

What is the Status of the Waterbird Populations of Casco Bay?

Answer: Baseline data collected in 2000 will allow us to identify habitats and evaluate population trends in coastal waterbirds in the future.

Why Is it Important to Understand the Status of Waterbird Populations in Casco Bay?

A baseline understanding of the areas where waterbirds congregate can help us to permanently protect high priority habitat. Further, the number of waterbirds in Casco Bay is an important indicator of environmental quality. While Maine's waterbirds are migratory, they return to the same habitat locations during migration, wintering and breeding. Studying population trends over time can help us to assess environmental impacts on the birds. If Casco Bay waterbird populations decline while those of Maine and New England are stable or increasing, it could indicate a problem with the health of the habitat in Casco Bay. For example, toxins, oil spills, loss of habitat or other localized factors could result in a decline in the numbers of waterbirds. A local population decline that is also observed throughout New England could indicate habitat threats elsewhere in the birds' range.

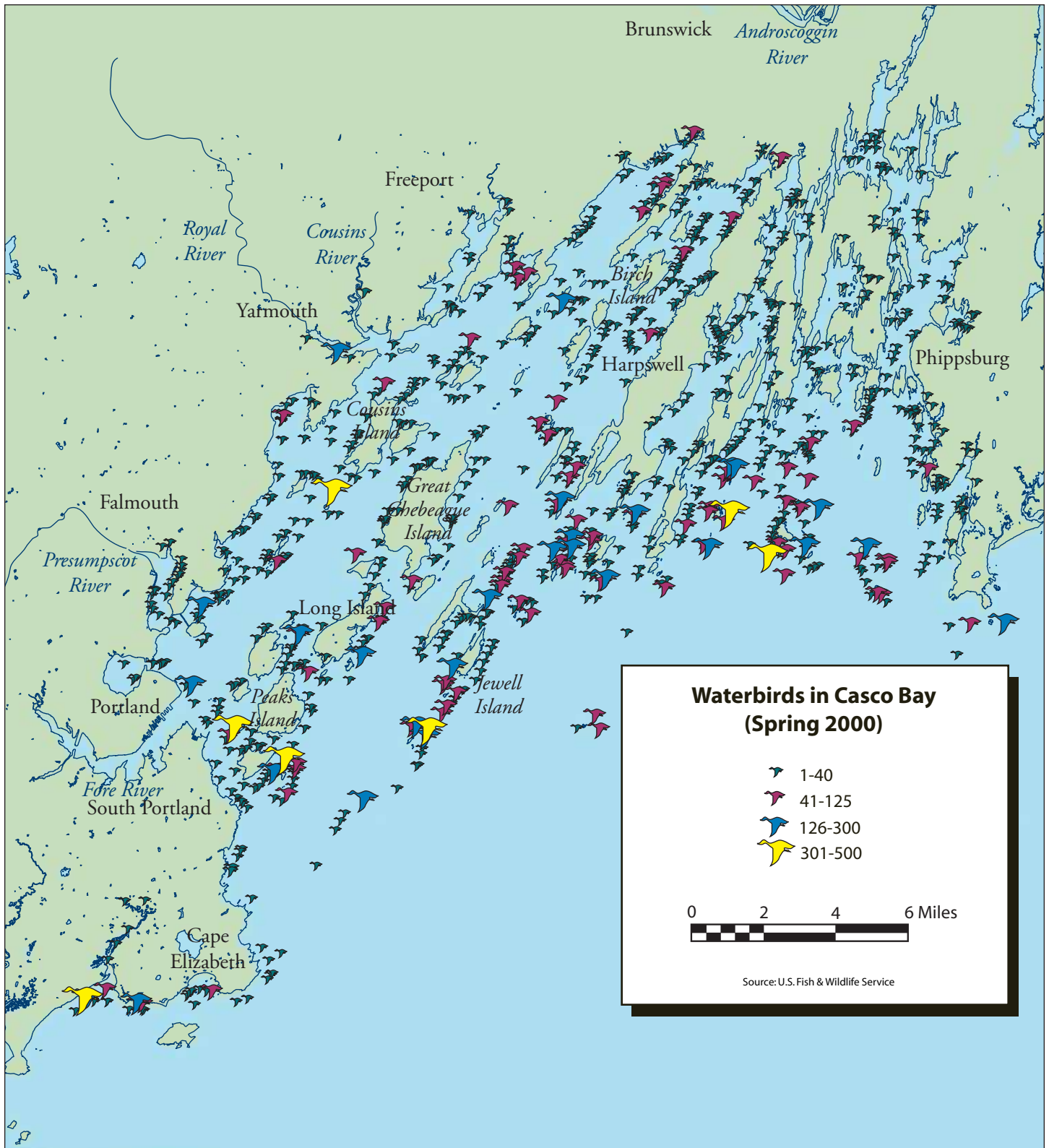
Key Studies to Date

In 2000, with the assistance of funds from CBEP, the Maine Department of Inland Fisheries and Wildlife and the U.S. Fish and Wildlife Service conducted a series of aerial waterbird surveys in Casco Bay. The surveys were timed to occur within the spring migration (February 16 to April 30), nesting (May 1 to June 30) and fall (September 1 to November 30) migration seasons for the birds. Seasonal surveys are necessary to observe the diversity of waterbird species that use the bay during these various periods. The results for the spring migration season are indicated in the map and the table. This data will serve as a baseline to which future surveys can be compared.

Aerial Bird Survey Data for Casco Bay (Spring Migration Period 2000)

Species	Count
American Black Duck	270
American Crow	11
American Green-winged Teal	50
Atlantic Brant	175
Bald Eagle	3
Bald Eagle Nest	1
Black Scoter	710
Black-headed Gull	0
Bufflehead	439
Canada Goose	146
Common Eider	14,175
Common Loon	1
Common Tern	0
Double-crested Cormorant	1,427
Goldeneye	10
Great Black-backed Gull	115
Great Blue Heron	13
Grebe	2
Gull	1,751
Herring Gull	3,227
Hooded Merganser	2
Mallard	18
Merganser	1,171
Northern Harrier	1
Oldsquaw	0
Osprey	23
Raven	0
Red-breasted Merganser	4
Ring-billed Gull	0
Ring-necked Duck	45
Sandpiper	58
Scoter	815
Snowy Egret	0
Surf Scoter	29
White-winged Scoter	8
Total	24,700

Note: Data from April 29 and 30, 2000
Source: Maine Department of Inland Fisheries and Wildlife



Aerial surveys conducted in 2000 indicate the distribution and numbers of coastal waterbirds in Casco Bay. The map above illustrates the results of the spring survey.

Preparing for Oil Spills

Understanding the distribution and numbers of coastal waterbirds is critical in the event of oil spills, for both spill response and damage assessment. This is especially true for Casco Bay, which has the largest volume of oil transport in New England. Knowledge of the location of waterbird concentration areas is important in oil spill response planning. For example, it may be necessary to haze birds from a threatened site, to boom sites in order to avoid oiling, or to avoid using bird colony locations as staging areas during oil cleanup. Coastal waterbird surveys conducted during the 1980's were used to help determine the number of birds impacted by the *Julie N* oil spill in the Fore River in 1996. As a result, the settlement for damage relating to this spill was aimed at helping to increase the waterbird population in Casco Bay. The settlement included partial funding for the enhancement of 130 acres of coastal wetlands in Scarborough Marsh and the acquisition and permanent protection of Flag Island, a coastal waterbird nesting site that was threatened with development.



In 1996 The *Julie N* oil tanker spilled 179,634 gallons of fuel oil into the Fore River after striking the former Million Dollar Bridge while entering the harbor.

Reference

Maine Department of Inland Fisheries and Wildlife. 2000. John Kenney. *Casco Bay Aerial Survey Report*.



Outer Green Island with observation blind.

Outer Green Island Tern Restoration Project

In 2002, the National Audubon Society's Seabird Restoration Program in cooperation with the Maine Department of Inland Fisheries and Wildlife and U.S. Fish and Wildlife Service Gulf of Maine Coastal Program initiated a tern restoration program on Outer Green Island in Casco Bay. CBEP provided funding to assist with this program. Outer Green Island is a 5.5-acre island located 5 miles east of Portland. Historically, the island served as a tern colony until 1914. Outer Green was selected because of its rich seabird nesting history and because of its remote location (hopefully reducing predator visits).

During the first season, in order to attract the target species, a resident field camp was established and 100 decoys and a solar powered CD sound system broadcasting tern colony calls were placed on the southeast corner of the island. In just three years, the colony has grown to over 650 pairs of Common Terns and 13 pairs of Roseate Terns (a federally listed endangered species)! In 2004, Audubon also initiated a Leach's Storm-Petrel attraction program on Outer Green Island; storm-petrels nested on the island until approximately 1918, but no longer nest in Casco Bay. The goal of this project is to re-establish a breeding site in Casco Bay.



Roseate Tern



Leach's Storm-Petrel

Has Eelgrass Habitat in Casco Bay Changed Over Time?

Answer: Yes. The overall amount of eelgrass has increased over the past decade.

Why is Eelgrass Habitat Important?

Eelgrass (*Zostera marina* L.) is a flowering plant that grows rooted in the sediment in low intertidal and shallow subtidal environments. In areas such as Casco Bay that are protected from severe wave action, eelgrass often forms extensive, dense meadows that provide critical ecological functions and values, including habitat for fish and wildlife. Many commercially and recreationally valuable species of fish and shellfish depend on eelgrass beds as feeding and nursery areas. Eelgrass is also important waterfowl habitat. Brant, in particular, rely on eelgrass for food. In addition, eelgrass beds help to protect shorelines by stabilizing the substrate and baffling waves and currents, and help to improve water quality by filtering sediments and absorbing nutrients. The leading cause of widespread eelgrass loss throughout New England is reduced water quality due to coastal watershed development, but local habitat damage or destruction has also been attributed to dredge and fill operations, boat propellers, docks, anchors and mooring chains, and fishing gear.



Eelgrass serves many important ecological functions, such as providing habitat for fish and wildlife.



Intertidal eelgrass bed in Maquoit Bay.

Key Findings

Eelgrass beds in Casco Bay were mapped from aerial photographs (1:12,000 scale) by the Maine Department of Marine Resources in 1993-1994 and again in 2001-2002. Photographs were acquired and interpreted following the NOAA Coastal Change Analysis Program protocol for seagrass mapping. The overall amount of eelgrass habitat has increased in Casco Bay over the past decade. In 1993-1994, 7,056 acres of eelgrass were present in Casco Bay and in 2001-2002, 8,248 acres were present. Areas of increase are largely restricted to the northeastern end of the bay; in particular, eelgrass beds in Maquoit Bay increased considerably in extent and density during this period (Barker 2005). However, decreases in coverage occurred in Broad Cove, north of Cousins Island, west of upper Great Chebeague Island, and in the vicinity of Upper and Lower Goose Islands (Barker 2005).