

## Some Phyllodocid Polychaetes from Kwangyang Bay, Korea

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광양만의 부채발갯지렁이류

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### 요 약

1983년 2월부터 1985년 4월까지 광양만에서 채집된 갯지렁이류중 연성저질에 서식하는 부채발갯지렁이류를 조사한 결과 1 신종, *Anaitides koreana*, n. sp.와 1 미기록종 *A. chinensis*를 포함하여 모두 4종의 부채발갯지렁이를 얻었기에 보고한다.

이들 중 미기록된 종의 우리말 이름은 각각 한국부채발갯지렁이(*A. chinensis*)와 중국부채발갯지렁이 *A. chinensis*로 명명 기재한다.

Key words: Phyllodocid Polychaetes, Kwangyang.

### INTRODUCTION

The phyllodocids are widely distributed in the habitat and mainly associated with hard substrates. The family Phyllodocidae is one of the largest group of Polychaeta which is comprising more than 30 genera and 290 species. Bergström(1914) published a monograph on the Phyllodocidae with a much detailed classification of genera which is not correct in all respects. There are a lot of studies compiled by Berkeley and Berkeley(1948), Hartman(1968), Imajima and Hartman(1964) and Uschakov(1972) etc. in the North Pacific coasts.

The main diagnostic characters are the formation of papillae on the proboscis, the shapes of the parapodial lobe and their cirri, and body coloration. The form of tentacular cirri of first anterior segments should be used to as important identificatory character. It would be simplified to a tentacular formula as following:  $(1 + O \frac{1}{1}) + S \frac{1}{N}$ . Symbols; 1: present a elongate tentacular cirrus, S or O: setae present or absent, N: present a normal cirrus, ( ): fused segments.

Phyllodocids reported from Korean coasts have been also concerned mainly with the hard

substrates of intertidal zone. These taxonomical studies have been performed by Paik(1975, 1976, 1978, 1979, 1982 & 1984) and Rho and Song(1975) and by these studies 7 species(*Mysta ornata*, *Nipponophyllum japonicum*, *Eulalia viridis*, *Eulalia bilineata*, *Anaitides maculata*, *Genetyllis castania*, *Eumida sanguinea*) are known. On the soft substrates of sublittoral zone, only one phyllodocid polychaete, *Eteone longa*, is reported by Lee(1976).

In this paper, four species of the phyllodocids occurring on the soft substrates of the sublittoral zone of Kwangyang Bay in the southern coast of Korea are presented.

The specimens were based on collections obtained every two months periodically from Feb. 1983 to Apr. 1985 using the van-Veen grab. All of samples were narcotized with a solution of 7% MgCl<sub>2</sub> in sea water and in about half an hour fixed with 10% neutral formalin.

The type specimen and most of the remaining collections have been deposited in Biological Oceanography Laboratory in KORDI, Seoul.

## DESCRIPTION OF PHYLLODOCIDS SPECIES

*Anaitides koreana*, n. sp. 한국부채발갯지렁이(신칭) (fig. 1)

Collection : Accounted only rather complete and clear 26 specimens of 284 individuals collected (Table 1).

**Description:** Body slender and relatively long. Complete specimen with 166 segments 44mm long and 2.0mm wide excluding setae at widest segment. Coloration of body preserved in formalin lightish yellow with three longitudinal dark(almost black) pigments on the dorsal side and a dark narrow longitudinal stripe on the ventral side. Mature specimens reddish excepting anterior some segments. Reddish region of the body with numerous eggs within their parapodia(paratype specimens of No. 4,5 and 26 in April). Eggs round, 64-93 um in diameter.

Prostomium heart-shaped, longer than wide. Two pairs of antennae inserted at convexed frontal margin of the prostomium, short and subequal. Two eyes on the posterior third of prostomium large and purple. A nuchal papilla present in the posterior incision of the prostomial lobes.

Basal part of eversible proboscis expanded like ballon; with 6 longitudinal rows of papillae on each lateral side, 15-17 papillae in each row and median row absent. Middle part with dark pigment and wrinkled. Distal cirlet with 17 large marginal papillae(Fig. 1, A).

Four pairs of tentacular cirri cylindrical and tapered at the end. Longest tentacular dorsal cirri on 3rd segment reaching 14th segment. On 2nd and 3rd segment setae absent and on 3rd segment normal cirrus present. First two segment fused. Tentacular formula of anterior segments;  $(1+O\frac{1}{1})+O\frac{1}{N}$ .

Parapodia uniramous. Parapodial lobe bilobed by aciculum; upper lip somewhat larger than lower one. Dorsal cirri nearly symmetrical, as long as wide and heart-shaped with the

Table 1. Material of *Anaitides koreana*, n. sp.

No.	Collecting date	Width	Length	No. of segments	Remarks
1	Feb. 27, 1985	2.0mm	44.0mm	166	CS
2	Feb. 24, 1983	1.6	8.9	40	AF
3	Apr. 16, 1983	1.8	38.8	142	AF
4	Apr. 16, 1983	1.9	39.2	159	CS+
5	Apr. 16, 1983	2.3	33.0	148	CS+
6	Jul. 26, 1983	2.1	25.7	117	AF
7	Dec. 23, 1983	1.8	20.1	85	CS
8	Feb. 21, 1984	1.9	26.5	84	AF
9	Feb. 21, 1984	1.8	26.3	91	AF
10	Feb. 21, 1984	1.9	59.2	127	AF
11	Feb. 21, 1984	1.8	39.5	106	AF
12	Feb. 21, 1984	2.0	44.3	129	AF
13	Jun. 14, 1984	1.9	35.0	78	AF
14	Oct. 31, 1984	1.6	36.1	114	AF
15	Dec. 18, 1984	1.9	13.3	56	AF
16	Dec. 18, 1984	1.9	19.1	73	AF
17	Dec. 18, 1984	2.0	29.6	100	AF
18	Feb. 27, 1985	2.0	26.6	97	AF
19	Feb. 27, 1985	1.9	25.4	81	AF
20	Feb. 27, 1985	1.7	24.3	76	AF
21	Feb. 27, 1985	2.1	36.6	112	AF
22	Feb. 27, 1985	1.9	52.0	159	AF
23	Feb. 27, 1985	2.0	86.0	207	AF
24	Apr. 3, 1985	2.4	7.2	30	AF
25	Apr. 3, 1985	2.0	7.9	36	AF
26	Apr. 3, 1985	2.2	18.6	75	AF+

CS: complete specimen, AF: anterior fragment, +: mature specimen, Holotype: No. 1, Paratypes: No. 2-No. 26.

round tip but toward posterior region of body gradually smaller, slenderer and asymmetrical(Fig. 1, D, E & F). Ventral cirri somewhat broad and pointed at the tip; about 1.5 times as long as parapodial lobe and tapered toward the posterior end of body. Parapodia and its cirri of mature specimens somewhat thicker than immature specimen's(Fig. 1, B & E).

Setae composite, spinigerous and minutely serrated at one margin(Fig. 1, C).

A pair of anal cirri very long, more than 6 times longer than wide(Fig. 1, G).

Additional material examined: Feb. 1983(11 inds.), Apr. 1983(31 inds.), Jun. 1983(1 ind.), Aug. 1983(3 inds.), Dec. 1983(12 inds.), Feb. 1984(73 inds.), Apr. 1984(20 inds.) Jun. 1984(5 inds.), Jul. 1984(2 inds.), Oct. 1984(1 ind.), Dec. 1984(13 inds.), Feb. 1985(53 inds.), Apr. 1985(33 inds.).

**Remark:** Present specimens somewhat resemble to some other species of genus *Anaitides*. The present specimens nearly agree with *Anaitides groenlandica* and *A. mucosa* in the

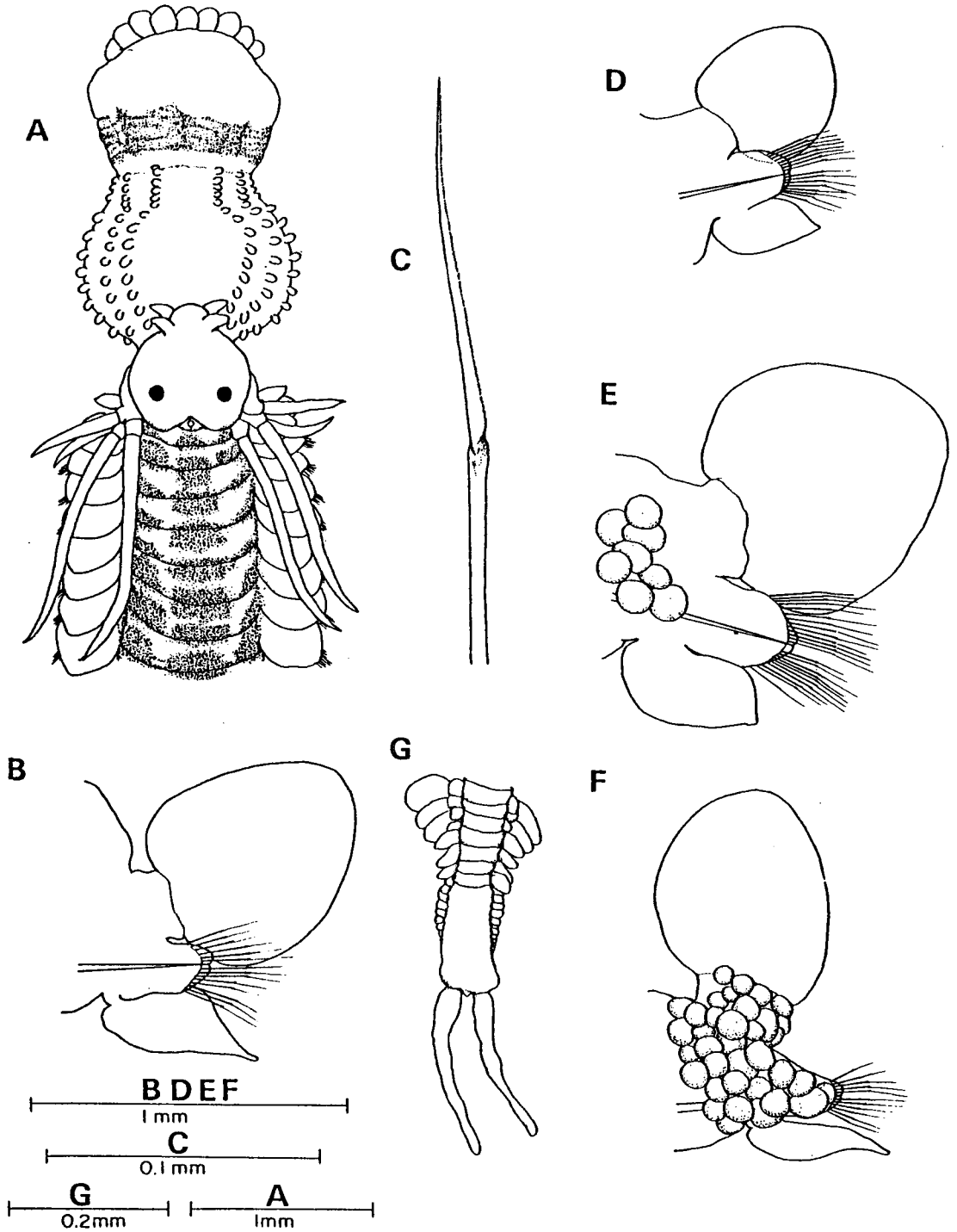







Fig. 1. *Anaitides koreana*, n. sp.

A, Anterior end with eversible proboscis; B, 22nd parapodium (anterior view); C, seta; D, 9th parapodium (anterior view); E, 24th parapodium with eggs (anterior view); F, 79th parapodium with eggs (anterior view); G, posterior end (dorsal view).

Table 2. Distinguishing characteristics of *Anaitides koreana*, n. sp. and other neighboring species.

Species	Tentacular formula	Proboscis	Parapodia	Remark
<i>Anaitides koreana</i>	$(1+0\frac{1}{1})+O\frac{1}{N}$	without median row 6 longitudinal rows on each side 15-17 papillae in each row 17 marginal papillae		Specimens
<i>Anaitides groenlandica</i>	$(1+0\frac{1}{1})+S\frac{1}{N}$	without median row 6 longitudinal rows on each side 15-17 papillae in each row 17 marginal papillae		Ushakov (1972)
<i>Anaitides mucosa</i>	$(1+0\frac{1}{1})+S\frac{1}{N}$	without median row 6 longitudinal rows on each side 8-12 papillae in each row marginal papillae unknown		Pettibone (1963)
<i>Anaitides maculata</i>	$(1+0\frac{1}{1})+S\frac{1}{N}$	median row unknown 6 longitudinal row on each side 6-8 or 7-9 papillae in each row 16-17 marginal papillae		Ushakov (1972) Imajima & Hartman (1964)
<i>Anaitides longipes</i>	$(1+0\frac{1}{1})+O\frac{1}{N}$	with a median row 6 longitudinal row on each side about 14 papillae in each row 15 marginal papillae Present		Day (1963, 1967)

characters of proboscis and these are similar to *A. mucosa*, *A. maculata* and *A. longipes* in the parapodial feature, however, their distinguishing characteristics are summarized in Table 2.

**Habitat** : Clayey silt, silty clay and silty sand bottom in 8.5-32m deep. Present species is most abundant of phyllodocids from the Kwangyang Bay.

*Anaitides chinensis* Uschakov and Wu, 1959 중국부채발갯지렁이(신칭) (Fig. 2)

*Anaitides chinensis* Uschakov and Wu, 1959, (pp.22-23, pl. I, A-B); Uschakov, 1972, (p. 131, pl. W, 2-4).

**Collection** : Accounted only rather complete and clear 4 specimens of 16 individuals collected (Table 3)

Table 3. Material of *Anaitides chinensis*.

No.	Collecting date	Width	Length	No. of segment	Remark
1	Aug. 3, 1983	1.6mm	25mm	95	AF
2	Dec. 23, 1983	4.7mm	41mm	96	AF
3	Dec. 23, 1983	3.5mm	37.2mm	148	AF
4	Oct. 31, 1984	4.1mm	89.2mm	235	CS

**Description** : Body long and slender. Complete specimen with 235 segments 89.2mm long and 4.1mm wide excluding setae at widest segment. Body color in formalin yellowish green or brown with three longitudinal dark stripes on dorsal side.

Prostomium heart-shaped, wider than long with two pairs of antennae. A nuchal papilla present in the shallow posterior incision of prostomium.

Eversible proboscis very long, large and cylindrical with 17 marginal papillae. Basal part of proboscis with lateral rows on each side (7-9 scale-like papillae in each row) and 2 median rows dorsally (4 and 5 papillae in each row) (Fig. 2, A).

Longest tentacular cirri on 3rd segment reached 11th segment. Tentacular formula ;  $(1+0\frac{1}{1})+0\frac{1}{0}$ . Setae and normal cirrus on 2nd and 3rd segment absent.

Parapodia uniramous. Parapodial lobe bilobed by aciculum; the upper lip much larger than the lower. Dorsal cirri bean-shaped and very wide, nearly twice as wide as long; their margin markedly thin and weakly pigmented on the dorsal part. Dorsal cirri in the middle part of the body partly covering lateral region of each segment. Ventral cirri slightly pointed and rather longer than podial lobe (Fig. 2, C).

Setae composite, spinigerous and minutely serrated at one margin (Fig. 2, B).

A pair of anal cirri conical, more than twice as long as wide (Fig. 2, D).

**Remark** : Present specimens agree with the description of Uschakov and Wu (1959). They are distinguished in the pigmented stripes of thie body by having three rows in the former instead of a dark lonitudinal stripe in the latter. However, it seems that the lateral pigm-

entations of 3 longitudinal rows become looked weakly or lost like Uschakov and Wu's. In the description of the species, it is difficult to regard the coloration of the body as the taxonomical character of the species because it can be changeable owing to the environments or fixative solution in lab. Present species is similar to *A. madriensis* in having the scale-like papillae on the proboscis. The former has two median rows, however, the later only one median row. Present species clearly differs in the characters of anterior segments, that is, tentacular formula, as follows; *A. madriensis*,  $(1+0\frac{1}{1})+1\frac{1}{N}$  and *A. chinensis*  $(1+0\frac{1}{1})+0\frac{1}{0}$ . Furthermore, present species has a characteristic pygidium with the small and conical anal cirri. As its length is roughly 2.5 times longer than its width, its proximal part is wider compared to the other species of the same genus.

The species is new to Korea.

Distribution : Yellow Sea.

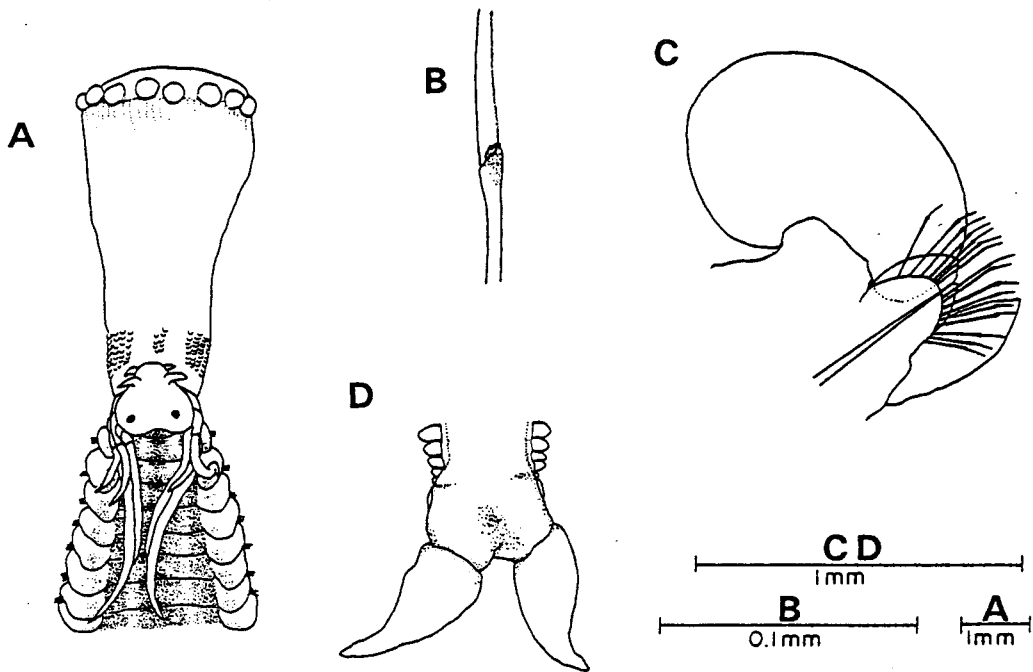


Fig. 2. *Anaitides chinensis* Uschakov and Wu.

A, anterior end with eversible proboscis; B, middle part of seta; C, 17th parapodium (anterior view); D, posterior end (dorsal view).

Habitat : Clayey silty, silt clay and silty bottom, 17.5-32m deep in Kwangyang Bay.

*Eumida sanguinea* (Oersted, 1843) 심장부채발갯지렁이

*Eulalia longicornuta*: Moore, 1906, (p. 222, pl. 10, figs. 7-8).

*Eulalia tubiformis*: Moore, 1909, (p. 342, pl. 16, figs. 22-23).

*Eulalia sanguinea*: Berkeley and Berkeley, 1948, (p. 47, fig. 69); Okuda and Yamada, 1954, (pp. 182); Uschakov, 1955, (p. 98, fig. 6, D); Uschakov and Wu, 1959, (pp. 88-90).

*Eumida sanguinea*: Uschakov, 1972, (pp. 153-154, pl. X, fig. 4-5); Pettibone, 1963, (pp. 88-90, fig. 21, a-b); Imajima and Hartman, 1964, (pp. 64-65, pl. 13, fig. 3); Paik, 1975, (pp. 411-412, pl. 1, fig. 9); 1979, (pp. 57-58, fig. 5, a-c); 1982, (p. 722, pl. 7, f-g.).

Collection : 21 specimens

Distribution : World-wide (cosmopolitan) species Pacific Ocean (Kamchatka to Sea of Japan, Yellow Sea, Southern Coast of Korea, New Zealand, California), Indian Ocean, Atlantic Ocean (Iceland, Norway to France, Gulf of Mexico, Venezuela), Korea (Chungmu, Gõmundo, Baegto)

Habitat : Clayey silt, Silty clay and Silty sand bottom, 8.5-32m deep in Kwangyang Bay.

***Eteone longa* (Fabricius, 1780) 길쭉부채발갯지렁이**

*Eteone longa*: Fauvel, 1923, (172-173, fig. 62, a-d); Uschakov, 1955, (101, fig. 8, A);

Pettibone, 1963, (73-74, fig. 16, e); Imajima and Hartman, 1964, (61, pl. 12, figs. d-g); Uschakov and Wu, 1965, (154-155); Lee, 1976, (61-62, fig. 7, A-C).

*Eteone longa* var. *robertiana*: Berkeley and Berkeley, 1954, (459).

Collection : 57 specimens

Distribution : A widely distributed arctic-boreal circumpolar species. Arctic Sea, Pacific Ocean (Bering Sea to Mexico, Yellow Sea, Southern Coast of Korea) Atlantic Ocean (Norway to English Channel, Hudson Bay to North Carolina), Mediterranean Sea, Korea (Pusan).

Habitat : Clayey silt, silty clay and silty sand bottom, 8.2-32m deep in Kwangyang Bay.

## ABSTRACT

Materials were collected from Kwangyang Bay of Korea during the period from February 1983 to April 1985. In the present study, phyllodocid polychaetes of 4 species in 3 genera are recognized from the soft substrates. The material includes one new species, *Anaitides koreana*, n. sp. and one unrecorded species, *Anaitides chinensis*.

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