Small Mammal Trapping
(Museum Special Traps)

Prepared for:

Government of Northwest Territories,
Environment and Natural Resources

Prepared by:

Outcrop Communications

outcrop

Northwest Territories Environment and Natural Resources

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This project involves the preproduction work for a video that will be used to instruct field personnel on methods to be used in conducting a small mammal trapping study. This section illustrates only the kill trap method, using Museum Special Traps. Live trapping is covered separately.

The following is an outline of scenes, components of scenes, photo notes, and suggested script notes. It is best to avoid directly reading the script notes if possible, but to use these as a guide.

It is important to note that we had to do all the photography for this scripting in March, so there is a lot of snow on the ground in all photos. The study will probably be done in August, so conditions at that time will be very different. In some cases, it was simply impossible to get the correct photo. In these cases, we have just described the scene or photo needed in the box for the photo. We have added a few additional summer photos sent in by reviewers.

Video

Photo of northern red-backed vole with title: Small Mammal Survey (Museum Special Traps)

Series of photos of other small mammals, including southern red-backed vole, meadow vole, brown lemming, collared lemming, deer mouse, and a couple of shrews. (It is likely these will be still photos, sort of done as a slide show.)

Script notes

Small mammals play an important role in boreal and arctic ecosystems and are major prey species for foxes, martens, raptors and other carnivores. Fluctuations in the populations of small mammals are reflected in the abundance of their predators.

This study is designed to help monitor changes in density indices for voles, mice, lemmings, and shrews across the NWT. It will help predict variations in furbearer populations and to detect links between small mammal population fluctuations and the breeding success of other animals.

It will also help provide baseline ecosystem information and will enable scientists to test for the presence of hantavirus in microtine rodents in the North. In addition (if ectoparasites are collected), this study may provide a reliable source of material for entomologists who are working on the taxonomy of ectoparasites of North America.

This study will likely continue over at least 10 years. The specimens collected in the study will be sent to mammalogists in southern Canada and the US for further study. Many will be made into museum specimens and will aid in understanding the taxonomy and distribution of several groups, especially the voles.

Through the use of this video, you will learn how to handle and set Museum Special traps, how to prepare bait, set up and mark transect traplines, establish trap locations, set traps in the field, remove small mammals from the traps, and preserve the collections for use by mammalogists.

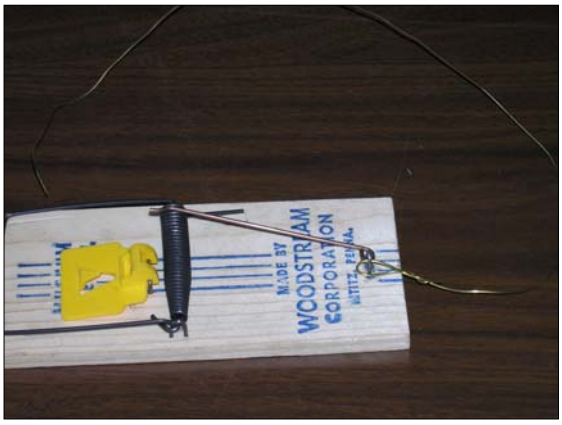
This is a detailed study, and you may need to watch the video several times to pick up on all the techniques.

The study will involve establishing traplines in different types of typical habitat for your area, running those traplines for five nights each year, and collecting and preserving the carcasses of the small mammals that encounter the traps. The trapping should be done in August. The goal is to achieve 500 “trap nights” per year, in a consistent time period. August is preferred. A “trap night” is one trap set for one night, so if you have 100 traps out for one night, that is 100 “trap nights”.

It is important to note that a study of this sort does not deplete the populations of any small mammal species; the reproductive capability of these mammals far outstrips any attempt to study them.

1) Trap preparation and operation (in lab):

- **Types of traps to be used (Museum Special snap trap, and example of commercial mouse trap which should not be used)**



Video

Close-ups of both types of kill traps, to show the one that should be used and one that should not.

Script notes

The Museum Special trap is a large mousetrap that kills mice but is less likely to crush their skulls. These are used when the small mammals are destined for museum collections.

The commercial type of mouse trap sold for household use should not be used. It tends to hit the skulls of small mammals so is not advised when the intent is to make museum specimens.

- **How to clean traps (brush off, flick off any peanut butter, wash in plain water using scrub brush if really dirty), attaching wire and flagging tape.**

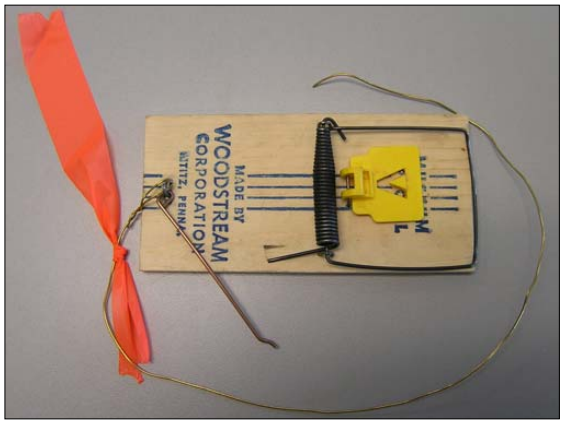
Video

Cleaning traps with brush and water.

Trap with wire and flagging tape in place.

Script notes

Prior to setting out your trapline, inspect all traps. If they are really dirty, or have mouldy peanut butter on the triggers, clean them with a brush and clean hot water. Do not use soap or bleach.



Attach 40 cm of snare wire and flag each trap with surveyors' tape where the wire is attached. This is to make it easier to find the trap if a predator carries it off.

- **Preparing bait (mix peanut butter with oatmeal)**

Video

Oatmeal and peanut butter in dish.

Mixing oatmeal with peanut butter.

Script notes

Bait is a mixture of peanut butter and oatmeal. Any kind of oatmeal will do. Mix it about half and half. Carry the bait in a container like a margarine tub or small large-mouthed jar.

Alternately, you could omit the oatmeal and put the peanut butter into a large syringe or refillable tube (available from camping outfitters). These are really messy to fill. Check drugstores for “oral syringes”, used to give medicine to babies.

- **Applying bait**

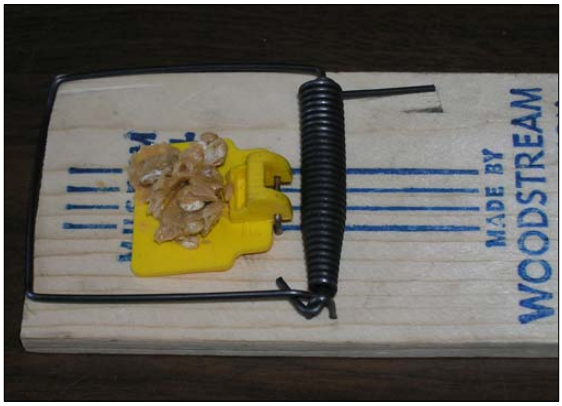
Video

Application of bait to trigger, photo of baited trap.

Script notes

It's easiest to apply bait with a stick or your finger, but take a cloth along to wipe your hands or you will end up with peanut butter all over you! A tongue depressor or wooden coffee stir stick works well.

If you use a tube or syringe, just apply the peanut butter to the trigger.



Be sure to push the peanut butter into the trigger mechanism so the animal has to work to get it off.

- **Practice handling and setting trap safely; setting Museum Special trap.**

Video

Museum Special trap being set in lab, showing how to hold.

Script notes

To set the Museum Special trap, you pull the "bail" (the square wire piece attached to the spring) back until it is opposite the trigger portion of the trap. While holding the wire against the wood, place the trigger wire over the "bail" and into the notch on the yellow plastic trigger mechanism. Pull up on the mechanism until the wire will remain in place.

It helps if you place your hand over the cocked wire piece and prevent it from rising. Work the trap into the area where you want it to be set. Your cupped hand will keep the bail from rising if something triggers the trap. Hold it in place until the trap is on the ground and stable, then remove your hand and hope it remains set!

Practice setting and triggering the traps in the lab until you are not intimidated by their snapping and are sure you can prevent them from triggering until you get them in place.

- **Preparing materials for measuring mammals: scale, small ruler (cut ends off parallel to last mark so you can get exact measurements).**

Video

Collection of equipment for snap trapping, including small metal tag, flagging tape, clipboard or notebook, pencil, data sheets, field labels, Zip-loc bags, small bottle of ether, cotton balls, field guide to small mammals for specimen identification, hip chain measuring device.

Script notes

This is the equipment you will need to conduct this study.

The metal tag is used to identify the transect or trapline, and the flagging tape to mark the transect, the trap sets, and traps. Don't forget to bring extra bait so you can rebait the traps.

Use a clipboard to hold the data sheets. If you do not have a clipboard, use a piece of thin plywood or cardboard and a clip to hold your data sheets.

Field labels will mark each collected mammal. Record all information in pencil, as it is waterproof. It helps to flag your pencil so you don't lose it as easily.

The small mammal carcasses will go in the Zip-loc bags. Ether or another anaesthetizing chemical will be applied to a cotton ball and inserted in the bag to anaesthetize and kill all ectoparasites. (Or, if an insecticide dust is selected, you will dust the small mammal and then seal it in the bag. This will kill all ectoparasites and they can be removed.)

The field guide will help you identify the small mammals.

The hip chain measuring device can be used to measure the trapline. If you do not have one, use pacing to measure the distance between trap sets.

Make sure you also have a small first aid kit with you, and make sure it contains iodine pads or an antiseptic in case you get nipped.

2) Establishing your pace.

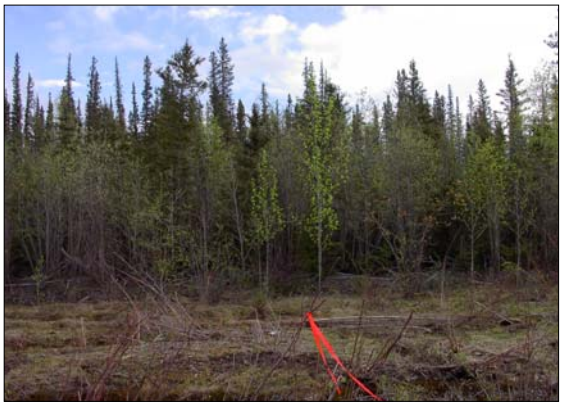
Video

Pacing known distance to establish number of steps in 50 meters.

Script notes

If you do not have a hip chain measuring device, you will need to pace off your transect lines.

In a practice area, like a ball field, measure off 50 meters and mark both ends. Then walk this line three times, counting your steps. Average the number of paces it takes to go 50 meters, and this will be your "ruler" for determining the location of the trap sets, which are 50 m apart.



3) Locating traplines

- **Selecting location for pairs of lines (near office, etc.)**

Video

General habitat shot, pan across to include sufficient detail.

Technician, ready for the the field.

Script notes

Select the location for your traplines in a place with typical habitat for your area. This place needs to be accessible from your office by a short vehicle ride. The area should not be on a list for any kind of land development during the next 10 years.

You will check the traps on each line for five nights each year, in August.

Take a photo of the general habitat along the trapline. Try to locate the trapline in an area of uniform habitat if you can, rather than going from one extreme type to another. For example, if you set a line in marsh habitat, try to ensure the line is all in the wetland habitat. At times, it may be necessary to curve the line to remain in the same habitat.

You will set up two parallel lines about 100 m apart, running 250 m. through typical habitat for your area.

- **Marking start of the transect, measuring, establishing trap locations along a line.**
- **GPS use to identify start and finish of line.**
- **Use of compass to maintain a straight line.**

Video

Tying metal tag and flagging tape to tree (3 flags).

GPS use to identify location.

Use of hip chain measuring device along transect.

Use of pacing along transects.

Use of two flags for a trap “set”.

Compass use.

Script notes

Mark the transect permanently with a small aluminum tag fastened to a nail in a tree or wired loosely around a branch. Place three lengths of flagging tape nearby but not right at the tag.

Use GPS unit to get coordinates for the start and finish of the line. Record these on the data sheet.

Use hip chain measuring device to measure off 110 m. Remember to set the hip chain counter to “0” before starting, and check to see you have sufficient thread to do the transect.

If you do not have a hip chain unit, then measure by pacing.

Measure off 10 m from the beginning of the line to your first trap location. It is best if the trap site is not at the beginning of the line.

Use a compass to maintain a straight line.

Mark each trap location (which contains 2 traps) with two flags of flagging tape.

4) Habitat descriptions

- **Use of habitat forms.**

Video

Recording data on data sheet/clipboard.

Script notes

Standing in the line near the first set, complete the habitat description using forms provided by the Environment and Natural Resources department.

5) Setting traps:

- **Locating traps in pairs along the lines**

Video

Technician with traps, ready to be set.

Script notes

Traps will be set in pairs (about 1 m from each other). Each 2-trap "set" is 10 m from the previous one, along the transect.

If you have not already done so, "flag" each trap with a piece of flagging tape at the connection of the wire. When you set the trap, fold the flagging tape under the trap.

- **Establishing best location for each trap:**

  (This photography is being done in winter, so it's impossible to compare with summer habitat. The difficult thing is to illustrate how to locate each trap. See written suggestion below. In the video, this will be properly filmed.)
  Example: Look for "runs" along ground and along the base of logs or on logs. Look for activity spots at the base of trees, gnawed bark, or any scats, pressed down grass, burrows or holes in vegetation.
  Examine the general area for latrines (piles of scats) or grass nests, flattened vegetation, etc.
  Place traps across these runs with trigger area right where the mouse will run. Sometimes mice are not caught with bait, but because they run across the trap.

Video pan of forest floor showing possible trap locations (several shots).

Video

Video of general possible trap locations, showing runs if possible, or possible activity sites. (We were unable to get a photo that shows small mammal runs due to snow and crusting.)

Script notes

In summer, look for places a small mammal would use. Look for runs along ground and along the base of logs or on logs, activity spots at the base of trees, gnawed bark, any scats or latrine areas, pressed down grass, burrows or holes in vegetation.

Watch for debris when setting traps and make sure there is sufficient space for the wire bail to clear overhanging vegetation so it does not interfere with and prevent the trap from closing properly. You may need to clear out a small amount of debris, but do not alter the environment significantly.

Place snap traps *across* these runs with trigger area right where the mouse will run. Sometimes mice are not caught with bait, but because they run across the trap and set it off by tripping the trigger.

- **Marking trap locations, use of flagging tape over trap location.**

Video

Tying two pieces of flagging tape to branch above trap location.

Script notes

Flag each trap location with two strips of flagging tape tied to a branch above the set. Try to keep it at least a meter from any trap.

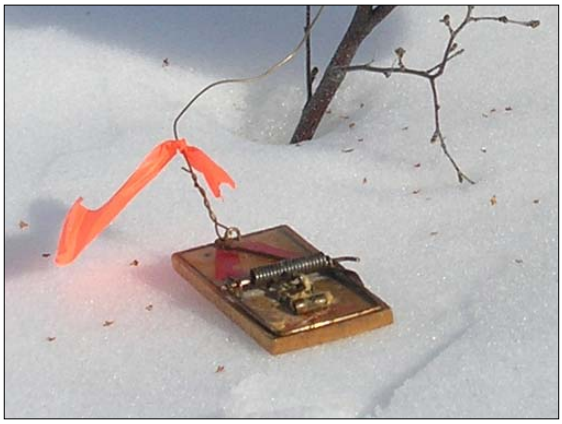
- **Securing traps with wires (wire to tree or branch)**

Video

Securing trap with wire.

Script notes

Fasten each trap with wire to a nearby bush or limb to prevent predators from carrying it away.



- **Setting trap (same technique as practiced in lab)**

Video

Trap being baited and set in the field. (This photo was also impossible to get in March, due to depth of snow.)

Trap being lowered into place and released.

Photo of set trap.

Script notes

Follow the same procedures you practiced in the lab, being careful as there is more vegetation to spring the trap, and the wire restricts movement.

After you bait the trap, pull the wire bail back and hold it. Put the trigger wire over the bail and cup your hand over the bail to keep it down. Insert trigger wire in the trigger and lift the trigger until the wire stays. Keeping hand cupped over the bail, work the trap down into the area you want it set. When it is stable, release your hand and leave the trap.

Make sure the flag on the trap is out of sight under the trap.

Trap will look somewhat like this when set in the habitat.

6) Checking traps:

- **When to check (early am, avoid rain if possible by going out earlier)**
- **What you will need to take with you in the field (Zip-loc bags, field labels, pencil, data sheet, ether bottle, cotton balls, mammal guide, and, if using live traps, cloth bag and plastic ruler).**
- **How to check: visual examination of area, follow wire.**
- **Use of data sheet and field labels.**
- **How to identify small mammals.**
- **How and where to record any indications of predators robbing traps, etc. (Shrews and weasels will take mice from traps; other mice will sometimes feed on them as well.)**
- **Record all "misfires" (no bait left, trap sprung, trap gone, trap refuses to snap if touched with stick, trap with animal other than a small mammal)**

Video

Trap, with mouse in trap. (For the script and storyboard, we used fake mice. We suggest using a dead mouse for the video as the fake ones are too stiff.)

Script notes

Check your traps as early as possible in the morning. Walk along the transect until you get to a trap location then look for the traps, being careful not to step on them.

If you catch a small mammal, identify it using the mammal guide before touching it if possible. Record information on your data sheet.

If there is a "misfire" (no bait left, trap refuses to snap when touched), predators robbing traps (trap sprung, moved, hair on bail -- look around for mouse carcass), or trap containing animal other than a small mammal], record this on your data sheet. Shrews will often feed on a small mammal in a trap, in which case parts of the mouse will be gone. Shrews usually start with the stomach area.

7) Removal of mammal from trap:

- **In the case of kill traps, the animal will be dead, but the ectoparasites are not.**
  - **Use of Zip-loc bags…animal in bags**
  - **Put a bit of ether on the cotton and into bag**
  - **Filling out labels, field forms**
  - **Labels in bags, expel as much air as possible, keep dry as possible, into larger bag, one bag for each transect.**

Video

Will show process of picking up trap with animal in place, then inserting it into a Zip-loc bag and releasing it.

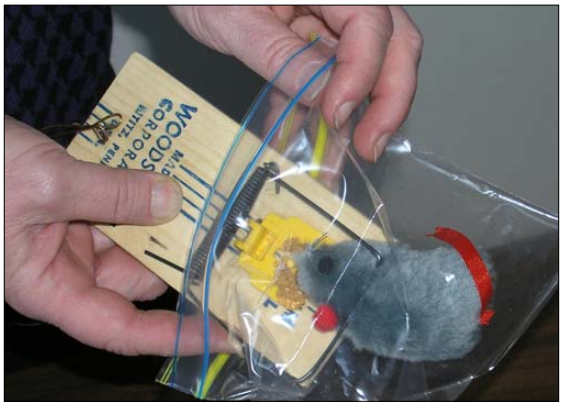
Slide end into Zip-loc bag, release bail and drop carcass into bag.

Putting ether on cotton wad and into bag.

Filling out label and field form.

Place label in bag; get rid of air, seal.

Multiple bags into one larger bag for each transect or for the day's catch if only a few.

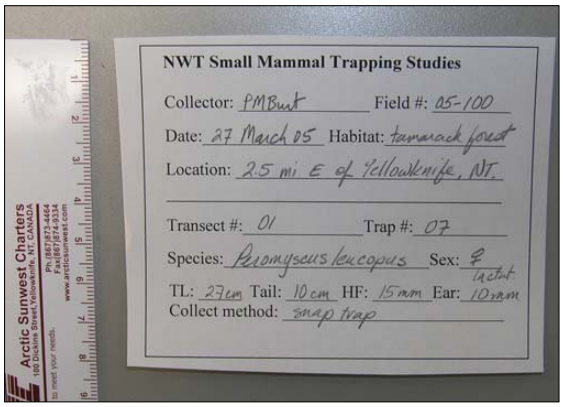


Script notes

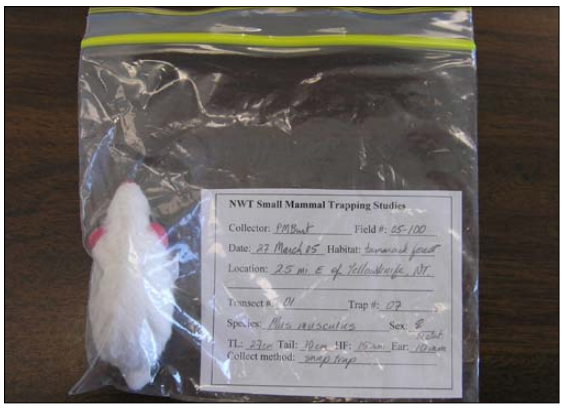
Once you catch something, pick up the mammal and trap together. Holding it by the end of the trap, insert the small mammal into the Zip-loc bag. Pull up on the bail of the trap with your finger and shake the mouse down into the bag.

Try not to handle animal any more than necessary as any handling may cause the ectoparasites to leave the carcass. You want to save them if possible.

Put ether on a cotton ball and drop it into the bag. The ether will kill all ectoparasites so you don't lose them), and seal the bag. Then, identify mammal through the bag if possible, using the mammal guide.



Fill out the field label and field forms, open the bag and insert the label into the bag, force air out and reseal. Leave the cotton ball with the ether on it in the bag.



Put all bags from one transect into one larger plastic bag.

With kill traps, it is easier to measure the mammals back in the lab, after all ectoparasites have been killed, or to simply send them out to specialists without being measured. (They can't be measured while frozen.)

- **Completing field forms**

Video

Writing on field form on clipboard or notebook.

Script notes

When using kill traps, record the name of the collector, field number, date, habitat, location (general and transect number), trap number and species on the field label and complete the field form.

The rest of the data, such as measurements, can be obtained later. Just identify the animal if possible and get it to a freezer as soon as possible.

8) Processing carcasses of kill-trapped mammals:

- **Measurements to take on site, or in lab; species identification**
- **Remove any peanut butter, expel air from bag, make sure seal is good, label is visible**
- **Pack in larger Zip-loc bag with other specimens from the same day, seal well**

Video

Checking carcass, inserting label, expelling air from bag, make sure label is visible from outside the bag.

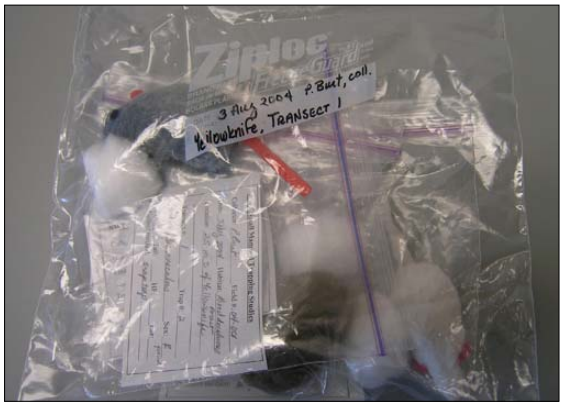
Photo of several specimens in individual bags placed in a larger bag.

Labeling larger bag.

Script notes

To prepare carcasses for storage, place in bag, put label in bag so it is visible from outside and on side of bag without the Zip-loc logo. Press bag to exclude air and seal. Leave the cotton ball with the ether on it inside the bag.

Store all specimens from one transect in a larger bag.



Label the larger bag clearly with your name, name of the transect line (community name), and month and year.

9) Processing specimens in the field with no access to a freezer.

- **If you are working in an area where there is permafrost, it may be possible to dig down and bury a box next to permafrost, then heap insulating material over the container.**
- **If you have no access to a freezer, keep specimens in a cooler placed in a lake.**
- **Fill the cooler with lake water, make sure the Zip-loc bags are well sealed up, and sink the cooler.**
- **Attach cooler with a rope so it can be easily retrieved. Place all specimens in a freezer soon as possible.**
- **Transport to lab (keep in plastic bags, keep cool, keep dry, process as soon as possible)**

Video

Use of cooler in lake. (As there was no open water, we could not illustrate this.)

Video of process of using cooler, filling, sinking in lake...

Script notes

If you have no access to a freezer or to permafrost, keep specimens as cool as possible in an insulated cooler placed in a lake. They will last about a week this way, but will not be in good shape.

Make sure the individual Zip-loc bags are well sealed with as much air excluded as possible. Put individual bags into a larger bag (by the transect if possible) or place all of one day's collection in one bag.

Exclude as much air from this bag as you can and seal it well. Put a rope on the cooler so it can easily be retrieved. Fill the cooler with lake water, and sink it in the lake. Tie rope securely to a bush or tree on the shore.

For transport to lab, keep all specimens in plastic bags; keep cool, keep dry, and process as soon as possible.