MONITORING THE RURAL COYOTE PACK OF PELHAM

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Executive Summary

The rural coyote pack of Pelham are long time residents of the area. They are feared by people who live in and around town because they are presented as a danger, but they are actually the apex predator of the town, and they do what they can to help to maintain the balance of the local ecosystem. Instead of being feared, they should be respected. There have been instances in the past where they have bitten people, but that was most likely due to curiosity or fear of humans.

To understand them better, this report examines the history of the eastern coyote, as well as the pack's history within the town, how they live, why they live in a den, and where they go to do this every year.

When the western coyote migrated to the east, there weren't enough mates available, so they mated with the eastern wolf and domesticated dog, who are their cousin species. Over time, they have evolved to have a slightly different look from the western coyote. The pack that this report focuses on seem to have characteristics of both the eastern and western coyotes. It is unknown as to why this is.

To find where they might be denning, topographic maps were utilized along with photographic evidence of their movements that was already available. With these, the Short Hills Nature Park was selected as the more likely area where they would go to den as it doesn't see a lot of foot traffic, there are large hills all over the park, and a tributary for the Twelve Mile Creek goes through it. Agape Valley was also a possibility, but that seemed less likely since it's a business with a lot of employees who tap the maple trees on the property for the sap, maintain an apiary, run a day camp during the summer, plus an assortment of other events throughout the rest of the year.

Contact was made with the Hamilton Naturalist's Club, who allowed for access to the park, and it was then scouted in late February/early March. A few sites were selected, and the cameras were setup, but one ended up being on the Agape Valley property. Once this was realized, contact was made with Tim Hartwick, who manages the property for the Niagara Shorthills Christian Ministries. He said the camera is fine and offered an invitation to come see another possible den site further into the property. This was accepted and a camera was setup on the fourth site as well.

None of the cameras captured any denning behaviour happening, but there were a couple instances of predation found. At this point, the theory that they're denning in or around the park is not yet proven as the results are inconclusive but given that the coyotes are regularly seen in the area, topography is right for their needs, and food in the area is plentiful, they are most likely denning close by. If there was a more comprehensive search of the area and the scope was expanded a bit, their den will probably be found.

Acknowledgements

As this was a large project that I did by myself I couldn't have done it without a lot of help. A special thanks to the following:

Martin Smith for assigning me this project and offering advice all throughout.

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Niagara College for providing three cameras, SD cards, locks, lockboxes, and batteries.

And the wildlife of North Pelham for being so photogenic.

Table of Contents

1.0 Introduction

1.1 Purpose

The purpose of this monitoring report is to discover if the rural coyote pack of Pelham den in the Short Hills Nature Park or the nearby Agape Valley property during their denning season of March to late April/early May (Environment and Climate Change Canada & Canadian Wildlife Federation, n.d.) when they are having new pups to add to their pack.

1.2 Background

When the settlers moved west during the 19th century, they deforested a lot of land for agriculture. That fragmented a lot of forests, which hurt the populations of various species, like the brown bear, puma, and the wolf (Nelson, 2013). These are also predators of the coyote, so this allowed for the western coyote (*Canis latrans)* to move east (Nelson, 2013). Upon arriving in the east, the species didn't have enough of both sexes to breed, so some mated with a couple of their cousin species, the eastern wolf (*Canis lycaons*) and even the domesticated dog (*Canis lupus familiaris*) (Kays, 2015). It is because of this that they have a couple different species names, which are *Canis latrans*, *Canis latrans* var. and *Canis latrans x Canis lycaon*. There have even been recommendations for giving them a species name of their own, like *Canis oriens* (Way, 2016), because they have a different body shape. As far as their common name is concerned, they're called the eastern coyote, coywolf or coydog (Kays, 2015).

The western coyote is a very lean species (20 – 30 lbs.) with long legs, large paws, slender tail, and light brown fur, while the eastern coyote has a larger body (up to 50 lbs.), shorter legs, smaller paws, bushy tail, and fur that ranges from light brown to black (RocWildLife, n.d.). *Figure 1* is a comparative picture of the two. The pack that this report is focusing on seems to have characteristics of both, as can be seen in *Figure 2*.

Figure 1: Comparison between the Eastern and Western Coyote (Rocwildlife, n.d.)

Figure 2: Solo coyote walking in front of the Backyard camera.

The eastern coyote operates at all times of times of the day or night if they're rural, but if they're urban, they tend to be more nocturnal to avoid humans (Nelson, 2013). Another noticeable difference between urban and rural coyotes are their choices of denning locations. While urban coyotes tend to go with sites near parking lots, road, or buildings (Urban Coyote Research Project, n.d.), rural coyotes choose bases of hollowed out trees or a crevice in a rock wall. There's usually a dug-out hole in the ground though and it tends to be on a slope near a stream or creek (Environment and Climate Change Canada & Canadian Wildlife Federation, n.d.). There is also some evidence that they will opt for a hollow log, if needed (Sullivan, n.d.). It would also have to be located within their territory, which is anywhere from 5 to 28 km^2 (Mastro, Morin, Gese, 2019).

Additionally, they only den when it is time to give birth to new pups and for the first few weeks to take care of them. This period of time is March – May (Wildlife in Ontario, n.d.). The rest of they time, they will sleep out in the open (Urban Coyote Research Project, n.d.).

Within the Town of Pelham, it is possible that there are multiple packs as some individuals have been seen far into town in the past and that wouldn't fit with the behavior of this specific pack (Town of Pelham, 2018). They are also actually feared by some residents of the town, which has been shown in couple articles in the local newspaper last year (Rickers, 2021a; Rickers, 2021b). This is because they have bit local people in the past (Rickers, 2021b), as well as throughout Canada and the US (Urban Coyote Research Project, n.d.a). Coyotes are also known to attack dogs and cats (Urban Coyote Research Project, n.d.b). Some local groups have been trying to push back against the narrative that they should be hated and feared lately though (Lincoln Pelham Public Library, 2022).

2.0 Methods & Materials

The pack is regularly heard (and seen on trail cameras) in and around North Pelham, so that seemed like a good general location to start. To try to find their den, their denning behaviors were first researched to understand what their needs are for a good location. Based on their preference for hilly areas near creeks, a topographic map of North Pelham (*Figure 3*) was used to pick some possible areas. Highlighted in blue is the Short Hills Nature Park, which is owned by the Hamilton

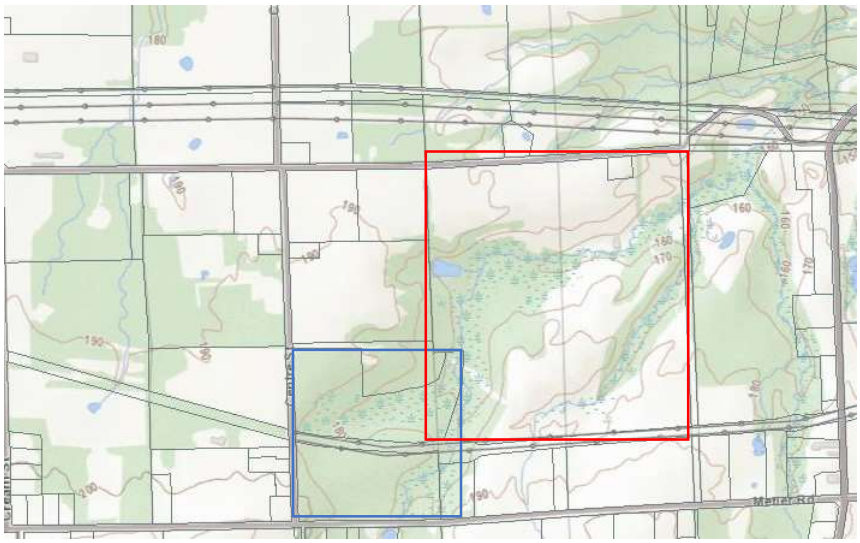

Figure 3: Topographic map of the subject area (Queen's Printer For Ontario, 2019)

Naturalist's Club. It has quite a few hills and the Twelve Mile Creek runs through it. Also, it doesn't get much traffic from people. The other location in red is the Agape Valley. This is a larger area with more hills and the creek, but it is also a business with a lot of employees on site regularly. They tap numerous maple trees for syrup and run an apiary for honey. During the summer, it is also a children's day camp, so people are usually on the property, and there are other events that happen throughout the rest of the year. Based on this, it seemed more likely that they would be in the Short Hills Nature Park. The Hamilton Naturalist's Club was then contacted, and access was granted to setup trail cameras in late February and take them down in late March. Utilizing a camera that have been setup in areas within North Pelham that they frequent for years, pictures were already starting to be accumulated in early February. Three more were ordered from Niagara College to be picked up on February 25th and were scheduled to be returned by March 25th.

On February 26th and March 2nd, the Short Hills Nature Park was scouted to find suitable locations for the cameras. After four hours of searching, the first location found was a hollowed base of a tree at the bottom of a southern facing slope in a somewhat swampy type of area (Figure 4). The snow was covering a lot of it at the time, but it seemed like a spot that they could dig out and it is near the creek. A few hundred meters north is where a large dog lives though. That made it less likely of being a choice, but it was still a decent option despite that. The camera was strapped to a tree nearby using a cable and lockbox provided by the college.

Figure 4: View of Agape Valley camera 1

During the second trip, after searching for a couple more hours, some large concrete pipes were selected for the other two cameras (*Figures 5 and 6*). They were also strapped to nearby trees with similar cables and lockboxes from the college. As noted previously, sometimes coyotes will choose hollow logs for their dens (Sullivan, n.d.) and these pipes could serve the same purpose. They are near a tributary of the creek and are open at both ends in case

Figure 5: View of Short Hills camera 1

Figure 6: Short Hills camera 2

they need to flee for some reason. However, there are trails in the same area, which might make them feel unsafe. No other locations within the park fit their needs though.

After these cameras were setup, the locations were being mapped to be referenced later when it was discovered that the first camera is actually probably on the Agape Valley property. Soon after, contact was made with Tim Hartwick, manager of the property for the Niagara Shorthills Christian Ministries (NSCM) and their Board of Directors who own the property. He approved the location of the camera and offered an invitation to come see another possible denning site. This invitation was accepted. Permission to setup a camera on the location was also granted. On March 5th, the onsite manager of the property, Chris Hartwick, presented a site that can be seen in *Figure 7*. It is at the bottom of a western facing slope, on the bank of a tributary for the creek, and partially obscured by vegetation, an overhang from the hill and tree roots. Also, no camera was available at the time (other than the trail camera), but at the bottom of the bank, near the water, was a coyote's paw print in the snow. So, it definitely appeared to be a strong possibility, but near the top of the hill is a section of maple trees that are being tapped for syrup, which means that people are close every few days. The camera was another one that was privately owned, and it was setup on the other side of the creek. It has a screw-in mount, so it was setup on a tree that has a good view of the possible den and switched on.

Figure 7: View of Agape Valley camera 2

The final locations of all the cameras are shown in *Figure 8*. All of the cameras were checked on by March 12th and removed on March 22nd, except for Agape Valley camera #2 and the Backyard camera. As Agape Valley camera #2 was so far into the property, it was not checked on it again until March 23rd when it was removed. The Backyard camera will remain where it is perpetually and was checked a few more times up until April 13th. On March 12th, batteries were swapped out for new ones for Short Hills cameras #1 and 2 and Agape Valley camera #1 and any pictures were moved over to a smartphone with a SD Card reader. The pictures were saved to folders that were previously setup

Figure 8: Official camera locations (Google Earth, 2021)

for them, then reviewed, and a select few were uploaded to a personal Microsoft OneDrive account for later use. The cameras and their coordinates are listed in *Table 1* of *Appendix A*.

3.0 Results

3.1 Backyard Camera

The were varying results from location to location. The backyard camera was the most successful location as it was able to take 64 pictures of the coyotes passing through the area and they tended to be hunting, some of which are included throughout the body of this report and in Appendix B. Usually, there was just one (*Figure 9*), but sometimes the camera captured two together (*Figure 10*) and they are known to hunt both solo as well as in pairs (Nelson, 2013).

Figure 9: Solo coyote walking towards the camera

Figure 10: Two coyotes in the night

There were also numerous tracks found (*Figure 11*), including a large amount of with in a small area (*Figure 12*). No blood was seen in the area, so that rules out eating prey and fighting. It is unknown as to what they were actually doing, but it's possible they were just playing around with each other.

Figure 11: Coyote tracks

Figure 12: A large amount of coyote tracks

Fresh coyote scat and urine was found near where the backyard camera is located in February, as well (*Figure 13*). It could not have been anymore than an hour or two old, but they must have been just outside of the frame as there were no coyotes actually seen on the camera around that time. This could be easily identified as coyote from the fur in the scat and it is tapered at one end (Heavey, 2021).

Figure 13: Fresh coyote scat & urine

3.2 Short Hills Cameras #1 and 2

During the time spent scouting the park to find possible denning locations, tracks were found from various species of wildlife all over the area, like deer, raccoons, opossums, turkeys, and coyotes. Despite finding coyote tracks within the Short Hills Nature Park (*Figure 14*), they did not choose to den in the concrete pipes, but pictures were taken of them walking through the area during the day and night (*Figures 15 and 16*).

Figure 14: Wildlife Tracks, including coyote (Photo Credit: Tom Liszt).

This is probably because, as was previously stated, the pipes are near the trails, so they wouldn't feel safe.

Figure 15: Solo coyote in the Short Hills Nature Park during the day

Figure 16: Solo coyote in the Short Hills Nature Park at night

3.3 Agape Valley Cameras # 1 and 2

Both of the sites in the Agape Valley had no pictures of coyotes denning or passing through, but there were other interesting results found nearby on March 22nd. One of the two groups surveying a tributary for the Twelve Mile Creek that runs through the property for the field project class found evidence of two instances of coyote predation.

Figure 17: Niagara College student Taylor Hamel standing next to white-tailed deer fur (Photo Credit: Jocelyn Baker).

Figure 18: Remnants of a Coyote Carcass (Photo Credit: Rachit Penglee).

Figure 19: Remaining feathers of a waterfowl (Photo Credit: Jocelyn Baker).

Figures 17 and 18 show the remnants of a deer carcass and the white fur from the belly. Jocelyn Baker, the field project teacher, was with that group and said that it was a "fresh kill," so it might have happened on the night of March 21st. The pictures were shown to hunters who said that, based on the amount of fur, the deer was an adult, but there was no way to tell if it was a male or female. They also said that there were at least two coyotes present because of the way that the fur is thrown around everywhere. That's evidence that they were fighting over the meat (Teodorini, 2022). There are some videos online that show how they kill deer (Milkacow, 2012), but nothing that could confirm these claims on how they act while feeding on a carcass together.

Figure 19 is a picture of a bunch of feathers. The predator could have been a few different species that live in the area like raccoons, foxes, coyotes, or even a domesticated dog. Since they need approximately 600 grams of food of every day though (Feeding Nature, 2020), it was probably a coyote. To determine the species, contact was made with Nadine Litwin, who teaches the birds section of the Fauna Identification class in the Ecosystem Restoration program at Niagara College and employed by Bird Studies Canada and LCA Environmental as a Field Ornithologist. She then made contact with some colleagues in her field who said it was some kind of gull (Jacklin, 2022) or it might be a duck, based on the curvature of the feathers, like an American Widgeon (*Mareca americana*) (Brunning, 2022).

4.0 Implications and Recommendations

The results are inconclusive as none of their den locations for this year could be found. However, they are regularly seen in the area, the topography is right, and food is plentiful, so they're most likely nearby. If this pack is monitored in the future, what should be done is all of the landowners within the entire area that is highlighted in Figure 20 need to be contacted to gain access, then walk along or in all of the tributaries and the surrounding area to find possible denning locations. The scope should also be expanded a bit to the north and east if the hills are high enough.

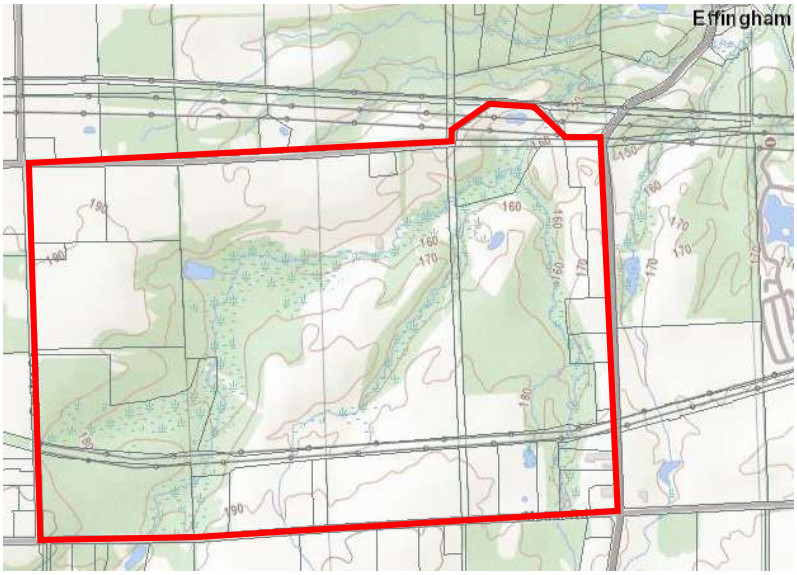

Figure 20: Topographic map of where to focus on for future studies of this pack (Queen's Printer for Ontario).

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6.0 Appendix

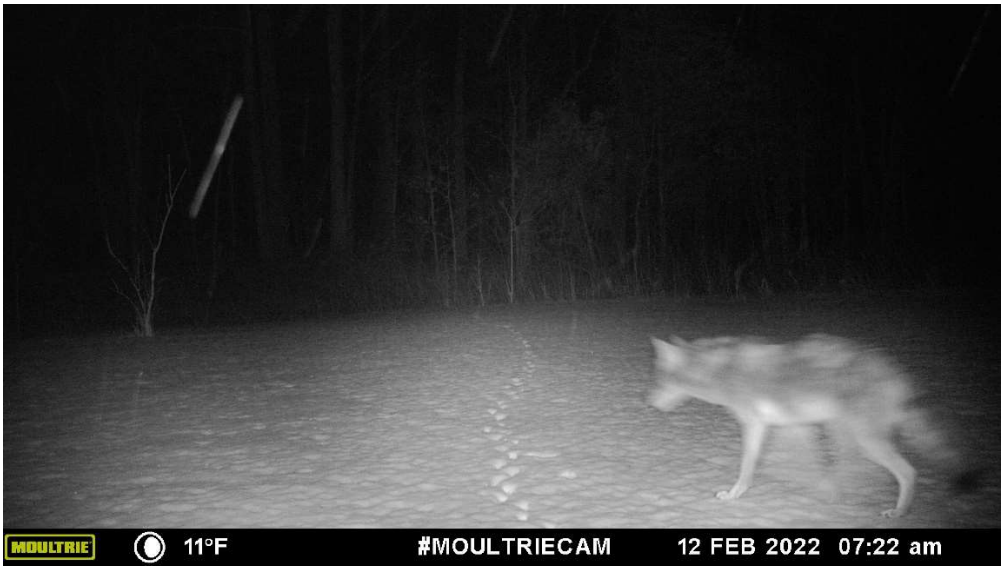
Appendix A

Table 1: A list of all of the camera locations and their coordinates

Camera	Coordinates	Description
Backyard Camera	43.0637631, -79.3383305	Backyard near forest
Short Hills Camera 1	43.0649313, -79.3262927	Concrete pipes near trail
Short Hills Camera 2	43.0649068, -79.3259323	Concrete pipes near trail
Agape Valley Camera 1	43.0661491, -79.3254079	Hollow base of tree, swampy area
Agape Valley Camera 2	43.0662736, -79.3188295	Small hole at bottom of slope, near creek

Appendix B

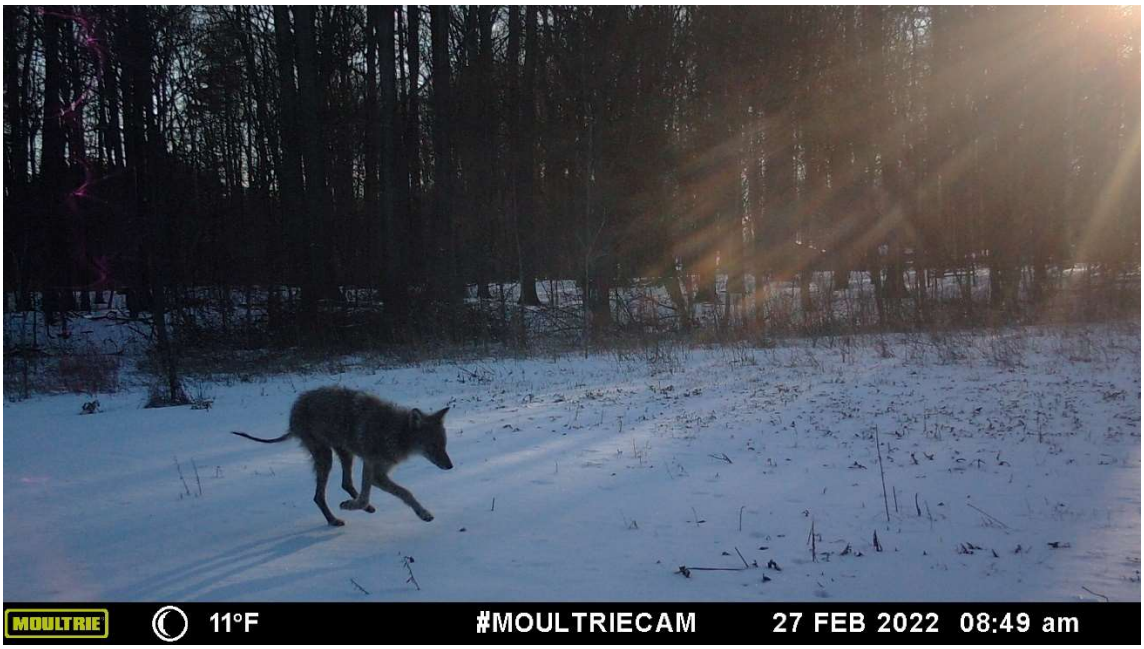
A solo coyote walking in the night



A solo coyote briskly walking in the early morning.

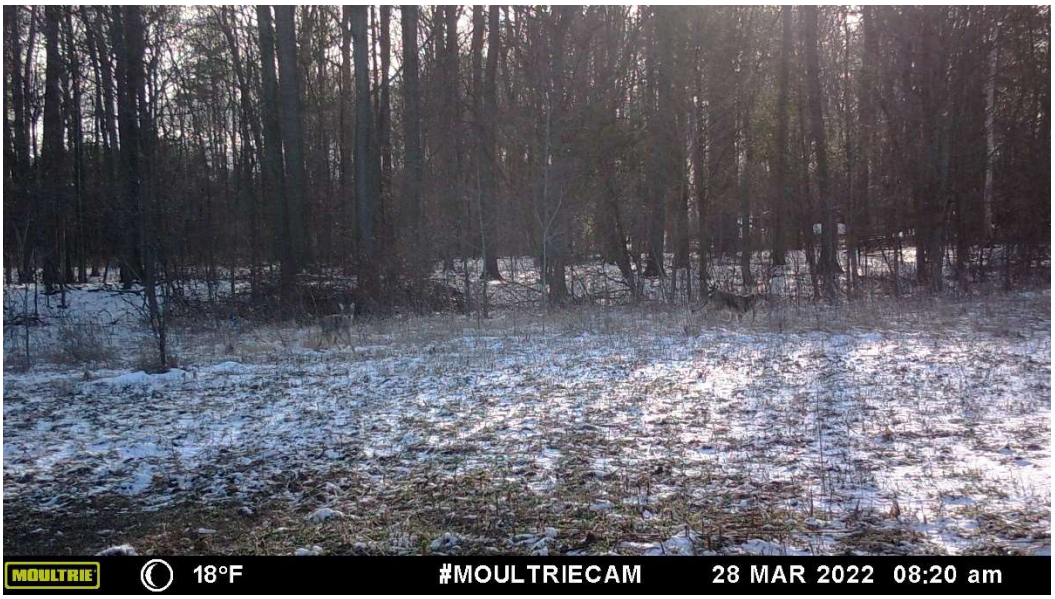
A coyote running in the night.

A coyote sniffing to track their prey.



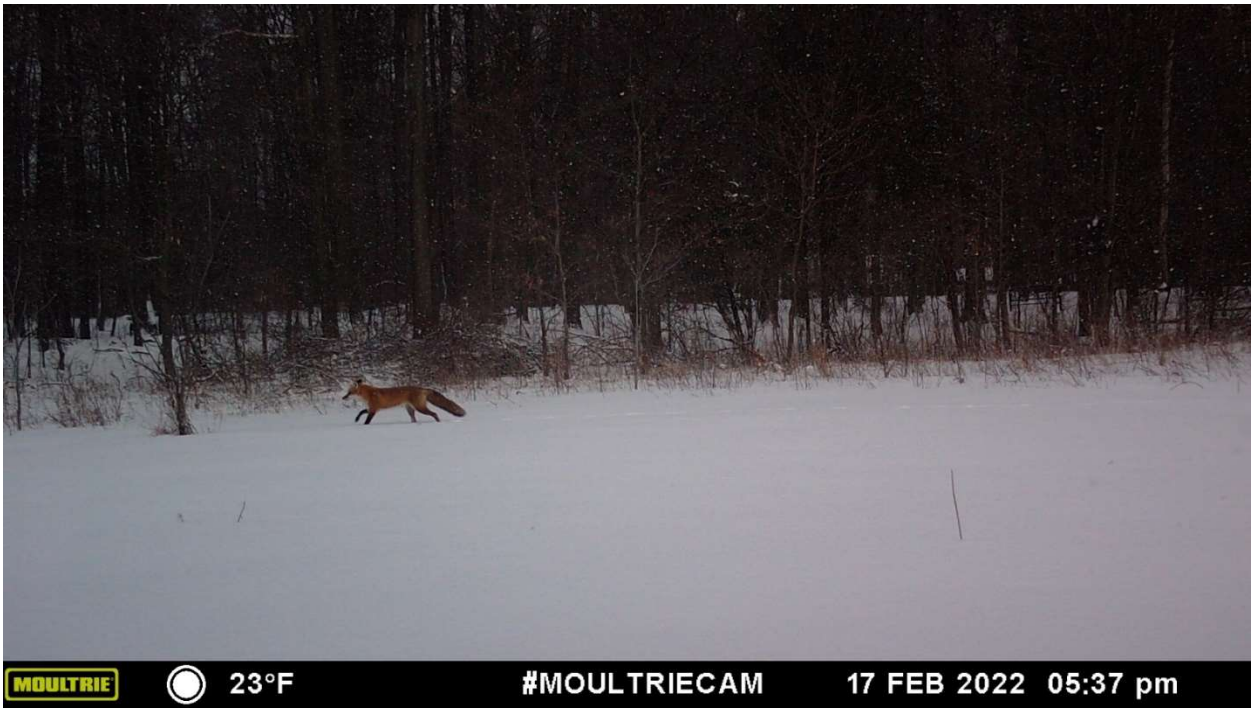
A coyote running in the early morning

A close up shot of a lone coyote.



Two coyotes hunting in the morning.

White-tailed deer and wild turkeys eating together. Both species are prey of the coyote.



The lone fox that lives in the area.