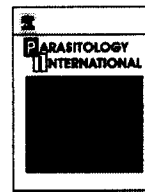




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Helminth communities of loggerhead turtles (*Caretta caretta*) from Central and Western Mediterranean Sea: The importance of host's ontogeny

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ABSTRACT

We investigated the factors providing structure to the helminth communities of 182 loggerhead sea turtles, *Caretta caretta*, collected in 6 localities from Central and Western Mediterranean. Fifteen helminth taxa (10 digeneans, 4 nematodes and 1 acanthocephalan) were identified, of which 12 were specialist to marine turtles; very low numbers of immature individuals of 3 species typical from fish or cetaceans were also found. These observations confirm the hypothesis that phylogenetic factors restrict community composition to helminth species specific to marine turtles. There were significant community dissimilarities between turtles from different localities, the overall pattern being compatible with the hypothesis that parasite communities reflect the ontogenetic shift that juvenile loggerheads undergo from oceanic to neritic habitats. The smallest turtles at the putative oceanic, pelagic-feeding stage harboured only the 2 digenean species that were regionally the most frequent, i.e. *Enodiotrema megachondrus* and *Calycodes anthos*; the largest turtles at the putative neritic, bottom-feeding stage harboured 11 helminth taxa, including 3 nematode species that were rare or absent in turtles that fed partially on pelagic prey. Mean species richness per host was low (range: 1.60–1.89) and did not differ between localities. Variance ratio tests indicated independent colonization of each helminth species. Both features are expected in ectothermic and vagrant hosts living in the marine environment.

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1. Introduction

The loggerhead sea turtle, *Caretta caretta*, belongs to a monophyletic group of chelonians containing 7 extant species that have adapted to live in the marine environment [1]. Loggerheads behave as carnivorous generalist feeders and forage principally on fish, crustaceans, molluscs, and other invertebrates, according to local availability [2–4]. However, loggerheads undergo an ontogenetic habitat shift and, therefore, they exploit broadly different trophic resources throughout their lives. After hatching, early juveniles disperse through the oceanic habitat where they prey upon epipelagic animals [2,5]. As larger juveniles, loggerheads gradually recruit to neritic habitats where they prey upon benthic animals [2];

dietary data suggest the existence of an intermediate phase in which juveniles feed on both benthic and pelagic prey [3,4]. Late juveniles appear to exhibit fidelity to specific benthic foraging areas [6,7], but they have a great dispersal capacity and are able to move great distances [8–11]. Finally, when turtles become adult they return to natal beaches to reproduce, feeding on coastal benthic habitats [2].

The above ontogenetic and ecological factors should exert a strong influence upon the community structure of trophically-transmitted helminths of loggerheads. Aznar et al. [12] analyzed broad phylogenetic constraints on community structure and predicted that marine turtles as a whole should exchange few parasites with other marine vertebrates because marine turtles are ecologically isolated from other chelonians and have a peculiar physiology and diet. Thus, regardless of the locality, any marine turtle species would be expected to share parasite species only with other sympatric marine turtles [12]. The few available surveys from loggerheads support this

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