

2019 NEW JERSEY OSPREY PROJECT REPORT



Osprey 39/C was the first auxiliary banded osprey to be found breeding in New Jersey in 2019, only .94 miles from where he originated.

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“In 1974 there were only five active osprey nests on Barnegat Bay. Today there are approximately one hundred and fifty.”



Since the late 1970s, surveys of active osprey nests have been conducted every year during the peak of their nesting season. These early surveys painted a grim picture for the future of ospreys — virtually no pairs were productive. The effects of DDT and habitat loss had taken their toll. In 1973, no young ospreys were produced at nests on Barnegat Bay. After ospreys were listed as endangered, biologists began transplanting eggs from nests on Chesapeake Bay to Barnegat Bay nests. After that innovative effort, nests began to produce young. It's encouraging to look back and see how far we've come in the statewide recovery of ospreys in New Jersey.

Something that has not changed is the seasonality of ospreys and their life cycle. These highly migratory birds return to their breeding grounds in late March and April. Ospreys have a high level of site fidelity, so pairs return to the same nest site and “spruce up” their old nests. Courtship and egg laying follow. An average of 2-3 eggs are laid and incubated for an average of 36 days - a bit longer along the Atlantic coast, which is influenced by the cool water temperatures. Eggs hatch in the order they are laid and usually around Memorial Day, to signal the unofficial start of summer along the New Jersey coast.

A nest with adults present is “occupied” and one with eggs is “active.” It is productive when they have young. Surveys of osprey nests are conducted in late June and early July, when most pairs have nestlings that are around 3-4 weeks old. This is when the outcome of nests is most easily determined as the young cannot fly and are most likely to survive to fledge. Nests are surveyed by staff and specially trained volunteers — Osprey Banders — who access

remote nests by boat and Osprey Watchers — citizen scientists who report activity at nests online at: www.osprey-watch.org. Staff and Volunteer Osprey Banders use a ladder to climb up to nests, a mirror attached to a pole, or binoculars to determine the outcome of a nest. A portion of young are banded for future tracking with USGS aluminum bird bands. In recent years we have begun researching the use of sUAS or drones to determine the outcome in nests. Osprey Watchers use optics to determine activity and outcome at nests.



A sUAS (drone) approaches an active osprey nest inside Manahawkin Wildlife Management Area. July 2019.

The age of young observed at nests during surveys varies from unhatched eggs to pre-fledgling aged young, but most are around 3-4 weeks old. This year our surveys determined the outcome in 70% of 669 occupied nests. We continue to see more of the public utilize Osprey-Watch to contribute data online, and this year 80 nests (up from 47 in 2019 and 34 in 2017) were reported as active in New Jersey through Osprey-Watch. The activity recorded by our Osprey Watchers is very valuable because they survey nests that are not covered by our traditional boat surveys. Since abandoning the aerial survey in 2009, which covered all areas of the coast from Manasquan to Cape May and west to Salem, data from this source is prized. Survey data collected this year indicates that ospreys had a very productive year throughout their range, with a few exceptions.

Highlights

Our surveys continue to highlight the fact that the majority of ospreys (81%) nest along the Atlantic coast. The most densely populated colonies are prioritized and include: Sandy Hook — Gateway National Recreation Area; Barnegat Bay — Sedge Islands WMA; Great Bay - Absecon Bay; Margate, Ventnor, Ocean City, Great Egg Harbor Watershed; Sea Isle & Strathmere; Avalon & Stone Harbor; Wildwood & Cape May Harbor; and the Delaware Bayshore and Maurice River. Ospreys continue to utilize man-made wooden nest platforms where ~ 95% of the population nest. Other nest structures include channel markers, communication towers, duck blinds, utility poles, old docks, and dead trees. Over the past several years more frequent coastal flooding has caused more woody vegetation in high marsh and forested edges to die. In turn, ospreys are taking advantage of these opportunities to nest.

Weather was optimal for ospreys this year. There were no significant severe weather events with high straight line winds that can cause nest failures. Prey availability did not appear to play a role in any nest colony. Staples during the nestling period (June/July) are menhaden and flounder along the Atlantic Coast, and consist mainly of catfish, river herring, and perch along the Delaware Bay and its tributaries.

This year staff and volunteers recorded a total of 669 occupied nests — the most ever recorded in New Jersey. 542 of those nests were located along the Atlantic Coast and 97 along the Delaware Bay. 30 nests were active in the Northern region of New Jersey from the Meadowlands west to the Delaware River and south to the Betsy Ross Bridge. There were a total of 50 new nests reported or found in 2019. The average statewide productivity rate was 1.91 young/active (known outcome) nest which has increased slightly as compared to the previous four years. This is more than double the minimum needed to sustain the population.



A new productive nest atop a dead red cedar tree on N. Barnegat Bay.



Photos by Northside Jim

The Delaware Bay nesting colony continues to have better productivity as compared to the Atlantic Coastal colony at an average productivity rate of 2.09 vs. 1.90. In some parts of Delaware Bay, many previously active nests were reportedly abandoned or not active this year. We need to do more investigation into the cause of this. Overall, our data shows that the population growth rate has slowed slightly over the past decade. From 1999-2009 the population grew by 32% and 27% from 2009-2019. This data is only an estimate for the total size of the population, since this year was not a census year, so there are nests that are not accounted for in this report. This is another reason why sightings from the public are crucial to future management of ospreys in New Jersey.

In an amazing tie with 2018, a total of 932 young were recorded this year — 31 from the Delaware River/Northern Region, 790 (a new record) from the Atlantic Coastal region and 111 from the Delaware Bay — from a total of 488 active nests where the outcome was determined. A total of 286 (31%) nestlings were banded with USGS bird bands for future tracking, which is the lowest of the past three years. This is no surprise since banding is a secondary objective when conducting an osprey survey. Along the Atlantic Coast 26% of young (202) were banded and 68 of those with red “field readable” auxiliary bands as part of Project RedBand, an osprey banding and re-sighting project. On Delaware Bay 76% of young (84) were banded. No young were banded in North Jersey.

A total of eleven banded ospreys were reported or re-sighted in 2019; however, we were not able to confirm the identity of two red banded birds whose full band codes were not visible (4_/C - observed at BL Osprey Cam and 9_/C - photographed at IBSP in mid-April by Ray Yeager). The oldest banded bird that was encountered was a male (band # 788-49033) who nested at our new Barnegat Light Osprey Cam. He was banded as a nestling on July 12, 2006 at a nest



Red banded ospreys who were re-sighted this year (clockwise from left): 25/H by Rich Nicol, 79/D by John Naughton, 23/ by John Naughton, 73/C by Rich Nicol, and 4_/C by Ray Yeager.

inside Sedge Islands WMA, only 2.6 miles away from where he now nests. A notable finding, as compared to previous years, is that out of the ten total confirmed band encounters, only two were birds found dead. Most encounters were of live red-banded birds in New Jersey, but others include re-sightings in Lewes, Delaware (1088-04332, banded 7/8/13, re-sighted alive on 3/30/19) and Tappahannock, Virginia (0928-12809, banded 7/6/10, found dead on 7/25/19).

Project RedBand

On July 9, 2019 we encountered the first breeding red banded osprey (39/C, pictured on cover page) at a nest inside Sedge Islands WMA. For those who are not familiar with Sedge Islands, it is the birthplace of the early recovery efforts of ospreys in New Jersey and home to the most densely populated colony of ospreys with 32 nesting pairs in less than 2 square miles. As we were wrapping up a survey of nests inside Sedge, one of the last nests we visited was that of 39/C. We saw that he had a red band on his right leg, so we made sure to capture some photos to confirm his identity. He was the 40th osprey nestling banded as an elite member of Project RedBand on July 12, 2014 at a nest that is located inside Sedge Islands and less than a mile from where he currently nests. We can't wait to see when he returns to Sedge in the spring.

Pollution and Ospreys

In addition to determining the outcome at nests, we also collect any addled or unhatched eggs for future analysis. In 2019 a total of 17 eggs were collected throughout our survey areas.



A male osprey picks up a single use plastic bag off the marsh in Oceanville, New Jersey. Spring 2019. Photo by Howie Williams.

When analyzed, the contents can depict their exposure to pollutants in the environment that are biomagnified through the food chain like DDT/DDE, PCBs, flame retardants and heavy metals. Past studies have shown that levels of organic contaminants in the environment have declined, but levels of heavy metals have increased. Ospreys have not shown any indications that contaminants are at levels which would affect their reproduction.

As many people know, plastics in the environment are becoming a global crisis. It is no surprise that ospreys collect and use plastics in their nests. Adults and their young are particularly at risk of becoming entangled, which usually requires human intervention for them to survive. While we do not know why ospreys use plastics in their nests, we know they have become much more prevalent in the environment and in areas where ospreys collect natural nesting material. Ospreys may be attracted to brightly colored plastics but some items also resemble natural nesting material. In 2019 we began to collect more data on the presence of plastics in nests during a survey. Of our volunteers who participated we found that of 189 active nests, 42% contained plastic debris. We do collect all plastic marine debris that we find in nests (and the surrounding marsh) for proper recycling/disposal and hope to further research the occurrence and types of plastics found in osprey nests in the future. Our goal is to inform policymakers who can enact regulations to limit plastic use and the chance that they enter our coastal environment, which degrades the health of both humans and wildlife.

This year we were assisted by our first volunteer student research intern, Marissa Murdock, a student attending Rider University. She helped survey nests, collect and record data, band young, carry ladders, and collect plastic litter. She was a true asset to the Project. We hope to open up this internship opportunity to more college students in 2020.



In conclusion, our data shows that ospreys had a productive year in 2019 with 488 pairs that produced 932 young. Over the past twenty years the average statewide reproductive rate has steadily increased while the population growth rate has steadily decreased. The availability of prey does not appear to have limited the growth of the population; however, global fish stocks are expected to decline along with biodiversity. The use of plastics is also expected to increase in the coming decades, so we're concerned about their future impact on ospreys. Climate change will only exacerbate these threats to ospreys, so future monitoring is critical to the long term stability of the state population. Ospreys continue to indicate that the overall quality of our environment, especially along the coast, has improved significantly over time.

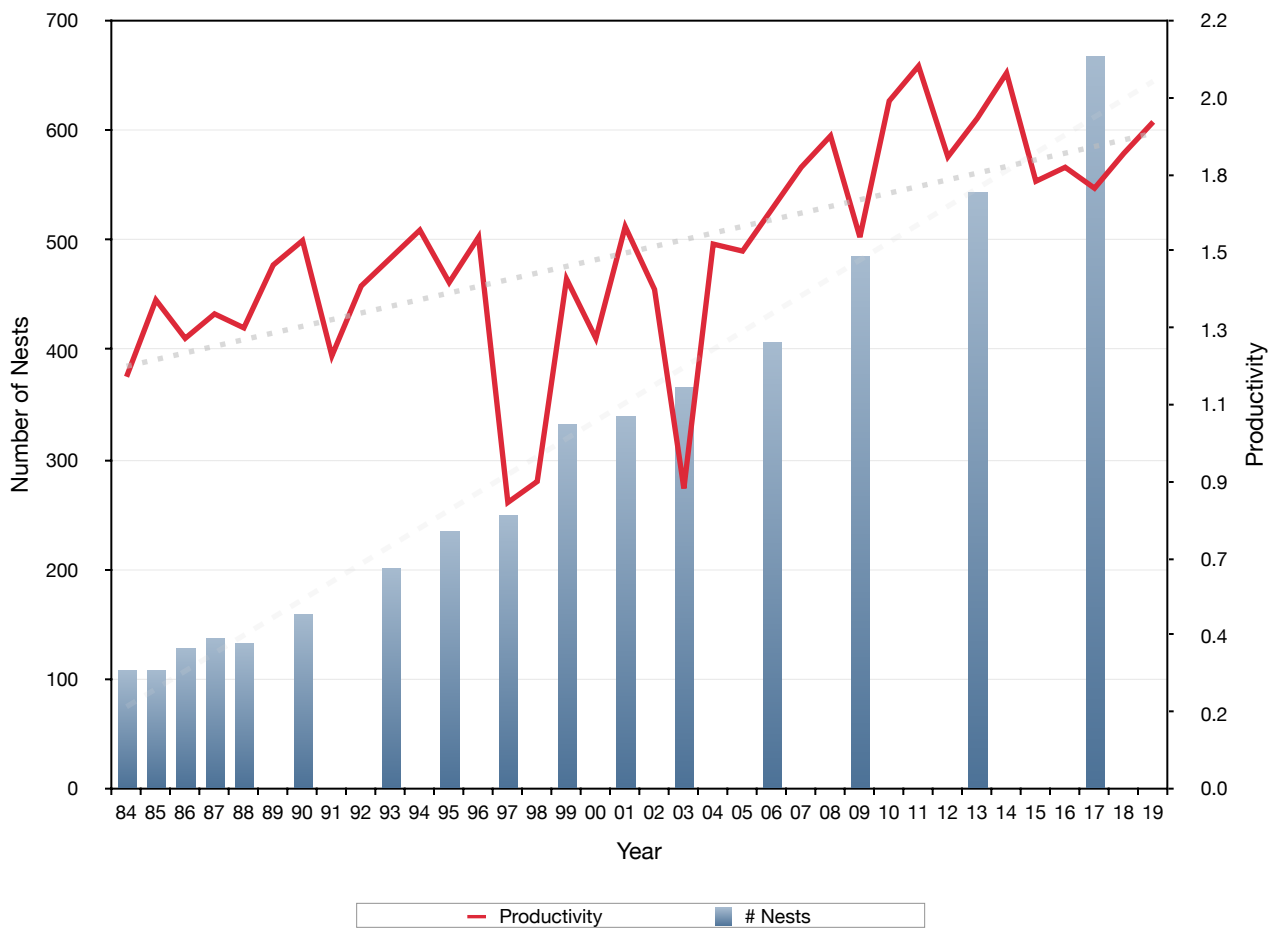


Figure 1. Osprey nesting population (bar) and productivity (line) 1984-2019 in New Jersey.

Project Staff: Kathy Clark, Ben Wurst, Larissa Smith and 2019 Intern Marissa Murdock, Rider University.

Volunteer Osprey Banders: Fred Akers - Great Egg Harbor Watershed Association, Jane and Peter Galetto - Citizens United to Protect the Maurice River and its Tributaries, Northside Jim - Nest Story, Jeanne Heuser - Sandy Hook Unit of Gateway National Recreation Area, Damon Noe - The Nature Conservancy, Bill Stuempfig, Matt Tribulski, Hans and Hanna Toft.

Thanks to everyone who donates to Conserve Wildlife Foundation of NJ, contributes to the Endangered and Nongame Species Program through the Check-Off for Wildlife on their NJ State Income Tax, and by purchasing Conserve Wildlife License Plates!

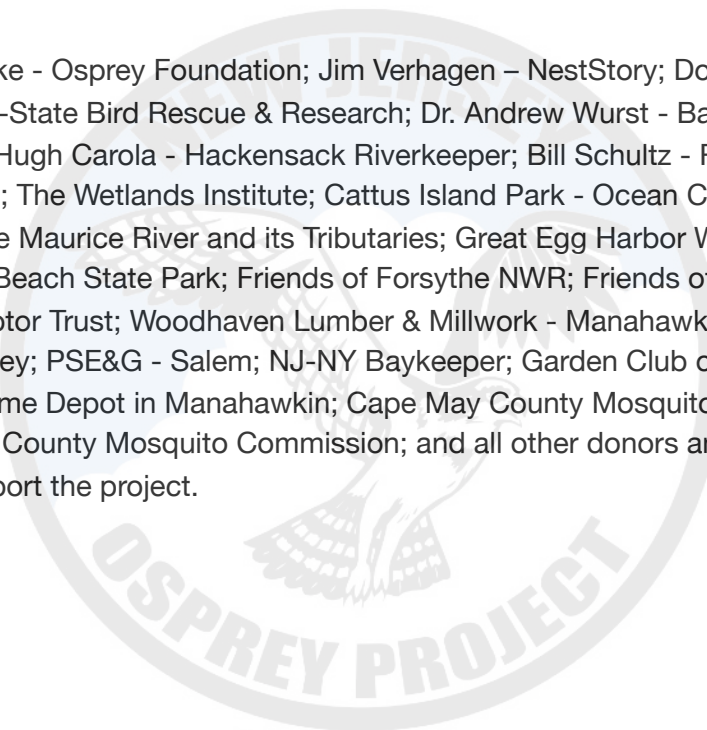
Funding also provided by the U.S. Fish & Wildlife Service, with matching contributions from Osprey Project volunteers.

Special Thanks to: Bill Clarke and the Osprey Foundation and everyone who donated to help us purchase a new work boat this year! We are eternally grateful for the contributions you've made to support ospreys and our efforts to monitor and manage them!



Our new 20' Maycraft skiff sits along the edge of the marsh at dusk in Loveladies. July 2019. Photo by Northside Jim.

Thanks to: Bill Clarke - Osprey Foundation; Jim Verhagen - NestStory; Don and Karen Bonica; Dr. Erica Miller of Tri-State Bird Rescue & Research; Dr. Andrew Wurst - Barnegat Animal Clinic; Osprey-Watch.org; Hugh Carola - Hackensack Riverkeeper; Bill Schultz - Raritan Riverkeeper; Atlantic City Electric; The Wetlands Institute; Cattus Island Park - Ocean County Parks; Citizens United to Protect the Maurice River and its Tributaries; Great Egg Harbor Watershed Association, Island Beach State Park; Friends of Forsythe NWR; Friends of IBSP; Toms River Avian Care; The Raptor Trust; Woodhaven Lumber & Millwork - Manahawkin; Zoological Society of New Jersey; PSE&G - Salem; NJ-NY Baykeeper; Garden Club of LBI; Jetty Rock Foundation; The Home Depot in Manahawkin; Cape May County Mosquito Control Department; Ocean County Mosquito Commission; and all other donors and volunteers who assist with and support the project.



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Nesting Area	# Nests	Known-Outcome Nests	# Young	# Banded	Production 2019	Previous Years		
						2018	2017	2016
Delaware River & North Jersey	21	15	24	n/a	1.60			2
Hackensack-Hudson Rivers	9	5	7	n/a	1.40	2.50	1.38	0.60
Raritan Bay area (w/ Cheesequake)	36	31	41	10	1.32	1.16	1.81	1.77
Monmouth County	23	7	16	n/a	2.29	2.05	1.46	1.91
Barneгат Bay	109	81	156	47	1.93	1.71	1.34	1.78
Sedge Islands WMA	32	28	52	21	1.86	1.32	2.04	2.18
Great Bay to Atlantic City	95	70	126	6	1.80	1.65	1.46	2.05
Great Egg Harbor/Ocean City	79	70	150	66	2.14	1.99	1.90	2.12
Sea Isle City	38	31	54	0	1.74	1.45	1.95	1.46
Avalon/Stone Harbor Bays	74	57	119	41	2.09	1.91	1.89	1.51
Wildwood Bays & Cape May	56	40	76	11	1.90	2.11	1.81	1.28
Delaware Bay & Maurice River	97	53	111	84	2.09	2.24	2.01	1.93
TOTAL of Study Areas	669	488	932	286	1.91	1.82	1.71	1.78
D. River/N. Jersey	30	20	31	n/a	1.55			
Atlantic Coast only	542	415	790	202	1.90	1.75	1.67	1.75
Delaware Bay only	97	53	111	84	2.09	2.24	2.01	1.93
Total Checked Statewide	669	488	932	286	1.91			

Table 1. Osprey productivity in 2019 in all major nesting areas. Productivity was determined by ground surveys in June-July. Productivity rates in 2016-2018 provided for comparison.

