

## A Taxonomic Study of Leeches, Hirudinidae (Gnathobdellida: Hirudinea) from Chölla-do, Korea

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전라도산 거머리과(턱거머리목 : 거머리강)의 분류학적 연구

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### 적 요

저자들은 1983년 3월부터 1985년 9월에 걸쳐 전라도 지역의 강과 하천 20여개 지점에서 채집된 거머리류를 대상으로 정리한 결과 거머리과의 2속 4종을 동정하였다. 이 중 *Whitmania acranulata* 와 *Whitmania edentula* 는 미기록종이며, *W. edentula* 는 일본산 종과는 외부형태학적 변이가 다소 심한 차이를 보인다.

Key words: Taxonomy, Hirudinidae, Chölla-do, Korea

### INTRODUCTION

Gnathobdellida in Hirudinea is an isolated taxon and including Acanthobdellida, Rhynchobdellida and Pharyngobdellia, it is dealt with primitive aquatic leeches. 15 species inhabit the Sino-Japanese region and they are big form of which length is about 200mm. Gnathobdellidis are carnivores which are parasitic on mammalia for sucking blood or prey upon not only small insects and crustaceans but also especially snails.

There has been little works done on the fauna of the Korean leeches so far. Oka (1925) recorded *Torix tagoi* in Glossiphonidae and recorded only *Hirudo nipponia* and *Whitmania pigra* in Hirudinea.

Authors worked on the fauna of Chölla-do leeches and identified 4 species in Hirudinea of which 2 species, *Whitmania acranulata* and *Whitmania edentula*, are first recorded in Korea.

## MATERIALS AND METHODS

The materials examined in this study consist of the specimens collected from their hosts; fishes, shellfishes and amphibians and from swamps or under stones in rivers. They are collected during the period from March 1983 to September 1985. 20 plots are determined for collecting sites. At the time of examination, materials should be lively soaked in tepid water about 50°C. This allows the materials to extend and die. For the detailed examination of annuli, the samples were soaked in 1% chrome acid or were injected by 1% chrome acid in the mouth. After one day, the samples were washed, fixed by 80% alcohol or 5% formalin and then examined on the surface. The classification system in the present study was based on the Caballero (1952) and Nagao (1967).

## SYSTEMATICS

Class Hirudinea      거머리강  
 Order Gnathobdellida      턱거머리목  
 Family Hirudinidae Whitman, 1886      거머리과

Hirudinidae Whitman, 1886, 349-392.

Type genus: *Hirudo* Linnaeus, 1758.

Type locality: Europe-Westasia.

### Key to the genera and species of Hirudinidae of Korea

- 1(2). Well developed jaw; a large number of tooth projections like saw; 22 annuli between 5th eye and male genitalia ..... Genus *Hirudo*  
 ..... *Hirudo nipponia*
- 2(1). Poor developed jaw; a small number of tooth projections or scarce, irregular; tooth 15-30 pairs; each segment with 5 annuli, dorsal marking similar to the texture of silk, the depth of furrow regular; 24 annuli between 5th eye and male genitalia, 17 complete segments ..... Genus *Whitmannia*
- 3(4,5). 5 dorsal lines dark black, big; male and female pore open around the boundary between segments ..... *Whitmania pigra*
- 4(3,5). Dorsal part dark brown; a large yellow vertical line and horizontal lines in the middle dorsal part or instead of 4 horizontal lines with a large yellow vertical line ..... *Whitmania edentula*
- 5(3,4). Dorsal part yellowish brown; longitudinal marking dark black ..... *Whitmania acranulata*

Genus *Hirudo* Linnaeus, 1758

*Hirudo* Linnaeus, 1758 (p. 649); Moquin-Tandon, 1846 (pp. 326-327); Diesing, 1850 (p. 485); Whitman, 1886 (pp. 364-365); Apathy, 1888 (pp. 743-746, 793-794); Blanchard, 1894 (p. 39); Harding, 1910 (p. 171); Rousseau, 1912 (p. 280); Gedroyc, 1915 (p. 71); Moore, 1927 (p. 189); Harant, 1929 (pp. 639-641); Pawlowski, 1936 (p. 134); Autrum, 1958 (p. 13); Richardson, 1969 (pp. 102-103); Soos, 1969 (p. 163); Lukin, 1976 (pp. 353-371).

*Latrobdella*: De. Blainville, 1827 (p. 252)

*Sanguisuga*: Savigny, 1822 (pp. 107, 113-114).

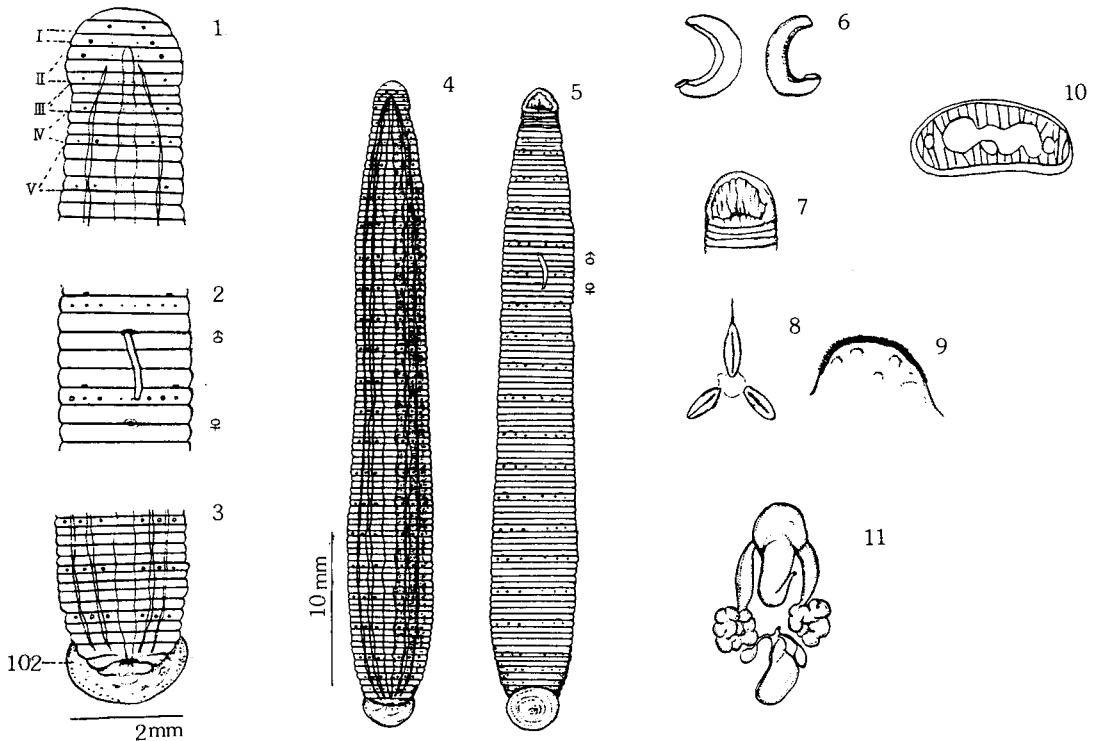
Type species: *Hirudo medicinalis* Linnaeus, 1758.

Type locality: Europe-Westasia.

**1. *Hirudo nipponia* Whitman 1886** 참거머리 (개칭) (Figs. 1-11)

*H. nipponia* Whitman, 1886, (pp. 349, 357, pl. XVIII, figs., 10-20, pl. XXI, figs. 65, 70 ; Moore, 1924 (p. 373); Moore, 1930 (p. 185).

*H. nipponia* var. *jaejamana*: Oka, 1910 (PP. 181-182).



**Fig. 1-11.** *Hirudo nipponia*. 1, head; 2, gonad segment; 3, anus dorsal to posterior sucker; 4, body (dorsal); 5, body (ventral); 6, contraction of body; 7,8, jaws; 9, teeth; 10, crosssection of body; 11, reproductive system.

**Collecting Site:** Chŏnbuk: Puan Sŏyuri (27, III, 1983), Koch'ang Asan-kyo (29, IV, 1984), Namwŏn Yochŏnsu (15, VIII, 1983), Iri Mangyŏng (13, IV; 1983), Changsu ch'ŏn (10, X, 1984). Chŏnnam: Changsŏng Hwangnyong-keyo (28, v, 1983; VI, 1985).

**Distribution:** Korea, Japan, Formosa, China, Mongolia, Manchuria.

Genus *Whitmania* Blanchard, 1888

*Whitmania* Blanchard, 1888 (pp. 139, 155); Blanchard, 1896 (p. 322); Oka, 1925 (pp. 320-325); Moore, 1927 (pp. 168-169); Oka, 1931 (pp. 387-389); Soos, 1969 (pp. 189-190); Lukin, 1976 (pp. 387-389).

*Leptostoma*: Whitman, 1886 (p. 376).

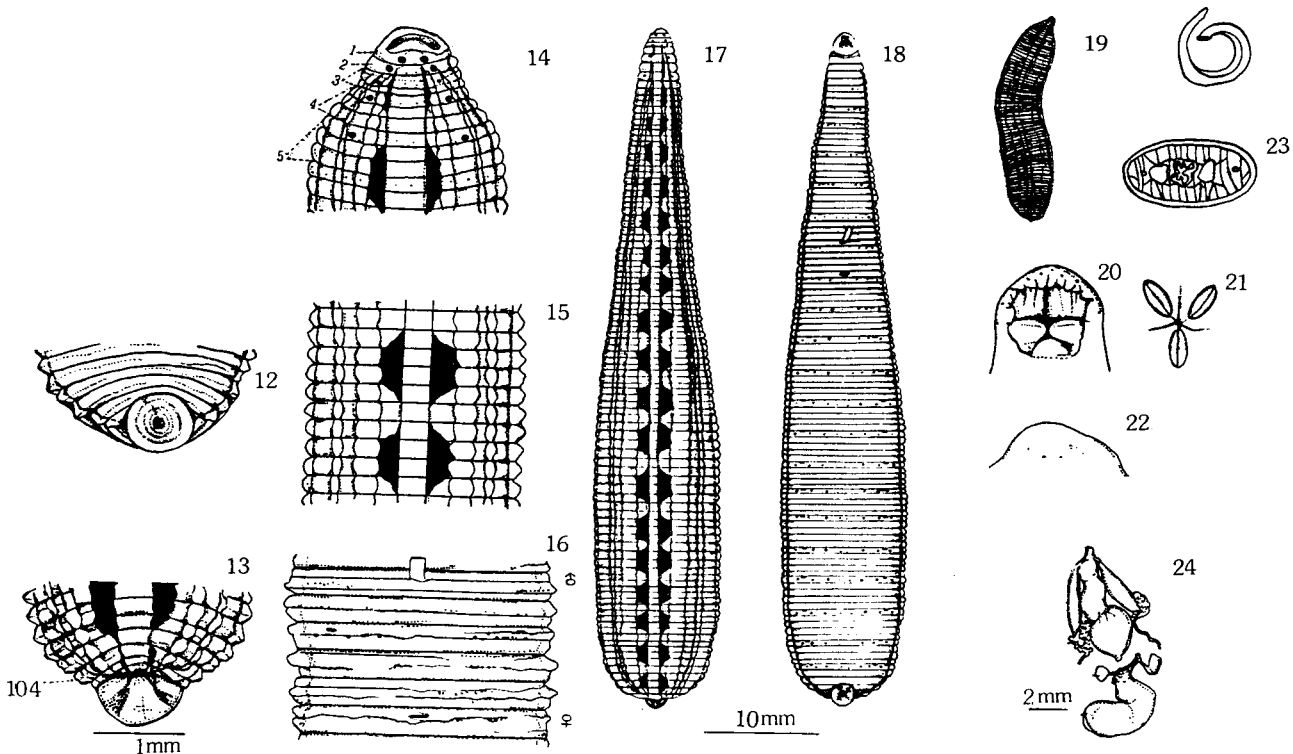
*Microstoma*: Whitman, 1884 (pp. 20, 84).

Type species: *Microstomum pigrum* Whitman, 1884.

Type locality: Japan, China.

**2. *Whitmania acranulata* (Whitmania, 1886) 갈색말거머리 (신칭) (Figs. 12-24)**

*W. acranulata*, 1886 (pp. 389-392, pl. XIX, figs. 40-46, pl. XX, fig. 53, pl. XXI, fig. 64); Blanchard, 1888 (p. 155); Soos, 1969 (p. 155).

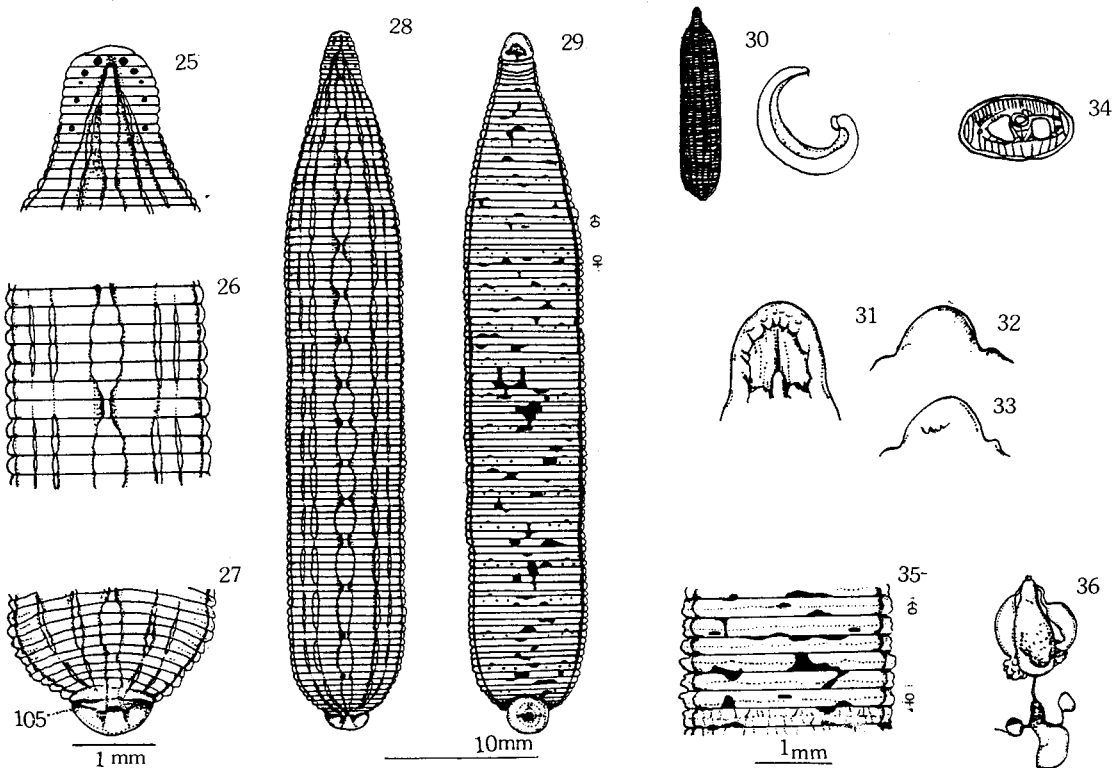


**Fig. 12-24:** *Whitmania acranulata*. 12, ventral posterior sucker; 13, anus dorsal to posterior sucker; 14, head; 15, middle body; 16, gonad segment; 17, body (dorsal); 18, body (ventral); 19, contraction of body; 20, 21, jaws; 22, teeth; 23, cross section of body; 24, reproductive system.

**Description:** Body length 35-45mm in contraction and 65-100mm in extension, width 8-14mm. Body form flat column, anterior fine and sharp, posterior round and anus not seen. Dorsal surface with blackish-brown and pale brown mixed colour longitudinal lines, gray ventral surface with fine black lines on both side (fig. 15). Head slender, sucker small. Body with 104-105 annuli, an annulus consists of 2-3 subannulus, a segment of middle part of body consists of 5 annuli (fig. 6). Eyes 5 pairs which are located on the 2nd, 3rd, 4th, 6th, 9th, annuli (fig. 14). Annulus band formed from anterior the 20th annulus to the 30th annulus. Male pore open at 4th annulus of the 11 segment, female pore open at 12 segment, both sex pore leaves 5 annuli interval (fig. 2). Annus open between 1st and 2nd annuli of the dosal surface of posterior sucker which is very small (fig. 12, 13). Stomach simple and road form, crop caeca projecting to 22 segment.

**Collecting Site:** Chönbuk: Imshil Sasön-tae (13, IV, 1985), Koch'ang Haeri(3, VIII, 1985), Sunch'ang Pok'ung- jösuji (15, V, 1983), Chönju Chilbo-suro (3, X, 1983), Chönju-ch'ön (20, V, 1983), Samnye Mangyonggang (13, IV, 1983).

**Distribution:** Korea, Japan.



**Fig. 25-36.** *Whitmania edentula*. 25, head; 26, middle body (dorsal); 27, anus dorsal to posterior sucker; 28, body (dorsal); 29, body (ventral); 30, contraction of body; 31, 32, 33, jaws; 34, cross section of body; 35, gonad segment; 36, reproductive system.

3. *Whitmania edentula* (Whitman, 1886) 녹색말거머리(신칭) (Figs. 25-36)

*W. edentula* Whitman, 1886 (pp. 386-389, pl. XIX, figs. 28-39, pl. XXI, figs. 63, 66); Blanchard, 1888 (p. 155); Blanchard, 1896 (pp. 328-330, figs. 7 A-B); Moore, 1924 (pp. 381-382) Oka, 1931 (pp. 387-389); Soos, 1969 (p. 190).

**Description:** Body length 30-50mm in contraction and 70-90mm in extension, width 7-10mm. Body from column, ventral surface flat, usually head rapidly slender. Dorsal surface blackish green with yellow thick middle line and sometimes with four yellow fine lines around the middle thick line, ventral surface yellowish-brown with irregular black marks on the both margin. Anterior sucker very small and with mouth on the beneath, three small jaw without tooth and so can not suck blood (fig. 33-36). Body with 105 annuli, a segment of middle part of body consist of 5 annuli. Eyes 5 pairs which are located on the 2nd, 3rd, 4th, 6th, 9th, annuli.

Annulus band formed on the anterior part. Both sex pore leaves 5 annuli interval. Anus open at the last annulus of the dorsal surface of posterior sucker. Stomach slender and tube form, crop caeca in distinct.

**Collecting Site:** Chŏnbuk: Koch'ang Haeri, Kungsan- jŏsuji (20, III, 1985), Koch'ang Taesan-suro (6, III, 1983), Koch'ang Asan-kyo (29, IV, 1984).

**Distribution:** Korea, Japan, China, Hongkong.

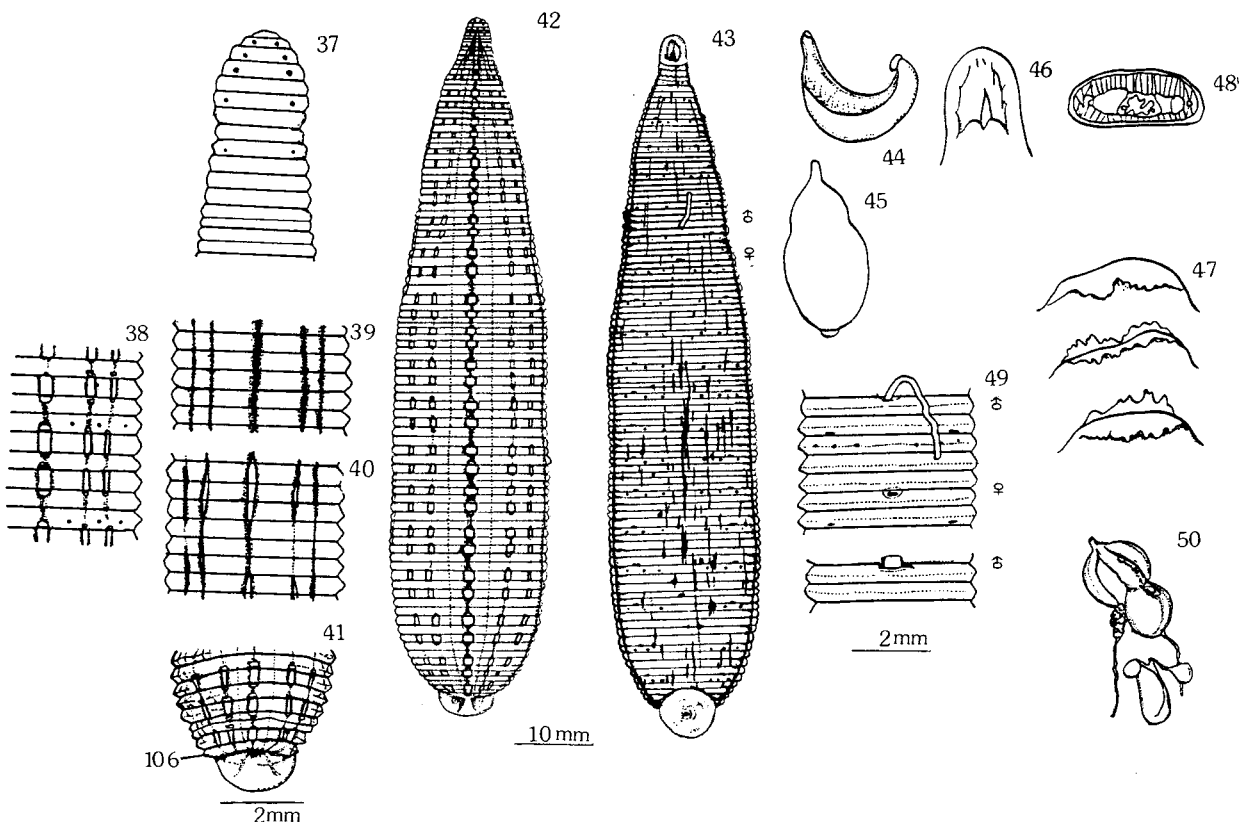


Fig. 37-50. *Whitmania pigra*, 37, head; 38-40, middle body(dorsal); 41, anus dorsal to posterior sucker; 42, body(dorsal); 43, body(ventral); 44,45, contraction of body; 46,47, jaws; 48, cross section of body; 49, gonad segment; 50, reproductive syste.

**4. *Whitmania pigra* (Whitman, 1884)      말거머리      (Fig. 37-50)**

*W. pigra* Whitman, 1884 (p. 84); Whitman, 1886 (pp. 382-386, pl. XVII, figs. 21-27, pl. XX, figs. 54-55, pl. XXI, figs. 61-62, 67); Blanchard, 1888 (p. 155); Oka, 1931 (pp. 387-389); Soos, 1969 (p. 191).

**Collecting Site:** Chŏnbuk: Kochang Haeri, Kungsan- jŏsuji (3, IX, 1985), Namwŏnshi Yochŏnsu (15, VIII, 1983), Muju Naedori (19, V, 1983), Buan Chŏngpŏji-daem (20, III, 1985), Sŏntaein-suro (10, IV, 1983), Samnye mangyŏnggang (13, IV, 1983), Chansuchŏn (19, X, 1984), Imshil Kan jin-suro (24, VI, 1985). Chŏnnam: Changsŏng Hwangnyong-kyo (18, VI, 1985).

**Distribution:** Korea, Japan, China

## ABSTRACT

Authors worked on the fauna of Chŏlla-do leeches and identified 4 species in Hirudinea, of which 2 species, *Whitmania acranulata* and *Whitmania edentula*, are first recorded in Korea.

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