Testing the Efficacy of Two Methods for Snaring Hair from Mesocarnivores

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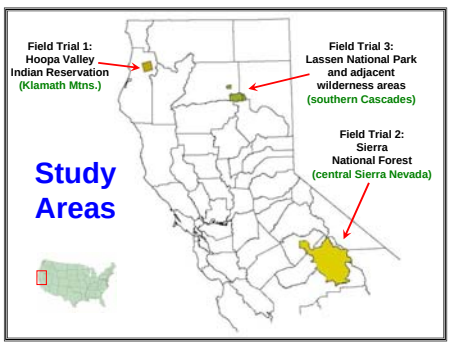
Objectives

- Develop and refine hair-snagging methods for mesocarnivores, especially for fishers (*Martes pennanti*) and American martens (*M. americana*)
- Test new designs in the field
- Compare to widely-used track plate method
- Independently identify species: "double sampling"
- Evaluate for genetic analysis: species, sex, and individual
- Evaluate for efficacy and ease of use



Methods

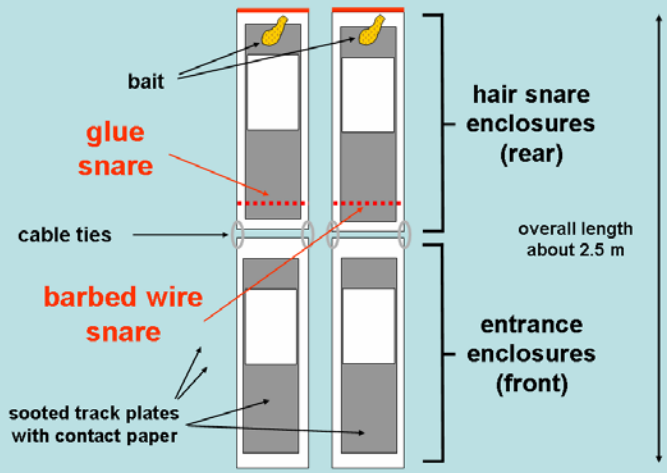
- Snare enclosures were identical to light-weight Coroplast™ track plate boxes
- Paired enclosures were used for each experimental station
- Barbed-wire snare used wire with a 7.6-cm barb spacing and 4 points per barb (Gaucho™ brand – see image at upper left of poster)
- Glue snare used strips cut from commercially-available glue boards (Catchmaster® brand – see image at upper right of poster)
- Track plates were used in entrance and snare enclosures to determine snare **permeability*** and to verify species identity
- Snare **effectiveness*** for each type was determined by presence of tracks and hair
- Tracks were identified independently of hair identification
- Hair sample DNA was analyzed for species, and, in some cases, individual ID

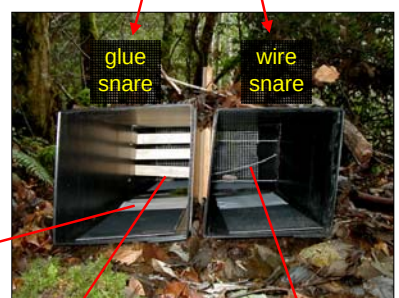
***Permeability**: the proportion of times that the tracks of a species appeared on the track plate in the entrance enclosure and *also* appeared on the track plate in the snare enclosure.

***Effectiveness**: the proportion of times that the tracks of a species were present in the snare enclosure and there was *also* detectable hair on the snare in that enclosure.

Experimental design

(backs of enclosures are sealed)





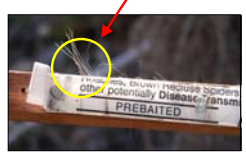
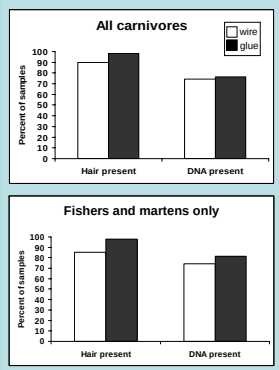


Figure 1



Results

- 5 species of carnivores were detected by tracks:
  - Fisher
  - American marten
  - Gray fox (*Urocyon cinereoargenteus*)
  - Ringtail (*Bassariscus astutus*)
  - Western spotted skunk (*Spilogale gracilis*)
- 5 species of carnivores were detected by DNA:
  - Fisher
  - American marten
  - Gray fox
  - Ringtail
  - Black bear (*Ursus americanus*)
- 16% of wire enclosures with tracks did not collect hair; 2% of glue enclosures with tracks did not collect hair
- 96 hair samples were collected: 41 (43%) from wire enclosures and 55 (57%) from glue enclosures
- 26% of hair samples (n=25) had insufficient hair and/or DNA to confirm species ID via genetic methods
- Percent of samples that contained sufficient DNA to confirm species ID via genetic methods:

Species	Wire	Glue
Fisher	58%	75%
American marten	7%	72%
Gray fox	53%	0
Ringtail	0	33%
Western spotted skunk	0	0

- Wire snares were more permeable than glue snares
- Glue snares were more effective at capturing hair than wire snares (Figure 1)
- Both types of snares are safe, easy to deploy, and inexpensive

Conclusions

- Effectiveness of snares differed between and within species
- Both wire and glue snares were effective at capturing hair from fishers, but our results favor the use of glue snares
- Wire snares, as deployed here, were ineffective at capturing hair from martens, probably because of the spacing between wires
- A single device – wire or glue – may not be capable of capturing hair from species of varying body sizes
- Care in handling hair samples is important to provide the highest rate of DNA amplification
- Simultaneous use of track plates in the enclosure is recommended
- Future snare designs should focus on developing a single-visit device

Acknowledgements

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