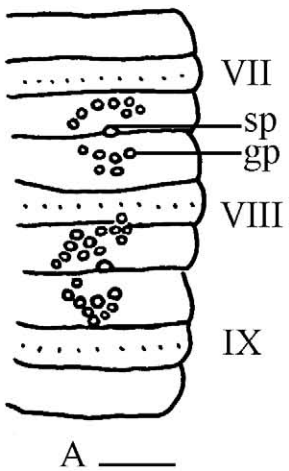
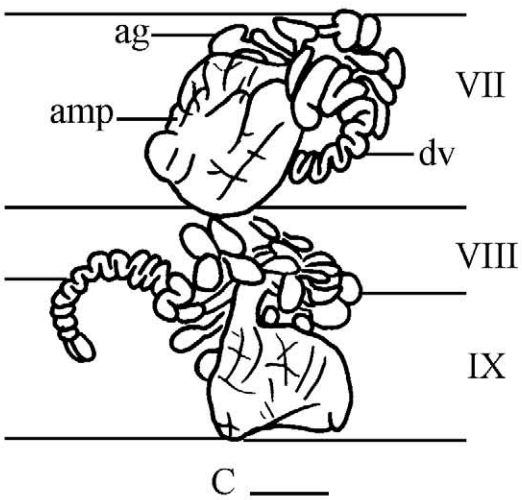
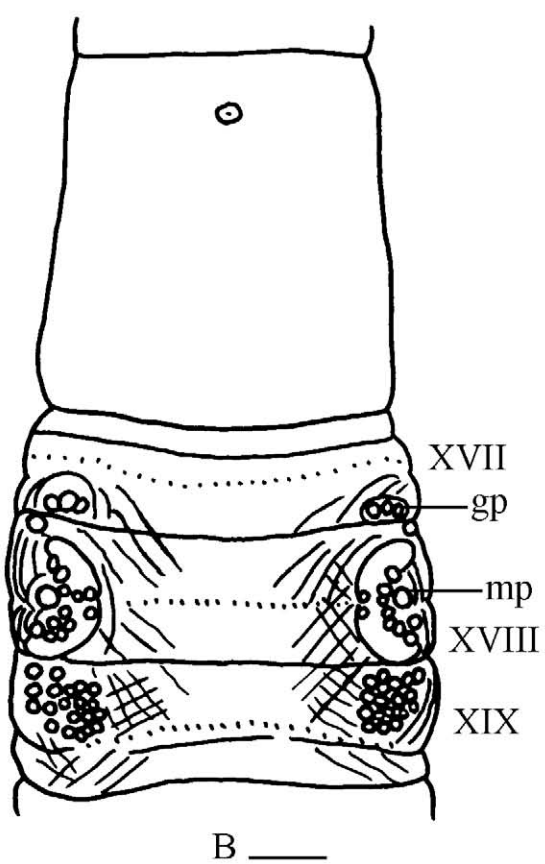
***Amynthas kinmenensis* sp. nov.**
(Fig. 1)

Holotype: Clitellate (mature) specimen (170 mm in total length, dissected) collected 18 June 2008 under bush outside Hsiajuang Village (elevation 53 m), Jinhu, Kinmen by C. L. Li and C. H. Chang (cat. no. 14-07374).

Paratype: One clitellate collected 19 June 2008 behind Chuehshan garbage yard (elevation 28 m), Kinmen by C. L. Li and C. H. Chang (cat. no. 14-07375).







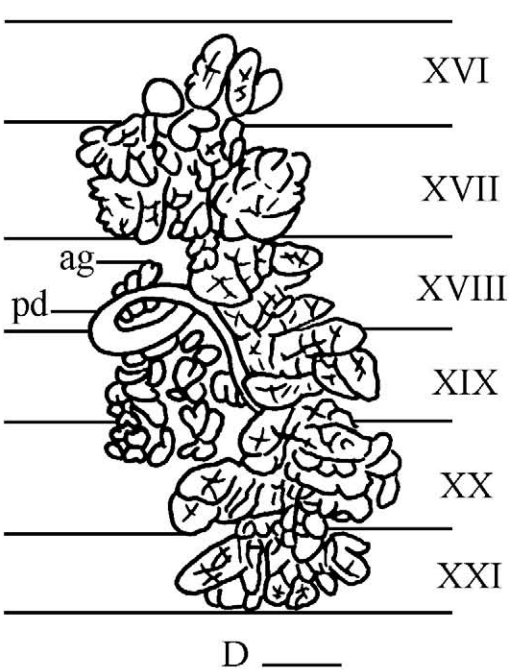


FIGURE 1. *Amynthas kinmenensis* **sp. nov.** Holotype (cat. no. 14-07374): (A) ventral view of left spermathecal pore region (gp, genital papilla; sp, spermathecal pore); (B) ventral view of male pore region (mp, male porophore); (C) dorsal view of left spermathecae (amp, ampulla; dv, diverticulum; ag, accessory gland); (D) dorsal view of right prostate gland (pd, prostatic duct). Scale bar 1 mm.

Other material. 14 specimens (catalogued) altogether. One aclitellate collected 23 May 2008 at Junglan Reservoir (elevation 16 m), Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-07373); one clitellate collected 22 May 2008 from roadside grassland at Hsiyuan (elevation 22 m), Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-07376); one semi-clitellate collected 22 May 2008 at Shanhsi Reservoir (elevation 27 m), Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-07377); one clitellate collected 29 April 2008 from the ditch around Guningtou Battle Museum (elevation 16 m), Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-08123); one clitellate collected 25 May 2008 at South Stone Weir Park (a former granite quarry) (elevation 18 m), Liaoluo Village, Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-08124); one clitellate collected 23 May 2008 at Maple Woods parking lot (elevation 25 m), Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-08125); one clitellate collected 25 May 2008 from roadside litter at Chenggong Village (elevation 31 m), Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-08126); one clitellate collected 9 September 2008 on a hiking trail at Doumen (elevation 33 m), Kinmen by C. L. Li and S. H. Yang (cat. no. 14-08128); one clitellate collected 17 June 2008 at Three Widows Chastity Arch (elevation 20 m), Chonglin, Kinmen by C. L. Li and C. H. Chang (cat. no. 14-08129); one clitellate collected 16 June 2008 at Hsiapuhsia (elevation 31 m), Kinmen by C. L. Li and C. H. Chang (cat. no. 14-08130); one clitellate collected 19 June 2008 on a hiking trail at Doumen (elevation 38 m), Kinmen by C. L. Li and C. H. Chang (cat. no. 14-08131); one semi-clitellate collected 23 May 2008 at Jinsha Reservoir, Kinmen by C. L. Li and Y. H. Lin (cat. no. 14-08372); two clitellates (one amputated) collected 18 June 2008 on a farm outside Jhushan Village, Jincheng, Kinmen by C. L. Li and C. H. Chang (cat. no. 14-08373). More than 300 specimens, not catalogued.

Diagnosis. Medium to large; length (clitellates) 110–276 mm. Segments numbering 104–141. Setae 47–69 in VII, 52–81 in XX, and 11–22 between male pores. First dorsal pore in 12/13 or 13/14. Spermathecal pores two pairs in 7/8/9, 0.35–0.41 body circumference ventrally apart. Genital papillae tiny, 9–24 arranged in form of an arc stretching across two annulets and medial to each spermathecal pore. Male pores 0.3–0.39 body circumference ventrally apart in XVIII, each on a small, round porophore surrounded by 5–9 small papillae, within a crescent- or kidney-shaped area. Two groups of genital papillae, a cluster of 3–8 immediately adjacent to the margins between XVII and XVIII and a cluster of 9–20 arranged obliquely in presetal XIX, in line with each male pore area. Spermathecae two pairs in VII and IX, or in VIII and IX. Diverticulum coiled. Seminal vesicles large, two pairs in XI and XII, Prostate glands large in XVI–XX. Prostatic duct C- or U-shaped in XVIII. Accessory glands stalked, mushroom-like, corresponding to external genital papillae.

Description. External: Total length (clitellates) 110–276 mm. Weight 0.67–5.32 g. Segments numbering 104–141. Clitellum XIV–XVI, setae and dorsal pores absent, length 4.41–7.98 mm and width 3.77–6.05 mm. Prostomium epilobous. Setae minute, number 47–69 in VII, 52–81 in XX, and 11–22 between male pores in XVIII. First dorsal pore in 12/13 or 13/14. Spermathecal pores lateral, two pairs in intersegmental furrows of 7/8/9; distance between paired pores 0.35–0.41 body circumference ventrally apart. Genital papillae tiny, round, 9–24 arranged in form of an arc stretching from postsetal VII to presetal VIII and from postsetal VIII to presetal IX, medial to each spermathecal pore (Fig. 1A). Female pore single, mid-ventral in XIV. Male pores inconspicuous, paired in XVIII, 0.3–0.39 body circumference ventrally apart, each situated on a small, round porophore surrounded by 5–9 small papillae, within a crescent- or kidney-shaped area (Fig. 1B). Often additional papillae arranging irregularly within the crescent- or kidney-shaped area. Two groups of genital papillae in line with each male pore area: (1) a cluster of 3–8 small papillae immediately adjacent to the margins between XVII and XVIII (2) a cluster of 9–20 papillae arranged obliquely in presetal XIX; often three or four skin folds stretching from postsetal XVII to postsetal XIX and enclosing the two groups of genital papillae together with each male pore area laterally (Fig. 1B). Preserved specimens dark brown or dark reddish brown on dorsum, brown to light brown on ventrum, and brown to dark brown on clitellum. Live worms dark orange or dark reddish brown in color.

Internal: Septa 5/6–7/8 thick, 10/11–13/14 muscular, 8/9/10 absent. Nephridial tufts thick on anterior faces of 5/6/7. Gizzard large in VIII–X. Intestine enlarged from XV or XVI. Intestinal caeca paired in XXVII, extending anteriorly to XXIII–XXV, each simple, distal end either straight or bent. Esophageal hearts in X–XIII. Spermathecae two pairs in VII and IX (Fig. 1C), or in VIII and IX, each with a peach-shaped or elongated oval-shaped ampulla 1.77–3.3 mm long and 2.1–2.7 mm wide, and a short, stout spermathecal stalk 0.5–0.75 mm in length. Diverticulum 2.83–4.8 mm in total length, coiled with a short, slender and straight proximal part. Accessory glands long- or short-stalked, mushroom-like, 0.6–1.3 mm in length, each corresponding to external genital papilla (Fig. 1C). Holandric, testes small, two pairs in ventrally joined sacs in X and XI. Seminal vesicles large, surface smooth, two pairs in XI and XII, anterior pair rectangular-shaped, extending anteriorly to the posterior half or the

entire compartment of segment X, with a round dorsal lobe at the middle of the dorsal end; posterior pair elongated oval, with a round, finely-granulated dorsal lobe at the dorso-anterior end. Prostate glands large in XVI–XXI (Fig. 1D), wrinkled and lobed. Prostatic duct C- or U-shaped in XVIII. Accessory glands short-stalked, mushroom-like or irregular-shaped, corresponding to external genital papillae (Fig. 1D).

DNA barcodes. GenBank accession numbers JQ936593 (14-07374, holotype), JQ936596 (14-07375, paratype), JQ936594, JQ936597, and JQ936595 (14-07373, 14-07376 and 14-07377, respectively).

Etymology. The name *kinmenensis* is given to this species with reference to its type locality of the island of Kinmen.

Remarks. *Amynthas kinmenensis* **sp. nov.** is the most abundant earthworm and widely distributed on the main island of Kinmen. It is fairly similar to *Amynthas polyglandularis* (Tsai, 1964) from northern Taiwan in terms of both the external and internal morphological characters. Both species are quadrithecal with spermathecal pores in 7/8/9 and have numerous small genital papillae. Molecular studies also suggest that the two species are closely related (unpublished data). However, *A. kinmenensis* has 9–24 papillae arranged in form of an arc stretching across two annulets and medial to each spermathecal pore, whereas *A. polyglandularis* has 1–5 papillae in a transverse row on both the anterior and posterior margins of each spermathecal pore (Tsai 1964). Two groups of genital papillae, a cluster of 3–8 immediately adjacent to the margins between XVII and XVIII and a cluster of 9–20 arranged obliquely in presetal XIX, in line with each male pore area are present in *A. kinmenensis*, while these papilla arrangements are absent in *A. polyglandularis*. In addition, *A. polyglandularis* has groups of papillae on mid-ventrum of segments VIII, IX and XVIII, while these papilla arrangements are absent in *A. kinmenensis*. Papillae are more concentrated mid-ventrally in *A. polyglandularis*, whereas the papillae of *A. kinmenensis* are laterally distributed. It is possible that the two species were derived from a common ancestor and have gone through allopatric speciation.

Amynthas omeimontis (Chen, 1931) from Sichuan, China also has spermathecal pores in 7/8/9 and numerous small genital papillae. However, it has manicate intestinal caeca, genital papillae absent around spermathecal region and presetal XIX, but about 40 to 50 small papillae closely arranged in rows in presetal XI (Chen 1931). Also, it has lower setal number with 38–46 in VI–VIII and 40–44 in XX (Chen 1931).

The soil pH (H_2O) values of the localities where the specimens of *A. kinmenensis* were collected were 4.3–7.98 (unpublished data).