

BOSTON HARBOR ISLANDS PARTNERSHIP
NATURAL RESOURCE & SCIENCE INITIATIVES
(2001–2006)

PHASE ONE INITIATIVES

Meeting on December 19, 2000, the Boston Harbor Islands Partnership adopted six initiatives as the beginnings of a strategic plan. Because implementation estimates had only been developed for capital and one-time costs—omitting annual operating costs—the Partnership voted to adopt the initiatives as an interim “capital plan” rather than a 5-year strategic plan.

Concurrent with the strategic planning work the Partnership also developed a general management plan, with a 20-year planning horizon. On July 17, 2001, the Partnership voted unanimously to transmit the agency review draft of the general plan for final review and adoption. The approval endorsed the same six initiatives as adopted in the “capital plan” along with attendant estimates for infrastructure and other one-time costs. The initiatives comprise Phase One—the first five years—of the general management plan.

Each initiative includes long-term goals that broadly define the desired outcomes of Phase One, and the types of implementing actions needed. The long-term goals address the park mission and mission goals presented in the general management plan. The proposed actions, which were further described in the December 2000 document adopted by the Partnership, are captured in detailed cost estimates and as the substance of implementation plans. The initiatives are:

- Natural Resource Inventory & Monitoring Initiative
- Resource Stabilization & Remediation Initiative
- Cultural Resource Baseline Initiative
- Visitor Access Initiative
- Interpretation & Education Initiative
- Partnership Effectiveness Initiative

More specific Phase One implementation plans are being developed as funding and other commitments for action become clear. The specific actions called for are evaluated for potential effects on the human environment, including park cultural resources, as called for in the park general management plan.

The initiatives do not represent all of the work of the Partners, rather they highlight goals adopted for special emphasis by the Partnership as a whole.

NATURAL RESOURCE INVENTORY & MONITORING INITIATIVE

The overarching mission of the Boston Harbor Islands Partnership is to conserve unimpaired the natural and cultural resources and values of the islands for the enjoyment of this and future generations. We are unable to do this job effectively without scientific information about the nature and condition of resources in the park and how they are changing over time. Lack of knowledge weakens our ability to make sound management decisions that support the park mission. An assessment of the park's natural resources is among the Boston Harbor Island Advisory Council's organizational priorities.

The Boston Harbor Islands Partnership has launched a five-year Natural Resource Inventory and Monitoring Initiative to collect basic information about the physical environment of the park and the plants and animals that inhabit it. By 2006, a monitoring program will be in place to keep track of the health of the Boston Harbor Islands.

The nationwide Inventory and Monitoring Program of the National Park Service (NPS) will assist the Partnership in this initiative as part of a larger effort to establish baseline information and to provide data on the long-term trends in the condition of national park system resources. The national program will enter data in NPS databases.

Four primary goals will be accomplished during the initiative:

- Sensitive habitats and species of special concern are identified on digitized maps for 30 Boston Harbor Islands.
- Presence or absence is known for 90% of the vascular plant and vertebrate animal species expected to occur on the Boston Harbor Islands, presence is physically documented.
- Surficial geology and coastal processes are evaluated on 30 Boston Harbor Islands, appropriate processes inventoried, and human influences that affect those processes are identified.
- Park "vital signs" are identified and the first monitoring of Boston Harbor Islands natural resources is complete using professionally accepted protocols.

The goals will be achieved through the following actions (see Addendum):

- existing data inventory
- natural resource overview and assessment
- field inventories
- data management
- natural resource monitoring
- coordination

Natural Resource Overview and Assessment

Inland Habitats

Massachusetts Natural Heritage & Endangered Species Program is conducting a comprehensive survey of plants and animals and exemplary natural communities on all 34 harbor islands in cooperation with the Island Alliance. Goals are to map and describe general vegetative cover, compile comprehensive plant and animal species lists, locate rare and endangered plant and animal populations, describe and map exemplary communities and critical habitats, and provide management recommendations. Project

focuses on upland, but will include vernal pools and freshwater resources. Data will be presented in GIS compatible format. Project duration is 2 years, with a completion date of March 2003. Estimated project cost is \$62,000 provided by National Park Service (NPS) and Natural Heritage Program. Principal Investigators: Paul Somers, State Botanist and Ted Elliman, contracted botanist. Scott LaGreca of Farlow Herbarium, Harvard University, is working with six others to survey for lichens and bryophytes (mosses, liverworts, and hornworts). Mark J. Mello, Research Director, Lloyd Center for Environmental Studies, is doing surveys of Macrolepidoptera, Odonates and tiger beetles with one assistant. Gwil Jones and Jessica Gonyor of Northeastern University will survey for mammals and herpetofauna.

Avian Species

The University of Rhode Island is conducting a survey of birds in the park, with recommendations on which species to focus future efforts. This approach is consistent with the overview and assessment being conducted for other biota of the islands. The project will assess habitats available in the park, the locations of colonial water bird colonies (e.g. wading birds, gulls, terns), and the feasibility of conducting point counts and transect counts during the breeding season and fall migration on islands in the park. During this pilot study, researchers will gather data on the species detected to generate a preliminary inventory for birds in the park. Most importantly, this pilot data will be used to assess the most efficient means to determine how to inventory birds in Boston Harbor Islands national park area. Field work is being conducted during the breeding season (May-early July) in 2001 and 2002. Estimated project cost is \$6,720 provided by National Park Service (NPS) Inventory and Monitoring Program. Principal Investigator: Peter Paton, URI, Department of Natural Resources Sciences.

Intertidal Habitats

New England Aquarium and US Geological Survey Patuxent Wildlife Research Center (USGS) are conducting a survey of the biotic communities in the intertidal zone of the 34 harbor islands in cooperation with the Island Alliance. Expected products are a comprehensive species list, GIS database, and narrative description of intertidal zone habitats, identifying habitats and species of concern and location of rare plant and animal populations. Fieldwork includes a rapid assessment of targeted locations and habitats conducted by a team of experts. Indicator species, vital signs, and critical habitats will be identified for future monitoring and management recommendations will be made. Project duration is 2 years, with a completion date of March 2003. Estimated project cost is \$99,000 provided by the Island Alliance (through Sweet Water Trust and Sudbury Foundation), National Park Service, USGS, and New England Aquarium. Principal Investigators: Charles Roman, USGS and Rich Bell, New England Aquarium; Research Collaborator: Robert Buchsbaum, Massachusetts Audubon Society.

Historic Vegetation & Land Use History

University of Massachusetts-Amherst is tracing the history of natural vegetation and land use on the Harbor Islands from the time of European settlement in the 1600's. Historic vegetation and land use maps (digital format), descriptions of period vegetation, and catalogs of species will be produced to demonstrate changes over time. Historical documents, aerial and landscape photographs, period artwork, and herbarium records will be searched. A sediment core may be collected from one island to analyze the pollen signature and determine pre- and post- settlement, regional vegetation patterns. Increment tree cores may also be gathered to determine time of establishment. Project duration is 2 years, with completion in 2002. Estimated project cost is \$40,000 provided

by NPS. Principal Investigators: William Patterson and Julie Richburg, Dept. of Forestry & Wildlife Management.

Carrying Capacity

The Universities of Vermont and North Carolina State are conducting research in order to develop Visitor Experience and Resource Protection (VERP) carrying capacity guidelines for the park. An interdisciplinary committee is meeting throughout the duration of the study and to integrate and apply research findings into a carrying capacity implementation and monitoring guideline during the final year of the project. NCSU is analyzing natural and cultural resources and their sensitivity to visitor use and UVT is analyzing park use patterns and visitor attitudes to alternative park and visitor management practices. Goals are to identify and evaluate indicators of resource and social quality by management zone, develop standards of quality for indicator variables, and establish monitoring and management procedures to maintain quality. Project duration is 3 years, with a completion date of December 2003. Estimated project cost is \$240,000 provided by the National Park Service and support from Partners. Principal Investigators: Robert Manning, Recreation Management Program, UVM; Yu-Fai Leung, Parks, Recreation and Tourism Mgmt, NCSU; assisted by graduate students and Earth Watch volunteers.

Boat Wake Impacts and their Role in Shore Erosion Processes

US Geological Survey, National Park Service, Boston University, and Northeastern University propose to identify sites of critical erosion along the Harbor Islands shorelines, quantify direction and rates of shoreline retreat, and assess the role of storms, boat wakes, and other natural and human processes responsible for shoreline erosion. Geological features of island shorelines would be mapped in GIS format. Proposed project duration is 3 years and total funding is \$515,554 (\$401,554 is still needed). Baseline study of geomorphology and retreat rates of selected islands is being conducted in 2001-02 with funding from the National Park Service. Principal Investigators: Duncan M. Fitzgerald, Department of Earth Sciences, Boston University; and Peter S. Rosen, Geology Department, Northeastern University; assisted by graduate students. (We regret the loss of James Allen, NPS/USGS, who was crucial to developing this project.)

Water Resources Scoping Report

National Park Service, Water Resources Division, is identifying and analyzing major water resource issues and management concerns, summarizing existing hydrological information, and developing management recommendations or project statements for the Harbor Islands. The study encompasses water features and water-related environments (e.g. ponds, salt marshes, freshwater marshes, tidal flats and pools, groundwater) and water-related infrastructure issues, which occur at or above mean low water for all 34 islands. Additional ecosystem indicators, such as re-established eel grass beds will be evaluated. Major issues addressed include (1) adequacy of available resource information, (2) water quality (e.g. marinas/boat discharge, recreational monitoring, shellfish harvest), (3) infrastructure (e.g. water supply, sewage management), and (4) invasive species. Funding is provided by NPS Water Resources Division. Principal Investigator: Mark Flora, NPS Water Resources Division.

Data Management

Use of effective data management systems is an essential part of all of the Boston Harbor Islands projects. The data for inventory and monitoring will be collected and

maintained in accordance with clearly defined protocols and quality standards. Whenever possible, information will be acquired in a form that is compatible with or can be downloaded into a GIS format using National Park Service standards. The NPS Field Technical Support Center at the University of Rhode Island has developed an Arcview GIS database for the Boston Harbor Islands. The Center and the NPS Boston Support Office will provide GIS assistance for all projects. An accuracy assessment of the recently completed NWI map of the harbor islands is being conducted in 2002. Funding is provided by NPS. Principal Contacts: Nigel Shaw, GIS Program Manager and Beth Johnson, Inventory and Monitoring Coordinator.

RESOURCE STABILIZATION & REMEDIATION INITIATIVE

During the next five years the Boston Harbor Islands Partnership will work together to protect the natural and cultural resources of the park. The island owners will continue managing resources, informed by the policies of the new general management plan. Generally, the Partnership's role in resource protection will be directed towards better understanding the nature and condition of park resources so that changes in management practices will not inadvertently do harm. (See the Natural Resource Inventory & Monitoring Initiative and the Cultural Resource Baseline Initiative for more details about increasing knowledge about park resources.)

A few critical resource needs have been identified that require joint effort over the next five years by the Partner agencies. Those needs are the focus of this initiative to stabilize archeological sites and historic structures, and clean up known environmental hazards: resource stabilization and remediation. Environmental clean-up is an organizational priority adopted by the Boston Harbor Islands Advisory Council.

The following goals help preserve park resources, as called for in the Boston Harbor Islands general management plan.

- 100% of the historic buildings and fortifications with potential for mission-related uses—but not entered in the NPS List of Classified Structures in 1999—are stabilized in poor condition and secure at Fort Andrews, Fort Warren, and Fort Strong/Curley Building (47 structures).
- Archeological sites at Boston Harbor Islands on two islands identified in 1998 to be threatened by erosion—but not entered in the NPS Archeological Sites Management Information System—are in good condition.
- Remediation actions recommended in 1998 to address environmental hazards (USTs, asbestos, and coal) at Boston Harbor Islands for 6 "matters" are complete on George's, Outer Brewster, Great Brewster, Gallops, Bumpkin, Calf, Lovells, and Peddocks islands.

The goals will be achieved through the following actions (see Addendum):

- stabilize historic structures
- stabilize archeological sites
- remediate environmental hazards

