Long-Term Ecosystem Monitoring Program at Cape Cod National Seashore

2003 Cape Cod National Seashore LTEM Project Prioritization Report

Prepared by:

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Introduction

The 2002 Update of the Conceptual Framework for the Development of Long-Term Monitoring Protocols[1] described 33 projects underway or planned as part of the Cape Cod LTEM Program. We will not know how many of these monitoring projects can be sustained over the long-term until more protocols are finalized, field tested, and revised accordingly. However, based on the staff and resources required for those protocols that are underway, it is unlikely that we will be able to implement reliably all of the long-term monitoring projects identified in the 2002 Update given projected resources. As a result, it is important to prioritize monitoring projects and phase in their implementation in a manner that ensures the long-term sustainability of the most essential. Specifically, we want to ensure that:

- the program can be sustained over the long term given our existing budget and staffing plan;
- the program includes those projects that relate most directly to environmental concerns at Cape Cod National Seashore (CACO); and
- we are capable of fully implementing the projects we undertake, including planning, hiring and supervision or contract oversight, data collection, data management, analysis, and reporting.

Prioritization is an important tool that will identify the most critical projects and guide the subsequent phase-in of other important monitoring efforts as program capacity allows.

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 as Appendix I.

In response to this need, and to fulfill our commitments in the FY2003 work plan and to the Program Review Panel, we undertook a prioritization effort during the first half of FY2003. Our objectives were to:

- identify the core suite of monitoring protocols necessary to satisfy the primary goals of the Cape Cod LTEM Program;
- order or classify the remaining protocols in a manner that would facilitate their integration into the program over the long-term; and

[1] Boland, K., R. Cook, E. Gwilliam, C. Phillips, J. Portnoy, and S. Smith. 2002. 2002 Update of the Conceptual Framework for the Development of Long-Term Monitoring Protocols at Cape Cod National Seashore. Cape Cod National Seashore. 74p.

- ensure that these priorities are consistent with the original LTEM Program proposal[2] and the Program's 1999 Conceptual Framework[3].

This report describes the process we used, documents the results (also summarized in Table 1 on page 9), and describes how this prioritization will be used and updated as the Cape Cod LTEM Program matures.

Prioritization Process

The process we used to prioritize the LTEM Program's long-term monitoring projects consisted of four basic steps:

1. Identify a group of staff, managers, and technical advisors to complete the prioritization process;
2. Establish criteria for determining the priority of each project;
3. Evaluate each project according to those criteria;
4. Conduct a workshop to synthesize the project evaluations, identify a core suite of projects, and categorize the remaining projects for future implementation.

Prioritization Group:

Prioritization Group participants were chosen to reflect a variety of perspectives and expertise including:

- familiarity with short- and long-term resource management issues;
- appreciation 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
- experience with the logistical considerations and limitations associated with implementing monitoring protocols.

We also believed it was important to invite participation from individuals who are relatively new to the program to provide a fresh perspective to the process, and to limit the size of the group to facilitate productive discussion.

Based on these considerations the work group consisted of:

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

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[2] Cape Cod National Seashore. 1993. A Proposal for Cape Cod National Seashore to Serve as a Prototype Monitoring Program for the Atlantic/Gulf Coast Biogeographic Region. 91 pp.
[3] Roman, C.T. and N.E. Barret. 1999. Conceptual Framework for the Development of Long-term Monitoring Protocols at Cape Cod National Seashore. USGS Patuxent Wildlife Research Center. University of Rhode Island. 59 pp.

Beth Johnson, NPS, Northeast Region Inventory & Monitoring Coordinator
Sara Stevens, NPS, Northeast Coastal and Barrier Network Data Manager
Don Cahoon, USGS-BRD, Liaison to the CACO Prototype LTEM Program
Carrie Phillips, CACO, Prototype LTEM Program Coordinator

Establishing Evaluation Criteria:

During the 2002 Program Review, we discussed a variety of criteria that could be used to prioritize among long-term monitoring projects. We used notes from that discussion to establish the following evaluation 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 and the Conceptual Framework;
- likelihood of detecting change over time; and
- applicability to parks in the Northeast Coastal and Barrier Network and to other networks in the Atlantic and Gulf Coast biogeographic region.

Protocol Evaluation:

In order to standardize and document protocol evaluation, a questionnaire was developed based on the criteria listed above. LTEM Program staff completed the questionnaire for each project in or most closely related to their discipline (wildlife ecology, plant ecology, and aquatic ecology). The questionnaire also requested information regarding project scope to help clarify which projects are most focused on long-term monitoring and which are temporally-finite inventory and ecological characterization projects. Questions regarding monitoring logistics were included to help anticipate the long-term work load involved in each project. The rest of the questionnaire focused on the evaluation criteria. The completed questionnaires were provided to the Prioritization Group in advance of the workshop and are included as Appendix III.

Prioritization Workshop:

The Prioritization Group convened February 26, 2003, to identify core monitoring projects and categorize the remainder in a manner that would help guide future implementation. Key discussions and elements of the workshop are summarized below.

Tools: In addition to the protocol evaluation questionnaires described above, the Prioritization Group had several tools available to facilitate discussion during the workshop. These included:

- a summary of relationships to the 1993 proposal and the 1999 Conceptual Framework (figures 1 and 2 in Appendix II);
- a summary of project scope (ie. inventory, short-term ecological characterization, long-term monitoring) (figures 1 and 2 in Appendix II);
- a ranking of projects necessary for analysis and interpretation of data from other projects (figure 3 in Appendix II);
- a ranking of projects that would provide context for analysis and interpretation of data from other projects (figure 3 in Appendix II); and
- priorities and capacity for implementation, by discipline, as estimated by the lead staff for each discipline (figure 4 in appendix II).

These were provided in poster form and reviewed at the beginning of the workshop. All posters used during the workshop are provided and explained more fully in Appendix II.

Updating the list of CACO LTEM Program Monitoring Projects: During the course of the workshop we made several adjustments to the list of long-term monitoring projects to be prioritized:

- *Focusing on Long-Term Monitoring Projects*: Our concerns about sustainability and the need for prioritization focus on long-term monitoring projects; however, our list of LTEM projects include inventories and short-term (1-3 years) ecological characterization studies that may or may not develop into long-term monitoring projects. To maintain focus, we reviewed the temporal scope of each project and removed one proposed inventory (lichens) and one ongoing short-term ecological characterization study (dune slack wetlands) from further discussion of long-term priorities. The dune slack study is underway and will be completed within the next two years, and the lichen inventory can be considered and prioritized in a future annual work plan.

- *Addressing "Lumping and Splitting"*: As discussed in the introduction to the 2002 Update to the Conceptual Framework, expansion from the 19 projects identified in the 1999 Conceptual Framework to the 33 identified in the 2002 Update resulted, in large part, from separating components of single projects into individual monitoring efforts. This was done to better reflect the different approaches needed to achieve multiple monitoring goals. For example, the 1999 Framework called for monitoring vegetation. A variety of approaches are needed to adequately monitor the diversity of vegetation communities of management concern within CACO; as a result, "vegetation" was split into several different community-specific vegetation monitoring projects in the 2002 Update. The "lumped" projects identified in the 1999 Framework that were "split" in the 2002 update are waterbirds, landbirds, and, as discussed above, vegetation. We discussed the lumping and splitting that had occurred and made the following decisions:
  - "Landbirds" would remain as two separate projects as described in the 2002 Update (avian point counts and Monitoring Avian Productivity and Survivorship (MAPS)).
  - "Waterbirds" would remain as four separate projects as described in the 2002 Update (migrating waterbirds, marshbirds, colonial waterbirds, and piping plovers).
  - In the 2002 Update "vegetation" had been split into eight separate projects; we made a few adjustments that change this to six habitat-specific long-term vegetation monitoring projects. As discussed above, the dune slack wetland project is a short-term ecological characterization study and should not be categorized as a long-term monitoring project. We replaced "Woodland vernal pool vegetation" with "vernal pool vegetation". Site selection will focus on vernal wetland types of primary management concern (the Eastham vernal pool complex); additional types of vernal wetlands can be added to this long-term monitoring effort if program capacity allows. "Kettle pond vegetation" and "Province Lands pond vegetation" were grouped together into "pond vegetation". As with vernal wetlands, site selection will focus on the pond systems of primary management concern (kettle ponds) with additional types of ponds being added to the project later if program capacity allows.

- *Adding Cover-Type Mapping as an LTEM Program Project*: We are currently working with NatureServe and the University of Massachusetts to complete a CACO cover-type map based on photography from 2000. The most recent vegetation map for CACO was made using photography from 1991. It has been our intention to continue to acquire photography and update the map every ten years, but we have never articulated this as a specific part of the Cape Cod LTEM Program. We discussed this oversight and are taking this opportunity to add cover-type mapping as a specific long-term monitoring project.

- *Piping Plovers and Colonial Waterbirds*: Piping plovers have been monitored for many years as an integral part of CACO's management program for this threatened species. This monitoring has been implemented by Natural Resource Management (NRM) staff using NRM funds independent of the CACO LTEM Program. Beach-nesting colonial waterbirds, such as laughing gulls, oystercatchers, and several tern species, have also been monitored by NRM staff as a complement to piping plover monitoring and an important part of CACO beach management. We expect that this monitoring will remain a NRM function for the foreseeable future. As a result, the implementation of these projects will not affect the capacity of the LTEM Program to address other monitoring questions. Similarly, this LTEM project prioritization will not affect the Park's plans to continue this monitoring as long as necessary. However, because these are long-term monitoring projects that address critical management issues and are important to understanding the integrity of beach ecosystems, it is important to take them into account when evaluating the priority of LTEM Program projects. Consequently, these projects will continue to appear in lists and discussions of long-term monitoring, but CACO LTEM Program budgets and capacity will not affect the longevity of these monitoring efforts. We also concurred that "Colonial Waterbirds" could be a mis-leading project title since we are specifically addressing beach-nesting colonial waterbirds. We are taking this opportunity to re-name this monitoring effort "Beach-Nesting Colonial Waterbirds."

- *Refining "Reptiles"*: When initiated, the reptile monitoring project hoped to address a variety of taxa within this broad group and was considered within the coastal upland ecosystem category of protocols. During the course of protocol development, the scope of the project has narrowed to focus on aquatic turtles. Consequently, we are taking this opportunity to rename this project "aquatic turtles" and move it to the ponds and freshwater wetland ecosystems category of protocols.

Weighting "Relevance to High Priority Management Issues" Evaluation Criterion: We reviewed the evaluation criteria and decided that relevance to high priority management issues was the most important criterion for assessing the priority of each monitoring project. To facilitate evaluation of this criterion, we developed a list of priority management issues, compared that to those discussed in the 1999 Conceptual Framework, made a few adjustments, and ended up with the following issues of primary concern:

- shoreline change
- nutrient enrichment
- groundwater quantity and quality
- management of altered habitats
- threatened and endangered species
- recreation impacts
- air quality and pollution
- resource consumption

Prioritization Discussion: Establishing priorities entailed extensive, detailed, and iterative discussion of each project and the six evaluation criteria. Though the discussion was neither linear nor highly structured, there were a few key steps that were critical; these are summarized below:

- As a first step toward identifying high priority monitoring projects, we listed those that are most directly related to each of the priority management issues discussed above. We then discussed each listed project in detail and adjusted the list as needed. During this discussion

we considered the remaining evaluation criteria, noted those projects listed more than once (ie. directly related to more than one of the priority management issues), and compared the list to the rankings reflecting importance to other protocols (Figure 3 in Appendix II).

- We discussed the remaining projects to determine if any should be added to the first list generated. During this discussion we considered all evaluation criteria, and compared each project with the rankings reflecting importance to other protocols. Often, our discussion lead us to reconsider those projects already listed. Adjustments were made as needed so that the list of projects encompassed those that we believe are key components of a long-term ecosystem monitoring program.

- Based on existing information and our collective experience with monitoring, we felt this group of monitoring projects was highly likely to be sustainable over the long-term. However, recognizing that some uncertainty remains regarding the work-load required to implement some of the projects, and after reviewing the recommendations of the Review Panel, we decided to identify a subset of these projects as an essential core - the fewest projects necessary for a basic, long-term monitoring program capable of enhancing CACO's ability to respond to long-term management issues.

- These discussions produced three categories of projects:
  - essential components of a basic long-term monitoring program that will enhance CACO's ability to respond to long-term management issues;
  - key components of a long-term ecosystem monitoring program capable of addressing high priority management issues at CACO and meeting prototype responsibilities to the Northeast Coastal and Barrier Network and the Atlantic and Gulf Coast Biogeographic Region; and
  - projects that will augment the previous two categories to provide a more complete understanding of ecosystem change.

  We reviewed these categories of projects for relevance to the monitoring objectives of the Northeast Coastal and Barrier Network specifically, and for overall consistency with the objectives of the prioritization process in general. We also discussed the status of protocol development, and how these categories would be used to guide the phasing-in of projects as protocols are completed.

Results and Implementation:

The prioritization process placed each of the 31 long-term monitoring projects into one of three categories as summarized in Table 1 on page 9. The first category includes those projects that are essential to a basic long-term monitoring program, and is referred to as the Essential Core. These projects will track the most critical parameters directly related to CACO's highest priority management issues. These projects are also critical for interpreting the results of many of the other monitoring efforts proposed. However, implementation of only these projects would be of limited utility in forecasting or understanding the causes of ecosystem change, and would only produce a few protocols relevant to networks in the Atlantic and Gulf Coast biogeographic region. The second category includes those projects that are key to monitoring change at the ecosystem level and are referred to as the Full LTEM group. Considered cumulatively with the Essential Core group, the Full LTEM suite of projects will significantly increase our ability to detect and understand ecosystem change, to forecast potentially adverse changes, and to inform and evaluate management actions. These projects will also help us meet our responsibilities to the Northeast Coastal and Barrier Network and other networks in the biogeographic region. The

projects in the third category are those that would augment the Essential Core and Full LTEM groups to provide a more complete understanding of ecosystem change; these projects are referred to as the Expanded LTEM group.

To ensure implementation of the most fundamental long-term monitoring projects, and to reflect the cumulative value of the projects in the other two categories, our future work plans will be developed based on successive application of the following general priorities:

1st : continue implementation of operational Essential Core projects;
2nd: implement Essential Core projects for which protocols have been completed but which have not become operational;
3rd: continue protocol development work for any Essential Core projects lacking completed protocols;
4th: continue operational Full LTEM projects;
5th: implement Full LTEM projects for which protocols have been completed but which have not become operational;
6th: continue protocol development work for any Full LTEM projects lacking completed protocols;
7th: continue any Expanded LTEM projects that have become operational;
8th: implement any Expanded LTEM projects for which protocols have been completed but which have not become operational;
9th: continue protocol development work for any Expanded LTEM projects lacking completed protocols.

At some point we will be unable to phase in additional projects without compromising the implementation of those that are already operational - this will define the outer limits of the program's capacity. By focusing on implementation of Essential Core projects first, we will ensure that this capacity includes those projects that are most fundamental to basic long-term monitoring at CACO. However, implementation of the maximum number of protocols possible won't necessarily equate to a successful and sustainable program. To reach that objective, it is crucial that we also integrate the following considerations into our work planning process:

- Each long-term monitoring project involves several phases of equal importance including planning, hiring and supervision or contract oversight, data collection, data management, analysis, and reporting. *We should not contemplate implementation of additional projects until we have demonstrated our ability to complete all phases for those projects that are already operational.*
- The ecosystem-approach described in the 1999 Conceptual Framework emphasizes integration of monitoring efforts in order to understand the causes of ecosystem change. Our work plans must budget adequate time and resources for integrated and inter-disciplinary analyses of monitoring results.
- The ability of each project to detect meaningful trends will be better estimated after several cycles of data collection. These future power analyses may guide us to increase the intensity of monitoring beyond what is described in current protocols. If high priority monitoring projects require intensified work in order to produce meaningful results, and if such increases in work effort impair our ability to thoroughly and reliably implement other operational protocols, it may be necessary to consider discontinuing implementation of a lower priority protocol in order to ensure the overall integrity and sustainability of the program. It is also possible that future power analyses of collected data will show that certain projects can be abbreviated without compromising statistical power; in such cases, lower-priority projects could be initiated or expanded.

Many of the projects envisioned to be part of the Cape Cod LTEM Program are still in development, and their feasibility and likelihood of detecting meaningful change can only be estimated. As developmental projects come into sharper focus, it will be important to review this prioritization and confirm its validity in light of any new information. This review will occur at least once every two years and will involve technical advisors if substantial revisions are suggested.

Table 1 - Summary of Prioritization Results:

Essential Core: Fundamental components of a basic long-term monitoring program that will enhance CACO's ability to respond to long-term management issues:		
Project:	Ecosystem:	Status:
Estuarine Nutrient Enrichment	Estuaries and Salt Marshes	In Development
Salt Marsh Vegetation	" " "	Operational
Shoreline Change	Beaches, Spits, Barrier Islands	In Development
Kettle Pond Water Quality	Ponds and Freshwater Wetlands	Operational
Cover-type Mapping	Park-Wide/Multi-System	Operational
Meterologic and Atmospheric Monitoring	" " "	Operational
Hydrology	" " "	Protocol Complete
Full LTEM: Key components of a long-term ecosystem monitoring program that will address high priority management issues at CACO, and meet Prototype responsibilities to the Northeast Coastal and Barrier Network and the Atlantic and Gulf Coast Biogeographic Region:		
Project:	Ecosystem:	Status:
Salt Marsh Sediment Elevation Response to Sea Level Rise	Estuaries and Salt Marshes	Operational
Estuarine Nekton	" " "	Protocol Complete
Estuarine Benthic Macrofauna	" " "	In Development
Piping Plovers (implemented by NRM)	Beaches, Spits, Barrier Islands	Operational
Beach-Nesting Colonial Waterbirds (implemented by NRM)	" " "	Operational
Pond Vegetation	Ponds and Freshwater Wetlands	In Development
Vernal Wetland Vegetation	" " "	In Development
Freshwater Fish	" " "	In Development
Pond-Breeding Amphibians	" " "	Operational
Dune Grassland Vegetation	Coastal Uplands	In Development
Coastal Heathlands	" " "	In Development
Coastal Forests	" " "	In Development
Landbirds - Avian Point Counts	" " "	In Development
Meso-Mammals	" " "	In Development
Ground Water Quality	Park-Wide/Multi-System	In Development
Visitor Use and Resource Impact	" " "	In Development
Expanded LTEM: Components that will complement the projects listed above to provide a more complete understanding of ecosystem change:		
Project:	Ecosystem:	Status:
Migrating Waterbirds	Estuaries and Salt Marshes	In Development
Beach Macroinvertebrates	Beaches, Spits, Barrier Islands	In Development
Freshwater Aquatic Invertebrates	Ponds and Freshwater Wetlands	In Development
Marsh Birds	" " "	In Development
Aquatic Turtles	" " "	In Development
Landbirds - MAPS	Coastal Uplands	Protocol Complete
Small Mammals	" " "	Protocol Complete
Contaminants	Park-Wide/Multi-System	In Development

Appendix I: Complete text of Review Panel recommendation (November 25, 2002) regarding long-term monitoring project prioritization

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.

Appendix II: Summary material provided in poster form for the Prioritization Workshop, February 26, 2003

To summarize information from the Project Evaluations and to facilitate discussion, a variety of posters were provided for the Prioritization Workshop. Brief explanations are provided below, and the graphics appear on the following pages.

Figures 1 and 2: One of the evaluation criteria addressed the relationship of each project to the original LTEM proposal prepared in 1993, and to the Program's 1999 Conceptual Framework. An unrelated element of interest was the temporal scope of each project. Information addressing both of these issues was summarized into tables organized by ecosystem. Figure 1 contains tables for Estuaries and Salt Marshes; Beaches, Spits, and Barrier Islands; and Ponds and Freshwater Wetland projects. Figure 2 contains tables for Coastal Uplands and Park-Wide/Multi-System projects. For some of the projects, the relationship to the 1993 proposal and 1999 framework is denoted with a "G". This indicates that the project was identified as a subset of a larger monitoring effort (please see the discussion of lumping and splitting on page 4).

Figure 3: Another evaluation criterion addressed the importance of each project to the interpretation of the results of other projects. On each project evaluation questionnaire, the staff scientist was asked to list any other monitoring projects necessary for the analysis and interpretation of the project being evaluated. For example, analysis and interpretation of freshwater aquatic invertebrate data will require data collected by the kettle pond water quality monitoring project. Each project that was identified as being necessary to another project is listed in the first part of Figure 3. Following the name of each listed project is a row of stars indicating the number of other projects that rely on the results of the project listed. For example, data from the meteorologic and atmospheric monitoring project is necessary for the analysis and interpretation of eight other monitoring projects. Similarly, each project evaluation also listed other projects that are not necessary for analysis, but that would provide a more complete context for interpreting the results of the project being evaluated. For example, meteorologic and atmospheric monitoring data are not necessary for the analysis of freshwater aquatic invertebrate data, but it will provide help provide context for the results. This information is summarized in the second part of Figure 3.

Figure 4: For a discipline-based perspective on priority, each staff scientist was asked to list the projects in their discipline in their recommended priority order. For a rough estimate of program capacity, each was also asked to indicate how much of the prioritized list they believed could be implemented for the long-term. The results are presented in Figure 4.

Figure 5: This poster provided a summary of workshop objectives, listed the evaluation criteria, and identified some other considerations to help focus discussion and provide easy reference throughout the workshop.

Figure 1

Estuaries and Salt Marshes	93 Proposal	99 Framework	Inventory/Eco Characterization	Inv/EC with Developmental Monitoring Element	Long-Term Monitoring
Estuarine Nutrient Enrichment:	X	X			X
Salt Marsh Sediment Elevation (SETs):					X
Salt Marsh Vegetation:	X	G			X
Estuarine Benthic Macrofauna:	X				X
Estuarine Nekton:	X	X			X
Waterbirds - Migrating Waterbirds:	G	G			X

Beaches, Spits, Barrier Islands	93 Proposal	99 Framework	Inventory/Eco Characterization	Inv/EC with Developmental Monitoring Element	Long-Term Monitoring
Geomorphic Shoreline Change:	X	X			X
Beach Macroinvertebrates:				X	
***Waterbirds - Colonial Waterbirds:**		G			X
***Waterbirds - Piping Plovers:**		G			X

***Piping Plovers and Colonial Waterbirds will continue to be implemented by NRM**

Ponds and Freshwater Wetlands	93 Proposal	99 Framework	Inventory/Eco Characterization	Inv/EC with Developmental Monitoring Element	Long-Term Monitoring
Kettle Pond Water Quality:	X	X			X
Kettle Pond Vegetation:	X	G			X
Dune Slack Vernal Wetlands:		G	X		
Province Lands Ponds:		G			X
Woodland Vernal Pool Vegetation:		G			X
Freshwater Aquatic Invertebrates:		X			X
Freshwater Fish:		X			X
Pond-Breeding Amphibians:		X			X
Waterbirds - Marshbirds:		G			X

Reptiles has been narrowed to aquatic turtles - should be moved to Ponds and Freshwater Wetlands group

Blue = completed protocol
G = identified within a larger project

Figure 2

Coastal Uplands	93 Proposal	99 Framework	Inventory/Eco Characterization	Inv/EC with Developmental Monitoring Element	Long-Term Monitoring
Lichens:			X		
Dune Grassland Vegetation		G			X
Coastal Heathlands:	X	G			X
Coastal Forests:	X	G			X
*Reptiles:					X
Landbirds - Avian Point Counts:					X
Landbirds - MAPS:		X			X
Small Mammals:					X
Meso-Mammals:		X			X

*** Reptiles has been narrowed to aquatic turtles - should be moved to Ponds and Freshwater Wetlands group**

Park-Wide/Multi-System	93 Proposal	99 Framework	Inventory/Eco Characterization	Inv/EC with Developmental Monitoring Element	Long-Term Monitoring
Meteorologic/Atmospheric:	X	X			X
*Contaminants:				X	
Hydrology:	X	X			X
Ground-Water Quality:		X			X
Visitor Use and Resource Impact:		X			X

***A Network project that could identify long-term contaminant monitoring needs**

Blue = completed protocol
G = identified within a larger project

Figure 3

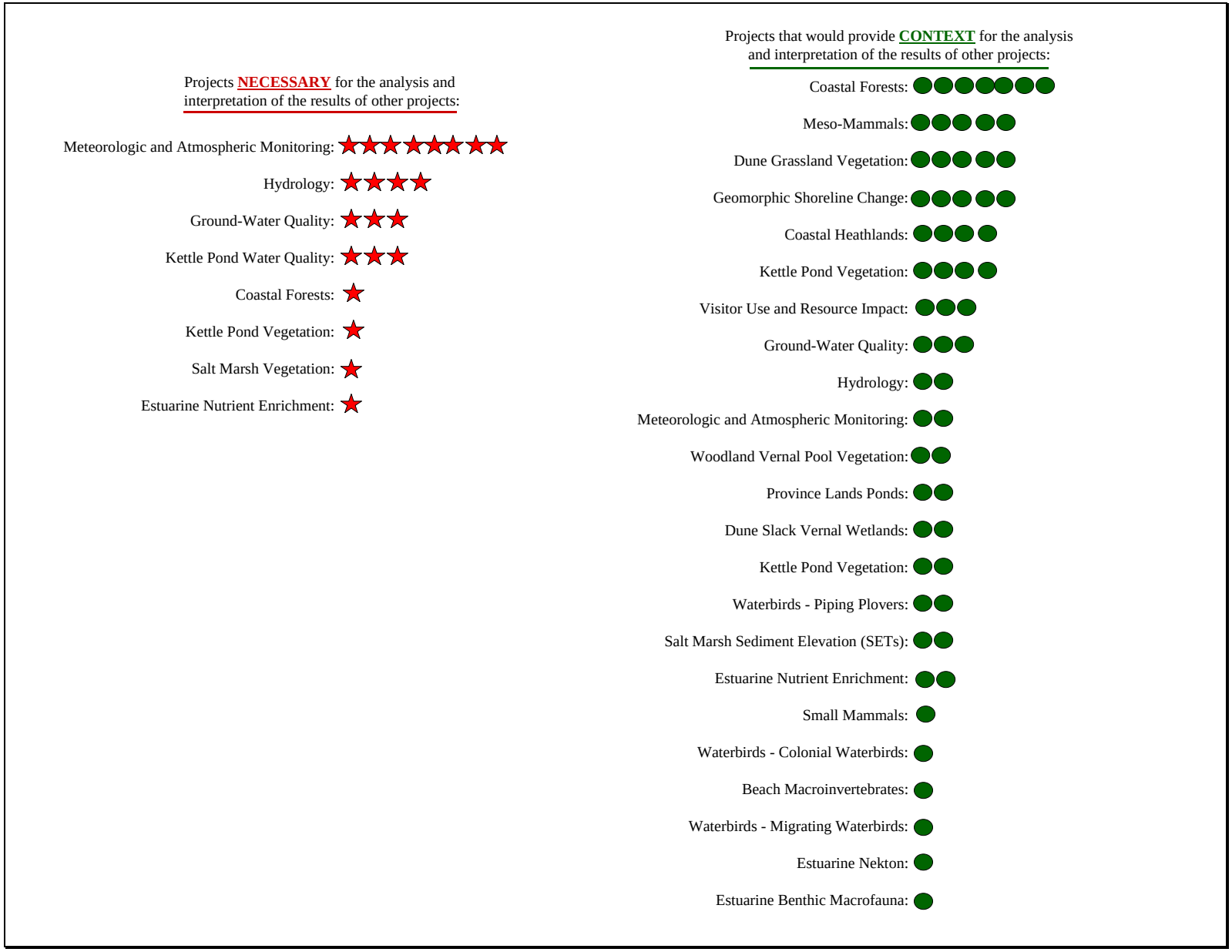
Projects NECESSARY for the analysis and interpretation of the results of other projects:
Meteorologic and Atmospheric Monitoring:
Hydrology:
Ground-Water Quality:
Kettle Pond Water Quality:
Coastal Forests:
Kettle Pond Vegetation:
Salt Marsh Vegetation:
Estuarine Nutrient Enrichment:
Projects that would provide CONTEXT for the analysis and interpretation of the results of other projects:
Coastal Forests:
Meso-Mammals:
Dune Grassland Vegetation:
Geomorphic Shoreline Change:
Coastal Heathlands:
Kettle Pond Vegetation:
Visitor Use and Resource Impact:
Ground-Water Quality:
Hydrology:
Meteorologic and Atmospheric Monitoring:
Woodland Vernal Pool Vegetation:
Province Lands Ponds:
Dune Slack Vernal Wetlands:
Kettle Pond Vegetation:
Waterbirds - Piping Plovers:
Salt Marsh Sediment Elevation (SETs):
Estuarine Nutrient Enrichment:
Small Mammals:
Waterbirds - Colonial Waterbirds:
Beach Macroinvertebrates:
Waterbirds - Migrating Waterbirds:
Estuarine Nekton:
Estuarine Benthic Macrofauna:

Figure 4

Priorities/Capacity by Discipline
best estimates by lead staff

Plant Ecology

1. **Coastal Forests**
2. **Coastal Heathlands**
3. **Salt Marsh Vegetation**
4. **Kettle Pond Vegetation**
5. **Province Lands Ponds**
6. **Dune Slack Vernal Wetlands**
7. **Woodland Vernal Pools**
8. **Dune Grasslands**
9. **Lichens**

Assumptions/Considerations:
•Forest monitoring: 2 consecutive seasons every 10 years
•All others: 1 season every 5 years
•Lichens: 1-time inventory through contract

Wildlife Ecology

1. **Waterbirds: Piping Plover**
2. **Waterbirds: Colonial**
3. **Pond-Breeding Amphibians**
4. **Waterbirds: Marsh Birds**
5. **Waterbirds: Migrating**
6. **Small Mammals**
7. **Reptiles: AquaticTurtles**
8. **Landbirds: Point Counts**
9. **Meso-Mammals**
10. Landbirds: MAPS

Assumptions/Considerations:
•NRM staff continue Piping Plover and Colonial Waterbird monitoring
•Amphibians and MAPS: annually
•Reptiles: 4 years out of every 6
•MAPS: annually
•All others: 2 consecutive years out of every 6

Aquatic Ecology

1. **Kettle Pond Water Quality**
2. **Estuarine Nutrient Enrichment**
3. **Salt Marsh Elevation (SETs)**
4. **Estuarine Nekton**
5. Freshwater Aquatic Macroinvertebrates
6. Estuarine Benthic Macrofauna
7. Freshwater Fish
8. Beach Macroinvertebrates

Assumptions/Considerations:
•Kettle Pond WQ and Estuarine Nutrient Enrichment monitoring: annually
•SETs: bi-annually
•Estuarine Nekton: once every 1-3 years
•All others: frequency/duration/resources required are unknown

Physical Science

1. **Hydrology**
2. **Meteorologic/Atmospheric Monitoring**
3. **Geomorphic Shoreline Change**
4. **Ground-Water Quality**
5. Contaminants

Assumptions/Considerations:
•Shoreline Change implemented through Network with CACO assistance
•Assumes Ground-Water Quality integrated into Hydrology monitoring
•Contaminants: frequency/duration/resources required are unknown

Bold = potentially sustainable

Figure 5

Objectives:

- Identify core suite of protocols that:
  - meet "ecosystem-based issue-oriented" goals
  - contribute to monitoring efforts of Network and Atlantic/Gulf Coast Biogeographic Region
  - are likely to be sustainable over the long term
- Prioritize or categorize remaining projects and protocols to:
  - facilitate integration into the program over the long-term
  - help define logical degree of completion for those still in development

Misc. Considerations:

- transition from development to implementation - 3-5 years?
- "sustainable"
  - -within existing staffing plan and budget;
  - -includes planning, hiring/supervising, data collection, data management, analysis, reporting
- not all projects = long-term monitoring
- work required / potential to detect meaningful change still unknown for ~85% of proposed projects

Evaluation 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 (93) and Conceptual Framework (99)
- likelihood of detecting meaningful change over time
- applicability to parks in the NC&B Network and other networks in the Atlantic/Gulf Coast Biogeographic Region

Appendix III: Project Evaluations

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Project: Estuarine Nutrient Enrichment

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)	Spring to Autumn	A
Annual frequency	Yearly	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1 Tech, (AQ EC Tech) 1 SCA	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	NO	B

Could this project be farmed out?
No, this project needs to be done yearly on the long term. It would not be feasible, due to cost, to farm this work out.

Project: Estuarine Nutrient Enrichment

EVALUATION CRITERIA

Relevance to management issues

1-Management Issue: Nutrient loading in the estuaries managed by the CCNS is of great concern to Park managers. The estuaries of the CCNS are one of the Park's greatest treasures, and monitoring the flow, ecosystem utilization and fate of nutrients in the estuaries of the CCNS is vital. This monitoring effort will provide baseline information on possible estuarine eutrofication, and the cascade of effects of nutrient loading on the ecology, recreation and commercial activities within these marshes.

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:
Salt Marsh Vegetation, Estuarine Benthic Macrofauna, Estuarine Nekton, Waterbirds-Migrating

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

Project: Salt Marsh Sediment Rate Response to Sea Level Rise

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)	Two, 2 week sampling periods	B
Annual frequency	Bi-Annually	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	Four workers to collect data in field, one worker to work data	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Need ~$110 of N2 each sampling period, and about $100 for upkeep of equipment and sites annually.	C

Could this project be farmed out?

Yes, researchers from the USGS, or other agency could conduct this work, **<u>however</u>** CACO has an interest in seeing this project done internally; for project continuity, insuring the continuation of the program due to the importance of sea-level rise on other monitoring efforts and management issues.

Project: Salt Marsh Sediment Rate Response to Sea Level Rise

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Threat to all estuarine natural resources from global climate change, expressed through and increase in sea-level rise.

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:
Estuarine Nutrient Enrichment, Salt Marsh Vegetation, Estuarine Benthic Macrofauna, Estuarine Nekton, Migrating Waterbirds, Park-wide Hydrology (saltwater intrusion into aquifer)

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

Project: Salt Marsh Vegetation

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)	3 months	A
Annual frequency	once every 5 yrs	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? No

Project: Salt Marsh Vegetation

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: sea level rise, estuarine enrichment, salt marsh restoration

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: estuarine nekton

would benefit by the context provided by this project: herps, wildlife

are necessary for analysis and interpretation of the results of this project: atmospheric monitoring, estuarine nutrient enrichment

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)
>90% probability of detecting significant change (significance defined by Euclidean distance similarity index)

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

Project: Estuarine Benthic Macrofauna

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)	May-October 2003	B (from proposal)
Annual frequency	UNKNOWN	UNKNOWN
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	UNKNOWN, possibly three workers, (from proposal)	C (from proposal)
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	No	C (from proposal budget)

Could this project be farmed out? No

Project: Estuarine Benthic Macrofauna

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Conducting an initial inventory, and producing a monitoring protocol for estuarine benthic macroinvertebrate will provide invaluable baseline data in case of oil spills or other environmental catastrophes. Monitoring estuarine benthic macrofauna community structure, and response to natural processes and human induced stressors will provide insight into estuarine ecosystem stability that is well documented in the literature.

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:
Contaminants

would benefit by the context provided by this project:
Salt Marsh Vegetation, Estuarine Nekton, Waterbirds- Migrating Waterbirds, Estuarine Nutrient Enrichment

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: Salt marsh sedimentation rate response to sea-level rise

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

Project: Estuarine Nekton

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)	Early Summer to Late Summer	A
Annual frequency	1-3 yr interval	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	Two workers	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Costs less than $1000	A

Could this project be farmed out? Not currently. It could be possibly farmed out after the proper sampling interval was determined. However, I feel contracting this work would incur more expenses than hiring a seasonal tech to conduct the work

Project: Estuarine Nekton

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: The estuaries of the Lower Cape are one of the greatest treasures of the CCNS. They are also one of the most threatened and vulnerable; highly used for recreation and commerce, and also vulnerable to sea-level rise and catastrophic disasters such as oil and chemical spills. Monitoring Nekton is an efficient and accurate way of understanding estuarine ecosystem response to change, from top down and bottom up.

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:
Estuarine Nutrient Enrichment, Salt Marsh Sedimentaion Rate Response to Sea-Level rise, Salt Marsh Vegetation, Estuarine Benthic Macrofauna, Waterbirds-Migrating Waterbirds

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)

With n>15 the power of .9 there is a 90% chance to detect change when a difference actually exists

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

Project: Migrating Waterbirds

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 work in each year data is collected (eg. X months, X weeks, X days/month year round, etc)	mid-July to end of October, full time, every week	A
Annual frequency	Two consecutive years in a six year cysle	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	I bio tech and 1 SCA	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	A

Could this project be farmed out? May be possible but not desirable

Project: Migrating Waterbirds

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue:
Estuarine habitats / environmental change: Nutrient enrichment, Shoreline change, Sea level rise
Global declines in shorebirds
Aquaculture
Visitor Use

2-Issue Priority (pick one):
A: known threat to species or habitat persistence
B: suspected threat to species or habitat 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 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 monitoring projects that:
depend on this project for analysis and interpretation:

would benefit by the context provided by this project: shoreline change, sea level rise/salt marsh sedimentation, estuarine nutrients, estuarine benthic macrofauna, estuarine nekton

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: shoreline change, sea level rise/salt marsh sedimentation, estuarine nutrients, estuarine benthic macrofauna, estuarine nekton

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 target species, habitat characteristics, etc?
C: useful to other parks but requiring significant local adaptation?
D: not applicable to other parks

Project: Geomorphic Shoreline Change

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)	SEE 1 BELOW	B
Annual frequency	SEE 1 BELOW	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	SEE 2 BELOW	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Yes, the LIDAR and advanced GIS data analysis	B

Could this project be farmed out? Parts of this protocol MUST be farmed out, i.e the LIDAR and the LIDAR data interpretation. The GIS data generated by the beach drives and the real-time photography could be done in-house, but because of the amount of time and knowledge needed for analysis, it may need to be sent off-site, to the URI-EDC of similar facility for analysis

1) The protocol draft suggests monitoring mean high water variation by traversing the outer beach with a vehicle mounted GPS receiver at least once a year, preferably four times a year, and following any "major" storm events.
It also suggests LIDAR measurements of the shoreline twice a year and after major storm events
It also indicates the use of digital remote cameras continuously capturing data to measure real-time change to the beaches. This would involve two already established sites at CCNS.

2) This protocol would involve highly trained (MS level) GIS workers, (at least two) for data analysis and interpretation. The amount of data generated by this protocol would require a serious investment of time for these workers (at least a full FTE). A well trained and motivated biotech could undertake the beach drive surveys, but for the LIDAR data and analysis of the real time data could only be done by MS level or higher workers

Project: Geomorphic Shoreline Change

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Monitoring the natural shoreline dynamics, and retreat of the land in the face of rising sea-level is basic to the understanding the driving forces behind many of the CCNS ecosystems. The loss of valuable cultural/historic (Outermost House and the Coast Guard Beach archeological site) and natural resources (endangered plover and tern breeding habitat) is of paramount concern to Park managers, and the understanding of shoreline dynamics will assist with management decisions in the future.

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:
Beach Macroinvertebrates, Waterbirds-colonial, Waterbirds-Piping Plover, Waterbirds-Marshbirds, Lichens, Dune Grassland Vegetation, Coastal Heathlands, Visitor Use and Resource Impact

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

Project: Beach Macroinvertebrate

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)	Spring thru Summer	B
Annual frequency	UNKNOWN (yearly until calibrated)	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	Two workers, one biotech and an SCA/volunteer	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	UNKNOWN, but probably not	C

Could this project be farmed out?
UNKNOWN, but I suspect not

Project: Beach Macroinvertebrate

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: The long term impact of ORV traffic on macroinvertebrate communities inhabiting the high energy outer beaches of the CCNS is unknown. This monitoring effort seeks to characterize this macroinvertebrate community and impact of ORV traffic. Additionally, the piping plover, a federally protected species forages on this macroinvertebrate community, and a decline in these forage species may have a negative impact on the CCNS breeding plover population.

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:
Waterbirds-Piping Plovers

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: Geomorphic Shoreline Change, Piping Plovers

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)

- to address specific questions about the effects of ORV traffic on the beach ecosystem in general and on piping plover food sources specifically
- to potentially link marine processes (wave energy, shoreline change, productivity as reflected by wrack abundance) with terrestrial processes (foredune dynamics, dune vegetation)
- to provide baseline information in the event of an oil spill or similar event

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 (ASIS and FIIS)

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

Project: Colonial Waterbirds

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)	May-July, collected in conjunction with Piping Plover	A
Annual frequency	annually	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	same staff as Piping Plover	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	A

Could this project be farmed out?
Already implemented by NRM and R&VP staff

Project: Colonial Waterbirds

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Federal and State listed species recovery, visitor impacts/ORV use, subsidized predators, shoreline dynamics

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: shoreline dynamics, visitor use/ORV use, meso-mammals, estuarine nekton

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

Project: Piping Plover Monitoring

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 work in each year data is collected (eg. X months, X weeks, X days/month year round, etc)	Early April thru August	A
Annual frequency	annually	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	4 seasonals plus 2 SCA's at a minimum to cover park	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	A

Could this project be farmed out?
Already implemented by NRM and R&VP staff

Project: Piping Plover Monitoring

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Federally Threatened Species Recovery, Visitor Impacts/ORV Use, Subsidized Predators

2-Issue Priority (pick one):

A: known threat to species or habitat persistence
B: suspected threat to species or habitat 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 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 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: Shoreline Dynamics, ORV Impacts to wrack/Invertebrates, Meos-mammals, Visitor Use

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 target species, habitat characteristics, etc?
C: useful to other parks but requiring significant local adaptation?
D: not applicable to other parks

Project: Kettle Pond Water Quality

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)	April to October, but lab work can continue into the winter	A
Annual frequency	Annually	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	Two, AQECO Tech and a volunteer, Park Chemist to assist with water analysis	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	No	A

Could this project be farmed out?

No, due to the long time nature of the monitoring effort.

Project: Kettle Pond Water Quality

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Nutrient loading in the Kettle ponds, and atmospheric deposition of acids and metals

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: Kettle Pond Vegetation, Freshwater Aquatic Invertebrates, Freshwater fish, Pond Breeding Amphibians, Waterbirds-Marshbirds (those that utilize the kettle ponds), Visitor Use and Impact, Dune Slack Vernal Wetlands, Provinceland Ponds

would benefit by the context provided by this project: Meteorologic and Atmospheric Monitoring, Hydrology, Ground Water Quality.

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: Ground Water Quality.

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

Project: Kettle Pond Vegetation

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)	3 months	C
Annual frequency	once every 5 years	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? No

Project: Kettle Pond Vegetation

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: eutrophication, groundwater wathdrawals

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: kettle pond water quality

would benefit by the context provided by this project: herps/wildlife

are necessary for analysis and interpretation of the results of this project: kettle pond water quality, ground water quality, hydrologic monitoring, atmospheric monitoring

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

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

Project: Dune Slack Wetlands

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)	6 months	B
Annual frequency	for next 2 years	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? No

Project: Dune Slack Wetlands

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: ground water withdrawals, rare species protection

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: herps/wildlife

are necessary for analysis and interpretation of the results of this project: hydrologic monitoring, atmospheric monitoring

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

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
*Framework called for monitoring freshwater wetlands
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

Project: Province Lands Pond Vegetation

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)	4 months	C
Annual frequency	once every 5 years	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? No

Project: Province Lands Pond Vegetation

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: water quality/hydrologic impacts, rare species

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: herp monitoring

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: kettle pond water quality, dune slack wetlands study

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
*Framework called for monitoring freshwater wetlands
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

Project: Woodland Vernal Pool Vegetation

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)	3 months	B
Annual frequency	once every 5 years	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? No

Project: Woodland Vernal Pool Vegetation

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: ground water withdrawals

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: herps

are necessary for analysis and interpretation of the results of this project: ground water quality, hydrologic monitoring, atmospheric monitoring

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

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
*Framework called for monitoring freshwater wetlands
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? based on 1997/1999 study
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

Project: Freshwater Aquatic Invertebrates

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)	UNKNOWN, Spring through Fall	C
Annual frequency	UNKNOWN	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	UNKNOWN, maybe two.	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	UNKNOWN, probably not	C

Could this project be farmed out? UNKNOWN

Project: Freshwater Aquatic Invertebrates

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Negative change in macroinvertebrate community structure and composition due to: change in trophic status and physical/chemical characteristics of water column (e.g. light penetration and temperature), invasive species, sedimentation, changes in vegetation and fish communities.

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: Kettle Pond Water Quality, Kettle Pond Vegetation, Dune Slack Vernal Wetlands, Provinceland Ponds Woodland Vernal Pool Vegetation, Freshwater Fish, Pond-Breeding Amphibians, Waterbirds-Marshbirds

are necessary for analysis and interpretation of the results of this project: Kettle Pond Water Quality,

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

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

Project: Freshwater Fish

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)	Spring to Autumn	B
Annual frequency	UNKNOWN Five Year?	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	UNKNOWN Three?	B/C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Fish stunning equipment	C

Could this project be farmed out? Perhaps, I am not that familiar with what Mather is proposing

Project: Freshwater Fish

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: The composition and distribution of the CCNS freshwater fish community, the interactions between species and functional groups, and the influence of human activities such as fishing, nutrient loading and introduction of exotic species is unknown. The freshwater fish population of the CCNS is highly valued and this program will give managers the basic knowledge to make informed decisions about this community.

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: Freshwater Aquatic Macroinvertebrates, Pond-Breeding amphibians, Water-birds-Marshbirds,

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: Groundwater quality, Hydrology, Meteorologic and Atmospheric Monitoring, Visitor Use and Impact

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

Project: **Pond Breeding Amphibians**

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 work in each year data is collected (eg. X months, X weeks, X days/month year round, etc)	Late March thru mid-July, full time, weekly sampling	A
Annual frequency	Annually	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1 Bio Tech and 1 SCA	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	No	A

Could this project be farmed out? May be possible but not desirable

Project: Pond Breeding Amphibians

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Global amphibian decline-multiple issues; Acid precipitation/Mercury deposition; Groundwater pollution; Changes in hydroperiod -Groundwater withdrawal, sea level rise; Habitat alterations; Road Kill

2-Issue Priority (pick one):

A: known threat to species or habitat persistence
B: suspected threat to species or habitat 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 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 monitoring projects that:

depend on this project for analysis and interpretation:

would benefit by the context provided by this project: water quality and hydrology, wetland vegetation, woodland vegetation, ground water quality

are necessary for analysis and interpretation of the results of this project: water quality at sampling ponds, hydrologic monitoring at sample ponds

are not necessary for interpretation but will provide a more complete context for the results of this project: kettle pond and dune slack vegetation, ground water quality

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**)** Power varied by species. Over a 10 year period, power to detect 5% changes ranged from .8 to .96. Power to detect 10% change was 1.0.

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 target species, habitat characteristics, etc?
C: useful to other parks but requiring significant local adaptation?
D: not applicable to other parks

Project: Marshbirds

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)	May - mid-July, full time	A
Annual frequency	2 consecutive years in a 6 year cycle	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1 BioTech and 1 SCA	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	A

Could this project be farmed out? May be possible but not desirable

Project: Marshbirds

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: State listed species; changes in wetland vegetation/hydrology due to: ground water withdrawal, tidal flow restoration, sea level rise

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: wetland vegetation monitoring, water quality monitoring, salt marsh restoration monitoring

are necessary for analysis and interpretation of the results of this project: wetland vegetation monitoring, water quality monitoring, salt marsh restoration monitoring

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) Based on initial work, it is low

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: revised protocol will sample at better quality sample points and increase sample size

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

Project: Lichens

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)	6 months	C
Annual frequency	one time	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? Yes

Project: Lichens

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: biodiversity, air quality indicator

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: atmospheric monitoring, coastal forest monitoring

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

Project: Dune Grassland Vegetation

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)	3 months	C
Annual frequency	once every 5 years	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? Yes

Project: Dune Grassland Vegetation

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: dune stabilization, succession

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: dune slack wetlands, heathlands, coastal forest, wildlife monitoring

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

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

Project: Coastal Heathlands

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)	Summer to Fall	B
Annual frequency	Five years	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	Two workers	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	No	B

Could this project be farmed out?
It would not be cost effective to farm this out. Data collection could be efficiently carried out by summer seasonal techs with a minimum of training. The Park Veg Ecologist would analyze and prepare reports

Project: Coastal Heathlands

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: The coastal heathlands of the CCNS are a recognized globally rare landscape type unique to the North Atlantic United States. These heathlands are the habitat of rare vegetation and wildlife. Additionally, they represent a significant cultural and historic landscape indicative of past land use practices of Native Americans and early European settlers of the Lower Cape. The Coastal heathlands are being lost to natural successional processes, coastal erosion, and in the adjoining community, to development. The Park administers the last large extents of coastal heathland on the Lower Cape. This project would monitor the changes in the heathland vegetation community and quantify the agents of change.

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: Lichens, Dune Grassland Vegetation, Coastal Forests, Landbirds, Small Mammals, Visitor Use and Impact

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: Geomorphic Shoreline Change

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)

Coastal Heathlands are mentioned specifically in the NR Management plan 1998. The NRMP recognizes the Coastal heathlands as a habitat of special concern. The coastal heathland monitoring program will provide Park managers with solid science on which to base their decisions.

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

Project: Coastal Forests

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)	4 months	B
Annual frequency	once every 10 years	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc		

Could this project be farmed out? No

Project: Coastal Forests

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: heathland loss, pine habitat loss

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: heathland, wildlife monitoring

would benefit by the context provided by this project: heathland, wildlife monitoring

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

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

Project: Reptiles – Pond and Special Concern Turtles

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 work in each year data is collected (eg. X months, X weeks, X days/month year round, etc)	Box turtles –incidental Spotted Turtle – Aug-Sept Aquatic Turtles –Aug-Sept	B
Annual frequency	Box Turtles-yearly, Spotted, Aquatic Turtle-each two consecutive years in a six year cycle.	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1 biotech and 1 SCA	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	B

Could this project be farmed out? May be possible but not desirable

Project: Reptiles – Pond and Special Concern Turtles

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: State-listed species; Development; Habitat Change-terrestrial and aquatic; Road Kill; Poaching; Wetland vegetation change; Water quality; Ground water withdrawal

2-Issue Priority (pick one):

A: known threat to species or habitat persistence
B: suspected threat to species or habitat 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 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 monitoring projects that:

depend on this project for analysis and interpretation:

would benefit by the context provided by this project: Coastal Forest; Province Land Ponds Vegetation; Contaminants (provide samples)

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: Forest Monitoring; Vegetation Monitoring in general; Water Quality; Hydrology; Wetland Vegetation; Meso-mammals; Traffic and visitation; Province Lands Ponds Vegetation

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? While a specific reptile protocol is not mentioned in the 1999 Conceptual Framework, that documents lists reptile abundance as an ecosystem response in both upland and freshwater wetlands. Reptiles (i.e. turtles) are long lived species whose populations dynamics are among the least variable of the vertebrates. In addition, ease of marking and capture makes abundance estimation relatively easy. These two attributes allow for long term monitoring based on periodic (every few years) rather than continual (annual) sampling. Special concern species such as box turtle and spotted turtle are indicators of intact woodland and vernal pond ecosystems, and reflect not only the quality and quantity of these habitats from a physical, chemical, and biotic perspective, but also incorporate anthropogenic impacts, such as road kill and poaching/collecting. Aquatic turtles are often the dominant vertebrate biomass of freshwater wetlands at CACO.

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: comparisons of population estimates based on mark-recapture are easily tested statistically

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 target species, habitat characteristics, etc?
C: useful to other parks but requiring significant local adaptation?
D: not applicable to other parks

Project: Landbirds - Avian Point Counts

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)	May - August, full time	B
Annual frequency	2 consecutive years in a 6 year cycle	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2 biotechs or 1 biotech and 1 SCA	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	B

Could this project be farmed out? more feasible than with the other wildlife protocols but not necessarily desirable

Project: Landbirds - Avian Point Counts

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: State listed species; changes in land bird abundance/species composition due to: human presence/conflict, development, habitat changes (succession, fire suppression, restoration activities), landscape changes

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: all vegetation monitoring, heathlands

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: heathlands, coastal forest, dune grassland, vegetation, meso-mammals

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? Landbird abundance is specifically identified in the 1999 Conceptual Framework, both as a parameter to be monitored and as an ecosystem response in upland habitats. However, Framework calls for monitoring using the MAPS approach. While MAPS provides useful data on survival and productivity, because it is very labor intensive, it is limited in sample size and scope within the park. Avian point counts provide a means of monitoring the presence, abundance, and distribution by habitat type of a greater number of land birds over the entire park uplands rather than at just a handful of sites. This provides more information on the status and trends of species, particularly changes in species composition, and allows us to track more habitats.

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

Project: Landbirds - MAPS (Monitoring Avian Productivity and Survival)

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)	June through August, full time	A
Annual frequency	annually	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	2 MAPS interns, plus MAPS professional staff for analysis	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Annual contract ~$25k	A

Could this project be farmed out? Yes - should be implemented by the Institute for Bird Populations out of California

Project: Landbirds - MAPS (Monitoring Avian Productivity and Survival)

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Changes in land bird abundance/species composition/survival/productivity due to: Human presence/conflict; Development; Habitat changes (succession, fire suppression, restoration activities); Landscape change

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: all vegetation

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: heathlands, coastal forest, dune grassland vegetation, meso-mammals

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

Project: Small Mammals

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 work in each year data is collected (eg. X months, X weeks, X days/month year round, etc)	2 sampling periods, mid-July to end of September	A
Annual frequency	Two consecutive years in a six year cycle	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	I biotech and 1 SCA	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	A

Could this project be farmed out? May be possible but not desirable

Project: Small Mammals

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Vegetation Change (both as cause and effect); Trends in mammalian/avian predator populations; Forest Pests (gypsy moth); Alien Plants

2-Issue Priority (pick one):
A: known threat to species or habitat persistence
B: suspected threat to species or habitat 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 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 monitoring projects that:
depend on this project for analysis and interpretation: Upland Vegetation Monitoring

would benefit by the context provided by this project: Meso-mammals; Heathland Restoration Monitoring

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: Upland vegetation monitoring; ,meso-mammals

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? Small mammal abundance was identified as an ecosystem response in both coastal barrier and upland systems, but it is not listed as a protocol. Small mammals are a key component of trophic dynamics in terrestrial communities, preying upon plants and insects and serving as prey to many species of mid-sized predators. Small mammals, by virtue of differences in species abundance and composition, also affect plant community structure through seedling predation. Thus, small mammal communities both respond to changes in the plant community and also drive them. Thus, monitoring of small mammals will help interpreting causes underlying vegetation trends, and possibly also of meso-mammals.

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) Power analysis based on a single, late summer replicate at 10 sampling sites was conducted. Power to detect a 3% annual decline in park wide small abundance was 1.0 when sampled annually for 19 years and decreased to 0.97 when sampling occurred every three years over a 21 year period. Similar results were obtained for sampling every 5 years. Thus, it is anticipated that the sampling replication proposed here would have high power.

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 target species, habitat characteristics, etc?
C: useful to other parks but requiring significant local adaptation?
D: not applicable to other parks

Project: Meso-Mammals/Carnivores

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)	probably at least six months, nearly full time	B
Annual frequency	2 consecutive years in a six year cycle	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1 biotech and 1 SCA	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Possibly, depends on disposition of equipment used in protocol development	B

Could this project be farmed out? Possible but not desirable

Project: Meso-Mammals/Carnivores

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: Vegetation Change/Ecological Succession; Development/ T&E Species (subsidized predation on); Feral Animals (also detectable); Hunting/Nuisance Species; Species of local controversy (eg. coyotes)

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: Piping Plover/Colonial Waterbirds; Reptiles (Turtles)

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: Upland Vegetation Monitoring; Small Mammals

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

The 1999 Framework lists protocols targeted at Red Fox/Coyote and White-tailed Deer. The Meso-Mammal protocol is sensitive to these species, but by bundling together a combination of methods into a sampling array, it is capable of detecting and monitoring a broader range of species.

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

Project: Meteorologic and Atmospheric Monitoring

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)	All Year	A
Annual frequency	Daily	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	One plus	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	Maybe, if other parameters are to be monitored, like mercury deposition or light pollution, more money may need to be spent	A

Could this project be farmed out?
Much of the analytical work, and some of the data collection (e.g. MA-DEP) is already done by other agencies and groups. The tech function that collects the data could not be farmed out

Project: Meteorologic and Atmospheric Monitoring

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: The amounts and constituency of the precipitation, and other atmospheric processes (e.g. salt spray) is central to nearly all of the other monitoring efforts of the CCNS. Park managers are interested in trends in deposition and effects of precipitation on the aquatic and terrestrial ecological processes at the CCNS

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: Estuarine Nutrient Enrichment, Kettle Pond Water Quality, Dune Slack Vernal Wetlands, Hydrology, Ground Water Quality, Contaminants.

would benefit by the context provided by this project: Freshwater Macroinvertebrates, Freshwater Fish, Pond-breeding Amphibians,

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

Project: Contaminants

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)	unknown	C
Annual frequency	unknown	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	unknown	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	unknown	C

Could this project be farmed out? Initial inventory and assessment is part of an NC&B Network project being implemented by a cooperator (Rutgers) with technical direction from CACO; any subsequent long-term monitoring may include sample collection or analyses that could be carried out by a cooperator

Project: Contaminants

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: CACO's resources, particularly air and water, are vulnerable to impacts from pollutants. Some specific contaminant threats have been identified and are being studied through other projects (eg. ozone, nutrients, mercury). A comprehensive assessment is needed to identify other known or potential contaminants, assess the risk they pose to CACO's ecosystems, and identify monitoring priorities.

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: ground-water quality, kettle pond water quality, estuarine nutrient enrichment, atmospheric monitoring

are necessary for analysis and interpretation of the results of this project: ground-water quality, atmospheric monitoring

are not necessary for interpretation but will provide a more complete context for the results of this project: estuarine nutrient enrichment, kettle pond water quality

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

*The 1999 Framework called for assessing petroleum hydrocarbons in estuarine sediments; that assessment has been completed

If no to both, why was this project added?

The current project is part of the NC&B Network's Vital Signs Monitoring and is intended to assess the risk posed to park resources from known or potential contaminants not already under study. Part of this assessment will include identification of monitoring priorities. This project has been added to CACO's LTEM Program as a kind of place holder for follow-up in the event that the NC&B Network project identifies contaminant monitoring priorities not covered by other CACO LTEM protocols (eg. atmospheric monitoring, ground water quality, etc).

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: We anticipate that any monitoring recommended would address threats that can be measured with a high degree of reliability.

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

Project: Hydrology

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)	Year-Round	A
Annual frequency	Monthly	A
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	One worker to collect data and maintain sites and equipment. A MS+ level hydrologist to summarize and analyze data.	A
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	No, although there may be in the future, i.e more wells drilled, more siphon gages installed robowells purchasesd and deployed	A

Could this project be farmed out?
No. The frequency and diversity of work involved precludes the farming of the data collection. However, the analysis of the data could be done off-site

Project: Hydrology

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: The flow of groundwater from precipitation, to water bodies, streams estuaries and finally into the ocean is of vital importance to many of the CCNS monitoring projects. Any changes in the flow of groundwater (e.g municipal groundwater withdrawal) could result in serious disruptions in a cascade of ecological functions. It is of paramount importance for Park managers to understand the hydrology of the CCNS

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: Ground Water Quality, Kettle Pond Water Quality, Dune Slack Vernal Wetlands, Provincelands Ponds, Woodland Vernal Pool Vegetation,

would benefit by the context provided by this project: Estuarine Nutrient Enrichment, Estuarine Benthic Macrofauna, Waterbirds-Migrating, Kettle Ond Vegetation, Freshwater Aquatic Invertebrates, Freshwater Fish, Pond-Breeding-Amphibians, Waterbirds-Marshbirds, Visitor Use and Resource Impact

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

Project: Ground-Water Quality

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)	UNKNOWN Monthly?	B
Annual frequency	UNKNOWN Monthly	B
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	One Tech, with a MS+ hydrologist and other geochemists to do analysis	B
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	UNKNOWN, perhaps new wells and analytical equipment must be purchased	B

Could this project be farmed out?
It would not be cost effective to farm the data collection. However the analysis of the collected water samples, and the analysis of the data could be farmed to applicable hydrologist, such as those at the USGS-WRD

Project: Ground-Water Quality

EVALUATION CRITERIA

Relevance to management issues

1-Management Issue: The flow of groundwater from precipitation, to water bodies, streams estuaries and finally into the ocean is of vital importance to many of the CCNS monitoring projects. Any changes in groundwater quality (e.g. nutrient input from high density housing) could result in serious disruptions in a cascade of ecological functions. It is of paramount importance for Park managers to understand the hydrology of the CCNS

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: Ground Water Quality, Kettle Pond Water Quality, Dune Slack Vernal Wetlands, Provincelands Ponds, Woodland Vernal Pool Vegetation,

would benefit by the context provided by this project: Estuarine Nutrient Enrichment, Estuarine Benthic Macrofauna, Waterbirds-Migrating, Kettle Ond Vegetation, Freshwater Aquatic Invertebrates, Freshwater Fish, Pond-Breeding-Amphibians, Waterbirds-Marshbirds, Visitor Use and Resource Impact

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

Project: Visitor Use and Resource Impact

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)	3 months	C
Annual frequency	every 3-5 yrs	C
Seasonal staff required for data collection, data entry, QA/QC, and preliminary data management	1 biotech or SCA	C
Any major recurring or 1-time costs? eg. big equipment we've yet to purchase, sending samples out for chemical or taxonomic analysis, etc	no	

Could this project be farmed out? Probably not

Project: Visitor Use and Resource Impact

EVALUATION CRITERIA

Relevance to management issues
1-Management Issue: visitor impacts to natural resources (excluding ORVs on the beaches)

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: kettle pond veg, kettle pond WQ, migrating waterbirds, piping plovers, colonial waterbirds, geomorphic shoreline change

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: kettle pond veg, kettle pond WQ, migrating waterbirds, piping plovers, colonial waterbirds, geomorphic shoreline change

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.

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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):

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D: not applicable to other parks