Maine's Sebasticook River

A Rare and Critical Resource for Bald Eagles in the Northeast

MAINE DEPT. OF INLAND FISHERIES AND WILDLIFE

bri

Overview

Due to the combined effects of pesticide use, direct killing, and habitat loss, Bald Eagles (*Haliaeetus leucocephalus*) were nearly extirpated by the mid-20th century. As a consequence of concerted efforts to prevent the loss of this iconic species, the natural history of this eagle is closely intertwined with some of the most important landmark environmental policies in U.S. history, such as banning of the pesticide DDT and the Endangered Species Act.

While traditional conservation efforts focused on increasing reproduction at nest sites, the current management focus is now shifting toward protecting eagle aggregation areas, typically centered on seasonally abundant fisheries.

In 2014, with support from the American Eagle Foundation and local landowners, researchers from Biodiversity Research Institute (BRI) and the Maine Department of Inland Fisheries and Wildlife (MDIFW) conducted ground-based and aerial surveys of Bald Eagles utilizing fishing and perching areas along the Sebasticook River.

The Recovery of Maine's Bald Eagle Population

Fifty years ago, our nation's symbol was in serious decline. Nationwide, populations, once estimated at 300,000-500,000 in the 1700s, had dropped to fewer than 500 individuals by 1963. The widespread use of the pesticide DDT was largely responsible for the significant drop in productivity among breeding pairs.

Conserving nesting habitat has been a vital tool in both the recovery and protection of Bald Eagles. Since 1972 and continuing today, the state provides technical assistance to landowners and an array of conservation organizations concerning eagles and eagle nesting habitat.

MDIFW works through voluntary conservation ownership or easement, and has successfully secured a safety net for nearly 500 eagle territories. This is a significant increase from only five nesting areas protected in 1976. The population has soared from fewer than 30 breeding pairs in the '70s to more than 633 nesting pairs currently and more than 2,500 Bald Eagles in the state.

The Role of Nonbreeding Bald Eagles in Recovery

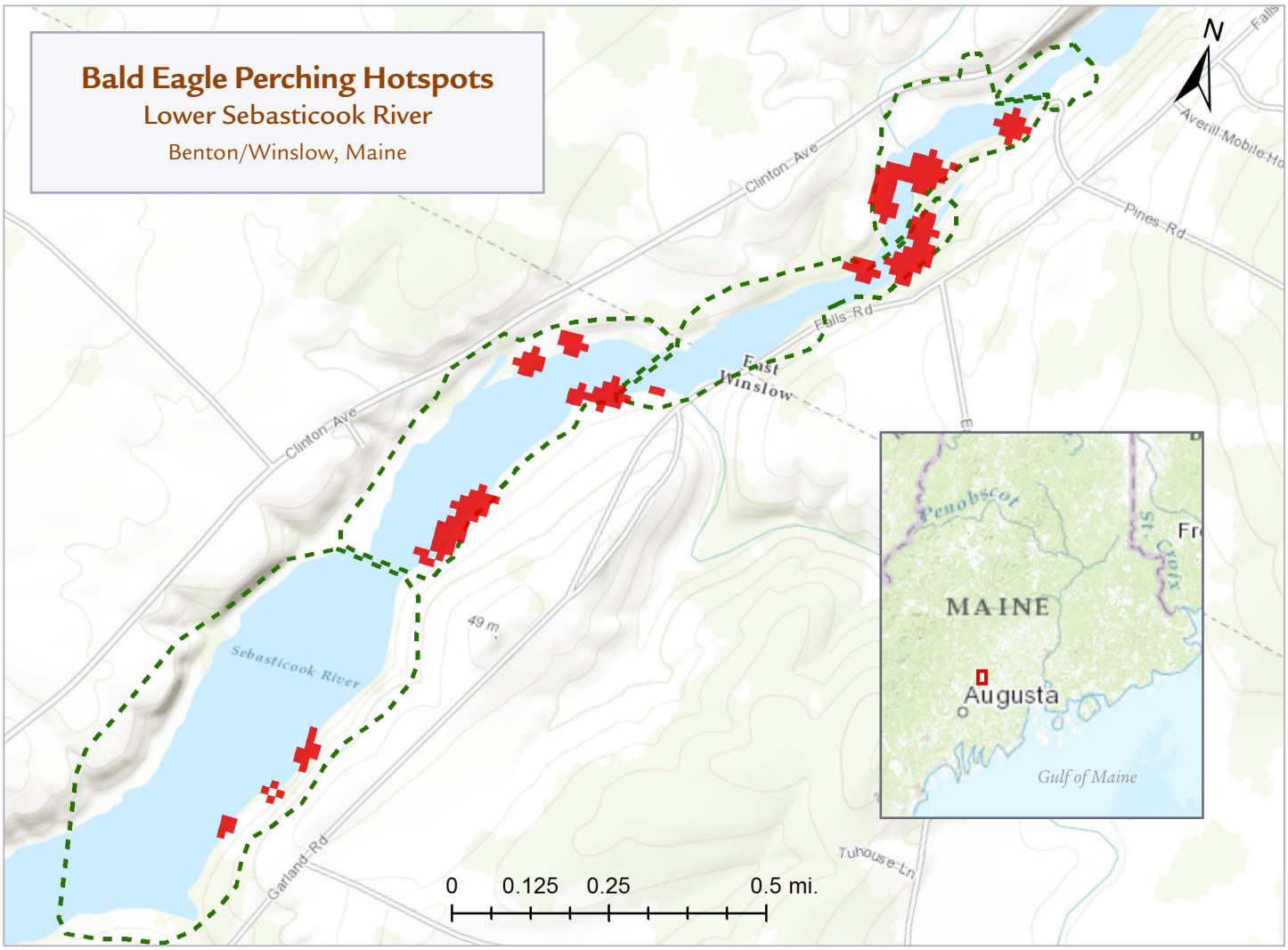
Research has shown that the survival of nonbreeding adults and subadults (younger than five years old) is key to population stability. Yet, the habits of this sector of the population are poorly understood. Conservation management efforts have traditionally focused on protecting nest sites. Since nonbreeding individuals are not associated with nest sites, they and their habitats tend to be overlooked in these efforts.

Nonbreeders often form aggregations in areas of high food abundance, which are important in maintaining their survival. Efforts to protect areas containing seasonally abundant resources therefore contribute to the long-term stability of Maine's thriving, but still sensitive, eagle population.

While highly territorial at nest sites, Bald Eagles commonly group together in higher numbers, called aggregations, where food is abundant (as shown at right). In central Maine, dozens of eagles frequent the Sebasticook River corridor to feed upon millions of river herring migrating between the ocean and their upriver spawning areas.

Roughly three-quarters of the eagles using the Sebasticook during the summer fish runs are subadults aged 1 - 4 years, a period when eagles are vulnerable to mortality. Nonbreeding eagles and the habitats that boost their survival are often overlooked in conservation efforts despite their critical role in maintaining the stability of populations.

Bald Eagles use their keen eyesight to catch fish out of swiftly moving waters. To minimize energy expenditure, they employ a "sit and wait" foraging strategy, perching adjacent to water, awaiting the easiest prey. Bald Eagles are also known to frequently steal fish from Ospreys and other eagles. As a result, eagles in areas with abundant food are seemingly often in conflict with each other as they all strive to procure a meal.



Important Bald Eagle foraging areas identified by analyzing significant clusters, or "hotspots" (indicated by red areas), of perching locations documented during 2014 survey efforts. The map shows five of the surveyed areas (indicated by dashed green line), those farthest upstream and closest to the Benton Falls Dam. In total, 10 sites along the lower Sebasticook River were surveyed.

The Sebasticook River – A Restoration Success Story

Plight of the Alewife

Accounts dating back to the 1500s describe an abundance of alewives throughout the Gulf of Maine. Alewives (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), also known collectively as river herring, are native to the eastern seaboard—from South Carolina to New Brunswick, Canada—and are mostly known for their commercial value as lobster bait. These anadromous species spend the majority of their lives at sea, returning to their natal freshwater streams and lakes each spring to spawn in large annual migrations known as *runs*.

Widespread dam construction blocking migration, water pollution, and long-term overfishing led to drastic declines in river herring populations.

The Road to Recovery

Recovery of the Kennebec River Basin's dwindling river herring population began following the 1999 removal of Edwards Dam near Augusta. The collaborative restoration efforts of the State of Maine, federal agencies, conservation organizations, and several upstream dam owners have led to removal of the Fort Halifax Dam (2008) and installation of a fish lift at the Benton Falls Dam (2006), enabling migrating fish to reach expanded spawning habitat for the first time in 100 years.

The Sebasticook River—A Resource for Eagles and Other Wildlife

The Sebasticook River in central Maine is an ecologically valuable river running 50 miles from its headwaters near Dexter to the Kennebec River in Winslow. The Sebasticook is the Kennebec's largest tributary, with a watershed covering about 606,000 acres, and it supports the largest annual run of river herring in New England.

More than 2.75 million river herring were able to swim up the river in 2011—an increase from just 47,000 in 2006. Even the much larger Connecticut and Merrimack Rivers do not see river herring runs of this magnitude.

Bald Eagles gather along the Sebasticook River in groups while feeding on this seasonably reliable food resource. Such an unusual abundance of food provides benefits to both nonbreeding and subadult eagles, in addition to local breeding pairs. River otter, cormorant, osprey, and kingfisher also benefit from the renewed river herring run.

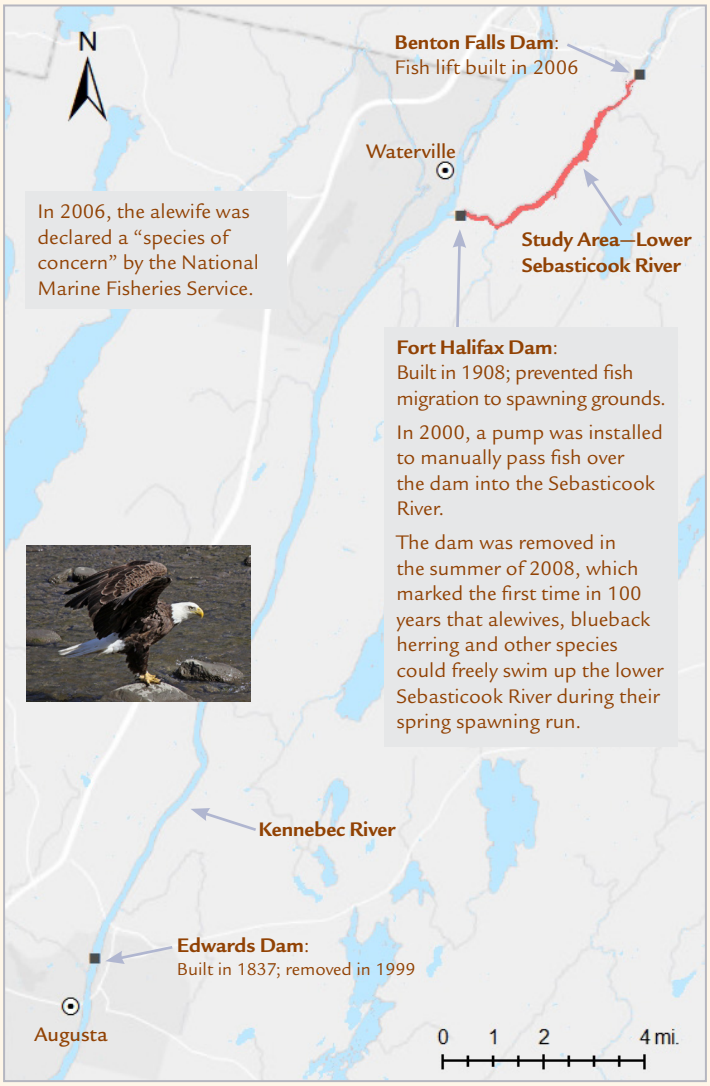


Photo above: River herring pour out of the fish elevator at the Benton Falls Dam. A fish elevator, or *lift*, carries fish over a barrier (the dam). Fish swim into a collection area at the base of the dam. When enough fish accumulate there, they are moved into an "elevator" compartment that carries them into a flume that empties into the river, above the dam. At left: An Osprey catches a river herring along the Sebasticook River.

Surveys of Bald Eagle Use along the Sebasticook River

From mid-May to early July, aggregations of Bald Eagles frequent the reach of the lower Sebasticook River spanning between the Kennebec River, five miles upstream to the Benton Falls Dam.

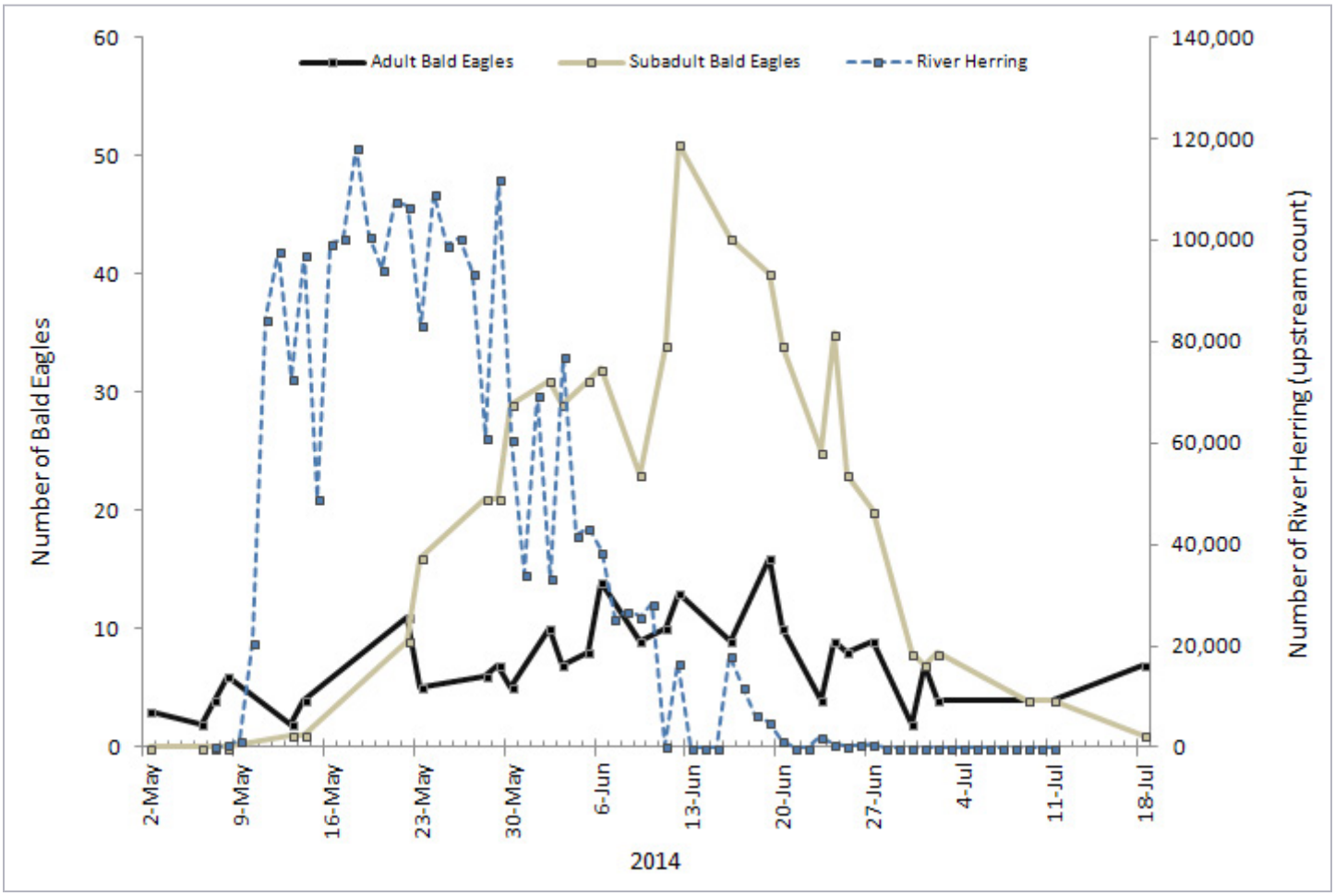
While the relationships between fisheries and wildlife populations are well recognized, no prior research efforts have focused on quantifying the use of the Sebasticook River by Bald Eagles. The information gained in this project will improve the ability of wildlife and conservation managers to make informed decisions about fish-eating birds, river herring, and the critical habitats that support them.

Findings from the Field

To identify when Bald Eagles were most reliant on the river herring run and which areas along the river stretch were most heavily used, BRI and MDIFW field biologists surveyed from May to July in 2014. Researchers focused on ten locations along the five-mile corridor of the Sebasticook River from the Benton Falls Dam downstream to the former Fort Halifax Dam. Surveys were conducted before, during, and after the river herring run to document eagle abundance and identify perching locations.

For a three-week period in June, along this five-mile stretch of riparian corridor, we consistently observed 40-50 eagles. On a single day in mid-June, 64 eagles were observed, the largest aggregation documented in New England.

Bald Eagle aggregations along the Sebasticook River span well beyond the period of the fish run; anecdotal counts by ground and aerial observers regularly note these aggregations during late summer and winter months. There are few examples of comparable aggregations in the northeastern United States. The daily counts of eagles using the Sebasticook River may translate to use by hundreds of eagles over the course of the entire year.



Daily riverwide estimates of adult and subadult Bald Eagles counted along a five-mile stretch of the Sebasticook River, Maine, compared with numbers of river herring (alewives and blueback herring) counted at the Benton Falls fish lift. The apparent time lag between upstream fish passage and the number of eagles documented does not account for, and is likely explained by, post-spawning downstream migrating fish (fish are only counted as they swim upstream). Downstream fish presumably continue to attract eagles long after the upstream fish migration subsides. Fish passage data courtesy of Maine Department of Marine Resources.

Supporting Maine's Eagles

Increasing awareness of conservation efforts along the lower Sebasticook River may be one of the most important investments in maintaining a lasting recovery for New England's Bald Eagle population.

Making a Difference: What You Can Do

- *Get Involved.* Many Maine organizations are dedicated to land and wildlife conservation. Participation and membership are critical to their missions.
- *Conserve Habitat.* Shoreline trees stabilize riverbanks, but they are also used by eagles to perch while foraging. Riverfront property owners can protect eagles, fish populations, and other wildlife by obeying municipal shoreland zoning ordinances, which helps conserve water quality and minimize erosion.
- *Make a Donation.* Private donations play a critical role in conservation. You can support Bald Eagle conservation and research in Maine by contributing to BRI's Bald Eagle Research Fund and by supporting the Maine Department of Inland Fisheries and Wildlife. Support MDIFW conservation efforts through the Chickadee Tax Check-off, the Loon Conservation Plate, Maine Birder Bands, and special lottery ticket sales (Maine Outdoor Heritage Fund).
- *Be Responsible.* Keep a respectful distance from nesting trees and foraging eagles. Properly discard used fishing line and hooks that can entangle wildlife. Consider using non-lead lead fishing weights and ammunition (see www.huntingwithnonlead.org). Vehicle collisions with eagles are common; be aware of eagles feeding on roadkill and flying near waterways.

For more information about Bald Eagles, habitat conservation and restoration, and eagle research in Maine, contact biologists at:

- Maine Department of Inland Fisheries & Wildlife: www.maine.gov/ifw/wildlife
- Biodiversity Research Institute Raptor Program: www.briloon.org/raptors
- U.S. Fish and Wildlife Service Maine Field Office: www.fws.gov/mainefieldoffice

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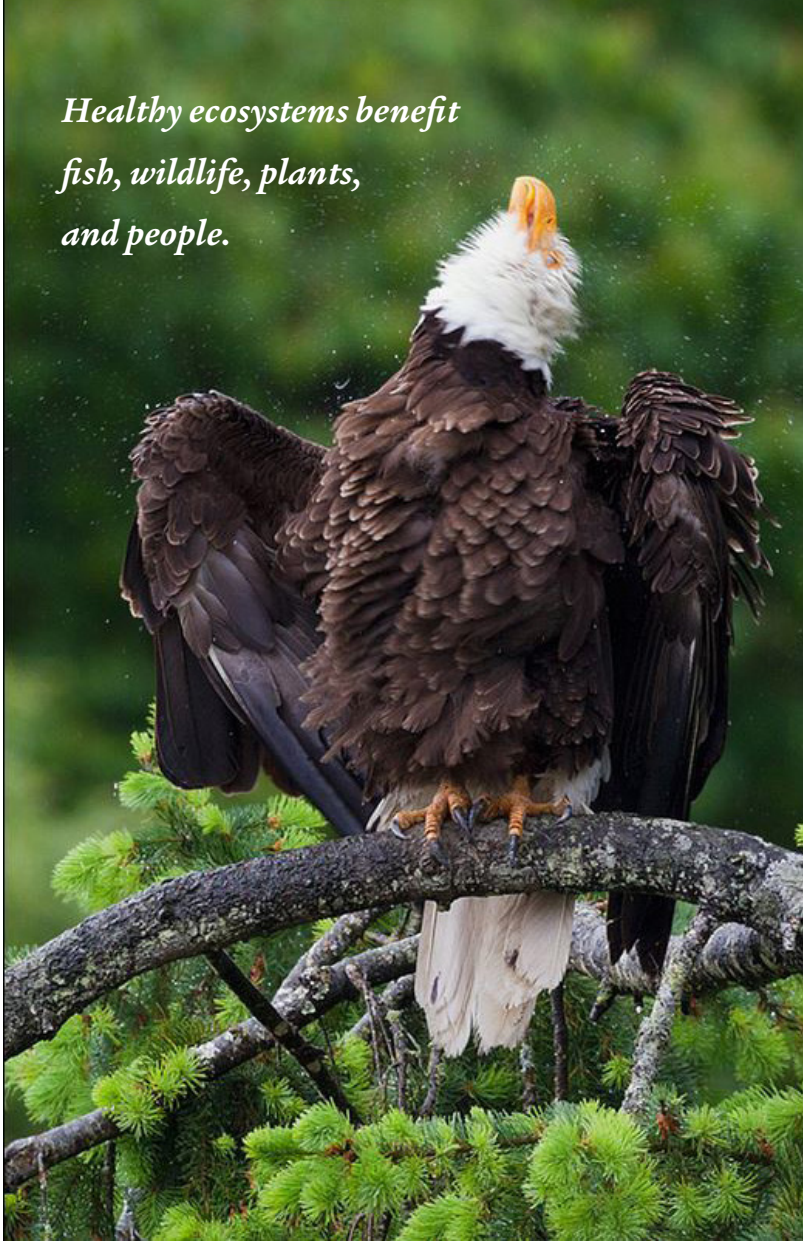

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Acknowledgments

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