Woods Hole Oceanographic Institution



Coastal Landform System Sustainability Project: An Analysis of Activities Permitted on Coastal Landforms on Cape Cod, Massachusetts in 1999

by

James F. O'Connell

Woods Hole Oceanographic Institution Woods Hole, Massachusetts 02543

August 2000

Technical Report



Funding was provided by the Sea Grant Program of the Woods Hole Oceanographic Institution.

WHOI-2000-09

Coastal Landform System Sustainability Project: An Analysis of Activities Permitted on Coastal Landforms on Cape Cod, Massachusetts in 1999

by

James F. O'Connell

Woods Hole Oceanographic Institution Woods Hole, Massachusetts 02543

August 2000

Technical Report



Funding was provided by the Sea Grant Program of the Woods Hole Oceanographic Institution.

Reproduction in whole or in part is permitted for any purpose of the United States Government.

This report should be cited as Woods Hole Oceanog. Inst. Tech. Rept., WHOI-2000-09.

Approved for public release; distribution unlimited.

Approved for Distribution:

Director, Woods Hole Oceanographic Institution Sea Grant Program



Figure 1



Figure 4



Figure 5



Figure 6



Figure 7

REPORT DOCUMENTATION PAGE	1. REPORT NO. WHOI-2000-09		2.		3. Recipient's Accession No.
4. Title and Subtitle Coastal Landform System Sustainability Project:					5. Report Date August 2000
An Analysis of Activities Permitted on Coastal Landforms					6.
on Cape Cod, Massachusetts in 1999					
7. Author(s) James F. O'Connell					8. Performing Organization Rept. No. WHOI-2000-09
9. Performing Organization Name and Address					10. Project/Task/Work Unit No.
Woods Hole Oceanographic Institution					11. Contract(C) or Grant(G) No.
Woods Hole, Massachusetts 02543					(C)
					(G)
12. Sponsoring Organization Name and Address				13. Type of Report & Period Covered	
Woods Hole Oceanographic Institution				Technical Report	
					14.

15. Supplementary Notes

This report should be cited as: Woods Hole Oceanog. Inst. Tech. Rept., WHOI-2000-09.

16. Abstract (Limit: 200 words)

In their natural state, the coastal landform systems of Cape Cod are self-sustaining. However, recognition that humans have become intrinsic agents in the evolution of coastal landscapes is significant. There is a great need to understand how individual actions on a small scale (lot-by-lot) basis affect the sustainability of coastal landform systems, such as coastal dunes, beaches, coastal banks, barrier beaches, saltmarshes, and coastal floodplains. However, there are few investigations relative to this scale.

This study illustrates the vast extent of human alterations to coastal landforms on Cape Cod. As a result of analyzing 318 Orders of Conditions issued for activities permitted on and adjacent to coastal landforms in all 15 Cape Cod towns in 1999, it documents and quantifies the gains and losses to coastal landform system sustainability.

The study documents the types of activities presently taking place on and adjacent to our coastal landforms and their potential affects, and potential mitigation being required by local commissions to minimize these affects. It also documents the trade-offs and balances oftentimes necessary in the application of performance standard based regulations governing activities proposed on coastal landforms. Because our quantitative understanding of coastal landform function is still evolving, particularly on a small-scale lot-by-lot basis, many decisions are oftentimes made using best professional judgement (if available) without the predictive capability to know what the impact will be to the applicant's or neighboring property and resources.

It is hoped that the results of this study will assist local, state, and federal coastal resource managers and regulators, as well as the public, in gaining insight into the interactions of human activities and natural coastal landform system function leading towards improved coastal resource management. The project participants stated that during the course of this study the sharing of information among them was invaluable. It is hoped that the sharing of information in this study with a broader audience will also be utilized for improved coastal landform system management.

17. Document Analysis a. Descriptors

Coastal Landform

Coastal Management

Permits

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
Approved for public release; distribution unlimited.	UNCLASSIFIED	58
Approved for public release; distribution uniffilied.	20. Security Class (This Page)	22. Price

DOCUMENT LIBRARY

Distribution List for Technical Report Exchange – July 1998

University of California, San Diego

SIO Library 0175C 9500 Gilman Drive La Jolla, CA 92093-0175

Hancock Library of Biology & Oceanography

Alan Hancock Laboratory

University of Southern California

University Park

Los Angeles, CA 90089-0371

Gifts & Exchanges

Library

Bedford Institute of Oceanography

P.O. Box 1006

Dartmouth, NS, B2Y 4A2, CANADA

NOAA/EDIS Miami Library Center

4301 Rickenbacker Causeway

Miami, FL 33149

Research Library

U.S. Army Corps of Engineers Waterways Experiment Station

3909 Halls Ferry Road Vicksburg, MS 39180-6199

Marine Resources Information Center

Building E38-320

MIT

Cambridge, MA 02139

Library

Lamont-Doherty Geological Observatory

Columbia University Palisades, NY 10964

Library

Serials Department Oregon State University Corvallis, OR 97331

Pell Marine Science Library University of Rhode Island Narragansett Bay Campus Narragansett, RI 02882

Working Collection Texas A&M University Dept. of Oceanography College Station, TX 77843 Fisheries-Oceanography Library 151 Oceanography Teaching Bldg.

University of Washington

Seattle, WA 98195

Library R.S.M.A.S.

University of Miami

4600 Rickenbacker Causeway

Miami, FL 33149

Maury Oceanographic Library Naval Oceanographic Office

Building 1003 South 1002 Balch Blvd.

Stennis Space Center, MS, 39522-5001

Library

Institute of Ocean Sciences

P.O. Box 6000

Sidney, B.C. V8L 4B2

CANADA

National Oceanographic Library Southampton Oceanography Centre

European Way

Southampton SO14 3ZH

UK

The Librarian

CSIRO Marine Laboratories

G.P.O. Box 1538 Hobart, Tasmania AUSTRALIA 7001

Library

Proudman Oceanographic Laboratory

Bidston Observatory

Birkenhead

Merseyside L43 7 RA UNITED KINGDOM

IFREMER

Centre de Brest

Service Documentation - Publications

BP 70 29280 PLOUZANE

FRANCE