

PAPER DETAILS

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The occurrence of *Ammothella longioculara* (Faraggiana, 1940) (Arthropoda, Pycnogonida) in İzmir Bay (Aegean Sea, Turkey) and reported species from the bay

Ammothella longioculara (Faraggiana, 1940) (Arthropoda, Pycnogonida)'nın İzmir Körfezi'nde (Ege Denizi, Türkiye) bulunuşu ve körfezden rapor edilmiş türler

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Abstract: Sampling studies in İzmir Bay revealed the occurrence of a pycnogonid species, *Ammothella longioculara* (Faraggiana, 1940). *A. longioculara* is reported only one time from the Turkish waters, up to now. The presence of this rare species is reported herein for the first time from the İzmir Bay, and also second time from the Turkish waters. The distribution map of the species in the Mediterranean Sea is provided, together with photographs and line drawing of the species. Moreover, all of the early studies were reviewed on the pycnogonid fauna of İzmir Bay, distribution of each species, depth range, and type of substrate are given.

Keywords: *Ammothella longioculara*, Pycnogonida, İzmir Bay, Turkey, Mediterranean Sea

Öz: İzmir Körfezi'nde yapılan örnekleme çalışmaları, bir piknogonid tür olan *Ammothella longioculara* (Faraggiana, 1940)'nın varlığını ortaya koymuştur. *A. longioculara* bugüne kadar Türkiye sularından yalnızca bir kez rapor edilmiştir. Bu nadir türün varlığı İzmir Körfezi'nden ilk kez, Türkiye sularından ise ikinci kez bu çalışmada rapor edilmektedir. Türün Akdeniz'deki dağılımı, fotoğraf ve çizimi çalışmada sunulmuştur. Ayrıca, İzmir Körfezi'nin piknogonid faunası üzerine daha önce yapılmış çalışmaların tümü gözden geçirilmiş olup, her bir türün dağılımı, derinlik aralığı ve substratı tipi verilmiştir.

Anahtar kelimeler: *Ammothella longioculara*, Pycnogonida, İzmir Körfezi, Türkiye, Akdeniz

INTRODUCTION

Ammothella longioculara (Faraggiana, 1940) is endemic to the Mediterranean Sea. This species had been reported eleven times before from the region (Faraggiana, 1940; Stock, 1958; Krapp, 1973; Arnaud, 1987; Schüller, 1989; Chimenz et al., 1993; Munilla and Nieto, 1999; Vignoli et al., 2006; Kocak and Katagan, 2007; Krapp et al., 2008, who reported for the first time this species from the Turkish waters). The present study provides a new locality for *A. longioculara* in the Aegean Sea, information about its distribution in the Mediterranean Sea, and reported pycnogonid species from the İzmir Bay.

MATERIALS AND METHODS

One ovigerous male specimen of the species was collected by snorkeling from *Cystoseira mediterranea* facies at one station in the upper infralittoral zone (1m depth) of Urla, İzmir Bay (Figure 1). The sample was fixed in 5% formaldehyde and later rinsed with fresh water and then preserved in 70% ethanol. The specimen sampled was

examined under a stereomicroscope. The drawing was made with the aid of a drawing tube mounted on an Olympus CX31 compound microscope. The following papers were used for species identification: Faraggiana (1940), Krapp (1973), and Kocak and Katagan (2007). The specimen was stored in the ESFM (Museum of the Faculty of Fisheries, Ege University, İzmir).



Figure 1. Distribution of *Ammothella longioculara* (Faraggiana, 1940) in the Mediterranean Sea (●), including the sampling area (*)

RESULTS

Systematics

Class PYCNOGONIDA Latreille, 1810

Order PANTOPODA Gerstaecker, 1863

Family AMMOTHEIDAE Dohrn, 1881

Genus *Ammothella* Verrill, 1900

Ammothella longiocularata (Faraggiana, 1940) (Figures 2-3)

Material examined: 1 ovigerous ♂, (EFSM-PYC/2007-1), Urla (İzmir Bay, Aegean Sea), 38°22'27"N, 26°47'13"E, *Cystoseira mediterranea* Sauvageau, 1912, 1 m, 04 July 2007.

Measurements (mm): Length of the trunk (frontal margin of the cephalic segment to tip of 4th lateral process), 0.87; trunk width (across second lateral processes), 0.62; abdomen length, 0.35.

Remarks: The present specimen agrees well with the specimen given by Krapp (1973) and by Kocak and Katagan (2007). I noted only that the trunk length of the present specimen is slightly larger than those in Krapp's (1973) sample (0.84mm in the male) and Kocak and Katagan's (2007) sample (0.83mm in the male).

Worldwide Distribution: Mediterranean Sea.

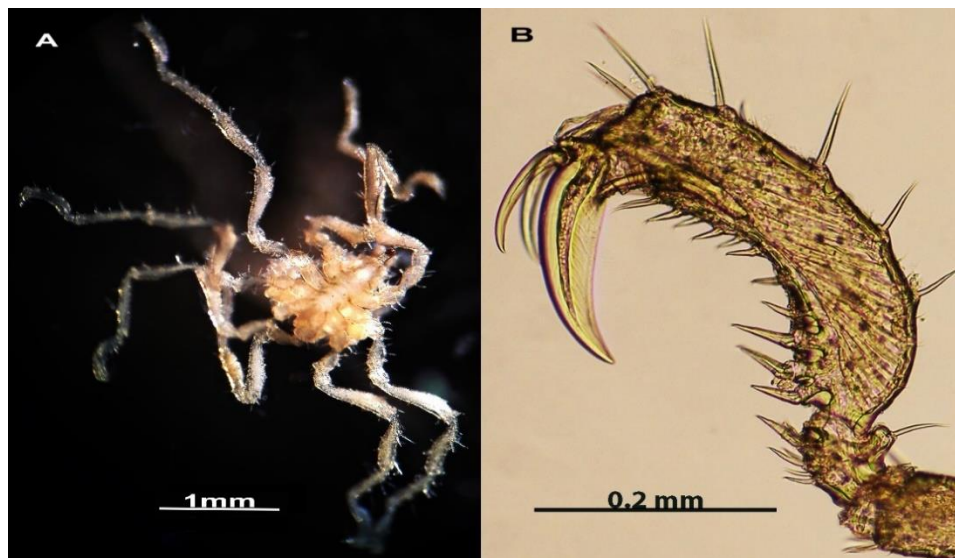


Figure 2. *Ammothella longiocularata* (Faraggiana, 1940), ovigerous ♂, from İzmir Bay. A-Dorsal view; B- Tarsus and propodus of right leg 3

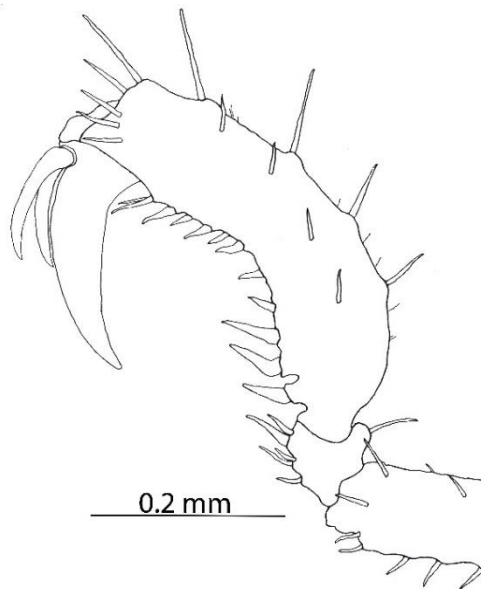


Figure 3. *Ammothella longiocularata* (Faraggiana, 1940), ovigerous ♂, from İzmir Bay. Line drawing of tarsus and propodus of right leg 3

As a result of studies carried out to review the Pycnogonid fauna of the İzmir Bay, indicating the presence of 18 species inhabiting the Bay, belonging to 6 families and 9 genera:

SUPERFAMILY: ASCORHYNCHOIDEA POCOCK, 1904

FAMILY: AMMOTHEIDAE DOHRN, 1881

GENUS: *AMMOTHELLA* VERRILL, 1900

***A. appendiculata* (Dohrn, 1881)**

Synonyms: *Ammotheta appendiculata* Dohrn, 1881; *Ammotheta rugulosa* Verrill, 1900

This species was reported by Çınar et al. (2008) from Alsancak Harbour, Pasaport Harbour, and İnciraltı.

Depth range: 0.2m.

Substrate: *Mytilus galloprovincialis* Lamarck, 1819.

Worldwide Distribution: Cosmopolitan (Soler-Membrives and Munilla, 2015).

***A. longipes* (Hodge, 1864)**

Synonyms: *Achelia longipes* (Hodge, 1864); *Ammotheta longipes* Hodge, 1864; *Ammotheta magnirostris* Dohrn, 1881; *Ammothella magnirostris* (Dohrn, 1881); *Achelia hispida* King, 1974

The species was reported by Arnaud (1976) from Kalabak, Mordoğan, and Urla.

Depth range: 0.5-1.5m.

Substrate: *Cystoseira crinita* Duby, 1830; *Ellisolandia elongata* (J. Ellis & Solander) K.R. Hind & G.W. Saunders, 2013 (as *Corallina mediterranea* J.E. Areschoug, 1852).

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

***A. uniungiculata* (Dohrn, 1881)**

Synonyms: *Ammotheta uni-ungiculata* Dohrn, 1881

This species was reported by Arnaud (1976) from Kalabak, Foça and Narlıdere, and Krapp et al. (2008) from Foça.

Depth range: 0.5-1.5m.

Substrate: *C. crinita*; *Padina* sp.; *Ulva lactuca* Linnaeus, 1753; *Halopteris scoparia* f. *hiemalis* J. Agardh.

Worldwide Distribution: Endemic (Mediterranean) (Soler-Membrives and Munilla, 2015).

GENUS: *ACHELIA* HODGE, 1864

***A. echinata* Hodge, 1864**

Synonyms: *Ammotheta brevipes* Hodge, 1864; *Ammotheta echinata* (Hodge, 1864); *Achelia fibulifera* (Dohrn, 1881)

This species was reported by Arnaud (1976) from Kalabak (as *Achelia* cf. *echinata*).

Depth range: 0.5m.

Substrate: *E. elongata* (as *C. mediterranea*).

Worldwide Distribution: Cosmopolitan (Soler-Membrives and Munilla, 2015).

***A. langi* (Dohrn, 1881)**

Synonyms: *Ammotheta langi* Dohrn, 1881

The species was reported by Krapp et al. (2008) from Foça.

Depth range: 0.5m.

Substrate: *C. crinita*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

GENUS: *TANYSTYLUM* MIERS, 1879

***T. conirostre* (Dohrn, 1881)**

Synonyms: *Clotenina conirostris* Dohrn, 1881

The species was reported by Arnaud (1976) from Kalabak, Narlıdere and Foça, Krapp et al. (2008) from Foça, and Çınar et al. (2008) Alsancak Harbour, Pasaport Harbour and İnciraltı.

Depth range: 0.2-1.5m.

Substrate: *C. crinita*; *U. lactuca*; *E. elongata* (as *C. mediterranea*); *M. galloprovincialis*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

***T. orbiculare* Wilson, 1878**

Synonyms: *Clotenina orbiculare* (Wilson, 1878)

This species was recorded by Arnaud (1976) from Kalabak, and Krapp et al. (2008) from Foça.

Depth range: 0.5-1m.

Substrate: *E. elongata* (as *C. mediterranea*); *C. crinita*; *H. scoparia*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

GENUS: *TRYGAEUS* DOHRN, 1881

***T. communis* Dohrn, 1881**

The species was reported by Kocak (2019) from Mordoğan.

Depth range: 0.5m.

Substrate: *Cystoseira mediterranea* Sauvageau, 1912.

Worldwide Distribution: Mediterranean (Soler-Membrives and Munilla, 2015).

FAMILY: ASCORHYNCHIDAE HOEK, 1881

GENUS: ASCORHYNCHUS G.O.SARS, 1877

A. castelli (Dohrn, 1881)

Synonyms: *Barana castelli* Dohrn, 1881

This species was reported by [Kocak \(2012\)](#) from Mordoğan.

Depth range: 10m.

Substrate: *Posidonia oceanica* (Linnaeus) Delile, 1813.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

SUPERFAMILY: PHOXICHILIDOIDEA G.O. SARS, 1891

FAMILY: PHOXICHILIDIIDAE G.O. SARS, 1891

GENUS: ANOPLDACTYLUS WILSON, 1878

A. petiolatus (Kroyer, 1844)

Synonyms: *Phoxichilidium petiolatum* Kroyer, 1844; *Pallene attenuata* Hodge, 1863; *Phoxichilidium attenuata* (Hodge, 1863); *Phoxichilidium longicolle* Dohrn, 1881; *Phoxichilidium pygmaeum* Hoek, 1881; *Anoplodactylus longicollis* (Dohrn, 1881); *Anoplodactylus pygmaeus* (Hoek, 1881); *Anoplodactylus hedgpethi* Bacescu, 1959; *Anoplodactylus guyanensis* Child, 1977.

This species was reported by [Arnaud \(1976\)](#) from Kalabak.

Depth range: 0.5m.

Substrate: *E. elongata* (as *C. mediterranea*).

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

A. pygmaeus (Hodge, 1864)

Synonyms: *Pallene pygmaea* Hodge, 1864; *Phoxichilidium pygmaeum* (Hodge, 1864); *Anoplodactylus exiguus* (Dohrn, 1881); *Phoxichilidium exiguum* Dohrn, 1881; *Halosoma derjugini* Losina-Losinsky, 1929; *Anoplodactylus derjugini* (Losina-Losinsky, 1929)

This species was reported by [Arnaud \(1976\)](#) from Tuzla, [Krapp et al. \(2008\)](#) from Balıklıova, and [Çinar et al. \(2008\)](#) from Alsancak Harbour, Pasaport Harbour, and İnciraltı.

Depth range: 0.2-8m.

Substrate: *M. galloprovincialis*; *P. oceanica*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

A. virescens (Hodge, 1864)

Synonyms: *Orithya globosa* Goodsir, 1842; *Phoxichilidium globosum* Goodsir, 1842; *Phoxichilidium virescens* Hodge, 1864

This species was reported by [Arnaud \(1976\)](#) from Kalabak and Foça.

Depth range: 0.3-1m.

Substrate: *C. crinata*; *Padina pavonia* (Linnaeus) J.V. Lamouroux, 1816; *E. elongata* (as *C. mediterranea*).

Worldwide Distribution: Disrupted distribution (St. Paul I., Amsterdam, Mediterranean Sea including eastern and western basins) (Soler-Membrives and Munilla, 2015).

FAMILY: ENDEIDAE NORMAN, 1908

GENUS: ENDEIS PHILIPPI, 1843

E. spinosa (Montagu, 1808)

Synonyms: *Chilophoxus spinosus* Montagu, 1808; *Endeis gracilis* Philippi, 1843; *Endeis laevis* (Grube, 1871); *Endeis vulgaris* (Dohrn, 1881)

This species was reported by [Krapp et al. \(2008\)](#) from Foça (one juvenile specimen as *E. cf. spinosa*).

Depth range: 0.5m.

Substrate: *C. crinita*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

SUPERFAMILY: NYMPHONOIDEA POCOCK, 1904

FAMILY: CALLIPALLENIDAE HILTON, 1942

GENUS: CALLIPALLENE FLYNN, 1929

C. emaciata (Dohrn, 1881)

Synonyms: *Pallene emaciata* Dohrn, 1881; *Callipallene emaciata* (Dohrn, 1881)

This species was reported by [Arnaud \(1976\)](#) and [Krapp et al. \(2008\)](#) from Foça.

Depth range: 0.5m.

Substrate: *E. elongata* (as *C. mediterranea*); *C. crinita*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

C. phantoma (Dohrn, 1881)

Synonyms: *Pallene phantoma* Dohrn, 1881; *Pallene phantopa* Norman, 1908; *Callipallene phantoma crinita* Stock, 1952.

This species was reported by [Arnaud \(1976\)](#) from Urla.

Depth range: 0.7-1m.

Substrate: *P. pavonia*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

***C. spectrum* (Dohrn, 1881)**

Synonyms: *Pallene spectrum* Dohrn, 1881

The species was reported by Krapp et al. (2008) from Urla.

Depth Range: 0-1m.

Substrate: Stones; *Cladocora cespitosa* (Linnaeus, 1767).

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

***C. tiberi* (Dohrn, 1881)**

Synonyms: *Pallene tiberii* Dohrn, 1881; *Callipallene emaciata tiberii* (Dohrn, 1881)

This species was reported by Koçak (2016) from Urla.

Depth range: 0.5m

Substrate: *C. mediterranea*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

FAMILY: NYMPHONIDAE WILSON, 1878

GENUS: NYMPHON FABRICIUS, 1794

***Nymphon gracile* Leach, 1814**

Synonyms: *Nymphon gallicum* Hoek, 1881

This species was reported by Arnaud (1976) from Alsancak Harbour, and Çinar et al. (2008) from Pasaport Harbour and Alsancak Harbour.

Depth range: 0.2m.

Substrate: Boat hulls; *M. galloprovincialis*.

Worldwide Distribution: Atlantic-Mediterranean (Soler-Membrives and Munilla, 2015).

DISCUSSION

Ammothella longiocularata is only known from the Mediterranean Sea. Spanish coast: Chafarinas Islands, Alboran Sea (Munilla & Nieto, 1999). French coast: Nice (Arnaud, 1987). Tunisian coast: Tabarka (Arnaud, 1987). Italian coast: Levanto, Ligurian Sea (Faraggiana, 1940); Isola Lachea (Krapp, 1973); Apulian coast (Chimenz, et al., 1993); Costa d'Argento (Vignoli et al., 2006). Croatian coast: Rovinj, North Adriatic (Schüller, 1989). Israel coast: Tantura (Stock, 1958). Northern Cypriot coast: Famagusta Bay (Kocak and Katagan, 2007); Turkish coast: Gencelli cove (Krapp et al., 2008) (Figure 1).

A. longiocularata is reported only one time from the Turkish waters up to date. The presence of this rare species is confirmed for the first time from the İzmir Bay, and the second time from Turkey in the present study.

With *A. longiocularata*, the total number of species is raised to 19 in the İzmir Bay. These 19 different species of pycnogonids, out of a total number of 29 species in Turkey (Kocak, 2019), represent 65.5% of all known pycnogonid species. To date, a total number of 25 pycnogonid species are found in the Turkish Aegean Sea. Thus, the reported 19 species in the İzmir Bay represent 76.0% of the actual Turkish Aegean Sea species.

The family Ammotheidae is dominant with 9 species, followed by Callipallenidae (4 species), Phoxichilidiidae (3 species). *Ammothella* and *Callipallene* are the major genera (4 species), followed by *Anoplodactylus* (3 species).

All of the known pycnogonid species in İzmir Bay were reported in shallow water. Consequently, the studies conducted along the İzmir Bay coasts were based mainly on inshore samplings. Therefore, it is believed that deep-sea samplings in İzmir Bay and more detailed examinations along the İzmir Bay coasts will result in a more accurate count of pycnogonid species.

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