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STUDY ON THE POPULATION OF THE WARBLE FLY, OESTROMYIA LEPORINA (PALLAS. 1778) (DIPTERA, HYPODERMATIDAE) IN BOHEMIA

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Abstract. A new population of the warble fly, *Oestromyia leporina* from Western Bohemia is described. The parasite was recorded on *Microtus arvalis* and *M. agrestis*. The infection of offspring in the den did not occur.'

The warble fly *Oestromyia leporina* (Pallas, 1778) is the only member of the subfamily Oestromiinae occurring in Europe. Its distribution area covers the temperate zone of the palearctic region from Central Europe to Eastern Siberia.

In Central Europe, this warble fly is relatively rare species with an island-pattern distribution, occurring in moist hilly countries from 250 to 600 m a.s.l. It is mostly found in close vicinity of wetlands, little water areas or on the periphery of the forests. The occurrence of imagoes and larvae reaches its peak in September and October, respectively.

After the World War II, *O. leporina* has been reported from several localities in Germany, Czechoslovakia, Switzerland (Rietschel and Baumann 1975), and Hungary (Papp 1987). Natural infections have been described from members of the genera *Microtus* (vole), *Ondatra* (musk rat), *Pitymys* (pine vole), *Citellus* (ground squirrel), and *Ochotona* (marmot), while successful infections under laboratory conditions have been observed on *Apodemus* sp. (field mouse), *Mus musculus* (house mouse) and *Rattus norvegicus* (brown rat) (Rietschel 1975b).

The first and only isolated findings of the warble fly from the territory of Czechoslovakia have been reported from Nové Strašecí (Hlinovský 1951) and Doupov Mountains (Minář 1972), both West Bohemia, and from Prešov, East Slovakia (Turček 1951), all on *Microtus arvalis* (common vole). Povolný et al. (1960) found on common voles this species from thirteen different places in North Moravia and noticed an isolated report on the pelt of a musk rat from South Bohemia. Only a single finding has been reported from a large-scale parasitological research of small mammals in South Bohemia performed between 1976 and 1986 (Ježek and Vlček, in press).

MATERIALS AND METHODS

During extensive examinations of small mammals in 1984—1985 (Srp 1986), *M. arvalis* (common vole) and *M. agrestis* (short-tailed vole) specimens caught on two localities near Cerhovice, West Bohemia were found to be infected by *O. leporina*.

The first locality is the wetland "U studánek" lying 430 m a.s.l. with an area of 4 hectars covered with communities of *Carex* spp. It is surrounded partly by cultivated area and by forest (Locality I). Locality II, lying next to the first one and having an area of 30 hectars, is a relatively dry and regularly mowed meadow with predominating *Lolium perene*.

The standard quadrat method using snap traps was applied on the studied areas. The larvae were placed in 70% ethanol. For scanning electron microscopy, intact larvae were transferred through 96% ethanol to 2,2-dimethoxypropane, air dried at the room temperature and sputter-coated with gold in a Polaron P 100 SEM coating unit E 5100. The specimens were examined and photographed using a Tesla B 100 SEM.

RESULTS

Fifteen of 287 specimens of the common vole were found to be infected. Each of host animals was parasitized by one larva only, except one host with two larvae. All larvae were localized in the abdominal part of the body. The infection was detected only on specimens with the body weight up to 17 g and with the body length up to 90 mm, inclusive. Eleven of 15 infected individuals were females (73%).

Among the 70 captured short-tailed voles a single male adult was parasitized by five larvae. No lesions after detached larvae were found on other animals.

The presence of typical flat and round thorns on the anterior part of the larval body and well developed oral hooks (Fig. 1), as well as the dimensions of the larval body (9—16 mm × 5—10 mm), indicate that all examined specimens of *O. leporina* belong to the III larval instar.

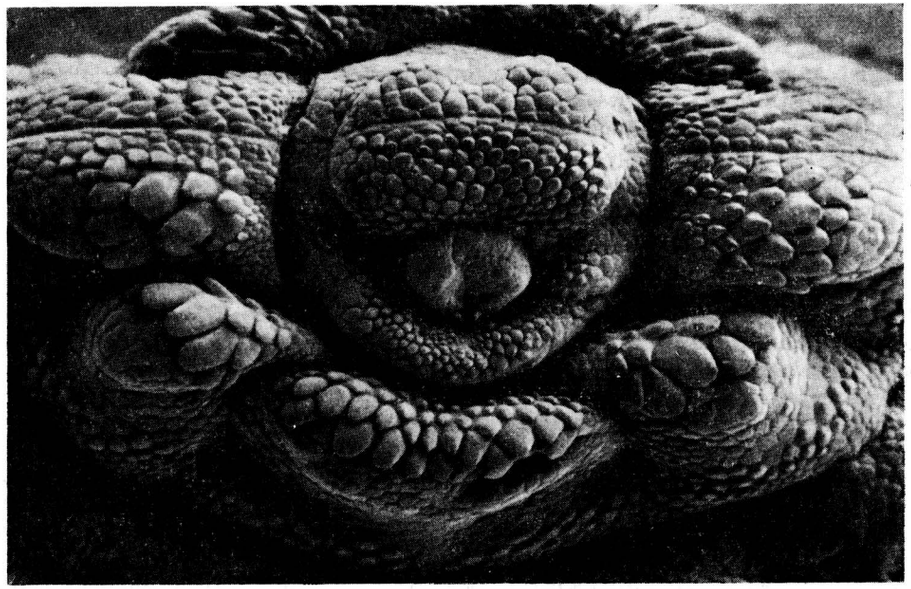

Fig. 1 The anterior part of the III instar larvae of *Oestromyia leporina* with typical flat and round thorns .

DISCUSSION

The external morphological signs and dimensions of the larval body of *O. leporina* correspond with the data in the literature (Povolný et al. 1960, Rietschel and Baumann 1975).

The studied population of the warble fly seems to be restricted to the small wetland "U studánek" and to the nearby meadow, because small mammals from the surrounding areas were uninfected. The rate of infection fluctuated in both years from 0.1% to 12%. This might reflect the population dynamics of the host.

Table 1. Prevalence of *O. leporina* on *M. arvalis* and *M. agrestis* at Cerhovice, with metric data of the host animals

Date	Locality	Host peciess	No. of collected animals	Parasitized animals			
				Number	Sex	Weight [g]	Length [mm]
14. 10.—17. 10. 84	II.	*M. arvalis*	111	1	♀	31	115
29. 10.—2. 11. 84	I.	*M. arvalis*	59	3	♂	17	93
					♀	17	90
					♀	18	92
		M. agrestis	57	1	♂	34	114
13. 10.—16. 10. 85	II.	*M. arvalis*	77	9	♂	20	93
					♂	40	107
					♀	20	92
					♀	29	113
					♀	30	106
					♀	35	113
					♀	36	116
					♀	36	120
					♀	37	124
13. 10.—16. 10. 85	I.	*M. arvalis*	40	2	♂	25	104
					♀	18	90
		M. agrestis	13	0			

In the temperature zone, the common vole reaches the body weight of 17 g and body length of 90 mm in about 6—7 weeks after the birth. The young animals leave the den at the age of 2—3 weeks (Šebek 1959) and the development of the larvae takes about 4 weeks (Rietschel 1975b). We therefore suppose that the infection of the youngsters in the den as described under laboratory conditions (Rietsche 1975a) does not occur in the studied population from free nature.

The higher number of infected females might be explained by the uneven presence of both sexes in higher weight categories: 55% of all captured common voles were females; however females were dominating (67%) also among older animals (up to 17 g).

This is the first report of the short-tailed vole serving as the host for *O. leporina* in Czechoslovakia.

ИЗУЧЕНИЕ ПОПУЛЯЦИИ ПОДКОЖНОГО ОВОДА *OESTROMYIA LEPORINA* (PALLAS, 1778) (DIPTERA, HIPODERMATIDAE) в Чехии

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Реэюме. В работе описана новая популяция подкожного овода *Oestromyia leporina* из Западной Чехии. Паразиты были обнаружены на *Microtus arvalis* и *M. agrestis*. Заражение малышей в гнездах авторы не обнаружили.

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ARRANGEMENT IN POSHARMOSTOMUM