New records of the Southern Ocean species *Cumella emergens* (Cumacea: Nannastacidae) that emerged from the deep

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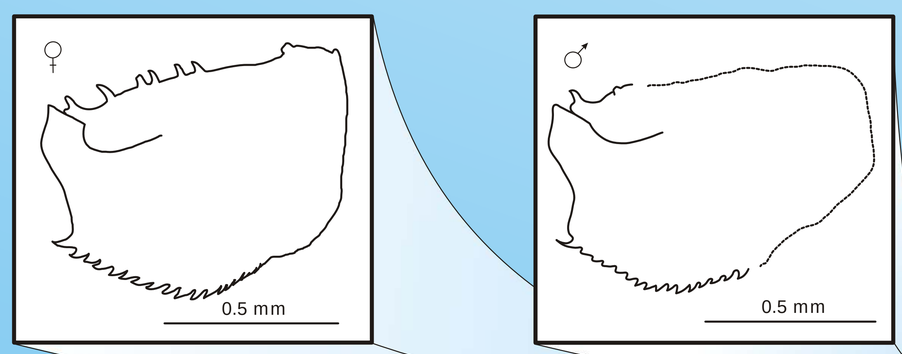
Introduction

A closer relationship of the fauna of the Antarctic and the Magellan region might be expected as the Scotia Arc islands could link both areas. Nevertheless, the species overlap of cumaceans from these areas is less than 10 percent . Therefore, the Antarctic was probably not only colonized from South America via the Scotia Arc, two other scenarios were possible. Antarctic cumaceans possibly originate from an ancient Gondwana fauna or are related to the deep-sea fauna. Little is known about the cumaceans of the deep sea around Antarctica. Further deep-sea sampling is necessary to illuminate the origin of Antarctic cumaceans. However, the widespread occurrence of *Cumella emergens* Cobera, 2000, in the Antarctic is an example of a biogeographic connection between Antarctic shallow-water

Weddell Sea



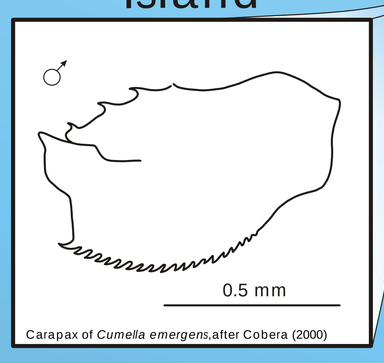
Cumella emergens

Difference in gender*

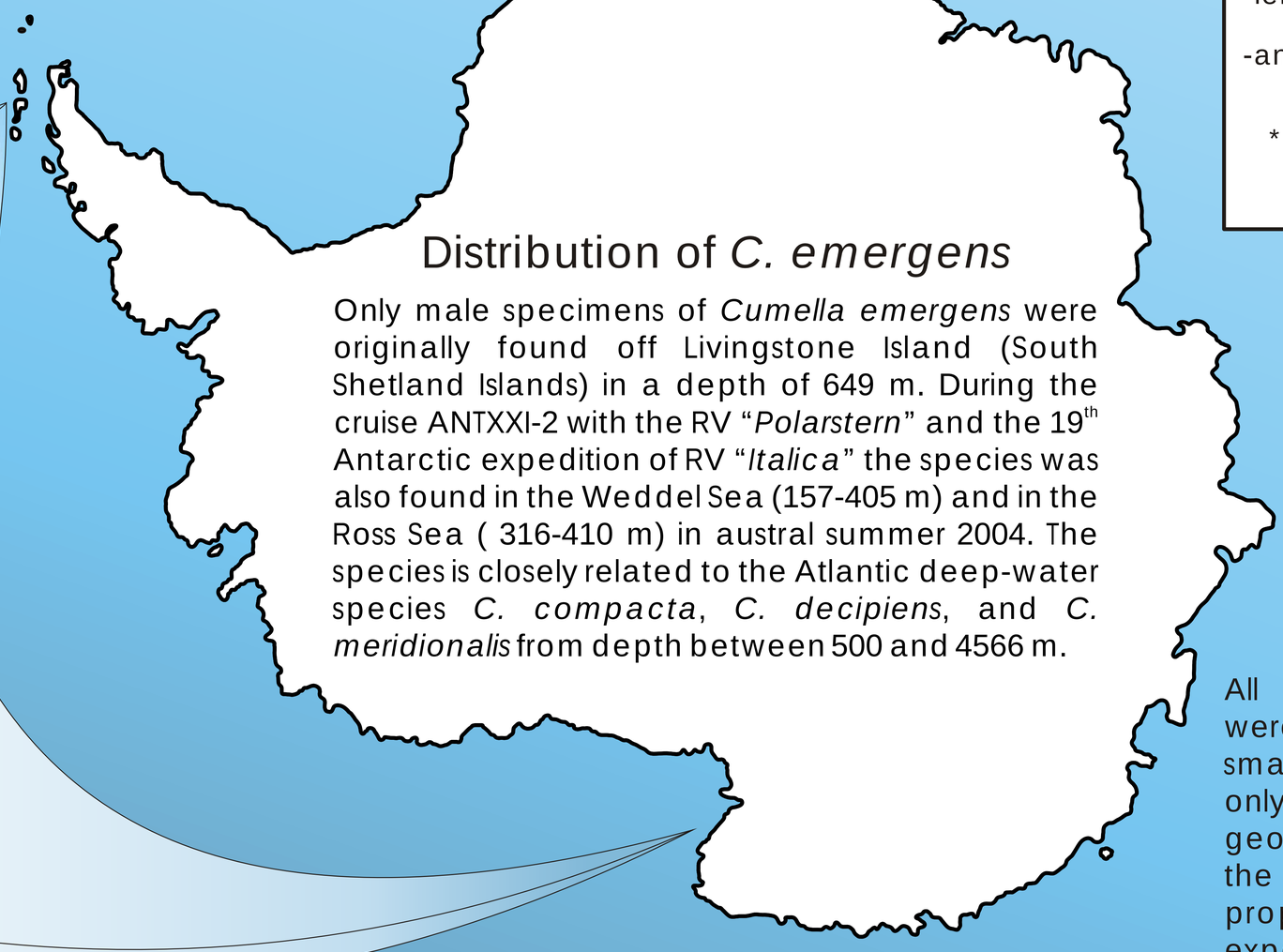
Attribute	♀	♂
Paraeopods bearing exopods	1-2	1-4
2nd antenna	absent	present
Carapax		
-ratio between length and width	< 1.3	> 1.3
-anterior margin	straight	angle

* Differences given in this table were observed between all populations

Livingstone Island



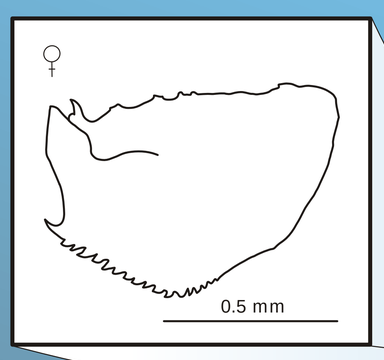
Carapax of *Cumella emergens*,after Cobera (2000)



Distribution of *C. emergens*

Only male specimens of *Cumella emergens* were originally found off Livingstone Island (South Shetland Islands) in a depth of 649 m. During the cruise ANTXXI-2 with the RV "*Polarstern*" and the 19th Antarctic expedition of RV "*Italica*" the species was also found in the Weddel Sea (157-405 m) and in the Ross Sea (316-410 m) in austral summer 2004. The species is closely related to the Atlantic deep-water species *C. compacta*, *C. decipiens*, and *C. meridionalis* from depth between 500 and 4566 m.

Ross Sea



Morphological differences in populations

Attribute	Livingstone Island	Weddell Sea	Ross Sea
number of dorsal spines	2-3	5 ♂ / 6-7 ♀	6-7
distal spine of carpus of 2nd paraeopod	absent	present	present
Carapax	flattened	normal	normal
Pseudorostrum pointing	forward	upward	upward
ratio between uropodal peduncle and 5th abdominal segment	1	1.2	1.2

Conclusion

All discoveries of *Cumella emergens* were made with gear equipped with small mesh sizes (0.5 mm), which were only employed in recent years. The geographic range of the species covers the western part of the Antarctic. Using proper sampling gear it might be expected to find in eastern Antarctica as well.

Some of the differences between *Cumella emergens* off Livingstone Island and the specimens from the Weddell Sea and the Ross Sea can possibly be ascribed to intraspecific variation. Differences between the animals from the Ross Sea and the Weddell Sea are less distinct. Nevertheless, these variations might be due to sibling species, because of the great distance between the two populations and the different ecological situations of the sample areas. A genetic analysis is planned to test whether these specimens from the three populations of *Cumella emergens* belong to one, two, or even three different species.

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