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New Species of *Oriopsis* and a New Record for *Augeneriella* cf. *dubia* Hartmann-Schröder, 1965 from Eastern Australia (Polychaeta: Sabellidae)

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ABSTRACT. Some species of *Oriopsis* found around the rocky shores of Sydney, Australia are described and a key to Australian species is provided. Four new species are described: *Oriopsis bicoloris* n.sp., *O. brevicollaris* n.sp., *O. dentata* n.sp. and *O. mobilis* n.sp. *Augeneriella* cf. *dubia* Hartmann-Schröder, previously known from Hawaii, is recorded from the Great Barrier Reef. The identification of *A. cf. dubia* is tentative due to poor type material. The definitions for both genera are discussed and emended.

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The few records of the sabellid sub-family Fabricinae made in Australia prior to 1979 have been listed by Day & Hutchings (1979). *Oriopsis michaelsoni* Banse, 1957 was described from Western Australia and additional new species have been described from Western Australia (*O. bussetonensis* Hartmann-Schröder, 1982) and South Australia (*O. cincta* Hartmann-Schröder, 1986 and *O. denticollis* Hartmann-Schröder, 1986). The two records of *Oriopsis* species found in eastern Australian waters, *O. cf. michaelsoni* Banse, 1957 and *O. parvula* (Ehlers, 1913), are doubtful (see Banse, 1957). No records of fabriciian sabellids have been made from the Great Barrier

Reef to date. Examination of rocky intertidal areas on the eastern Australian coast (New South Wales) has revealed four new species of *Oriopsis*. *Augeneriella* cf. *dubia* Hartmann-Schröder, 1965, previously known only from the type locality of Hawaii, is recorded and described from One Tree Reef, Great Barrier Reef.

Little use has been made of scanning electron microscopy (S.E.M.) in the taxonomy of small sabellids. Ben Eliahu (1975) and Wu (1984) have examined *Oriopsis* species with S.E.M. and in the following descriptions it is clear that this form of examination is invaluable with animals of such small size.

Materials and Methods

Collections of algal mats, sediment and encrustations were made from the lower intertidal zone at the sites indicated in the text. This material was then sorted under a binocular microscope. All species described here are tubiculous but readily leave the tube upon being disturbed and are easily seen. Specimens of all species were examined alive before fixation in 10% sea-water formalin and transferred to 70% ethanol (after washing). Photomicrographs were taken with a Leitz Dialux photomicroscope using Interference Contrast and an Orthomat camera. For S.E.M., specimens were dehydrated in ethanol, cleaned by ultrasonication, and critical point dried with CO₂ and coated with gold or platinum (200Å) before viewing with a Philips 505 S.E.M. Descriptions of new species are based on the alcohol preserved holotype and some S.E.M. observations of paratypes, and the variation is based on alcohol preserved paratypes.

The following abbreviations have been used: AHF – Allan Hancock Foundation, Los Angeles; AM – Australian Museum, Sydney; AMNH – American Museum of Natural History; BMNH – British Museum of Natural History, London; HZM – Zoologisches Institut und Zoologisches Museum der Universität, Hamburg; USNM – National Museum of Natural History, Smithsonian Institution, Washington D.C.; ZMC – Zoologisches Museum, Copenhagen.

Systematics

Fabricinae Rioja

Fabricinae Rioja, 1923: 13.—Banse, 1957: 97–99.—Fauchald, 1977: 136.

Diagnosis. Sabellidae with no companion setae in thoracic segments. Acicular uncini in thoracic neuropodia.

Oriopsis Caullery & Mesnil, emended

Oriopsis Caullery & Mesnil, 1896: 483–484, figs 1–2.—Banse, 1957: 68–69, fig. 1.—Fauchald, 1977: 139.—Knight-Jones, 1983: 289–290.

Oria Quatrefages, 1866: 462

Oriades Chamberlin, 1919: 470.

Oridia Rioja, 1917: 73.

Type species. *Fabricia armandi* Claparède, 1864, designated by Banse, 1957.

Diagnosis. Fabricinae with 3–5 pairs of radioles, without eyes or ridges. Radioles with external flanges. Branchial hearts absent. 1 or 2 pairs of filaments arise from between ventral halves of radiolar crown. Collar may be

present or absent; when present is incomplete, forming a gap dorsally. Usually a pair of eyes in collar segment and a pair of statocysts in first setiger. Pair of eyes present in pygidium. Body comprised of 8 thoracic and more than 4 abdominal setigers. First thoracic setiger bears notosetae only, other setigers biramous. Thoracic notosetae may be long or short, limbate or sub-spatulate/spatulate capillaries and, in some species, short, bayonet setae. Thoracic neurosetae, generally few in number, are acicular uncini with a prominent basal tooth and 2–3 arcs of teeth above it, with teeth of first arc fewer and stouter than those of upper arcs. Abdominal uncini usually quadrangular, avicular, toothed margin usually more or less parallel to base and usually with well-defined notch at anterior margin. Abdominal neurosetae a few long capillaries, sometimes limbate, arranged in clusters of 2 or 3. Glandular areas are indistinct, may be visible ventrally as shields, each divided by a transverse groove.

Comments. This diagnosis is slightly modified from that of Knight-Jones (1983). The definition of number of abdominal segments has been altered. Knight-Jones (1983) stated "...abdominal setigers fewer than those of the thorax but not less than four..." however, *O. alatooides* Hartmann-Schröder, 1962, *O. bansei* Day, 1961, *O. crenicollis* (Annenkova, 1934), *O. eimeri* (Langerhans, 1880), *O. magellanica* Hartmann-Schröder, 1962 and *O. rivularis* (Annenkova, 1929) all have more abdominal setigers than those of the thorax (Table 1).

Bayonet setae have only been recorded in the type species *O. armandi* (by Fauvel, 1927) and in *O. rivularis*. These setae are characteristic of the genus *Chone* (see Banse, 1972) but have also been found in three of the new species described here. They are difficult to distinguish with the light microscope but are easily seen with the S.E.M. Closer examination of other species may reveal a wider distribution of these setae.

The absence of a glandular girdle as a character is removed due to the fact that *O. cincta* Hartmann-Schröder, 1986 and all four new species described in this paper have a glandular girdle around the second setiger. Other genera of the Fabricinae e.g. *Euchone* Malmgren, 1866, *Chone* Krøyer, 1856, *Jasmineira* Langerhans, 1880 have this feature (see Banse, 1972) and it may well have been overlooked in animals of the very small size typical of *Oriopsis*. Banse (1972) states that some species of *Oriopsis*, e.g. *O. rivularis*, can only be excluded from the genus *Chone* on the basis that they lack the glandular girdle. Examination of all species in *Chone* and *Oriopsis* is needed to properly define the characters distinguishing the two genera.

The filaments lying between the halves of the radiolar crown are functionally different to the pinnules of the radioles and appear to be involved in tube construction. They are mobile and often in contact with the substrate (personal observations on live material). Day (1967) suggests they simulate the palps of other polychaetes. Since it has not been proved they are homologous with palps they will here be termed filaments to distinguish them from the pinnules of the radioles.

Table 1. Distinguishing features of *Oriopsis*.

| Species and subspecies | Radioles (pairs) | Abd. setigers | Filaments (pairs) | Collar | Thoracic notosetae | Type locality |
|--|------------------|---------------|-------------------|------------------------------|----------------------|------------------|
| <i>O. alata</i> (Ehlers, 1897) | 4 | 6 | 1 | absent | limbate | South Georgia |
| <i>O. alata pectinata</i> Banse, 1957 | 4 | 6 | 2 | vestigial | bilimbate | New Zealand |
| <i>O. alatoides</i> Hartmann-Schröder, 1962 | 3 | 11 | 1 | lateral clefts | bilimbate | Chile |
| <i>O. armandi</i> (Claparède, 1864) | 3 | 4-12 | 1 | smooth | subspatulate | Mediterranean |
| <i>O. bansei</i> Day, 1961 | 3-4 | 9 | 1 | smooth | subspatulate | South Africa |
| <i>O. bicoloris</i> n.sp. Rouse, 1990 | 3 | 9 | 2 | smooth | limbate | NSW, Australia |
| <i>O. brevicollaris</i> n.sp. Rouse, 1990 | 4 | 7 | 2 | vestigial | bilimbate | NSW, Australia |
| <i>O. busseltonensis</i> Hartmann-Schröder, 1982 | 4 | 6 | 1 | crenulate | bilimbate | WA, Australia |
| <i>O. cincta</i> Hartmann-Schröder, 1986 | 4 | 8 | 0? | irregular crenations | bilimbate | SA, Australia |
| <i>O. coalescens</i> Banse, 1959 | 4 | 6 | 1 | ventral projection | bilimbate | South India |
| <i>O. crenicollis</i> (Annenkova, 1934) | 3-4 | 15 | ? | crenulate | spatulate | Bering Strait |
| <i>O. dentata</i> n.sp. Rouse, 1990 | 3 | 11 | 2 | smooth ventral notch | spatulate | NSW, Australia |
| <i>O. denticollis</i> Hartmann-Schröder, 1986 | 4 | 6 | 2 | crenulate | bilimbate | SA, Australia |
| <i>O. ehlersi</i> Day, 1961 | 3 | 7 | 2 | smooth ventral notch | subspatulate | South Africa |
| <i>O. eimeri</i> (Langerhans, 1880) | 3 | 9-10 | 1? | crenulate | subspatulate | Madeira |
| <i>O. eimeri australis</i> Hartmann-Schröder, 1981 | 4 | 8 | 0 | crenulate | spatulate | WA, Australia |
| <i>O. eimeri persinosa</i> Ben-Eliahu, 1975 | 5 | 10 | ? | crenulate | limbate | Mediterranean |
| <i>O. gracilis</i> Hartman, 1969 | 3 | 8 | 0? | absent or vestigial | bilimbate | California, USA |
| <i>O. hynensis</i> Knight-Jones, 1983 | 3 | 5 | 1 | wide dorsal gap | bilimbate | Ireland |
| <i>O. limbata</i> (Ehlers, 1897) | 4 | 5 | 1 | ventral notch and projection | limbate | South Patagonia |
| <i>O. magellanica</i> Hartmann-Schröder, 1962 | 4 | 9 | ? | smooth ventral notch | bilimbate | Chile |
| <i>O. magna</i> Banse, 1957 | 5 | 5 | 1 | smooth ventral notch | bilimbate | South Georgia |
| <i>O. michaelsoni</i> Banse, 1957 | 4-5 | 6 | 1 | dorsal gap vent. projection | bilimbate | WA, Australia |
| <i>O. minuta</i> (Berkeley & Berkeley, 1932) | 2 | 5 | ? | absent | spatulate | Canada |
| <i>O. mobilis</i> n.sp. Rouse, 1990 | 3 | 5 | 1 | smooth ventral notch | limbate | NSW, Australia |
| <i>O. neglecta</i> Banse, 1957 | 4 | 5-6 | 1 | absent | subspatulate | South Africa |
| <i>O. pacifica</i> (Rullier, 1977) | 3 | 3 | ? | absent? | bilimbate | New Caledonia |
| <i>O. parvula</i> (Ehlers, 1913) | 3 | 6 | 1 | ventral projection | straight capillaries | South Africa |
| <i>O. rivularis</i> (Annenkova, 1929) | 3 | 17 | 1 | absent | spatulate | Sea of Ohkotosk |
| <i>O. taltanensis</i> Hartmann-Schröder, 1962 | 3 | 5 | 1 | dorsal clefts | bilimbate | Chile |
| <i>O. tristanensis</i> (Day, 1954) | 4 | 6 | 0? | crenulate | spatulate | Tristan da Cunha |

The number of abdominal setigers and radioles in the crown (Day, 1961) and the structure of the collar (Knight-Jones, 1983) are regarded as good specific characters for *Oriopsis*. These features are summarised in Table 1. The number of abdominal setigers ascribed to some species of *Oriopsis* is variable (Table 1). However in all four species described here a maximum number of setigers was observed. It appears that adults continue to add abdominal setigers after reaching sexual maturity until they reach this maximum. For previously described species discussed here, the largest number of abdominal segments described by the author will be regarded as the adult number.

Considerable confusion exists over the location of the peristomium in members of the Fabricinae. Several authors, Hartman (1951), Banse (1957) and Day (1967), state that the first body segment bearing the collar and a pair of eyes, when present, is the peristomium. Fitzhugh (1983) regards the segment bearing the collar to be separate from, and posterior to, the peristomium. Knight-Jones (1983) appears to regard the first setiger as the first body segment and so bears the collar and eyes, where present, as well as notosetae. In this study the position of Hartman (1951), Banse (1957) and Day (1967) has been followed although the peristomium may in fact be fused to the first asetigerous body segment.

Key to the Australian Species of *Oriopsis* *

- 1. Collar prominent 2
 - Collar vestigial *O. brevicollaris* n.sp.
- 2. Collar crenulate or irregular 3
 - Collar smooth 6
- 3. 6 abdominal setigers 4
 - 8 abdominal setigers 5
- 4. Collar low and irregular *O. busseltonensis*
 - Collar high and evenly crenulate *O. denticollis*
- 5. Distinct glandular girdle around setiger 2 *O. cincta*
 - Glandular girdle absent or indistinct *O. eimeri australis*
- 6. 3 pairs of radioles 7
 - More than 3 pairs of radioles *O. michaelsoni*
- 7. 5 abdominal setigers *O. mobilis* n.sp.
 - More than 5 abdominal setigers 8
- 8. 9 abdominal setigers *O. bicoloris* n.sp.
 - 11 abdominal setigers *O. dentata* n.sp.

*This key is not meant to imply phylogenetic relationships.

Oriopsis bicoloris n.sp.

Schröder.

Figs 1a-i, 2a-b

Material examined. HOLOTYPE: New South Wales, Port Jackson, Bottle and Glass rocks, 33°58'S 151°00'E, intertidal, (AM W 203545). PARATYPES: New South Wales, Port Jackson, Bottle and Glass Rocks, 33°58'S 151°00'E, intertidal, 4 (AM W 203550, in 70% alcohol), 4 (AM W 203559, on S.E.M. stub), 4 (AHF POLY 1491), 4 (BMNH ZB 1989.11-14), 4 (HZM P-19693), 4 (USNM 122288). All collected 25 Nov. 1988 by the author.

Other material examined. *Oriopsis cincta* Paratype: Australia South Australia, Kangaroo Island (HZM P-18634). Collected 14 Dec. 1975 by G. Hartmann-

Description. Complete mature female with 8 thoracic and 9 abdominal setigers (Fig. 1a). Total length of 2.1 mm. Crown made up of 3 pairs of radioles with distinct lateral flanges (Fig. 1b). The flanges fuse above the bases of the radioles forming a slight web (Fig. 1a). Each radiole with 5-6 pairs of pinnules ending with a terminal pinnule. Pinnules of each radiole equal in length. 2 pairs of filaments ventrally between halves of crown. Branchial hearts absent. Thoracic collar high, smooth and complete with a distinct notch ventrally. Posterior to notch is a large rectangular ciliated patch. Collar separated dorsally by a narrow gap (Fig. 1a). No eyes or statocysts visible in preserved specimen, however in life a pair of red eyes

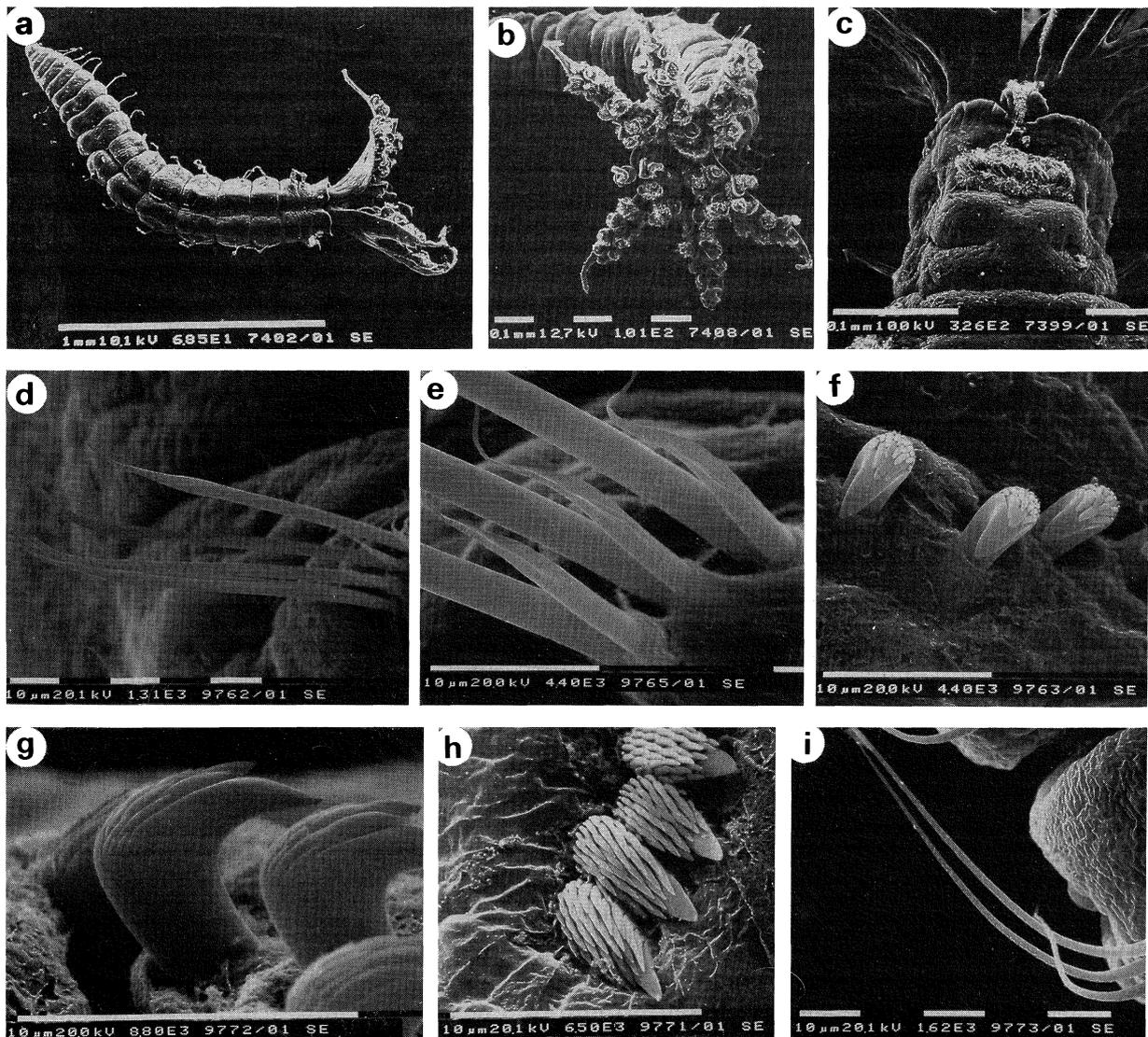


Fig. 1. *Oriopsis bicoloris* n.sp. (AM W 203557): a. S.E.M. dorsal view of whole animal showing narrow gap in collar. b. S.E.M. frontal view of crown showing three pairs of radioles. Note lateral flanges of radioles. c. S.E.M. view of collar region showing ventral notch and ciliated patch. d. S.E.M. showing long limbate and short bayonet capillary notosetae of thorax. e. S.E.M. showing bayonet notosetae of thorax. f. S.E.M. showing frontal view of thoracic uncini. g. S.E.M. showing side view of thoracic uncini. h. S.E.M. showing abdominal uncini. i. S.E.M. showing capillary neurosetae of abdomen. Scale indicated by white bar and bottom left measurement on each figure.

were apparent in peristomium (Fig.2a) and another in pygidium. A pair of spermathecae visible in collar before preservation (Fig.2a). A pair of statocysts also visible in first setiger (Fig.2a,b). A glandular girdle, immediately behind setae of second setiger, was evident when alive (Fig. 2a) and is visible in preserved holotype.

Thoracic notopodia have 3–4 long, limbate capillaries with fine teeth along one margin and 3–4 short bayonet

setae per torus (Fig.1d,e). Thoracic neurosetae acicular uncini with 3 rows of teeth above basal tooth. First row above basal tooth has a large central tooth flanked by smaller teeth (Fig.1f,g). Between 3 and 6 uncini per torus, decreasing in posterior segments. Abdominal uncini quadrangular with distal surface covered with rows of small teeth over a small basal tooth (Fig.1h). Between 4 and 13 uncini per torus. Abdominal neurosetae capillaries, 1–3 per

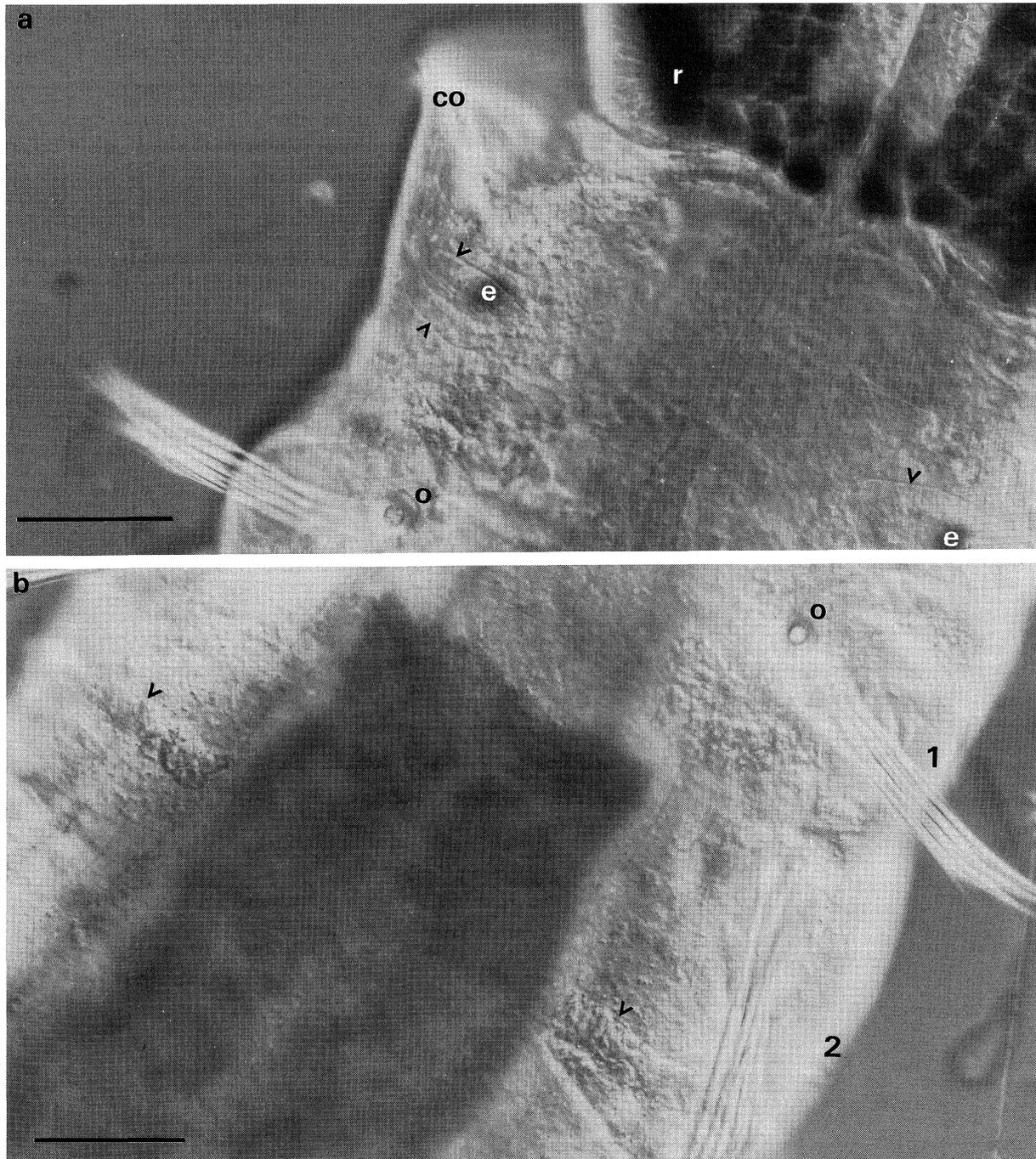


Fig.2. *Oriopsis bicoloris* n.sp. holotype (AM W 203551). a. Light micrograph of live holotype showing base of radiolar crown (r), collar (co), eyes (e), spermathecae in collar (indicated by arrows) and statocyst in first setiger (o). b. Light micrograph of live holotype showing statocyst in first setiger (o) and glandular girdle behind the setae of the second setiger (indicated by arrows). Scale bar for both a. and b. is 100 μ m.

torus (Fig. 1i).

Pygidium semicircular. Faecal groove visible mid-dorsally along thorax (Fig. 1a) and midventrally along abdomen to anus. Holotype opaque, uniformly white. In life body was transparent with entire length of radiolar flanges white in colour and orange eggs in posterior thoracic setigers of female. Tube fragile and closely fitting around occupant, composed of fine brown silt and mucous.

Variation. The maximum number of abdominal setigers is nine, with smaller, juvenile, specimens having fewer than this number. The paratype material matches that of the holotype very closely. Many specimens showed pink colouration along radioles in life instead of the more common white pigmentation. All paratypes have eight thoracic and seven to nine abdominal setigers. Paratype size range from 1.5 mm to 2 mm in length.

Comments. Of the species of *Oriopsis* with three pairs of radioles forming the crown only *Oriopsis bansei* Day, 1961 has nine abdominal segments. *Oriopsis bansei* also has a collar with smooth margins, a ventral notch and a small dorsal gap. However *O. bansei*, from South Africa, may have four pairs of radioles and has thoracic notosetae with characteristic broad blades, not limbate setae, as well as differences in overall setal count from *O. bicoloris* n.sp. No glandular girdle has been recorded for any other species of *Oriopsis* apart from *O. cincta* Hartmann-Schröder, 1986 which has four pairs of radioles and eight abdominal setigers, and the four new species described here. The presence of a glandular girdle around the second setiger was named as an important difference between *Oriopsis* and *Chone* by Banse (1972). *Oriopsis bicoloris* and any of the other new species described here should not be referred to *Chone* since they lack the three types of thoracic notosetae typical of that genus. They also have fewer radioles and abdominal setigers than any species of *Chone* described to date. However, Rouse (in preparation) has found marked differences in sperm structure amongst the four species of *Oriopsis* recorded here and has located spermathecae in females of three of the species. Further investigation of sperm and spermathecae amongst members of the Fabricinae is required to determine the importance of these features taxonomically.

Habitat. Found, gravid all year round, forming dense mats of tubes (greater than 250,000 m²) along with an unidentified spionid just below low water spring tide in rock pools.

Distribution. Type locality only.

Etymology. Specific name is from the latin *bicolor*, meaning two coloured, referring to the white or pink colouring of the radioles.

Oriopsis brevicollaris n.sp.

Fig. 3a-i

Material examined. HOLOTYPE: New South Wales, North Bondi rocks, 33°58'S 151°00'E, intertidal, (AM W 203553) PARATYPES: New South Wales, North Bondi rocks, 33°58'S 151°00'E, intertidal, 6 (AM W 203554, in 70% alcohol), 3 (AM W 203558, on S.E.M. stub), 6 (AHF POLY 1492), 6 (BMNH ZB 1989.15-20), 6 (HZM P-19694), 6 (USNM 122290). All collected 30 Nov. 1988 by the author.

Other material examined. HOLOTYPE: *Oriopsis alata pectinata* Banse, 1957 (ZMC) New Zealand Masked Island, Carnley Harbour. Collected 3 Dec. 1914.

Description. Complete mature female with 8 thoracic and 7 abdominal setigers (Fig. 3a). Total length 1.8 mm. Crown has 4 pairs of radioles, each with lateral flanges (Fig. 3c). Flanges fuse to form a web above bases of radioles (Fig. 3a). Each radiole with 7 pairs of pinnules ending with a long terminal pinnule. Main pinnules extend beyond level of terminal pinnule of each radiole. 2 pairs of filaments ventrally between halves of crown. One pair almost length of radioles with second pair shorter and thicker. Branchial hearts absent. Thoracic collar reduced to a thin flange dorsally and laterally, extending forward ventrally to form a triangular projection with a small notch (Fig. 3b,c). Collar separated dorsally by a wide gap. Eyes and statocysts not visible in alcohol preserved holotype, however in life it had a pair of red eyes in peristomium and another in pygidium. When alive a pair of statocysts also visible in first setiger. A thin glandular girdle occurs behind setae of second setiger, however this feature difficult to see in preserved holotype.

Thoracic notopodia with 3-4 long bilimbate capillaries and 3-4 short bayonet setae per torus (Fig. 3e). Thoracic neurosetae acicular uncini with 3 rows of teeth above basal tooth. First row above basal tooth has a large central tooth only (Fig. 3f,g). Between 3 and 6 uncini per torus decreasing in posterior segments. Abdominal notosetae have quadrangular uncini with distal surface covered with rows of small teeth overlying a large basal tooth (Fig. 3h). Between 6 and 10 uncini per torus. Abdominal neurosetae simple capillaries, 2-3 per torus (Fig. 3i).

Pygidium semicircular. Faecal groove runs along dorsal surface of the animal only. Anus dorsal (Fig. 3a). Midthoracic segments are distinctly longer and wider than other segments (Fig. 3a). Holotype opaque, uniformly white. In life body transparent and orange eggs visible in thoracic setigers. Tube composed of fine sediment and mucous, 3-4 times length of animal and closely fitting around occupant.

Variation. The maximum number of abdominal setigers is seven, with smaller specimens having fewer than this number. The paratype material matches that of the holotype very closely except smaller specimens also have fewer radioles and abdominal setigers. All paratypes

have eight thoracic and three to seven abdominal setigers. Many have three pairs of radioles or three pairs and one extra, giving a total of seven radioles. Paratype size range from 0.8 mm to 1.8 mm in length.

Comments. *Oriopsis brevicollaris* n.sp. can be clearly distinguished from other species of *Oriopsis* in possessing four pairs of radioles and seven abdominal setigers. Only *O. ehlersi* Day, 1961 has seven abdominal setigers but is different from *O. brevicollaris* n.sp. in having three pairs of radioles and a distinct smooth collar. However, the description by Banse (1957) of *O. alata pectinata* is similar to *O. brevicollaris* n.sp. in having a reduced collar, four pairs of radioles, two pairs of ventral filaments, bilimbrate thoracic notosetae and numerous abdominal uncini with a very

prominent basal tooth. The holotype of *O. alata pectinata* has six abdominal setigers and is much larger (4 mm) than any specimen of *O. brevicollaris* n.sp. (maximum 1.8 mm) with seven setigers. *Oriopsis alata pectinata* has segments of more even width along the body unlike the distinctly wider midthoracic segments of *O. brevicollaris* n.sp.

Habitat. Found gravid all year round amongst the tubes of the serpulid polychaete *Filograna implexa* in the littoral zone.

Distribution. Type locality only.

Etymology. Specific name is derived from the latin *brevis*, meaning short or small, and *collar* for collar.

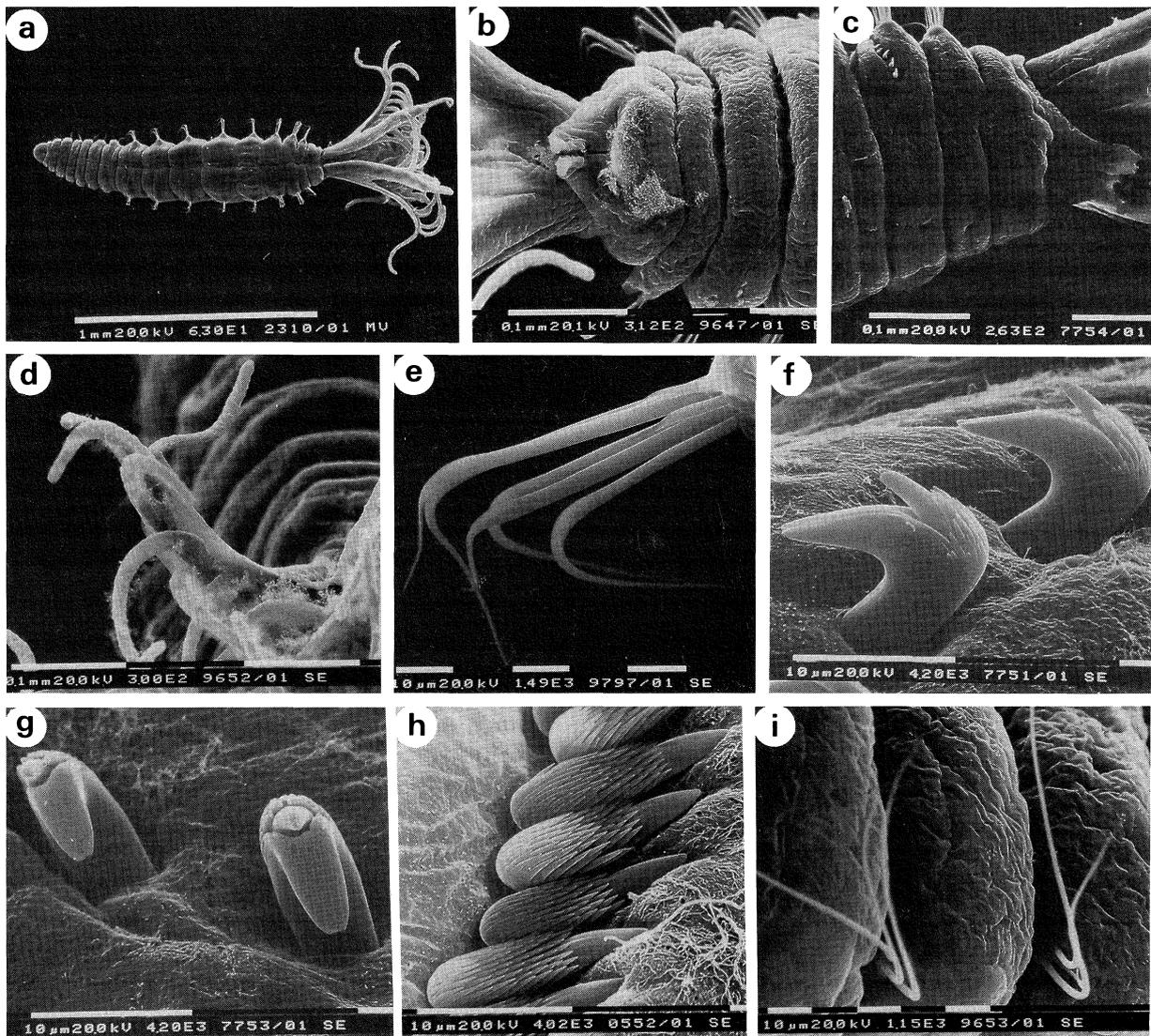


Fig.3. *Oriopsis brevicollaris* n.sp. (AM W 203558): a. S.E.M. ventral view of whole animal. b. S.E.M. ventral view of collar region. c. S.E.M. side view of collar region. d. S.E.M. view of one radiole showing lateral flanges characteristic of *Oriopsis*. e. S.E.M. showing long limbate and shorter bayonet notosetae of thorax. f. S.E.M. showing side view of thoracic uncini. g. S.E.M. showing frontal view of thoracic uncini. h. S.E.M. showing abdominal uncini. Note prominent basal teeth. i. S.E.M. showing capillary neurosetae of abdomen. Scale indicated by white bar and bottom left measurement on each figure.

Oriopsis dentata n.sp.

Fig.4a-i

Material examined. HOLOTYPE: New South Wales, Port Jackson, Bottle and Glass Rocks, 33°58'S 151°00'E, intertidal, (AM W 203555). PARATYPES: New South Wales, Port Jackson, Bottle and Glass Rocks 33°58'S 151°00'E, intertidal, 5 (AM W 203556, in 70% alcohol), 3 (AM W 203560, on S.E.M. stub), 5 (AHF POLY 1493), 5 (BMNH ZB 1989.21-25), 5 (HZM P-19695), 5 (USNM 122289). All collected 25 Nov. 1988 by the author.

Description. Complete mature female with 8 thoracic and 11 abdominal setigers (Fig.4a). Total length of 2.2 mm.

Crown of 3 pairs of radioles with distinct lateral flanges (Fig.4b). Flanges fuse above bases of radioles forming a slight web. Each radiole with 6 pairs of pinnules ending with a terminal pinnule. 2 pairs of filaments ventrally between halves of crown. One pair as long as crown, second approximately one quarter length of crown. Branchial hearts absent. Thoracic collar high, smooth and complete (Fig.4b,c) with a small notch ventrally. Collar separated dorsally by a wide gap. No eyes or statocysts visible in preserved specimens, however in life holotype had a pair of red eyes apparent in collar segment and in pygidium. A pair of statocysts also found in first setiger in alive specimens. A thin glandular girdle occurs behind setae of second setiger, however this feature difficult to see in preserved holotype.

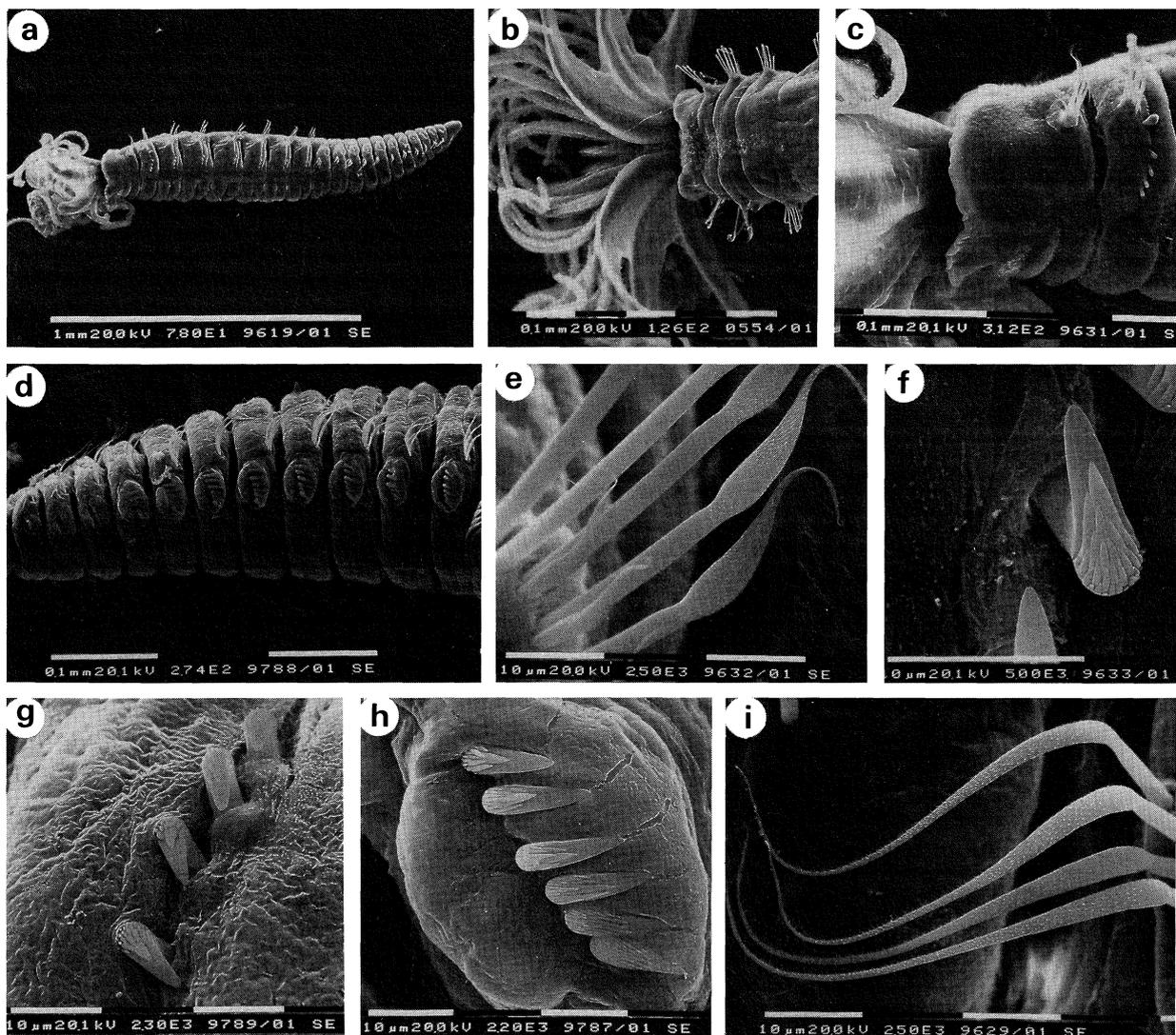


Fig.4. *Oriopsis dentata* n.sp. (AM W 203560): a. S.E.M. side view of whole animal. b. S.E.M. dorsal view of crown and collar showing three pairs of radioles and wide gap in collar. Note lateral flanges of radioles fusing to form basal webbing. c. S.E.M. side view of collar region. d. S.E.M. showing abdominal region with 11 setigers. e. S.E.M. showing long spatulate and shorter bayonet notosetae of thorax. f. S.E.M. showing dorsal view of thoracic uncini. g. S.E.M. showing thoracic uncini. h. S.E.M. showing abdominal uncini. Note prominent basal tooth and variation in overlying teeth. i. S.E.M. showing distinct limbate capillary neurosetae of abdomen. Scale indicated by white bar and bottom left measurement on each figure.

Thoracic notosetae 4–5 long spatulate capillaries and 3–4 shorter bayonet setae per torus (Fig.4e). Thoracic neurosetae acicular uncini with 3 rows of teeth above basal tooth. First row above basal tooth has a large central tooth flanked by smaller teeth (Fig.4f,g). Between 2 and 4 uncini per torus, decreasing in posterior segments. Abdominal uncini quadrangular with distal surface covered with rows of small teeth overlying a large basal tooth (Fig.4h). Between 3 and 6 uncini per torus (Fig.4d). Considerable variation in form of rows of teeth overlying basal tooth of abdominal uncini (Fig.4h). Abdominal neurosetae distinct limbate capillaries, 1–4 per torus (Fig.4i).

Pygidium semicircular. Faecal groove runs mid-dorsally along thorax (Fig.4b) and midventrally along abdomen. Holotype opaque, uniformly white. In life body transparent with base of radiolar flanges white in colour and orange eggs in thoracic setigers of females. Tube strong, 3–4 times length of animal, closely fitting around occupant and composed of fine sediment and parchment-like material.

Variation. The maximum number of abdominal setigers is eleven, with smaller specimens having fewer than this number. The paratype material matches that of the holotype very closely except for size, and male specimens have body cavity filled with sperm. All paratypes have eight thoracic and four to eleven abdominal setigers. Paratype size range from 0.8 mm to 2.3 mm in length.

Comments. Of the species of *Oriopsis* with three pairs of radioles forming the crown only *O. alatoides* Hartmann-Schröder, 1962 has eleven abdominal setigers. It is distinct from *O. dentata* in having only one pair of ventral filaments and ventrolateral clefts in the collar. *Oriopsis crenicollis* (Annenkova, 1934), *O. rivularis* (Annenkova, 1929) and *O. eimeri australis* Hartmann-Schröder, 1981 are similar to *O. dentata* in having spatulate thoracic notosetae, abdominal uncini with a very large basal tooth and limbate abdominal neurosetae, however they have different numbers of abdominal setigers (see Table 1). *Oriopsis dentata*, *O. rivularis* and *O. crenicollis* show some resemblance to small members of the genus *Chone* (see Banse, 1957, 1972) in the form of the abdominal uncini and the limbate abdominal neurosetae. However *O. dentata* cannot currently be referred to *Chone* since it has only two types of thoracic notosetae.

Habitat. Found in low numbers amongst dead tubes of the serpulid polychaete *Galeolaria caespitosa*. Also found in low numbers amongst the tubes of the serpulid polychaete *Filograna implexa* in the littoral zone.

Distribution. Type locality only.

Etymology. Specific name from the latin *dentatus*, meaning toothed, refers to the large basal tooth of the abdominal uncini.

Oriopsis mobilis n.sp.

Fig.5a–i

Material examined. HOLOTYPE: New South Wales, North Bondi rocks, 33°58'S 151°00'E, intertidal, (AM W 203545). PARATYPES: New South Wales, North Bondi rocks, 33°58'S 151°00'E, intertidal, 4 (AM W 203550, in 70% alcohol), 4 (AM W 203559, on S.E.M. stub), 4 (AHF POLY 1494), 4 (BMNH ZB 1989.26-29), 4 (HZM P-19696), 4 (USNM 122291). All collected 30 Nov. 1988 by the author.

Description. Complete mature female with 8 thoracic and 5 abdominal setigers (Fig.5a). Total length of 1.1 mm. Crown made up of 3 pairs of radioles with distinct lateral flanges (Fig.5b,c). Flanges fuse above bases of radioles forming a slight web (Fig.5c). Each radiole with 5 pairs of pinnules ending with a terminal pinnule. Proximal pinnules of each radiole are longest and extend furthest out giving crown a subspherical appearance (Fig.5a). 2 long filaments ventrally between halves of crown. Branchial hearts absent. Thoracic collar high, smooth and complete with a small notch ventrally (Fig.5e). Posterior to notch is a small ciliated patch. Collar separated dorsally by a small gap (Fig.5d). No eyes or statocysts visible in preserved specimen, however in life holotype had a pair of red eyes in collar segment and another in pygidium. A pair of statocysts also found in first setiger. A thin glandular girdle occurs behind setae of second setiger, however this feature difficult to see in preserved holotype.

Thoracic notosetae limbate capillaries with fine teeth along one margin. Between 3–4 short limbate setae and 3–4 long limbate setae per torus (Fig.5f). Thoracic neurosetae, 3 and 5 acicular uncini per torus, have 2 rows of teeth above basal tooth. First row above basal tooth has a large central tooth flanked by smaller teeth (Fig.5g). Abdominal uncini quadrangular with distal surface covered with rows of small teeth over an indistinct basal tooth (Fig.5h), between 9 and 3 uncini per torus, decreasing posteriorly. Abdominal neurosetae capillaries, 1–2 per torus (Fig.5i).

Pygidium semicircular in shape. Faecal groove arises ventrally from anus and crosses to dorsal side at junction between abdomen and thorax (Fig.5a). Holotype opaque, uniformly white. In life body transparent with white patches at base of crown and orange eggs in posterior thoracic setigers. Tube fragile and closely fitting around occupant, composed of fine brown silt and mucous.

Variation. The maximum number of abdominal setigers appears to be five, with smaller specimens having four. The paratype material matches that of the holotype very closely except for size differences and some variation in the white patterns on the radioles. All paratypes have eight thoracic and four or five abdominal setigers. Paratype size range from 0.8 mm to 1.3 mm in length.

Comments. Of the previously described species of *Oriopsis* with three pairs of radioles forming the crown, *O. alatoides* Hartmann-Schröder, 1962, *O. ehlersi* Day, 1961, *O. eimeri* (Langerhans, 1880), *O. gracilis* Hartman, 1969, *O. hynensis* Knight-Jones, 1983, *O. rivularis* (Annenkova, 1929) and *O. taltanensis* Hartmann-Schröder, 1962, only *O. taltanensis*, *O. hynensis* and *O. gracilis* have five abdominal setigers. None of these species has a collar with a ventral notch or a small dorsal gap. *Oriopsis taltanensis* has unique dorsal clefts in the collar margin, *O. hynensis* has a very low collar that exposes the peristomium ventrally and has a very wide dorsal gap, *O. gracilis* has no collar or only vestiges of one.

Habitat. Found, gravid all year round, amongst mats of

the red alga *Corallina officianilis* and the tubes of the serpulid polychaete *Filograna implexa* in the littoral zone.

Distribution. Type locality only.

Etymology. Specific name is from the latin *mobilis*, meaning nimble, referring to the violent flexing of the body this species undergoes when disturbed.

Augeneriella Banse, emended

Augeneriella Banse, 1957: 95–96, fig 9.—Hartmann-Schröder, 1965: 156–158.—Gitay, 1970: 105–109.—

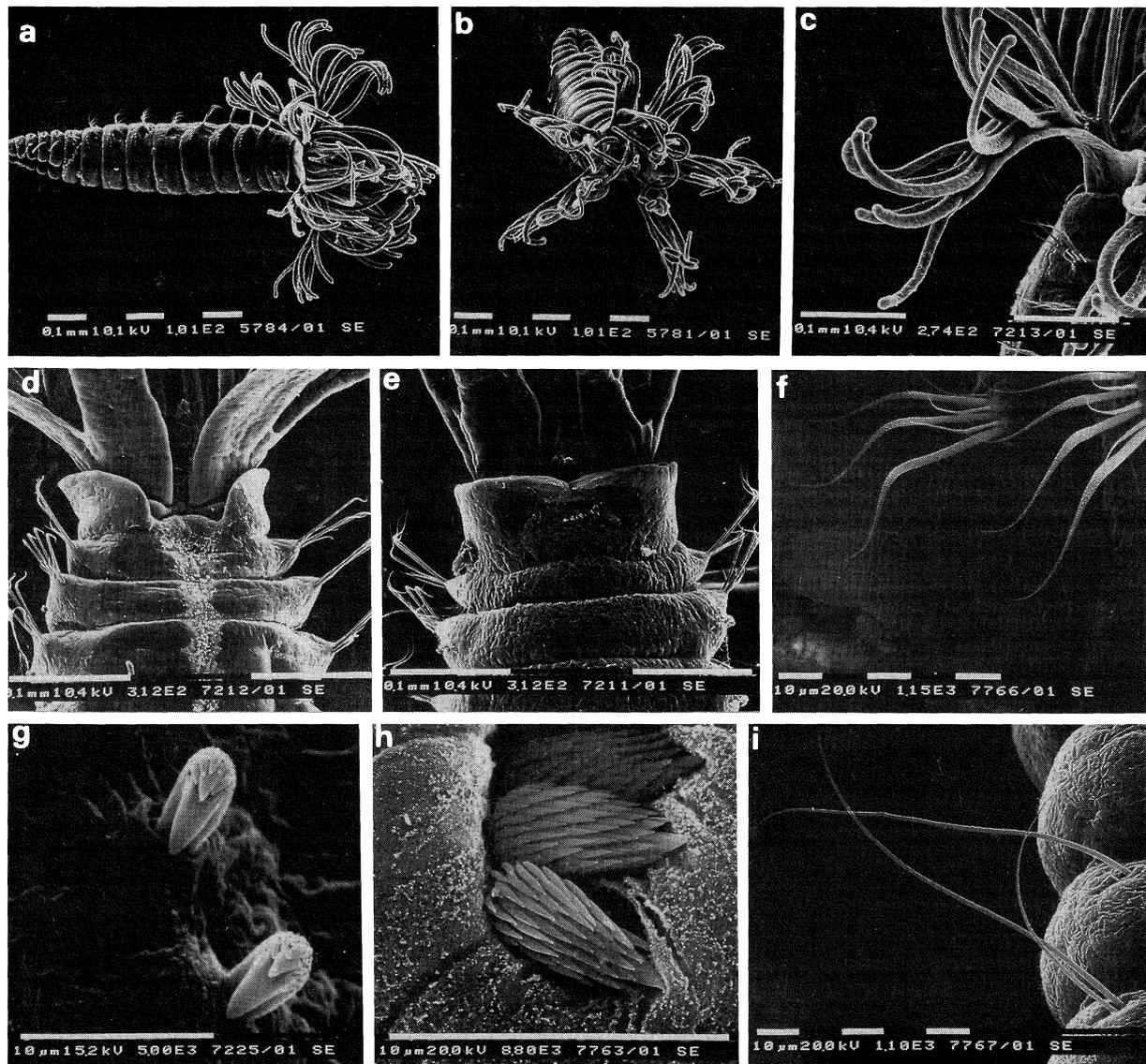


Fig.5. *Oriopsis mobilis* n.sp. (AM W 203559): a. S.E.M. oblique ventral view of whole animal. b. S.E.M. frontal view of crown showing three pairs of radioles. c. S.E.M. view of one radiole showing lateral flanges characteristic of *Oriopsis*. d. S.E.M. dorsal view of collar region. e. S.E.M. view of collar region showing ventral notch. f. S.E.M. showing long and short limbate capillary notosetae of thorax. g. S.E.M. showing thoracic uncini. h. S.E.M. showing abdominal uncini. i. S.E.M. showing capillary neurosetae of abdomen. Scale indicated by white bar and bottom left measurement on each figure.

Hartmann-Schröder, 1986: 60–61.

Type species. *Augeneriella hummelincki* Banse, 1957, by original designation.

Diagnosis. Fabricinae with 2 or 3 pairs of radioles each with 4–10 pairs of pinnules. Radioles free to base with no webbing, flanges or eyes. Branchial hearts present, one at base of each half of tentacular crown. Ventrally, between halves of tentacular crown, 2 branched or unbranched vascularised respiratory filaments. Collar reduced dorsally and forms a lobe ventrally. 8 thoracic and 3 or 4 abdominal setigers. Thoracic notosetae, spatulate and/or limbate capillaries. Thoracic neurosetae, on setigers 2–8 only, acicular uncini with several rows of teeth above the basal tooth. Abdominal notosetae uncini with long handles. Abdominal neurosetae straight capillaries.

Comments. The generic diagnosis has been emended as currently defined to include species with two pairs of radioles, unbranched ventral filaments and/or four abdominal setigers.

Hartmann-Schröder (1965) expressed reservations when including *Augeneriella dubia* in this genus due to its unbranched ventral filaments and the abdomen having four setigers instead of three. Gitay (1970) suggested that the definition of *Augeneriella* be emended to only include species of the Fabricinae with branched ventral filaments. However Hartmann-Schröder, when describing *Augeneriella bansei* Hartmann-Schröder, 1986 argued, but did not formally change the definition, that *A. bansei* showed similarities to *A. dubia* in having unbranched ventral vascularised filaments, and to the remaining species in the genus on the basis of setal structure, abdominal segmentation and collar structure. On this basis she felt *A. bansei* was a link between *A. dubia* and the remaining species of *Augeneriella* and both species should remain in the genus. This has been accepted in this study, however studies of reproduction in the Fabricinae (Rouse, in preparation) indicates detailed internal anatomical study is necessary to properly define *Augeneriella* and other fabriciini genera.

Augeneriella cf. dubia Hartmann-Schröder

Fig. 6a–k

Augeneriella dubia Hartmann-Schröder, 1965: 156–158, figs 84–85.—Gitay, 1970: 108.

Material examined. Queensland, Great Barrier Reef, One Tree Reef, 23°30'S 152°05'E. (AM W 20206, in 70% alcohol), 4 (AM W 203561, on S.E.M. stub). Queensland, Great Barrier Reef, One Tree Reef, 23°30'S 152°05'E. 30 specimens (AMNH). All collected 12 June 1987 by the author.

Description. Mature adults have 8 thoracic and 4 abdominal setigers (Fig. 6a). A pair of semicircular branchial lobes arise from prostomium. Each lobe contains a branchial heart. 3 radioles arise from each branchial lobe, ending with a terminal pinnule similar in thickness to 6–7 pairs of pinnules extending from inner side of radioles (Fig. 6a,b,c). 2 unbranched filaments, originating between ventral halves of radiolar crown, extend for half radiole length (Fig. 6d). In live specimens these filaments alternately fill with green blood from branchial hearts. Semicircular lip from peristomium lies ventral to vascularised filaments (Fig. 6c). Surface of lip completely ciliated and in females contains a pair of darkly pigmented spermathecae (Fig. 6k). Collar reduced to a thickened ridge behind ventral lip (Fig. 6b,c). No eyes or statocysts in preserved specimens, however in live material a pair of red eyes apparent in first segment and in pygidium. A pair of statocysts can also be found in first setiger when alive.

Notosetae of setiger 1 and following thoracic notopodia have 3–5 superior, long limbate setae and 3–5 inferior, short bilimbate setae (Fig. 6e). Thoracic uncini have straight, long handles with large basal tooth and numerous rows of small teeth extending over crest (Fig. 6f,g). There are 4–9 uncini per neuropodium. Abdominal notopodia have uncini with long handles and numerous rows of teeth (Fig. 6j). Number of uncini per torus varies from 21 anteriorly to 13 on posterior setigers (Fig. 6h). Abdominal neuropodia have simple capillaries with 3–4 long and 4–5 short setae per torus (Fig. 6i).

Pygidium semicircular. Faecal groove runs ventrally along abdomen and dorsally along thorax. Lined, on all specimens, by numerous peritrich ciliates (Fig. 6a,h). Preserved material opaque and dark brown anteriorly. Tubes fragile and closely fitting around occupant, composed of fine white coral sediment and mucous.

Females can be distinguished from males by their spermathecae located in ventral lip. Juveniles distinguished from adults in having only 3 abdominal setigers. Live material uniformly black with yellow patches at base of radiolar crown. Females have red eggs in last three thoracic setigers. In life branchial heart and filament systems expand and contract alternately pumping green blood.

Comments. The material from the Great Barrier Reef closely matches Hartmann-Schröder's original description. Therefore the distribution of *Augeneriella dubia* Hartmann-Schröder, 1965 has tentatively been extended from the type locality of Hawaii to Australia. The description of *A. dubia* differs only slightly from the Australian material in having fewer uncini in abdominal tori (up to 21 in Australian material compared to 26). The type material of *A. dubia* is restricted to the holotype and this is incomplete and in very poor condition (Fitzhugh, personal communication). Until new material is examined from the type locality the identification recorded here must remain uncertain.

Augeneriella dubia is distinguishable in the unbranched nature of the ventral filaments of the

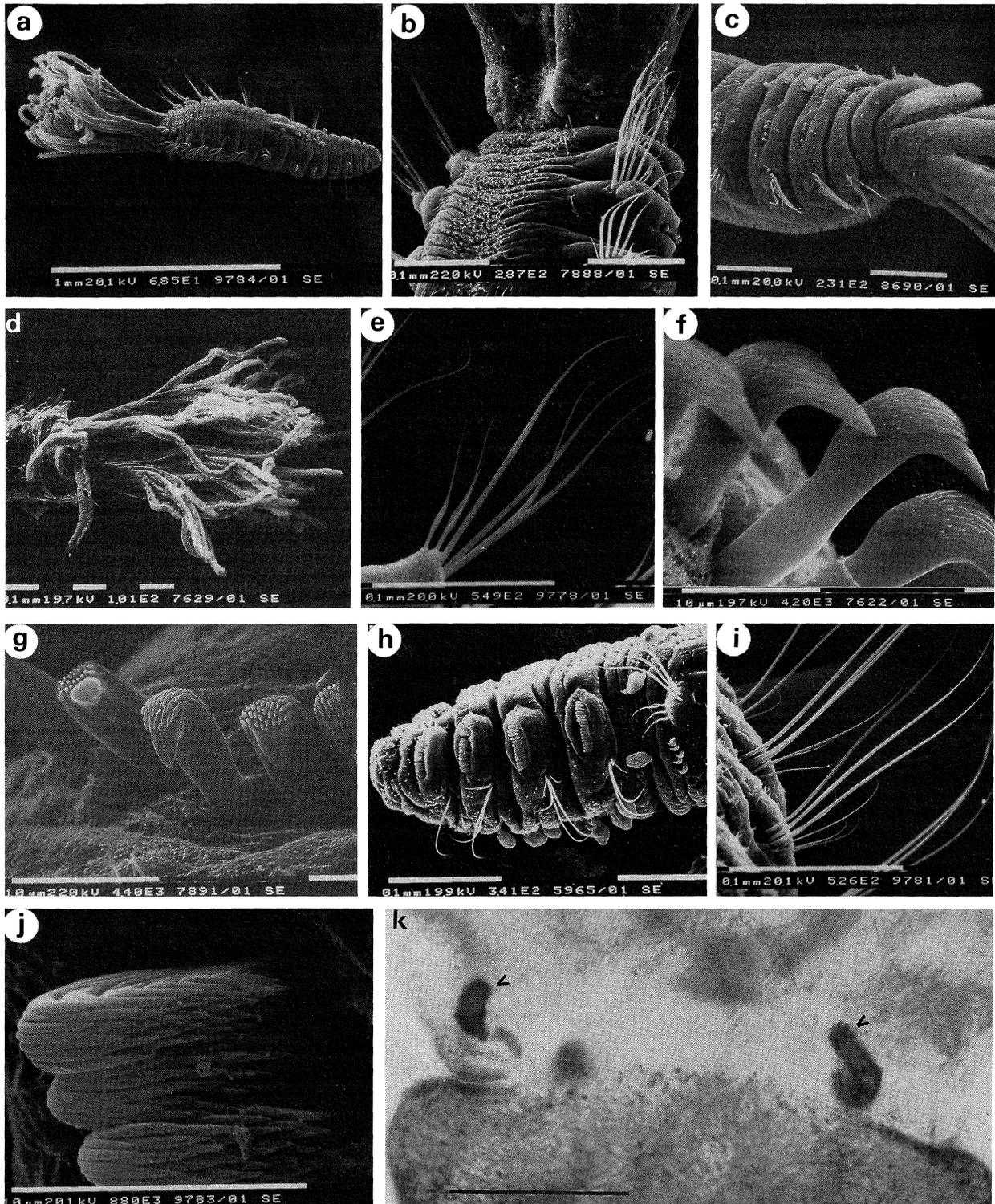


Fig. 6. *Augeneriella* cf. *dubia* Hartmann-Schröder. Material from One Tree Reef, Great Barrier Reef, Australia. (AM W 203561): a. S.E.M. dorsal view of whole animal. b. S.E.M. dorsal view of anterior region showing reduction of collar. c. S.E.M. side view of collar region. Note ventral lip. d. S.E.M. ventral view of the crown showing the two unbranched blood vessels. e. S.E.M. showing long limbate and shorter bilimbate notosetae of thorax. f. S.E.M. showing side view of thoracic uncini. g. S.E.M. showing frontal view of thoracic uncini. h. S.E.M. showing abdominal region. Note peritrich ciliates on faecal groove. i. S.E.M. showing capillary neurosetae of abdomen. j. S.E.M. view of abdominal uncini. Scale indicated by white bar and bottom left measurement on each figure. k. Light micrograph of living female specimen showing the pair of darkly pigmented spermathecae (indicated by arrows) in the ventral lip. Scale bar is 150 μ m.

crown, the lack of true spatulate notosetae in the thorax and the presence of four abdominal setigers instead of three. The observation of distinct spermathecae in the ventral lip of female specimens after preservation may prove to be an important generic feature. Rouse (in preparation) has observed spermathecae in several fabriciini genera. The spermathecae can be associated with the collar, crown or ventral lip. Examination of other species within *Augeneriella* for this feature may allow a better definition of the genus.

Habitat. Found intertidally in high densities (to 100,000 m²) in mats of *Boodlia composita*, a green filamentous alga, on the upper reef crest on the north-eastern side of One Tree Reef.

Distribution. Hawaii, Australia (Great Barrier Reef, One Tree Reef).

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