



October 25, 2007

Eye on the Environment

Northern Bog Lemmings: "The Least Known Rodent"

By Andrea Stephens for the
Seeley-Swan Pathfinder

On a beautiful, sunny day last month, some students and I were exploring a wetland near Lindbergh Lake when we found a mouse-sized, gray/brown rodent moving stealthily through a mound of sphagnum moss. An alarm went off in my head as I stumbled forward in my waders to get a better look: this could be a northern bog lemming! These animals have taken on a near-mythical significance for me; I've wanted to find one for over 20 years, but I've turned up nothing more than possible scat piles. Despite knowing how unlikely it would be to find a bog lemming, I secretly hoped the nervous little creature on our sphagnum hummock might be a special find. After talking with the folks in our region who know the most about bog lemmings, I can share the latest news I learned about them.

Related to true arctic lemmings, northern bog lemmings are a boreal species, meaning they live in the far north ("boreal" comes from *Boreas*, the Greek god of the north wind). They are the size of a large mouse, have a very short tail and unusually long, loose fur. At the time of our encounter, it didn't seem prudent to collect an animal that could

be quite rare so we took only two pictures and hoped they might reveal something later on. Unfortunately, the photos I hurriedly snapped of the hind end of our little guy turned out to be useless in positively identifying it. Despite the fact that the rodent happened to be in classic Montana bog lemming territory, atop a deep mat of sphagnum moss overlying many feet of mucky peat, we couldn't jump to conclusions. We would have had to dismantle its jaw and inspect its molar teeth and incisors to know for sure it wasn't a montane heather vole, a look-alike species with a slightly longer tail and a wider ecological niche that can overlap the lemming's preferred habitat of mossy wetlands.

Northern bog lemmings are active year-round during both day and night, so it isn't beyond the realm of possibility that we saw one in the middle of the afternoon. From the few specimens that have been collected in the state, we know they eat moss, especially the strange, super-absorbent type called sphagnum that my students and I had been slogging through. In fact, sphagnum-filled wetlands are the primary habitat for bog lemmings in Montana. We know owls and snakes eat them: someone found a lemming skull in a boreal owl pellet near Wisdom; another biologist discovered one that had been regurgitated by a garter snake in the Bitterroot. Pine marten researchers in Glacier Park have found lemming remains in marten scat.

In North America, northern bog lemmings are found all across Alaska and Canada, but are known in the western U.S. from only a handful of sites in Washington, Idaho and Montana.

They appear to be a relict population in our neck of the woods; apparently, they were more abundant during the most recent glacial period, but their populations became isolated here probably as a result of a warming trend between 3000 and 6000 years ago. As I suspected, it would be a statistical shock to actually encounter a bog lemming out of the blue. Of all the nights researchers have set out their traps looking for small mammals in general and northern bog lemmings in particular, only about 30 of the animals have ever been found in Montana! The very first one was identified on the west side of Glacier Park in the early 1950s. Two biologists looking specifically for lemmings in the Swan in 1993 didn't catch a single one despite 1670 trap nights of effort (a "trap night" is one trap set out for 24 hours). This rarity makes for challenging trapping and has led to the assignment of a "sensitive species" status by the Forest Service as well as a "species of special concern" status by the Montana Natural Heritage Program. Northern bog lemmings just don't occur in high numbers in Montana, at least not during the last several thousand years, and as a result we don't know much about their ecology. One researcher suggested they are "the least known rodent in the United States." Certainly a major strike against us just happening to stumble across one on a September afternoon.

However, if we did want to see a lemming, Montana would be a good bet. As it turns out, our state has the most number of reported northern bog lemming sites of any place in the lower 48. And Montana has twice as many lemming capture sites as the other two western states with known lemming

populations, with a large percentage clustered in Missoula and Flathead counties and Glacier Park. The Swan, by all accounts, offers excellent habitat for lemmings since it contains such a high density of wetlands compared to the rest of the state. Sphagnum moss is not a plant you will run across frequently here, yet it occasionally finds a foothold growing atop other plant material in the Swan's unusual boreal wetlands called peatlands. Peatlands themselves are not commonplace habitats in Montana but because of the Swan's unique geology and groundwater, there are a dozen or so in the valley. And a sphagnum-dominated peatland is exactly where a Gonzaga University biology professor reports she found the Swan's first bog lemming in the summer of 2006 after thousands of trap nights.

The Swan hosts extraordinary biodiversity partly because of the different ecosystem types that overlap here. The Swan is near the southern edge of the northern bog lemming's boreal distribution; apparently the presence of peatlands and sphagnum moss offer this creature a home here, just on the fringes of where it is capable of surviving. To my great disappointment, I'll never know if the little rodent scurrying along beneath our feet in the sphagnum was indeed a northern bog lemming. But the Swan's wetlands appear to be one of the best places to keep looking.