Standard Operating Procedure (SOP) 4: Plot and Trap Set up

Protocol for Monitoring Small Mammals

Central Alaska (CAKN) Inventory and Monitoring Network

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SOP 4 – Plot and Trap Set up

Standard Operating Procedure #4
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Previous Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #
Add rows as needed for each change or set of changes associated with each version.					

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SOP 4.0 – Introduction

This SOP describes how to set up plots and Sherman live traps for the Central Alaska Network (CAKN) Small Mammals long-term monitoring surveys, except where specific tasks are covered by other SOPs. See also SOP 2 (Field Notebook and iPad Set up and Data Collection Fields), SOP 3 (Training), SOP 5 (Equipment and Tasks Lists) and SOP 6 (Conducting Surveys) prior to plot and trap set up.

SOP 4.1 – Travel Authorizations and Vouchers

The week before the field work is conducted, a crew of 3-6 people will drive to Denali in a GOV (see SOP 1 for instructions on reserving GOVs) for the day to haul in traps and flag and label plots at the Rock Creek study site. Each crew member will need to fill out a travel authorization in Concur for the day trip (less than 12 hours but further than 50 miles). This ensures each crew member is covered under travel insurance for the trip. If the trip lasts longer than 12 hours, the crew can claim backcountry per diem. See the administrative team at the Fairbanks Administrative Center for more details on filling out travel authorizations in Concur. Upon return from the trip, travel vouchers (TVs) will need to be quickly completed and signed. If the trip is under 12 hours, travelers will not be entitled to per diem and the TAs will be 'no claim' and TV will be 'zero dollar.'

SOP 4.2 – Plot Flagging Equipment and Task List

Prior to departing to Denali for the day, the crew will need to gather these items for the plot flagging effort:

- 11 trap boxes (6 boxes at Rock Creek camp; 5 boxes hauled to upper plots RF1 and RF2)
- 10 large, heavy duty garbage bags
- 6 large back packs (or 1/person)
- 12 thick black Sharpies (or 2/person)
- 1 small yellow Rite-in-Rain field notebook (to make notes on which metal tags are missing)
- 6x rolls each of bright pink and blue flagging (red or orange and green hard to see in fall foliage) (or 1 pink and 1 blue each for each person)
- 6x pepper sprays with carabiners (transport in ammo cans for safety) (or 1/person)
- 6x walkie talkies with fresh batteries (or 1/person)
- Satellite phone with cigarette plug cord and charged batteries
- Lunch and water for each person
- Cameras and cell phones (optional)
- Bug spray and sunscreen
- Raingear, knee boots or hiking boots, sunglasses, warm clothes for each person
- Reserve a GOV and do travel authorizations for each person on the day trip
- Fill out the vehicle inspection form and grab a 'pink safety tub' for the vehicle prior to departure

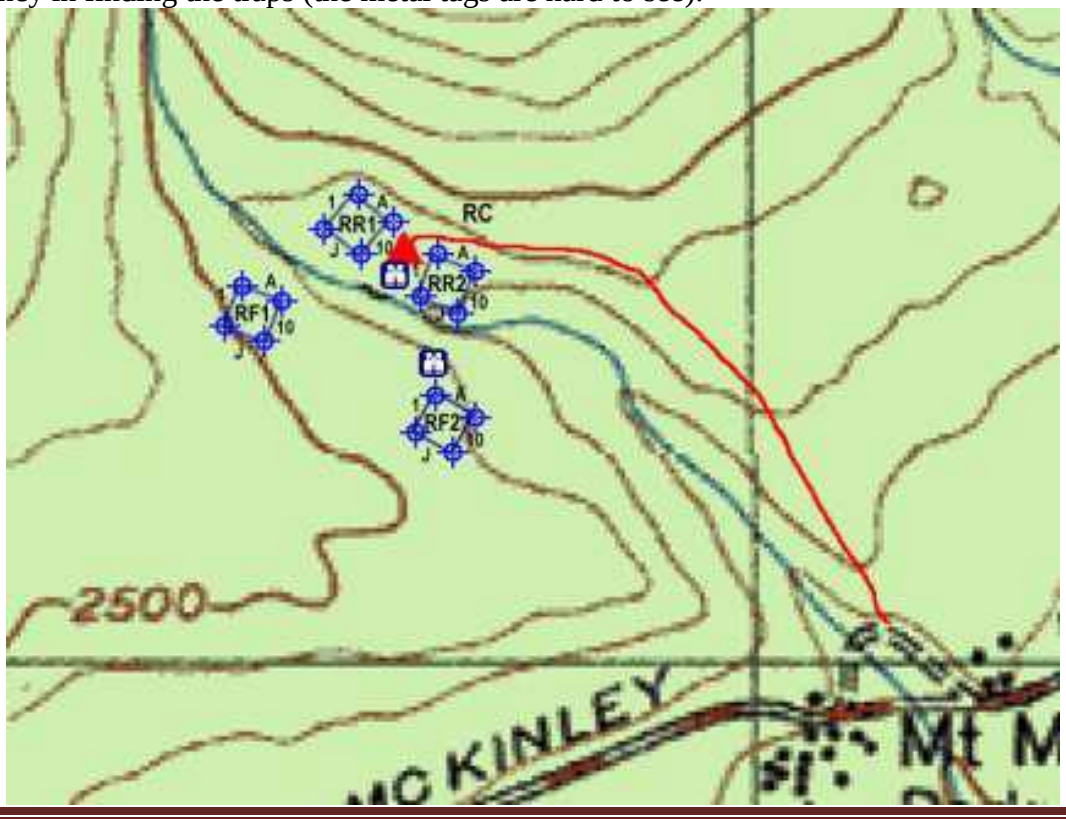




SOP 4.3 – Flagging Plots and Trails

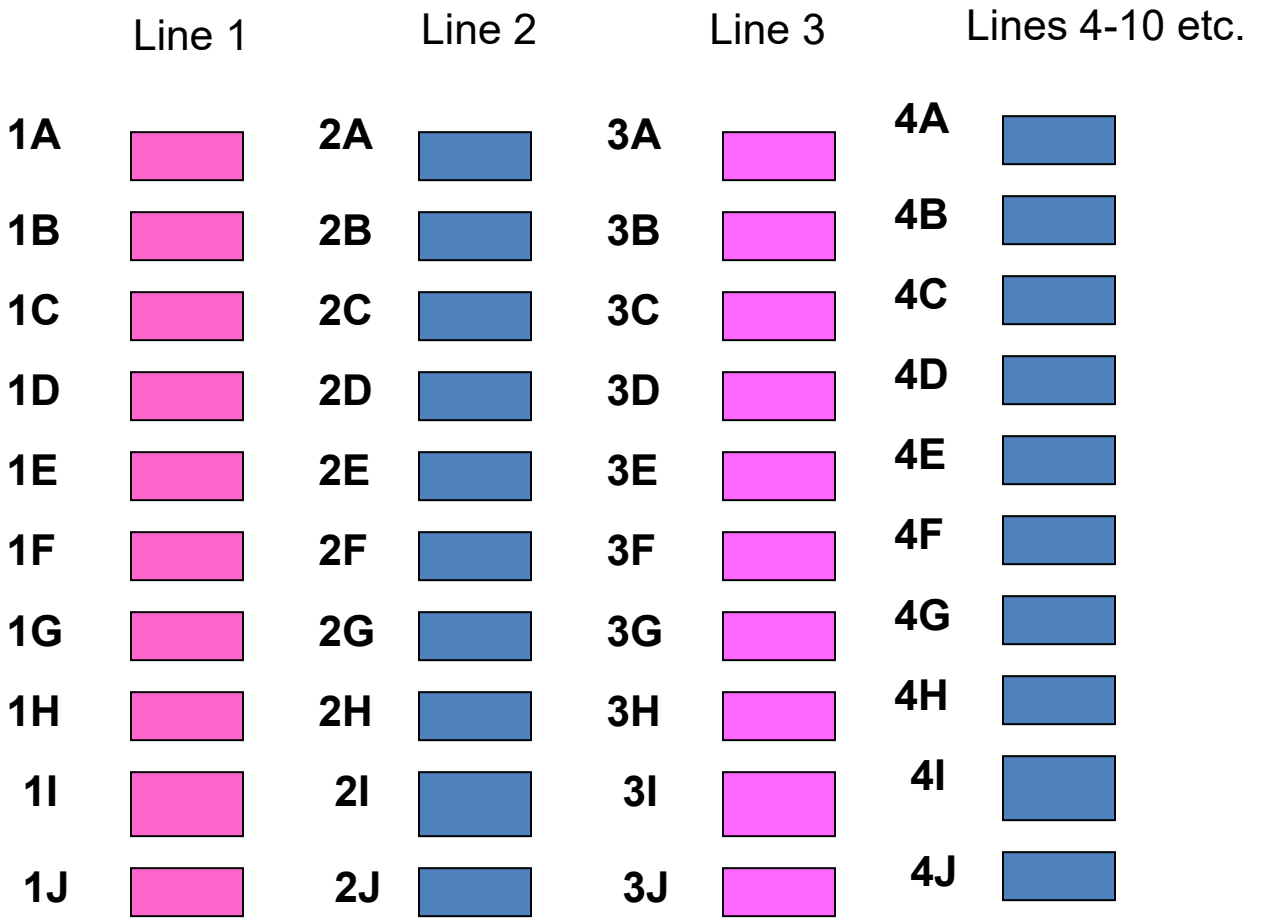
Once the crew parks at the upper C-camp parking lot, backpacks, pepper sprays, trap boxes, flagging and markers, etc. are disseminated to each crew member. As the crew hikes into Rock Creek camp, two crew members will hang back to flag the trail into the plots with blue flagging (using quick release knots). Flags on the trails should be placed far enough apart that the last flag can be seen by line of sight.

Once at Rock Creek camp, there are four plots to be flagged: RR1, RR2, RF1, RF2, each arranged in a 10x10m square with 100 traps apiece (for 400 traps total). Plots are composed of 10 lines of 10 traps each, arranged in lines 1-10 and traps A-J (see diagram below). Traps are placed ~ 10 m apart from each other in all directions. For example, trap line '1' would have traps: 1A, 1B, 1C, 1D…1J. Each trap location is marked with a permanent metal tag etched with the exact plot and trap line location (e.g. RR1, 1A). Each trapping session we also mark the trapping locations with flagging to increase visibility and efficiency in finding the traps (the metal tags are hard to see).



Typically, the crew will begin by flagging RF1 and RF2 (upper plots) because these plots are further away and take more time. Trails to and between plots are flagged. Plots RR1 and RR2, which are close to camp, can be flagged during the trapping week, if needed. In addition, 5 trap boxes are hiked to the upper plots and stashed in garbage bags until traps are set the following week.

When flagging the plots, every other trap line is flagged with either bright pink or blue flagging to keep crew members on the correct lines and to help them locate each trap. Pink and blue are used because these colors are visible in the fall when foliage starts to change color (green, orange, yellow and red are hard to distinguish at this time of year).





Each flag is clearly labeled using permanent marker (and capital letters) with the exact trap location (e.g. 1A, 1B, 1C, etc.). Flagging is placed as close as possible to the permanent metal tag. Long strands of flagging are highly-visible and are tied with quick release knots to mark trapping locations. This allows for quick location of traps and easy removal of flags after the trapping is completed each year. When metal tags are missing, the crew will record this in a yellow field notebook and replace the missing tags during the trapping week.

If a trap location cannot be found (for example, missing metal tag at trap 4C), crew members will line up on adjacent lines (e.g. 2, 3, 5, 6,) and walk down the trap lines together to help triangulate the missing trap location (e.g. 4C). The crew member trying to locate 4C can use the locations of 2C, 3C, 5C and 6C as well as 4B and 4D to deduce the location of 4C. Sometimes the branches holding the metal tags and flagging will break off from snow load or wind. Often, these are found on the ground near the trap location. The metal tags are hard to see but do glint in the sun if seen from the correct angle. It is often easier for a crew member on an adjacent line to spot the 'glint' of the metal tag on another line. If a trap location cannot be located with this method, the project manager will use a GPS unit with the coordinates of the trap location to pinpoint the spot (note: the other method is quicker and just as accurate).

Two hundred traps are hiked to the upper plots (RF1 and RF2) in back packs. The trap boxes are stashed in garbage bags under a tree near the start of the plot (RF1 trap 10A; RF2 trap 1A) to be available for trap setting day. Each trap box weighs ~20 lbs and 1-2 trap boxes will fit into large backpacks.

SOP 4.4 – Setting Out Closed Traps

During the trapping week, traps are set and opened Tuesday evening, between 1800-2000 (6-8 pm). They may be put out unopened earlier on Tuesday afternoon. ONLY put out unopened traps if all of the plots are completely flagged; otherwise it will be difficult to find traps in the thick brush if flags are not marking trap locations.

Trapping session schedule:

Mon	Tues	Wed	Thur	Fri	Sat	Sun
Drive to DENA	Training	**Trap check 0600**	**Trap check 0600**	**Trap check 0600**	**Trap check 0600**	Pull traps
Training	Set up plots x2	**Trap check 1300**	**Trap check 1300**	**Trap check 1300**	**Trap check 1300**	Break camp
Haul gear (2-3 trips)	Set out traps x4 plots	**Trap check 2000**	**Trap check 2000**	**Trap check 2000**	**Trap check 2000**	Haul gear (2-3 trips)
Set up camp	Open traps 1800-2000				Close and pull traps	
Set up plots x2 (or previous week)						Drive to FAI

On Tuesday afternoon of the trapping week (around 3 pm or 1500), all crew members will hike together to all of the plots to learn the trails and orientation of the plots. Crew members will bring large backpacks to haul trap covers and trap boxes between plots and will start with RF1 and RF2. Each plot will use 2.5 trap boxes (100 traps). The 11th trap box remains in camp and is used to replace any broken traps.





When the crew arrives to the RF1, they locate the stashed trap boxes and disseminate 2.5 boxes worth of traps (100 traps/plot) in stacks of 10 loose traps to each crew member. Empty trap boxes are wrapped in garbage bags and stashed again near RF1,10A to protect them from the rain. Each crew member is given 10 loose traps and assigned a trap line (e.g. line 10, line 9, line 8, etc.). Folded traps are placed under each flag on the trap line (from A to J). Two other crew members with backpacks full of trap covers 'sweep' behind those with traps and place a plastic trap cover next to each closed trap.

Once the plot is completed and all closed traps and trap covers are set out, the crew hikes together to plot RF2 and repeats the process (trap boxes wrapped in trash bags and stashed at (RF2, 1A). When RF2 is completed, the crew hikes together to the bottom of RR2 to learn the trails. Traps and covers are retrieved from Rock Creek camp to repeat the process for plots RR1 and RR2 (trap boxes for RR1 and RR2 stored under the tarp at Rock Creek camp).

After setting out all trap, the crew returns to Rock Creek camp to prepare for trap setting and opening at 1800 (6 pm).

SOP 4.5 – Opening and Setting Traps

At 1800 (6 pm) on Tuesday of trapping week, the crew is divided into two crews: upper (RF1 and RF2) and lower (RR1 and RR2) to set and open traps on the plots. Experienced crew leaders are assigned to both crews. All crew members don PPE, carry pepper spray, bring rain gear, wear trapping fanny packs or vests and bring a quart baggie of bait (sunflower seeds) and a gallon baggie of bedding (nestlets).



1. **Begin Opening and Setting Traps:** Upper and lower crews turn on walkie talkies, hike to the start of their respective plots (RF1 and RR1) and begin opening and setting traps. Experienced crew leaders provide a demonstration on how to set and bait traps properly before the crew begins. Then, each crew member is assigned a trap line.

2. **Check Flag Labels:** Each observer checks to ensure all flags are labeled with the correct line number and trap number letter.

3. **Open Traps and Check Doors:** At each flag, crew members unfold and open the traps into their rectangular shape and check that both doors close completely (if they don't close completely, animals may get cut on the sharp edges of the traps trying to escape through the openings).

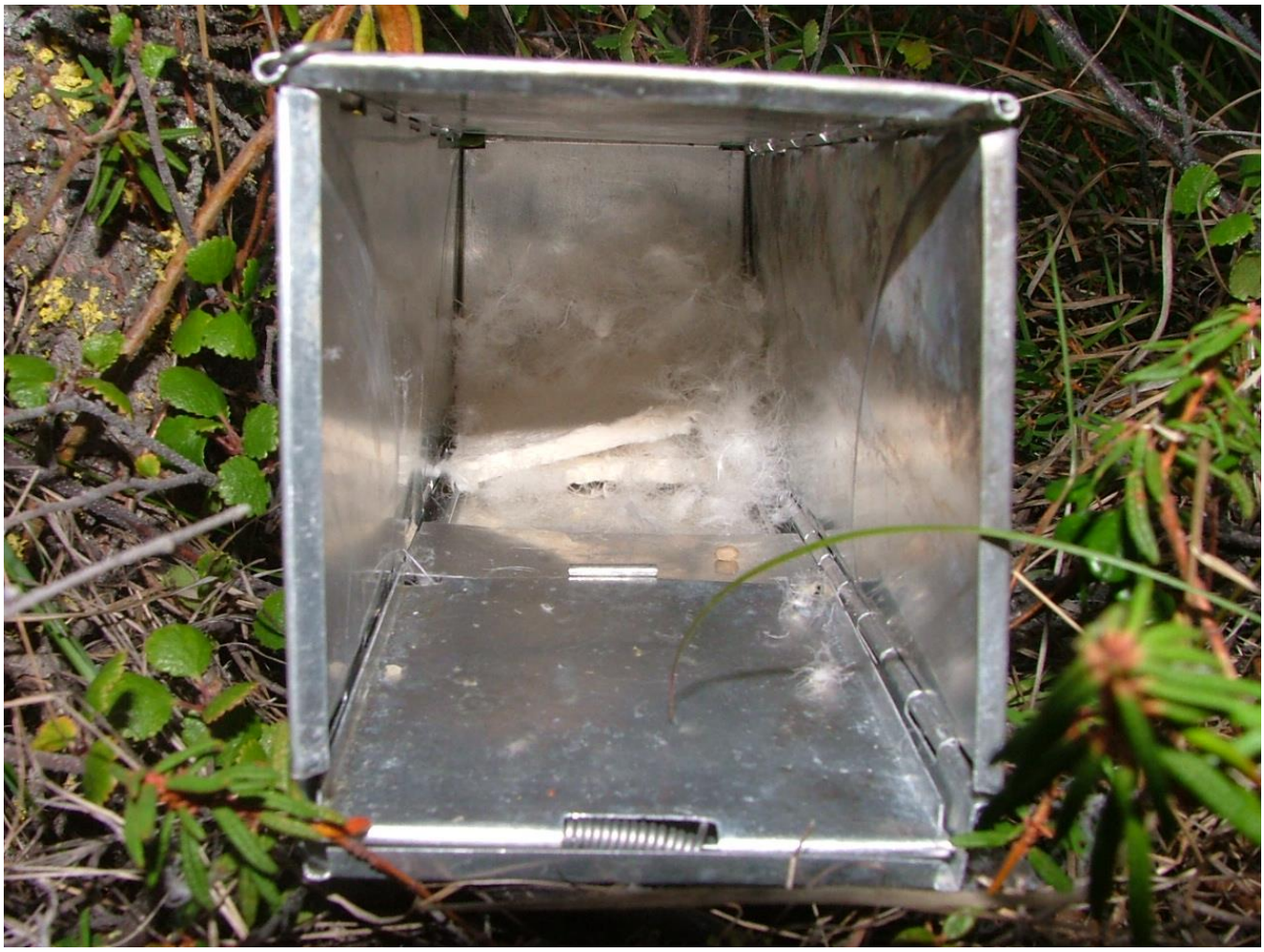
4. **Check Treadles/Tap Test:** Each observer carefully checks trap treadles. The treadles is adjusted by gently moving it back and forth with a finger to ensure that the door remains open at the proper tension to spring when an animal steps on the floor plate. Observers use the "tap test" to determine proper treadle tension. This involves 2-3 taps on the top of the trap to close the door. If the door does not close, the treadle needs to be loosened (gently pushed backward slightly away from the door). If the trap closes on the first tap, the treadle needs to be tightened (pushed forward slightly away from the door). Treadles may break off if wiggled too much. If a trap is broken (doors won't close all the way, missing a wire, treadle is broken, etc.), observers obtain a spare trap from the crew leader. Broken traps are brought back to camp, marked with flagging and set aside in the broken trap pile to be fixed at a later date.

5. **Stable and Smart Trap Placement:** Once the treadle tension is set correctly, the observer will look for a good spot to place the trap. Traps should be set close to the flagging but can be set within 1-2 m of the flag. The trap should be set flush on the ground and not jiggle when an animal enters. Traps should be set near areas attractive to small mammals (runways, holes, under logs, under trees and shrubs, etc.). Traps should not be placed on human and moose trails to avoid being trampled. Boots are used to scrape the ground and make a flat place for the trap. Traps should be placed parallel and flush to the ground. Once the trap is placed, the observer should check to see if the trap is stable (doesn't wiggle when touched). Once the trap is well placed, the door is pushed down until it clips under the treadle tab to hold it open. Traps should be placed parallel to the ground, not facing upward or downward. This prevents traps from being rained into (if upward) or animals climbing up into them from sliding out (if downward).

6. **Trap Exposure:** Traps should also be placed out of direct sunlight. The metal traps heat up quickly in the sun and cool off rapidly in the rain, frost and snow. Every precaution should be taken to shield the metal traps from solar radiation and or exposure to rain or snow. Observers should try to place traps in shaded areas, under the cover of leaves and tree branches, moss or sod. Traps should not be placed too low in areas where water might run into them if it rains or animals or people may step on them. Traps should be placed parallel to the ground to prevent precipitation from running into them.

7. **Moving Exposed Traps:** Exposed traps (not enough shade or cover from rain) can be moved within 2 m (6 feet) of the original spot during the trapping session. The metal traps can get very hot in the sun, even with the milk jug trap covers. Traps should be moved to shade, or covered with moist sod under the trap cover to keep them cool so captured animals do not overheat. Open traps should be turned with the opening away from the sun to prevent the inside from getting hot. Very exposed traps (e.g. lines 10-7 on RR2) should regularly checked (touched) to see if they are getting too hot or too cold.

8. **Bait and Nestlets:** Each observer uses a healthy pinch of bait (about the size of two quarters) and tosses it into the back of the trap, trailing a small amount in front of the door of the trap. Observers should ensure none of the bait is on the top of the traps; this attracts squirrels, Gray Jays and other birds. Crew members should not use too much bait. If too much bait accumulates in traps over the week, it can interfere with treadle mechanism and prevent the door from closing (bait will accumulate under the metal plate in the floor of the metal of the trap, preventing it from depressing and closing the door). After baiting, two, cotton nestlet squares are added. Nestlets placed to the back of the traps to 1) be less visible to birds and squirrels (who like to steal them) and 2) to prevent them from getting wet should it rain or snow. If it looks like a clear and cold night, a third nestlet is added and down (from a pillow) is provided for extra insulation.



9. **Trap Covers:** After the traps are baited and nestleted, the plastic trap covers are placed over the traps. Observers place the covers as snugly over the traps as possible to protect them from rain and sun.

Here are examples a successful trap sets:





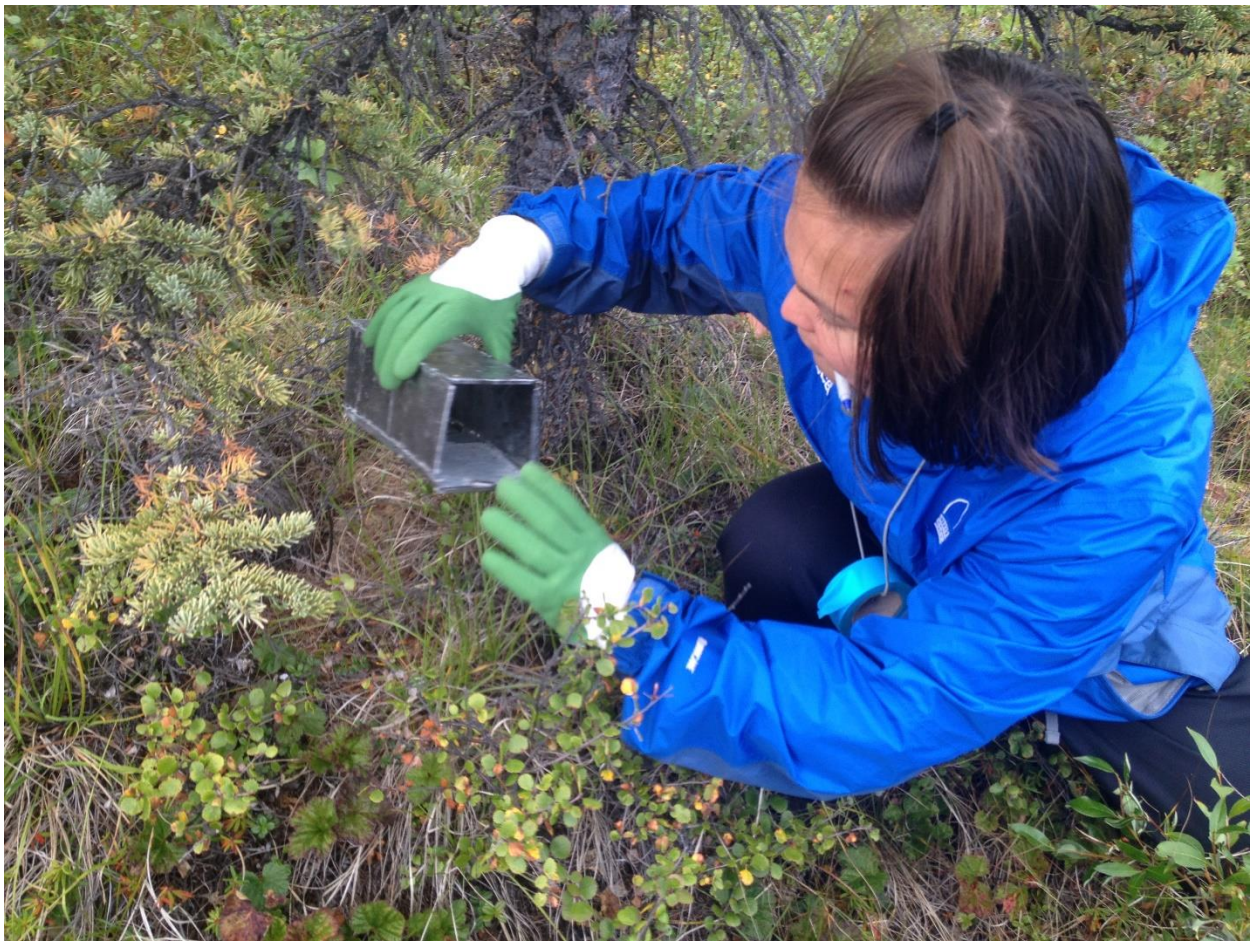




10. **Re-setting Traps:** After traps are checked during the survey (see SOP 6, Conducting Surveys; and SOP 7, Data Collection), traps should be re-set following the directions herein. Nestlets and bait are checked after every trap check. They are often stolen by jays and squirrels. If nestlets are soiled or wet, they are replaced. Only two nestlets should be loaded into each trap (3 nestlets is

acceptable on rare occasions when overnight temperatures are expected to be very cold and the entire crew has made this decision, but three nestlets can interfere with door closure). Observers add extra bait, an extra nestlet and down on clear, cold evenings when frost or snow is expected. However, observers should be mindful of how the extra material interferes with the treadle mechanism in the traps and be careful not to add too much bait or bedding when unnecessary.

Treadles are checked for every trap on every trap check using the tap test. An open door may mean the treadle is not functioning properly.



See SOPs 6 (Conducting Survey) and 7 (Data Collection) for the next steps in collecting small mammals data.