Protecting Wildlife and Significant Habitat in Coastal New Hampshire

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The Great Bay Estuary transforms New Hampshire's 18-mile coastal shoreline into 150 miles of rich salt and freshwater estuarine diversity, encompassing a 200-square mile, 17 town region. The Great Bay region is a mosaic of high quality, highly productive freshwater and tidal wetlands – thousands of acres of salt marshes, tidal rivers, eelgrass beds, mudflats, beaver flowages, emergent marshes, fens, bogs, Atlantic white cedar swamps, and floodplain forests – bordered and linked by a range of upland forest types. A few statistics highlight the tremendous and irreplaceable biodiversity know to rely on the region:

- 155 species of rare plants, 18 species of rare animals, and 35 types of rare natural communities.
- one of the most important wintering ground and migration stopover sites on the eastern seaboard for 20 species of waterfowl, 27 species of shorebirds, 13 species of wading birds, and Bald Eagles

It's no wonder that Great Bay is often referred to as "the unknown treasure of the New Hampshire Seacoast!" This treasure, however, is at present subject to an unprecedented level of threat due to rapid development, fragmentation, invasive species, and water quality degradation.

The Great Bay Resource Protection Partnership ("Partnership") was formed to respond to growing pressure on the region's precious natural resources by identifying and protecting vital habitat conservation areas before they are lost forever. Founded in 1995, the Partnership is a public-private collaboration consisting of non-profit conservation organizations, state and federal agencies, and local municipalities. The Partnership operates by using the best available scientific information to identify important natural resource areas in the Great Bay region, and then working on a voluntary basis with willing landowners to protect these critical habitats. Since its inception, and with the strong sustained support of U.S. Senator Judd Gregg, the Partnership has successfully protected more than 2,000 acres of ecologically sensitive lands located in the communities of Durham, Newmarket, Stratham, Greenland, Newington, Portsmouth, Exeter, Newfields and Dover. In addition, Partnership organizations have individually protected an additional 1,500 acres of critical habitat.

With the generous support of the New Hampshire Estuaries Project, the Partnership has recently undertaken an initiative to identify and prioritize significant habitat in the Piscassic and lower Lamprey River watersheds. The project had two main components: 1) intensive field inventory for rare plants, wildlife, and exemplary natural communities, and 2) GIS modeling to predict the location of significant wildlife habitats. The purposes behind the effort were straightforward:

- *to help direct the conservation activities of the Partnership and local partners in the Piscassic and lower Lamprey watersheds by providing on-the-ground data on the occurrences of significant biological and ecological resources, and by creating GIS modeling applications that identify potentially significant wildlife habitat across multiple watersheds; and,*
- *to provide science-based data that will strengthen the Partnership's land conservation grant funding proposals.*

First, the Partnership conducted a targeted field inventory to identify significant habitat for wildlife, plants, and natural communities of conservation concern in the Great Bay region, with a focus on the Piscassic River watershed. The Piscassic supports significant waterfowl concentrations and wetland resources, and is highly threatened by development and fragmentation. With permission from numerous private landowners, Nature Conservancy ecologists worked closely with NH Fish and Game Department wildlife biologists to survey some 2,500 acres deemed to have high potential for supporting important habitat.

In the case of the Piscassic, we can conclude that the watershed is meeting its potential – the area contains a rich diversity of significant habitat! Our field surveys documented nearly 360 plant species, or 18% of all known plant species in the state, and located several rare plants such as the Giant Bur-Reed which is found in sedge and buttonbush marshes. Seventy species of wildlife were documented, including species of concern such as nesting Black Ducks, Blue-Winged Warblers, and Jefferson/Blue Spotted Salamanders. The scientists also found more than 60 natural communities and critical wildlife habitats, 8 of which are rare in the state including Blackgum-Red Maple swamp. The ecologists were remarkably impressed by the relative lack of weedy species, indicating a high degree of ecological integrity. Surveyed areas were found to contain a productive mosaic of early successional habitats such as open field and beaver-influenced ponds and wetlands interspersed with intact river corridor, forested uplands and wetlands. **All in all, the study identifies, provides documentation, and recommends that the Partnership initiate land conservation activities on approximately 1,100 acres of important habitat.**

The second element of the project was to develop predictive GIS models and to map potentially significant wildlife habitat for the ecologically linked landscape of the Piscassic and lower Lamprey River basins. Computer-based GIS modeling offers a powerful tool for analyzing large quantities of spatial data and predicting the location of suitable habitat over vast areas – in this case three watersheds totaling more than 50,000 acres. Dan Sundquist, GIS guru for the Society for the Protection of New Hampshire Forests, convened a working group of regional experts to carefully construct, evaluate, and revise a series of models addressing both broad wildlife habitat classes (or "coarse filters") as well as the individual habitat needs of 25 animal species of conservation concern. In addition to creating high value habitat maps for each species and for areas where multiple habitat features intersect, Dan developed an innovative new approach to rapidly delineate open or early successional lands which provide vital habitat in the Great Bay region for many declining species. Final maps will be made available to members of the Partnership and other local partners to help guide further conservation activities. The methodology for creating the significant wildlife habitat models has been clearly documented

and will be made available to other GIS users who wish to conduct similar analyses in other watersheds.

The Partnership is already putting the results of the NHEP-funded study to good use! Bob Miller, The Nature Conservancy's Great Bay Project Director and lead acquisition agent for the Partnership, is contacting owners of priority lands identified during the project to explore protection opportunities. In addition, Partnership Coordinator Dea Brickner-Wood worked closely with staff from The Nature Conservancy and the NH Fish and Game Department to complete and submit a grant proposal for $1 million to the North American Wetlands Conservation Council to provide funding for the protection of priority parcels identified during this study. The proposal is currently under review, and we have received favorable feedback suggesting that the prospects for receiving an award are good! The Partnership is grateful to the New Hampshire Estuaries Project for supporting the initiative to identify, document, and map significant habitat areas in the Piscassic and lower Lamprey River watersheds, and is confident that the results will help to protect open space, habitat, recreation opportunities, and water quality in the Great Bay Estuary region.