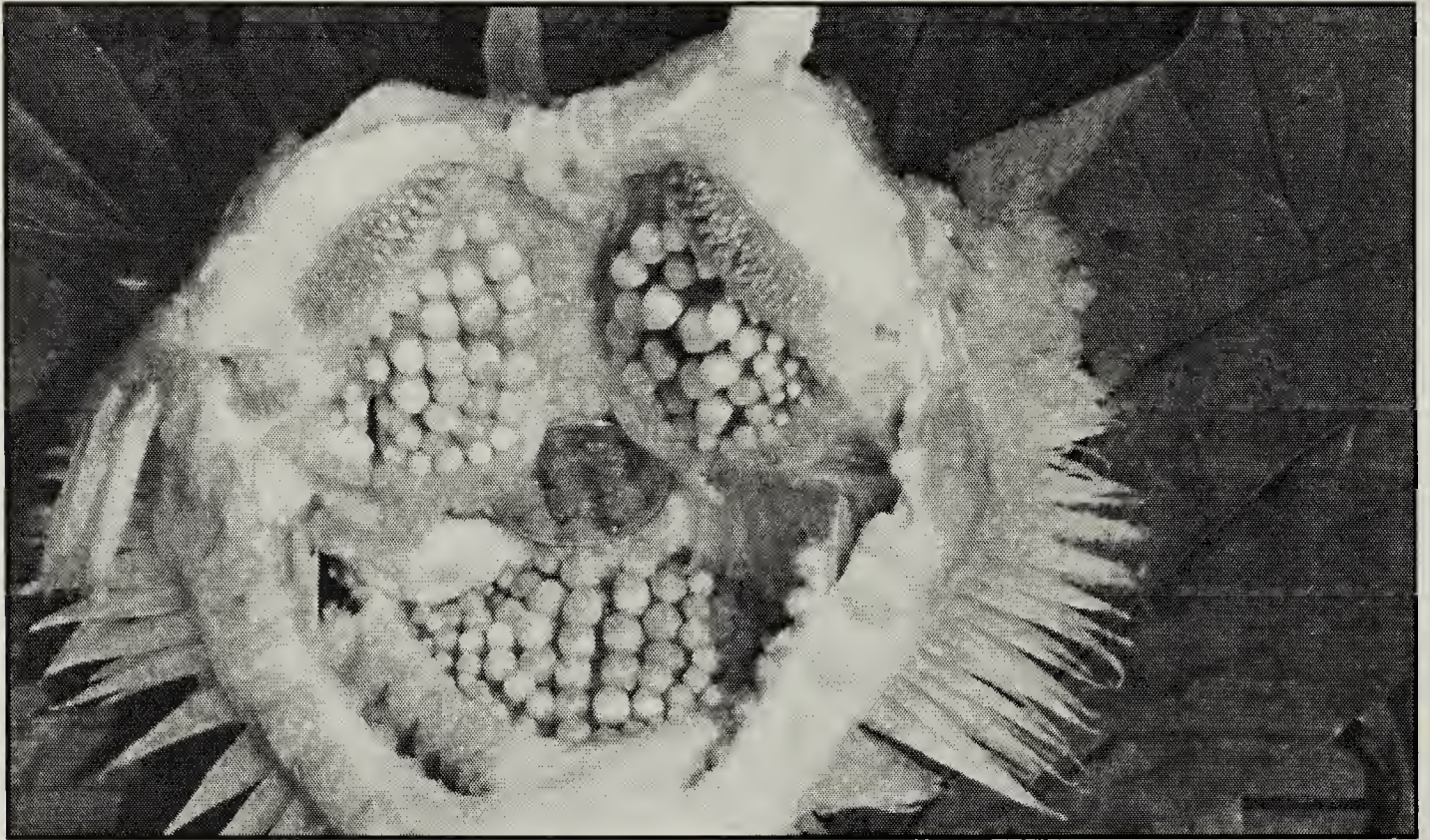

MYSTERY PHOTO

DECEMBER 2004 MYSTERY PHOTO

This photo, looking into the mouth of a freshwater fish, shows a specialized apparatus that allows the animal to consume somewhat unique food items. Can you name the kind of fish and what these food items

are? This fish occurs from Hudson Bay to Guatemala, with a disjunct population in southwest Saskatchewan. A dime, placed over the esophageal opening, gives an idea of scale.



ANSWER TO JUNE MYSTERY PHOTO

The creature beside the mouse, and the other one still under its skin, is the fully-grown larva of a Robust Bot Fly or cuterebrid (Genus *Cuterebra*). Cuterebrids are large, robust, and often beautifully coloured flies, the larvae of which live and develop only as internal parasites of rodents and rabbits. Few people ever see the adult flies in the field, although the males of many species form aggregations during the summer mating season. Mated females scatter their eggs on vegetation in areas frequented by their small mammal hosts, up to a dozen or more eggs at a time, and up to 1,000-3,000 eggs in total. The tiny larvae hatch from the eggs in response to small increases in temperature, often a signal of close proximity of a warm-blooded host. The larvae hatch rapidly and, being sticky, they will adhere

to the hair of their hosts on contact. If they miss the initial contact, these larvae may survive on the vegetation for several days, and they stand upright and thrash about when a potential host is detected nearby. Once they are on the skin of a host animal, they will move about until they encounter a moist area on the body, often around the mouth, nostrils, eyes, anus or genital opening. What happens next is not precisely known for many species. In one species, at least, these tiny larvae make their way to the windpipe, penetrate its wall and enter the chest cavity, penetrate the diaphragm and move through the abdominal cavity, and finally penetrate through the abdominal wall to take up residence just beneath the skin of the lower abdomen, as seen (bulge) in the deer mouse in the photograph. Up to this

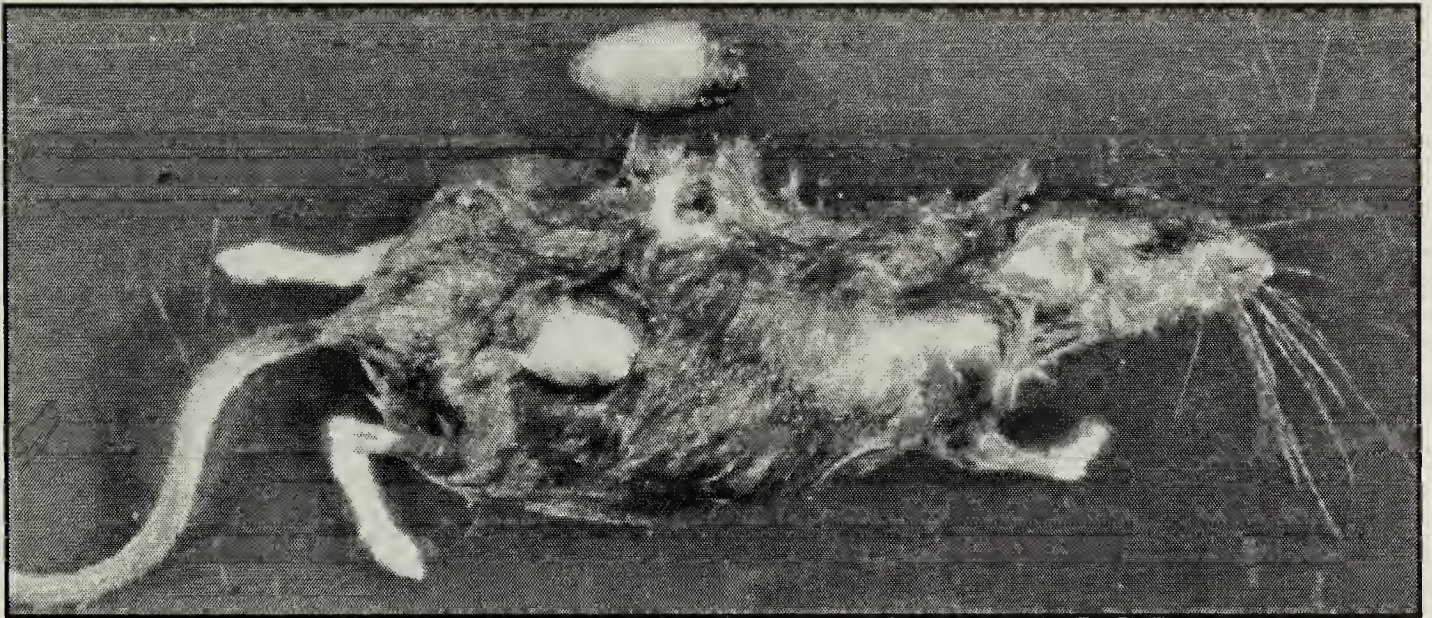
point, the larvae have grown very little, but now they pierce the skin to form a breathing hole, and their growth rate accelerates phenomenally. When they have completed their larval development, they enlarge the breathing hole, squeeze through, drop to the ground and pupate in the soil. Most of the species on the Canadian prairies probably over-winter in the pupal stage and emerge as adults the following summer. These fly larvae cause surprising little damage to their mammal hosts, although heavily infected meadow voles in the laboratory have died after the larvae they carried have emerged. The greatest impact of these parasitic larvae may be to increase the probability of predation for their host, since their size and location may impeded the hosts' ability to flee. There are records of cuterebrid larvae growing beneath the skin of abnormal host species, including humans very occasionally.

In Manitoba, cats appear to be the abnormal host most commonly infected.

- Terry Galloway, Department of Entomology, University of Manitoba, Winnipeg

Several Blue Jay readers wrote in with answers to this mystery photo. William J. Walley hit the nail on the head with his answer: "Regarding the Mystery Photo in the September 2004 issue of Blue Jay, I think the 'guests' are larvae-pupa (grubs or maggots) of the Robust Bot Fly, Cuterebridae or cuterebrids, order Diptera, parasitic on rodents."

Many thanks to readers who sent answers and to Terry Galloway for providing the detailed life history of this insect. - Editors.



"If I would see the wind, I go out after a windy snowstorm. There is the track of the wind in the drifted snow, the way it passed around even a weed stalk or fence post, the way it went over a hummock or a rock. Snow drifts are frozen motion of that most fluid of the elements, the wind. Even the curl at the lip of a snowdrift is the curl of the wind as it was sucked back by the drift."

Hal Borland, *Beyond Your Doorstep*. p. 355.