

Turtle Mountains (North Dakota) Marten Research Project

There is interest in opening a responsible harvest season for marten in the Turtle Mountains. In May 2022, the North Dakota Game and Fish Department contracted with Michigan State University to assess the marten population in the Turtle Mountains. The primary objective is to get an estimate of density and then use that to extrapolate abundance.

The research team is using a spatially explicit mark recapture method with noninvasive DNA sampling as the marking component. This uses baited PVC cubby sets on trees with sticky tape inside to collect a hair sample. Individuals are “marked” by their genetics, determined from the hair samples. Trail cameras are used to verify marten visits to justify sending samples for DNA testing. The same sample cells (set locations) are used year-to-year to assess survival.

Some quick takeaways include:

- Field season 1 (July – October 2022): 86 sampling locations, 351 sampling events. 79 samples processed.
- Field season 2 (August – November 2023): Added 15 sites on tribal land. 110 locations, 444 sampling events, 46 hair samples processed. There were many more visits than sampling events (i.e. marten visited the baited set but did not enter to possibly provide a hair sample).
- A redesigned cubby will be used for the 2024 (September – November 2024) season (that information follows).
- Researchers are confident that we will be able to use trail camera data to get an abundance estimate rather than DNA if we don’t get enough hair samples.
- Fishers have expanded throughout the Turtle Mountains. No fisher were detected during research completed in 2008-2009.

For the 2024 field season (photos and illustrations courtesy of Dr. Jon Pauli, University of Wisconsin and Rick Tischaeyer).

The North Dakota Fur Hunters and Trappers Association (NDFHTA) constructed 50 hair snare cubbies for the marten project in the Turtle Mountains and provided the research team with support equipment and trailing lure. Recognizing the importance of this final season, association members volunteered \$1500.00 to build and provide this equipment. The expenses eventually totaled \$1412.98. Here is the inventory of equipment, vendor, and costs:

10 - 4” x 10’ IPS Sch 40 PVC Pipe Menards	\$165.83
100 - 2.5” Stainless Steel Hinges Amazon.com	\$77.55
600 – Tube Brush, Brass 215BHD Prosperity Tool Company	\$750.00
600 - Toothbrush Holders Amazon.com	\$159.56
8 - #10 Can Grape Jelly Webstaurantstore.com	\$124.42

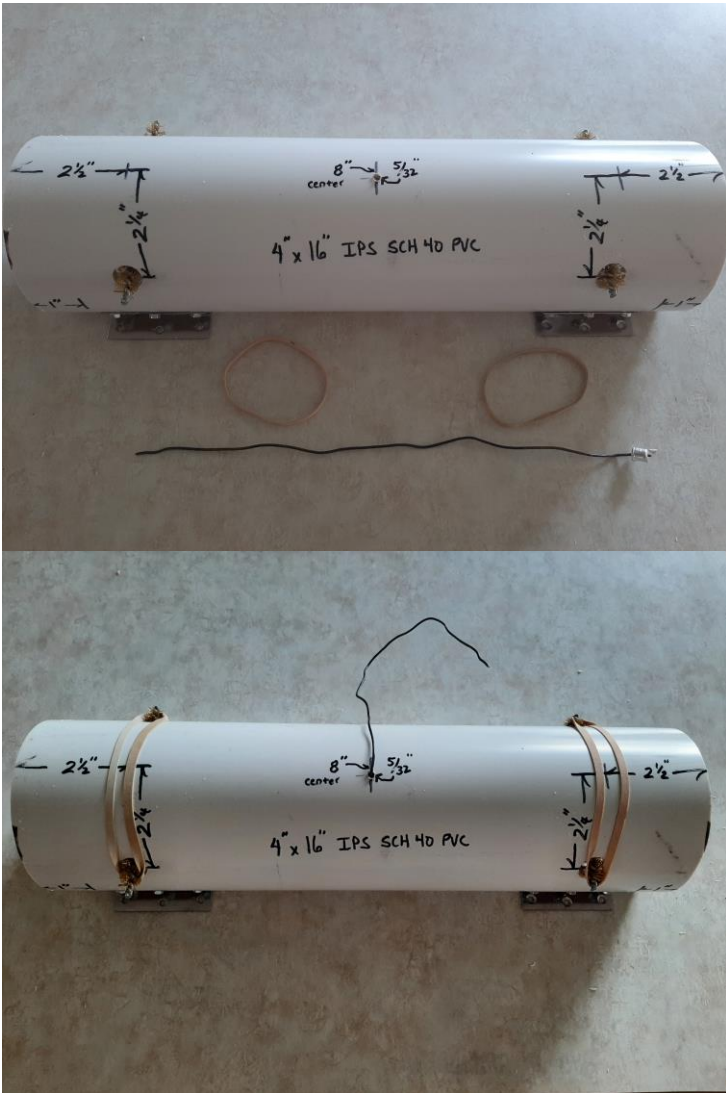
24 – Sugarless Grape Kool Aid Walmart	\$8.64
5 - #2 Screw Gun Driver Bits Menards	\$5.00
2 – 1LB. #64 Rubber Bands Office Depot	\$19.33
1 - 2.5" x #2 Square Head Screws Menards	\$17.18
1 – 3" x #2 Square Head Screws Menards	\$17.18
Can opener, steel wire whisk, large spoon, 600 Ziplock bags, funnel, potato masher, masking tape, and 6 Sharpies Walmart	\$68.29
16 gage wire, ferrules, screws, and glycerin Rick's Supply & Service	Donation
Volunteer Labor	119 hours
Volunteer Mileage	650 miles

In short, each cubby is mounted to a horizontal or angled log, beaver meat is spiked in the center, and grape jelly is used as a trailing lure on the log extending from both ends of the cubby. Tim Caven's (Minnesota Trapline) Gusto is used in the area as a call lure. A trail camera is positioned to photograph anything that interacts with the cubby. Marten is the target species, but photographs reveal this set-up is attractive to many different animals. A brass tube brush is mounted near each end of the cubby to retrieve hair samples from a marten as it enters or exists the cubby.

Reports from the fall 2024 (September – November 2024) study period showed that the cubby's worked and many hair samples were obtained. Hair samples will help determine individual animals through genetic testing. This is going to take a little time, and we hope to get a presentation on the interim results at our rendezvous in June. Providing this equipment to the research team was extremely beneficial and will greatly add to the information needed to make future decisions. Association members can be proud of their decision to assist the research team with this project.

Information provided with the equipment

A. Cubby



B. Cubby Markings

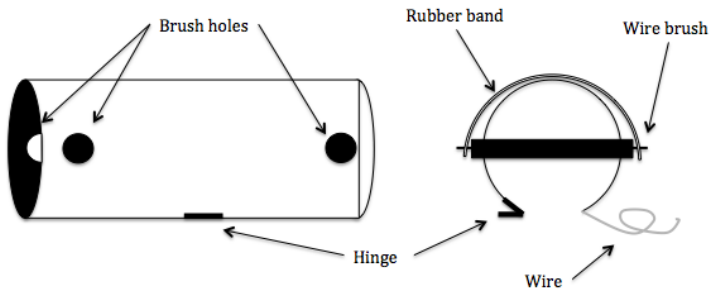
The exterior of each cubby has printed contact information taped to it; a cubby number, and the ends are marked "A" and "B". Use the rule that end "A" is higher than end "B" when the cubby is placed. This is the rule with placing every cubby.

C. Deploying the Cubby

Equipment bag or bucket: cubby, 2.5" and 3" screws, cordless screw gun with driver bit, hand axe, brush loppers, bait, squeeze bottle with grape jelly, flagging tape, sharpie, gusto call lure, GPS, brushes, rubber bands, trail camera with SD cards, gloves, and logbook.

1. Place cubby as a running log set in marten habitat. Logs should be equal to or larger in diameter than the cubby. The log can be anywhere from horizontal to almost vertical. Logs laid at a 45-degree angle seem to work best.

2. Place cubby on log with open bottom towards tree. Use the hand axe to prepare the surface of the log. Remove punky or uneven bark to provide an even, solid surface. Use two or more 2.5" screws to secure the side hinges on the cubby to the log. This will allow the cubby to swing open and closed like a door. Place a 3" screw on the opposite side from hinge so the wire can be wrapped around it to tighten the cubby to the log. Flip the cubby open and place another 3" screw in the center of the cubby to be used as a bait holder.



3. Put clean wire brushes through the holes in the tube and secure with rubber bands. The brushes may be bent slightly to make sure the brush contacts the marten as it enters, but not too much as to discourage entry. Place bait on

the bait holder between the brushes, add a stream of jam on the log from the bait and extend outwards about 12" from each end. Secure the cubby to the log by wrapping the attached wire around the bare screw. Apply the call lure up and away from the cubby, preferably in a northwest direction away from the cubby. Call lure is used to get the target species in the general area. Do not apply the call lure on or next to the cubby.

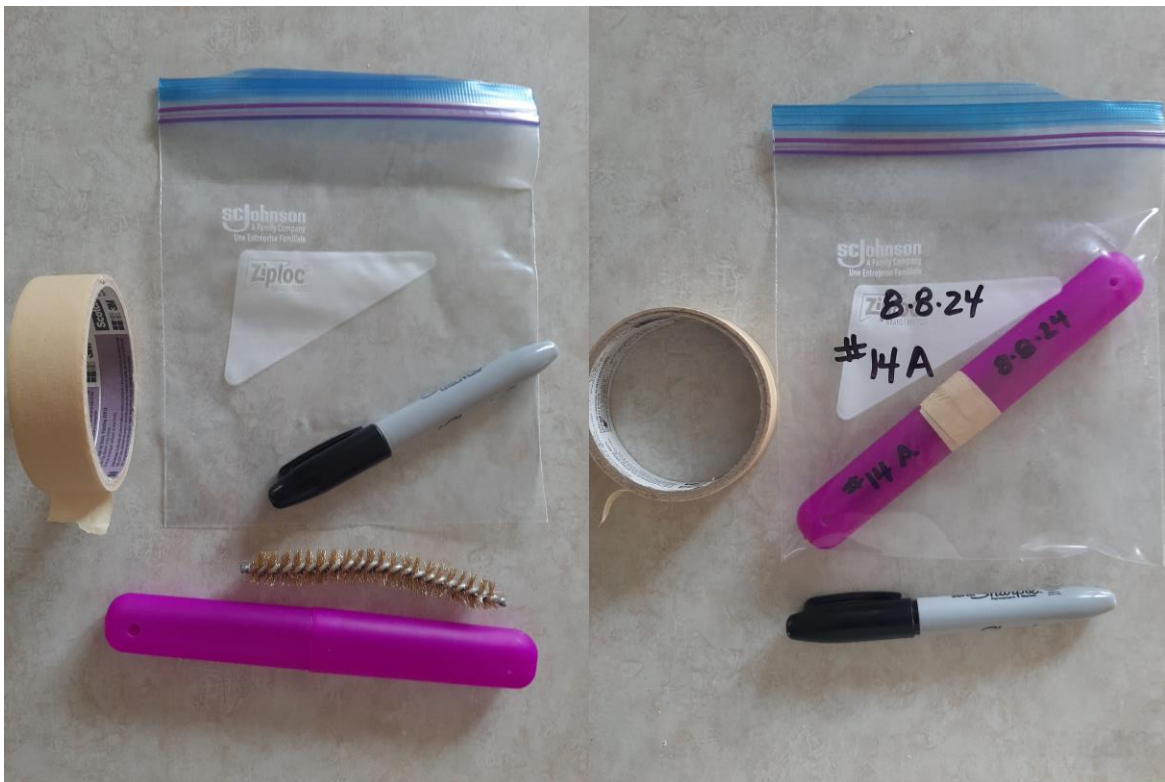
4. Clear area for the trail camera. Position and secure the camera for usable photos. Mark location in GPS, flag site, and make any notes needed in the logbook.



D. Checking the Cubby

Equipment bag or bucket: all cubby deployment items plus toothbrush holders, masking tape, Ziploc bags, extra SD cards and card reader.

1. Check for use, sign, or tracks, and note presence of martens at or near each location in the notebook.
2. Extract brush and inspect for hair. If any hair is present, place the brush in a toothbrush holder, mark toothbrush holder with date, cubby number, and brush location in cubby (A or B). Use a piece of tape to secure the halves of the toothbrush holder together. Place the marked toothbrush holder in a Ziplock bag, seal, and mark the exterior of the bag with the same information. One brush in one toothbrush holder in one bag.



3. Replace brush(es), refresh with new bait (if needed), call lure, and grape jelly. Secure the cubby to the log with the attached wire.
4. Store Ziplock bags containing toothbrush holders with brushes in a freezer until formal examination.

E. Making Grape Jelly as a “Trailing Lure”:

Equipment: can opener, spoon, funnel, whisk, squeeze bottles, a #10 can of grape jelly, grape flavored Kool-Aid, empty #10 can, and glycerin.

1. Open a #10 can of grape jelly with the can opener and spoon out half the contents into the empty #10 can. Stir the contents of both cans thoroughly with a spoon and whisk to break up the solid form of jelly. Mix in 1.5 packages of grape flavored Kool Aid into each container while doing so. You will

want the consistency of the jelly to be thick but still be able to flow through the funnel and fill the squeeze bottles. To achieve that consistency, you may add small amounts of glycerin. Remember – as thick as possible without being runny.

2. Fill the squeeze bottles with jelly using the funnel if needed. Refrigerate when not in use.
3. Use the plastic can covers on the open but unused #10 cans of grape jelly and refrigerate.

F. Preparing the Tube Brushes (this task has been completed)

Equipment: Fencing plier, brushes, and sealable plastic bags.

1. Remove the brushes from the bags provided by the vendor.
2. Using the fencing plier, cut the stem from the brush.
3. Place the brushes in a sealable bag until they are ready to use.
4. Stack bags on the brush end in a box so as not to crush the brass brush filaments. Laying one on top of another will cause the brush bristles to become deformed or crushed.



Photos of Working Cubby's

Courtesy of Dr. Steven Gray, Michigan State University and Rick Tischaefer



A cubby baited with beaver meat and trailed with grape jelly.



A bull elk visits a cubby at night.



A fisher visits a cubby.



A marten visits cubby set locations.



A marten visits a cubby.



A marten enters a cubby at night.



A marten enters a cubby.



A cow moose visits a cubby.



A technician preparing to examine a cubby.



A technician examines the cubby brushes for animal hair.



A technician enters data and cubby information on a tablet for record keeping.