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Re-evaluation of *Rostraria bierii* Tokioka, 1970 (Annelida) from Seto, Japan as a magelonid, with a review of the Magelonidae of the western Pacific

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Abstract

The identity of *Rostraria bierii*, originally described as a larval amphinomid from Cape Setozaki, Pacific coast of Japan, is investigated. Based on the original description and illustrations, reinterpretations conclude the “larva” to represent a partial juvenile or adult magelonid specimen, broken after the first chaetiger. The original figures are compared with several known magelonid species to justify the new placement. The authors suggest the supposed amphinomid larva is a Magelonidae *taxon inquirendum*. The identity of the species is discussed in line with the current knowledge of the Magelonidae in the western Pacific and a key to all known species within the region is provided to aid identifications. Current gaps in our taxonomic knowledge of the Magelonidae of the western Pacific are highlighted and discussed.

Key words: Polychaeta, Amphinomida, Magelonidae, *Magelona*, *Octomagelona*, western Pacific, identification key, Cape Setozaki

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1 Introduction

Rostraria (Annelida) is a name originally coined by Häcker (1898) to include four planktonic larval forms collected in the Atlantic open sea. These forms were characterized by two long, folded palps or tentacles (of approximate length as the body, or greater), two anterior bundles of capillary setae (up to three or four times the length of the body), and an anterior conical region in the form of a hood, supporting the palps dorsally (Häcker, 1898; Bhaud, 1972). The forms were provisionally named as *R. biremis*, *R. galeata*, *R. oxyrhina*, and *R. platyrhina* by Häcker (1898), and whilst the provisional nature of the names was highlighted, the justification for their description was to enable future recognition and the identification of the adult counterparts.

The number of *Rostraria* forms was later increased by Ehlers (1913), who added *R. carunculata*, another Atlantic open sea form identified by the author as the larval stage of *Hermodice carunculata* (Pallas, 1766), and subsequently by Tokioka (1970), who described and named (albeit provisionally “for convenience sake”) *R. bierii*, a coastal form from Japan.

Bhaud (1972) partially added to the chronology of the group, including two additional forms described by Häcker based on larvae from two coastal locations in West Africa (Liberia and Benin). According to Bhaud (1972) these two forms were named *R. irmingensis* and *R. filamentosa*, but no further information concerning these names can be found in Häcker (1898). It is conceivable they were suggested by Bhaud (1972), although it is not stated to which of the forms each of the names should apply. It is possible that *R. filamentosa* was intended for the Beninese form, characterized by Häcker (1898) by the remarkably long capillary chaetae of the first chaetiger, but this is uncertain.

The suprageneric assignment of the group was discussed by Häcker (1898), who pointed at similarities between these larval forms and the Amphinomidae Lamarck, 1818 (which at that time included the Euphrosinidae Lamarck, 1818), but they were finally placed provisionally under the Trochochaetidae Pettibone, 1963 (as Disomidae Mesnil, 1897), following Saint-Joseph’s comments *in litteris*, who noted resemblances and a possible systematic connection between the two families.

Ehlers (1913) was the first to place *Rostraria* in the Amphinomidae, while identifying *R. carunculata* as the larval form of *H. carunculata*. Hannerz (1956) further supported this opinion based on his own observations, placing *Rostraria* larva in the Amphinomidae or Euphrosinidae, a placement additionally reinforced by Mileikovsky (1960, 1961), Sveshnikov and Wen-Jen (1963) and Bhaud (1967, 1972). While these latter authors were able to link some of their *Rostraria* larvae with adult species in Amphinomidae and Euphrosinidae, the specific identity of the forms previously described by Häcker (1898) and Ehlers (1913) has remained indeterminable or uncertain.

Current investigations shed doubt on the inclusion of *R. bierii* within either the Amphinomidae or Euphrosinidae. The form was described from a single specimen collected in 1966 south of the Seto Marine Biological Laboratory from a 50 m deep sandy seabed, about 1.2 km off Cape Setozaki, Japan (around 33.67°N, 135.31°E), using a Dragonet trawl specially designed to study the meio-epibenthos (Bieri and Tokioka, 1968). The authors stipu-

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lated that the sample was contaminated with upper water during the drawing up of the trawl net and thus the exact depth at which the specimen was collected could not be determined (i.e., whether it was epibenthic or planktonic). Tokioka (1970) determined the specimen as a larval polychaete, and although suggested some similarities with the Spionidae, stated that it belonged to the amphinomid *Rostraria* based on "the very slow development of segments and parapodia and a strongly coiled state of contracted tentacles, caused by uneven distribution of muscles in them, together with a prominent forward stretch of the prostomium and the existence of a pair of bundles of filamentous setae on the first segment".

Rostraria bierii has remained overlooked by most authors, with its description briefly cited only three times since the original publication (Schroeder and Hermans, 1975; Rouse, 1999; Omel'yanenko and Kulikova, 2002). During editorial work on the systematics of the Amphinomidae, the original description of *R. bierii* was analysed, with one of the authors of the current paper highlighting the unlikeness of the type specimen to be an amphinomid. Consequently, further investigations into the original description and drawings of *R. bierii* have been made, and the morphology of the form reinterpreted. The new identification is discussed in relation to known species within the same region and a complete review of the taxonomic status is made.

2 Materials and methods

The Inventory of Zoological Type Specimens in the Museum of the Seto Marine Biological Laboratory (Harada, 1991) was examined in order to locate possible type material of *R. bierii*. Unfortunately, the specimen is not present for verification; however, the photograph and images in Tokioka (1970) provide sufficient information for reinterpretation of the specimen. Plasticine models based on the original drawings were additionally produced to supplement reinterpretation (particularly in relation to palp insertion), enabling evaluation from dorsal, ventral and lateral views. Structures observed for *R. bierii* were compared to those known from larval and adult magelonid specimens from Amgueddfa Cymru-National Museum Wales collections and other species previously studied by the authors.

Images of fluid preserved magelonid specimens (for comparison with *R. bierii*) were taken using a Canon EOS 80D 24MP DSLR camera attached to a Leica Z6 macroscope with trinocular head and stacked using HeliconFocus v6.22 (HeliconSoft Ltd) extended depth of field software, with calibrated scale bars added using Adobe Photoshop v.20.0.5. An image of a live *Magelona johnstoni* Fiege et al. (2000) animal (relaxed, $MgCl_2$, Andrew Mackie) was taken with a DSLR camera (Canon EOS 77D, Canon MP-E 65mm f/2.8 1-5x macro lens with Canon Speedlite 580EX II flash), utilising live view (EOS utility 3). Scanning Electron Microscopy images were taken using a Jeol Neoscope JCM–5 000 SEM following preparation of specimens as noted in Mortimer et al. (2020).

A literature search of magelonid records from the western Pacific was made in order to assess the current state of taxonomic knowledge within the region.

3 Results

Reinterpretation of *R. bierii*:

Rostraria bierii Tokioka, 1970: 276–278, Fig. 1, Figs 2A and B (Figs 1 and 2, Table 1).

Based on the presence of ventrally inserted paired palps, a shovel-shaped prostomium, a trilobed buccal region on the ventral side of the prostomium, and an oval to heart-shaped burrowing organ (previously termed the proboscis), it is suggested that *R. bierii* represents a magelonid and not an amphinomid. The evidence for its inclusion in the Magelonidae is presented below and a table comparing terminology applied by Tokioka (1970) with the corresponding structures as seen in magelonids is given (Table 1). In fact, Tokioka (1970) himself highlighted the similarities with the Spionidae, a family long considered to be related to the Magelonidae (although the latter group is presently suggested to be part of the Palaeoannelida Weigert and Bleidorn, 2016 alongside the Oweniidae).

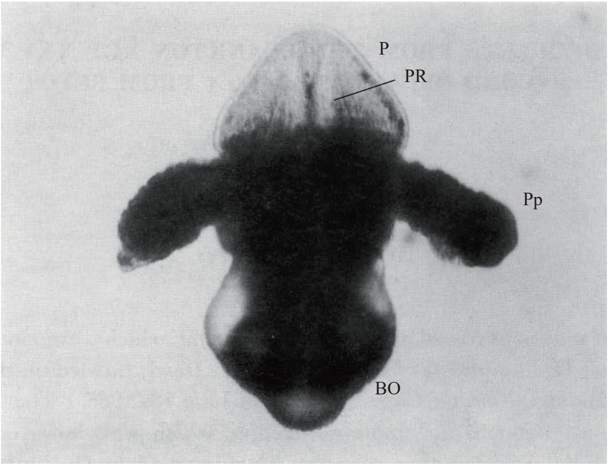

Fig. 1. Photograph of *Rostraria bierii* (dorsal view) taken from Tokioka (1970), annotated with magelonid features (photo by Dr. Nishimura and Mr. Morino). BO represents burrowing organ; P, prostomium; Pp, palp; PR, prostomial ridge.

Tokioka (1970) described the head or prostomium as "hood-shaped in outline, very flattened, faintly concave ventrally". This shape is extremely characteristic of the shovel-shaped prostomia of magelonids, which in several species curve around the bases of the palps, as is suggested in Tokioka's original description. The prostomium carries a distinct line around the edge (Figs 1 and 2), which is present in all magelonid species (Figs 3a–d). The "pair of retractor muscles" represent the dorsal prostomial ridges, which in magelonids are always present, either as one or two pairs depending on species, although one pair of prostomial ridges is more common in the larger, stouter *"Magelona cincta"* group of species (Mortimer et al., 2020). Tokioka's Fig. 2B shows a "nototroch" at the base of the prostomium. Comparison of his Fig. 1 with images of *Magelona* specimens (e.g., Fig. 3b) reveals this to be the base of the prostomial ridges and not dorsal ciliary bands as suggested.

Tokioka described the tentacles as "inserted very near, slightly anterior to, the middle of the body" although did not allude to whether they are inserted dorsally, ventrally or laterally. His drawings further complicate the interpretation since they look almost dorso-laterally inserted. However, in his photograph (Fig. 1), they are shown to be ventrally inserted, behind the prostomium (more noticeable on the right-hand side). It is conceivable that his drawings of palp insertion were influenced heavily by his belief that the specimen represented an amphinomid larva, which would be expected to have dorsally inserted palps. However, they are indeed ventrally inserted on either side of the buccal region, characteristic of those seen in the Magelonidae. Although no obvious papillae can be observed on the palps (a unique characteristic of magelonids), the short stumps are representative of the non-papillated region seen in all

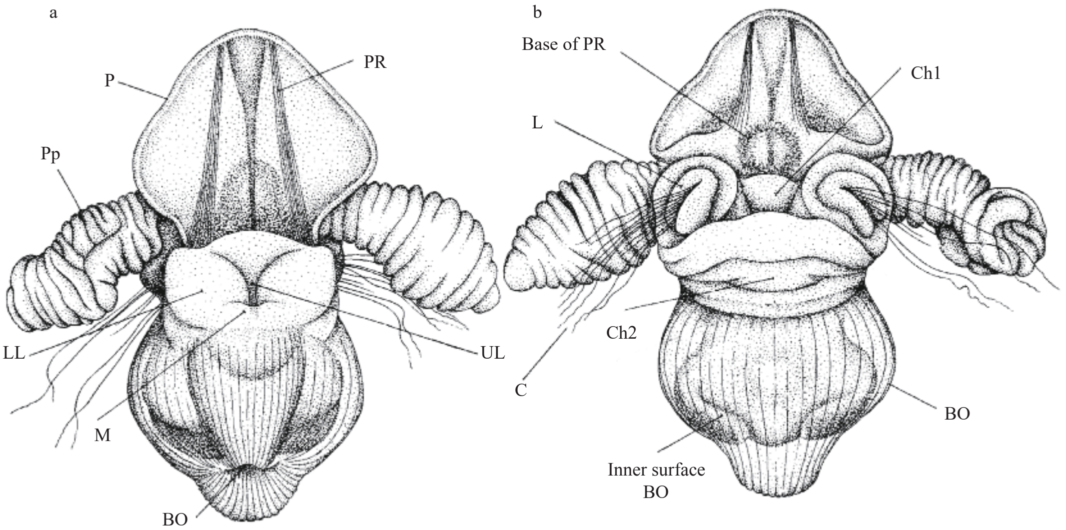

Fig. 2. Drawings of *Rostraria bierii* taken from Tokioka (1970), annotated with magelonid features (a. ventral view; b. dorsal view). BO represents burrowing organ (partially everted); C, chaetae of chaetiger 1; Ch1, chaetiger 1; Ch2, chaetiger 2 (first part?); L, parapodial lamellae; LL, lower lip; M, mouth; P, prostomium; Pp, palp; PR, prostomial ridges; UL, upper lip.

Table 1. Comparison of terms used in Tokioka (1970) with suggested magelonid replacement terms

Term from Tokioka (1970)	Replacement term suggested
a—anus	BO—burrowing organ (not completely everted)
c—mid-gut coecum	Inner surface BO—inner surface of burrowing organ
f—filamentous setae	C—chaetae of chaetiger 1
l—lower lip	M—mouth
m—mouth	UL—upper lip
n—nototroch	Base of PR—basal part of prostomial ridges
pe—peristome	LL—lower lip
pr—prostomium	P—prostomium
q—quiver for setae	L—parapodial lamellae
r—retractor	PR—prostomial ridges
s—last segment of trunk	BO—burrowing organ
t—tentacle	Pp—palp
I-IV—first to fourth segments	Ch1, Ch2—first chaetiger and possibly part of the second

magelonid species. This region is often wrinkled in appearance (Figs 3d–h) and is what Tokioka describes as having a "surface with clear marks of coiling". The size of this region does vary greatly between magelonid species and can depend on the level of contraction upon preservation. However, the size of the non-papillated region for *R. bierii* is in-line with that observed in magelonid species (see, Figs 3f–h, and Mortimer, 2010: Figs 1A and B for example). Interestingly, Wilson (1982) noted the similarity of *Magelona* larval tentacles to those observed in some "rostraria" larvae, although later noting differences in mobility between the two.

The buccal region is extremely comparable to that of magelonids, being at the base, and on the ventral side of the prostomium, and comprising of a large triangular upper lip and two smaller lower lips (compare Fig. 2a with Figs 3e, h).

Although Tokioka (1970) described the specimen as having five segments, it is believed only the first chaetiger and possibly part of the second chaetiger (broken before the second set of chaetae) are present. Tokioka's "quiver for setae", although looks a little odd, would be comparable to the pre- and postchaetal lamellae that encircle the chaetal bundle in magelonid notopodia (Fig. 4). These appear particularly wrinkled around the chaetal bundles, as if pushed forward when the specimen was accidentally sectioned by the extreme pressures experienced during bottom trawling.

What Tokioka (1970) described as the last segment of the trunk is believed to be the burrowing organ, everted through the damaged body after the animal was broken. This is extremely likely given the trauma often experienced by animals during trawling or sieving. Magelonid burrowing organs carry longitudinal ridging as was drawn by Tokioka for *R. bierii*, and which he described as "furnished with a number of longitudinal muscles". When fully everted, magelonid burrowing organs are heart-shaped, but when only partially everted they can be anything between oval to heart-shape with a characteristic circular indentation at the top, where the remaining part of the burrowing organ has yet to be everted (Figs 3f, g). This circular indentation is what Tokioka labelled as the anus, with the mid-gut coecum being the inner surface of the burrowing organ often seen in both live and preserved magelonids (Fig. 3f).

4 Discussion

Although described as a larva, the current authors suggest that the specimen of *R. bierii* represents part of a juvenile, or possibly an adult magelonid. Images of magelonid larvae can be seen for instance in Wilson (1982), Blake (2006), or Capa et al.

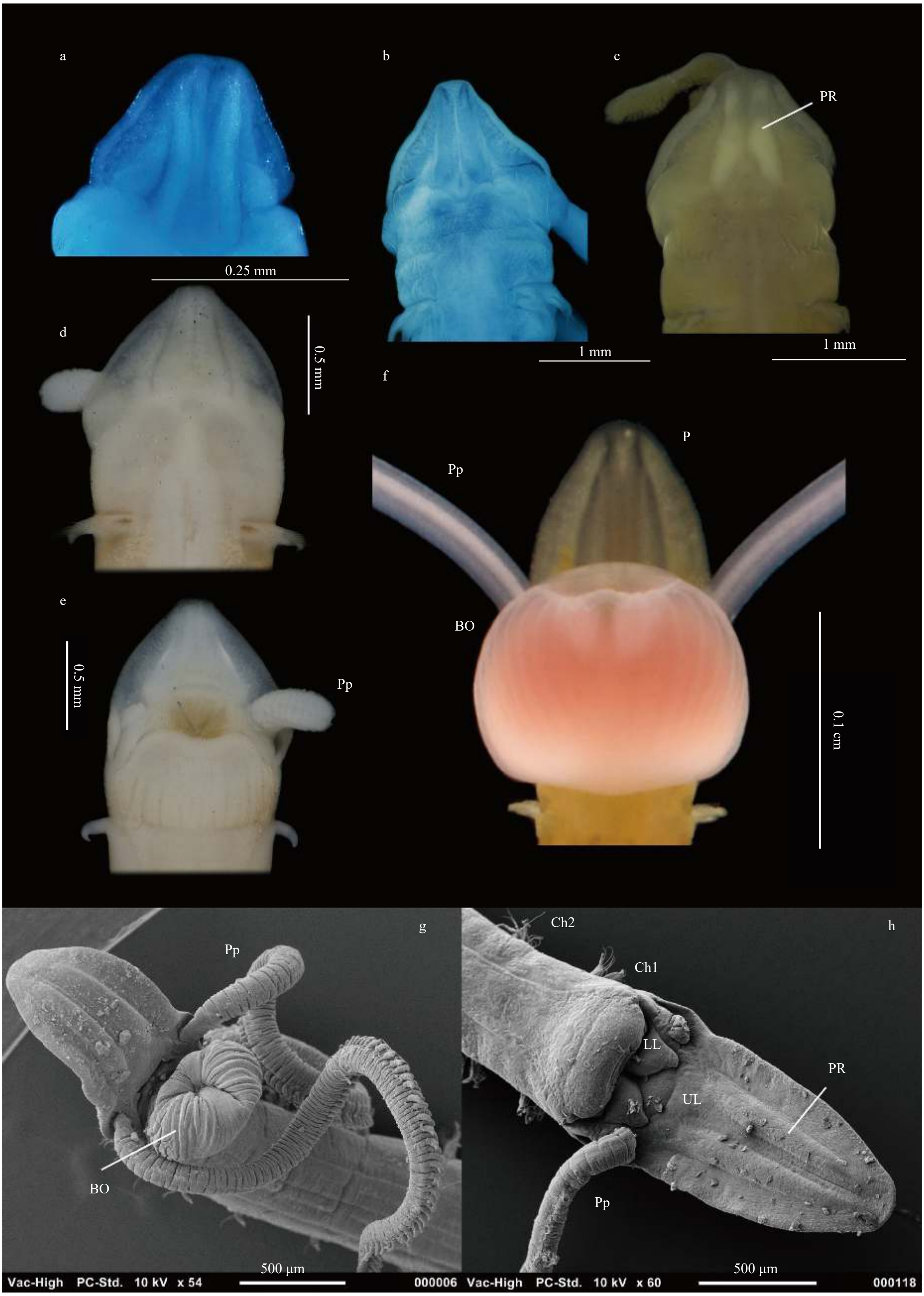

Fig. 3. Magelonid prostomia (a–d, dorsal views; e, f and h, ventral views; g, ventro-lateral view). a. *Magelona falcifera*, stained methyl green; b, d and e. *Magelona alleni*, b stained with methyl green; c. *Magelona equilamellae*; f. live *Magelona johnstoni* showing partially everted burrowing organ (provided by Andy Mackie); g. SEM of *M. johnstoni* showing partially everted burrowing organ; h. SEM of *M. johnstoni* showing buccal region. BO represents burrowing organ; LL, lower lip; P, prostomium; Pp, palp; PR, prostomial ridge; UL, upper lip; Ch1, chaetiger 1; Ch2, chaetiger.

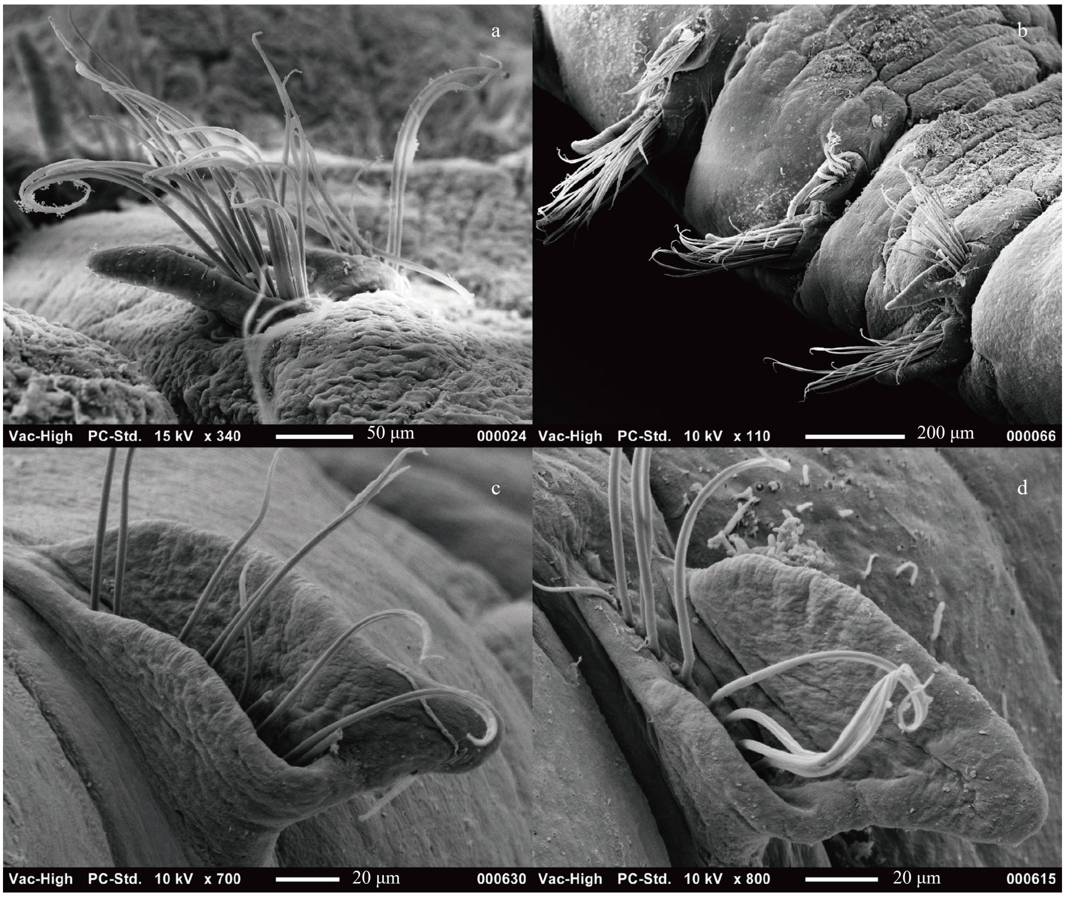

Fig. 4. SEMs of magelonid parapodia. a and b. *Magelona equilamellae* (right-hand notopodia of chaetiger 5 (anterior view) and right-hand parapodia of chaetigers 5–7 (antero-dorsal view) respectively); c and d. *Magelona mirabilis* (Johnston, 1865) (c. chaetiger 8, notopodia, anterior view; d. chaetiger 3, notopodia, anterior view).

(2019), and are clearly distinguishable from the specimen in question here, notably in the shape of the prostomium which is much less distinct and shovel shaped in larvae. In terms of size, Tokioka (1970) stated that the specimen was 1.05 mm long. Thus, the prostomium and first chaetiger would be approximately 0.7 mm long (estimated from the figures). This would be comparable to the size of the prostomium and first chaetiger of an adult of several magelonid species, such as *M. minuta* Eliason, 1962 (see Mills and Mortimer, 2018) or *M. falcifera* Mortimer and Mackie, 2003 (Fig. 3a), and comparable to a juvenile/smaller specimen of larger species such as *M. alleni* Wilson, 1958 (Figs 3b, d and e) or *M. equilamellae* Harmelin, 1964 (Fig. 3c).

In the absence of type material of *R. bierii* and given the small proportion of the specimen found, it is impossible to ascertain which magelonid species it belongs to. The presence of only one pair of prostomial ridges and a prostomium which is wider than long suggests a placement in the "*M. cincta*" group of species, which often carry posterior pigmentation (Mortimer et al., 2020). However, the genus *Octomagelona* Aguirrezabalaga et al., 2001 are known also to possess only one pair of prostomial ridges, and thus cannot be ruled out either. *Octomagelona*, additionally possess long thoracic chaetae (see type description, and Mortimer et al., 2020) which could match that of *R. bierii*. However, this genus is currently known only from deeper waters (Aguirrezabalaga et al., 2001; Capa et al., 2019).

There is relatively little known about the Magelonidae in the western Pacific, with only seven species originally described from the area: *M. japonica* Okuda, 1937 (Korean Archipelago and Japan), *M. koreana* Okuda, 1937 (Korean Archipelago, originally described as a subspecies of *M. japonica*), *M. agoensis* Kitamori, 1967 (Ago Bay, Japan), *M. crenulifrons* Gallardo, 1968 (Viet Nam), *M. lenticulata* Gallardo, 1968 (Viet Nam), *M. sachalinensis* Buzhinskaja, 1985 (Sakhalin Island) and *M. parochilis* Zhou and Mortimer, 2013 (China). Kitamori (1967) published an account of the Magelonidae of Japan reporting five species: the aforementioned *M. agoensis* and *M. japonica*, alongside *M. longicornis* Johnson, 1901, *M. pitelkai* Hartman, 1944a, and *M. californica* Hartman, 1944b. Mortimer and Mackie (2009), following on from reviews in the region by Mackie et al. (1993), Shin (1982a, 1982b, 1990, 1998, 2003) and Shin and Thompson (1982), reviewed the Magelonidae of Hong Kong, noting the presence of three species: *M. crenulifrons*, *M. cornuta* Wesenberg-Lund, 1949 and a species approaching *M. cincta* Ehlers, 1908. Paxton and Chou (2000) provided a checklist of species in the South China Sea, including seven species: *M.* cf. *cincta*, *M. crenulifrons*, *M. japonica*, *M. koreana*, *M. lenticulata*, *Magelona* sp. and a species approaching *M. pacifica* Monro, 1933. Subsequently, Al-Hakim and Glasby (2004) noted three species to occur off the Natuna Islands, South China Sea: *M. crenulifrons*, *M. cornuta* and an additional new record for the region, *M. gemmata* Mortimer and Mackie, 2003. Additional records from the region include: *M. cincta* from China (Sun et al., 2007; Zhang et al., 2016; Xu et al., 2016); *M. japonica* from Korea (Oh and Kim, 1976) and Japan (Lee and Paik, 1995; Nishijima et al., 2015); *M. longicornis* from the Sea of Japan and

Sea of Okhotsk (Zachs, 1933) and finally, *M. pacifica* from the Sea of Japan (Annenkova, 1937; Choi and Koh, 1990) and Sea of Okhotsk (Uschakov, 1950). However, it should be noted that several of the above records are species which were originally described from outside of the region: *M. californica*, *M. longicornis* and *M. pitelkai* are all originally described from the west coast of America, *M. pacifica* from the Panama region, *M. gemmata* from the Seychelles, *M. cornuta* from the Gulf of Oman, and *M. cincta* from South Africa, and caution should be noted with some of these records.

Material of a species approaching *M. cincta* observed by Mortimer and Mackie (2009) from Hong Kong corresponded well with the type material, however, differences in the nature of the thoracic neuropodial lamellae, palps, abdominal lamellae and overall size were observed. Unfortunately, whilst the authors felt it was likely to represent a new species, it could not be separated at that time without fresh material from the type locality. It is clear that the species warrants further investigation, but should be reported as *M.* cf. *cincta* until the two populations can be clearly diagnosed and separated. Whilst *M. cornuta* was originally described from the Gulf of Oman, material from Hong Kong was compared directly to the type material by Mortimer and Mackie (2009) during a redescription of the species. The Hong Kong material agreed well with the type material and the authors suggested the species had an Indo-West Pacific distribution. However, it is clear for the other species noted above (*M. californica*, *M. longicornis*, *M. pitelkai*, *M. pacifica* and *M. gemmata*) that further investigations are needed before their presence in the region can be verified, or whether they actually represent undescribed species.

Many of the species described or reported in the western Pacific warrant re-description and this is perhaps why several species originally described outside the region have been recorded. Rouse (2001) suggested that the diversity of *Magelona* species world-wide has been dramatically underestimated, primarily based on several studies showing high diversities of species in relatively small geographic areas such as the Gulf of Mexico (Uebelacker and Jones, 1984) or the Andaman Sea (Nateewathana and Hylleberg, 1991), and additionally noted in several subsequent studies: Seychelles (Mortimer and Mackie, 2003, 2006), the Portuguese shelf (Mortimer et al., 2011), and the Persian Gulf (Mortimer et al., 2012, Shakouri et al., 2017). These results suggest that many other magelonid species are likely to be present in the western Pacific and that taxonomic work is urgently needed in order to identify and describe them adequately. In order to improve the recognition of the different morphotypes and to try to establish their number, a key to adult specimens of magelonid species known to occur in the region is given at the end of this work. Species recorded in the region but originally described from other marine biogeographic realms were excluded from the key, with the exception of *M. cornuta* for the reasons outlined above.

Whilst knowledge of the Magelonidae of the north-western Pacific is patchy, that of neighbouring west coast of Thailand is better understood. Nateewathana and Hylleberg (1991) described eight new species: *M. kamala*, *M. methae*, *M. mickminni*, *M. noppi*, *M. pectinata*, *M. petersenae*, *M. pygmaea*, and *M. tinae*, and additionally reported the presence of *M. crenulifrons* and *M. cincta*. Mortimer and Mackie (2009) stated that the drawings and description of the latter species by Nateewathana and Hylleberg (1991) corresponded well with material of *M.* cf. *cincta* from Hong Kong as noted above. Whilst the species reported by Nateewathana and Hylleberg (1991) came from the Andaman Sea, in the western Indo-Pacific, they are herein included in the identification key as they are likely to be present in the South China Sea at the least.

Of the species known to occur in the western Pacific, the following differ to *R. bierii*: *M. cornuta*, *M. crenulifrons*, *M. japonica*, *M. koreana*, *M. lenticulata*, *M. methae* and *M. petersenae*, in possessing distinct prostomial horns; *M.* cf. *cincta*, *M. kamala*, *M. mickminni*, and *M. noppi*, in possessing rudimentary horns; and *M. parochillis*, *M. pectinata*, *M. sachalinensis* and *M. tinae*, in possessing prostomia that are longer than wide, carrying two pairs of prostomial ridges. The two remaining species, *M. agoensis* and *M. pygmaea* cannot be ruled out based purely on the morphology of the anterior region. The main distinguishing feature of the former species is the presence of polydentate abdominal hooded hooks, and in the latter species they are tridentate. In the absence of much of the body of *R. bierii*, including the whole abdominal region, these features cannot be observed. Moreover, whilst *M. pygmaea* was re-described by Mortimer and Mackie (2006), *M. agoensis* is a species which requires further evaluation, with the original description lacking many details required for separation of species. Sadly, the type material is believed to be lost (Shakouri et al., 2017), and so this is not possible at the present time. While both *M. agoensis* and *M. pygmaea* are a possibility, *R. bierii* may also represent an undescribed magelonid species, as the taxonomy of magelonids of the region is in need of a thorough revision. Thus, the genus and species that *R. bierii* should be attributed to are undeterminable at this time.

The recognition of *R. bierii* as an anterior region of an undetermined magelonid has an interest that goes beyond the advance in taxonomic knowledge of the group. Under the light of Integrative Taxonomy (Dayrat, 2005; Will et al., 2005; Wheeler, 2008), all relevant biological data generated from many different sources of systematics and biodiversity is integrated towards making high level taxonomy, taking advantage of the expertise, passion, skills, diligence or knowledge of everybody involved in the process, without the necessity of the full range of data being generated by each taxonomist (Wheeler, 2008). In this process, larval morphology and development also play an important role in the establishment of phylogenetic relationships (Blake and Arnofsky, 1999). Aberrant forms can be interesting from a phylogenetic point of view, but only if they are clearly identified and placed in the right taxonomic group. Failure to do so could lead to conclusions which are both misleading and deceptive. In this case, a taxon or a presumed larva being erroneously classified or identified has been corrected. The specific identity of other forms of *Rostraria* previously described for instance by Häcker (1898) and Ehlers (1913) have remained indeterminable, but their amphinomid nature was clearly established. If the morphology of *R. bierii* had been analysed together with other *Rostraria* larvae this would have introduced errors not only due to its post-larval status, but also due to its erroneous identification. Thus, caution is required whenever considering aberrant and poorly known forms while performing phylogenetic studies.

Key to adult specimens of known Magelonidae species in the western Pacific (type localities/confirmed locations given in brackets. Full descriptions of characters can be found in Capa et al. (2019).

1. Prostomium with distinct prostomial horns..............**Go to 2**
– Prostomium without prostomial horns, or with a squared anterior margin (often referred to as “rudimentary horns”)...**Go to 8**
2. Anterior margin smooth..**Go to 3**
– Anterior margin crenulate...**Go to 4**

3. Deep purple pigment band between chaetigers 5 and 8. Abdominal lamellae roughly equal in size in both rami....................................***M. japonica*** (Korean Archipelago, Japan)
– No pigmentation of the thoracic region. Abdominal parapodia sub-equal, those of the neuropodia being somewhat smaller.............................***M. koreana*** (Korean Archipelago)
4. Prostomium width approximately similar to length......**Go to 5**
– Prostomium wider than long................................**Go to 6**
5. Abdominal hooded hooks bidentate...***M. crenulifrons*** (Viet Nam, Hong Kong, Natuna Islands)
– Abdominal hooded hooks tridentate...***M. cornuta*** (Hong Kong)
6. Dorsal superior lobes present in the thorax.................**Go to 7**
– No dorsal superior lobes present in thorax, anterior margin only minutely crenulate...................***M. petersenae*** (Thailand)
7. Small dorsal superior lobes present on the ninth chaetiger, abdominal hooded hooks tridentate...........***M. lenticulata*** (Viet Nam)
– No dorsal superior lobes present on the ninth chaetiger, abdominal hooded hooks bidentate.................***M. methae*** (Thailand)
8. Chaetiger nine with mucronate chaetae.......................**Go to 9**
– Chaetiger nine bearing capillary chaetae only, as in chaetigers 1–8...**Go to 12**
9. Abdominal hooded hooks tridentate..........................**Go to 10**
– Abdominal hooded hooks bidentate..***M. sachalinensis*** (Sakhalin Island)
10. Thoracic notopodial lamellae with smooth upper edges..**Go to 11**
– Thoracic notopodial lamellae with pectinate upper edges...***M. pectinata*** (Thailand)
11. Abdominal parapodia without dorsal and ventral medial lobes...***M. parochilis*** (China)
– Notopodial lamellae of chaetiger 8 distinctly bi-lobed, abdominal parapodia with dorsal and ventral medial lobes...***M. tinae*** (Thailand)
12. Abdominal hooded hooks polydentate...***M. agoensis*** (Japan)
– Abdominal hooded hooks bi- or tridentate.................**Go to 13**
13. Thoracic notopodia with dorsal superior lobes.........**Go to 14**
– Thoracic notopodia without dorsal superior lobes......**Go to 15**
14. Neuropodia of chaetiger eight bearing a slender ventral lobe beneath the chaetal bundle..................***M. kamala*** (Thailand)
– Neuropodia of chaetiger eight bearing a small digitiform lobe underneath the chaetal bundle and an additional slender triangular postchaetal lamellae.................***M. noppi*** (Thailand)
15. Anterior thoracic neuropodial lamellae distinctly scoop-shaped..***M. cf. cincta*** (Hong Kong)
– Anterior thoracic neuropodial lamellae slender triangular...**Go to 16**
16. Moderate to large species with rudimentary horns, broad palps with several rows of papillae...***M. mickminni*** (Thailand)
– Prostomial margin rounded to straight, minute species with slender palps carrying two rows of papillae...***M. pygmaea*** (Thailand)

5 Conclusions

(1) *Rostraria bierii* is not an amphinomid or euphrosinid, but actually a magelonid.

(2) *Rostraria bierii* represents a juvenile or adult magelonid, not a larval form.

(3) Only the prostomium, first chaetiger (possibly part of second chaetiger) and burrowing organ of the worm are present.

(4) The species of magelonid is indeterminable, and it may be attributed to either genera of extant magelonid: *Magelona* or *Octomagelona*.

(5) *Rostraria bierii* is transferred to Magelonidae as a *taxon inquirendum*.

(6) Not all forms under the name *Rostraria* are amphinomids.

(7) A review of the Magelonidae in the north of western Pacific is urgently needed. Records of species described from outside the region should be treated with caution.

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