

THE SAGEBRUSH VOLE FLEA, *MEGABOTHRIS CLANTONI PRINCEI*,  
IN WESTERN UTAH, WITH COMMENTS ON THE DISTRIBUTION  
OF *MEGABOTHRIS* IN THE BONNEVILLE BASIN

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ABSTRACT.— The sagebrush vole flea (*Megabothris clantoni princei* Hubbard) is reported from Utah for the first time, based on collections made in Tooele County. Distribution of the flea *Megabothris abantis* in the Bonneville Basin is limited to the Oquirrh Mountains, where its presence appears to be determined by the occurrence of the western jumping mouse.

Fleas previously recorded from the sagebrush vole, *Lagurus curtatus intermedius* (Taylor), in western Utah included *Amphipsylla sibirica* ssp. "near" *washingtona* (Egoscue 1966), a primary sagebrush vole flea described from eastern Washington (Hubbard 1954). This note reports the occurrence of a second sagebrush vole flea in Utah, *Megabothris clantoni princei* Hubbard, with a range extension of about 604 km east-southeast from the type locality, 6.4 km west of Vya, Washoe County, Nevada.

A male *M. c. princei* (H.J.E. No. 7) was among seven fleas collected 15 May 1963 from a spotted skunk (*Spilogale putorius gracilis* Merriam) that was trapped on Johnson Pass between the Stansbury and Onaqui Mountains in Tooele County, Utah (elev. 1830 m). This association was no doubt accidental. A second male (H.J.E. No. 6349) was the only flea from a sagebrush vole trapped 13 February 1969 about .4 km west of the previous locality.

Both traplines were set among rock outcrops and ledges on dry hillsides where the dominant plants were sagebrush (*Artemisia* sp.) and juniper trees (*Juniperus osteosperma* (Torr.) Little). Other small mammals commonly collected there were the deer mouse (*Peromyscus maniculatus sonoriensis* (Le Conte)), canyon mouse (*P. crinitus pergracilis* Goldman), long-tailed vole (*Microtus longicaudus latus* Hall), desert wood rat (*Neotoma lepida lepida* Thomas), bushy-tailed wood rat (*N. cinerea acraia* (Elliot)),

cliff chipmunk (*Eutamias dorsalis utahensis* Merriam), and Great Basin pocket mouse (*Perognathus parvus olivaceus* Merriam). Despite several efforts to capture them in both livetraps and snaptraps, sagebrush voles were rarely trapped here or at numerous other places in the Bonneville Basin where conditions seemed more favorable.

The two specimens of *M. c. princei* were originally misidentified by me as atypical *Megabothris abantis* Rothschild. At the time, this was the only species of *Megabothris* known from Utah (Stark 1958), and I was unfamiliar with *M. clantoni*. The discovery of my error made me realize that the range of *M. abantis* within the Bonneville Basin was limited to the Oquirrh Mountains. In the Oquirrh Mountains *M. abantis* was the most common flea on western jumping mice (*Zapus princeps utahensis* Hall), but was also found regularly in riparian situations and on adjacent damp hillsides above 1525 m on long-tailed voles, and less commonly in the same location on deer mice associated with *Zapus*. In years of collecting in suitable habitats, scientists have failed to trap jumping mice in other mountains within the Basin; *M. abantis* was not found among hundreds of fleas collected from long-tailed and montane voles, deer mice, and other small mammals in the West Tintics, Stansburys, Onaquis, Sheeprocks, and other western Utah mountains. Stark believed the preferred hosts of *M. abantis* in Utah were microtines. If this is so, I have

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no reasonable explanation for the restricted range of *M. abantis* in an area where *Microtus* are common and widely distributed. My evidence strongly suggests that the presence of this flea in the Bonneville Basin is dependent on the occurrence of jumping mice. Past climatic and ecological changes of the Pleistocene Epoch must explain the disjunct distribution of *Z. princeps* and other essentially montane mammals in this part of Utah. Conditions in the Pleistocene Epoch apparently enabled certain small mammals to penetrate further west from the centrally located Wasatch cordillera than did other small mammals. The habitat that permitted this differential expansion no longer exists, and the distribution of some species was fragmented into scattered populations confined to higher elevations. (See Durrant 1952 for further discussion of the influence of Pleistocene Lake Bonneville on the distribution and speciation of mammals.)

I never trapped *Lagurus* in the Oquirrh Mountains, and I know of no fleas being saved from sagebrush voles collected there. Durrant (1952) reported collecting specimens of *L. c. intermedius* from a locality on the east side of the Oquirrh Mountains in Salt Lake County, and there is reason to believe that *M. c. princei* and *A. sibirica* will eventually be found there.

I collected *M. abantis* from *Z. princeps* and *M. clantoni* ssp. from *L. curtatus*; the specimens were trapped within 10 yards of each other in southeastern Oregon.

*Thrassis bacchi johnsoni* Hubbard is the only known *Lagurus* flea that has not been found in Utah. Two specimens of *Thrassis* that I found on a sagebrush vole collected in Uinta County, Wyoming, a few miles from the Utah-Wyoming boundary were identified by Stark as *Thrassis bacchi caducus* (Jordan). Because of their implication in plague elsewhere (Hubbard 1949 and others), all of Utah's *Lagurus* fleas should be added to Allred's (1952) Utah list of plague-important fleas.

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