

## BENTHIC POLYCHAETOUS ANNELIDS FROM GEOMUN-DO AND BAEG-DO ISL., KOREA

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### 거문도 백도산 다모환충류의 분류학적 연구

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한국산 다모환충류의 분류에 관한 연구의 일환으로서 1978년 남해수역의 중심지역인 거문도와 백도에서 채집한 저서성 갯지렁이류를 동정 분류한 결과 11과 19속 24종의 다모환충류를 얻었기에 그 형태적 특징을 바탕으로 과와 종의 분류검색표를 작성하였다.

이 가운데 *Syllis sclerolaema* 흰점염주발갯지렁이, *Amphitrite cirrata* 유명꽃갯지렁이, *Salmacina dysteri* 가는관뿔개꽃갯지렁이, *Dexiospira foraminosus* 동그라미관뿔개꽃갯지렁이 등의 3과 4종은 한국 미기록종으로 우리나라 동물상에 최초로 기재된다.

#### INTRODUCTION

This paper is concerned with the benthic polychaetous annelids of Geomun-Do and Baeg-Do island in the southern part of Korea. The principal external diagnostic characters of all the families of benthic polychaetous annelids are depicted with tabulated scheme, and taxonomical keys are presented.

Twenty-four species representing nineteen genera are described. Of these, four species representing three families are newly added to the polychaetous annelids fauna of Korea.

#### CHECKLIST OF BENTHIC POLYCHAETOUS ANNELIDA FROM GEOMUN-DO AND BAEG-DO ISLAND

##### POLYNOIDAE

- Lepidonotus elongatus* Marenzeller  
긴예뽀이갯지렁이
- Lepidonotus squamatus* (Linnaeus)  
비늘예뽀이갯지렁이

##### *Lepidonotus helotypus* Grube

송곳예뽀이갯지렁이

##### *Lepidonotus dentatus* Okuda and Yamada

이에예뽀이갯지렁이

##### *Halosydna brevisetosa* Kinberg

짧은예뽀이갯지렁이

##### PHYLLODOCIDAE

##### *Eumida sanguinea* (Oersted)

녹색부채발갯지렁이

##### SYLLIDAE

##### *Syllis sclerolaema* Ehlers

흰점염주발갯지렁이

##### *Typosyllis fasciata* (Malmgren)

긴수염염주발갯지렁이

##### *Trypanosyllis* (T.) *zebra* (Grube)

얼룩무늬염주발갯지렁이

##### NEREIDAE

##### *Perinereis nuntia* (Savigny)

눈썹참갯지렁이

##### *Perinereis cultrifera* (Grube)

한토막눈썹참갯지렁이

##### *Nereis heterocirrata* Treadwell

짧은앞머슴이참갯지렁이

##### *Nereis pelagica* Linnaeus

원참갯지렁이

##### *Neanthes japonica* (Izuka)

참갯지렁이

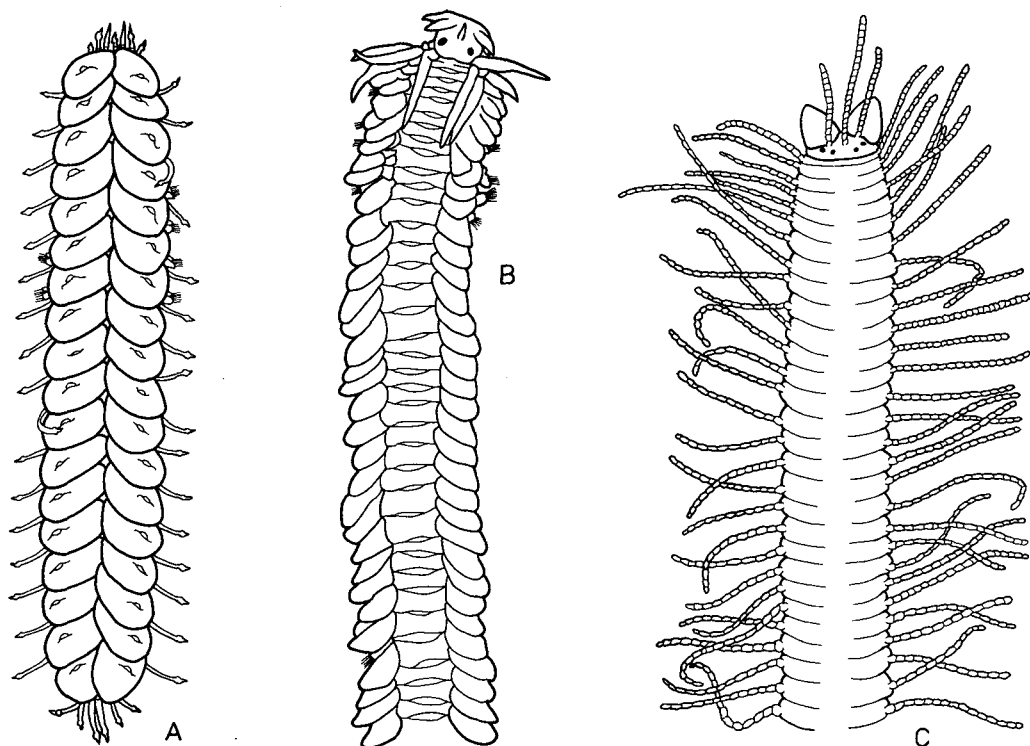
##### EUNICIDAE

##### *Marphysa sanguinea* (Montagu)

바위갯지렁이

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Table 1. Principal external diagnostic characters of Families

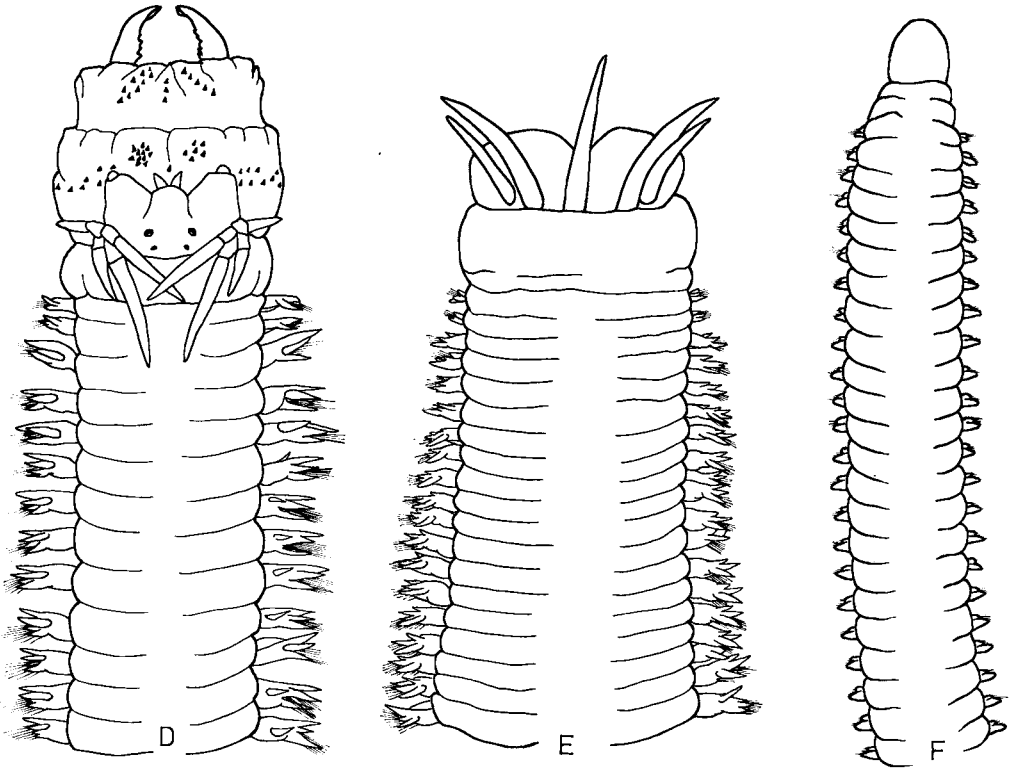


Family	Appendages of the anterior end	Setae
<b>POLYNOIDAE</b> Table 1, fig. A Page 47-50; Fig. 1-4	3 ant 1 pair palps 2 pair tC	notosetae spl or absent neurosetae spl
<b>PHYLLODOCIDAE</b> Table 1, Fig. B Page 50; Fig. 5	5 ant 4 pair tC	notosetae absent neurosetae cpd
<b>SYLLIDAE</b> Table 1, Fig. C Page 51; Fig. 6	3 ant 1 pair palps 1-2 pair tC	notosetae absent neurosetae cpd (rarely spl or pscp)
<b>NEREIDAE</b> Table 1, Fig. D Page 52; Fig. 7	2 ant 1 pair palps 4 pair tC	notosetae cpd neurosetae cpd
<b>EUNICIDAE</b> Table 1, fig. E Page 53; Fig. 8	5 ant 1 pair palps 0 pair tC	notosetae absent neurosetae spl and cpd
<b>ARABELLIDAE</b> Table 1, fig. F Page 54; Fig. 9a-e	absent	notosetae absent neurosetae spl

ant, antenna; cpd, compound seta; pscp, pseudo-compound seta; Spl, Simple seta; tC, tentacular cirrus

Benthic polychaetous Annelids

Table 1. Cont.



Other diagnostic characters

dorsal cirrus well developed, flattened and leaflike, sometimes nearly covering dorsum

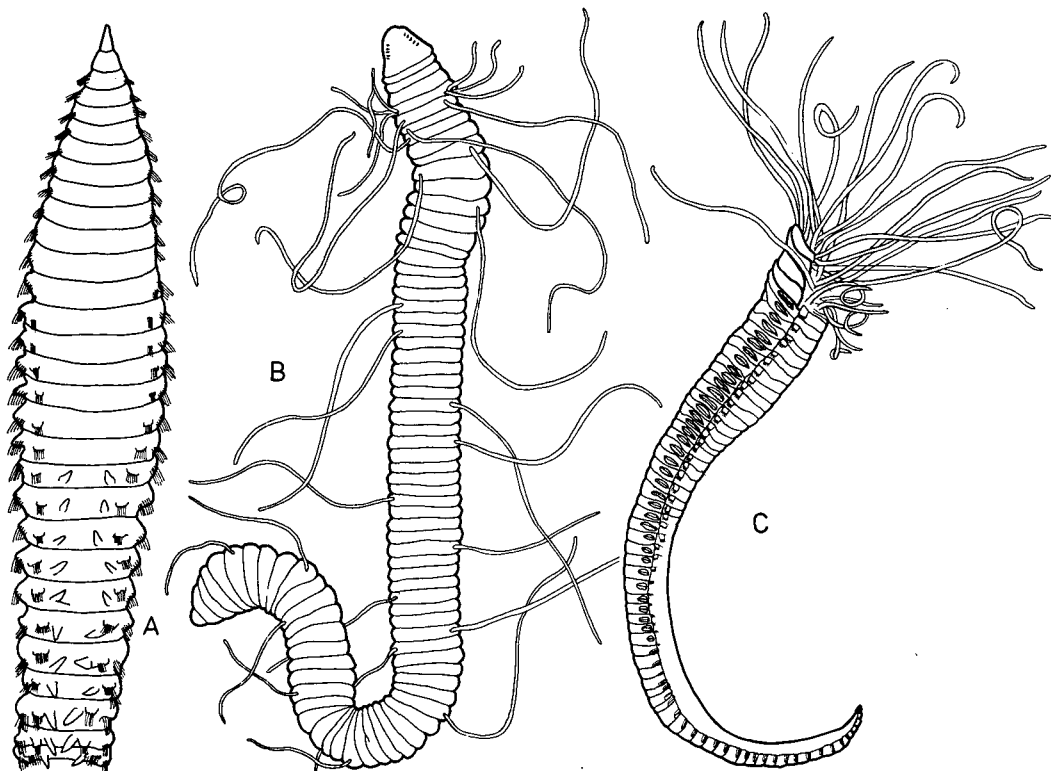
dorsal cirrus annulated

with 2 large dark jaws

with pectinate setae

} dark jaw apparatus of ventral paired mandibles and dorsal maxillae of several paired pieces

Table 2. Principal external diagnostic characters of families

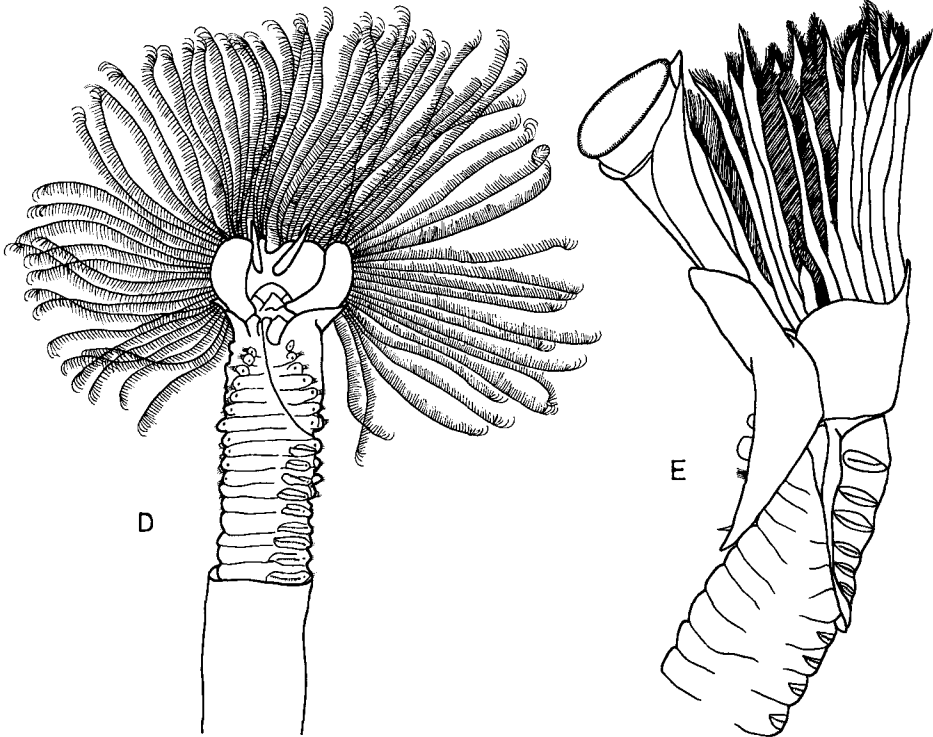


Family	Appendages of the anterior end	Setae
<b>ORBINIIDAE</b> Table 2, fig. A Page 55	absent	notosetae spl neurosetae spl
<b>CIRRATULIDAE</b> Table 2, fig. B Page 54; Fig. 9f-g	10 pair tC (bearing first setS)	notosetae spl neurosetae spl
<b>TEREBELLIDAE</b> Table 2, fig. C Page 55	branched gills	notosetae spl neurosetae avical
<b>SABELLIDAE</b> Table 2, fig. D Page 56; Fig. 10a-c	big tC crown	notosetae spl neurosetae avical
<b>SERPULIDAE</b> Table 2, fig. E Page 56; Fig. 10d-k	tC crown opercula crown (absent in <i>Salmacina</i> )	notosetae spl neurosetae avical

setS, setigerous segment; spl, simple seta; tC, tentacular cirrus

Benthic polychaetous Annelids

Table 2. Cont.



Other diagnostic characters

posterior part of the body with dorsal parapodia displaced to the back  
finger-shaped gills

thread-like gills

all notosetae limbate capillaries

branchia is simple filament

tube made of sand or shells

all notosetae limbate capillaries

mucous tubes

calcareous tubes

ARABELLIDAE

*Arabella iricolor* (Montagu) 홍점갯지렁이

ORBINIIDAE

*Haploscoloplos elongatus* (Johnson) 원추머리갯지렁이

CIRRATULIDAE

*Cirratulus cirratus* (Müller) 머리털갯지렁이

TEREBELLIDAE

*Amphitrite cirrata* Müller 유령꽃갯지렁이

SABELLIDAE

*Sabellastarte japonica* (Marenzeller) 꽃갯지렁이

SERPULIDAE

*Pomatoleios kraussii* (Baird) 굵은관뿔개꽃갯지렁이

*Hydroides ezoensis* Okuda 우산관뿔개꽃갯지렁이

*Salmacina dysteri* (Huxley) 가는관뿔개꽃갯지렁이

*Dexiospira foraminosus* (Bush) 동그라미관뿔개꽃갯지렁이

PRINCIPAL EXTERNAL DIAGNOSTIC CHARACTERS OF FAMILIES OF BENTHIC POLYCHAETOUS ANNE-LIDS FROM GEOMUN-DO AND BA-EG-DO ISLAND

Polychaetes usually are easily identified to the family level on the basis of their external appearance. For this purpose, the following Table 1 and 2 provide an illustration and a summary of some external diagnostic characters for each benthic family of errantiate polychaetes.

KEYS

1. Dorsum covering horizontal scales (as in Table 1, fig.A; Fig. 1a; Fig. 2a; Fig. 3a, f, g; Fig. 4a) .....POLYNOIDAE
1. Without these horizontal scales.....2
2. The anterior end with long tentacles or cirri (as in Fig. 5a; Fig. 6a, g; Fig. 7a).....4
2. The anterior end without tentacles (as in Fig. 9a) .....3
3. Posterior part of the body with dorsal parapodia displaced to the back

- (Table 2, fig.A .....ORBINIIDAE
3. This is not the case.....ARABELLIDAE
  4. Anterior with a collar of feather-shaped or branched tentacles forming a tentacle-crown(as in Table 2, fig. D; Fig.10h) .....5
  4. Tentacles are not feather-shaped or sitting as a crown .....6
  5. One or two tentacles transformed to a lid; Calcareous tubes .....SERPULIDAE
  5. No lid; Tube not calcareous...SABELLIDAE
  6. Body divided into two regions; A lot of thread-like tentacles anteriorly(Table 2, fig.C) .....TEREBELLIDAE
  6. Body not divided into two regions .....7
  7. Dorsal and ventral cirri foliaceous, placed ventral (Table 1, fig.B; Fig.5a) ..... PHYLLODOCIDAE
  7. Cirri not foliaceous .....8
  8. Parapodia biramous with tungs, lips and cirri(as in Fig.7d, g, j, m, p); Prostomium with two palps and two tentacles(as in Table 1, fig.D; Fig.7a); Two jaws and paragnaths (as in Table 1, fig.D; Fig.7b, c, e, f, h, i, k, l, n, o) .....NEREIDAE
  8. This is not the case .....9
  9. Anterior blunt cone and has paired series of eyespots; A long thread-like gill dorsal to the notopodia (Table 2, fig.C; Fig. 9f, g) ..... CIRRATULIDAE
  9. All this not together .....10
  10. Larger animals; 5 thread-shaped tentacles (Table 1, fig.E; Fig.8) Palps short..... EUNICIDAE
  10. 3 tentacles; Uniramous parapodia; Dorsal cirri annulated(as in Table 1, fig.C; Fig.6) ..... SYLLIDAE

POLYNOIDAE Malmgren, 1867

1. Elytra 12 pairs(as in Fig.2a; Fig.3a, f); Parapodia without branchial filaments.....2
1. Elytra 18 pairs(Fig.4a).....*Halosydna brevisetos* (See Marenzeller 1907; Izuka 1912; Okuda 1938a, 1970; Hartman 1939; Okuda and Yamada 1954; Imajima and Hartman 1964; Imajima and Camo

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1970; Rho and Song 1974, 1975; Paik 1975a)

2. Elytral surface smooth(Fig.3a,d).....  
 ..... *Lepidonotus helotypus*  
 (See Grube 1877; Marenzeller 1879; Izuka 1912;  
 Okuda 1939; Okuda and Yamada 1954; Imajima  
 and Hartman 1964; Rho and Song 1974)
2. Elytral surface tuberculated.....3
3. Elytra with numerous small tubercles only...4
3. Elytra with numerous small tubercles and  
 large cone-shaped horny protuberance  
 (Fig.3f, j) .....*Lepidonotus dentatus*  
 (See Okuda and Yamada 1954; Imajima and  
 Hartman 1964; Rho and Song 1965)
4. Dorsal cirri short, with well developed  
 ceratophore(Fig.1b)..... *Lepidonotus elongatus*  
 (See Marenzeller 1902; Okuda 1933d, 1938a;  
 Imajima and Hartman 1934; Imajima and Gamo  
 1970; Rho and Song 1974, 1975)
4. Dorsal cirri moderately long(Fig.2e).....  
 .....*Lepidonotus squamatus*  
 (See Marenzeller 1902; Moore 1903; Izuka 1912;  
 Okuda and Yamada 1954; Pettibone 1963; Imajima  
 and Hartman 1964; Rho and Song 1975)

PHYLLODOCIDAE Williams, 1852

With 4 pairs of tentacular cirri; Ventral cirri  
of segment 2 similar to other tentacular cirri;  
Proboscis papillated; Segment 1 and 2 free from  
one another (Table 1, fig.B; Fig.5a) ; Parapodia  
uniramous; Dorsal cirri elongate, lanceolate;  
(Fig;5b, c) .....*Eumida sanguinea*  
(See Izuka 1912; Okuda 1938a, 1939; Okuda and  
Yamada 1954; Pettibone 1963; Imajima and Hartman  
1964; Kirkegaard 1969; Paik 1975a)

SYLLIDAE Grube, 1850

1. Pharynx with a trepan of 10 distal teeth;  
 Anterior dorsum with two transverse color  
 bands on each segment; Setae are bidentate  
 composite falcigers(Fig.6l, m) .....  
 ..... *Trypanosyllis(T.) zebra*  
 (See Fauvel 1934; Imajima and Hartman 1934;  
 Imajima 1966; Paik 1975a)
1. Pharynx without a trepan but with a  
 middorsal tooth .....2

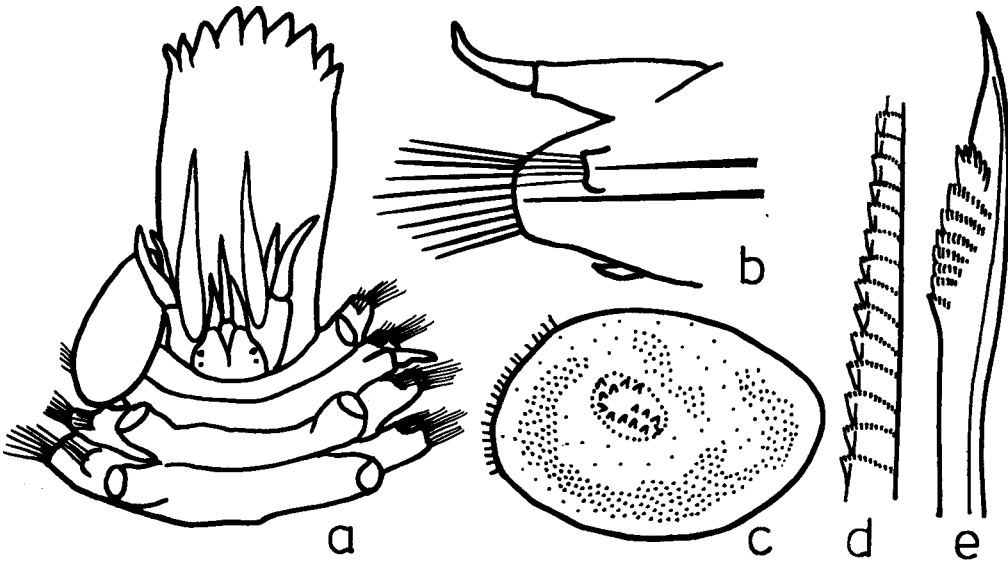


Fig. 1. POLYNOIDAE: *Lepidonotus elongatus*: a, anterior end, dorsal view; b, 11th parapodium; c, elytron; d, notosetae; e, neuroseta. Sources: a-e Okuda(1936) modified.

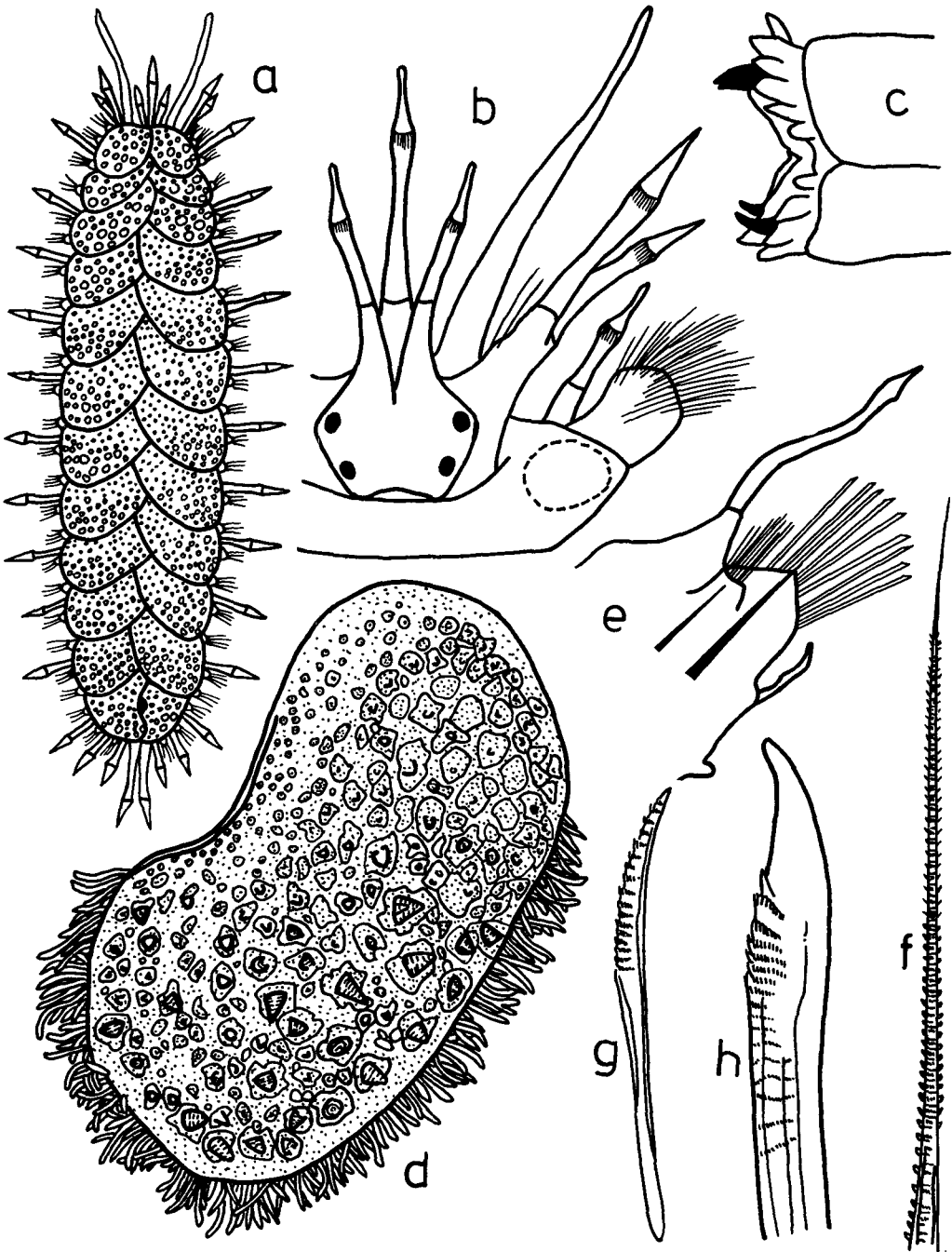


Fig. 2. POLYNOIDAE: *Lepidonotus squamatus*: a, dorsal view; b, anterior end, prostomium and first 2 segments, elytra removed, c, distal tip of extended proboscis, lateral view; d, second elytron; e, parapodium; f, distal end of inferior notoseta; g, superior notoseta; h, neuroseta. Sources: a-c. Pettibone (1963); d, f-h, Imajima and Hartman (1964); e, Uschakov (1955) modified.



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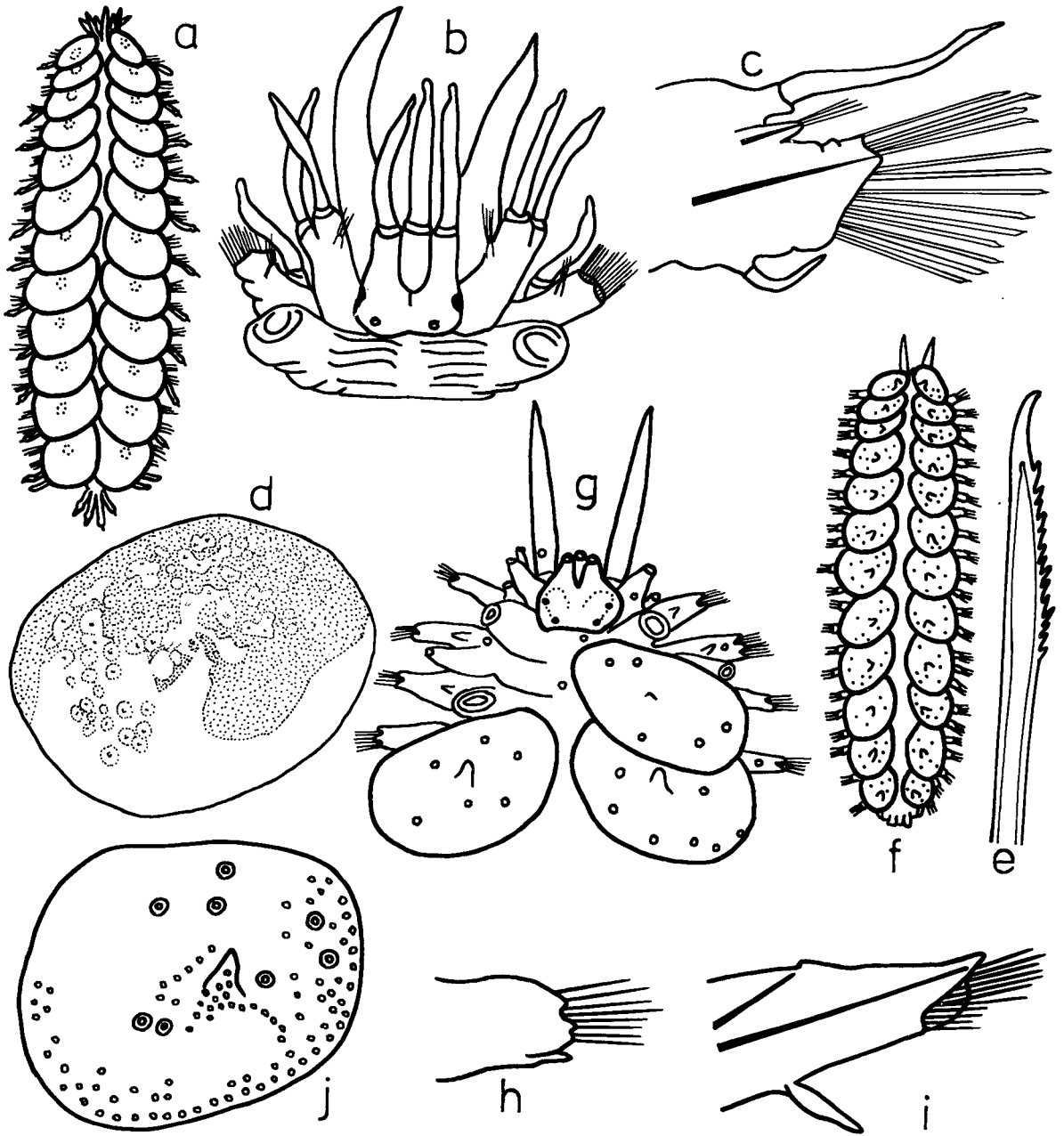


Fig. 3. POLYNOIDAE: *Lepidonotus helotypus*: a, dorsal view; b, anterior end, dorsal view; c, parapodium; d, elytron; e, neuroseta. *Lepidonotus dentatus*: f, dorsal view; g, anterior end; h, pedal lobes of neuropodium; i, 12th parapodium; j, 8th elytron. Sources: a, Imajima and Gamo(1970); b-e, Uschakov (1955); f-j, Okuda and Yamada(1954) modified.

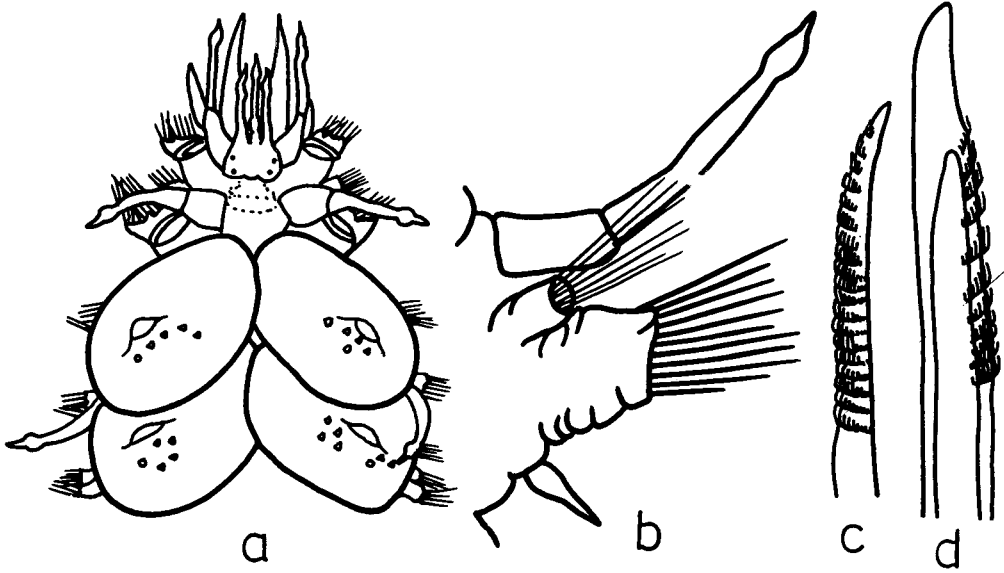


Fig. 4. POLYNOIDAE: *Halosydna brevisetosa*: a, anterior end, dorsal view; b, median parapodium, anterior view; c, notopodial bristle from median parapodium; d, neuropodial bristle from median parapodium. Sources: a-d, Paik(1975) modified.

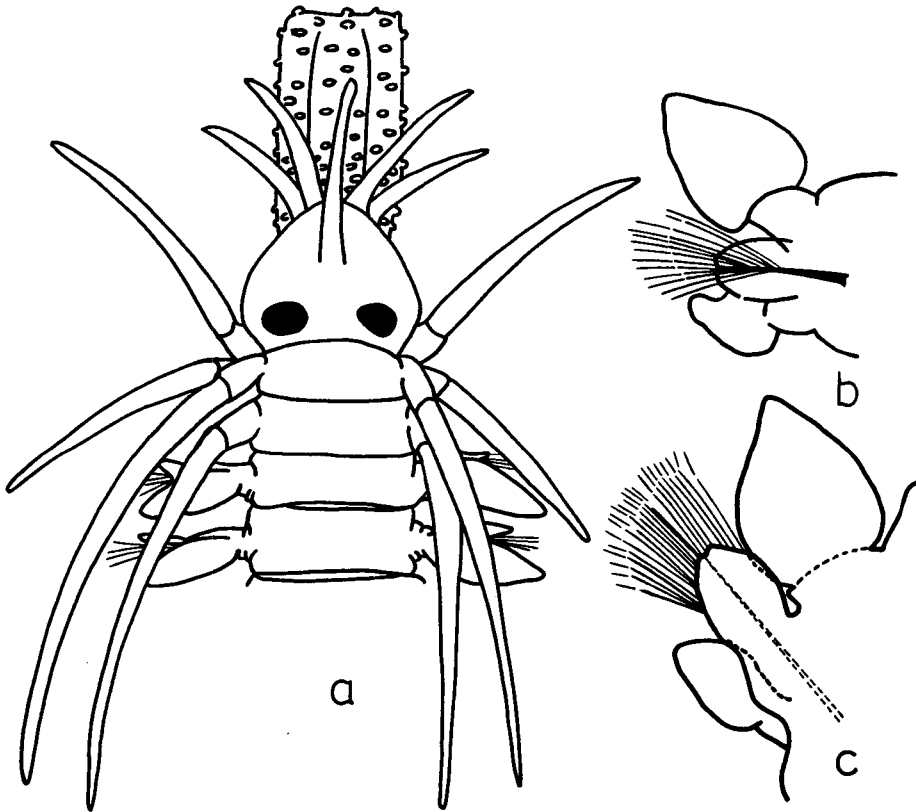


Fig. 5. PHYLLODOCIDAE: *Eumida sanguinea*: a, anterior end, dorsal view; b, median parapodium; c, 35th parapodium, anterior view. Sources: a-b, Pettibone (1963); c, Imajima and Hartman(1964) modified.

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2. Parapodia with compound setae and simple or pseudo-compound setae with bifid tip

Fig.6a-f) .....*Syllis sclerolaema*

(See Ehlers 1901; Monro 1930; Berkeley and Berkeley 1938; Hartman 1953; Imajima and Hartman 1964)

2. Parapodia with compound setae and with acicular setae in posterior parapodia; Compound setae with unidentate appendage only(Fig.6g-k) .....

*Typosyllis fasciata*

(See Berkeley and Berkeley 19'8; Uschakov 1955; Imajima and Hartman 1964; Paik 1976)

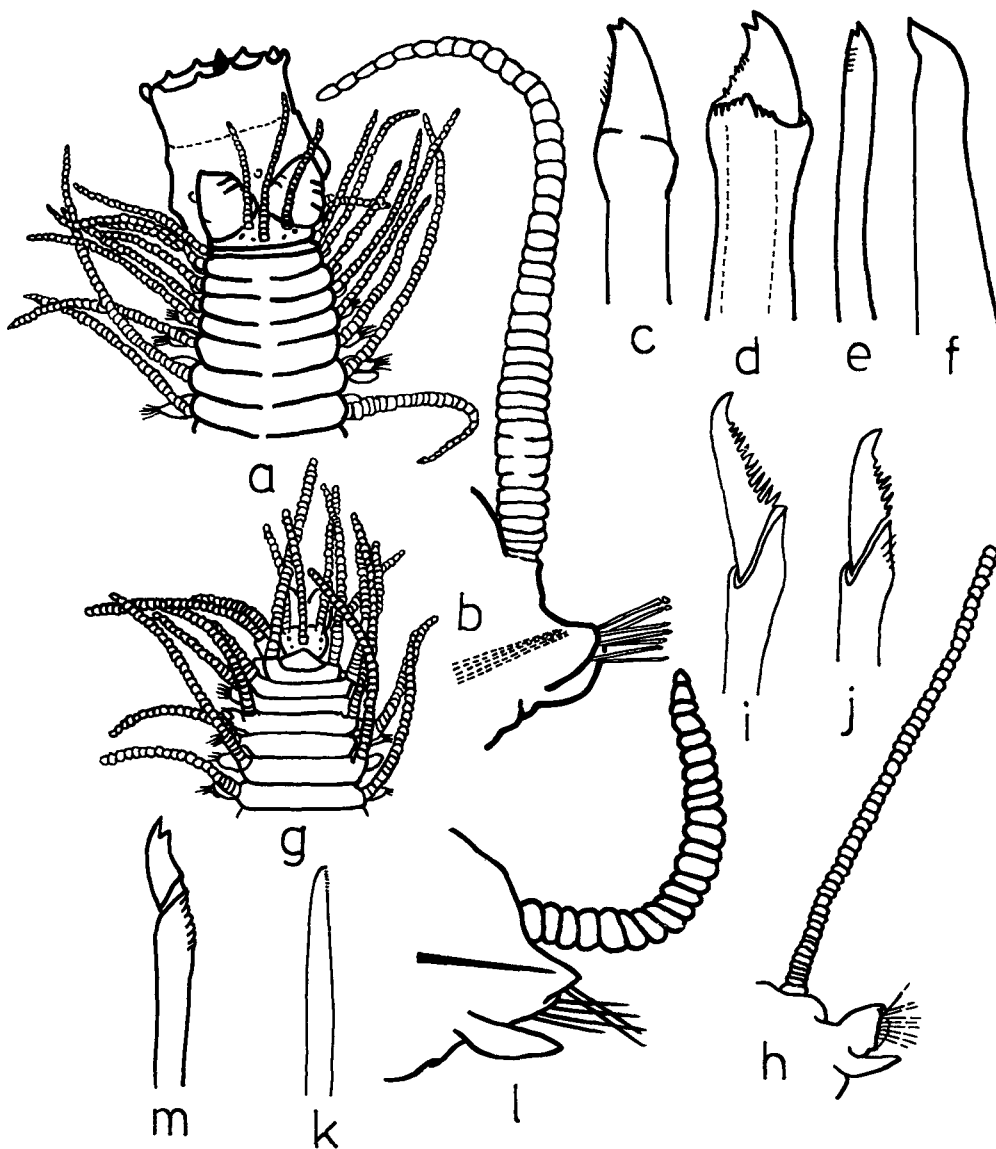


Fig. 6. SYLLIDAE: *Syllis sclerolaema*: a, anterior end with everted proboscis, dorsal view; b, 17th parapodium; c, bifid simple seta from 10th parapodium; d, pseudo-compound seta from a median parapodium; e, inferior bifid simple seta from a posterior parapodium; f, aciculum. *Typosyllis fasciata*: g, anterior end, dorsal view; h, 11th parapodium; i, superior compound seta; j, inferior compound seta; k, superior simple seta from a posterior parapodium. *Trypanosyllis*(T.) *zebra*: l, median parapodium, anterior view; m, heterogomph falciger from median parapodium. Sources: a-k, Imajima and Hartman(1964); l-m, Paik(1975) modified.



Fig. 7. NEREIDAE: *Perinereis nuntia*; a, anterior end, dorsal view; b, proboscis showing paragnaths, dorsal view; c, the same, ventral view; d, median parapodium. *Perinereis cultrifera*: e, proboscis showing paragnaths, dorsal view; f, the same, ventral view; g, median parapodium. *Nereis heterocirrate*: h, proboscis showing paragnaths, dorsal view; i, the same, ventral view; j, median parapodium. *Nereis pelagica*: k, proboscis showing paragnaths, dorsal view; l, the same, ventral view, m, median parapodium. *Neanthes japonica*: n, proboscis showing paragnaths, dorsal view, o, the same, ventral view; p, median parapodium. Sources: a-p, Paik(1977) modified.

NEREIDAE Johnston, 1865

1. Area VI with paragnaths in a transverse line (as in Fig. 7b, e) .....2
1. Area VI without such a transverse line (as in Fig. 7h, k, n) .....3
2. Area VI with 4 to 8 transverse bars in a row (Fig. 7b) .....*Perinereis nuntia*  
(See Savigny 1818; Marenzeller 1879; Fauvel 1919, 1930, 1932, 1936, 1953; Okuda 1938a, 1939; Knox 1951, 1960, Okuda and Yamada 1954; Pillai 1961; Silva 1961; Chlebovitsch and Wu 1962; Imajima

and Hartman 1964; Day 1957; Wu 1967; Imajima 1958; Imajima and Gamo 1970; Imajima 1972; Paik 1972, 1975b, 1977, 1978; Rho and Song 1974, 1975)

Area VI with a single ridgelike paragnath (Fig. 7e)..... *Perinereis cultrifera*

(See Izuka 1912; Fauvel 1919, 1923, 1930, 1936; Okuda 1938a, 1950; Hartman 1948; Day 1953, 1962, 1967; Okuda and Yamada 1954; Imajima and Hartman 1964; Uschakov and Wu 1965; Wu 1965, 1967, Imajima 1968; Rullier and Amoureux 1970; Imajima and Gamo 1970; Paik 1977)

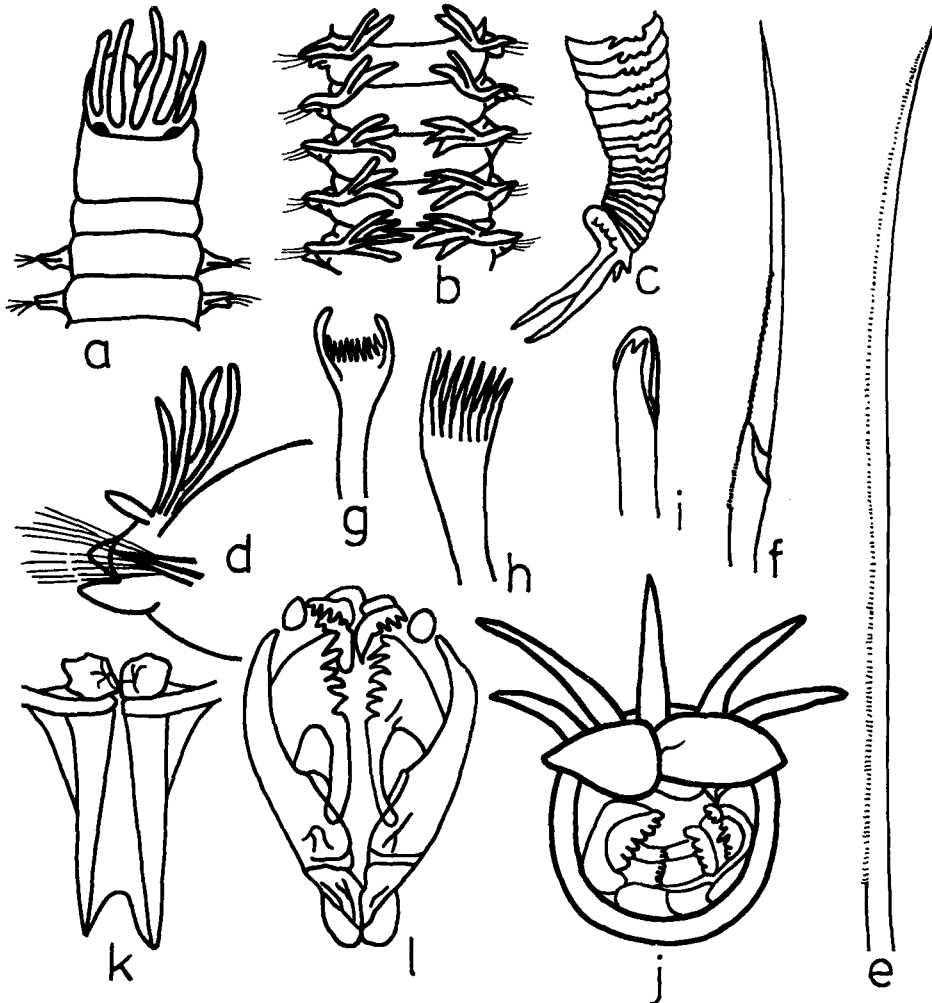


Fig. 8. EUNICIDAE: *Marphysa sanguinea*: a, anterior end, dorsal view; b, setigerous segments 25 to 29, dorsal view; c, posterior end, lateral view; d, median parapodium, anterior view; e, simple capillary seta from setiger 8; f, shorter bladed compound spinigerous seta from setiger 8; g, simple comb seta from setiger 8; h, the same, from setiger 48; i, hooded seta from setiger 48; j, anterior end, cross view; k, mandibles; l, maxillae, dorsal view. Sources: a-i, l, Pettibone(1963); j-k, Paik(1975) modified.

3. Notopodia with spinigers in anterior parapodia, partly or wholly replaced by fal-cigers in posterior parapodia.....4
3. Neuropodia with spinigers throughout the body; Neuropodia with spinigers and fal-cigers .....*Neanthes japonica*

(See Izuka 1908, 1912; Okuda 1933, 1935; Okuda and Isikawa 1936; Okuda and Yamada 1954; Uschakov 1955; Wu and Chen 1963; Imajima and Hartman 1934; Uschakov and Wu 1965; Imajima 1972; Paik 1972, 1977, 1978; Rho and Song 1974)

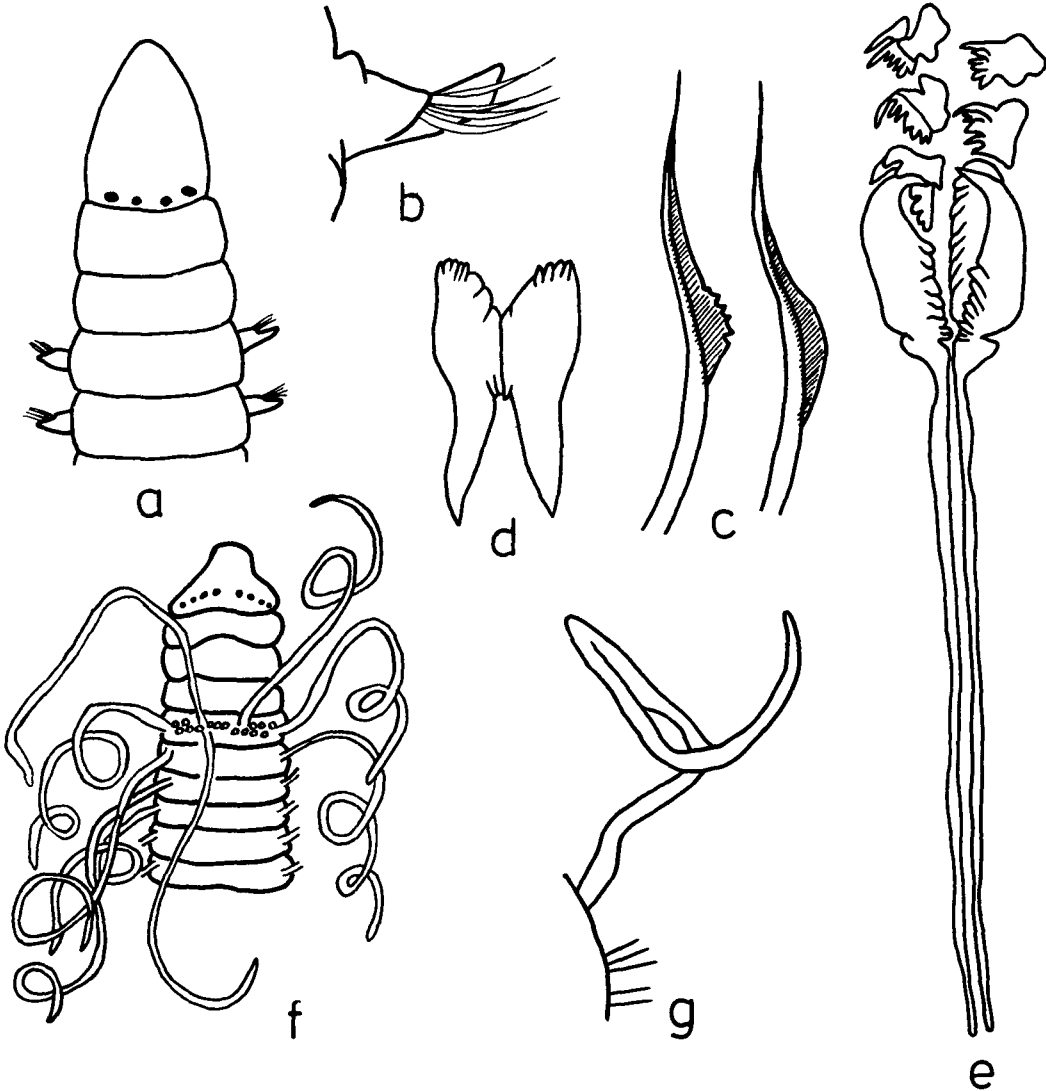


Fig. 9. ARABELLIDAE: *Arabella iricolor*: a, anterior end, dorsal view; b, median parapodium, anterior view; c, limbate setae from median parapodium; d, mandibles from above; e, maxillae. CIRRATULIDAE: *Cirratulus cirratus*: f, anterior end, dorsal view; g, median parapodium, anterior view. Sources: a-e, f, Uschakov (1955); g, Paik(1976) modified.

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4. First ventral peristomial cirrus thick and flask-shaped; Areas VII and VIII of proboscis with paragnaths in two to four rows of large cones, together with many small ones scattered on area VII (Fig.7i).....  
..... *Nereis heterocirrata*  
(See Treadwell 1931; Imajima and Hartman 1964; Wu 1967; Imajima 1972; Paik 1977, 1978)

4. Areas VII and VIII of proboscis with paragnaths in a row of large cones and 2 or 3 rows of very small ones on the oral side  
..... *Nereis pelagica*  
(See Marenzeller 1879; McIntosh 1885; Andrews 1891; Moore 1903; Izuka 1912; Fauvel 1923; Okuda 1939; Berkeley and Berkeley 1941; Okuda and Yamada 1954; Uschakov 1955; Imajima 1961, 1993, 1967, 1968; Pettibone 1954, 1956, 1963; Imajima and Hartman 1964; Uschakov and Wu 1965; Day 1967; Buzhinskaja 1967; Kirkegaard 1969; Imajima and Gamo 1970; Banse and Hobson 1974; Paik 1977)

EUNICIDAE Savigny, 1818

With 5 prostomial antennae; Peristomium without a pair dorsal cirri, Prostomium anteriorly incised, with eyes (Table.1, fig.E; Fig.8a, i).....*Marphysa sanguinea*  
(See Izuka 1912; Okuda 1933, 1938a, 1939; Okuda and Isikawa 1936; Okuda and Yamada 1954; Hartman 1961; Pettibone 1963; Imajima and Hartman 1964; Fauchald 1970; Paik 1975a, 1978; Rho and Song 1975)

ARABELLIDAE Hartman, 1944

Prostomium is bluntly conical, has 4 eyes (Fig.9a); Parapodia without thick, projecting acicula; Posterior parapodia without prominent postsetal process; Dorsum has 5 longitudinal dark blue bends.....*Arabella iricolor*  
(See Fauvel 1936; Okuda 1938a 1939, 1940; Okuda and Yamada 1954; Pettibone 1963; Imajima and Hartman 1964; Imajima and Gamo 1970; Banse and Hobson 1974; Rho and Song 1975; Paik 1976, 1978)

ORBINIIDAE Hartman, 1942

Prostomium is acutely pointed in front; Thoracic parapodia with slender, distally pointed setae only (Table 2, fig.A).....  
..... *Haploscoloplos elongatus*  
(See Okuda 1937c, 1938a; Imajima and Hartman 1964; Paik 1975a)

CIRRATULIDAE Carus, 1863

Without a pair of thick palpi; Without a median tentacle; Dorsal transverse tentacles inserted on a single anterior segment; Dorsal tentacles present on first setigerous segment; Prostomium with paired series of eyespots (Table 2, fig.B; Fig.9f, g).....*Cirratulus cirratus*  
(See Fauvel 1936; Hartman 1944, 1961; Uschakov 1955; Imajima and Hartman 1965; Paik 1976)

TEREBELLIDAE Malmgren, 1867

Ucini in double rows on some segments; Thorax consists of 17 setigerous segments; Branchiae number 3 pairs and are located on segments 2 to 4; Each branchia consists of a tuft of simple filaments arising from a thick, low stalk (Table 2, fig.C) ..... *Amphitrite cirrata*  
(See Moore 1903; Okuda 1937b, 1938a; Imajima and Hartman 1964)

SABELLIDAE Malmgren, 1867

Thoracic notopodia with longer, slenderer, to gradually short, broader setae; Thoracic neuropodia with avicular but no pick-axe setae; Radioles without stylodes; Ventral gland shields with a pair of small white spots (Table 2, fig.D; Fig.10a-c).....  
..... *Sabellastarte japonica*  
(See Okuda 1938a; Takahashi 1941; Okuda and Yamada 1954; Imajima and Hartman 1964; Rho and song 1974, 1975; Paik 1975a)

SERPULIDAE Savigny, 1818

- 1. Body symmetrical; With more than 3 thoracic setigerous segments.....2
- 1. Body asymmetrical; With 3 thoracic seti-

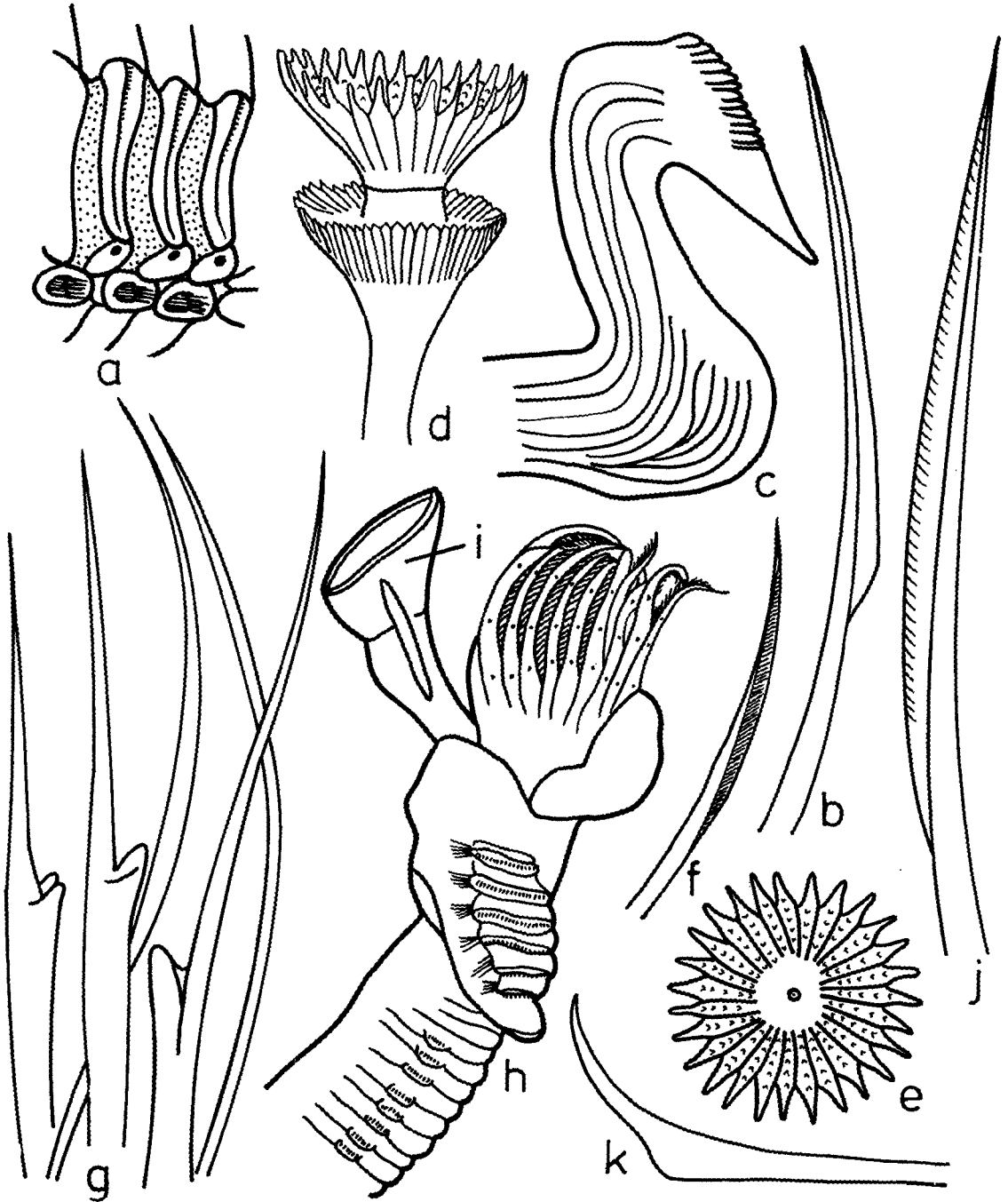


Fig.10. SABELLIDAE: *Sabellastarte japonica*: a, notopodial and neuropodial part from median segments, lateral view; b, limbate capillary seta; c, neuropodial avicular uncinus. SERPULIDAE: *Hydroides ezoensis*: d, operculum, lateral view; e, the same, upper view; f, limbate seta; g, capillary seta. *Pomatoleios kraussii*: h, anterior end, lateral view; i, operculum; j, thoracic seta; k, abdominal seta. Sources: a-c, Paik(1975); d-g, Uschakov(1955); h-k, Okuda(1937) modified.



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- gerous segments; Operculum with longitudinally ridged edge ..... *Dexiospira foraminosus*  
(See Moore and Bush 1904; Okuda 1938a; Okuda and Yamada 1954; Imajima and Hartman 1964)
2. Operculum present, its peduncle not a radiole ..... 3
2. Operculum absent; Radioles number 4 pairs ..... *Salmacina dysteri*  
(See Okuda 1937b, 1938a; Imajima and Hartman 1964)
3. Thoracic collar provided with capillary setae and bayonet-shaped setae with a pair of conical processes at base of blade; Operculum crown with spines on midline (Fig. 10d-g) ..... *Hydroides ezoensis*  
(See Okuda 1939; Imajima and Hartman 1964; Paik 1975)
3. Thoracic collar setae absent; Operculum is flat and has a white calcareous plate (Table 2, fig. E; Fig. 10h-k) ... *Pomatoleios kraussii*  
(See Okuda 1937b, 1940; Imajima and Hartman 1964; Straughan 1965; Zibrowius 1973)
- pl. 1, figs. g-j;  
Rho and Song, 1975, p. 99, pl. 2, fig. 12; pl. 8, figs. 1-4.

### *Lepidonotus helotypus* Grube, 1877.

*Polynoë(Lepidonotus) helotypus* Grube, 1877, p. 49.

*Polynoë(Lepidonotus) gymnotus*: Marenzeller, 1879, pp. 112-113, pl. 1, fig. 3.

*Polynoë gymnota*: Izuka, 1912, pp. 8-10, pl. 3, figs. 1-4.

*Lepidonotus helotypus*: Okuda, 1939, p. 224; Okuda and Yamada, 1954, p. 177; Imajima and Hartman, 1964, p. 25; Imajima and Gamo, 1970, p. 2, fig. 4; Rho and Song, 1974, p. 77, figs. 12-16; 1975, pp. 98-99; Paik, 1975a, p. 411, pl. 1, fig. 5.

### *Lepidonolus dantatus*

Okuda and Yamada 1954

*Lepidonotus dentatus* Okuda and Yamada, 1954, pp. 177-179, textfig. 1; Imajima and Hartman, 1964, p. 24; Rho and Song, 1975, p. 99, pl. 1, fig. 6; pl. 5, figs. 4-7.

### *Halosydna brevisetosa* Kinberg, 1855.

*Halosydna nebulosa*: Marenzeller, 1902a, p. 567, pl. 1, fig. 1.

*Polynoë vexillaria*: Izuka, 1912, pp. 27-30, pl. 1, fig. 2; pl. 3, figs. 12-14.

*Halosydna nebulosa*: Okuda, 1938a, p. 85.

*Halosydna brevisetosa*: Hartman, 1939, p. 34.

*Halosydna nebulosa*: Okuda, 1940, p. 7; Okuda and Yamada, 1954, p. 181.

*Halosydna brevisetosa*: Imajima and Hartman, 1964, p. 20; Imajima and Gamo, 1970, p. 4, figs. 6-7; Rho and Song, 1974, pp. 75-76, figs. 1-7; 1975, p. 100; Paik, 1975a, pp. 410-411, pl. 1, figs. 1-4.

### *Eumida sanguinea* (Oersted, 1843)

*Eumida sanguinea*: Izuka pl. 21, fig. 4.

*Eulalia(Eumida) sanguinea*: Okuda, 1938a, p. 88, fig. 9; 1939, p. 227; Okuda and Yamada, 1954, p. 182.

*Eumida sanguinea*: Imajima and Hartman, 1964, pp. 64-65, pl. 13, fig. e; Kirkegaard, 1969, p. 38, 1map; Paik, 1975a, pp. 411-412, pl. 1,

## SYNONYM

*Lepidonotus elongatus* Marenzeller, 1902

*Lepidonotus elongatus* Marenzeller, 1902a, pp. 571-572, pl. 1, fig. 5; Okuda, 1936d, pp. 562-563, textfigs. 1, 2; 1938a, pp. 82-83; Imajima and Hartman, 1964, pp. 24-25; Imajima and Gamo, 1970, pp. 2-4, fig. 5; Rho and Song, 1974, p. 76, figs. 8-11; 1975, p. 98; Paik, 1976, p. 233.

*Lepidonotus squamatus* (Linnaeus, 1767)

*Aphrodita squamata* Linnaeus, 1766, p. 1804.

*Lepidonotus squamatus*: Marenzeller, 1902a, pp. 570-571, pl. 1, fig. 3.

*Lepidonotus caelorus*: Moore, 1903, pp. 412-414, pl. 23, fig. 12.

*Polynoë squamata*: Izuka, 1912, pp. 12-15, pl. 3, figs. 7-9.

*Polynoë caelora*: Izuka, 1912, pp. 23-25.

*Lepidonotus squamatus*: Okuda and Yamada, 1954, p. 177; Imajima and Hartman, 1964, pp. 26-27,

fig. 9.

***Syllis scerolaema*** Ehlers, 1901.

*Syllis scerolaema* Ehlers, 1901, p. 86, pl. 10, figs. 1, 2; Monro, 1930, p. 102, textfig. 35; Berkeley and Berkeley, 1938, p. 40, textfig. 5; Hartman, 1953, p. 20, textfig. 2; Imajima and Hartman, 1964, pp. 122—124, pl. 28, figs. i, j; pl. 29, figs. a—i.

***Typosyllis fasciata*** (Malmgren, 1867)

*Syllis fasciata*: Berkeley and Berkeley, 1948, p. 74, textfigs. 109—110.

*Syllis*(*Typosyllis*) *fasciata*: Uschakov, 1955, p. 180, textfigs. 46, 51.

*Typosyllis fasciata*: Imajima and Hartman, 1964, pp. 135—136, pl. 33, figs. j—o; Imajima, 1966, p. 276; Paik, 1976, pp. 234—235, fig. 14.

***Trypanosyllis*(*T.*) *zebra*** (Grube, 1860)

*Trypanosyllis zebra*: Fauvel, 1934, p. 311.

*Trypanosyllis*(*T.*) *zebra*: Imajima and Hartman, 1964, p. 125; Imajima, 1966, p. 236; Paik, 1975a, p. 412, pl. 2, figs. 14—15.

***Perinereis nuntia*** (Savigny, 1818)

*Lycoris nuntia* Savigny, 1818, p. 33.

*Perinereis nuntia*: Fauvel, 1919, pp. 410—415; 1930, pp. 528—529.

*Perinereis nuntia* var. *vallata*: Fauvel, 1919, pp. 418—419; 1932, pp. 110—111; 1953, p. 215; Knox, 1951, pp. 218—219, pl. 45, figs. 9—10; pl. 46, figs. 11—13; 1960, pp. 122—124, fig. 181; Pillai, 1961, pp. 7—9, fig. 2, G—H, fig. 3, A—H; Chlebovitsch and Wu, 1962, pp. 40, 51—52, pl. 3, z; Day, 1967, p. 334, fig. 14, 12, p—s; Imajima, 1972, pp. 92—94, fig. 26; Paik, p. 131, fig. 2, a—h; Rho and Song, 1974, p. 79; 1975, pp. 101—102.

*Nereis mictodonla*: Marenzeller, 1879, pp. 118—119, pl. 2, fig. 2; Izuka, 1912, pp. 148—151, pl. 16, fig. 1—6.

*Perinereis nuntia* var. *brevicirris*: Fauvel, 1919, pp. 417—418; 1932, p. 110; 1936, pp. 63—64; 1953, p. 214, fig. 109, a—b; Okuda, 1938a, p. 92; 1939, p. 231; Knox, 1951, pp. 219—220, pl. 46, figs. 14—18; 1960, p. 124; Okuda and

Yamada, 1954, p. 184, textfig. 3, E; Silva, 1961, p. 175; Chlebovitsch and Wu, 1962, p. 40, pl. 3, z; Imajima, 1972, pp. 94—96, fig. 26; Paik, 1972, pp. 131—132, fig. 2, i—j; Rho and Song, 1974, p. 80.

*Perinereis brevicirris*: Imajima and Hartman, 1964, pp. 151—152; Wu, 1967, pp. 71—72, fig. 11, a—d; Imajima, 1968, p. 28, fig. 11, e—f; Imajima and Gamo, 1970, p. 14, figs. 59—60.

*Perinereis nuntia*: Paik, 1975b, pp. 242—244, figs. 1—2; 1977, pp. 176—178, fig. 18, A—G; 1978, pp. 369—370, pl. II, figs. 1—4.

***Perinereis cultrifera*** (Grube, 1840)

*Nereis cultrifera*: Izuka, 1912, pp. 151—153, pl. 16, figs. 7—14.

*Perinereis cultrifera*: Fauvel, 1919, p. 410; 1923, pp. 352—354, fig. 137, a—1; 1930, pp. 527—528; 1936, pp. 62—63; Okuda, 1938a, p. 92; 1950, p. 52, figs. i—j; Hartman, 1948, p. 72; Day, 1953, p. 426; 1962, p. 640; 1967, p. 337, fig. 14, 13, o—q; Okuda and Yamada, 1954, p. 185, textfig. 3, F; Imajima and Hartman, 1964, p. 152; Uschakov and Wu, 1965, pp. 200—201; Wu, 1967, pp. 66—67; Imajima, 1968, p. 28, fig. 11, g; 1972, pp. 88—91, fig. 24; Rullier and Amoureux, 1970, pp. 122—123; Imajima and Gamo, 1970, pp. 12—14, figs. 55—58; Paik, 1977, pp. 174—176, fig. 17, A—G.

***Nereis heterocirrata*** Treadwell, 1931.

*Nereis heterocirrata* Treadwell, 1931, pp. 1—2, fig. 1, a—e; Imajima and Hartman, 1964, pp. 146—147; Wu, 1967, p. 62, fig. 7, a—d; Imajima, 1972, pp. 125—129, fig. 41, a—m, fig. 42, a—e; Paik, 1977, pp. 187—189, fig. 23, A—F; 1978, pp. 370—371, pl. IV, figs. 1—4.

***Nereis pelagica*** Linnaeus, 1758.

*Nereis pelagica*: Marenzeller, 1879, p. 122; McIntosh, 1885, p. 216; Andrews, 1891, p. 284; Moore, 1903, p. 431; Izuka, 1912, pp. 154—156, pl. 17, figs. 1—6; Fauvel, 1923, pp. 336—337, fig. 130, a—f; Okuda, 1939, p. 230; Berkeley and Berkeley, 1941, p. 31; Okuda and Yamada, 1954, p. 184, textfig. 3, D; Pettibone, 1954,

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- pp. 264—265, fig. 30, a, b; 1956, p. 557; 1963, pp. 179—181, fig. 42, d-h; Uschakov, 1955, p. 211, fig. 66, g-n; Imajima, 1961, pp. 85—87; 1963, pp. 353—354; 1967, p. 422; 1968, pp. 28—29, fig. 11, h; Imajima and Hartman, 1964, pp. 147—148; Uschakov and Wu, 1965, p. 199; Day, 1967, p. 315, fig. 14, 7, f-j, Buzhinskaja, 1967, p. 89; Kirkegaard, 1969, pp. 43—44; Imajima and Gamo, 1970, p. 10, fig. 37—42; Banse and Hobson, 1974, p. 70; Paik, 1977, pp. 193—195, fig. 26, A-F.
- Neanthes japonica*** (Izuka, 1908)  
*Nereis japonica* Izuka, 1908, pp. 295—305, textfigs. 4; 1912, pp. 163—169, pl. 17, figs. 14—16, 18, textfigs. 4; Okuda, 1933, pp. 247—248, pl. 13, figs. i-j; 1935, p. 243; Okuda and Isikawa, 1936, pp. 33—34; Okuda and Yamada, 1954, pp. 182—183, textfig. 3, A; Uschakov, 1955, pp. 209—210, fig. 65; Wu and Chen, 1963, pp. 22—23; Uschakov and Wn, 1965, p. 198.
- Neanthes diversicolor*: Imajima and Hartman, 1964, pp. 143—144.
- Neanthes japonica*: Imajima, 1972, pp. 102—105, fig. 30; Paik, 1972, pp. 132—135, fig. 3, a-i; 1977, pp. 196—198, fig. 27, A-F; 1978, p. 371, pl. IV, figs. 8—9; pl. V, figs. 1—2; Rho and Song, 1974, p. 80; 1975, p. 101.
- Marphysa sanguinea*** (Montagu, 1807)  
*Marphysa iwamushi*: Izuka 1912, pp. 131—133, pl. 1, fig. 8; pl. 14, figs. 11—16; Okuda, 1933, p. 247, pl. 13, figs. a—e.
- Marphysa sanguinea*: Okuda and Yamada, 1954, p. 188; Hartman, 1961, pp. 84—85; Imajima and Hartman 1964, pp. 259—260; Fauchald, 1970, pp. 64—66; Paik, 1975a, pp. 417—418, pl. 7, figs. 57—64; 1978, p. 372, pl. V, fig. 9; pl. VI, fig. 1; Rho and Song, 1975, pp. 103—104.
- Arabella iricolor*** (Montagu, 1804)  
*Arabella iricolor*: Fauvel, 1936, p. 70; Okuda, 1938a, p. 97; 1939, p. 236; 1940, p. 18; Okuda and Yamada, 1954, p. 189; Imajima and Hartman, 1964, p. 265; Imajima and Gamo, 1970, p. 16, fig. 65; Banse and Hobson, 1974, p. 89, fig. 25, a; Rho and Song, 1975, p. 104, pl. 2, fig. 8; pl. 4, figs. 8—10, Paik, 1976, p. 238, figs. 28—29; 1978, p. 373, pl. VI, figs. 4—5.
- Haploscoloplos elongatus*** (Johnson, 1901)  
*Haploscoloplos kerguelensis*: Okuda, 1937c, pp. 103—104, textfigs. 5, 6; 1938a, p. 98; 1939, p. 238.
- Haploscoloplos elongatus*: Imajima and Hartman, 1964, p. 274; Paik, 1975a, p. 419, pl. 8, fig. 69.
- Cirratulus cirratus*** (Müller, 1776)  
*Cirratulus cirratus*: Fauvel, 1936, pp. 72—73; Hartman, 1944, p. 263; 1961, p. 105; Uschakov, 1955, pp. 198—299, pl. 109, fig. d; Imajima and Hartman, 1964, p. 298; Paik, 1976, pp. 238—239, figs. 30—31.
- Amphitrite cirrata*** Müller, 1771.  
*Amphitrite cirrata*: Moore, 1903, p. 473; Okuda, 1937b, p. 58; 1938a, p. 102; Imajima and Hartman, 1964, p. 335.
- Sabellastarte japonica*** (Marenzeller, 1884)  
*Sabellastarte indica*: Okuda, 1938a, p. 103; Takahashi, 1941, pp. 109—113; Okuda and Yamada, 1954, pp. 196—197.
- Sabellastarte japonica*: Imajima and Hartman, 1964, p. 364; Rho and Song, 1974, pp. 82—83, figs. 41—43; 1975, p. 105; Paik, 1975a, p. 423, pl. 9, figs. 79—84.
- Pomatoleios kraussii*** (Baird, 1864)  
*Pomatoleios crosslandi*: Okuda, 1937b, pp. 64—67, pl. 2, fig. 1, textfigs. 11, 12,
- Pomatoleios kraussii*: Imajima and Hartman, 1964, p. 372; Straughan, 1965, p. 235; Zibrowius, 1973, pp. 72—73; Paik, 1975a, p. 424.
- Hydroides ezoensis*** Okuda, 1934  
*Hydroides ezoensis* Okuda, 1934e, pp. 239—242; 1939, p. 243; Imajima and Hartman, 1964, p. 369; Paik, 1975a, pp. 423—424, pl. 9, fig. 88.
- Salmacina dysteri*** (Huxley, 1855)  
*Salmacina dysteri*: Okuda, 1937b, p. 67, pl. 2, fig. J; 1938a, p. 104; Imajima and Hartman, 1964, pp. 376—377.
- Dexiospira foraminosus*** (Bush, 1904)

*Spirorbis foraminosus* Bush, in Moore and Bush, 1904, pp.176—177, textfigs. c—e; Okuda, 1938a, p.104; Okuda and Yamada, 1954, p.198; Imajima and Hartman, 1964, pp.378—379.

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(In Japanese with English Summary)

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