

- Polia lubens* (*lutra*) *glaucopis* Hampson. Lodgepole Pine. (*Pinus contorta* Dougl.) (W. G. M.)
- \**Rachela occidentalis* Hbst. June-berry (*Amelanchier florida* Lindl.), Snow-berry (*Symphoricarpos racemosus* Michx.), Maple (*Acer macrophyllum* Pursh.) (J. R. J.)
- \**Synaxis jubararia* Hbst. Species of Poplar. (J. R. J.)
- Tortrix citrana* Fern. In greenhouses on species of Rose, Cyclamen, Tomato, and Asparagus Fern. (W. D.)
- Zale minerea norda* Sm. Species of Apple. Foliage is preferred but larva will eat the fruit. (A. A. D.)
- Zeiraphera* (*Enarmonia*) *ratzeburgiana* Sax. Sitka Spruce (*Picea sitchensis* (Bong.) Carr.) (W. G. M.)

### PHENOMENAL INFESTATION OF ECTOPARASITES ON MARMOT, WEASEL & PACKRAT

by George P. Holland

Science Service, Dominion Department of Agriculture

The groundhogs or yellow-bellied marmots, *Marmota flaviventris avara* (Bangs) of the Kamloops district, normally have a short season of activity, coming out of hibernation in March and retiring again in late August or early September. However, in October, 1937, a single specimen was seen actively running over the rocks by the road near Tranquille, B.C., and on November 17th, another was found moving sluggishly over the snow in the same locality. This animal, a young female of the year, judging from its size, was captured and placed in a



*A seething mass  
of Lice*

cage at the Dominion Entomological Branch Field Laboratory at Kamloops. It was noted that the creature was in very poor physical condition, having wasted away to little more than skin and bone, and also that the tail, limbs and under parts were very mangy. T. K. Moilliet, formerly connected with the Kamloops Laboratory, found a similar mangy groundhog dragging itself weakly over the ground near Mount Olie, B. C., on November 27th, 1933. This animal had been practically denuded, especially on the tail and limbs, and the little hair remaining was thickly infested with fleas. A few nymphal ticks, *Dermacentor andersoni* Stiles also were feeding on it.

Our groundhog drank a little milk but refused all solid food during its period of captivity, which was terminated on November 23rd, 1937, by its death. When checked for the presence of ectoparasites it was found to be literally seething with fleas and lice (Fig. 1). During the next two days a good deal of time was spent in picking off these creatures until about 150 fleas and 9.75 c.c.'s of concentrated lice had been collected. Taking into consideration the facts that a goodly portion of its parasite population had already dropped off into the bedding material, as the animal was cold and stiff when found dead in its cage, and also that thousands of lice were still clinging tenaciously to the pelage when the specimen was ultimately discarded, the original population may be conservatively estimated to have been about 250 fleas and 50,000 lice. This terrific infestation undoubtedly had driven the miserable creature from its hibernating quarters, and by dint of sheer numbers had so sapped its strength as to bring about its death.

Professor G. J. Spencer of the University of British Columbia has kindly identified the *Anoplura* as *Neohaematopinus marmotae* Ferris 1923, and the fleas as *Thrassis acamantis* Roths, 1905.

A further remarkable circumstance in connection with this case is that the flea larvae were found actually living on the host. Several dozen, large and small, were picked off and preserved. This is a most unusual association as flea larvae are almost invariably found only in the bedding material.

Other cases of this nature have come to our attention. A weasel, *Mustela arizonensis* (Mearns) taken at Kamloops on October 12th, 1937, was found to be infested with the larvae of fleas as well as the adults. These were *Orchopeas caedens durus* Jordan. A packrat, *Neotoma cinerea occidentalis* (Baird) captured alive at Mount Dunn on August 12th, 1937, and which died at Kamloops on December 14th, 1937, was in a similar condition, about three dozen mature fleas and half this number of larvae being found in the fur upon examination. These fleas were identified as *Orchopeas sexdentatus agilis* Roths. Unfortunately none of the larvae was reared through. The adult fleas from the weasel and packrat were determined by Dr. M. A. Stewart of the University of California at Davis.