

First observation of a Least Weasel (*Mustela nivalis*) in North America utilizing the Mostela System



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Introduction

The Mostela System is a novel tool designed for detecting weasels through non-invasive camera trapping. We utilized this new tool with the goal of recording Least Weasels (*Mustela nivalis*; Fig. 1) in Montgomery County, VA, in the system's first North American field test. This species of weasel is extremely elusive, with only 11 records for the county before our project.



Figure 1. The Mostela System deployed in the field.

- Constructed 8 Mostelas with cameras
- Deployed boxes at 18 locations (Fig. 2)
- Logged 519 trap nights
- Checked boxes every 2 weeks



Figure 2. Survey locations on the main Virginia Tech campus.



Figure 3. The first record of a Least Weasel (*Mustela nivalis*) in Montgomery County, VA in over 30 years.

- First record of Least Weasel in Montgomery County in over 30 years (Fig. 3)
- Detection of Long-tailed Weasel, marking two Mustelid species detected in the first use of Mostela system in North America (Fig. 4)
- 10 additional mammal species detected, along with one bird species (Table 1)

Table 1. Total observations from Mostela boxes.

Species	Total Logged Observations	Number of Trap Nights with a Detection
Least Weasel	1	1
Long-tailed Weasel	6	3
<i>Peromyscus spp.</i>	1086	386
Eastern Cottontail	736	148
Eastern Chipmunk	184	53
Short-tailed Shrew	39	17
Meadow Vole	91	11
Eastern Grey Squirrel	76	10
Fox Squirrel	8	5
Striped Skunk	15	2
Groundhog	9	1
Southern Flying Squirrel	1	1
Carolina Wren	14	12

- Despite hundreds of trap nights, we have only recorded one Least Weasel, a testament to their elusiveness in North America.
- This contrasts with studies in Europe, where one research team was able to detect 28 weasels at 3 sites over 4 months (Croose and Carter 2019).
- As a major byproduct of our work, the Mostela System has proven useful in detecting a dozen species with relative ease.
- We were able to passively track activity patterns of shrews, chipmunks, eastern cottontails, and mice.
- Given the success of our testing and the diversity in detections, we feel the Mostela System could be effectively utilized to study a variety of species.



Figure 4. Long-tailed Weasel (*Mustela frenata*) detected near Mountain Lake Biological Station, the only station outside of Montgomery County, VA.

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References

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- Linzey, D.W., and M.K. Hamed. 2016. Distribution of the Least Weasel (*Mustela nivalis*) in the Southeastern United States, *Southeastern Naturalist* 15: 243-58.