezoensis* Izuka, 1912 accepted as *Nereis vexillosa* Grube, 1851 (WoRMS)
- 6) *Nereis dyamusii* Izuka, 1912 accepted as *Alitta virens* (M. Sars, 1835) (WoRMS)
- 7) *Nereis ezoensis* Izuka, 1912 accepted as *Nereis vexillosa* Grube, 1851 (WoRMS)
- 8) *Nereis shishidoi* Izuka, 1912 accepted as *Cheilonereis cyclurus* (Harrington, 1897) (WoRMS)
- 9) *Marphysa iwamushi* Izuka, 1907 accepted as *Marphysa sanguinea* (Montagu, 1815) (WoRMS)
- 10) *Eunice flavopicta* Izuka, 1912 accepted as *Eunice aphroditois* (Pallas, 1788) (WoRMS)
- 11) *Vanadis grandis* Izuka, 1914 accepted as *Vanadis longissima* (Levinsen, 1885) (WoRMS)
- 12) *Callizona japonica* Izuka, 1914 accepted as *Rhynchonereella gracilis* Costa, 1864 (WoRMS)

In general, there are three patterns of taxonomic works involving re-examination of types and older important material. The first is concentrated on taxa (genera, family, etc.) (e.g., Boggemann, 2002), the second examines the material studied by a particular researcher (e.g., Loi, 1980 on material of J. Percy Moore and Hartman, 1949 on material of Kinberg), and the third one deals with the material deposited in a particular museum or institution (e.g., Fiege & Wehe, 2004; Solis-Weiss et al., 2004; Nishi & Kupriyanova, 2011). This work is the first study of the second type among Japanese annelids studies. As a result of this work on Izuka's materials, older samples collected by other Japanese researchers such as Okuda Shiro, Kitamori Rhonosuke, Takahashi Keizo and T. Fujiwara will become the focus of attention. The material studied by Prof. Okuda Shiro material has been deposited in Hokkaido University (T. Kato, pers. comm.). Nishi et al. (2007) unsuccessfully searched for Kitamori's lost samples, particularly those of Pilargiidae Sigambra and related specimens, so his samples may be lost. There is also no information on materials of K. Takahashi and T. Fujiwara.

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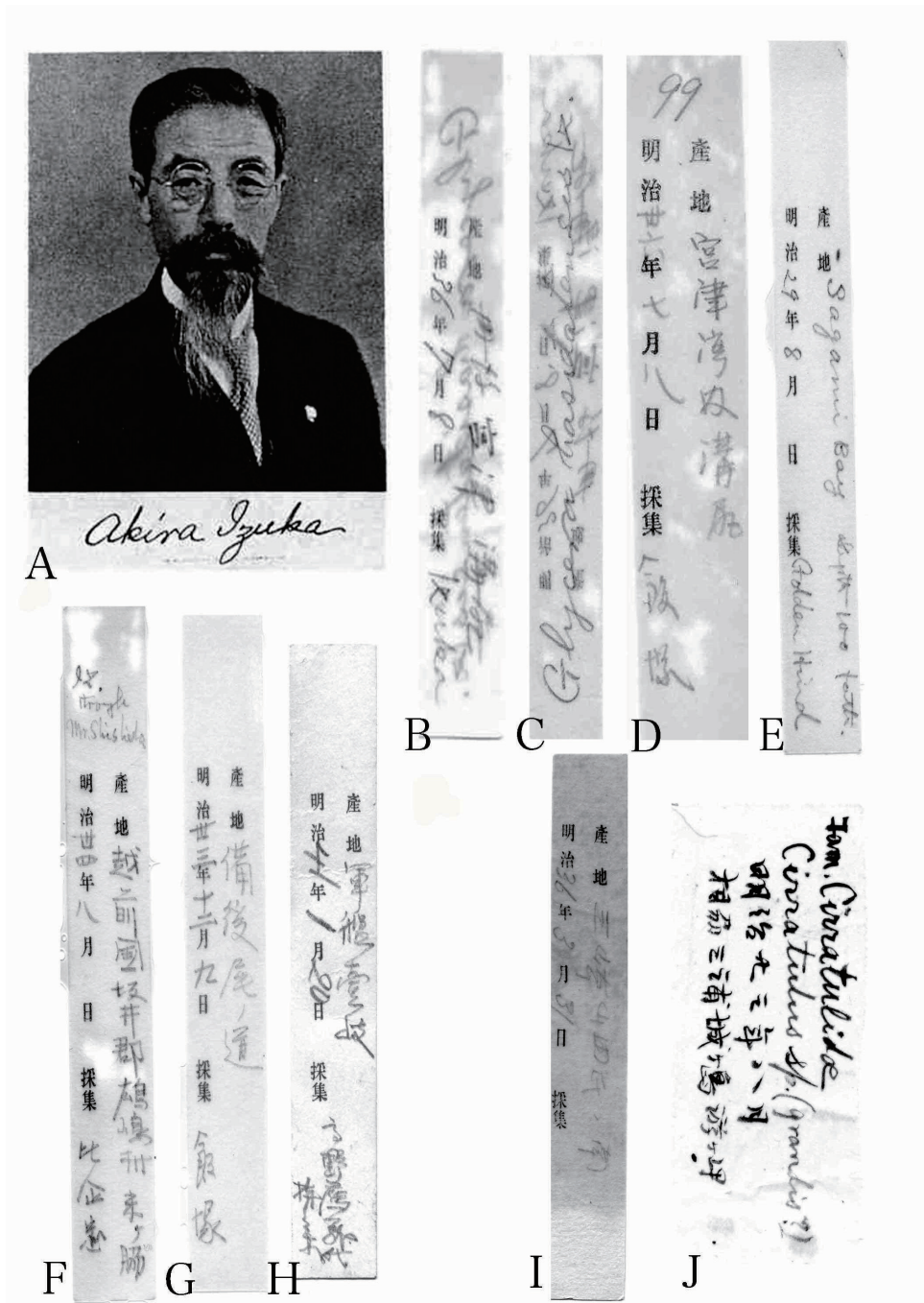


Figure 1. Labels of material and hand-written signature of Izuka.

A, Professor Akira Izuka, with his signature - reproduced from Mukai (1985). B-D, UMUTZ-An-Pc-99, *Glyceria hasidatensis*. E, UMUTZ-Ann-Pc-138, *Eunice cf. palauensis*. F, G, UMUTZ-Ann-Pc-119, *Marphysa iwamushi*. H, UMUTZ-Ann-Pc-15, *Hydroides elegans*. I, UMUTZ-Ann-Pc-120, *Diopatra sugokai*. J, UMUTZ-Ann-Pc-142, *Cirriformia tentaculata*.

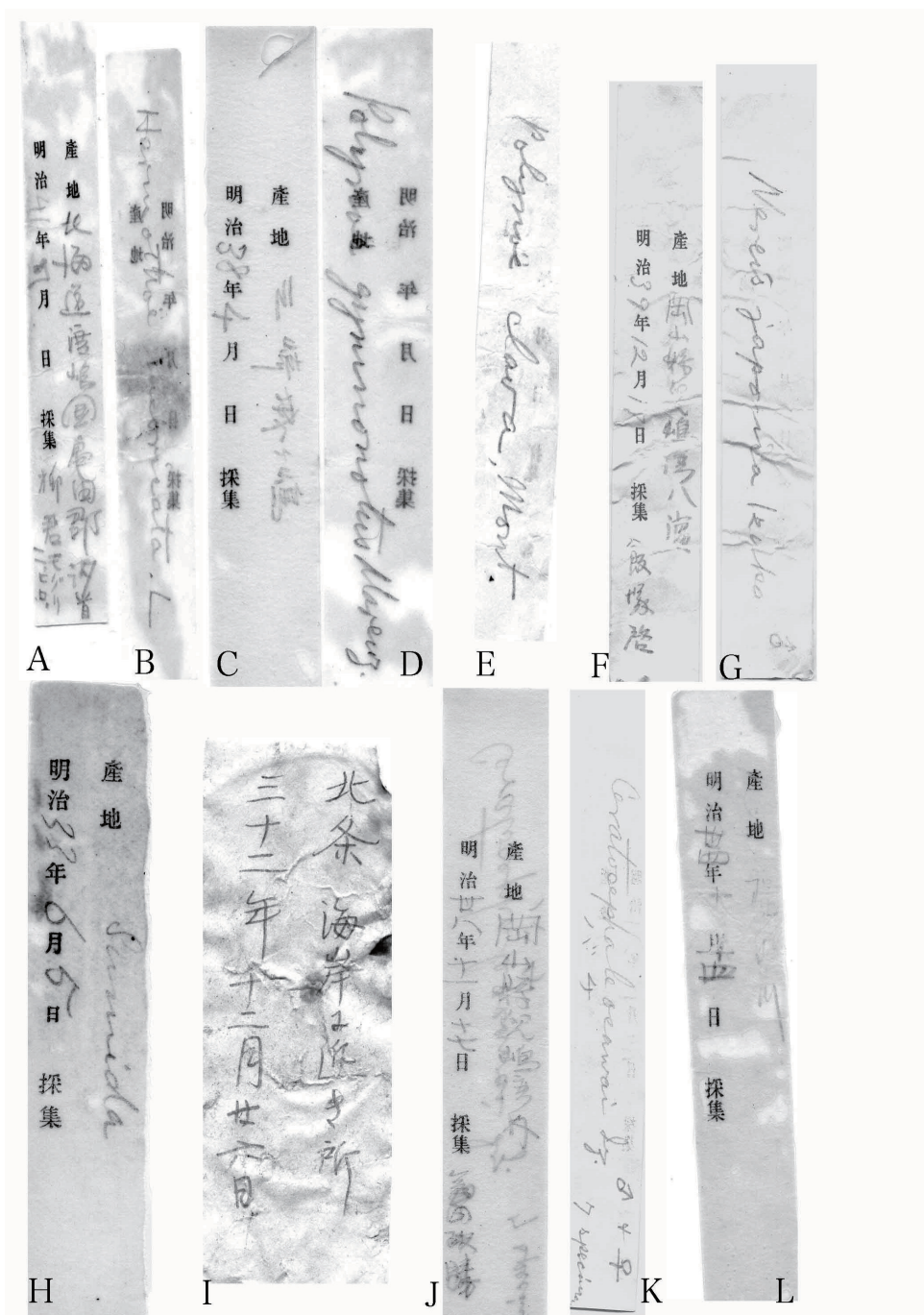


Figure 2. Labels of material. A, B, UMUTZ-Ann-Pc-66, *Harmothoe* sp. C, D, UMUTZ-Ann-Pc-65, *Polynoe* sp. E, UMUTZ-Ann-Pc-82, Polynoidae sp. F, G, UMUTZ-Ann-Pc-55, *Hediste japonica*. H, UMUTZ-Ann-Pc-114, *Hediste japonica*. I, UMUTZ-Ann-Pc-51, *Tylorrhynchus osawai*. J, K, UMUTZ-Ann-Pc-131, *Tylorrhynchus osawai*. L, UMUTZ-Ann-Pc-133, *Tylorrhynchus osawai*.

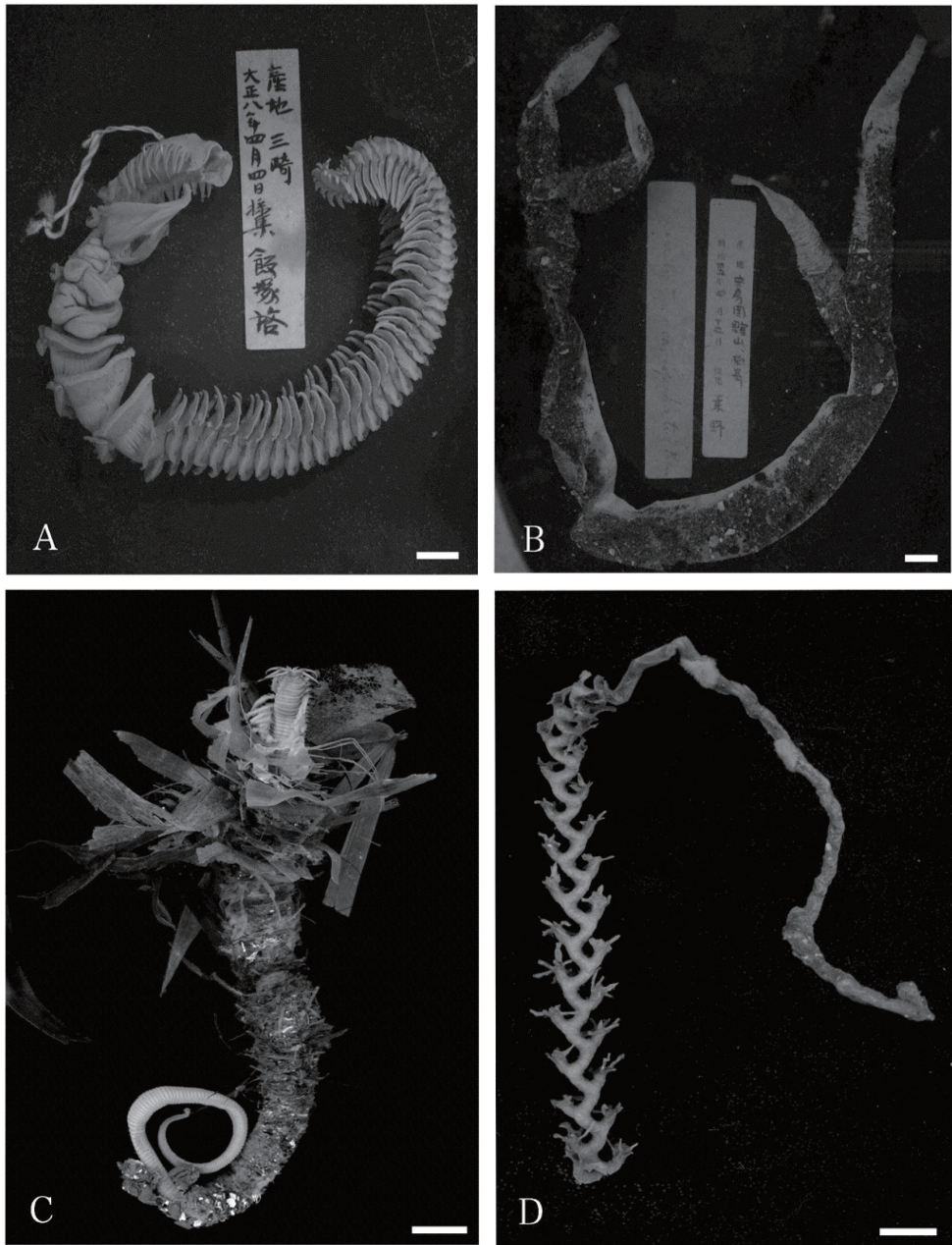


Figure 3. Photos of specimens. A, UMUTZ-Ann-Pc-72, *Chaetopterus cautus*. B, UMUTZ-Ann-Pc-49, tube of *Chaetopterus cautus*. C, UMUTZ-Ann-Pc-120, *Diopatra sugokai*. D, UMUTZ-Ann-Pc-138, *Eunice* cf. *palauensis*. Scales are 10mm.