

FIRST RECOVERY OF BIRD ACANTHOCEPHALAN *SPHAERIROSTRIS LANCEOIDES* IN AN EURASIAN BADGER (*MELES MELES*) IN ITALY

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RIASSUNTO - Esemplari di cistacanti parzialmente e completamente evertiti dell'acantocefalo *Sphaerirostris lanceoides* sono stati rilevati nell'intestino di 1 tra 5 tassi (*Meles meles*) raccolti in Italia e già deceduti al momento del loro ritrovamento. Questa è la prima segnalazione di *S. lanceoides* nel tasso.

Parole chiave: Acanthocephala, *Sphaerirostris lanceoides*, tasso, *Meles meles*, Italy

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The Eurasian badger (*Meles meles*) is a nocturnal mammal of the family Mustelidae which is widespread in the Italian peninsula. *M. meles* is an opportunistic food generalist (Roper, 1994) and is thus exposed to a great variety of endoparasites. In a time frame spanning from 2006 to 2007, five Eurasian badgers from central Italy were analyzed for the presence of endoparasites; two badgers, one male and one female, were from Tuscany, the other three, two females and one male, from Liguria region. The badgers were dead at the time of recovery due to road killing, natural causes or illegal hunting and were delivered already frozen by local veterinarians.

After defrosting and gross examination, they were analyzed for the presence of parasites in the respiratory system, heart and digestive system. The intestines were

cut open longitudinally and washed for the whole length with tap water, and the mucosa was scratched by hands. The resulting sediment, after dilution, was put in Petri dishes and carefully checked under a stereomicroscope. The collected parasites were kept in 70% ethanol with 5% glycerol. In addition to the nematodes *Uncinaria criniformis*, *Capillaria* sp., *Crenosoma* sp. and *Angiostrongylus vasorum* (Magi *et al.*, 2009), we recovered 6 specimens - one partially everted and five completely everted cystacanths -, of *Sphaerirostris lanceoides* (Petrochenko 1949) from the intestine of one of the female badgers from Liguria. The parasites were identified using Yamaguti's and Petrochenko's keys and descriptions (Petrochenko, 1958; Yamaguti, 1963).

Two specimens, of which one was the only partially everted cystacanth, were later

dehydrated with ascending alcohol solutions followed by critical point drying and sputter coated with gold to allow examination by a scanning electron microscope SEM (mod. JEOL JSM-5024).

The parasites body length was 3.85 mm with a 695 μm long proboscis which was formed by an orbicular anterior portion 450 μm long and 290 μm wide, and a cylinder-conical basis 245 μm long (Fig. 1). The proboscis had 36 longitudinal staggered rows of 12 hooks. The first 7 hooks of each row were bigger with well developed roots, the subsequent 5 were progressively smaller. The biggest hook of each row was the 5th and was 37 μm long. The roots of the first 6 hooks pointed backwards with a medium length of 55 μm (Fig. 2). The main vessels of the lacunar system run laterally. From these morphological features, we identified the parasite as *S. lanceoides*.

This is the first report of *S. lanceoides* in an Eurasian badger as far as we know. *S.*

lanceoides (formerly genus *Centrorhynchus*) is an Acanthocephalan of the Centrorhynchidae family, whose common hosts are the common blackbird (*Turdus merula*) and the grey plover (*Pluvialis squatarola*) (Petrochenko, 1958). The intermediate host of acanthocephalans is an arthropod, and the life cycle is complex and might include a paratenic host (Schmidt, 1985). Some species of *Centrorhynchus* use water dwelling paratenic hosts, like water snakes and amphibians, and thus they are able to bridge the gap between the aquatic environment and the final predatory bird host (Kennedy, 2006).

S. lanceoides has been occasionally found in some Carnivores species: in raccoon *Procyon lotor* (Sato *et al.*, 2005; Sato and Suzuki, 2006), and raccoon dog *Nyctereutes procyonoides viverrinus* (Sato *et al.*, 2006).

In Italy, the diet of the Eurasian badger includes a wide variety of food items from earth-

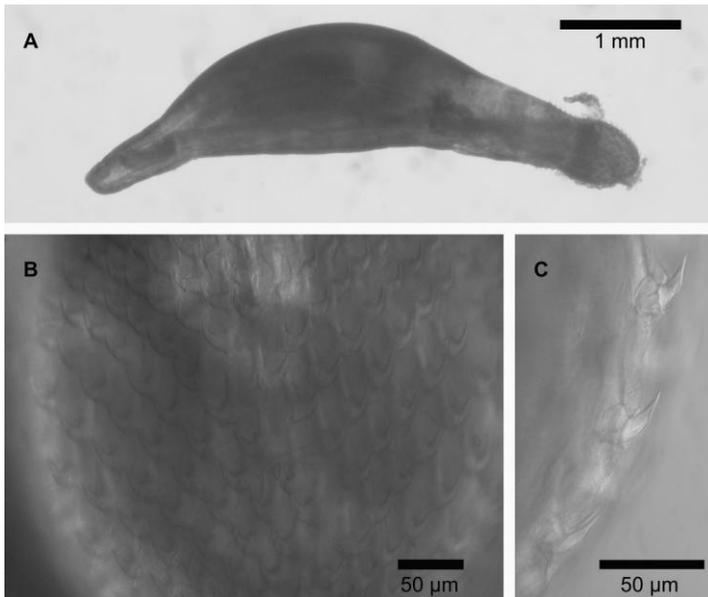


Figure 1 - Light microscopy of a completely everted cystacanth of *S. lanceoides*. (A) Total body view. (B) Proboscis. (C) Hooks on the proboscis.

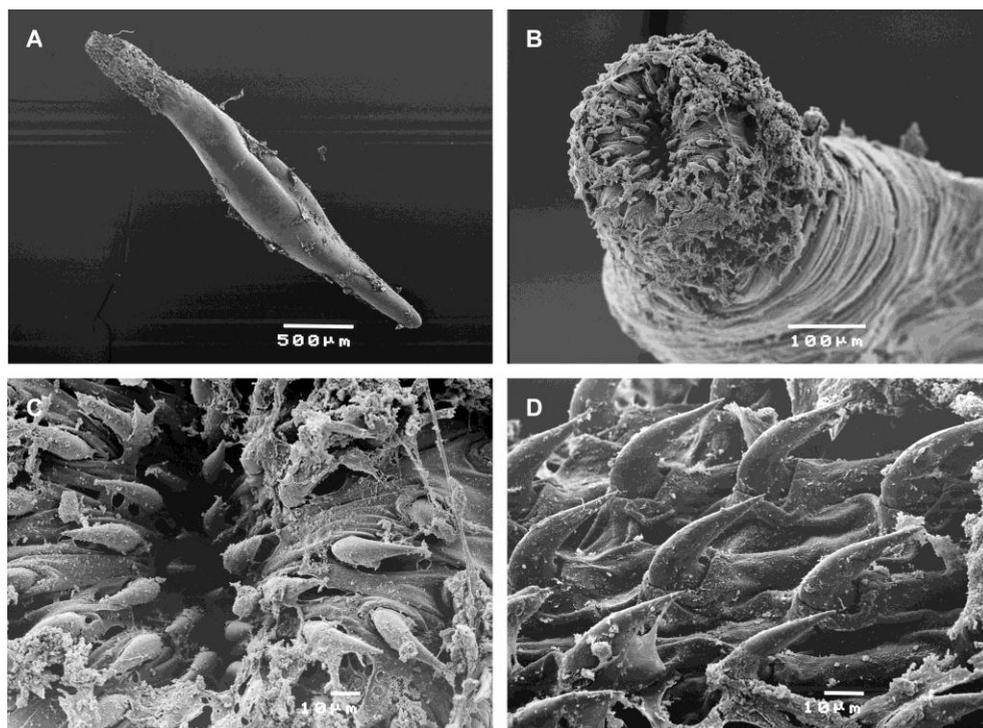


Figure 2 - Scanning electron microscopy of *S. lanceoides* cystacanth at different magnifications. (A) Completely everted cystacanth. (B) Partially everted cystacanth. (C) Magnification of the anterior part of the proboscis of B. (D) Magnification of the proboscis hooks of A.

worms and insects (and their larvae), to fruit, snails, amphibians and reptiles; in addition they can occasionally eat small mammals and carrions (Priori, 2004). Therefore the presence of *S. lanceoides* in the badger could be the result of the ingestion of an intermediate, paratenic or definitive host of the acanthocephalan.

Since no adult parasite was recovered, postcyclic parasitism caused by the ingestion of a definitive host seems unlikely, unless the badger ingested a definitive host that had been recently infected. The ingestion of a paratenic host (e.g. a frog) or of an intermediate host (e.g. a beetle larva) are both a more likely scenario.

Further studies, in conjunction with diet analysis, are needed to assess the modes of

transmission and prevalence of acanthocephalans in this aberrant host.

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