

## *Cape Cod National Seashore LTEM Project Prioritization*

### **Background:**

The 2002 Update of the Conceptual Framework for the Development of Long-Term Monitoring Protocols (Boland et. al. 2002) describes 33 inventory and monitoring projects. The extent to which this breadth of activities will fit within our capacity for long-term implementation will not be known until more protocols are finalized, field tested, and revised accordingly. None the less, it is highly likely that we will not be able to include all of these projects within our core long-term monitoring program. Therefore, it is necessary to develop some type of project prioritization to help direct our implementation efforts.

Project prioritization is called out specifically in our FY2003 work plan:

*"Task 6.3 - Prioritize monitoring needs within and across ecosystems to ensure that our core monitoring program is sustainable for the long-term while meeting scientific objectives.*

Scheduled FY2003 Activities:

- Begin planning for a series of workshops with staff and technical advisors to prioritize monitoring activities."

This need was also underscored during the Cape Cod LTEM Program Review (November 4-8, 2002) and was the first recommendation offered in the Program Review Report. Specifically, the reviewers recommended: "Program leaders should prioritize among the many monitoring components that are being developed, provide a focus on essential information, and strike an appropriate balance between tactical and strategic monitoring . . . Program leaders should meet within the next two months to make the difficult decisions about how to prioritize among monitoring components and to determine which components will be included in a core program that can be sustained 'forever'." The complete text of this recommendation is attached for reference.

### **Objectives:**

Over the next few years, we would like to focus our efforts on implementing a core suite of long-term monitoring protocols. Once we have demonstrated the capacity to fully and reliably implement these monitoring projects (including data management, analysis, and reporting) we will consider integrating additional protocols into our work plans. The objective of the proposed prioritization is:

- to identify the core suite of protocols;
- to order or classify the remaining projects in a manner that will facilitate their integration into the program over the long-term; and
- ensure that these priorities are consistent with the original proposal (CACO 1993) and the Conceptual Framework (Roman and Barrett 1999).

### **Process:**

We propose the following process for meeting our prioritization objectives:

1. Summarize basic information about the temporal scope (inventory/characterization vs. monitoring) and feasibility (frequency, cost, sustainability, etc) for each project. [Information about the purpose, monitoring questions, and status of each project is available in Boland et. al. 2002.]
2. Evaluate each project according to the following criteria:
  - relevance to high priority management issues;

- relevance to an overall understanding of the target ecosystem;
  - importance to interpreting the results of other protocols;
  - relationship to program objectives as articulated in the original proposal (CACO 1993) and the Conceptual Framework (Roman and Barrett 1999);
  - likelihood of detecting change over time; and
  - applicability to parks in the NC&B Network and to other networks in the Atlantic and Gulf Coast biogeographic region.
3. Conduct a workshop to identify core protocols and rank the remaining projects for future implementation.
  4. Summarize the proceedings of the workshop and use the results to formulate work plans for the next five to ten years.
  5. Re-evaluate priorities at least once every two years to incorporate new information regarding feasibility and likelihood of detecting change.

The project summaries and evaluations (Steps 1 and 2) will be completed by LTEM Program staff using the attached draft form and distributed to workshop participants. The workshop will be convened as described below. The workshop summary will be prepared by the LTEM Program Coordinator and distributed to workshop participants for review and comment before being finalized. Re-evaluation, revision, and documentation will be the responsibility of the LTEM Program Coordinator and staff; however, future program coordinators will involve technical advisors (such as the workshop participants) if any significant revisions are contemplated.

### **Workshop**

**Scheduled for:** Wednesday, February 26, 2003, 8:30am - 5:00pm, CACO Headquarters Building, Upstairs Conference Room

### **Participants:**

There are a variety of perspectives and expertise that should be represented in the prioritization process including:

- CACO management;
- familiarity with short- and long-term resource management issues;
- understanding of the role long-term monitoring can play in providing information relevant to management issues;
- knowledge of the program's history and our current role as a prototype park;
- familiarity with monitoring issues in the Northeast Coastal and Barrier Network and the Atlantic and Gulf Coast biogeographic region;
- experience in a range of ecological disciplines;
- familiarity with the status of science in the park and the Lower Cape region; and
- understanding of the logistical considerations and limitations associated with implementing monitoring protocols.

We also believe it is important to invite participation from individuals who are relatively new to the program in order to provide a fresh perspective to the process.

Based on these considerations, we have requested the following individuals to participate in the workshop:

Maria Burks, CACO Superintendent

Mike Murray, CACO Deputy Superintendent  
Nancy Finley, CACO, Chief, Division of Natural Resource Management  
John Portnoy, CACO, Ecologist  
Evan Gwilliam, CACO, Aquatic Ecologist  
Kelly Boland, CACO, Wildlife BioTech  
Charles Roman, NPS, North Atlantic CESU  
Beth Johnson, NPS, Northeast Region Inventory & Monitoring Coordinator  
Bryan Milstead, NPS, Northeast Coastal and Barrier Network Coordinator  
Don Cahoon, USGS-BRD, Liaison to the CACO Prototype LTEM Program  
Carrie Phillips, CACO, Prototype LTEM Program Coordinator

**Proposed Agenda:**

- 8:30 Introduction: Review of Workshop Objectives and Proposed Agenda
- 8:45 Estuaries and Salt Marshes:  
-Review Project Evaluations  
-Identify Core Monitoring Projects  
-Prioritize Remaining Projects
- 10:00 Break
- 10:15 Ponds and Fresh Water Wetlands:  
-Review Project Evaluations  
-Identify Core Monitoring Projects  
-Prioritize Remaining Projects
- 11:30 Lunch
- 12:45 Coastal Uplands:  
-Review Project Evaluations  
-Identify Core Monitoring Projects  
-Prioritize Remaining Projects
- 2:00 Break
- 2:15 Beaches, Spits, and Barrier Islands:  
-Review Project Evaluations  
-Identify Priority Management Issues  
-Identify Core Monitoring Projects  
-Prioritize Remaining Projects
- 3:00 Park-Wide/Multi-System:  
-Review Project Evaluations  
-Identify Priority Management Issues  
-Identify Core Monitoring Projects  
-Prioritize Remaining Projects
- 4:00 Synthesis and Summary
- 5:00 Adjourn

#### **IV. Recommendations**

**1. Prioritization. Program leaders should prioritize among the many monitoring components that are being developed, provide a focus on essential information, and strike an appropriate balance between tactical and strategic monitoring.**

The program is at a point in its development for careful consideration of the level of monitoring that can be sustained over the long-term. There are a number of reasons to begin from a conservative foundation, implementing the most essential protocols first, and expanding as resources allow. The workload and cost per protocol can only be estimated at this point. For many of the protocols, several consecutive years of data should be collected before an appropriate sampling frequency and adequate sample size are determined. This approach allows a near-term emphasis on development of key protocol databases, routine reporting formats and finding ways to accomplish data integration.

- **There was a consensus that the program was attempting to do too much.** Program leaders should meet within the next 2 months to make the difficult decisions about how to prioritize among monitoring components and to determine which components will be included in a core program that can be sustained ‘forever’. Criteria for prioritizing among monitoring components might include a) direct application to management and decision-making issues of highest concern; b) clear link to the conceptual models of the Cape Cod ecosystem and maintaining integration across the suite of protocols selected; c) use of established, “tried and true” techniques; d) high signal to noise ratio, i.e. the likelihood of showing a trend if one exists; e) application to the network and the region; f) sustainability, in terms of financial and staffing resources needed and logistics of operations; g) maintaining an appropriate balance between short-term and long-term management issues and information needs [ideally, data will have immediate value to the public and park administrators as well as value for detecting long-term changes]; h) responsiveness, capability of providing early warning of threats to ecosystems and resources; i) public appeal and marketing value; and j) value as “building blocks” in understanding system or interpreting other data.

Attachment II: Draft evaluation form to be completed by lead staff scientist for each project

**Project:**

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**SCOPE AND LOGISTICS**

**Which of the following best describes the scope of the project (as described in the Conceptual Framework Update) ?**

- Inventory: a one-time assessment of distribution and/or abundance
- Ecological Characterization: a discrete (eg. 1-3 yr) study focusing on describing the ecological components and processes associated with a specific habitat or system
- Monitoring: a long-term project intended to detect change across years or decades
- Primarily inventory or ecological characterization but includes an element intended to develop into long-term monitoring

**Logistical considerations as best you know them ("unknown" is fine):**

For the last column, please indicate the certainty of the information by choosing the most appropriate qualifier:

A-as written in a final or near-final protocol or study plan

B-reasonable estimate based on early draft protocol or ongoing field work

C-your best guess

		Qualifier A/B/C
Duration of field and lab work in each year data are collected (eg. X months, X weeks, X days/month year round, etc)		
Annual frequency		
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management		
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

**Project:**

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**EVALUATION CRITERIA**

**Relevance to management issues**

1-Management Issue:

2-Issue Priority (pick one):

- A: known threat to species or habitat function or persistence
- B: suspected threat to species or habitat function or persistence
- C: known or likely to degrade population vigor or habitat function
- D: suspected impact but intensity and immediacy unknown

3-Relationship between monitoring questions and management issue (pick one):

- A: synonymous: project monitors the specific parameters at issue
- B: directly related: project monitors parameters that are indicators of the issue; or project is critical to interpreting results from other protocols that are also directly related
- C: indirectly related: project monitors parameters that may help us understand a secondary cause or effect of the issue
- D: contextual: project will help describe the physical and ecological setting of the issue in a more complete way

**Contribution to understanding ecosystem integrity**

Relationship between monitoring questions and understanding the target ecosystem (pick one):

- A: monitoring questions address known ecosystem drivers or indicators of system integrity - the functional relationship between system integrity and the driver or indicator is well understood
- B: monitoring questions address suspected drivers or indicators - the functional relationship between system integrity and the driver or indicator is logical but has not been demonstrated
- C: project will help describe a poorly understood aspect of the target system.

**Relationship to other protocols (list attached)**

List monitoring projects that:

depend on this project for analysis and interpretation:

would benefit by the context provided by this project:

are necessary for analysis and interpretation of the results of this project:

are not necessary for interpretation but will provide a more complete context for the results of this project:

**Relationship to program objectives as articulated in the original proposal and Conceptual Framework**

Was this project specifically identified in the original proposal? Y/N

Was this project specifically identified in the 1999 Conceptual Framework? Y/N

If no to both, why was this project added?

(Please be brief - like 100 words or less; bullets are fine)

**Likelihood of detecting change over time**

If different components of the project have different likelihood of detecting change, complete the following section for each component (or set of components) as necessary to reflect fully the project's potential.

If power analysis has been done, what were the results? (eg. X% chance of detecting X magnitude of change in X parameter over X years)

If no power analysis yet, which of the following best reflects your sense of the likelihood that this project will be able to detect change over time?

- A: highly likely
- B: likely
- C: possible
- D: unlikely
- X: too early to guess

Is this based on:

- quantitative data analysis other than a power analysis?
- qualitative assessment of the data?
- similar studies?
- best guess?
- other:

**Applicability to the NCB Network and the Atlantic and Gulf Coast biogeographic region**

Does this protocol address an issue common among most parks in the Network? Y/N

Does this protocol address an issue common among most parks along the Atlantic and Gulf coasts? Y/N

Is the protocol (or will the protocol be):

- A: directly exportable to other parks with only specific sites requiring local adaptation?
- B: exportable but requiring minor changes to account for differences in environmental stressors, biota, habitat characteristics, etc?
- C: useful to other parks but requiring significant local adaptation?
- D: not applicable to other parks

List of Monitoring Protocols and Related Studies

Estuaries and Salt Marshes

- Estuarine Nutrient Enrichment
- Salt Marsh Sedimentation Rate Response to Sea-Level Rise
- Salt Marsh Vegetation
- Estuarine Benthic Macrofauna
- Estuarine Nekton
- Waterbirds - Migrating Waterbirds

Beaches, Spits, and Barrier Islands

- Geomorphic Shoreline Change
- Beach Macroinvertebrates
- Waterbirds - Colonial Waterbirds
- Waterbirds - Piping Plovers

Ponds and Freshwater Wetlands

- Kettle Pond Water Quality
- Kettle Pond Vegetation
- Dune Slack Vernal Wetlands
- Province Lands Ponds
- Woodland Vernal Pool Vegetation
- Freshwater Aquatic Invertebrates
- Freshwater Fish
- Pond-Breeding Amphibians
- Waterbirds - Marshbirds

Coastal Uplands

- Lichens
- Dune Grassland Vegetation
- Coastal Heathlands
- Coastal Forests
- Reptiles
- Landbirds - Avian Point Counts
- Landbirds - Monitoring Avian Productivity and Survivorship
- Small Mammals
- Meso-Mammals/Carnivores

Park-Wide/Multi-System

- Meteorologic and Atmospheric Monitoring
- Contaminants
- Hydrology
- Ground-Water Quality
- Visitor Use and Resource Impact