

THE IMPACT OF DEER TRAILS IN THE NORTH OTTAWA DUNES

JESSE L. DAMSTEEGT, BRIAN P. HESS, MADELINE G. HUGHEY, JAKE A. MCCUSKER, JACOB C. VAN WYK

ABSTRACT

There are very few studies on deer in relation to dunes in the scientific community. The studies that do pertain to deer usually focus on their impacts on vegetation. We decided to focus our two-week study on the impact of deer on unmanaged trails in North Ottawa Dunes in Michigan. Our study sites were both arms of the dune, the bare sand area, and the dune slipface. We mapped the trails and noted their width, leaf litter, vegetation, slope, and track density, as well as any deer evidence we saw. We found little evidence of deer activity on the open sand area of the dune. However, there were many signs of deer in the lower grass areas and the wooded areas. Our results show that deer trails do not have a particularly significant effect on the dune structure.

INTRODUCTION

Ottawa County Park's officials have been worried about the deer population in their parks. In recent years, the deer population has grown significantly (Fig. 1), and the officials are concerned that this will have a negative effect on the ecosystem, such as dune destabilization and vegetation reduction due to trampling and grazing. We measured the impact of deer trails in the area while trying to see if this concern is warranted for this area. Others who read our research may find that the reasons for the study are applicable in other dune ecosystems.



Fig. 1. A deer captured on the trail camera

Study Objectives:
Document the effects of deer trails on dune structure
Measure the effects of deer trails on vegetation
Determine whether deer or humans use specific trails

STUDY AREA

Our study location is the North Ottawa Dunes. Our study area is the North Beach dune, with the exception of the upper windward slope (Fig. 2).

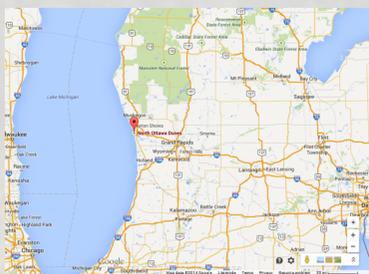


Fig. 2. A map showing the location of North Ottawa Dunes

METHODS



Fig. 3. The trail camera utilized

Our research methods used visual observation of deer evidence and measurements such as track count, track density, vegetation density and trail width. Useful research methods also included photos, trail camera photos, and GPS mapping of deer evidence. The mapped deer evidence consisted of trails, feces, tracks, buck rubs, buck scrapes, and bedding areas. These methods are similar to previously performed research [1, 2].

RESULTS

We gathered data from 11 interconnected trails on the dune. These trails were mostly found on the forested wings of the dune, although some led across the bare sand of the dune blowout (Fig. 4). We found that the average width of the trails was 50.8 cm. Vegetation cover was approximately equal, although it was leaning towards the less covered side (Fig. 5). The trails we recorded were mostly used by deer (Fig. 6). The trail camera that we set on the dune (marked by the turquoise blue dot the farthest to the left in Fig. 4) managed to capture photographs of deer wandering in our study area.

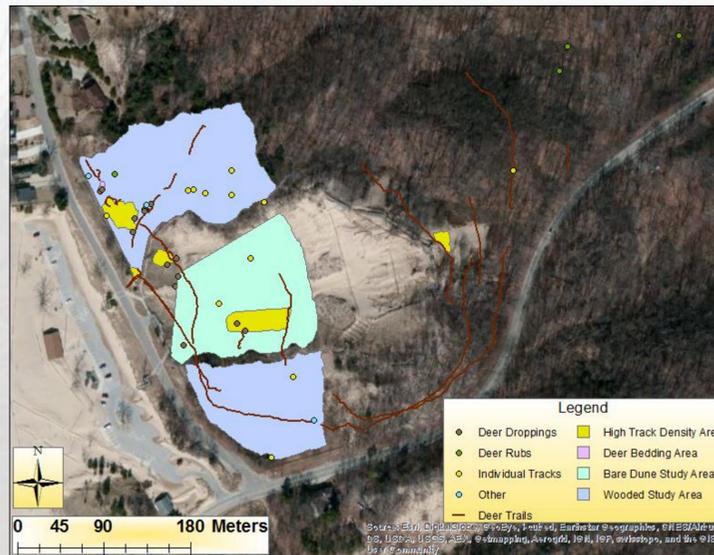


Fig. 4. A map of the study area evidence

PERCENTAGE OF VEGETATION ON TRAILS

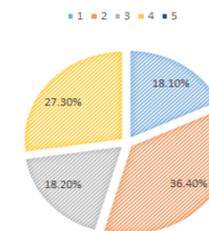


Fig. 5. A graph showing vegetation cover on a scale of 1-5

TRAIL USAGE

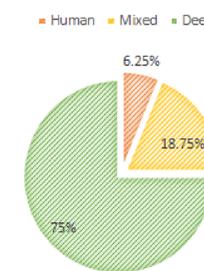


Fig. 6. A graph showing the percentage of trail usage on a scale of 1-5

DISCUSSION

According to our evidence, we can conclude that deer use the dunes, although not as much as originally thought. The average widths of the recorded trails were fairly thin, even though their vegetation cover varied. Most of the deer feces that we found were also old and dry, and few were fresh. The current effects that deer have on the dunes are seemingly minimal. Previous research shows that there has been a significant reduction in mixed trail use from 70% of all trails in 2013 [1] to only 18% of all trails in our study in 2014. This is likely due to the persistent management techniques of building the raised boardwalk, erecting signs, planting grass, and implementing sand fences.

CONCLUSION

The study objectives of our research project were to determine the concentration of deer in North Ottawa Dunes and whether or not they are using the unmanaged trails more than humans. We can conclude that this was the case, because the evidence we gathered supports this (Fig. 7). Likely, dune management strategies have been effective in preventing most human traffic. We also concluded that there was less vegetation on trails that had heavy deer traffic. Previous studies have already concluded that deer have an impact on vegetation growth [1,3]. In conclusion, there were some effects from the deer traffic, but they are not too damaging on the dune.



Fig. 7. Deer evidence

ACKNOWLEDGEMENTS

First, we would like to thank our mentor Brian Hilbrands for all of the time and effort that he has given for this project and for all of the guidance along the way. We would also like to acknowledge the park management at North Ottawa Dunes and express our gratitude to them for their cooperation and willingness to allow us to participate in this research. We would also like to thank and acknowledge Professor van Dijk for her dedication to this class and all of the help and direction with which she provided us. Finally, we would like to thank Ms. McCusker for bringing the trail camera with her, which allowed us to get some excellent pictures of deer.

SOURCES:

- [1] Dzieciolowski, Ryszard, Goszczynski, Jacek; Wasilewski, Michal; Babinksa-Werka, Joanna 1995. "Numbers of red deer in the Słowiński National Park, Poland." *Acta Theriologica* 40:45-51.
- [2] Liu, Chengbi; Grevengoed, Lincoln; Haugh Matthew; Koopman, Megan; Peterson, Isla; Walters, Logan. 2014. "An Investigation of the Relationships between Deer and Trails in North Ottawa Dune"
- [3] Philips, Tracy; Maun, M.A. 1995. "Population ecology of *Cirsium pitcheri* on Lake Huron sand dunes I. Impact of white-tailed deer" *Canadian Journal of Botany* 74: 1439-1444.s." FYRES: Dunes Research Report #12: 1-20.