Investigating Deer and Unmanaged Trails on North Ottawa Dunes

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Abstract

North Ottawa Dunes in Ottawa County, Michigan features an active dune (open system) within a forested environment which provides for substantial vegetation growth as well as sustained animal populations. This sustained animal population, specifically deer, presents an opportunity to study the impacts of animals on dune systems like that of North Beach Dune. In our study we canvassed both systems by walking through the area, then we returned to high probability areas using equipment including GPS units to map trails and record observations. It was found that there was significant concentration of trails in the open system with evidence nearby to identify deer activity. Trails did show consistency in trail width and slope angle. While our experimental study and methods have shown that deer have a significant presence on this dune system, further study will confirm trails as distinctly deer trails and will be able to show the specific impacts of deer on the dune.

Introduction

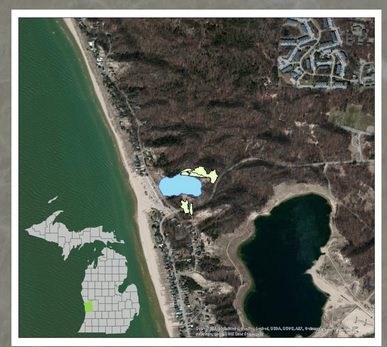
Studies have shown that the presence of trails and the lack of vegetation have a direct relationship to increased or sustained dune activity. Deer have been known to travel along defined routes [1] and graze on various species of vegetation with significant impact [2]. Accordingly a deer hunt occurred in the area last year "because of a need for deer reduction due to the sheer number of deer and the ecosystem's inability to sustain all of them" [3]. Our study observes the deer impacts on the dune in terms of trails.

Our study objectives were to:

- Find evidence that indicates the presence of deer
- Identify trails that can be attributed to deer.
- Record trail characteristics and observe trends.

Study Area

Our study took place at North Ottawa Dunes (Fig. 1) and covered two dune systems, forested and open (Fig. 2). The idea was to locate a concentration of evidence and trails that could be attributed to deer.



▲Fig. 2 The bare, grassy area of the open North Ottawa Beach parabolic dune

◄Fig. 1 Our study location was located in Western Michigan in Ottawa County

Methods

We recorded evidence of deer (Fig. 3, 4) in both study areas using direct observations and GPS mapping. Both the forested dune and open dune were surveyed for unmanaged trails (Fig. 5). Trail characteristics, such as trail width and slope, were recorded.

Fig. 3 Deer scat found on the dune. This was used as evidence for deer presence.

Fig. 4 Deer tracks found on the bare area of the dune. Tracks were used as evidence of deer presence.

Fig. 5 An unmanaged trail created by traffic. This type of trail was recorded by the research team.

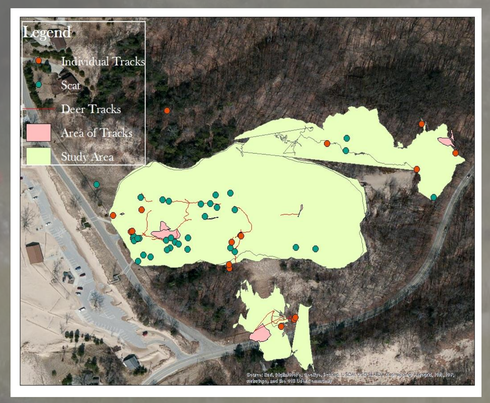
Results

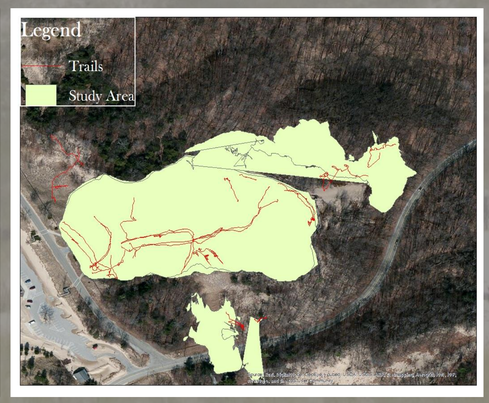
Deer Evidence

We recorded deer evidence in both areas (Fig. 6), with more scat recorded compared to individual deer tracks. The most deer evidence was recorded on the lower section of the open dune area. Both the scat and track measurements were recorded close to deer trails and the area of the deer tracks.

Trails

Many trails (Fig. 7) were located on the lower area of the open area running from south to north. These trails were very distinct consisting of mostly bare sand. Fewer trails were recorded in the forested area due to the dense leaf cover. The width of the trails ranged from 0.25-.83 meters (Fig. 8) while the slope of these trails ranged from 4-43 degrees with an average of 18.47 degrees.





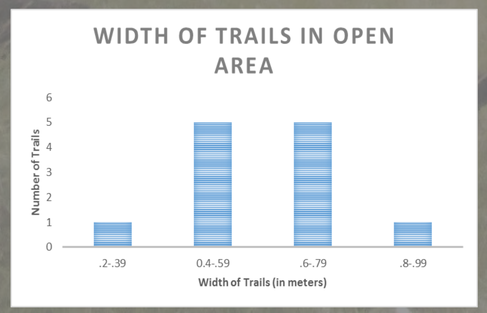


Fig. 6 (top left) indicates deer presence on the dune in terms of scat and tracks

Fig. 7 (top right) shows all unmanaged trails on both the open and closed dunes from deer, human, or other animal sources

Fig. 8 (left) depicts the recorded width of trail on the open dune and are grouped into categories with a range of .19 meters

Discussion

Deer evidence was concentrated around where trails were recorded indicating that the deer are using these trails to pass through the dune system (Fig. 9). Further observation of the surrounding area compounds this as the dune is situated on an ideal route between two undeveloped areas. However, we are unable to determine whether deer are the cause of these trails as human tracks and other animal prints were observed as well.

Fig. 9 A trail located on the south side of the dune.

Fig. 10 Other animal prints located on the dune.

Conclusions

Our study confirms deer presence in both open and forested dune areas, along with numerous unmanaged trails. The deer evidence we found had a strong relationship with where the unmanaged trails were recorded. However, due to other animal and human activity, we cannot determine the exact effect deer have on the dune.

Acknowledgements

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