ANNUAL ADMINISTRATIVE REPORT (FY2000-2001) AND WORK PLAN (FY 2002) FOR INVENTORIES AND VITAL SIGNS MONITORING

FY2000-FY2002

COASTAL AND BARRIER NETWORK

Includes: Assateague Island National Seashore, Cape Cod National Seashore, Colonial National Historical Park, Fire Island National Seashore, Gateway National Recreation Area, George Washington's Birthplace National Monument, Sagamore Hill National Historic Site, and Thomas Stone National Historic Site

Coastal and Barrier Network Approval Signatures

Constantine Dillon, Superintendent, Fire Island National Seashore Date
Chair, Network Board of Directors

Elizabeth Johnson, Inventory and Monitoring Coordinator, Date
Northeast Region

Mary Foley, Chief Scientist, Boston Support Office Date
Northeast Region

John Karish, Chief Scientist, Philadelphia Support Office Date
Northeast Region

I. Overview and Objectives

The Northeast Coastal and Barrier Network includes eight national parks with significant natural resources in Virginia, Maryland, New York, New Jersey, and Massachusetts. In FY00, the network received funds from the Servicewide I&M program to identify data gaps in the inventory of vertebrates and vascular plants. The primary goal is to document the presence of 90% of species and have distribution and abundance for species of special management concern. We began to gather existing species data and populate nationally created databases including NPSpecies, NRBIB and the Data Set Catalog. In addition, where possible, we revised agreements with cooperators on inventories funded prior to FY2000 to require data management and sampling to meet the new guidelines for biological inventories. A pre-proposal was prepared that described the network parks, identified management issues, highlighted existing vertebrate and vascular plant data, suggested inventory needs and priorities by park, and listed subject matter experts. Park managers and subject matter experts were interviewed to identify data gaps, and for some parks, a workshop was held to set priorities and identify potential cooperators for needed inventories.

Funds were also provided by the I&M program in FY00 to hold a "vital signs" scoping session for the Network. In FY01, the Coastal and Barrier Network was one of 5 to receive substantial funds from the I&M program for developing a "vital signs" monitoring program. The Network also received $90,000 from the Water Resource Division to develop a water quality monitoring program designed to meet Government Performance Results Act (GPRA) goals to maintain pristine waters and improve impaired waters in network parks. To guide the development of a vital signs monitoring program, a seven-step process has been recommended:

1. Form a network Board of Directors and Science Advisory Committee.
2. Summarize existing data and understanding.
3. Prepare for and hold a scoping workshop.
4. Write a report on the workshop and have it widely reviewed.
5. Hold meetings to decide on priorities and implementation approaches.
6. Draft the monitoring strategy.
7. Have the monitoring strategy reviewed and approved.

The Network has made substantial progress toward meeting steps 1-4. A Science Advisory Committee and Board of Directors have been established and a Network Charter has been signed. In order to begin functioning as a network and to be prepared for funding in 2001, a scoping session was planned. The preliminary summary of existing data and understanding began early in 2000; then, the Science Advisory Committee met in February. For purposes of a vital signs workshop, the Committee recommended adopting the Cape Cod Prototype ecosystem models. These could be revised later as the program progressed. Based on coastal management issues, the Committee listed monitoring questions and indicators for a scoping workshop and developed a list of invitees. A considerable amount of material was provided to the participants. The scoping workshop was held in April 2000 and a workshop report was prepared by September 2000. One comment was received. The Technical Steering Committee met in September and based on results from the workshop, recommended setting up smaller workgroups to develop a detailed approaches to data mining, needs assessment and long term monitoring protocol development to

address management issues in coastal parks. Nine workgroups were established and led by staff from parks or USGS-BRD. Workgroup reports were requested by February 2001. Based on workgroup reports, FY2001 funds were obligated to projects. Most of the projects involved summarizing existing data and understanding. The long term goal of the vital signs program is to develop and test protocols and begin operational monitoring.

Objectives for Biological Inventories

1. Compile existing data for each park into NPS databases and amend data management requirements for ongoing studies.
2. Evaluate existing inventory data and gaps and write 5-year study plan for vertebrate and vascular plant inventories.
3. Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Objectives for Vital Signs Monitoring

1. Organize Network, Science Advisory Committee and Board of Directors
2. Compile existing inventory and monitoring information for identified management issues, Assess Threats, Assess Needs.

II. Accomplishments (FY2000-2001) and Scheduled Activities (FY2002)

A. Biological Inventories

Objective 1 – Compile existing data for each park into NPS databases and amend data management requirements for ongoing inventories.
Task 1.1 – Compile existing data on vertebrates and vascular plants and enter them in a consistent format into NPSpecies, NPBib, Database Template and the Dataset Catalog.

FY 2000 Accomplishments:

(1) Under cooperative agreement with the GIS Field Technical Support Center at the University of RI, spatial data sets were entered into the Dataset Catalog for CACO, GATE, FIIS and SAHI. FGDC compliant metadata was not available for these parks, so compiling the needed information was difficult. The cooperator was also working with an early version of the Catalog and there were problems. Good communication and support from WASO staff helped this effort.

(2) Under cooperative agreement with the GIS Field Technical Support Center at North Carolina State University, a program was written to transfer FGDC compliant metadata to the Dataset Catalog for ASIS, COLO, GEWA and THST. This work is expected to be complete in 2002.

(3) NPSpecies was managed under a cooperative agreement with Penn State University and the University of RI. The focus for CACO, GATE, FIIS and SAHI was to have the parks check the data. For ASIS, COLO, GEWA and THST the focus was to enter voucher records and new documents into NPSpecies. The latter parks were included in a species database that had been maintained by the regional science office.

(4) Under cooperative agreement with Penn State, Scott Tiffney, a science librarian, has been updating the NRBIB for all parks in the Northeast Region, including Coastal and Barrier Network parks. Scott will look for non-spatial data sets that should be entered into the Data Set Catalog. Scott discovered that prior NRBIB work in New England did not include published literature so new documents and new data have surfaced via his efforts. Completion is expected in FY2002.

FY 2001 Accomplishments:

(1) NPSpecies was managed under cooperative agreement with Penn State University (ASIS, COLO, GEWA and THST) and the University of RI (CACO, GATE, FIIS, SAHI). We had problems with changing staff in both of these agreements and problems with conversion of electronic data. Parks assisted in reviewing the early data and electronic conversions. Problems were noted with ANCS+ data and Regional data conversion. The NPBIB did not agree with NRBIB.
(2) Scott Tiffney, science librarian continues to update the NRBIB for the Region.
(3) Brian Watts, College of William and Mary, reviewed NPSpecies bird data for COLO, and list of potential and documented bird species by habitat was created.
(4) Under an Interagency Agreement with Patuxent Wildlife Research Center, Dr. Allan O'Connell is searching museums for vertebrate (non-fish) and vascular plant vouchers to populate NPSpecies and assist with identifying data gaps. A report is due in 2002.
(5) Under a Cooperative agreement with Penn State, Jay Stauffer is locating fish vouchers for parks in the network. A report of fish distribution for each park and an electronic database with fields corresponding to NPSpecies is due in 2001.

Scheduled FY 2002 Activities and Products:

(1) The updating of NPSpecies will continue under a cooperative agreement with URI. All references are being checked for location or other descriptive data. New species lists from published literature will be entered and as electronic data sets are located, they will be documented in the Dataset Catalog and possibly converted to a database template format.
(2) Metadata will be written for electronic data sets used to populate NPSpecies
(3) Ron Barry will develop a database template for mammal inventories at COLO, GEWA and THST. Field sampling will begin.
(4) The existing herpetological database template (developed for Acadia) will be evaluated for use at COLO, GEWA and THST. Field sampling will begin.
(5) Updating of NRBIB will continue.

Task 1.2 – Amend data management requirements for ongoing biological inventories.

FY 2000 Accomplishments:

(1) The cooperative agreement with Martha Mather, UMass, Amherst (1999) was amended to include new data delivery requirements for CACO fish data. Report is expected in 2002.

FY 2001 Accomplishments:

(1) The cooperative agreement with Wildlife Conservation Society (1999) for herpetological inventories in GATE, FIIS, SAHI, CACO and other Northeast parks was amended to include new sampling and data management requirements. Steve Fancy and WCS staff for reptile and amphibian inventory data designed a database template.

Objective 2 – Evaluate existing inventory data and gaps and write 5-year study plan for vertebrate and vascular plant inventories (all parks)

Task 2.1 – Review vascular plant data

FY 2001 Accomplishments:

(1) Les Mehrhoff is evaluating plant data in NPSpecies under a cooperative agreement with University of Connecticut for CACO, GATE, FIIS and SAHI and other Northeast parks. Dr. Mehrhoff is an expert on exotic plants and curator of the herbarium. He will check the plant lists to determine if 90% have been documented by consulting local flora and published literature.

(2) Scoping session for COLO, GEWA and THST and other VA parks recommended needed plant inventories. A workshop summary was written.

FY2002 Scheduled Activities and Products:

(1) Agreement signed with ASIS to detail Chris Lea, ASIS plant ecologist to the network for ½ year will review plant data for GATE, FIIS and SAHI to determine the need for additional floristic inventories. Park resource managers indicated no need for additional work.

Task 2.2 – Hold workshops to prioritize inventory work.

FY 2001 Accomplishments:

(1) A scoping workshop for Virginia parks in the Coastal and Barrier Network (COLO, GEWA), Mid-Atlantic Network, Appalachian Trail and National Capital Region was held in Richmond in April 2001. Preliminary data, management issues and park summaries were provided to attendees. Park resource managers and subject matter experts worked in groups to identify additional data sources, determine data gaps and recommend priorities for biological inventories. A summary report was written.

Task 2.3 – Write 5-year study plan for biological inventories.

FY 2000 Accomplishments:

(1) Park natural resource managers provided descriptions of park natural resources, management issues and data needs. Some parks indicated the need for additional scoping to determine priorities.

(2) FY 2001 Accomplishments:

(3) Under a cooperative agreement with University of RI, a research associate has been data mining for species and habitats as part of vital signs. This work has provided additional information for biological inventories.

(4) Much of the network focus was on vital signs so developing needs for inventories was put aside for a year.

FY 2002 Scheduled Activities and Products:

1) A study plan will be submitted by November 30 that outlines funding needs for 2002.
2) Inventory scoping workshops will be held for ASIS, CACO and the NY parks (GATE, FIIS and SAHI) to develop justification for inventory needs.

Objective 3 – Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Task 3.1 – Floristic inventories

FY 2001 Accomplishments:

(1) The herbarium at ASIS was entered into ANCS+ and is now being converted to NPSpecies
(2) Cooperative Agreement was signed with NCState University, Virginia Division of Natural Heritage and Association for Biodiversity Inventory to complete vegetation mapping in COLO, GEWA and THST.
(3) In a 50-50 split with the US Fish and Wildlife Service, a cooperative agreement with Association for Biodiversity Inventory was signed to allow development of floristic keys for the northeast.
(4) As part of a vegetation mapping effort, botanists from SHEN, RICH, ASIS and National Capital Region, GEWA and THST staff sampled plots at THST. The plot work and visual inventories indicated a very high floristic diversity so a complete inventory was recommended. A species new to Maryland and new to science was found at THST (see Public Interest Highlights).

FY2002 Scheduled Activities and Products:

(1) Brent Steury, NCPE Botanist will complete a floristic inventory at THST by visiting the site several times over the growing season. His first visit was in September-October.

Task 3.2 – Inventory of Mammals

FY 2001 Accomplishments:

(1) A proposal from Ron Barry, Frostburg State University, to inventory mammals at COLO, GEWA and THST was received, reviewed, revised and funded.

FY2002 Scheduled Activities and Products:

(1) Allan O'Connell, USGS Patuxent Wildlife Research Center will provide technical assistance at SAHI in determining mammal inventory needs.
(2) Ron Barry, Frostburg State University will begin mammal inventories at COLO, GEWA and THST. Acceptable data management procedures and sampling scheme will be in place.

Task 3.3 – Inventory of breeding, wintering, and migrating bird species

FY2001 Accomplishments:

(1) Bryan Watts, College of William and Mary, Center for Conservation Biology submitted a proposal to sample birds in the VA parks (including COLO, GEWA and THST) using volunteers. Watts would develop the sampling scheme, find and train volunteers, and gather and process the data.

Scheduled FY 2002 Activities and Products:

(1) A Cooperative Agreement will be developed and work will begin on bird inventories in VA parks.

Task 3.4 – Inventory of reptiles and amphibians

FY 2001 Accomplishments:

(1) Funds were added to the Wildlife Conservation Society agreement to allow additional distribution and abundance sampling for species of concern at GATE
(2) Reconnaissance for reptiles and amphibians at COLO was completed.
(3) A proposal by the University of Richmond (Joe Mitchell) for herpetological inventory at COLO, GEWA, THST was received, reviewed and funded.

Scheduled FY 2002 Activities and Products:

(1) Wildlife Conservation Society will station field crews in GATE Sandy Hook Unit, GATE Jamaica Bay Unit and FIIS for FIIS, William Floyd Estate and SAHI from March until October. Additional funds may be added to this agreement in 2002.
(2) I&M program will reimburse GATE, and FIIS for GSA vehicle rental and housing costs for reptile and amphibian inventory work.
(3) Joe Mitchell will begin field sampling in COLO, GEWA and THST

Task 3.5 – Inventory of estuarine and freshwater fish

FY 2001 Accomplishments:

(1) Martha Mather, UMass Amherst, is completing the third year of a freshwater fish inventory (including distribution and abundance) at CACO and other parks in the Northeast Temperate Network. A report is expected in 2002.

B. Vital Signs Monitoring

Objective 1: Organize Network, Science Advisory Committee and Board of Directors

FY 2000 Accomplishments:

(1) A Science Advisory Committee was organized and met to plan a Network "vital signs" scoping session. The CACO ecosystem model was adopted; thus, ecosystems include: a) estuaries and near shore environments, b) freshwater wetlands, ponds and streams, c) uplands, forest grasslands and thickets, and d) beaches, dunes spits and shoreline systems. Workgroups were formed based on management issues including: a) shoreline change, b) water quality, c) species and habitats, d) resource extraction and e) recreation and visitor use. Workgroup leaders were responsible for summarizing the group work in a report.
(2) A "vital signs" workshop was held at Gateway National Recreation Area April 13-14, 2000. About 50 participants from parks, Region, WASO, State and other Federal agencies, universities and the private sector attended. Materials provided prior to the workshop included: a workshop agenda and format, park and network management issues, resources and setting, a summary of a USGS-Patuxent Wildlife Research Center workshop on coastal issues, "*Framework for development of long-term monitoring protocols at CACO prototype"* by Roman and Barrett, available GIS layers for each park and a draft list of monitoring questions and vital signs for each workgroup. Workgroups were to evaluate background materials, review monitoring questions, develop monitoring questions, identify and prioritize indicators and submit a report. This process was valuable in introducing participants to the I&M program, vital signs goals and in beginning to frame out the important issues in the network. The written workshop summary is a record of decisions and discussions. The workshop was not successful in identifying vital signs.
(3) The Science Advisory Committee met in September and recommended forming small

focused workgroups to address monitoring issues: vegetation mapping, shoreline change, freshwater nutrients, data management, estuarine nutrient enrichment, water quality (contaminants), visitor use and recreation, species and habitats and air photography. Group leads were park staff or USGS cooperators. Workgroup tasks were to: review the CACO protocols, review the prior workgroup reports, prioritize monitoring questions, review candidate indicators, evaluate existing research, inventory and monitoring programs, develop a scope of work and list of potential cooperators as well as expected costs for projects identified. Reports were to be submitted to the Network for funding consideration.

FY 2001 Accomplishments:

(1) A Network Coordinator and a Data Manager were hired and will be stationed at the University of RI with the Northeast Region's I&M Coordinator and the Coordinator for the Coastal Ecosystems Studies Unit (position now advertised). The Regional Coordinator will supervise the Network Coordinator who will supervise the Data Manager. Both positions were to EOD November 2001, but the Network Coordinator later declined the position before moving. Unfortunately, the certificate of eligible candidates had expired and we must re-advertise.
(2) A vehicle, workstation, and other equipment were purchased.
(3) Mark Duffy, GIS Specialist from ASIS was detailed to the Network for Shoreline Change program data mining, data development, and needs assessment and protocol development. The Network provided funds to backfill at ASIS and supports the GIS program in exchange for 75% of Mark's time and 25% of the backfill time. A written agreement was developed and signed by the Regional Coordinator and ASIS Superintendent. Mark visited several network parks this year and will continue in 2002.
(4) The Network Science Advisory Committee met several times to review progress and recommend direction.
(5) The Board of Directors and park resource managers met in Boston in April to develop a charter and review ongoing network work activities for 2001
(6) A charter was written, reviewed and approved by the Board of Directors and submitted to WASO.

Scheduled FY 2002 Activities and Products:

(1) The Network Coordinator position will be re-advertised and filled.
(2) Chris Lea, Ecologist from ASIS will be detailed to the Network for 6 months to manage the Network vegetation mapping program. He will be shared with National Capital Region Network and both Networks will provide funding to backfill at ASIS. A written agreement will be signed by the Regional I&M Coordinator and ASIS Superintendent. A term position will be filled at ASIS to replace Chris.
(3) The CACO prototype and Coastal and Barrier Network will jointly plan a strategy for data management and shoreline change programs.
(4) A term position will be filled at ASIS to partially replace Mark Duffy who is detailed to the network for shoreline change.

Objective 2: Compile existing inventory and monitoring information for identified management issues, Assess Threats, Assess Needs

FY 2001 Accomplishments:

(1) A research associate with University of RI is compiling information on existing information on rare threatened and endangered species and habitats and keystone species in (or near) Network parks. The cooperator must identify existing and potential threats to species and habitats, detail current monitoring programs, identify other monitoring outside of the parks, review literature on keystone species monitoring along the North Atlantic coast and write a report summarizing all of the information. A panel of experts will be convened to guide the development of a species and habitats monitoring program based on information gather by the URI cooperative agreement. A detailed scope of work was developed and an access database is being used to compile information. Inventory data has been found as well.

(2) An interagency agreement with John Brock, USGS Center for Coastal Studies in St. Petersburg for "Creation of Aerial Mapping Data Products for Park Vital Signs Monitoring within the Northeast Coastal and Barrier Network" was funded. Brock will process LIDAR data on existing flights by NASA. Most of the data sets are for ASIS. We will use these data to illustrate the utility of these data for monitoring.

(3) Mark Duffy arranged with NASA to fly GEWA to collect LIDAR data at no cost to Network. GEWA has bluff erosion issues.

(4) University of RI (James-Pirri and Roman) will complete a project "Wetland and Water Quality Issues for Parks of the Northeast US: A Scoping Report for the Coastal and Barrier Network". This is a two-year project. The report will summarize threats, establish how those threats are altering structure and function of wetlands. In addition, existing monitoring programs will be evaluated and improvements suggested if appropriate. Information from state 305(b) and 303(d) reports will be summarized and discussed in light of our need to identify pristine waters in the network and impaired waters.

(5) A cooperative agreement with Keith Cooper, Rutgers University to complete an "Environmental Contaminants Baseline Inventory" for network parks was initiated. The network identified contaminants monitoring as a priority in order to assess baseline condit8ions and evaluate change over time. There is interest in understanding the source of contaminants and their ecological effects and how such information can be used in long-term monitoring. FIIS will be done first and a template will be created that can be used by other networks.

(6) Funding was committed to furthering the development of the database template via a cooperative agreement with Colorado State University. Many networks contributed to this effort.

(7) A large multi-year proposal was developed to complete vegetation maps in all network parks.

Scheduled FY 2002 Activities and Products:

(1) Mark Duffy will work with USGS St Petersburg and NASA to establish a baseline for all network parks for shoreline position. In addition, he will interview geomorphologists and other cooperators who have been researching geomorphic change in coastal parks for decades. Park managers will be asked about threats and information needs.

(2) Chris Lea will seek cooperators and cost proposals for vegetation mapping at GATE, SAHI (and other non-network parks). In addition, he will complete revisions of the ASIS vegetation

map. ASIS was the first park to get a vegetation map, however, the accuracy assessment was well below the accuracy standards. Chris will revise the keys and correct the line work so that ASIS's map will meet the National Mapping Standards. Chris will complete vegetation plots at THST, develop the keys and work with NCState University on the line work.

(3) A cooperative agreement with University of RI for Phase 1, data mining, for developing protocols to measure estuarine nutrient enrichment in coastal parks.
(4) A cooperative agreement with VATech University will be developed to investigate the recreation and visitor use component of monitoring.
(5) A data management plan will be developed for the network in cooperation with CACO prototype.
(6) A cooperative agreement with University of RI will be for Network assistance.
(7) We will seek proposals for setting priorities for species and habitats vital signs now that a more comprehensive baseline is available.

III. Staffing

Elizabeth Johnson, Northeast Region I&M Coordinator
Network Coordinator, re-advertised 10/01
Sara Stevens, Data Manager
Mark Duffy, Shoreline Change Workgroup leader (on detail from ASIS)
Chris Lea, Vegetation Mapping leader (on detail from ASIS)
Allison Hamel-LeBlanc, NPSpecies (cooperator)
Linda Fabre, Network Data Mining (cooperator)

Coastal and Barrier Network Science Advisory Committee:
Vacant, Network Coordinator
Sara Stevens, Network Data Manager
Elizabeth Johnson, NER-NPS
Dr. Charles Roman, USGS
Dr. Hillary Neckles, USGS
Dr. P.A. Buckley, USGS
Dr. Allan O'Connell, USGS
Dr. Glenn Guntenspergen, USGS
Dr. Howard Ginsberg, USGS
Mary Foley, Chief Scientist
Vacant, Coastal CESU Coordinator
Norm Rubinstein, EPA, North Atlantic Ecology Lab
Carl Zimmerman, ASIS
Nancy Finley, CACO
Charles Rafkind, COLO
George Frame, GATE
James Ebert, FIIS (now vacant)

Coastal and Barrier Network Board of Directors
Michael Hill, ASIS

Maria Burks, CACO
Alec Gould, COLO
Constantine Dillon, FIIS
Mark Koenings, GATE
Vidal Martinez, GEWA/THST
Lorenza Fong, SAHI
Network Coordinator, vacant

IV. Public Interest Highlights

A. In 2001, vegetation classification and mapping projects were initiated in Coastal and Barrier Network parks. One of the parks, Thomas Stone National Historic Site (NHS) in Charles County, Maryland, had been established primarily because of historical significance as the home of Thomas Stone, a delegate to the Continental Congress and signer of the Declaration of Independence. As with many eastern units of the National Park Service with a primarily cultural resources theme, Thomas Stone NHS is small (325 acres), has a significant proportion of its lands managed in largely natural conditions, and, as of 2001, had no prior systematic biological inventories at either the species or community level.

The principal investigator for the vegetation classification is an Assateague Island National Seashore employee on loan to the network, and who (as a "spare time" activity) is co-authoring, with the Maryland state botanist, a monographic treatment and county atlas of the sedge genus *Carex* (a large and taxonomically complex group of cryptic plants) in Maryland. Because this genus is difficult and poorly understood by even experienced botanists and because of the investigator's knowledge and interest in the group, he offered to document this aspect of the park's flora, in order to supplement future floristic investigations, while planning vegetation classification sampling surveys. In turn, this activity would likely provide some information for the statewide atlas project. He found and collected a specimen of a species that did not match known species for the state, even following comparisons with specimens in herbaria. The specimen was forwarded to Dr. Tony Reznicek (University of Michigan and a Flora of North America (FNA) author for the genus), who recognized it as a species that was undescribed but the subject of a taxonomic paper in progress by two colleagues. Dr. Reznicek delivered the specimen to one of the authors, Dr. Rob Naczi (Delaware State University and another FNA author), who confirmed its identity. Dr. Naczi and his co-author, Dr. Charles Bryson, plan to cite the Thomas Stone NHS specimen as a paratype in their paper, which is expected to be published in early 2002 and will formally describe and name this species. (Paratypes are specimens examined by a species author that are supplemental to the holotype ("type specimen") and are often listed in a formal description as representations of a new species across its range and its habitat breadth). Thus, the sedge found at Thomas Stone NHS will contribute to the description of a species new to science and also represent the first known Maryland occurrence of it.

Vascular plant species new to science turn up rather infrequently in the eastern United States, which has had a long history of botanical exploration. Small parks with cultural themes in this part of the country are often easily dismissed as unlikely to be reservoirs of biodiversity, let alone sites of new taxonomic discoveries. The serendipitous nature of this discovery during a vegetation

mapping project also underscores that the rigorous floristic standards of the national vegetation mapping program can have the further benefits of significant floristic discoveries as well. Overall, this finding suggests that NPS inventory projects can reveal the contribution of these small units to regional and national biodiversity, which would be otherwise underestimated.

B. Staff at Cape Cod National Seashore and the Boston Support Office has conducted water quality monitoring of the Seashore's 20 kettle ponds since the mid-1970s. Prior to the inception of the Prototype Inventory and Monitoring Program, staff did their best to cobble the effort together on a year-to-year basis with, unfortunately, some important gaps in the data record. This all changed with incorporation of the pond program into the emerging I&M in 1998. The new I&M funding supports field data collection, sampling and analytical equipment and, perhaps most significantly, data synthesis and interpretation by Park scientific staff, resulting most recently (2001) in the publication of a semi-technical *Kettle Pond Data Atlas: Paleoecology and Modern Water Quality*. This publication has been very well received and is generating new public and management awareness of pond preservation issues in the face of greatly increased human use.

Reports, Publications and Presentations:

Reports:

- Pre-Proposal for Coastal and Barrier Network Biological Inventories
- Coastal and Barrier Network Science Advisory Committee Meeting Summary, September 27, 2000
- Coastal and Barrier Network Vital Signs Workshop Report, September 2000
- Shoreline Change Workgroup Report
- Water Quality (Nutrients) Workgroup Report
- Estuarine Nutrient Enrichment Workgroup Report
- Data Management Workgroup Report
- Vegetation Mapping Workgroup Report
- Coastal and Barrier Network 2001 Vital Signs Monitoring Annual Work Plan
- Virginia Parks Biological Inventory Workshop Report (includes COLO, GEWA, THST)

Presentations: PowerPoint presentation on status of Coastal Network Vital Signs Program

- January 2001 in Denver, CO for I&M coordinators meeting,
- April 2001 in Boston, MA for Network Board of Directors,
- August 2001 in Phoenix, AZ at I&M Meeting of networks
- September 2001 in Ventura, CA for I&M Training

Publications:

- Johnson, Elizabeth. 2001. "Managing Natural Resource Information in Coastal National Parks. *Maritimes. In Prep.*

V. Status of Park Vital Signs Monitoring

Coastal and Barrier Network 2001	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics
Planning and Design							
# parks monitoring w/ NRC funding	8	8	0	8	8	8	8
# parks monitoring w/ other funding	1	6	0	4	4	5	0
Protocols Implemented							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	4	0	2	3	5	0
Analysis/Synthesis Available							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	0	0	2	5	0

Note: Air (CACO), Water (CACO,GATE, FIIS, ASIS, COLO, GEWA), GEO (CACO,ASIS,GATE, FIIS), Plants (ASIS, CACO, GATE, COLO), Animals (ASIS, CACO, GATE, FIIS, COLO)

VII. Budget

In FY 2000, the network received $122,000 from the NPS Servicewide I&M program for biological inventories. In addition, $6,900 was received to have a Network scoping session for vital signs and $80,000 was received by FIIS to continue development of a vegetation map. No funds were requested for biological inventories in 2001.

In FY 2001, the network received $626,500 from the I&M program for vital signs monitoring program development. In addition, the network received $90,000 from Water Resources to begin development of a network water quality monitoring program. The network also received $57,500 from the vegetation mapping program.

Coastal and Barrier Network **FY 2000 Income and Expenditures**	NPS-WASO Inventory $$	Vital signs Monitoring $$	WASO Water Quality $$	Park Base & Other Park $$ Other NPS $$	Partners & Other Agencies	In Kind Services
Funding Sources						
Servicewide I&M Program	122,000	6,900				
Servicewide I&M Program-Regional Coordinator	21,250					
Servicewide I&M Program-Vegetation Mapping (FIIS)	80,000					
NER Regional Science Funds						
USGS-BRD						10,000
NRPP				92,135		
Park Base				28,100		8,000
Total Income	**223,250**	**6,900**		**120,225**		**18,000**
Expenditures						
Personnel (Salary and benefits)						
▪ Regional I&M Coordinator	21,250					
▪ USGS-BRD staff						10,000
▪ Park Resource Managers				10,000		8,000
Contracts and Cooperative Agreements						
▪ Penn State University (Research Assoc.-NRBIB)	11,250					
▪ University of RI (Research Assoc.-Regional I&M)	10,690					
▪ University of RI (Data Set Catalog-CACO,FIIS, GATE, SAHI)	31,158					
▪ University of RI (Research Assoc.-NPSpecies)	17,153					
▪ Virginia Tech (FIIS Vegetation Map)	80,000					
▪ NCState Univ (Data Set Catalog-ASIS,GEWA, COLO, THST)	2,000					
▪ Field Technical Support Center	40,000					
▪ UMass (Mather) Fish inventory at CACO				92,135		
Travel and Equipment						
▪ Network Scoping Session and Workgroups		6,900		9,500		
▪ Additional Workgroup Travel	4,549			8,600		
▪ Computer	5,200					
Total Expenditures	**223,250**	**6,900**	**0**	**120,225**	**0**	**18,000**

Coastal and Barrier Network **FY 2001 Income and Expenditures**	NPS-WASO Inventory $$	Vital signs Monitoring $$	WASO Water Quality $$	Park Base & Other NPS $$	Partners & Other Agencies	In Kind Services
Funding Sources						
Servicewide I&M Program	0	626,500	90,000			
Servicewide I&M Program-Regional Coordinator	21,250					
Servicewide I&M Program-Vegetation Mapping (COLO, GEWA, THST, CACO and keys	116,318					
NER Regional Science	40,000					
Fire Program				11,000		
Park Base				33,000		
NRPP				26,375		
Total Income	**187,568**	**626,500**	**90,000**	**70,375**		**5,000**
Expenditures						
Personnel (Salary and benefits)						
▪ Regional I&M Coordinator	21,250					
▪ ASIS term(herbarium to ANCS+)	5,319					
Contracts, Cooperative and Interagency Agreements						
▪ URI(Research Associate-I&M)		23,642				
▪ URI (Research Associate-NPSpecies)		34,352				
▪ URI(Fabre) Species and Habitats Data Mining		20,000				
▪ URI(Roman)Wetlands and Water Quality			46,000			
▪ Rutgers(Cooper)Contaminants baseline		61,586	44,000			
▪ NCState(ASIS position- Shoreline Change)		37,000				
▪ NASA flight of GEWA						5,000
▪ USGS-St. Petersburg (LIDAR data)		55,000				
▪ Colo State U (database template)		10,000				
▪ Umass (Mather)fish inventory at CACO year 3				26,375		
▪ ABI(CACO vegetation)	8,000					
▪ Kucera (veg map photos)		340		11,000		
▪ ABI (Northeast key development)	50,818					
▪ ABI(veg map crosswalk)		4,000		3,000		
▪ VADNH(veg/fuels map)	57,500	22,500				
▪ NCState (photo interpretation, mosaic, GIS)		57,037				
▪ Wildlife Conservation Society (GATE herps)		10,876				
▪ URich(Mitchell) COLO, GEWA, THST herp inventory	40,000	9,500				

▪ URich(Mitchell) herp Jamestown COLO		5,000		Reg sci		
▪ Watts(COLO bird list)		2,000				
▪ Frostburg State(Barry)COLO, GEWA, THST mammals		82,062				
▪ Backfill GIS at ASIS		87,811				
▪ CESU project		14,150				
Operations and Equipment						
▪ Vehicle		21,626				
▪ Equipment (ASIS equip for Shoreline Change		8,200				
▪ Other equipment		9,239				
Travel						
▪ Network Travel (workgroups, meetings)		40,777		15,000		
▪ Loan to NTN for vital signs meeting		5,657				
▪ THST veg map		4,145		15,000		
Total Expenditures	**187,568**	**626,500**	**90,000**	**70,375**	**0**	**5,000**

Coastal and Barrier Network **Proposed FY02 Income and Expenditures**	NPS-WASO Inventory $$	Vital signs Monitoring $$	WASO Water Quality $$	Park Base & Other Park or NPS $$	Partners & Other Agencies	In Kind Services
Funding Sources						
Servicewide I&M Program	270,000	776,500	90,000			
Servicewide I&M Program-Regional Coordinator	21,250					
NER Regional Funds				20,000		
Servicewide I&M Program-vegetation mapping	80,000					
Total Income	371,250	776,500	90,000	20,000		
Expenditures						
Personnel (Salary and benefits)						
▪ Regional I&M Coordinator	21,250					
▪ Data Manager		75,000				
▪ Network Coordinator		85,000	5,650			
▪ Backfill at ASIS for veg mapping ASIS, THST		38,000				
▪ Backfill at ASIS for shoreline change		57,189				
Contracts and Cooperative Agreements						
▪ USGS-Patuxent (Estuarine Nutrients-phase I)			14,350			
▪ USGS-Patuxent (Estuarine Nutrients-phase II)			70,000			
▪ USGS-VaTech(Visitor Impact/Rec Use)		70,000				
▪ NCState U (Shoreline Change GEWA)		25,000				
▪ URI (Shoreline change data sets)		25,000				
▪ URI(data summary assistance)		55,000				
▪ URI Vegetation Mapping GATE, SAHI	80,000					
▪ NY Natural Heritage-veg map GATE SAHI		100,000				
▪ SAHI Natural Resource Assessment for GMP				20,000		
▪ NASA flights (shoreline change)		45,000				
▪ Keystone species and habitat identification		169,311				
▪ Biological Inventories, fish	70,000					
▪ Biological Inventories, mammals	50,000					
▪ Floristic Inventory THST	8,000					

▪ Biological Inventories-herps GATE CACO	52,000					
▪ Biological Inventories- birds	90,000					
Travel						
▪ network travel		15,000				
▪ Network Coordinator move		10,000				
Total Expenditures	371,250	776,500	90,000	20,000	0	0