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A new alien species in the Mediterranean?

On the presence of *Sirpus monodi* Gordon, 1953 (Brachyura, Pirimelidae) in Greece

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Abstract

Sirpus monodi, first described from West Africa (Dakar, Senegal) and later reported from Mauritania and Congo, has now been found in the eastern Mediterranean. This work reports on its occurrence in two Greek localities.

Keywords: Alien species; Brachyurans; *Sirpus monodi*; Mediterranean.

Introduction

The family Pirimelidae, represented by the genera *Pirimela* and *Sirpus*, seems to have a fairly restricted distribution in the Mediterranean and Eastern Atlantic (ABELE & FELGENHAUER, 1982). It is characterized by relatively small specimens, with a hexagonal carapace and four or five antero-lateral teeth in the genera *Sirpus* and *Pirimela* respectively. Following the first description of the genus *Sirpus* by GORDON (1953a, b), four different species have been described to date. These are:

- *Sirpus zariquieyi* Gordon, 1953, known throughout the Mediterranean and on Atlantic coasts of Spain (ZARIQUIEY ALVAREZ, 1968)
- *Sirpus monodi* Gordon, 1953, known

only on the West Africa coasts (MONOD, 1956 - Mauritania, Senegal; ROSSIGNOL, 1962 - Congo)

- *Sirpus gordonae* Manning & Holthuis, 1981, described from Annobon (Gulf of Guinea, S Atlantic, MANNING & HOLTHUIS, 1981)
- *Sirpus ponticus* Verestchaka, 1989, previously referred as *Sirpus zariquieyi* in the Black Sea (KOCATAŞ, 1982).

The present paper reports on the presence of *Sirpus monodi* in the Mediterranean, from two different areas in Greece.

Material Examined

The examined specimens have been obtained from different areas (the coasts

of Crete and the Korinthiakos Gulf respectively, Fig.1), variable substrata (soft and hard) and depth (from 1 to 14m), using different sampling methods. More specifically, specimens (deposited in the Hellenic Centre for Marine Research collection) were obtained from:

- The Cretan Sea, off Siteia, NE Crete (Latitude: $35^{\circ}15'23.99''\text{N}$, Longitude: $26^{\circ}13'29.70''\text{E}$) 14 m depth, Van Veen grab, sand, October 2002, 1 ♂ 3.21 mm carapace length
- The Korinthiakos Gulf (Latitude $38^{\circ}22,90$, Longitude $22^{\circ}40,00$), 5m depth, Dredge, sand with pebbles , 31 October 2006, 1 ♂, 3.25 mm carapace length
- The Korinthiakos Gulf (Latitude $38^{\circ}20,70$ Longitude $22^{\circ}40'45$), 1m depth, scuba diving, hard bottom with photophilous algae, 30 October 2006, 1 ♂, 3.43 mm carapace length
- The Korinthiakos Gulf (Latitude $38^{\circ}22'62$, Longitude $22^{\circ}40'78$) 5m depth, scuba diving, hard bottom with photophilous algae, 15 February 2007, 1 ♂, 2.63 mm carapace length.

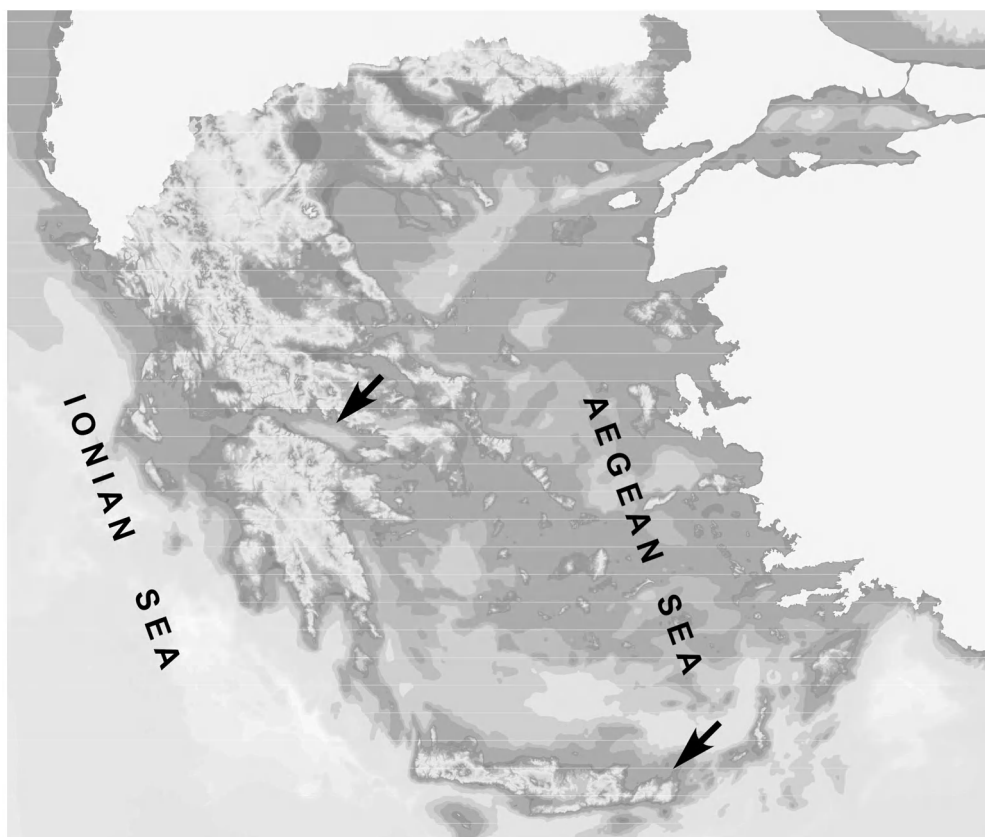


Fig. 1: Location of the sampling sites.

Results and Discussion

The specimens have been identified as *S. monodi* (Fig. 2), after comparison with *S. zariquieyi* male (Fig. 3), in order to avoid any misidentification due to the similarity of the female rostrum of *S. zariquieyi* with the male rostrum of *S. monodi*. *S. monodi* differs from *S. zariquieyi* mainly in the following characters:

- More tuberculated carapace in *S. monodi*
- Shorter and more massive spines on front, orbital and antero-lateral margins (more slender in *S. zariquieyi*)
- The setae on the antennal flagellum are simple and rather short in *S. monodi* compared to long and distally plumose in *S. zariquieyi*
- The front consists of three sub-equal, blunt triangular spines, the median one situated below the level of the lateral ones and directed obliquely forwards and downwards in *S. monodi* (the median one shorter in *S. zariquieyi*).

The specimens of this study agree well with GORDON'S (1953b) descriptions and figures. The unique observed discrepancy was related to the size of specimens, quite similar in literature between *S. monodi* and *S. zariquieyi*. Indeed, GORDON (1953b) refers to a *S. monodi* male of 4,9 mm carapace length and a *S. zariquieyi* male of 5 mm carapace length (the largest at her disposal). However, younger *S. zariquieyi* males of only 3.42 mm are considered by the same author as already mature (GORDON, 1953b). Moreover, ALVAREZ (1968) reports 6,93 mm in length for the biggest *S. zariquieyi* male he collected, mentioning however that specimens collected in



Fig. 2: *Sirpus monodi* Gordon, ♂ from the Korinthiakos Gulf.

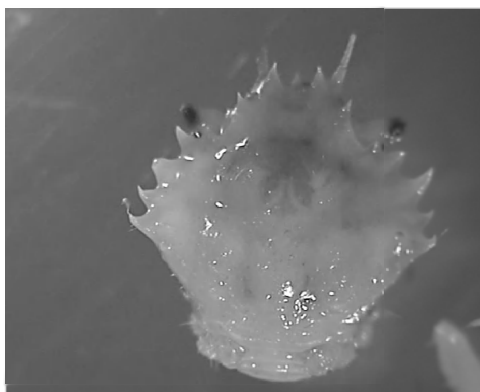


Fig. 3: *Sirpus zariquieyi* Gordon, ♂ from the Korinthiakos Gulf.

August were smaller (mostly 2 to 3 mm) than those collected during winter – early summer. From the above, it seems that the two species have very similar dimensions, but seasonal variation can be observed. However, D' UDEKEM D'ACQZ has remarked that depending on the orientation of *Sirpus* specimens, the relative size of the rostral teeth may look different and that the comparison of specimens of the same size is indispensable (D' UDEKEM D'ACQZ, pers. comm.). In our samples *S. monodi* was constantly smaller than *S. zariquieyi* (max

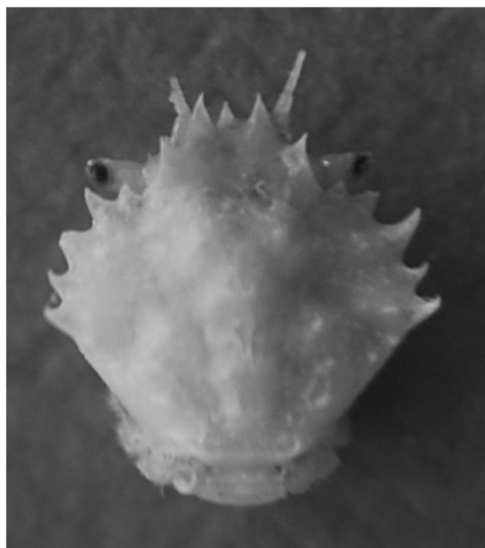
carapace length of *S. monodi* 3.43 mm vs 5.1 for *S. zariquiey*, see figure 4 for comparison). On the other hand, direct observation of the two species from the same area (Korinthiakos Gulf), as well as comparison with reported taxonomic characters and drawings of *S. gordonae* and *S. ponticus*, lead to the relative certainty that the specimens belong to *S. monodi*, leaving some doubts due to size differences.

The presence of *Sirpus monodi* together with *S. zariquiey* in the same area (Korinthiakos Gulf) confirms the occurrence of both species in Greece, as *S. zariquiey* has already been observed in the Ionian Sea (D'UDEKEM D'ACQZ, 1999; CRUSTIKON, 2007).

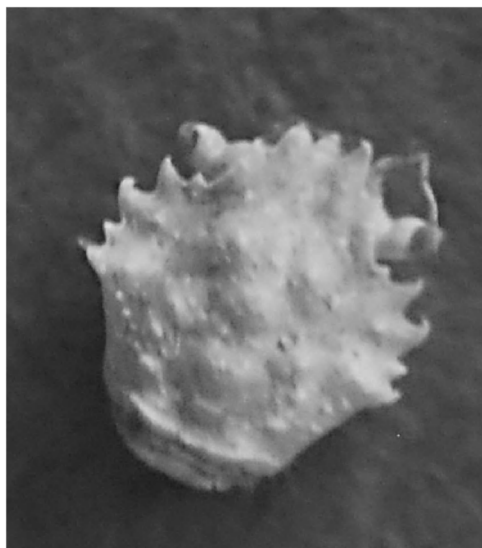
This record, the first for Greece and the Mediterranean Sea, considerably extends the known distribution of *Sirpus monodi*. As *S. monodi* specimens have been found in different areas, it seems

that the species could be present in all the Greek seas, as well as in the Mediterranean, but very probably it has been overlooked due to its similarity to *S. zariquiey* as well as to its very small size and rarity.

It could be speculated that this species could be a native crab in the Mediterranean. However, it seems rather unlikely that more than 50 years after its description this species has not been yet recorded from the Mediterranean, while recent specialized publications have included *S. zariquiey* (VIGNOLI *et al.*, 2004) or are dealing with its peculiar features (BEDINI, 2006). Thus, it seems more probable to consider its presence in the Mediterranean as the result of an accidental transport from its native distribution range. As for its mode of introduction, in the Korinthiakos Gulf it is very likely related to shipping, as the sampling area is very close to a private harbour



a) *S. zariquiey*



b) *S. monodi*

Fig. 4: Comparison of dimensions between the two species.

where ships coming from Ghana have been delivering material at least twice a year over the last 5 years. Regarding the species presence in the Cretan Sea, it remains unknown. Either shipping or another mode of introduction has to be examined, as the sampling site is close to aquaculture installations. However, it is worth mentioning that Italian ships coming from African coasts, visit Cretan harbours (Ierapetra, Siteia) for fish catch disposal. Thus, shipping is assumed to be the most probable vector of *Sirpus monodi* in Greek waters.

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