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Severe Infestation of Imported Roe Deer (*Capreolus capreolus coxi*) by *Hypoderma diana* (Diptera: Hypodermatidae)

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ABSTRACT: The warble fly larvae *Hypoderma diana* was diagnosed in five roe deer (*Capreolus capreolus coxi*) imported from Hungary on 10 January 1993.

Key words: *Hypoderma diana*; *Capreolus capreolus coxi*.

Roe deer (*Capreolus capreolus coxi*) once were wild ruminants in the Mediterranean district of Israel (Alon, 1978). The last animal of this species was extirpated from the Carmel mountains in 1912 (Alon, 1978).

Hypoderma diana (Hypodermatidae, Oestridae) is a warble fly which usually infests wild Cervidae (Farkas et al., 1984). Occasional infestation of nonspecific hosts also has been reported, mainly in animals and humans which have been in contact with roe deer (Hendrikx et al., 1989), red deer (*Cervus elaphus*) (Solopov and Zharkov, 1988) sheep (*Ovis aries*) (Tarry, 1981), horses (Hendrikx et al., 1989), donkeys (Schumann et al., 1988) and humans (Doby et al., 1985). There are no known previous reports of this parasite in Israel.

In order to populate a natural reserve in the Carmel mountains (32°48'N, 35°00'E) with roe deer, 12 individuals were imported from Hungary on 10 January 1993. The animals were captured 4 mo prior to their delivery to Israel. According to the Hungarian Veterinary authorities the animals had been treated at that time by ivermectin injection, but no specific information was provided. They were transported by air freight in wood cages. Five roe deer died a few days after their arrival. At necropsy all roe deer were severely emaciated with no evidence of fat deposits and without any gross lesions. They each were infested with 150 to 180 third instar

larvae of *H. diana*. The larvae were found subcutaneously on the dorsum (Fig. 1).

Identification of the larvae collected (accession number 26907/93) from the carcasses was based on Zumpt's (1965) description, and was accomplished at the Parasitology Division, Kimron Veterinary Institute, Beit-Dagan, Israel.

In our opinion, the heavy infestation of the animals by *H. diana*, their poor physical condition, and the stress imposed by shipping were major reasons for the high mortality rate (41%) of the imported roe deer.

Severe infestation by *H. diana* has negatively affected the condition of red deer (*C. elaphus*) (Solopov and Zharkov, 1988) and has even caused the death of roe deer (Minar, 1982). The final site of the third instar larvae is on the host's dorsum by way of the neural canal (Cameron, 1932).

When a new parasitized host species is introduced into a country, parasites of that host species may be transmitted to native



FIGURE 1. Severe infestation in the subcutis of a roe deer with the warble fly *Hypoderma diana* (arrows). Note the marked emaciation of the animal. Bar = 15 cm. Insert: Higher magnification of the warble fly. Bar = 12 mm.

species of wild and local domestic animals. This threat can be eliminated by enforcing an adequate period of quarantine, diagnosis and treatment. Unfortunately, this was not done with the present case. Similarly, the introduced host species becomes exposed to the possibility of infestation by enzootic parasites.

It is recommended that before importation of species, the parasitic diseases native to that species and the export region be considered. Based on life cycles of the exporting region's native parasites and safe treatment periods, time of export could be adjusted to prevent introduction of a new parasitic disease to the importing region.

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