*Zootaxa* 1168: 51–58 (2006)
www.mapress.com/zootaxa/


ISSN 1175-5326 (print edition)
**ZOOTAXA**
ISSN 1175-5334 (online edition)

**1168**

# Description of *Chone usticensis* sp. nov. (Polychaeta, Sabellidae) from the Mediterranean Sea

ADRIANA GIANGRANDE[1], MARGHERITA LICCIANO[1], & LUCA CASTRIOTA[2]

[1]*DiSTeBA Department of Biological and Environmental Sciences and Technologies. University of Lecce. Via Provinciale Lecce-Monteroni. Complesso Ecotekne, 73100 Lecce, Italy*
[2]*ICRAM Istituto Centrale per la Ricerca scientifica e tecnologica Applicata al Mare, Via Emerico Amari, 124, 90139 Palermo, Italy*
*E-mail: [1]gianadri@ilenic.unile.it; [1]margherita.licciano@unile.it; [2]castriotaluca@hotmail.com*

## Abstract

A new species of *Chone* (Sabellidae) from the coast of Ustica Island (Mediterranean Sea, north of Sicily) is described. The species, named *Chone usticensis* sp. nov., is similar to another Mediterranean species, *C. filicaudata*, in having a long pygidial filiform appendage, but is distinct from this species especially in the peristomium, collar, and in thoracic paleate chaetae shape. A discussion on the presence of the radiolar appendages within the genus *Chone* is also given.

**Key words:** Polychaeta, *Chone usticensis*, new species, Sabellidae, Mediterranean Sea

## Introduction

The genus *Chone*, together with the closely related genera *Amphicorina*, *Euchone* and *Jasmineira* represents one of the least understood groups within the subfamily Sabellinae. Recently a cladistic analysis was performed on this group of sabellids in order to reveal some relationships among genera (Cochrane 2003). In her analysis, conducted on several species belonging to seven genera, Cochrane considered seven species of *Chone*, and concluded that the genus appeared monophyletic, although the relationships among species remains unsolved. However, according to Fitzhugh (1989), the genus *Chone* is characterized by a combination of features of which none are unique, and it lacks a defining synapomorphy. Fitzhugh (1989) pointed out that dorsal radiolar appendages can be present in some *Chone* species, but absent in others. Recently, a great number of new taxa (11) were added to *Chone* genus, mostly as unnamed *Chone* sp. (Fitzhugh 2002; Tovar-Hernández, 2005). Some of these taxa have dorsal radiolar appendages developed.

*Accepted by G. Read: 2 Mar. 2006; published: 6 Apr. 2006*

These structures do not seem to be present in all the Mediterranean species of *Chone* recognized up to now, except for *C. acustica* (Giangrande 1992).

Including the recent additions, the genus *Chone* comprises about 51 formally described species. Among these, only five have been reported from the Mediterranean area (Giangrande 1992).

During extensive ecological studies carried out since 1996 along the southwest coast of the Island of Ustica (Castriota et al. 1998; Castriota et al. 2000; Castriota et al. 2001), some sabellids belonging to the genus *Chone*, and having a well developed anal filament were collected, but were not identifiable to a known species. During a recent revision of sabellids present in the collection of two of the authors, this material was re-examined and described here as a new taxon.

## Material and methods

The study site where the species described in the present paper were collected is located off the south-west coast of Ustica Island, a 2000 m high volcanic island in the Southern Tyrrhenian Sea, lying 67 km north of Sicily at 38° 42’ N, 13° 10’ E, (Fig. 1). The substratum in the area is a mixture of medium sand, detritus and calcareous Rhodophyceae with a subtropical character (Mannino et al. 2002). The site is subject to strong currents, and the sea temperature ranges from 13 °C in winter to 17 °C in summer with salinity ranging from 36.9‰ to 37.9‰.

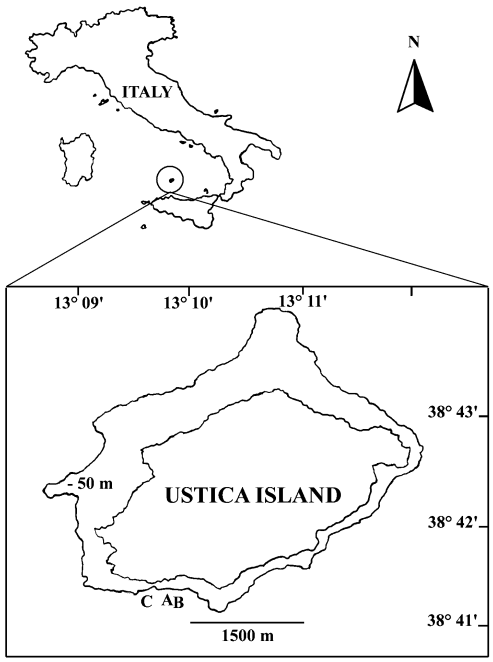


**FIGURE 1.** Ustica Island, showing study site stations, and (top map) location off Sicily.

  

Specimens were collected at the study site in November 1996, July 1997 and November 1997 with a van Veen grab (0.1 $m^2$), at a depth of around 50 m, at stations A, B, and C. Station A is at 38°41.50' N 13°09.78' E, station B is located 30 m to the east, and station C is located 100 m to the west (Fig. 1). Five replicate samples were taken at each station. Samples retained after washing on a sieve of 0.5 mm mesh were preserved in 5% formalin. The new described species was the dominant sabellid in all the samples and specimens were present at all the sampling times, but were particularly abundant in November 1997.

The holotype and some paratypes were deposited at the MNCN (Museo Nacional de Ciencias Naturales de Madrid. The remaining material is preserved in the senior author's private Polychaete Collection at the Zoological Laboratory of Lecce University (PCZL).

## Systematics

### *Chone usticensis* sp. nov.

Figures 2–4

*Material examined*

Type material: Holotype, MNCN 16.01/10325, collected by L. Castriota at station A, 38°41.50' N 13°09.78' E, in November 1997, at 50 m depth on a soft-bottom mainly composed of medium sand, biogenic and volcanic particles, together with a significant amount of red calcareous algae. Paratypes, MNCN 16.01/10326, 3 specimens from the same station.

Non-type material from the same locality (held in the personal collection of A. Giangrande): station A, 20 specimens Nov 96, 11 specimens July 97, 25 specimens November 97; station B, 48 specimens November 96, 40 specimens July 97, 59 specimens November 97; station C, 35 specimens November 96, 8 specimens July 97, 522 specimens November 97.

*Description*

Holotype complete, with 8 thoracic and 30 abdominal chaetigers (Fig. 2A). Branchial crown length 10 mm, total thorax-abdomen length 20 mm, maximum width 2.5 mm. Branchial lobes each with 10 fully developed radioles and one to two ventral radiolar appendages (Fig. 3A); radioles with palmate membrane for less than half of their length; radiolar flanges present distally to palmate membrane, but with radioles terminating as very long filaments (Fig. 2B). All pinnules of similar length. Radiolar skeleton axis composed of two rows of cells; outer surfaces of radioles flat. Dorsal lips pointed, longer than wide, radiolar appendages not visible, with one or two pinnular appendages. Ventral lips rounded, with radiolar appendage (Fig. 3A, B). Collar high with a mid-dorsal narrow gap, and slightly higher ventrally (Fig. 2C), ventral lobe of anterior peristomial ring pointed and extending slightly beyond ventral collar margin (Fig. 2D).

  

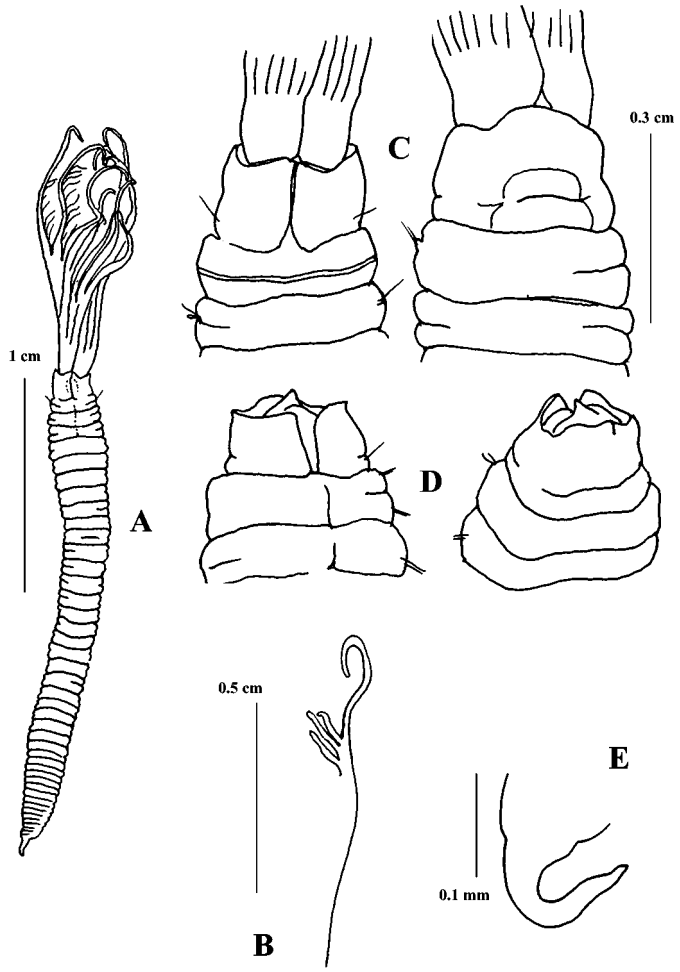


**FIGURE 2.** *Chone usticensis* sp. nov. A) entire worm, B) radiole tip, C) dorsal and ventral views of the anterior end with crown, D) dorsal and ventral views of the anterior end after removing of the branchial crown, E) detail of the pygidial filiform cirrus.

Thoracic notopodia in chaetiger 1 with 4 narrowly hooded chaetae. Notopodial fascicle from chaetigers 2–8 with superior group of 3–4 elongate narrowly hooded chaetae (Fig. 4C) and inferior group with 4–5 paleate chaetae posteriorly and 4–5 bayonet type anteriorly. Paleate chaetae with long tip (Fig. 4D). Neuropodial acicular uncini in number of about 13 per torus, with a series of small teeth of similar size over the main fang, with hood present, and breast only developed as slight swelling; handles very long (Fig. 4E, F). Abdominal neuropodial fascicles with modified, elongate narrowly hooded chaetae, longer in the posterior segment (Fig. 4A, B). Abdominal notopodia with 12–13 avicular uncini, with main fang surmounted by 5–6 rows of small teeth, breast rectangular, not extending beyond distal end of proximal tooth, handles absent. Intertorus variation in morphology present, with uncini from anterior abdominal segments as in Fig. 4H, and

  

uncini from posterior abdominal segments as in Fig 4I. Intratorus variation present as well (Fig. 4G). Pygidium triangular with long cirrus (Fig. 2A, E). Thoracic ventral glandular shields visible in thoracic chaetigers. Body cream coloured. Tube not observed.

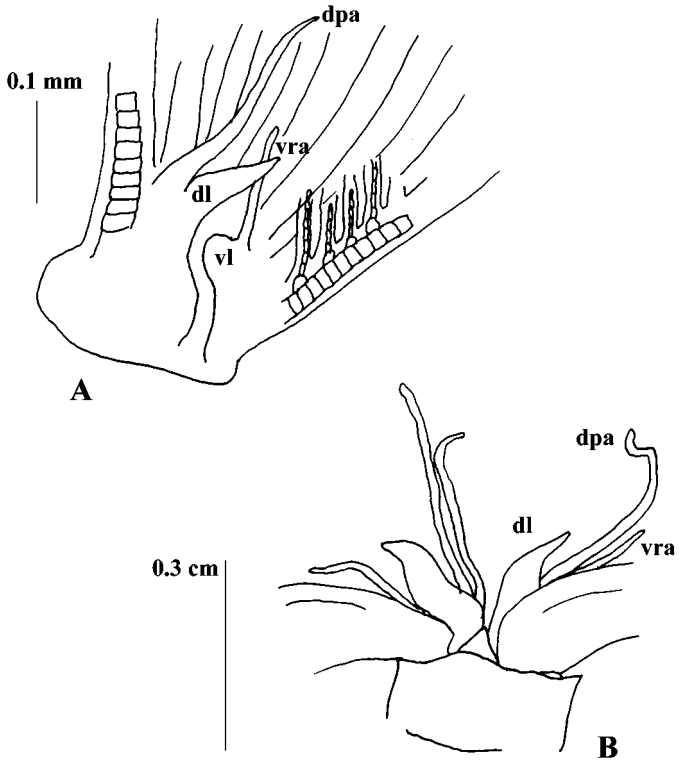


**FIGURE 3.** *Chone usticensis* sp. nov. branchial crown A) from a small dissected specimen showing internal structures, B) internal structure from a large specimen. Dpa = dorsal pinnular appendage; dl = dorsal lip; vra = ventral radiolar appendage; vl = ventral lip.

*Remarks*

*Chone usticensis* together with another Mediterranean species, *C. filicaudata* Southern, 1914, and *C. americana* Day, 1973, have a pygidial cirrus filament. *Chone usticensis* and *C. filicaudata* differ in the radiolar flanges which in *C. filicaudata* are developed until the end of radioles, in the length of palmate membrane, shorter in *C. usticensis*, in the shape of the paleate chaetae, wider in *C. usticensis*, and in the shape of the anterior peristomial ring lobe, entire and not incised in *C. usticensis*. Concerning the latter feature, *C. usticensis* is similar to *C. americana*, but differs in the shape of the thoracic uncini, which in *C. americana* are provided with teeth of unequal size above the main fang (Tovar-Hernández 2005), in the shape of the collar, ventrally lower in *C. americana*, in the shape of thoracic paleate chaetae, which has a longer tip in *C. usticensis*, and in the shape of abdominal uncini, which in *C. americana* have a smaller number of teeth over the main fang. *Chone usticensis* also shows similarity to some Mediterranean specimens previously collected and reported as *Chone* sp. (Giangrande 1992). However,

  

the features of the branchial crown, a lower palmate membrane and a shorter filiform tips of the radioles, distinguishes this taxon from *C. usticensis*.

Most of the specimens of the examined population were small sized (around 10 mm in total length). The holotype was selected from the best-preserved larger specimens because we assume it to be an adult, although gametes were not detected. Oocytes in the abdomen have been observed in some non-type material of a similar size as the holotype. The number of dorsal pinnular appendages seems to vary according to the size of individuals, with only one in smaller (Fig. 3A), and two in larger specimens (Fig. 3B).

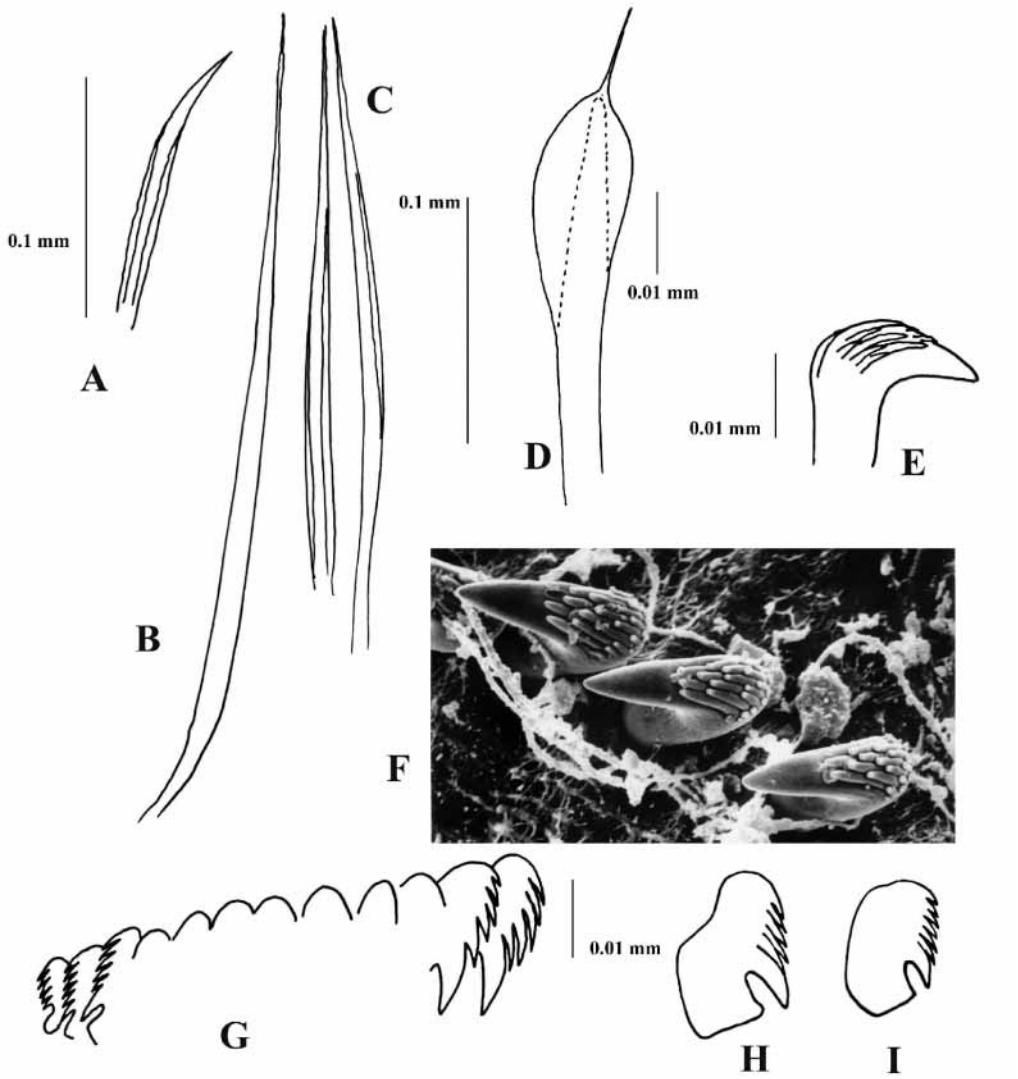


**FIGURE 4.** *Chone usticensis* sp. nov. A) abdominal neurochaeta from an anterior chaetiger, B) abdominal neurochaeta from posterior chaetiger, C) thoracic superior notochaetae, D) thoracic inferior paleate chaetae, E) thoracic uncinus, F) thoracic uncini *in situ* from SEM photo, G) intratorus variation of abdominal uncini morphology, H) abdominal uncinus from anterior abdominal chaetigers, I) abdominal uncinus from posterior abdominal chaetigers.

*Type locality*

Offshore on South Coast of Ustica Island at 38°41.50' N 13°09.78' E.

*Etymology*

The species is named after the type locality.

## Discussion

The description of *C. usticensis* increases the number of Mediterranean *Chone* species to six. The biotope where this additional new described species was collected is an atypical site within this Mediterranean area, showing sub-tropical environmental features and an unusual mixed soft bottom with rhodoliths present; it is inhabited by several species undiscovered until recently (e.g., Cantone et al. 2001; Dell'Angelo & Castriota 1999).

As already mentioned above, among *Chone* species two different character states have been observed, with one group having well-developed dorsal radiolar appendages and one group lacking this feature (Fitzhugh 1989). A previous examination by Giangrande (1992) of material belonging to the type species *C. infundibuliformis* Kröyer, revealed a different shape of dorsal lips in different specimens, with an elongate shape in some specimens and a rounded one in others, but the presence of radiolar appendages was not confirmed. However, it must be stressed that much confusion exists both in the identification of these features, as well as in their nomenclature.

Radiolar appendages, also called the radiolar mid-rib (Orrhage 1980; Giangrande 1992), provide a skeletal support of the lip, but are very difficult to discern in preserved small sized specimens. Although the detection of radiolar appengages probably requires histological examination, in some *Euchone* species these structures appear visible also under light microscopy (personal observation). In the presently described *Chone* species the absence of radiolar appendages can therefore be hypothesized as no cartilagineous support is so visible within the lips.

According to Fitzhugh (1989), the presence of radiolar appendages should be the plesiomorphic condition, being also present in the genus *Euchone*. Clarification of this matter would require re-examination of most of the material because in old descriptions this feature was not taken into consideration. Redescription of most of *Chone* species, considering new details useful for a future analysis to evaluate the phylogeny of this genus is still in progress (Tovar-Hernández 2005). Every new taxon added to the *Chone* group needs a very detailed description especially of the internal crown structures.

  

## References

Cantone, G., Catalano, D. & Badalamenti, F. (2001) A new species of Nereididae (Annelida Polychaeta) from the Island of Ustica (Northern, Sicily, Italy). *Marine life*, 11, 11–16.

Castriota, L., Sunseri, G. & Vivona, P. (1998) Primi dati sui popolamenti zoobentonici dei fondi mobili dell'area compresa tra Punta Gavazzi e Punta dell'Arpa (Isola di Ustica, Tirreno Meridionale). *Biologia Marina Mediterranea*, 5, 530–533.

Castriota, L., Sunseri, G., Finoia, M.G., Vivona, P. & Beltrano, A.M. (2000) Effetti dello scarico iperalino di un dissalatore sulla fauna bentonica nell'isola di Ustica (Tirreno Meridionale). *Biologia Marina Mediterranea*, 7, 943–946.

Castriota, L., Beltrano, A.M., Giambalvo, O., Vivona, P. & Sunseri, G. (2001) A one-year study of the effects of a hyperhaline discharge from a desalination plant on the zoobenthic communities in the Ustica Island Marine Reserve (Southern Tyrrhenian Sea). *Rapport de la Commission Internationale pour l'exploration scientifique de la Mer Méditerranée*, 36, 1–369.

Claparède, E. (1870) Supplément aux Annélides Chétopodes du Golfe de Naples. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève*, 20, 137–154.

Cochrane, S.J. (2003) Snowflakes and feather-dusters – some challenges for soft-bottom fanworm systematics. *Hydrobiologia*, 496, 49–62.

Day, J.H. (1973) New Polychaeta from Beaufort, with a key to all species recorded from North Carolina. *NOAA Technical Reports*, 375, 1–140.

Dell'Angelo, B. & Castriota, L. (1999) A new *Ischnochiton* from the Mediterranean. *La Conchiglia/The Shell*, 31, 23–26.

Fitzhugh, K. (1989) A systematic revision of the Sabellidae-Caobangidae-Sabellongidae complex (Annelida: Polychaeta). *Bulletin of the American Museum of Natural History*, 192, 1–104.

Fitzhugh, K. (2002) Fan worm polychaetes (Sabellidae: Sabellinae) collected during the Thai-Danish BIOSHELF Project. *Phuket Marine Biological Center Special Publication*, 24, 353–424.

Giangrande, A. (1992) The genus *Chone* (Polychaeta, Sabellidae) in the Mediterranean Sea with description of *C. longiseta*. *Bollettino di Zoologia*, 59, 517–529.

Mannino, A.M., Castriota, L., Beltrano, A.M. & Sunseri, G. (2002) The epiflora of a rhodolith bed from the Island of Ustica (Southern Tyrrhenian Sea). *Flora Mediterranea*, 12, 11–28.

Orrhage, L. (1980) On the structure and homologues of the anterior end of the polychaetes families Sabellidae and Serpulidae. *Zoomorphology*, 96, 113–168.

Southern, R. (1914) Clare Island Survey: Archiannelida and Polychaeta. *Proceedings of the Royal Irish Academy*, 31, 47, 1–160.

Tovar-Hernández, M.A. (2005) Redescription of *Chone americana* Day, 1973 (Polychaeta: Sabellidae) and description of five new species from the Grand Caribbean region. *Zootaxa*, 1070, 1–30.

  