

Unmanaged Trails on the North Beach Dune

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ABSTRACT

North Beach Park Dune is a parabolic dune located in Ferrysburg, Michigan. In 2004 the dune was advancing at a fast rate of 0.67 m/yr. This rapid advance rate caused there to be an increased concern that the only access road would be buried. Since then the park implemented management techniques, which have caused the dune's advancement rate to stop. Even though this dune is now stabilized, there are still unmanaged trails located on the dune. Our group explored whether the severity of the unmanaged trails on the North Beach Park Dune decreased since the installation of the management efforts. In order to measure the severity of the unmanaged trails we used the following methods: GPS (Trimble) where points at the beginning, middle, and end were recorded along with the perimeter of each trail, at each point recorded we measured the width of the trails and the vegetation density. We also compared photographs of the dune from previous years to photographs from this year. We used these methods to examine the difference in the number of trails, location of trails, and the difference in vegetation density. Our results show that there is a greater amount of unmanaged trails on the Southwest windward side of the dune compared to any other region. We also found that the Southwest area of the dune there was a lower percentage of vegetation density due to the increase in amount and size of unmanaged trails.

INTRODUCTION

Our study's main focus was on the unmanaged trails at North Beach Park Dune.

Our research question was : What is the location and the severity of the unmanaged trails on North Beach Park Dune?

Our objectives were:

- To explore the reasons behind the location of unmanaged trails on the dune.
- To investigate the density of vegetation on the unmanaged trails on the dune.
- To compare (and investigate) the width of unmanaged trails on the dune.

STUDY AREA

Our study took place on a coastal dune in North Beach Park.

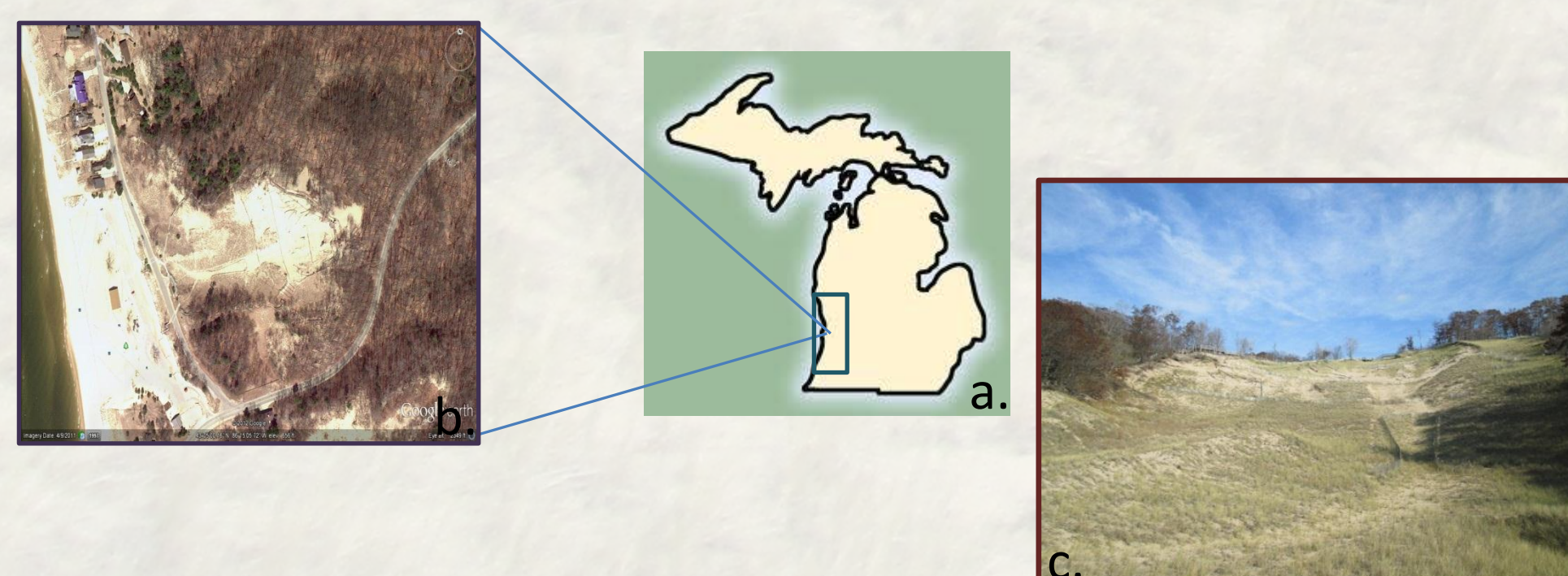


Fig 1. a) Our study site was located on the western side of Lake Michigan. b) Trail's width, location and vegetation percentage were studied on the dune. c) Site area studied

METHODS



Fig 2. Changes and locations of the trails were monitored by aerial pictures

•By using aerial photography and satellite images we were able to determine the locations of unmanaged trails (Fig 2).



Fig 3. An example of a GPS system used

•We used two GPS units (Fig 3). One unit was used to record the perimeter of each trail. The other was used to take points at the beginning, middle, and end of each trail.



Fig 4. Example of a heavily vegetated trail

•At each point recorded by the GPS unit we performed two tasks. First we measured the width of the trail. Then we visually estimated the percent of vegetation (Fig 4).

RESULTS

We found that there were more unmanaged trails in the Southwest part of the dune than in the Northwest part (Fig 6). We also found that typically when a trail is wider the vegetation density goes down (Fig 5).

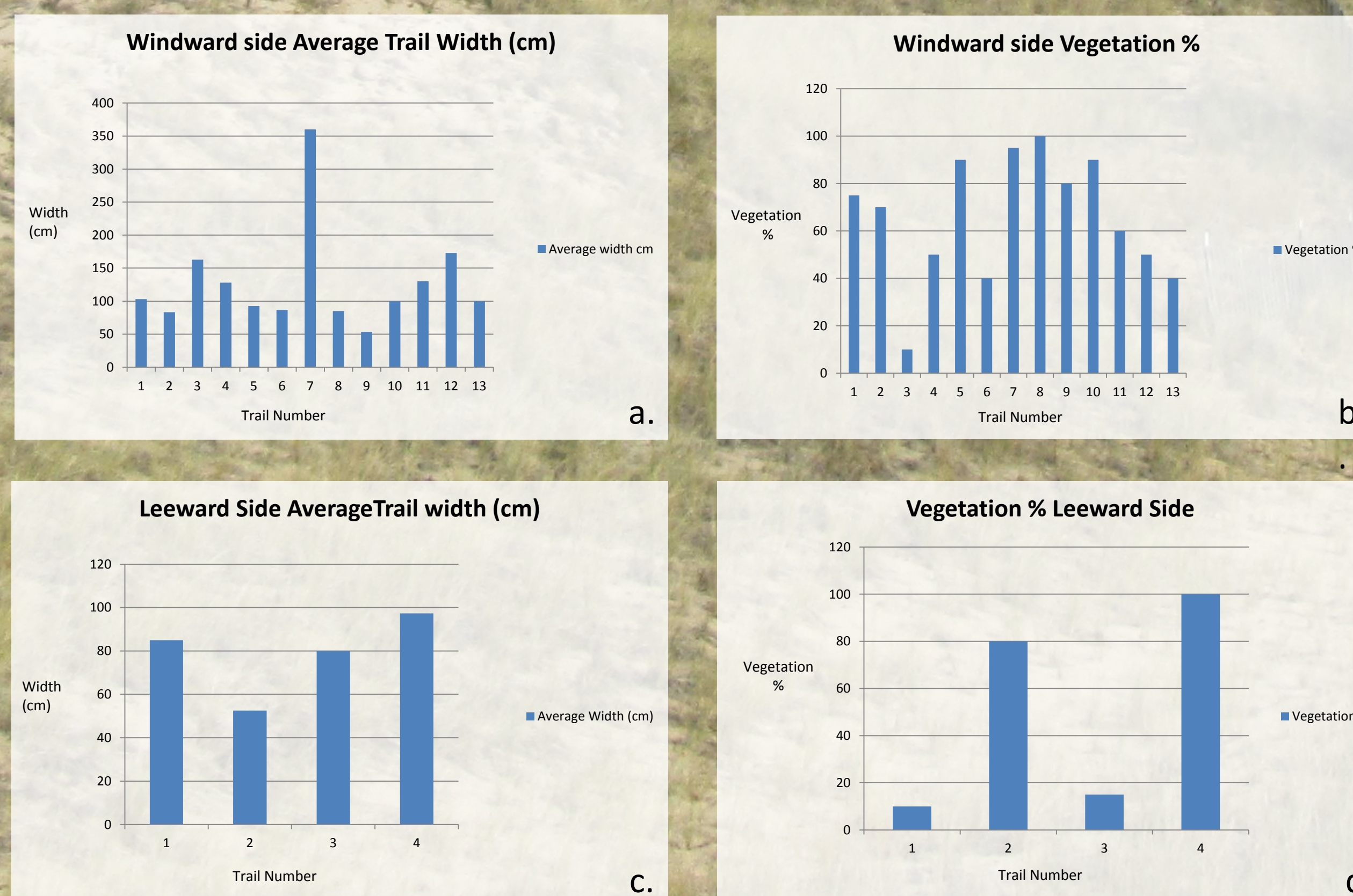


Fig 5. a) Trails widths measured at beginning, middle, and end on the windward side of the dune. b) Visual estimate of the percentage of vegetation along each trail c) Trails widths measured at beginning, middle, and end on the leeward side of the dune. d) Visual estimate of the percentage of vegetation along each trail on the lee ward side.



Fig 6. The perimeter of each unmanaged trail and the points where width and vegetation % was measured.

DISCUSSION

The Southwest side of the dune is where the largest number of unmanaged trails are located. This area has been subjected to large amounts of trampling in the past. This is most likely due to the fact its location, near the base of the dune. But another likely reason for the large amounts of trampling to occur is that the boardwalk ended half way to the summit. This is a likely the reason that there was a lot of large unmanaged trails in the past (Fig 7). We also believe that because of the management efforts it has made a noticeable improvement in the amount and severity of unmanaged trails located on the dune.



Fig 7. Aerial photo of North Beach Park Dune in 2005. *End of board walk is represented by blue dot.

CONCLUSIONS

The majority of unmanaged trails were found on the Southwest side of the dune. We found that the popular areas of the dune had a lower vegetation density and the unmanaged trails had wider widths.

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