

Protecting fish and wildlife habitat in the Casco Bay watershed

Gulf of Maine Coastal Program

In coordination with the Casco Bay Estuary Project, U.S. Fish and Wildlife Service's Gulf of Maine Program biologists identified important fish and wildlife habitat in the fifteen towns surrounding Casco Bay. Using data collected from state and federal agencies and non-governmental organizations, Gulf of Maine Program biologists identified habitat for colonial waterbirds, seabirds, wading birds, fish, eelgrass, cordgrass, marine worms, shellfish and endangered/threatened species. After mapping habitat for individual species or closely related groups of species, Gulf of Maine Program biologists overlaid the habitat information for each species to create a map identifying important fish and wildlife habitat for all species included in this study. This fact sheet briefly summarizes the methodology, presents results, and seeks to catalyze voluntary efforts to protect habitat in the Casco Bay region.

Wildlife in Casco Bay

Lobsters, clams, bald eagles, terns, alewife, eelgrass and people all share Casco Bay and its surroundings.

We're all interrelated, and we are all part of the essence of Casco Bay's heritage. As barometers of the Bay's health, fish and wildlife measure the quality of our environment and help define the character of our lives.

However, rapid population growth and associated development activities threaten to destroy or degrade natural habitats in Casco Bay and its surrounding watershed.

IDENTIFYING IMPORTANT FISH AND WILDLIFE HABITAT IN THE 15 TOWNS SURROUNDING CASCO BAY:

To identify important habitat, Gulf of Maine Program biologists completed a GIS analysis that involved four major components:

- 1. Select species:** The first step in completing this study was to select plants and animals representing a cross-section of important species in the Casco Bay estuary. Species were selected on the basis of: ecological importance, economic importance, institutional importance, sensitivity to development pressures, and availability of data.
- 2. Identify and map habitat for each species or group of species:** For some species, such as least terns, precise field surveys were available so habitat could be mapped with confidence from existing data. For other species, such as great blue herons, scientifically verified sightings were insufficient to fully represent areas actually used by herons. In those instances, field sightings were supplemented with habitat suitability profiles that identified appropriate habitat, based on selected environmental conditions. Habitat suitability profiles were developed by reviewing scientific literature and by seeking advice from species experts.

Recognizing that some habitat provides greater ecological value than other habitat, relative habitat values were determined for each species. Habitat scarcity, intensity of use, the quality of environmental conditions, and the amount of habitat disturbance were all important in assigning relative habitat values.

Once identified, habitat was mapped for each species or species group. Habitat maps for a single species or species group can focus protection, enhancement and restoration efforts for specific purposes, such as shellfish management, endangered species recovery, or fish passage maintenance.

- 3. Create a composite map of important habitat for all species evaluated:** Any complicated array of biological data can be confusing for planners, conservationists and others faced with land use decisions. Therefore, Gulf of Maine Program biologists overlaid relative habitat value maps for each species or species group to create a composite map identifying important habitat for all the species evaluated. All habitat identified has value for one or more of the species included in this analysis. In general, the higher the habitat score, the

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What is GIS?

Geographic Information Systems (GIS) technology is a computer mapping tool that can assemble, store, manipulate and display data that is linked to mapped locations. GIS is a powerful tool because it allows us to ask questions, relate information from different sources and display results clearly. In this habitat study, for example, we collected the best available data on the habitat of 27 different species. GIS, in combination with appropriate biological analysis, allowed us to combine all the information on a final map displaying important fish and wildlife habitat in the region.

What is the Gulf of Maine Coastal Program?

Established in 1991 as one of eleven U.S. Fish and Wildlife Service Coastal Program offices, the Gulf of Maine Program focuses on protecting and restoring economically, recreationally and ecologically important fish and wildlife habitat in coastal areas throughout the Gulf of Maine watershed. Using existing scientific data along with biological expertise, outreach skills and state-of-the-art computer mapping capabilities, Gulf of Maine Program offers technical assistance and participates with interested individuals and organizations -- including state agencies, local conservation commissions, land trusts, angling clubs and statewide organizations and agencies -- in protecting and restoring nationally important fish and wildlife resources.

higher the quality of the habitat and the greater the number of species using that habitat. While the composite map highlights areas with important habitat values, it is useful to recognize that:

- other areas in the watershed are likely to be important for other fish and wildlife species not included in this analysis,
 - this analysis is based on the best available information and identifies habitats most likely to be used, and
 - wildlife populations increase, decrease and change location over time.
- As additional information is collected, it can be incorporated into this analysis.

4. Create maps identifying conservation lands in all 15 towns to overlay with important habitat information: Maps of important habitat become most valuable for land use-decision makers when combined with a knowledge of what important habitats are permanently protected and which are not. Gulf of Maine Program staff took the lead in developing a plan to collect and compile existing data on the conservation status of all lands in the region. By developing a comprehensive work plan, gathering information from local land trusts, hiring a consultant to work with town planners, reviewing draft products, and distributing information to towns and land trusts, Gulf of Maine Program played an important role in making this information readily available. The conservation lands database is maintained at Maine Coast Heritage Trust for future updating.

In conducting all of this work, the Gulf of Maine Program coordinated with a panel of biologists, planners and others from state agencies and non-government organizations to substantiate methodology and findings. By collating and analyzing existing information, the individual species maps, the composite habitat map and the conservation lands maps provide useful tools for conservation. The maps offer individuals, local land trusts, conservation commissions, water quality monitoring groups, and statewide organizations and agencies with information that can catalyze and support habitat protection efforts in the 15 towns surrounding Casco Bay.

Gulf of Maine Program produced all habitat maps and conservation lands maps at a large watershed-wide scale and at a smaller scale suitable for use in each of the 15 towns. Multi-color maps are available through the Gulf of Maine Program:

- in the 75-page technical report, *“Identification of Important Habitats in the Lower Casco Bay Watershed,”* which details methodology and documents data sources,
- on our Gulf of Maine Program Internet site at <http://gulfofmaine.fws.gov>
- on a CD (readable with ArcView computer software), and/or
- in large format color copies.

(A small black and white version of the composite habitat map is illustrated on the last page of this publication).

IDENTIFYING IMPORTANT FISH AND WILDLIFE HABITAT AT RISK:

Gulf of Maine Program biologists and Casco Bay Estuary Project staff also examined related but more specific questions: “What would happen to existing habitat if lands surrounding Casco Bay developed to the extent currently permitted?” and “What habitats are at most risk from potential development?” In the Casco Bay watershed, where the population has risen 24% and housing units have increased 47% in the last 20 years, answers are critical if area residents want to protect fish and wildlife resources.

To answer these questions, Casco Bay Estuary Project staff completed a “build-out analysis” of the 15 towns surrounding the Bay that predicted potential future land cover. Gulf of Maine Program compared the results of the build-out analysis with the summary habitat map to identify important fish and wildlife habitats that

may be at risk from development. A description of this "work-in-progress" is available from the Casco Bay Estuary Project in a 15-page report. This information may be particularly useful for communities seeking to identify and minimize potential threats to existing fish and wildlife habitat. The information may also serve as a focal point for local conservation groups interested in directing protection efforts to habitats which may be most threatened by land development. However, we strongly recommend that groups interested in using this information for habitat protection contact the U.S. Fish and Wildlife Service's Gulf of Maine Program for guidance and technical assistance.

WHERE DO WE GO FROM HERE?

The results of this comprehensive analysis can catalyze voluntary partnership-based habitat protection efforts in the 15 towns surrounding Casco Bay. Partnerships involving landowners, land trusts, state conservation organizations and state and federal agencies interested in protecting water quality and habitat are being developed in association with the Casco Bay Estuary Project. The Gulf of Maine Program is assisting in carrying out habitat management, restoration, and protection efforts by providing biological data, identifying important habitats and existing conservation lands, and providing information about matching federal grant programs for habitat protection focused on migratory birds, (shorebirds, waterfowl, wading birds, etc.), endangered and threatened species, anadromous fish and coastal wetlands. Casco Bay Estuary Project has established a Casco Bay Important Habitats Fund (administered by Maine Coast Heritage Trust and the Gulf of Maine Program), which provides funds to help local groups protect important habitat identified in the analysis. Habitat protection will require active partnerships with many individuals and organizations. To the extent that we all work together, pooling our time, resources and expertise, the future for wildlife ... and for us ... will be in good hands in Casco Bay.

If this information stimulates your interest, please share your ideas with us and get involved in habitat protection efforts in Casco Bay. Gulf of Maine Coastal Program staff can:

- present a slide talk and lead a discussion for your organization on habitat protection and restoration opportunities.
- answer specific questions on the habitat analysis-- methods, applications and potential funding sources for habitat protection and restoration.
- direct you to the 75-page technical report, data catalog and habitat maps (available in hard copy, on CD and on our Internet home page). Digital versions of maps are readable with ArcView computer software.
- send you additional copies of this publication.
- send you a one-page fact sheet summarizing this analysis.
- provide you with large scale fish and wildlife habitat maps that will provide more detail for habitat protection work in specific coastal areas.
- discuss habitat protection opportunities with you.

