

Anoplodactylus digitatus (Böhm, 1879) (Arthropoda, Pycnogonida): a new addition to the Turkish fauna

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Abstract: *Anoplodactylus digitatus* (Böhm, 1879) from Turkish waters was recorded for the first time. Specimens were collected at 3 sampling stations along the Mediterranean coast of Turkey. Some morphological features of the species are illustrated and its distribution in the Mediterranean Sea is shown.

Key words: Mediterranean, Mersin Bay, *Anoplodactylus digitatus*, Pycnogonida, Turkey

Pycnogonids form a small but interesting part of most bottom communities. They are a little-known group of strictly marine arthropods that occur from brackish estuaries with salinities as low as 20‰ to the oceans of the world, from intertidal zones to the deepest trenches (Child, 1992).

So far, 7 pycnogonid species have been recorded along the Mediterranean coast of Turkey by Stock (1962), Özcan et al. (2009), and Koçak and Alan (2013). There are only 2 scientific reports to date on the pycnogonids of Mersin Bay in Turkey (Stock, 1962; Koçak and Alan, 2013); Stock (1962) recorded *Anoplodactylus californicus* Hall, 1912 (as *A. portus*). Koçak and Alan (2013) then reported 5 species [*Ammothella longipes* (Hodge, 1864); *A. appendiculata* (Dohrn, 1881); *Tanystylum orbiculare* Wilson, 1878; *T. conirostre* (Dohrn, 1881); and *A. pygmaeus* (Hodge, 1864)] from Mersin Bay. To date, these 6 pycnogonid species were known from the region. An examination of pycnogonid specimens from Mersin Bay on the Turkish coast of the Mediterranean Sea yielded one species of pycnogonid, *Anoplodactylus digitatus*, that is a new record for Turkey.

Up to now, 7 species of *Anoplodactylus* have been recorded from the Turkish waters: *A. petiolatus* (Kroyer, 1844); *A. pygmaeus* (Hodge, 1864); *A. virescens* (Hodge, 1864); *A. californicus* Hall, 1912; *A. angulatus*; *A. stocki* Bacescu, 1958; and *A. nanus* Krapp, Koçak, & Katağan, 2008.

Previous records of *A. digitatus* in the Mediterranean Sea were from the coast of Israel in the eastern Mediterranean (Stock, 1958; Lipkin and Safriel, 1971; Arnaud, 1987) (Figure 1).

Samples were taken at 3 sampling stations between July 2010 and March 2011 in the upper infralittoral zone (0.5 m depth) of Mersin Bay (Figure 1). The samples were fixed in 5% formaldehyde and later rinsed with fresh water and then preserved in 70% ethanol. The specimens sampled were examined and dissected under a stereomicroscope, and slide mounts were examined under a compound microscope. Drawings were made with the aid of a drawing tube mounted on an Olympus CX31 compound microscope. Measurements were done using an ocular micrometer. The species was identified following Müller (1992) and Arango (2003). The specimens were deposited in the Museum of the Faculty of Fisheries, Ege University, İzmir, Turkey (ESFM).

Systematics

Order PANTOPODA Gerstaecker, 1863

Family PHOXICHILIDIIDAE Sars, 1891

Genus ANOPLDACTYLUS Wilson, 1878

Anoplodactylus digitatus (Böhm, 1879) (Figures 2–4)

Phoxichilidium (*Anoplodactylus*) *digitatum*: Böhm, 1879: 184–185, pl. 1, figure 2, 2b.

Anoplodactylus digitatus: Stock, 1965: 28–28 (synonymy and literature); 1992: 94; 1994: 57; Müller, 1992: 164–166, figures 18–26; Arango, 2003: 2750, figure 10.

Material examined: 1 ♂ (ESFM-PYC/2010-12), Erdemli, Mersin Bay, 36°36'10"N, 34°19'15"E, *Palisada perforata*, *Jania rubens*, *Cystoseira* sp., 0.5 m, 27.12.2010. 1 ♀, (EFM-PYC/2011-12), Ayaş, Mersin Bay, 36°29'08"N, 34°10'43"E, 25.03.2011, 0.5 m, *Cystoseira compressa*, *Jania rubens*, *Palisada perforata*. 1 ♀, 2 subadult ♂♂ (EFM-

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Figure 1. Map of the Mediterranean Sea showing distribution of *Anoplodactylus digitatus* (Böhm, 1879).

PYC/2011-13), Kumkuyu, Mersin Bay, 36°30'01"N, 34°11'29"E, 25.03.2011, 0.5 m, *Corallina officinalis*, *P. perforata*, *Jania rubens*, *Cystoseira* sp. One immature ♀ (EFSM-PYC/2010-13), Ayaş, Mersin Bay, 36°29'08"N, 34°10'43"E, 27.12.2010, 0.5 m, *C. compressa*, *J. rubens*, *P. perforata*.



Figure 2. *Anoplodactylus digitatus* (Böhm, 1879), ♂. Dorsal view.

Description: ♂. Dorsally segmentation sutures present between trunk segments 1 and 2; suture between segments 3 and 4 fused, ventrally there appears a partly obliterated furrow between these 2 segments. Ocular tubercle cone-shaped with a low protuberance on top. Eyes large, oval, and well pigmented (Figure 2). Abdomen slightly taller than ocular tubercle. Proboscis elongate, slightly inflated and slightly angled upward mid-region.

Legs long and slender, armed with several short setae; second coxa of legs 3–4 with long ventrodistal genital spurs; coxae 1 and 3 subequal in length; a dorsodistal spur bearing a single spine on femur; femoral cement gland tube slender, anteriorly directed, near dorsal midpoint of femur; femur the longest article, with short, rounded dorsodistal spur bearing a slender spine (Figure 3A); propodus with heel bearing 2 robust spines in line followed by a single more slender spine, sole with 7 curved, anteriorly directed spines; distal propodal lamina very short, claw stout and moderately curved, with very short auxiliary claws (Figure 3B). Ovigera 6-segmented, first segment much broader than others; third segment the longest; fifth segment moderately setose; small terminal segment cone-shaped, with several short setae in proximal half (Figure 3C).

Measurements (mm): Trunk length (frontal margin of first trunk segment to tip of fourth lateral process), 1.50; trunk width (across first lateral processes), 0.92; proboscis length (ventral), 0.64; ocular length: 0.22; abdomen length, 0.25.

Third leg lengths: coxa 1, 0.27; coxa 2, 0.52; coxa 3, 0.37; femur, 0.97; tibia 1, 0.92; tibia 2, 0.90; tarsus, 0.14; propodus, 0.57; main claw, 0.31; auxiliary claw, 0.04.

Remarks: The present ♂ specimen shows morphological features identical with those given in a ♂

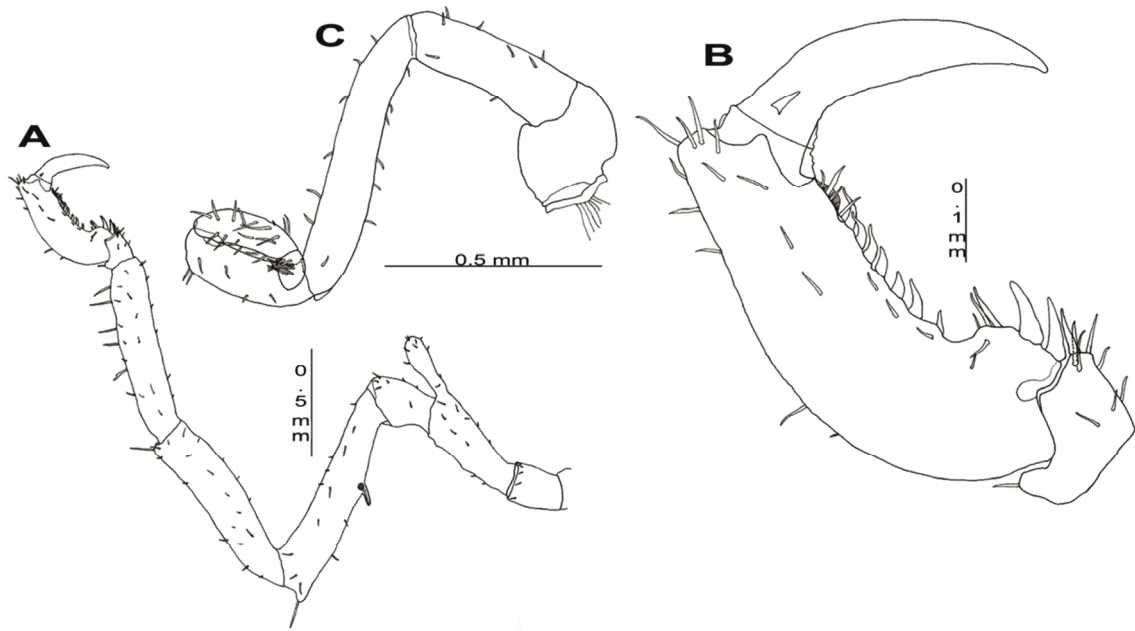


Figure 3. *Anoplodactylus digitatus* (Böhm, 1879), ♂. A: third left leg; B: propodus and tarsus of left leg 3; C: right oviger.

specimen described by Müller (1992) from Malaysia with some minor differences, such as the absence of 3 short dorsodistal setae on lateral processes. The presence of the setae was shown by Müller (1992). Müller's specimen has some short distal setae on the abdomen, while this specimen does not. The trunk length of the present specimen (1.50 mm) is slightly smaller than those in Müller's specimen (1.55 mm).

♀: Slightly larger than male in most measurements; trunk elongate-oval, fully segmented, without tubercles or setae (Figure 4A). Four protuberances at the ventral side of the proboscis (Figure 4B). Chelifores slender, scape 1-segmented and long, fingers nondenticulate (Figure 4C). Femora swollen (Figure 4D). The genital processes are much shorter and more robust than those of the male, bearing several short setae distally (Figures 4E and 4F). In propodus, sole with 9 curved, anteriorly directed spines (Figure 4G).

Measurements (mm): Trunk length (from frontal margin of cephalic segment to tip of fourth lateral process), 1.69; trunk width (across first lateral processes), 0.92; proboscis length (ventral), 0.75; abdomen length, 0.35; ocular length, 0.30.

Third leg lengths: coxa 1, 0.25; coxa 2, 0.57; coxa 3, 0.43; femur, 1.26; tibia 1, 1.14; tibia 2, 1.11; tarsus, 0.16; propodus, 0.63; main claw, 0.36; auxiliary claw, 0.03.

Distribution: This is a widely known species from the tropical Indo-Pacific, the Caribbean, and the Mediterranean Sea.

All previous records of the species in the Mediterranean Sea are only from Israel (eastern Mediterranean): by Stock (1958) from Tantura, Lipkin and Safriel (1971) from Mikhmoret, and Arnaud (1987) from Caesarea. The record herein further extends the known distribution of the species from the Mediterranean coast of Israel to the Turkish Mediterranean coast in the Mediterranean Sea.

A. digitatus is the first record from Turkey. With this species, the total number of species is raised to 27 in the Turkish seas and 8 along the Mediterranean coast of Turkey.

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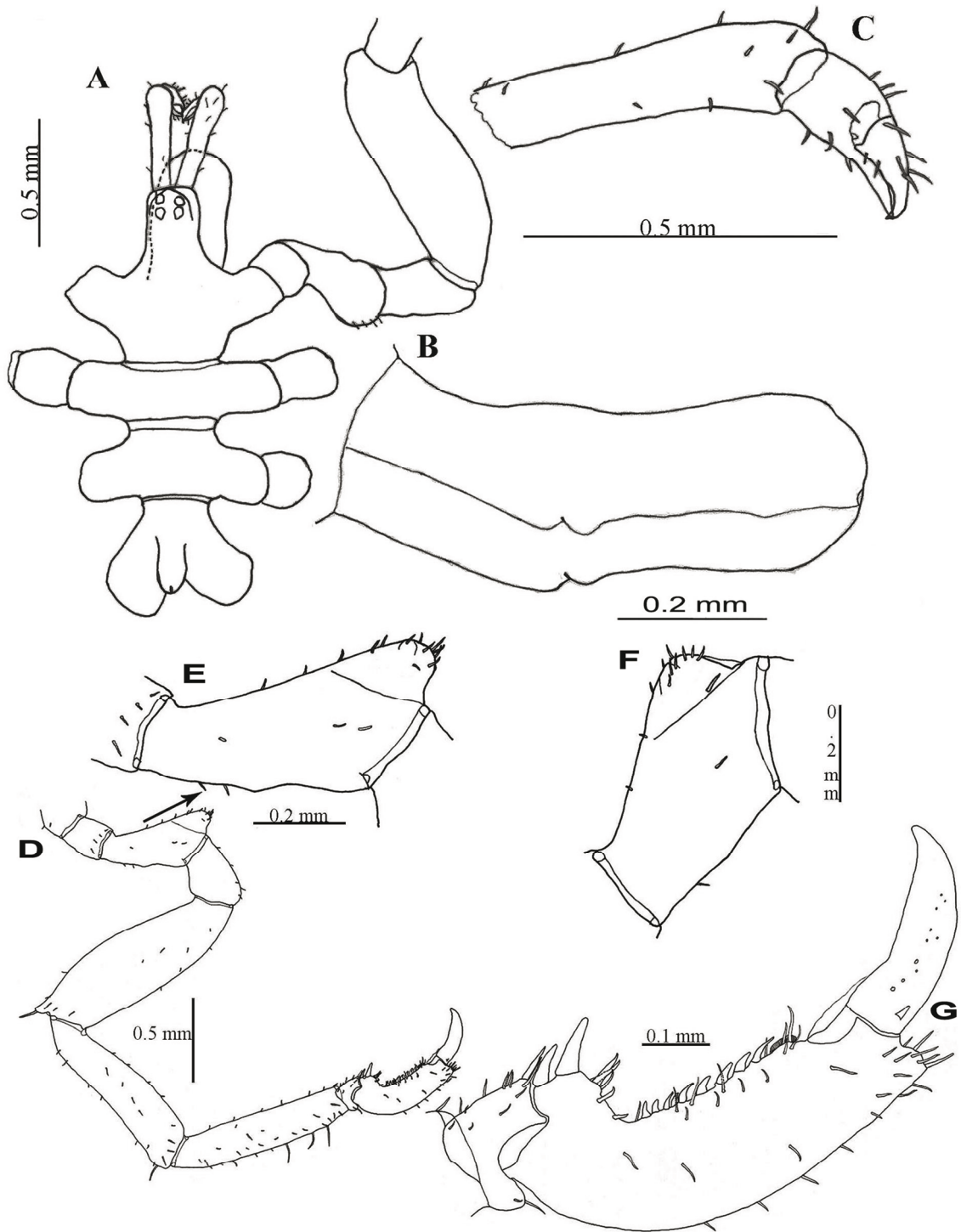


Figure 4. *Anoplodactylus digitatus* (Böhm, 1879), ♀ from Mersin Bay. A: trunk, dorsal view; B: proboscis with ventral protuberances, ventrolateral view; C: left chelifore; D: left leg 3; E: second coxa of left leg 3; F: second coxa of left leg 1; G: propodus and tarsus of left leg 3.

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