Mortality of Deer Mice, *Peromyscus maniculatus*, in Wire Mesh Live-Traps: A Cautionary Note

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Live-capture of animals occasionally results in the death of some individuals. Here, we report upon an unusual occurrence of trap-related mortality observed in Deer Mice (*Peromyscus maniculatus*) captured in wire mesh live-traps during field sampling in southeastern Yukon. Eight of 85 marked individuals (9.4%) were found with their snouts caught in the wire mesh of our live-traps; four of these individuals were found dead. We suggest a modification to Ugglan live-traps that would likely decrease such incidents.

Key Words: mortality, Deer Mouse, *Peromyscus maniculatus*, Live-trapping, Yukon.

Biologists often rely upon data obtained through the live-capture of individuals. Field sampling of animal populations and communities, however, occasionally results in the death of some individuals. Mortality can compromise data collection when experimental designs require individuals to be live-captured, marked and, later, recaptured. When deaths are the result of equipment or technique then it is incumbent upon field researchers to share this information and seek means to reduce capture mortality, for both ethical and data collection reasons (e.g., Jung et al. 2002). Here, we report upon an unusual incident of trap-related mortality of Deer Mice (*Peromyscus maniculatus*) during field sampling in southeastern Yukon.

As part of a study of small mammal communities in the boreal forest near Watson Lake, Yukon (60.06° N, 128.70° W), we used Ugglan live-traps (Model 3 Lemming Special, Granhab, Marieholm, Sweden) to live-capture small mammals during September 2003. Unlike some other commonly used types of small mammal live-traps like Sherman traps (H. B. Sherman Traps, Tallahassee, FL) or Longworth traps (Longworth Scientific Instruments Co., United Kingdom), Ugglan traps are constructed of wire mesh and the trap door is elevated and gravity controlled (as opposed to spring loaded). Our traps measured 250 × 78 × 65 mm and had a 6 × 6 mm wire mesh around the top and sides of the trap. A weather shield made of sheet metal covered most of the wire mesh.

We captured 85 individual Deer Mice 167 times during our study. Eight individuals (9.4% of individuals captured) were found with their snouts caught in the wire mesh of the traps (Figure 1). Because their upper incisors were through to the other side of the mesh, they were unable to free their snouts and they were lacerated on both sides of the snout. Four were found dead. We released the four live individuals but they did not appear to be in good condition upon release; we did not recapture these four individuals and suspect from their injury and constitution that they may have died sometime after release. All of the individuals that were encountered with their snouts stuck in the wire mesh were found underneath the elevated trap door (Figure 1), where the animals could see outside of the trap. We surmise that trapped Deer Mice were attempting to gnaw through the exposed wire mesh to escape and became caught. No other Deer Mice were found dead in the traps other than those with their snouts caught.

FIGURE 1. Deer Mouse with its snout caught in the wire mesh of an Ugglan live-trap. The tin weather shield was removed for this photograph.

During our sampling, we captured 443 individuals, representing five species (Deer Mice and 4 species of arvicoline rodents), a total of 888 times. None of the voles captured (Northern Red-backed Vole, *Clethrionomys rutilus*; Long-tailed Vole, *Microtus longi-*

caudus; Meadow Vole, *M. pennslyvanicus*; Taiga Vole, *M. xanthognathus*) captured were found with their snouts stuck in the wire mesh. Although some voles (12.9%, primarily juvenile *C. rutilus*) died in the traps from exposure, predation, or stress-related capture myopathy, we do not attribute this to trap type or technique. We suggest that voles did not become entrapped like some Deer Mice because of the difference in their facial morphology; arvicoline rodents tend to have shorter and broader snouts than mice, thus their snout likely would not fit through the wire mesh of our live traps.

The percentage of Deer Mice killed in our Ugglan traps is higher than reported in other studies of *Peromyscus*. For example, Whittaker et al. (1998) reported that <1% (2 of 655) of *Peromyscus* (White-footed Mouse, *P. leucopus* and Cotton Mouse, *P. gossypinus*) captured had died in box-style (Sherman) traps. In Australia, Jacob et al. (2002) reported mortality rates of House Mice (*Mus domesticus*) in Ugglan traps as 12%, wheras mortality in Longworth traps was only 1%. They attributed mortality of house mice in Ugglan traps to exposure, however, and not to becoming caught in the wire mesh.

This report of an unusual cause of trap-related mortality of Deer Mice in wire mesh traps is not intended to be a critique of wire mesh traps (which some believe to be a superior trap for some species of small mammals; e.g., O'Farrell et al. 1994). Rather, we wish to alert biologists intending to use similar traps of a potential problem.

A smaller mesh size would likely prevent such mortalities, but may be prohibitive to manufacture and would not address the use of those traps already in field use. We suggest that biologists using Ugglan traps can reduce the incidents of this type of trap mortality by slightly modifying the traps. A small piece of cardboard or tin can be placed to cover the wire mesh under the trap door without affecting it's operation. This would likely reduce trap-related mortalities of mice and may also keep bait from sliding outside of the capture area. We note that some Ugglan traps came supplied from the manufacturer with such a tin shield, while others did not.

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