BULLETIN
ZOOLOGISCH MUSEUM

UNIVERSITEIT VAN AMSTERDAM

Vol. 3 no. 17 23-X-1973

A FOURTH MEDITERRANEAN *RHYNCHOTHORAX* AND REMARKS ON THE GENUS (PYCNOGONIDA)

Franz Krapp

ABSTRACT

A species of *Rhynchothorax*, *Rh. alcicornis* nova species, the fourth known from the Mediterranean Sea, and the tenth in the genus is described. A new key to the species and a review of the genus are provided; an attempt is made to arrange all species known into four different species groups.

INTRODUCTION

Up to now, nine species of *Rhynchothorax* Costa have been described, as far as the present writer is aware. Three of them, viz., *mediterraneus* Costa, 1861, *voxorinus* Stock, 1966, and *anophthalmus* Arnaud, 1972, were originally reported from the Mediterranean Sea. *Rh. mediterraneus* is known also from the Atlantic Ocean (Zilberberg, 1963: partim = specimen 3, fide Fage & Stock, 1966; Zago, 1970; Arnaud, 1972). Very probably Child & Hedgpeth (1971) were right in predicting: "There are probably many more species of *Rhynchothorax* to be discovered .....", since this genus inhabits the mesopsammon. The only other pycnogonids known to share this unusual habitat are *Nymphonella* Ohshima, and some members of the large genus *Anoplodactylus* (*A. arescus*:vide Du Bois-Reymond Marcus, 1959; *A. tarsalis*: vide Arnaud, 1973). Moreover, *Rhynchothorax* is one of the tiniest pycnogonids known, a fact that is clearly correlated with its interstitial mode of life in the adult phase. Early development and larval life are unknown. Curiously enough, almost every newly discovered specimen adds to our knowledge. Often it proves to be a new species or at least it constitutes an extension of the distributional area. It would be most interesting to learn of *Rhynchothorax* species from the Japanese Sea. They probably exist, as there is an early Tethys connection involved, and other pycnogonid species indicate also a clear relationship between the Japanese and Mediterranean regions. We could substantiate Child & Hedgpeth's prediction even in a well-studied area as the Mediterranean, by finding a male specimen belonging to a new species.

Rhynchothorax alcicornis nova species

Material: 1 ♂ (holotype) from Punta San Pancrazio, Ischia (Italy). Coarse sand with rather much detritus, 12 m deep, collected by Ulrich Schiecke. Three microscopical slides with right palp, right oviger, and left leg 3 have been deposited in the Zoölogisch Museum, Amsterdam under the reference no. ZMA Pa 2017.

Description: A small pycnogonid (abt. 1 mm total length), body largest in first segment, tapering to fourth one. Segmentation lines present between segments 1 and 2, as well as between 2 and 3, but lacking between segments 3 and 4. Dorsal ornamentation of trunk not drawn, but very probably constituted of middorsal tubercles (the trunk with the remaining appendages was accidently destroyed when trying to draw it under the compound microscope: pushing the coverslide to a new position was sufficient to squash the entire animal. Fortunately, the preparations were made before this brutal performance). Ocular tubercle reduced, no eyes. As in many other species, lateral processes armed with tubercles on rostral and caudal side of dorsal face, but their exact form not recorded. Proboscis with all three antimeres present, dorsal one well developed. Abdomen cylindrical, rather long, bearing excrescences on dorsal contour, extremity appearing bifid.

Chelifores present, uniarticulate and bacilliform, parallel, directed forwards.

Palp (fig. 1a) of five articles, as long as proboscis. One single little terminal article, which is heavily lobuled and incised like an European elk's (American moose's) antlers, most of these lobules bearing setae. Penultimate segment long, supporting a lobuled dorsal process, whose surface resembles that of the last article. Article 5 the shortest, article 2 the longest, basal one short and thickset; articles 1, and especially 2 and 4, bearing very apparent bosses, some of which terminate in a seta.

Oviger (fig. 1b) 10-articulated, 4th article the longest. Articles 6 to 10 bearing compound (in brackets: simple) spines, according to the formula 1 : 4 : 4 : 3 (+1). As usual, article 10 is enlarged and supporting a large, flattened claw fitting into corresponding notch.

Legs with relatively robust coxae, but tapering (in dorsal aspect) to very fine articles. Leg 3 (fig. 1c) with subequal coxae, 1st with 3 apophyses, thickest, 2nd with reduced apophyses, about as long as 1st, 3rd the shortest, without any protuberances. Femur and tibia subequal, continuously narrowing, each bearing dorsally a long seta, those on the femur and 2nd tibia near the distal extremity of the article, that on tibia 1 a bit beyond the middle. All three articles heavily beset with bosses, sometimes supporting setae, tibia 2 with only two setae on its ventral margin. Propodus long, slender, with only five spine-like setules on sole, the last two paired. Dorsal surface with the same type of setae. Terminal claw robust, auxiliaries half as long as terminal claw and very slender.

Measurements in mm:

Leg 3		Palp	
coxa 1	0.13	article 1	0.13
coxa 2	0.10	article 2	0.20
coxa 3	0.09	article 3	0.09
femur	0.26	article 4	0.18
tibia 1	0.20	article 5	0.07
tibia 2	0.20		
tarsus	0.05		
propodus	0.21		
principal claw	0.10		
auxiliary claw	0.05		

KEY TO THE SPECIES OF *RHYNCHOTHORAX* DESCRIBED UP TO THE END OF 1972

Stock gave the first key to the 5 species known up to 1966. Arnaud (1972) further elaborated this to accomodate three more species described since. Child & Hedgpeth (1971), as well as the present paper, each add one further species to our knowledge. It should be noted that *Rh. australis* Hodgson, 1907, too, possesses a 6-articulated palp (vide Calman 1915: 67, fig. 21, compare couplet 4a in Arnaud's key).

1 a) Auxiliary claws present, dorsal antimere of labial system well developed .....2)
  b) Auxiliary claws absent, dorsal antimere of labial system reduced .....6)
2 a) Eyes and ocular tubercle (reduced or)absent; uniarticulated chelifores present, rod-like; palp ending into one minute article .....3)
  b) Eyes and ocular tubercle well developed; chelifores lacking; palp ending into two minute articles .....5)
3 a) Cephalic somite with anterolateral horns

..... *Rh. philopsammum* Hedgpeth, 1951

b) Cephalic somite without anterolateral horns .....4)

4 a) Last article of palp strongly branched like an elk's antler; 5 spines on sole of propodus of 3rd leg; oviger spine formula 1 : 4 : 4 : 2 (+1 simple), compound spines on 6th to 10th article (♂) .... *Rh. alcicornis* nov. spec.

b) Last article of palp simple; 8 spines on sole of propodus of 3rd leg; oviger with formula of 2 : 2 : 1 : 2 simple spines on 7th to 10th article (♀) .... *Rh. anophthalmus* Arnaud, 1972

5 a) Lateral processes smooth, without any tubercles..... *Rh. australis* Hodgson, 1907

b) Lateral processes bearing a single dorsal tubercle ..... *Rh. voxorinus* Stock, 1966

c) Lateral processes bearing several large dorsal tubercles... *Rh. articulatus* Stock, 1968

6 a) Palpi 6-articulated, proboscis uneven or rugose with tubercles .....7)

b) Palpi 5-articulated, proboscis smooth or bearing a horn .....8)

7 a) Fifth and 6th article of palp with protruding, finger-like, spine-bearing processes .. .. *Rh. malaccensis* Stock, 1968

b) Fifth and 6th article of palp simple, bearing spines without swollen bases .... *Rh. barnardi* Child & Hedgpeth, 1971

8 a) Ocular tubercle projected into a long, sagittal horn protruding anteriad to about halfway the proboscis; the latter is smooth; second article of palp with short lateral expansion; ovigers present in ♀; sole of propodus bearing subequal hairs .... *Rh. mediterraneus* Costa, 1861

b) Ocular tubercle normal, without protraction; proboscis bearing a median horn; second article of palp bearing an outgrowth as long as the article itself; ovigers lacking in ♀; sole of propodus with a series of subequal hairs, but distally armed with a large spine near the insertion of principal claw .... *Rh. unicornis* Fage & Stock, 1966

In the tabular synopsis 12 characters are shown, only part of which have been used in the key. Evidently, this is due to the emphasis on specific characters, instead of common ones. From the table, on the other hand, close correspondences resort: *Rh. australis, voxorinus* and *articulatus* possess 6 palp articles, the two distalmost of which are minute, auxiliary claws are present, as well as a dorsal proboscis antimere, chelifores are lacking altogether, eyes are present. Judging from the higher number of palp articles and presence of auxiliary claws, this group seems to demonstrate more or less primitive conditions. The unit formed by these three species may be termed *australis*-group or group A.

It should be noted that *australis* does fit this diagnosis only if we admit Calman's (1915) emendation regarding the number of palp articles.

The next group - B - has similar palp characters, but differs in lacking auxiliary claws and the dorsal proboscis antimere. It may be called the *malaccensis*-group. At any rate it seems more specialized than the preceding group. It comprises at present *Rh. malaccensis* and *barnardi*.

The *mediterraneus*-group, comprising the species *mediterraneus* and *unicornis*, comes rather close to the *malaccensis*-group, with which it agrees in the lack of the dorsal proboscis antimere and of auxiliary claws, but differs from the *malaccensis*-group in possessing only 5 palp articles, it may be termed group C alternatively.

The most aberrant group seems to be the *philopsammum*-group. It appears to be independently derived from a basal stock, like the *australis*-group, from which it differs in the presumed loss of the last palp article (less likely than an additional basal fusion took place). Its species agree with the *australis*-group in the presence of auxiliary claws and of the dorsal proboscis antimere, but unlike the members of that group they lost their eyes, while stumps of chelifores still exist. This may be indicative of the eyes being genetically not well fixed in the genetic complement, but the explanation of persisting chelifores is much more difficult.

In short this discussion of characters is not intended to nourish speculation but to induce new research into morphology of these little animals.

ACKNOWLEDGMENTS

Special thanks are due to Dr. Ulrich Schiecke, the collector of the new species, who entrusted all his Pycnogonida material to the author for treatment. Prof. Dr. Jan H. Stock very generously supplied his aid in many ways, notably in brushing up the manuscript. In addition he helped with literature.

REFERENCES

ARNAUD, Françoise, 1972. Un nouveau pycnogonide de Méditerranée nordoccidentale: Rhynchothorax anophthalmus n. sp. et redécouverte de Rhynchothorax mediterraneus Costa, 1861. Téthys, 3 (2): 405-409.

-------, 1973. Pycnogonides des récifs coraliens de Madagascar, 4. Colossendeidae, Phoxichilidiidae et Endeidae. Téthys, 4 (4): 953-960.

CALMAN, W.T., 1915. Pycnogonida. British Antarctic ("Terra Nova") Expedition 1910, (Zool.) 3: 1-74.
CHILD, C.A. & J.W. HEDGPETH, 1971. Pycnogonida of the Galápagos Islands. J. nat. Hist., 5: 609-634.
COSTA, O.G., 1861. Microdoride mediterranei o descrizione de' poco ben conosciuti od affatto ignoti viventi minuti e microscopici: I-XVII + 1-80 (Napoli).
DOHRN, A., 1881. Die Pantopoden des Golfes von Neapel und der angrenzenden Meeresabschitte. Fauna Flora Golfes Neapel, 3: I-VIII + 1-252, XVII Taf.
FAGE, L. & J.H. STOCK, 1966. Résultats scientifiques des Campagnes de la "Calypso", 27. Campagne de la Calypso aux Iles du Cap Vert (1959), 6. Pycnogonides. Ann. Inst. océanogr. Monaco, 44: 315-327.
HEDGPETH, J.W., 1951. Pycnogonids from Dillon Beach and Vicinity, California, with descriptions of two new species. Wasman J. Biol., 9 (1): 105-117.
HODGSON, T.V., 1907. Pycnogonida. "Discovery" nation. Antarctic Exped., (Zool.) 3 (1): 1-72, 10 pls.
STOCK, J.H., 1966. Sur quelques Pycnogonides de la région de Banyuls (3e note). Vie et Milieu, 17 (1B): 407-417.
-------, 1968. Pycnogonida collected by the Galathea and Anton Bruun in the Indian and Pacific Oceans. Vid. Medd. Dansk Naturhist. Foren., 131: 7-65.
ZAGO, Marlene Sofia Arcifa, 1970. Sobre o Pantópodo Rhynchothorax mediterraneus Costa, 1861. Contrçoes Inst. oceanogr. Univ. Sao Paulo, (Ocean. Biol.) 21: 1-5.
ZILBERBERG, Frida, 1963. Notes on Pantopoda. Bol. Inst. oceanogr., Sao Paulo, 13 (2): 21-32.

Dr. Franz KRAPP
Zoologisches Forschungsinstitut und
Museum Alexander Koenig
D - 5300 Bonn
Adenauerallee 150-164
Bundesrepublik Deutschland

Received: 1 August 1973

TABULAR SYNOPSIS OF SOME CHARACTERS IN THE GENUS *Rhynchothorax* COSTA, 1861

species, author, data	♀ oviger present	number of palp articles	number of small distal segments in palp	auxiliary claws	dorsal proboscis antimere	eyes	chelifores	median horn	lateral horns	trunk articulations	dorsomedial tubercles	tubercles on lateral processes	species-group
australis Hodgson, 1907	+	6	2	+	+	+	-	-	-	2	+	-	A
voxorinus Stock, 1966	? (1♂)	6	2	+	+	+	-	-	+	2	+	+	A
articulatus Stock, 1968	? (1♂)	6	2	+	+	+	-	-	-	3	+	+	A
malaccensis Stock, 1968	? (1 immat.)	6	2	-	-	+	-	-	-	2	+	+	B
barnardi Child & Hedgpeth, 1971	+	6	2	-	-	+	-	-	-	2	+	+	B
mediterraneus Costa, 1861	+	5	2	-	-	+	-	+	-	2	+	+	C
unicornis Fage & Stock, 1966	- (bud-like)	5	2	-	-	+	-	-	+	2	+	+	C
philopsammum Hedgpeth, 1951	+	5	1	+	+	-	+	-	+	3	-	+	D
anophthalmus Arnaud, 1972	+	5	1	+	+	-	+	-	-	2	-	+	D
alcicornis nova species	? (1♂)	5	1	+	+	-	+	-	-	2	?+	+	D

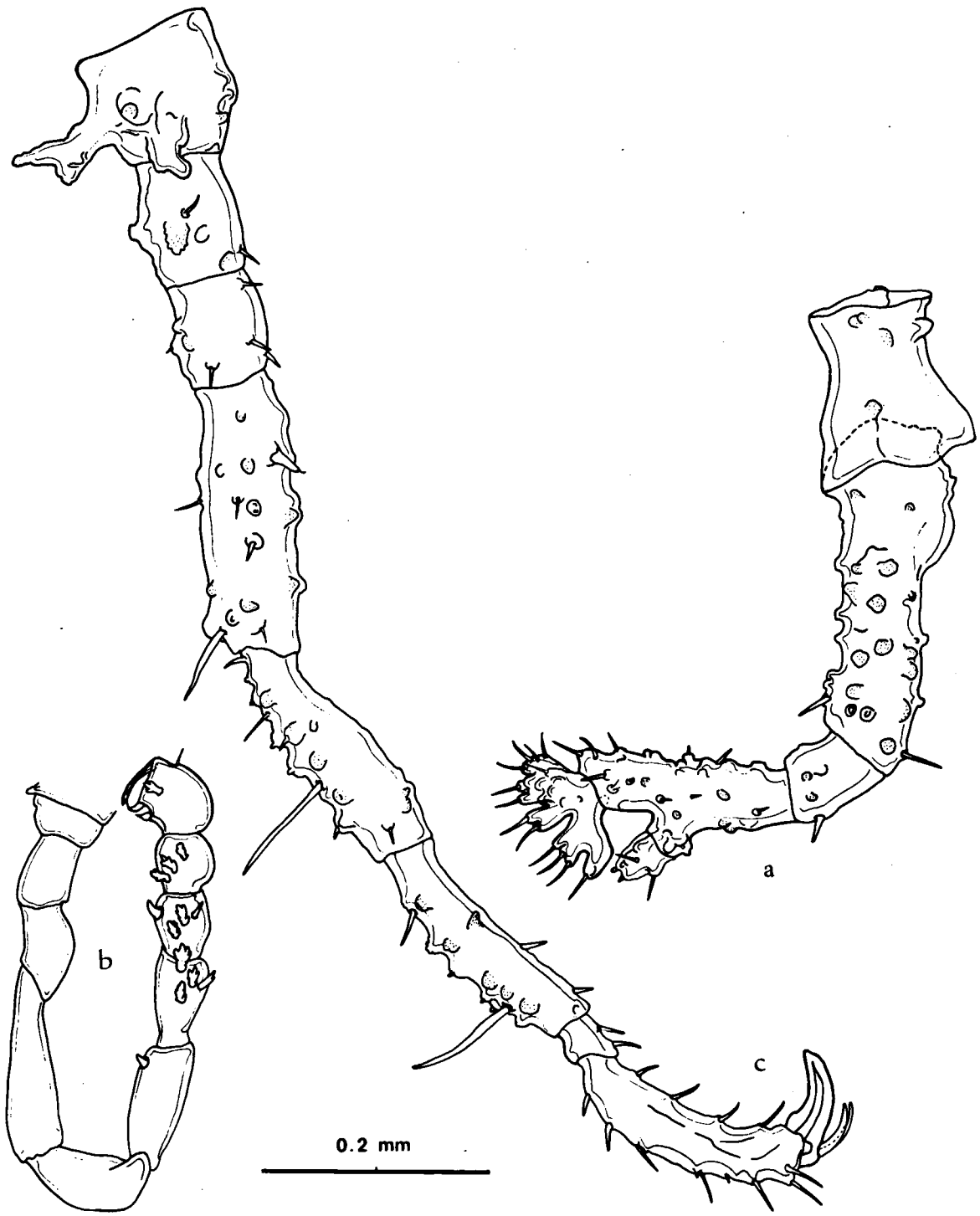

Fig. 1. *Rhynchothorax alcicornis* nova species, ♂ holotype (ZMA Pa 2017).
a) palp; b) oviger; c) leg 3. All to same scale.