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Connections: Spring 2012



Surveying Osprey in Casco Bay

by Chris DeSorbo

During the early and mid-summer of 2011, people recreating in Casco Bay and Penobscot Bay may have noticed a small plane circling mainland and island shorelines. With support from the Casco Bay Estuary Partnership, biologists from Biodiversity Research Institute (BRI) in Gorham, Maine, and the Maine Department of Inland Fisheries and Wildlife (MDIFW) surveyed the osprey population in Casco Bay. A parallel effort was also conducted in Penobscot Bay in collaboration with the University of Maine, with funding from the Maine Outdoor Heritage Fund. The primary objective of the survey was to estimate the abundance of osprey nesting territories in Casco Bay and Penobscot Bay and to assess their productivity- in this case, how successful they were in producing young. Efforts also aimed to compare patterns of nest distribution and productivity between current surveys and those collected in the 1980s by the MDIFW.

People who have spent time along Maine's coast in the summer have probably noticed ospreys. These large, white-bellied, dark-backed, fish-eating raptors are often seen plunging into the water, sometimes completely, to catch fish. In the spring, ospreys arrive in Maine from tropical overwintering areas. The birds quickly establish nesting territories that they defend from other ospreys and often other species. They build stick nests of varying size and character in anything from trees to channel markers and power poles. Ospreys typically lay up to three eggs; they diligently incubate them for approximately five weeks. Males are responsible for providing the lion's share of the food to the female while incubating and brooding young chicks. The demand for food increases as the nestlings develop, growing as large as their parents in just a few weeks.

Ospreys, like many raptors, have much to teach us about our environment. They prefer to build their nests in areas with adequate food resources, and patterns in their nest distribution often reflect patterns in the food resources upon which they depend. The number of chicks produced can also be a useful ecological barometer. During years when food is plentiful, osprey chicks are more likely to survive. When food is scarce, nestling rivalry increases and survival drops. Ospreys perhaps gained their most well-known "bioindicator" status when populations plummeted to dangerously low levels in the 1950s to 1970s, due in large part to the effects of the pesticide DDT. Today, scientists from BRI continue to analyze bird blood, feathers, and eggs to evaluate contaminant risks to wildlife and patterns in the aquatic environment.

During the 2011 osprey survey, biologists checked 124 current and traditional osprey nests throughout Casco Bay, from the Fore River in South Portland to the New Meadows River near Phippsburg. The Penobscot Bay data is still being summarized. Nests were not evenly distributed throughout the Bay, clustering in some areas and notably absent in others. Approximately 98 nest sites were considered in a useable state and possibly occupied by ospreys, and pairs were confirmed at 86 nest sites. Fifty-three nests were successful in producing young; 80 young survived to fledging age. The proportion of osprey nests in the Casco Bay population estimated to successfully produce young was between 54 to 62 percent. Estimated overall productivity for the population was between 0.83 – 0.92 fledglings per occupied nest, around the level associated with maintaining populations. Surveys showed that some regions, such as the New Meadows River and the majority of Casco Bay islands and shorelines, displayed similar levels of nest success and productivity.

The small subpopulation of ospreys nesting in the Fore River had the highest measures of nest success and productivity. Preliminary comparisons with data collected in the 1980s suggests that osprey populations in Casco Bay may have a similar abundance as in the 1980s, but the population may not be as successful in producing young as it once was. Preliminary data suggests that abundance of ospreys may have declined in Penobscot Bay, but the productivity of the remaining population appears stable.

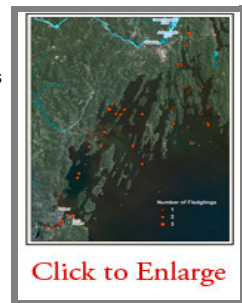
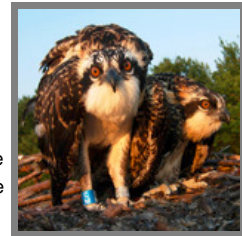
What are the primary factors that help explain differences in osprey nest distribution and reproduction in areas surveyed? What is the reason that osprey populations may be stable in one region, and possibly declining in another? Do environmental contaminants in the ecosystem influence the patterns observed? What can these surveys tell us about the health and stability of these aquatic ecosystems? The best perspectives on these questions will be gained by mirroring the three-year survey effort conducted in the 1980s. The BRI and collaborators hope to continue surveys in 2012 and 2013. Maine's osprey population has a lot to tell us—if we just take the time to listen.

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