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Parasitic Mites of Voles of the Genera *Arborimus* and *Lagurus* in Oregon²

Abstract

During studies of Oregon mammals, 33 individuals of the white-footed vole (*Arborimus* [= *Phenacomys*] *albipes*), 17 individuals of the red tree vole (*A. longicaudus*), and 98 individuals of the sage vole (*Lagurus curtatus*) were examined for ectoparasitic mites.

Introduction

Relatively little information on parasitic mites from these species is available (Whitaker and Wilson, 1974). The purpose of this paper, therefore, is to present data on ectoparasites that we have collected from 1969 through 1977.

Methods and Materials

Mites were collected by brushing the voles' fur with a finely bristled toothbrush. Voles were then examined with the aid of a 16-power handlens and by blowing the fur. Mites that had been missed were picked off using a forceps.

Mites were preserved in 70 percent ethanol. They were cleared and stained in Nesbitt's solution containing acid fuchsin, and mounted on slides in Hoyer's solution.

Study Area and Habitat

White-footed voles and red tree voles occupy the Coast Ranges, Klamath Mountains, and Western Cascades physiographic provinces of western Oregon (Franklin and Dyrness, 1973). Within these provinces, the voles inhabit the Sitka Spruce (*Picea sitchensis*) and Western Hemlock (*Tsuga heterophylla*) Zones of Franklin and Dyrness (1973). Their primary habitats are: (1) white-footed vole—Riparian Alder/Small Stream (Maser and Franklin, 1974; Maser and Johnson, 1967); and (2) red tree vole—Mature and Immature Conifer (Douglas-fir variant) (Maser, 1966; Maser and Franklin, 1974).

Sage voles inhabit the Columbia Basin, High Lava Plains, Basin and Range, and

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Owyhee Upland physiographic provinces of central and Eastern Oregon (Franklin and Dyrness, 1973). Within these provinces, sage voles are known to occupy the Pumice Region, Steppe (with bunchgrass), Shrub-steppe (with big sagebrush, *Artemisia tridentata*), the Alpine Region of Steens Mountain, and the Western Juniper (*Juniperus occidentalis*) Zone (Franklin and Dyrness, 1973; Maser *et al.*, 1974; Maser and Strickler, 1978).

Results and Discussion

Arborimus longicaudus. Of the 17 red tree voles examined, 15 harbored mites (Table 1). The more abundant mites were *Androlaelaps fabrenholzi* and *Glycyphagus* (= *Dermacarus*) *hypudaei*. *Androlaelaps fabrenholzi* is a widespread laelapid mite found on many different species of wild mammals (Whitaker and Wilson, 1974). *Glycyphagus hypudaei* is a non-feeding hypopial (transport stage) mite likewise occurring on many species of mammals. Two individuals of a new species of myobiid mite, *Radfordia arborimus* (Fain and Whitaker, 1975), were found along with a new genus and species of Listrophorid which is still under study.

Arborimus albipes. Thirty-three white-footed voles were examined—all but one harbored mites (Table 1). Mites taken in greatest numbers on this species were again *A. fabrenholzi* and *G. hypudaei*. *Haemogamasus ambulans* also occurred on these voles, as did the same listrophorid species found on red tree voles. In addition, several species of the non-parasitic genus *Euryparasitus* were collected.

Lagurus curtatus. Of 98 sage voles examined, 42 were found to harbor mites (Table 1). Again, the most abundant mite was *A. fabrenholzi*. This species was found on 38 animals, or 38.8 percent of the total sample, and 90.4 percent of those with mites. The mite averaged 3.92 individuals per animal, and 10.1 per animal on those harboring this species. The only other rather abundant mite was the same hypopus, *G. hypudaei*, found on the two species of *Arborimus*. Several other species of mites were taken, however, including 20 individuals of a second hypopus, which were similar to *Dermacarus bylandi*. Unfortunately, they were poorly preserved and could not be positively identified.

At least one new species of mite, *Radfordia arborimus* (Fain and Whitaker, 1974), was identified from the red tree vole during this study and *Listrophorus mexicanus* represents a new record from Oregon. Only *Haemogamasus reidi* had been previously reported from the white-footed vole, and only *A. fabrenholzi* on the red tree vole; the rest of the parasitic forms are new host records (Whitaker and Wilson, 1974). *Hirstionyssus utahensis*, *G. hypudaei*, *D. bylandi*, and *Listrophorus mexicanus* had not been previously taken from the sage vole.

Conclusion

Red tree voles, white-footed voles, and sage voles have a common denominator that probably accounts for heavy mite infestations; namely, these voles spend much time in their nests. Although red tree voles are arboreal, their nests often are large and compact and usually are moist, simulating subterranean habitat. Both the white-footed vole and the sage vole are terrestrial and subterranean in nesting habits (Maser, 1966; Maser and Franklin, 1974; Maser and Johnson, 1967; Maser *et al.*, 1974). Thus, the microenvironment of nests appears to be a major factor in the development and maintenance of large complements of mites.

TABLE 1. Ectoparasitic and other associated mites of the fur of *Arborimus albipes*, *A. longicaudus*, and *Lagurus curtatus* from Oregon.

No. examined	Arborimus albipes			A. longicaudus			Lagurus curtatus		
	No.	%	No. mites Total	No.	%	No. mites Total	No.	%	No. mites Total
	33			17			98		
Laelapidae									
	27	81.8	513	15	88.2	492	38	38.8	384
<i>Androlaelaps fahrenheitzi</i>	3	9.1	3	—	—	—	—	—	—
<i>Eulaelaps stabularis</i>	5	15.2	25	—	—	—	—	—	—
<i>Haemogamasus ambulantis</i>	1	3.0	1	—	—	—	—	—	—
<i>H. occidentalis</i>	—	—	—	—	—	—	—	—	—
<i>H. reidi</i>	—	—	—	—	—	—	4	4.1	6
<i>Hirstionyssus isabellinus</i>	—	—	—	—	—	—	4	4.1	8
<i>H. utahensis</i>	—	—	—	—	—	—	2	2.0	2
Glycyphagidae									
<i>Glycyphagus hypudaei</i>	5	15.2	24	8	47.1	182	15	15.3	123
<i>Dermacarus hylandi</i> (possibly—specimens in poor shape)	—	—	—	—	—	—	1	1.0	20
Listrophoridae									
<i>Listrophorid</i> gen. & sp. nov.	1	3.0	20	1	5.9	100	—	—	—
<i>Listrophorus mexicanus</i>	—	—	—	—	—	—	1	1.0	2
Myobiidae									
<i>Radfordia arborinus</i>	—	—	—	2	11.8	2	—	—	—
Other Associates									
Cyrtolaelapidae									
<i>Euryparasitus</i> sp.	11	33.3	28	—	—	—	3	3.1	3
<i>Anoetidae</i> sp.	—	—	—	3	17.6	5	—	—	—
Ascidae									
<i>Proctolaelaps</i> sp.	—	—	—	—	—	—	3	3.1	5
Ameroseiidae									
<i>Klemania</i> sp.	—	—	—	—	—	—	1	1.0	1

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