

# Wildlife Populations: Osprey

## Background

Ospreys (*Pandion haliaetus*) are large birds of prey, generally between 21–23 inches long with a wingspan of 4.5 to 6 feet. They have white underbellies, dark brown wings and back, and a dark stripe through the eyes. Ospreys are unusual among raptors because their diet consists almost exclusively of fish.

Morphological adaptations including relatively long legs, spiny footpads, sharp curved talons, and a reversible outer toe that aids in fish capture. Additionally, ospreys have a dense oily plumage and nasal valves that prevent water from entering the nostrils while under water.<sup>1</sup>

Ospreys can be found wintering or breeding on every continent except Antarctica. Their wide distribution is due in part to their ability to live almost anywhere that safe nesting sites and prey are abundant. Safe nest sites can be found atop a perch that is difficult for a predator to climb, over water, or on an island. Nesting sites also may include buoys and channel markers, dead trees, or artificial nest platforms. Ospreys also make use of various other types of man-made structures, such as power-line poles, duck blinds, communication towers, buildings, and billboards.<sup>2</sup>

Ospreys hunt for fish 30–130 feet above the water. When an osprey spots a fish, it hovers briefly, dives toward the water's surface, swings its legs forward, and bends its wings back, plunging feet-first into the water. Using strong, almost horizontal, wing beats the osprey lifts itself and its prey from the water. The osprey will then rearrange the fish in its feet so that the fish faces forward in order to reduce drag during flight.<sup>3</sup>

In the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, osprey populations were threatened by egg collectors and hunters. With the introduction of the pesticide DDT (dichloro-diphenyl-trichloroethane) in the 1950s, osprey populations declined sharply in many areas. The use of DDT may have accounted for the disappearance of up to 90% of breeding pairs from the Atlantic coast, between New York City and Boston.<sup>4</sup> Due to the banning of DDT in the early 1970s, along with the installation of artificial nest structures, reintroduction projects, and new habitat created alongside new reservoirs, osprey populations have largely rebounded and continue to increase.<sup>5</sup>



Photo credit: <http://www.public-domain-image.com/free-images/fauna-animals/birds/osprey-pictures/osprey-bird-in-flight-detailed-image-pandion-haliaetus/attachment/osprey-bird-in-flight-detailed-image-pandion-haliaetus>

## Trends

The Department's Endangered and Nongame Species Program (ENSP) surveys nesting areas in May and June by aircraft, ground, and boat to tally the population. Most nests continue to be located on the Atlantic coast, but nesting has increased along Delaware Bay and north up the Delaware River, with a few inland nests associated with lakes and reservoirs. Nests on the Atlantic coast and Delaware Bay marshes are mostly located on structures made for ospreys, while in the upper Delaware Bay and Delaware River nests may be found on cell-phone or power-transmission towers.

In 2013, the year of the last statewide census, 542 nesting pairs of ospreys were found in New Jersey, having increased steadily from about 60 pairs in 1974 (Figure 1). Productivity continued to progressively increase and reached an all-time high of 2.07 young per active nest in the 2011 sample of known-outcome nests, before dropping back to 2.02 in 2013 (Figure 1). These values are well above the 0.80 value determined by Poole as necessary to maintain the population, suggesting the population should continue to grow.<sup>6</sup>

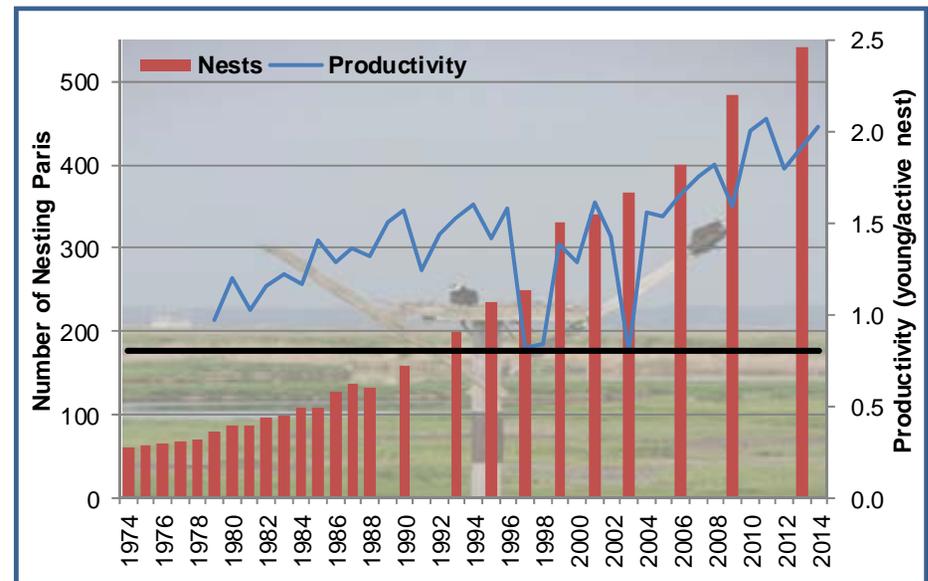


Photo Credit: <http://www.public-domain-image.com/free-images/fauna-animals/birds/osprey-pictures/>

Figure 1. Osprey nesting pair population (bar) and productivity (heavy blue line) between 1974 and 2014 in New Jersey. The solid black line represents the minimum average productivity necessary to maintain a stable osprey population<sup>3</sup>.

## Outlook & Implications

Ospreys are a valuable indicator species for monitoring the long-term health of large rivers, bays and estuaries. Ospreys are well-suited to this role because of their piscivorous (fish-eating) lifestyle and their known sensitivity to many contaminants. They are also relatively easy to study because they have conspicuous nests and are tolerant of short-term disturbance such as nest observations by researchers.

While osprey populations continue to rise, it is important to note that the osprey's recent success has been due in part to active human intervention and protection. Continuation of such efforts by New Jersey's Endangered and Nongame Species Program and others is part of the long term conservation of this species. Future monitoring may include evaluation of near-shore fish populations, especially menhaden, because osprey nesting success is closely tied to their prey.



Photo Credit: <http://www.public-domain-image.com/free-images/fauna-animals/birds/osprey-pictures/osprey-bird-pandion-haliaetus-flies-off-with-a-fish>

## More Information

[http://www.nj.gov/dep/fgw/ensp/raptor\\_info.htm#osprey](http://www.nj.gov/dep/fgw/ensp/raptor_info.htm#osprey)

<http://www.allaboutbirds.org/guide/Osprey/id>

<http://www.conservewildlifenj.org/protecting/projects/osprey/>

## References

Unless otherwise cited, the information in this report was provided by the DEP Division of Fish and Wildlife's "The 2011 Osprey Project in New Jersey" Report, which can be found at <http://njfishandwildlife.com/ensp/pdf/osprey11.pdf> and the September 1, 2013-August 31, 2014 Interim Report State Wildlife Grants, which can be found at: [http://www.state.nj.us/dep/fgw/ensp/pdf/swgreports/swg\\_report-interim13-14.pdf](http://www.state.nj.us/dep/fgw/ensp/pdf/swgreports/swg_report-interim13-14.pdf).

<sup>1</sup>Watkins, P. 2000. "*Pandion haliaetus*" (On-line), Animal Diversity Web. Accessed February 18, 2015 at [http://animaldiversity.ummz.umich.edu/site/accounts/information/Pandion\\_haliaetus.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Pandion_haliaetus.html)

<sup>2</sup>Ibid.

<sup>3</sup>Ibid.

<sup>4</sup>Poole, Alan F., Rob O. Bierregaard and Mark S. Martell. 2002. Osprey (*Pandion haliaetus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/683> doi:10.2173/bna.683

<sup>5</sup>Poole, Alan F. 1989. Ospreys: A Natural and Unnatural History. Cambridge University Press.

<sup>6</sup>Ibid.