

# Status of Osprey Breeding Activity in Northeastern Massachusetts 2023

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## Introduction

Ospreys are one of the most widely distributed raptors in the world, found breeding on every continent except Antarctica. In North America, Osprey occur in all 50 states, but populations decreased dramatically in the 1950s-1970s due to unregulated use of pesticides, which weakened Osprey eggshells and caused nesting failure and poor productivity. In the 1970s, new US laws regulated pesticide use and as a result Osprey numbers began to rebound across North America.

In northeastern Massachusetts (East Boston, MA to NH border), as far back as the 1850s and through the 1970s, Osprey were only observed as migrants in the county, despite well-established breeding populations to the north and the south. In the early 1980s, the first confirmed pair of nesting Ospreys was observed on a man-made nesting platform located on open salt marsh in Essex. During the 1990s and 2000s, nesting pairs of Osprey gradually increased in numbers on different natural and man-made structures including trees, nesting platforms, duck blinds, transmission towers and coastal navigational markers. In 2007, Greenbelt began to monitor Osprey nesting activity in northeastern Massachusetts more comprehensively and realized that suitable nesting sites may be limiting Osprey breeding success. As a result, since 2007, Greenbelt has built and installed approximately 60 new nesting platforms, while also repairing existing platforms and assisting private landowners, towns and others to install their own nesting platforms.

Greenbelt's Osprey Program was officially established in 2010. The goal remains to improve Osprey conservation in northeastern Massachusetts. In 2023, the program continued with four focus areas: management of nest structures, monitoring of breeding activity, research, and outreach/education. Management focused on nesting site/structure oversight; monitoring was a combination of staff and volunteers tracking individual nesting pairs; research involved banding flightless chicks; and outreach/education centered on the installation of a real-time webcam on an active Osprey nest displayed on the Greenbelt website as well as the installation of informational kiosks and other public outreach.

## Results

Greenbelt was successful collecting nesting and productivity data on all known Osprey pairs breeding in northeastern Massachusetts in 2023. Community scientists acting as volunteer Osprey nest monitors once again played a critical role in the data collection, as more than 50 individuals submitted over 2000 detailed accounts of Osprey activity at assigned nests using an online reporting process. Greenbelt staff also participated in monitoring. Some nesting pairs may be avoiding detection – most likely those pairs are deep in inland wetland that are difficult to access for monitoring.

The first observations of Osprey in 2023 in northeastern Massachusetts were reported in late March. Soon thereafter, Osprey pairs were visible from East Boston to Salisbury, and inland to Boxford, Merrimac and Haverhill, occupying and rebuilding old nests or constructing new nests. Most pairs laid eggs in April and were observed incubating through May and into June. Some nesting attempts failed in May and others in June. Great-Horned Owls were confirmed as a nest predator at one nest and suspected at most others. Chick starvation may have also limited fledging success, as numerous chicks were found either dead or severely emaciated in or around active nests. Nesting pairs with chicks were observed in many locations in June and the first fledglings were observed in July. Most of the resident adult and juvenile Osprey left their nest sites by the end of August and departed northeastern Massachusetts on their southward migration in September.

The data from the 2000+ online reports submitted by volunteer nest monitors and Greenbelt staff, plus other observations and data, shows that 80 active nests were observed in 2023 (Table 1). All nest site locations and descriptions are shown on a map accessible via a link at [www.ecga.org](http://www.ecga.org). Nest sites included a wide variety of man-made structures as well as some trees. In all, 80 different active nests were observed where Osprey made some

type of nest or occupied a nesting structure, including 53 nests on man-made nest platforms, 12 nests on navigational channel markers, 8 nests on light towers/electrical transmission poles or towers, 4 nests in trees and 3 nests on hunting blinds.

Table 1 shows the fate of the 80 breeding pairs observed in 2023. Based on all the available information, it is known that 70 pairs of Osprey produced nests with eggs, 6 “housekeeping” pairs were observed and 4 nests had an unknown fate. The housekeeping pairs were observed building and occupying a nest without ever laying eggs.

**Table 1.** Distribution and status of Osprey nests and breeding pairs in the region from East Boston to the New Hampshire border by town in 2022.

Town/City	# Active Pairs Observed	# Active Pairs with Eggs	# House-keeping Pairs with No Eggs	# Active Pairs Fledging young	# Active Pairs not Fledging Young	# Active Pairs with Unknown Fate	# Fledglings Observed (# banded)
East Boston	2	2		1	1		2 (2)
Revere	3	3		2		1	3 (3)
Saugus	7	5		4	1	2	7 (4)
Lynn	4	4		4			10
Marblehead	2	2		1	1		2
Salem	5	4		4		1	6
Beverly	1	1		1			2
Manchester	1	1		1			1
Gloucester	7	7		4	3		6
Essex	9	7	2	6	1		8 (5)
Ipswich	16	11		11	5		22 (10)
Rowley	5	3	2	1	2		2
Boxford	1	1		1			2
Merrimac	1	1		1			2
Haverhill	1	1		1			2
Newbury	6	5	1	4	1		7 (2)
Newburyport	2	2		2			5
Salisbury	7	6	1	4	2		7
<b>Totals</b>	<b>80</b>	<b>70</b>	<b>6</b>	<b>53</b>	<b>17</b>	<b>4</b>	<b>96 (26)</b>

Table 1 shows that in 2023, 86% (70/80) of breeding pairs with a known outcome laid eggs and 76% (53/70) were successful fledging young, compared to a fluctuating annual fledging success rate of 71% in 2022, 80% in 2021, 65% in 2020, 53% in 2019, 76% in 2018. Pairs (70) with eggs in 2023 had an average productivity rate of 1.4 fledglings per pair. Productivity for all pairs with a known nest outcome was about 1.3 fledglings per pair. In 2023 there were 96 fledglings observed, compared to 112 in 2022, 101 in 2021, 76 in 2020, 59 in 2019, 62 in 2018 and 44 in 2017.

In 2023, the failure rate of breeding pairs that laid eggs was 21% (17/70), which falls within the lower end of the observed range of 20-40% over the past 10 years. Nest failures were likely the result of eggs not hatching (infertile or otherwise not viable) or egg/chick predation. Great-Horned Owls were confirmed or suspected in several predation events at nest sites. Another factor that may have influenced nest failures but also productivity overall in 2023 was a possible lack of available forage fish. In numerous instances, dead or emaciated chicks were observed at nests. This was also reported from other areas in Massachusetts and the Chesapeake Bay area.

Forage fish abundance may have been lower in 2023, but high levels of rain could have created turbid water and fog was prevalent frequently, both conditions making it more difficult for adults to find forage fish.

Housekeeping pairs were similar (6) in 2023, compared to 8 pairs in 2022, 8 pairs in 2021, 7 pairs in 2020 and 6 pairs in 2019.

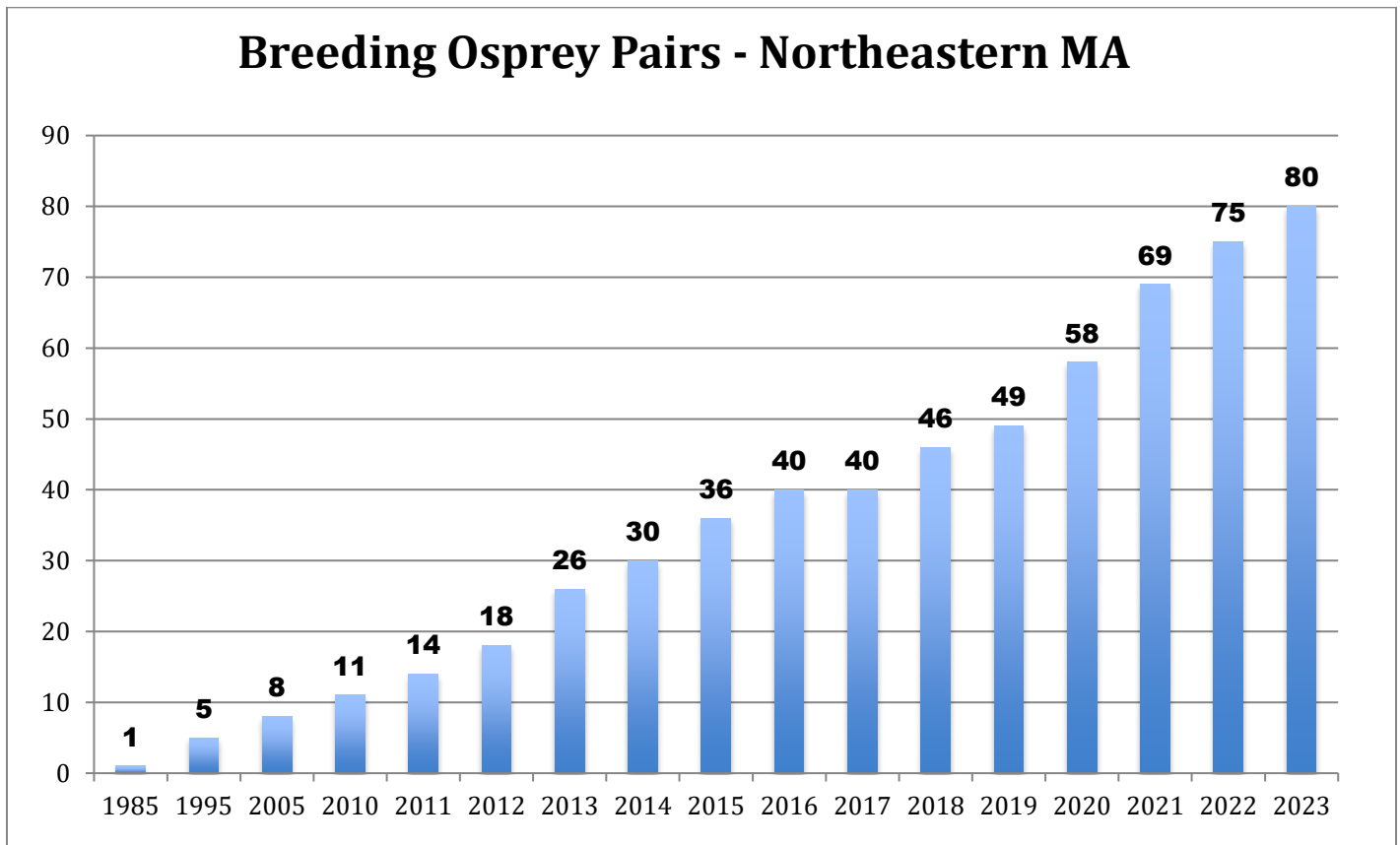
### Research

Greenbelt and collaborators placed US Fish and Wildlife Service aluminum leg bands on 26 flightless chicks in 2023. The total number of Osprey chicks banded as part of Greenbelt's Osprey Program since 2013 is now over 360. More and more banded Osprey are being observed in the region and undoubtedly the hundreds of fledglings produced in our region over the past 10-15 years are returning and being recruited into the local breeding population.

### Summary

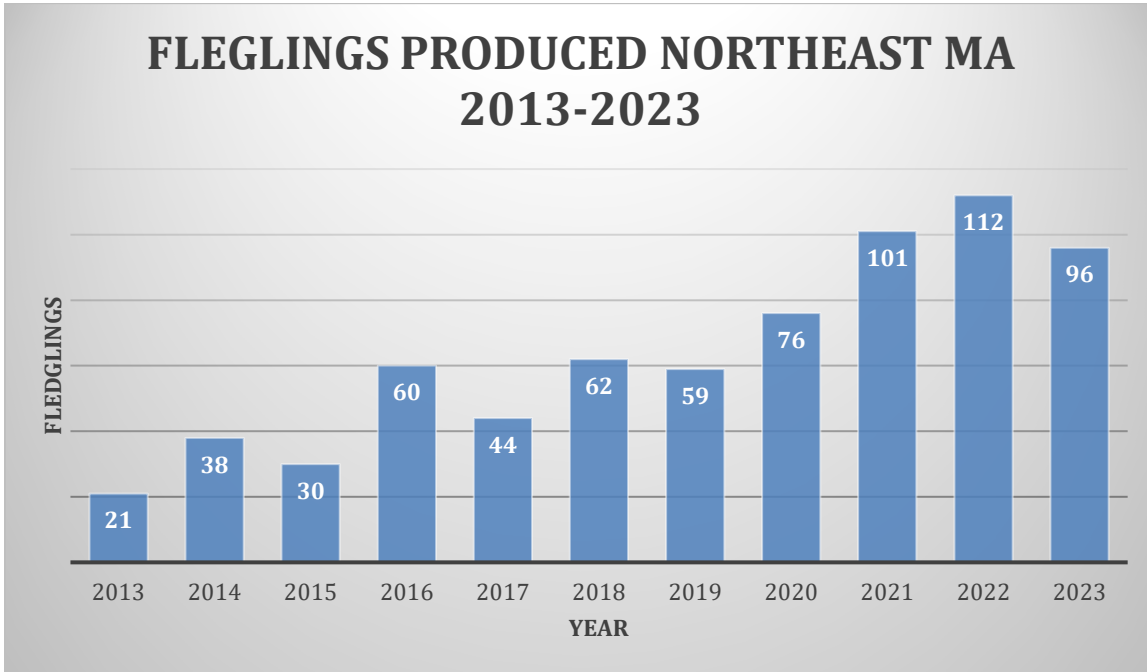
The population of breeding Osprey in northeastern Massachusetts in 2023 was estimated at 80 pairs, a 7% (5 pair) increase from 2022, and an increase in nesting pairs in the region for the sixth consecutive year. Figure 1 tracks the annual breeding population and shows that the population has grown significantly since 2010 (11 pairs to 80 pairs).

**Figure 1:** Numbers of breeding pairs of Osprey observed north of Boston, Massachusetts to the New Hampshire border since 1985, when the first nesting pair was confirmed in Essex.

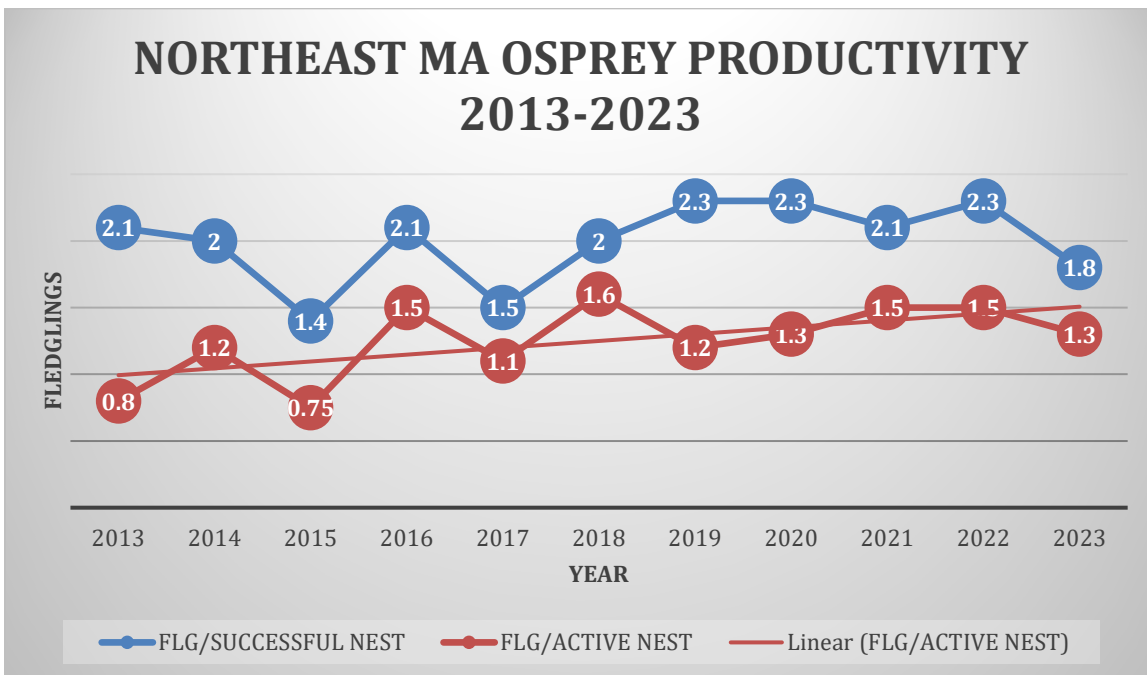


Chick survival was lower in 2023, with 96 fledglings observed (Figure 2), and productivity for both successful and all active nests was lower as a result (Figure 3). Food availability and poor weather very likely contributed to observed chick mortality and lower productivity.

**Figure 2.** Osprey fledglings produced annually in Northeastern MA 2013-2023



**Figure 3.** Osprey mean productivity per successful and active nest in Northeastern MA, 2013-2023.



The carrying capacity for Osprey in this region is unknown, but there appear to be few limiting factors. There are unoccupied nest structures throughout the area, new platforms are being added annually, and food availability appears generally abundant. Predation or abandonment caused by Great-horned Owls and Bald Eagles in 2023 contributed to limiting productivity.

Osprey are clearly thriving in northeastern Massachusetts; young Osprey are being recruited into the population and first-time nesting pairs are benefiting from the increased number of nesting platforms available to them. However, they are also taking advantage of many other man-made structures not intended for Osprey, like utility

poles, hunting blinds and other buildings. Greenbelt will continue to respond as needed to assist with Osprey nests that are potentially problematic.

Greenbelt's Osprey Program continued to play a vital role in Osprey conservation in northeastern Massachusetts in 2023 by ensuring nest sites/structures were stable; by coordinating monitoring of active nests by volunteers and staff; by expanding public outreach and education; and by conducting research. Greenbelt is excited to continue with the Osprey Program in 2024.

For more information about Greenbelt's Osprey Program, contact Dave Rimmer, Greenbelt Director of Stewardship at [dwr@ecga.org](mailto:dwr@ecga.org) or 978-768-7241 X14. Or visit [www.ecga.org](http://www.ecga.org) and click on the Osprey Program page.



*Atty, Lane and Babson on the nest in July, as captured via Greenbelt's webcam in Gloucester.  
- July 2023*