
TECHNICAL NOTE**AN IMPROVED METHOD FOR HANDLING SQUIRRELS AND SIMILAR-SIZE MAMMALS**

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Abstract

Trapping and handling animals is an important aspect of wildlife research and management. Safety precautions to minimize the risk of injuries to wildlife researchers and animal subjects are mandated by state and federal laws. Use of a modified plastic funnel aided in researcher safety in a study of fox squirrels (*Sciurus niger*) on the Texas A&M University campus. Plastic funnels used in conjunction with canvas bags prevented animal bites or other injuries and simplified the handling and tagging of 175 fox squirrels. Studies employing the use of canvas bags with zippers for restraining squirrel-sized mammals should use the plastic funnel as an added safety precaution.

Introduction

Trapping and handling animals is a critical aspect of wildlife research and management. It is important for students and researchers to develop handling skills and confidence using safe and effective methods. State and federal regulations require the careful attention to the methodologies used in the capture and handling of all vertebrates [1]. Institutions that use animals for research or teaching purposes must receive approval of proposed research methods from the Institutional Animal Care and Use Committee (IACUC), which requires minimizing risk of injuries to research personnel while participating in these endeavors [1]. Some small mammals such as squirrels (e.g., *Sciurus*) and rats (e.g., *Neotoma* and *Rattus*) serve as a potential threat to wildlife researchers trapping and handling them. In 2002, we began a study of urban fox squirrels (*S. niger*) on the Texas A&M University (TAMU) campus to learn more about the general ecology of the species and to us as a teaching tool to wildlife undergraduates. Undergraduates were involved in the capture, handling, marking, and radio-tracking of squirrels. This made student safety of the utmost importance for the project and required by TAMU-IACUC. Initially, chemical immobilization was considered to reduce the risk of injuries to research personnel during capture and handling, but previous studies have shown that chemical immobilization may increase the risk of capture myopathy or holding time [2]. Furthermore, capture drugs require additional training and regulatory approval. For these reasons, we sought alternative measures to reduce safety risks to trapped animals and researchers.

Several physical-restraint methods have been used in previous studies in the safe handling of squirrels including wire funnels [3, 4], and tube- or cone-shaped canvas bags [2,5,6,7,8] (Fig. 1A). We found the canvas bag useful when handling squirrels; however, the bag was cumbersome and difficult to manipulate when radio-collaring animals. Moreover, attaching radio-collars was difficult due to limited access to the

animal's neck even using bags with adjustable zipper [6,7,9] or Velcro™ [8] flaps. Here we describe the use of a plastic funnel that can be used in conjunction with canvas bags that facilitates access to the animal (i.e. neck and head area) while reducing the risk of animal bites to researchers.

Methods

During January 2002-2004, we trapped fox squirrels on the main TAMU campus (157 ha) in College Station, Texas. The study area consisted of park-like fields, buildings, various tree species (oaks [*Quercus spp.*], elms [*Ulmus spp.*], hickories [*Carya spp.*]), and ornamental plants. Wooden box traps (18 cm x 24 cm x 60 cm) were systematically placed (3-4 m above the ground using a portable ladder) in trees around campus and pre-baited for 2-3 days with bird seed prior to trapping. We removed captured squirrels from the trap into a canvas bag (35 cm x 60 cm, Fig. 1A). Prior to trapping we had modified a plastic funnel commonly used in automotive maintenance by cutting the end of the funnel to an opening of approximately 4 - 5 cm and splitting it longitudinally (Fig. 1B). We used 2 different size funnels (large – 14 cm x 5 cm; small – 10 cm x 4 cm) that could be fitted according to the size of the captured squirrel. Once a squirrel was in the canvas bag, the animal's head was exposed through the zipper (Fig. 1A). The plastic funnel was placed around the squirrel's neck and held in place with 2 small strips of masking tape (Fig. 1B-C).

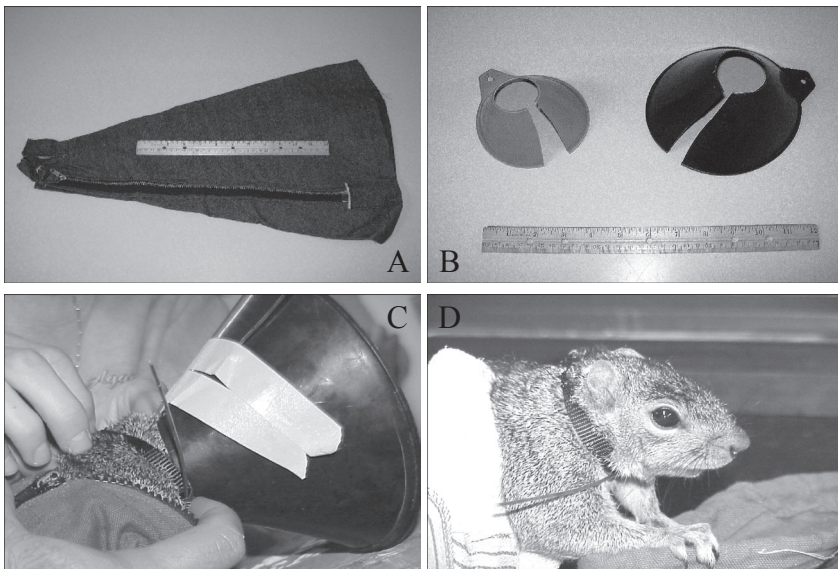


Fig. 1. Canvas bag (A) and modified plastic funnel (B) used to safely handle (C) and fit radio-transmitters on fox squirrels (D) on the Texas A&M University campus, 2004.

The plastic funnel served as a safety measure for researchers attaching radio collars. Additionally, we placed a small towel over the wide end of the funnel to reduce the squirrel's vision. Squirrels were sexed, aged, weighed, PIT-tagged (11 mm x 2 mm, inserted with 12-gauge needle, Biomark, Meridian, Idaho, USA) [10], and radio-

collared (150-152 MHz, 8-12 g, Advanced Telemetry Systems, Isanti, Minnesota, USA) [11,12] prior to release. Our AUP (Animal Use Permit) required that all handling and marking of squirrel be completed within 15 minutes.

Results and Discussion

We trapped 175 fox squirrels (76 females, 99 males) and found that the use of a plastic funnel in conjunction with a canvas bag simplified the handling of fox squirrels. Our plastic funnel was also clearly successful at reducing the risk of injury when we handled squirrels. We recorded no bites or injuries to researchers and squirrel alike during the study. Bites from small mammals during trapping and handling although rarely reported are probably common, even for an experienced biologist. Still, even with naïve wildlife students aiding in the processing, tagging and radio-collaring of squirrels we experienced no problems with researcher or animal safety when using the plastic funnel. Students also reported feeling more comfortable working with the squirrel after the funnel was in place. Additionally we noted that covering the eyes of the squirrel (with a towel over the funnel) reduced the animal's vision and in turn its stress [8]. We recommend that studies using canvas bags in restraining squirrels or similar-sized mammals use the plastic funnel as an added safety precaution. We found the plastic funnel was simple to use, inexpensive, reduced the risk of injury and the anxiety technicians handling squirrels. Using a plastic funnel in conjunction with a canvas bag was also efficient, our handling time per squirrel averaged 5 minutes (10 minutes less than the maximum time allowed by our AUP). In addition, this methodology presumably reduced stress of captured animals. It is the responsibility and obligation of researchers to reduce the risk of injury to handlers and captured animals. Our modified plastic funnel can help researchers to conduct ethical research and allowing to obtain IACUC approval

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