

# Generalized Rodent Trapping Protocol and Standard Operating Procedure

**Category** Experimental Procedures

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**Version** 2

**Labels:**

## Purpose

This SOP provides an overview of the steps, materials, and specific requirements to establish a rigorous rodent sampling system for the investigation of potential zoonotic pathogens or other field ecological surveys of rodent diversity.

## Definitions

**Circuit** - a set of transect(s) and a web in the same region which are opened at the same time.

**Cycle** - a trapping period where all the circuit have been opened for 2 nights.

**PPE** - personal protective equipment - protective clothing, helmets, goggles, or other garments or equipment designed to protect the wearer's body from injury or infection

**Transect** - a line or "string" of traps that are checked together and help to identify the diversity of rodents in the valley.

**Web** - a "spoke and wheel" set up of traps that helps to identify density of rodents in the area.

**Major radii of Web** - the first 4 "spokes" that correspond to 0, 90, 180 & 270 degrees of a circle.

**Minor radii of web** - the last 8 "spokes placed at 30 degree intervals between the major radii

**Quadrants of the web** - the 4 sections between the major radii of the web

## Set Up of Trapping Web

**Supplies Needed:** 100+meter (m) thin rope (1.5-3 mm diameter), a ~30+ m thin rope (1.5-3 mm diameter), meter measuring stick , GPS, Sherman traps, metal fence stakes, at least 2 people

### Safety Considerations:

- Throughout placement, ensure adequate water intake, sunscreen and shade from the sun.
  - If forecast exceeds 80°, Cal/OSHA requires access to at least one quart (4 cups) per person per hour for the entire shift, i.e., an 8 hour shift of strenuous work requires access to 2 gallons per person. Water must be fresh and suitably cool.
  - If possible limit strenuous tasks to morning or late afternoon hours. Rest breaks in shade must be provided at least 10 minutes every 2 hours (or more if needed). Effective means of communication, observation and monitoring for signs of heat illness are required at all times.
    - Signs of Heat Exhaustion Include:
      - Cool, moist skin with goose bumps when in the heat
      - Heavy sweating
      - Faintness
      - Dizziness
      - Fatigue
      - Weak, rapid pulse
      - Low blood pressure upon standing

- Muscle cramps
- Nausea
- Headache

## **Web Set up**

- Location of central point web (& planned trap numbers):
    - Web D: Lat/long (201-349)
    - Web C: Lat/long (1-148)
    - Web B: Lat/long (201-349)
    - Web A: Lat/long (1-148)
1. Before hand, prepare a 100+ meter thin rope with knots that will mark trap placement. Knots should be tied in the in the following pattern:
    1. Place a noose at the beginning of the rope
    2. Then place, four knots at 5 m intervals from the noose (5, 10, 15, & 20 m)
    3. The following 8 knots will be placed at 10 meter intervals starting from the last knot (30, 40, 50, 60, 70, 80, 90, and 100 m, from the noose)
    4. 2 knots should be placed at the last knot (100 m marker).
  2. In each web, a permanent metal stake is placed at the central point of each web and ~1-2 feet after the last trap of each radii. They are to be replaced if it falls down. All stakes will have the tops marked in a bright color to improve visualization (this should be refreshed as needed). (See Figure 3 for orientation of stakes & overview of final layout)
  3. Place the noose over the central metal stake in the web. This should allow it to spin 360 degrees around the central stake.
  4. One person should slowly unwind the marked rope in a straight line. A second person should be stationed at the central stake to help ensure the line is straight.
    1. This is easier to do if the rope is kept to the top of the stake and taut while it is being unwound.
    2. Avoid getting it caught on sage brush if possible by keeping the rope above the level of sage.
    3. Use hand signs for stop, left, right, keep going, and all set as determined by the pair before the rope is unwound.
    4. If a third or fourth person are available, it is helpful to have them support the middle sections of the rope.
  5. When the rope is fully unwound to the last knot at 100 m, communicate with your partner to make sure that it is straight, and then place the rope on the ground
  6. Both partners should begin to walk along the rope and place a flag in the soil at the location of each knot.
  7. A GPS marking should be taken at each flag.
  8. When all knots have a flag placed at each knot, one person should return to the center and the other to the end of the rope. This first radii is at "0" degrees. (See Figure 1).
  9. The "180" degree radii should then placed by setting up the rope in a similar manner. (See Figure 1)
    1. In terrain that allows the rope to be walked extended (low to no sage brush and even ground), the rope should be picked up, raised high, and pulled taut. The rope carrier can then walk in a semi-circle until the rope is perfectly inline with the previously placed radii of flags. The person in the center should guide the rope carrier until it is straight and in line with the "0" degree radii of flags.
    2. If the terrain does not allow the rope to be walked, it should be carefully rewound to avoid tangling and the rope walker should beginning from the central stake as described in #4-5.
    3. The person in the center should guide the rope carrier until it is straight and in line with the "0" degree radii of flags. This can be done by standing at the first flag of the "0" degree radii and making sure the rope and metal stake are aligned.
  10. The "90" & "120" degree radii should be placed as described in #9. Ensure that "90" & "120" are perfectly in line with one another and perpendicular to the "0" & "180" radii. (See Figure 1)

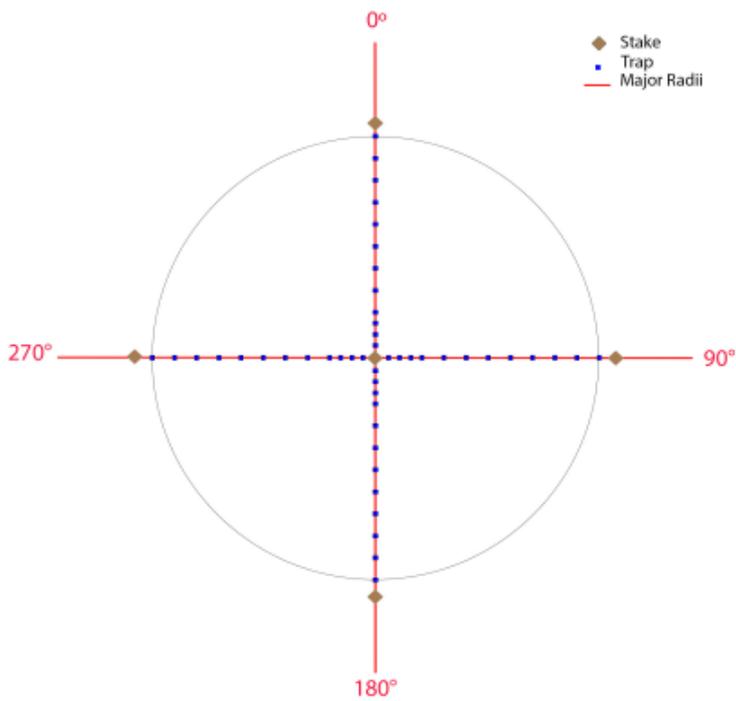


Figure 1: Outline of Major Radii and trap placement

11. Now that the 4 major radii are placed, the last 8 middle radii should be placed equally spaced (~30 degrees apart) with two in each quadrant.

1. To equally space the radii in each quadrant, take a ~30 m length of rope (different from the measuring rope)
2. Use the rope to mark the distance of one 5 m flag on the previously placed radii to the next closest radii's 5 m flag. (See Figure 2, black lines)
3. Then, fold the marked portion of the rope into thirds.
4. Then, used the folded rope to measure a 1/3 distance starting from the first 5 m flag to the next. At that point, place a "marking" flag. This will be the first minor radii in this quadrant (yellow lines in figure 2).
5. Measure another 1/3 distance from the newly placed marking flag towards the second 5 m marking flag. Place another marking flag at that spot. This will be the second and final minor radii in this quadrant.
6. Measure another 1/3 distance from the second marking flag and to make sure you're in the approximate location of the major radii's 5 m flag.
7. Repeat this process for all 4 quadrants.
8. The marking flags and will be picked up after the major radii they mark are placed.
- 9.

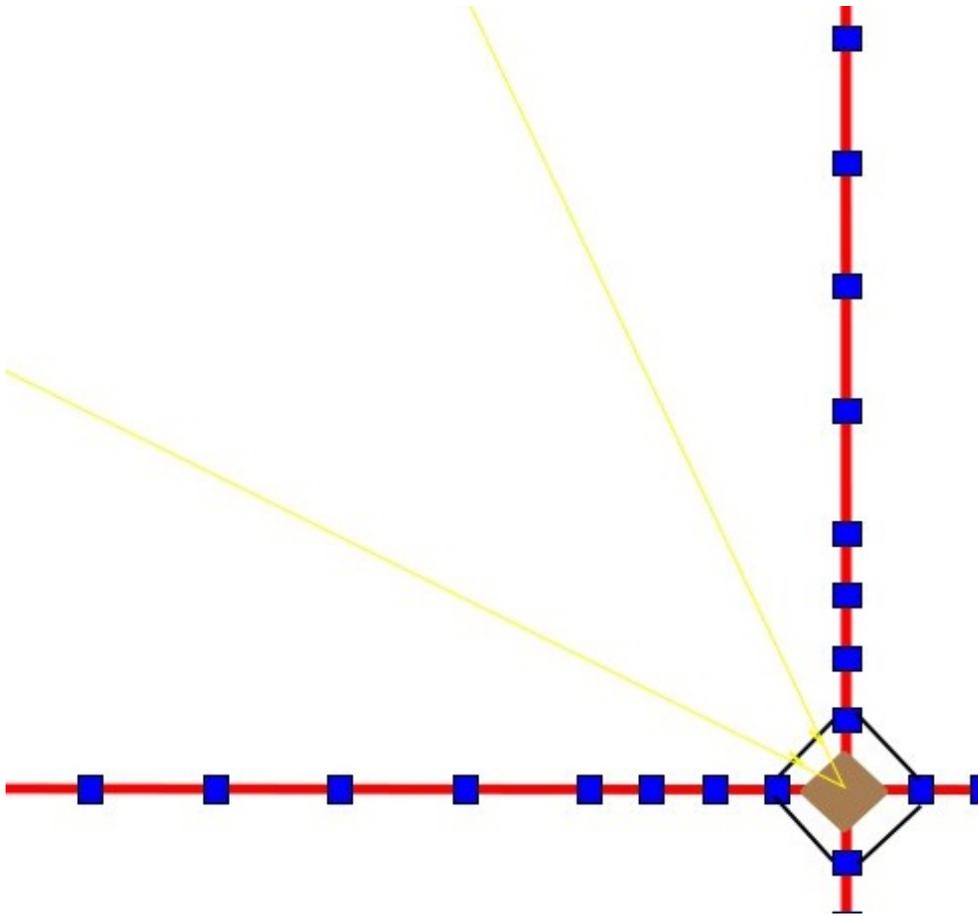


Figure 2: Measurement of Minor Radii from Major Radii. Black lines are the measure ropes, yellow lines are the theoretical path of the radii that you are preparing to place.

12. Place the measure rope & place flags as described in #4-6. If possible, it can be circled as described in 9.
13. Then pick up the marking flag for this radii.
14. Take a GPS location for each flag.
15. Repeat #12 until all 8 minor radii are placed. (See Figure 3)
16. Wind up the measuring rope.

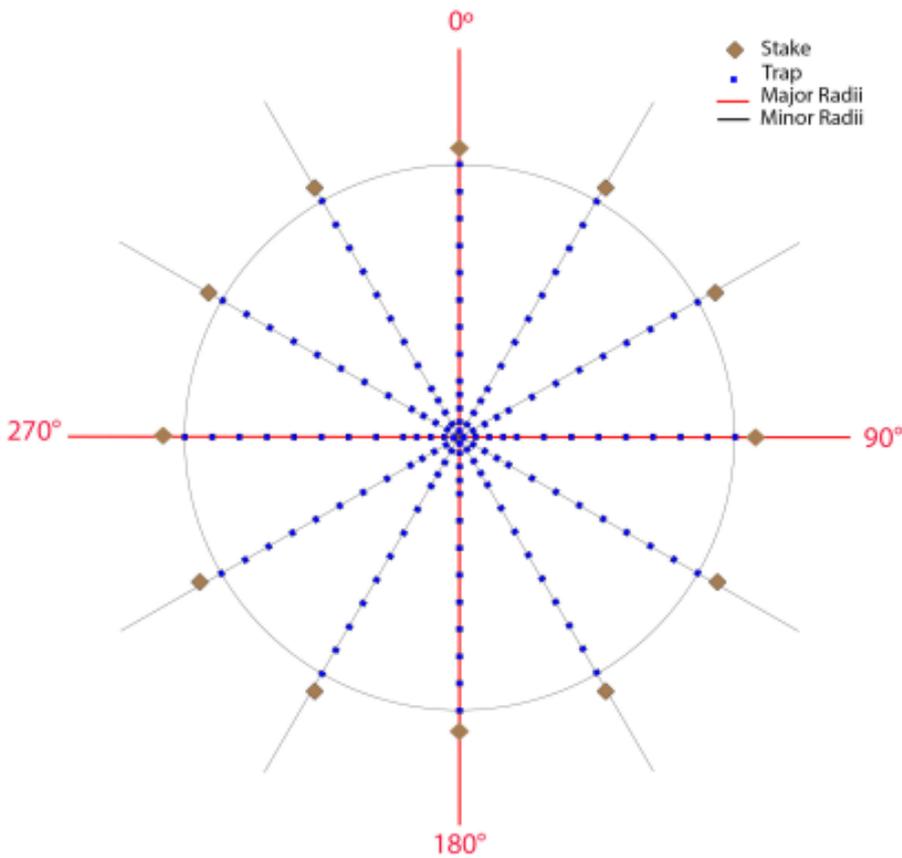


Figure 3: Final Layout of major and minor radii with traps

## Set-up of Transects

**Supplies Needed:** 10m thin rope, GPS, Sherman traps, metal fence stakes, 2 people

### Safety Considerations:

- Throughout placement, ensure adequate water intake, sunscreen and shade from the sun.
  - If forecast exceeds 80°, Cal/OSHA requires access to at least one quart (4 cups) per person per hour for the entire shift, i.e., an 8 hour shift of strenuous work requires access to 2 gallons per person. Water must be fresh and suitably cool.
  - If possible limit strenuous tasks to morning or late afternoon hours. Rest breaks in shade must be provided at least 10 minutes every 2 hours (or more if needed). Effective means of communication, observation and monitoring for signs of heat illness are required at all times.

### Transect Set Up:

- A permanent metal stake is to be placed at start and end of each transect and to be replaced if they fall down. All stakes will have the tops marked in a bright color to improve visualization (this should be refreshed as needed)
- Location of transect start/end (& planned trap numbers):
  - Transect 1: Lat/Long ; Lat/long (149-189)
  - Transect 2: Lat/Long ; Lat/long (190-200)
  - Transect 3: Lat/Long ; Lat/long (350-400)

- Transect 4: Lat/Long ; Lat/long (149-160)
- Transect 5: Lat/Long ; Lat/long (161-200)
- Transect 6: Lat/Long ; Lat/long (350-500)

1. Start at the metal stake marking the beginning of the transect with 2 people.
2. Have Person B stand at the stake with the end of the measured 10 m rope in hand.
3. Person A with the GPS should walk the GPS track with the other end of the 10 m rope until it is taut. (See GPS instructions for use).
4. Person A should place a flag and the location that the flag is placed should be close (within 4 m) to the marked location on GPS
5. Then, both people should then walk forward. and Person B will stop at the flag.
6. The Person A will walk along the GPS track while Person B will stop at the newly placed flag. Person A will continue to walk until the rope is taut again which should be next to the GPS marked trap.
7. The Person A will place a flag at this spot.
8. Steps #5-7 will be repeated until the end metal stake is reached.

## Trap Placement

**Supplies Needed:** ~200 traps, ikea bags, GPS, 2+ people

### Safety Considerations:

- Throughout placement, ensure adequate water intake, sunscreen and shade from the sun.
  - If forecast exceeds 80°, Cal/OSHA requires access to at least one quart (4 cups) per person per hour for the entire shift, i.e., an 8 hour shift of strenuous work requires access to 2 gallons per person. Water must be fresh and suitably cool.
  - If possible limit strenuous tasks to morning or late afternoon hours. Rest breaks in shade must be provided at least 10 minutes every 2 hours (or more if needed). Effective means of communication, observation and monitoring for signs of heat illness are required at all times.
  - Signs of Heat Exhaustion Include:
    - Cool, moist skin with goose bumps when in the heat
    - Heavy sweating
    - Faintness
    - Dizziness
    - Fatigue
    - Weak, rapid pulse
    - Low blood pressure upon standing
    - Muscle cramps
    - Nausea
    - Headache

### Web Trap Placement:

1. Take the supplies needed to the circuit
2. Fill the IKEA bags with 24 consecutively numbered traps.
3. Start at central point of the web and walk down the "0" degree radii placing the first numbered trap at the first flag. The GPS maybe used to help find the flag.
4. Ensure the trap is closed (the opening is covered by the metal flap).
5. Continue to walk down the radii placing closed traps increasing in consecutive numbers (ie. start 1 --> end 12). 12 traps should be placed down 1 radii.
6. Walk to the end stake of the next radii heading clockwise, and place traps in the same manner walking towards the central point. The trap numbers should increase in consecutively increasing numbers (ie. end 24 --> start 13). At all times, the smallest number should be at the center & the largest on the outside of the circle.

7. Continue in this fashion until all radii have traps placed.
8. If a second person is available to help place, they can start at the 180 degree radii and place in the same manner as step #3-7. (See Figure 1)
9. Finally, four traps will be placed facing outwards at the base of central metal stake. (See Figure 1)
10. A total of 148 traps should be placed per web.

### **Transect Trap Placement:**

1. Take the supplies needed to the circuit
2. Fill the IKEA bags with 20 consecutively numbered traps.
3. Start at starting pole and placing the first numbered trap at the post.
4. Ensure the trap is closed (the opening is covered by the metal flap).
5. Continue to walk to the first flag. The GPS maybe used to help find the flags.
6. Place a closed trap with the next increasing number at the flag.
7. Continue to each flag placing a trap as described in steps #5-6 until the end pole is reached.
8. Place the last closed trap at the end pole.
9. The table below shows how many traps should be placed per transect and assigned numbers.

## GPS: Mark Placement & Tracks

**Recording Tracks:** some features maybe different depending on GPS model used.

Review video: <https://www.youtube.com/watch?v=w4OcmKN1G4I>

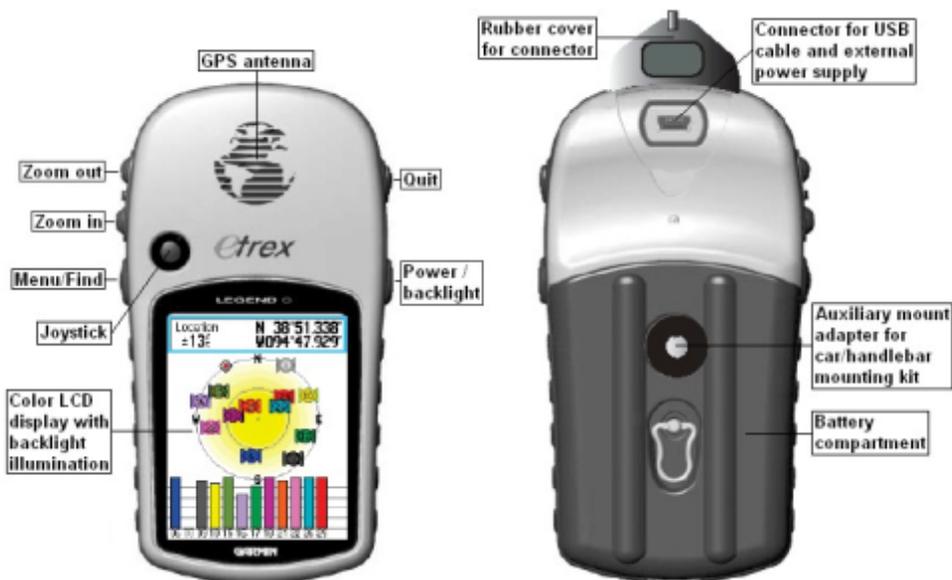


Figure 1: GPS location of buttons

Turn on the GPS

1. Hold the power Key (see Figure 1)
2. Make sure you have enough signal (some times you need to wait a couple of minutes)

Settings

1. Press the menu button twice: you should be in the main menu
2. Setup>tracks

3. Go to Track Log: make sure it's ON / record

4.

Press the quit button twice: you should be back in the main menu

View track

1. Select Track Manager>Current Track
2. Select View Map
3. Follow the dotted lines seen on the map to follow a track.
4. To zoom in/out - press the +/- buttons on the left side of the GPS.

Saving track at the end

1. Go to main menu
2. Select Track Manager>Current Track
3. Select Save Track
4. Name track as the circuit # : W# or T# (Web number of transect number) : Date MonthDayYear (053120)
5. Will ask if you want to clear data: select YES

Downloading tracks to computer

To prevent corrosion, thoroughly dry the USB port, the weather cap, and the surrounding area before connecting to a computer

1. Pull up the weather cap from the mini-USB port (#1)
2. Plug the small end of the USB cable into the mini-USB port (#2)
3. Plug the large end of the USB cable into a computer USB

In the computer:

1. Download GarminDNR: [ftp://ftp.dnr.state.mn.us/pub/gisftp/DNRGPS/dnrgps\\_6\\_1\\_0\\_6\\_for\\_ArcMap\\_10\\_2.zip](ftp://ftp.dnr.state.mn.us/pub/gisftp/DNRGPS/dnrgps_6_1_0_6_for_ArcMap_10_2.zip)
2. Extract zip files to folder
3. Go to folder
4. Click on the application link
5. On the app, go to Track>download track
6. Go to files> save to> file..
7. Name file, select Text (tab delimited) for format
8. Click Accept button

## **Marking Waypoints**

view: <https://www.youtube.com/watch?v=UcR9tLcFDCc>

1. Press and hold the joystick in to **mark** a **waypoint** at your current location OR hit the menu button twice, use the joystick to find the "mark button" and push the joystick in to select.
2. Select the "Name" field and use the trap number for this location as the name for the waypoint.
3. Use the on-screen arrows to scroll through to the done bottom.
4. Press Done to save.

Downloading to Computer:

To prevent corrosion, thoroughly dry the USB port, the weather cap, and the surrounding area before connecting to a computer

1. Pull up the weather cap from the mini-USB port (#1)
2. Plug the small end of the USB cable into the mini-USB port (#2)
3. Plug the large end of the USB cable into a computer USB

In the computer:

1. Download GarminDNR: [ftp://ftp.dnr.state.mn.us/pub/gisftp/DNRGPS/dnrgps\\_6\\_1\\_0\\_6\\_for\\_ArcMap\\_10\\_2.zip](ftp://ftp.dnr.state.mn.us/pub/gisftp/DNRGPS/dnrgps_6_1_0_6_for_ArcMap_10_2.zip)

2. Extract zip files to folder
3. Go to folder
4. Click on the application link
5. On the app, go to Waypoint>Waypoint properties and make sure there is a check mark next to "lat" "long" & "y\_proj" "x\_proj" to download both projected and unprojected coordinates. Hit "OK".
6. On the app, go to Waypoint>download Waypoint
7. Go to files> save to> file..
8. Name file, select Text (tab delimited) for format
9. Click Accept button

## Starting Trapping on A Circuit

### Safety Considerations:

- Throughout opening, ensure adequate water intake, sunscreen and shade from the sun.
  - If forecast exceeds 80°, Cal/OSHA requires access to at least one quart (4 cups) per person per hour for the entire shift, i.e., an 8 hour shift of strenuous work requires access to 2 gallons per person. Water must be fresh and suitably cool.
  - If possible limit strenuous tasks to morning or late afternoon hours. Rest breaks in shade must be provided at least 10 minutes every 2 hours (or more if needed). Effective means of communication, observation and monitoring for signs of heat illness are required at all times.
  - If temperature is below 45°, wear warm clothing (jackets, long-johns, etc as appropriate).
  - Per person, a set of clothing - pants, shirt, jacket - should be set aside and dedicated for the purpose of rodent trapping and kept at the ranch until trapping is finished.

## Step 1 - Traps Open

6-8 pm: Traps will be opened

- **PPE:** nitrile gloves, dedicated set of clothing (pants, shirt, jacket).
  - **Supplies:** traps, bait (peanut butter, oat, bacon), trap chart
1. A schedule of who conducting opening & closure of each trap line will be created before trapping.
  2. Before starting open, all trap openers will meet, confirm they know locations of traps that are to be checked & ensure that all 200 traps have a designated checker.
  3. Go to the first trap on web or transect.
  4. Open the trap by pushing the flap down securely until a click is heard.
  5. Place a ~1 cm ball of a peanut butter, oat & bacon bit mixture in the back of the trap.
- If overnight temperature is expected to be lower than 40 F, place hay/straw or egg crate (outside trap) bedding inside of the trap along with the bait.
4. Tap the side of the trap with a small amount of force and make sure the trap can close.
  5. If the trap is not easily closing, adjust the release mechanism by push down or back on the tab holding the "front panel" of the trap to the floor.
  6. Re-open the trap as described in step 2.
  7. Place the trap back in its spot
  8. Check off that this trap has been opened on the trap chart.
  9. Make sure that it is level and flat on the ground by pushing it back and forth into the soil or removing any rocks/twigs that are underneath it.
  10. Make sure that the trap has not closed in step #7. Re-open it if it has closed.
  11. Continue this process along the web and transects until all have been opened & baited.

## Step 2 - Check & Close Traps

~6 am: The opened circuits will be walked.

- **PPE:** nitrile gloves, dedicated field clothing, Dedicated set of coveralls for trap pick up to be reused. Trap chart.
  - **Supplies:** IKEA bags, ziplock bags
1. Walk the trap lines stopping at each trap. Dedicated field clothing & set of PPE (coveralls/gloves) should be worn during this period.
  2. If a trap is open:
    1. If the circuit is to remain open, take bait out and close the trap. Leave it there. If any ants are seen, remove the trap away from their path.
    2. If the circuit is to close (last day of trapping on this circuit), do as above but place the trap in the IKEA bag for empty traps.
  3. If the trap is closed
    1. Pick the the trap and place it as level as possible.
    2. Feel for a weight change or scurrying of an animal. If this is not felt, the trap can be carefully cracked opened in a vertical position to check. If no animal is seen, follow step #2
    3. If a weight change/scurrying is felt, place the trap - unopened - into a ziplock bag and then in the IKEA bag for closed traps.
  4. Check off that this trap has been closed on the trap chart and it's status.
  5. When the closed trap IKEA bag is filled, take it back to the processing area.
  6. Continue this process until all the traps have been checked.

## Step 3 - Rodent Processing & Sampling

~8-10 am: Rodents will be sampled & released.

- **PPE:** nitrile gloves, N95 face masks, face shield, coverall, dedicated field clothes, closed toed shoes. dedicated set of coveralls for cleaning to be reused.
  - **Supplies:** tarps, folding plastic table, sterile swabs, cryovials with and without aliquoted 0.5 ml trizol, isoflurane, cotton balls, 50 ml conical tube, virkon 1% spray bottles, dissection kits, camera, field sheets, ruler, caliper, grapes, scale, ziplock bags, ice chest, transfer pipette, well-fitted leather gloves, pencils, benchtop rack, trash bags, paper towels, pre-printed labels - see SOP for details, ear tags and tag pliers
- After collection, all checkers will turn their checking sheets to Ariel. And all the traps will be ensured to have been checked.
  - Set up at staging area
    1. Locate an area away from sun & wind/rain
    2. Open plastic table in a location where it is stable.
    3. Establish a one directional flow of sample processing of "dirty" --> "clean" --- PHOTO
    4. Place tarp on ground next to plastic table on the dirty side to place traps on.
    5. Identify locations on the tarp for processed vs unprocessed traps (this should be pre-marked on the tarp). --- PHOTO
    6. Set up the table with a "dirty" and "clean" section as halved by the fold in the table. Set up enough tubes and ziplock backs for 5 traps (or less if there is <5 closed traps). Place the following on the appropriate sides: --- PHOTO
      1. Dirty: ziplock bags, "isoflurane face mask" (see below), calipers, ruler, scale, grapes (or high energy/water treat).
        1. Isoflurane Face mask - place 1-2 drops of isoflurane on a cotton ball and put the cotton ball into the conical part of the 50 ml conical tube. Keep the tube open, upright (conical portion in the air) on the table. --- PHOTO
      2. Clean: cotton swabs (2 per rodent), 2 cryovials per trap filled with 0.5 ml of trizol in tube rack.

7. Set up off the table but nearby on clean side - ice chest with storage 81 cryovial tube storage, field sheets, virkon 1% spray bottles. --  
- PHOTO
8. Identify the rodent handler and "clean" sampler processor and preform a dry run through of the process to make sure everything is in place.
- Donning PPE: this video shows the process with an apron, boot covers and 2 sets of gloves which we will not be using  
- <https://www.youtube.com/watch?v=Ca66dpjPWZc>
  1. Wearing dedicated field clothes, tie back long hair, secure eye glasses, remove personal items.
  2. Put a coverall. Ensure coverall is large enough to allow unrestricted freedom of movement.
  3. Put on a pair of gloves. Ensure the cuffs are pulled over the sleeves of the coverall.
  4. Put on a N95 (model that you are fitted for) and make sure it is fitted well with no leaks.
  5. Put on a full face shield that covers eyes and mouth.
  6. Verify with partner that full range of motion at arms & waist are present without allowing skin to show. --- PHOTO
- Start Processing:
  1. Stack the unprocessed rodent traps on the appropriate location on the tarp.
  2. Have the rodent handler pick up the first trap to be processed
  3. Weigh the trap with the rodent inside and recorder should mark the total weight. --- PHOTO
  4. Remove rodent from trap - handler should wear nitrile and leather gloves
    1. Place a ziplock bag tightly around the door opening. --- PHOTO
    2. Open door through ziplock and allow trapped animal to fall into bag.
    3. Close ziplock bag
    4. The handler should guide the rodent into a corner where it can be scruffed (loose skin around nape of neck held tightly between thumb and index finger) through the bag.
    5. After it is securely scruffed, open the bag and use the other hand to scruff the rodent.
    6. When it is securely held in the second hand, the rodent can be removed from the bag.
  5. Conduct the rest of the processing in the following order
    1. Throughout this process - if the animal becomes too stressed (fighting excessively, panting) - the "isoflurane face mask" (as described above) maybe used by the handler.
      1. Using the hand that is free, the handler should pick the face mask and put the open end over the rodent's head. The deeper the head is placed, the deeper it's sedation will be. --- PHOTO
        1. If placed deeply into the mask, the rodent should be allowed to taken 2-3 breaths and then placed more shallowly in the mask.
        2. Keep the rodent's head in the mask until it's breathing slows (maintain >30 breaths per minute), muscles relax and struggling ceases. Do NOT allow breathing to slow below 30 breathing per minute.
        3. Remove the mask and place it back on the table.
        4. This process may be repeated as needed through the procedure.
- Weigh the trap **with the bait and replace any bait that fell into ziplock** - minus this weight from the total weight to calculate - record the final number as the rodent's weight.
- Examine the rodent for gender, age, and examine for any injuries as described on the sampling sheet.
- Take measurements as described on the sampling sheet using digital calipers or ruler as indicated - recorder should note measurements --- PHOTO
- Take photos of the animal as described on sampling sheets
- Brush the rodent with the flea combs on the back, base of tail and underbelly. Remove the hair from the comb and place any ectoparasites found into the 70% ethanol cryovials.
- Swabs:
  1. The sampler should have the appropriately labelled cryovials for oral and rectal swabs identified and available --- PHOTO
    1. Labels should be pre-printed with the following information: Unique ID (in format CRV - XXXX - R - sample source (oral/rectal)), medium, season collected. --- PHOTO

2. The sampler should sterily remove the swab from the packaging. The handler should restrain the body and head to allow easy oral swab.
  3. The sampler should take an oral swab swiping the swab tip along both cheeks. The swab should have some moisture present from saliva. --- PHOTO
  4. The swab should be placed directly into the cryovial with 0.5 ml of trizol which is labelled for oral sample.
  5. Break off or cut the swab handle to fit in the cryovial and replace the cap
  6. To take the rectal swab, repeat step 2. \*\*\*COVID-19 Alterations\*\*\* Instead of a rectal swab, feces will be taken and placed into the cryovial. If the rodent defecates while handling, use these feces. Otherwise, uses feces from the trap.
  7. Then, the sampler should take a rectal swab by inserting the swab tip until gone into the rectum and spin the handle gently in a circle once. The swab should be gently removed and should be noticeably moist. --- PHOTO
  8. Repeat step 4 & 5 in cryovials for rectal sample.
- The sampler should then place an ear tag on the right ear.
    - The tag that corresponds with the individual ID number on the sampling sheets should be placed into ear tag applicators with the numbering facing the applicator. --- PHOTO
    - Then, using the applicator + tag, take a large bite along the upper edge of the right ear. --- PHOTO
    - If the right ear is torn, place the tag on the left ear.
  - Confirm that all sections of the sampling sheet are filled out with the recorder, the ear tag is placed, and both swabs are taken with sampler.
  - If isoflurane face mask was used, the rodent should be kept in hand until it breathing more deeply and rapidly and beginning to blink. After multiple blinks, it should be quickly placed into the trap before it fully recovers.
  - Place a grape into the trap
  - Place the trap upright, while scruffing the rodent place it through the trap opening and let go after clearing the opening of the trap so that the rodent does not grab the sides. --- PHOTO
  - Release the rodent and quickly close the trap before it jumps out.
6. Place the processed rodent that is in the trap on portion of the tarp for processed traps.
  7. Repeat processing steps 1-6 until five traps are done or 1 hour has passed (which ever comes first).
- At that time, the processed traps should be taken back to their locations to release the rodents (see step 8). Then continue 1-6 until all traps have been processed. This can be done by runners (wearing PPE as described in checking/closing traps) if available.
    - As runners are releasing rodents, rodent handlers & samplers can set up for another 5 traps to sample.
    - The outside of the filled cryovials should be sprayed with 1% virkon solution and wiped clean. They can then be placed in the ice chest in their numerically arranged box.
    - When all sampling is finished, the cryovial box should be placed into the liquid nitrogen shipper while wearing gloves, long pants, closed toed shoes & protective eye wear.
      - Open the lid and remove the styrofoam lid.
      - Remove the vertical rack wearing gloves from the shipper.
      - Lift out the safety pole & place the box into the open racks.
      - Replace the safety pole and place back into the shipper.
      - Replace the styrofoam lid & seal the shipper lid. Make sure that the shipper is fully and properly sealed.
8. When processing is finished, take the traps back to their locations to release the rodent.
    1. **Wear dedicated PPE for trap closing/opening procedures.**
    2. At the site of capture, place the trap flat on the ground.
    3. Open the door and allow the rodent to run out.
    4. If the rodent does not do so, tapping or shaking of the sides can be preformed.
    5. If it still does not leave the trap, the trap maybe turned vertically to encourage leaving the trap.
    6. The trap should be returned to the processing site for cleaning in step 9.
  9. Disinfection (adapted from CDC guidelines for doffing) - this video shows the process with an apron, boot covers and 2 sets of gloves which we will not be using - <https://www.youtube.com/watch?v=bZA424c5sWQ>

1. An assistant should spray down the gloves of the rodent handler and sampler. The assistant can then spray down table and equipment.
2. Remove and discard gloves into trash bag
3. A second pair of clean gloves should be put on.
4. Remove the full face shield by tilting the head slightly forward, grasping the rear strap and pulling it gently over the head and allowing the face shield to fall forward, then discard. Care must be taken not to touch the face when removing the face shield. Avoid touching the front surface of the face shield. Place on to table. If an assistant is not available, the handler/samplers can now spray down equipment/table. Spray down face mask (inside and outside).
5. To remove coverall, tilt head back to reach zipper or fasteners. Unzip or unfasten coverall completely before rolling down and turning inside out. Avoid contact of scrubs with outer surface of coverall during removal, touching only the inside of the coverall. Place directly in trash bag.
6. Spray down gloves
7. Remove the N95 respirator by tilting the head slightly forward, grasping first the bottom tie or elastic strap, then the top tie or elastic strap, and remove without touching the front of the N95 respirator. Discard N95 respirator.
8. Remove the gloves and discard.
9. The handler & sampler should put on a coverall designated for cleaning (as described above) and a new set of gloves.
10. They should then wipe down all equipment after they have been sprayed down for 5 minutes. Ensure this includes the IKEA bags used in trap pick up.
11. The equipment can be replaced into the plastic storage bin labelled processing supplies. The trap should be stored or taken back to it's site depending on plans for trapping that evening.
12. Repeat steps 1, 5, & 8.
13. Wash hands/clean with sanitizer.
14. All PPE to be disposed of should be in trash bags which will be transported to UCD. There it will be placed into a biohazard bag.

#### Step 4 - Disinfection at End of Cycle

##### To close the circuit:

- Remove all the traps & flags marking the webs and transects. Store the flags in the plastic bins.
- Marked metal stakes will remain in place.
- This maybe done when trapping is finished on the circuit or at the end of the trapping cycle.

Don PPE - dedicated cleaning coveralls, gloves and face mask

Supplies: tarp, traps, plastic storage bins, water, soap, brushes, paper towels, 1% virkon spray bottles, and trash bags.

- At the end of all trapping for the cycle. All traps will be decontaminated in the following manner wearing the above PPE:
  - Two of the plastic storage buckets will be 2/3 filled with water. Mix dish soap into one of the buckets until soapy.
  - Take a trap and submerge in the soapy water.
  - Scrub with brushes until all organic material is gone.
  - Dip into plain water to remove soap.
  - Spray with 1% virkon solution. It will be set on to the tarp for a 10 minutes.
  - Wipe the trap down with paper towels
  - Dip into plain water and wipe down until dry.
  - Place into long-term storage buckets in the barn.
  - Soapy water & clean water will be emptied into the designated travel vat which will be taken to XXXX for disposal.
  - The plastic bins should be sprayed down with clean water and left in the sun to dry.
  - Paper towels should be placed into a trash bag and taken to UCD to be placed into a biohazard bag.

## Attachments

No file attachments

*This procedure was originally created by **Ariel Loredo***

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