

HUDSONIA SP.: EOLIAN AND SEDIMENTARY INTERRELATIONSHIPS

Danielle M. Tommaso
Mount Sinai High School
Mount Sinai, New York 11766
Summer Field Program
Suffolk County Community College

Introduction

The interrelationship of vegetation and its environment can indicate wind regimes. This may be of significance since the determination of near surface wind is of importance in the interpretation of eolian dominated landforms. *Hudsonia sp.*, which grows in exposed xeric environments, appears to trap wind borne sediment. To demonstrate the interrelationship of this species and its environment, a population of *Hudsonia sp.* was studied. (See Figure 1.)

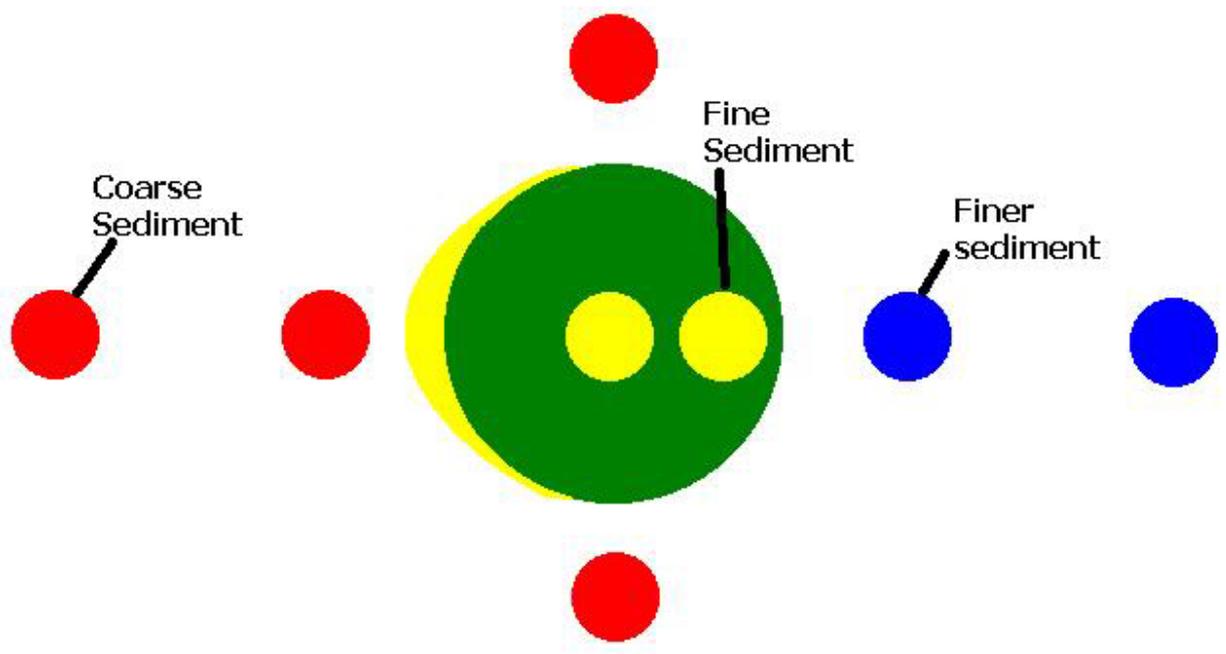
Site Description

The study area is located north of Gabreski Airport in the Long Island Pine Barrens of Westhampton, New York. This disturbed area has been scraped to a depth of 1.5 meters and is located adjacent to the airfield. The surficial sediment in the area consists of poorly sorted unconsolidated materials ranging from pebbles to very fine sand.

In the disturbed open area *Hudsonia sp.* has been observed to consistently grow in rounded mounds due to near surface wind. *Hudsonia sp.* found in the area may be used as an indicator of near surface wind directions and velocities in this area by using the distribution of sediments in the vicinity of the plant.

Observations

Hudsonia sp. reduces the velocity of near-surface winds, resulting in the deposition of wind-borne sediment in a sorted pattern around the plant. Coarser sediment is observed in front of the plant on the windward side, thus indicating relatively higher velocity winds traveling along the surface. Finer sediment is deposited both at the base and inward towards the center of the plant and towards the leeward side. The finest sediment is transported beyond the leeward side of the plant and forms a tapering trail. The areas of deposition of finer sediments are interpreted as lower energy regimes, where the surface wind velocity is reduced by the *Hudsonia sp.* The coarser sediment indicates higher velocity surface winds. This relationship of *Hudsonia sp.* and sediment distribution is found consistently throughout the study area.



Summary

The data regarding the observation of this phenomena provides evidence of the interrelationship of wind regime and *Hudsonia sp.* on disturbed areas in the Long Island Pine Barrens. The process of sediment transport and deposition as afflicted by the *Hudsonia sp.* leads to the formation of minor geomorphic features. This method could also be applied to interpret similar eolian dominated features on a larger scale, such as dune systems (Black, 1996).

Acknowledgments

This study would not have been completed without the invaluable help of Joan Horn. I thank her for the enormous amounts of time she has spent with me throughout this study. Her encouragement is greatly appreciated and will remain with me throughout my future endeavors.

A special thank you goes to John A. Black, whose indispensable knowledge of geobotany has consistently helped throughout this study. His guidance and support led to my decision to pursue this study.

I would like to thank many times my parents, Annette and Al, and my sister, Michelle. Their patience and encouragement throughout my life, and especially during this study, has had an overwhelming positive impact on me. Their eminent advice will always be echoed throughout my mind.

References

Black, J. A. (1996) "The Origin and Fate of the Migrating Dunes, Napeague, New York," *Geology of Long Island and Metropolitan New York*, State University at Stony Brook.

Oviatt, Charles G. and James R. Wilson (1993) "Desert Processes and Landforms," *Laboratory Manual in Physical Geology*, pp. 163- 174, Macmillan Publishing Company.