

A Tale of Two Keystones: An Evaluation of Northern River Otters and Eastern Coyotes in Jug Bay Wetlands Sanctuary

As stated by John Terborgh in the Continental Conservation, many ecosystems are controlled by a top-down effect (Terborgh). This means that organisms at the highest trophic level, typically carnivores, have the highest impact on an ecosystem. Because of this, it is crucial to monitor keystone predators to evaluate the health of an ecosystem. In 2016 two protocols were created by University of Maryland students to effectively observe coyotes and river otters in Jug Bay Wetlands Sanctuary. The purpose of this study was to follow these protocols as closely as possible and to determine their effectiveness in producing observations of river otters and coyotes. This study took place in Jug Bay Wetland Sanctuary Proper, which included Emory Waters, and Glendenning Nature Preserve.

The primary method for both protocols consisted of looking for signs of activity. This included walking transects to find scat and tracks. The two major signs of activity when searching for otters are slides and latrines, typically found at bends of rivers (Coriell et al.). Otter latrines are areas where families of otters socialize and defecate, and slides are formed where otters drag their bellies frequently, to access a body of water (Coriell et al.). The two major signs of activity when searching for coyotes were scat and tracks (Geshke et al.).

At each location where activity was observed a trail camera was placed. These cameras were placed at waist height on the nearest tree. In areas where there were significant amounts of activity in a relatively close distance, linear transects were established with trail cameras, to increase the odds of capturing observations. In addition to using transects, when evidence of

coyote activity was observed, scent lures consisting of coyote glands were placed within clear sight of the cameras.

This study started in October 2022 and concluded November 2023. During this time, there were 18 coyote and 104 river otter observations. Emory Waters had the most observations, with 15 coyote observations and 92 otter observations. Jug Bay had 2 coyote observations and 12 otter observations and Glendenning had one coyote observation and no otter observations.

A potential reason for the differences in observations by location may have occurred due to the amount of human foot traffic in each location. Glendenning is open to the public 7 days a week, and dogs are allowed. Jug Bay is open four days a week, with no pets allowed. Emory Waters has the least amount of human foot traffic, as it is not easily accessed by the public. The only available entry is either by watercraft or through a gate requiring a code. As a result, Emory Waters is much more secluded than the other parks. This may explain the higher observations of both species compared to Jug Bay and Glendenning. Further studies are required to investigate this hypothesis.

In conclusion, the protocol established by the University of Maryland students appeared to be successful. Unfortunately, not every part of the protocol was able to be followed as this study was conducted by one researcher. Future studies, which include establishing these protocols as citizen science programs, should be conducted to evaluate the keystone species in Jug Bay. These studies should incorporate spotlight observations for river otters and coyote calling. Additionally, the effects of human foot traffic on trails should be investigated to determine the impact on the populations of coyotes and river otters in Jug Bay.

Works Cited

- Coriell, Carson, et al. *Monitoring North American River Otter (Lontra Canadensis)*. 2016.
- Geshke, Julia, et al. *Coyote Survey Protocol*. 2016.
- Terborgh, J. "Ecological Meltdown in Predator-Free Forest Fragments." *Science*, vol. 294, no. 5548, 30 Nov. 2001, pp. 1923–1926, <https://doi.org/10.1126/science.1064397>.