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Helminth parasites of the dwarf sperm whale *Kogia sima* (Cetacea: Kogiidae) from the Mediterranean Sea, with implications on host ecology

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ABSTRACT: Limited data exist on the occurrence of the dwarf sperm whale *Kogia sima* in the Mediterranean Sea and its parasite fauna. Here, the occurrence of the anisakid species *Anisakis physeteris* and *A. pegreffii* in the stomach chambers of an adult female dwarf sperm whale, stranded in southern Italy, is reported. In addition, the occurrence of *Phyllobothrium delphini* larvae infecting the blubber of the caudal peduncle region was recorded. *A. physeteris* and *A. pegreffii* represent the 2 parasite species of the genus, mostly distributed in the Mediterranean Sea in fish and squids. The finding of *A. pegreffii* and *A. physeteris* in the dwarf sperm whale represents a new record in this host species for the Mediterranean Sea. The study of gastrointestinal content also revealed a massive presence of cephalopod beaks identified as belonging to pelagic squids including the umbrella squid *Histioteuthis bonnellii*, the reverse jewel squid *H. reversa*, the long-armed squid *Chiroteuthis veranii*, and the comb-finned squid *Ctenopteryx sicula*. The feeding habits of the dwarf sperm whale, as well as the occurrence of these squid residuals in the cetacean host, suggest that these squid species play a major role in maintaining the life cycle of anisakid parasite species and *P. delphini*.

KEY WORDS: *Kogia sima* · Mediterranean Sea · *Anisakis physeteris* · *Anisakis pegreffii* · *Phyllobothrium delphini* · Squid beaks · Host ecology

INTRODUCTION

The genus *Kogia* comprises 2 cetacean species, the pygmy sperm whale *Kogia breviceps* de Blainville, 1838 and the dwarf sperm whale *Kogia sima* Owen, 1866, which were not recognized as separate species until the mid 1960s (Taylor et al. 2012). The dwarf sperm whale appears to be distributed widely in offshore waters of tropical and warm temperate zones and inhabits shelf-edge and slope waters, where it primarily feeds on deep-water cephalopods (Taylor et al. 2012). In the Mediterranean Sea, the only records of kogiid species in the past are limited to 2 stranded individuals of the dwarf sperm whale, both from Italian waters (Baccetti et al. 1991, Bortolotto et al. 2003). The first refers to a decomposed carcass

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