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DIVERSITY OF ANTARCTIC SEA SPIDERS (ARTHROPODA: PYCNOGONIDA) AND ADVANCES IN THEIR PHYLOGENETICS

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The extraordinary sea spiders are recognised as one of the most intriguing groups of arthropods. Their higher affinities are still uncertain, due to their unique and bizarre morphology. Antarctic pycnogonids are known for their greater abundance, diversity and magnificent size with leg spans of up to 50 cm, compared to counterparts from shallow tropical waters which are usually less than 5 mm. Despite their 'popularity', we know very little about the diversity, evolution and distribution patterns of the Antarctic forms. In general, the evolutionary history of the Pycnogonida is not yet understood and only recent cladistic analyses have shed light on possible phylogenies suggesting parallel evolution and paraphyly of the most diverse families. In this paper I firstly present an update of the state of knowledge of the diversity of Antarctic sea spiders and their possible distribution trends and, secondly, recent results of a higher level phylogenetic analysis of Pycnogonida based on the most extensive dataset available so far, including morphology and six loci from 60 taxa. All families of sea spiders are present in Antarctic waters, and the basal position of the most predominant lineages could suggest deep Antarctic habitats as centre of origin of the Pycnogonida. Future research directions based on modern techniques are discussed, exploring the potential of pycnogonids, animals with supposedly limited dispersal ability due to absence of planktonic stages, and quite specific host/prey associations, as model organisms to understand dispersal patterns and evolutionary trends of Antarctic benthic invertebrates.