

New Jersey Department of Environmental Protection

Division of Fish and Wildlife

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Endangered and Nongame Species Program

New Jersey Bald Eagle Project, 2016

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Cover photo by “Northside Jim” on Barnegat Bay

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Summary

The Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) biologists, Conserve Wildlife Foundation (CWF) staff, and volunteer observers located and monitored bald eagle nests and territories. One hundred seventy-two nest sites were monitored during the nesting season, of which 150 were documented to be active (with eggs) and twenty-two were territorial or housekeeping pairs. Fifteen new eagle pairs were found this season, twelve in the south, three in central NJ. One hundred thirty-two nests (88%) of the 150 known-outcome nests produced 216 young, for a productivity rate of 1.44 young per active and known-outcome nest. Twenty (12%) nests failed to fledge young. The Delaware Bay region remained the state's eagle stronghold, with 47% of nests located in Cumberland and Salem counties, and the bay side of Cape May County.

The state's eagle population would not be thriving without the efforts of the dedicated eagle volunteers who observe nests, report sightings, and help protect critical habitat.

Introduction

Historic records are incomplete, but one study indicated New Jersey hosted more than 20 pairs of nesting bald eagles in the Delaware Bay region of the state (Holstrom 1985). As a result of the use of the pesticide dichloro-diphenyl-trichloroethane, commonly known as DDT, the number of nesting pairs of bald eagles in the state declined to only one by 1970 and remained there into the early 1980s. Use of DDT was banned in the United States in 1972. That ban, combined with restoration and management efforts by the Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP), resulted in population increases to 23 pairs by 2000, 48 pairs by 2005, 82 pairs by 2010, and 150 pairs by 2015. ENSP recovery efforts – implemented since the early 1980's – have resulted in a steady recovery as New Jersey's eagle population has rebounded from the edge of extirpation.

Recovery efforts were multifaceted. In 1982, after New Jersey's only remaining nest (located in Cumberland County's Bear Swamp) had failed at least six consecutive years, ENSP biologists removed the egg for artificial incubation at Patuxent Wildlife Research Center in Maryland, and fostered the young nestling back to the nest. As a result of residual DDT contamination, the Bear Swamp eggs were too thin to withstand normal incubation. Artificial incubation and fostering chicks continued with success until 1989, when the female of the pair was replaced and the pair was able to hatch their own eggs.

Increasing the production from a single nest, however, was not enough to boost the state's population in a reasonable period of time. Mortality rates are high in young eagles (as high as 80%), and they do not reproduce until about five years of age. ENSP instituted a hacking project in 1983 that resulted in the release of 60 young eagles in NJ over an eight-year period (Niles et al. 1991). These eagles contributed to the increase in nesting pairs since 1990.

Bald eagles nesting in NJ face many threats, with disturbance and habitat loss the greatest threats in our state. In addition, contaminants in the food web may negatively affect the eagles nesting in some areas of NJ.

Disturbance is defined as any human activity that causes eagles to change their behavior, and takes many forms, including mere presence of people in nesting or foraging areas. In general, people on foot evoke the strongest negative reaction (Buehler 2000). When eagles change their behavior in reaction to people, they cease doing what is best for their survival and the well-being of their eggs and young. Ultimately, that reduces the survival of individuals and the population. ENSP biologists work to manage and reduce disturbance in eagle habitats, especially around nest sites. A corps of experienced volunteer observers, as well as education and safe viewing areas, are essential to this effort. Viewing eagles from safe distances, where eagles continue to act normally, is best for eagles and satisfies our natural desire to see them. Biologists also protect habitat in a variety of ways, including working with landowners, land acquisition and management, and applying the state's land use regulations. ENSP is continuing to investigate the impacts of organochlorines and heavy metals in eagles and other raptors nesting in the Delaware Bay region. Bald eagles, ospreys, and peregrine falcons nesting in the region exhibited some reproductive impairment relative to other areas (Steidl et al. 1991, Clark et al. 1998), but recent research indicates problems may be limited to very local areas of contamination (Clark et al. 2001). ENSP biologists collect samples that allow monitoring of contaminants in eagles during the nesting season, and monitoring nest success is an integral part of this research.

ENSP biologists, with the Division's Bureau of Law Enforcement staff and project volunteers, work year round to protect bald eagle nest sites. However, with increasing competition for space in the most densely populated state in the nation, it is clear that critical habitat needs to be identified and, where possible, protected. Critical habitat for eagles includes areas used for foraging, roosting and nesting, and is included in the program's Landscape Project mapping of critical wildlife habitats.

The population of wintering bald eagles has grown along with the nesting population, especially in the last ten years. This growth reflects increasing populations in NJ and the northeast, as each state's recovery efforts continue to pay off for eagles.

The federal government removed the bald eagle from its list of Endangered Species in August, 2007, in recognition of the national resurgence in the eagle population in the lower 48 states. The U.S. Fish and Wildlife Service oversees a 20-year monitoring period (through 2027) to watch for and investigate any problems that could compromise the eagle recovery. In addition, a revised version of the Bald and Golden Eagle Protection Act remains in effect to protect nest and roost sites for bald eagles nationwide. The bald eagle's official New Jersey status remains state-endangered for the breeding season and state-threatened for the non-breeding season, and state

regulatory protection remained unchanged by the federal action.

Objectives of the New Jersey bald eagle program:

- 1) monitor the recovery of the bald eagle in the state by documenting the status, distribution, and productivity of breeding bald eagles in NJ;
- 2) enhance nest success by protecting bald eagles and their nest sites;
- 3) monitor wintering areas and other concentration areas and plan for their protection;
- 4) document locational data in the Biotics database and apply it to identify critical habitat using the Landscape Project mapping;
- 5) provide information and guidance to landowners and land managers with regard to bald eagles on their properties;
- 6) increase our understanding of bald eagle natural history in New Jersey.

Methods

Nest Survey

All known nest sites are monitored January through July or through fledging. Volunteer observers watch most nests from a distance of 1,000 feet, using binoculars and spotting scopes, for periods of two or more hours each week. Observers record all data including number of birds, courtship or nesting behaviors, incubation, feeding, and other parental care behaviors that provide essential information on nesting status. ENSP or CWF staff contact volunteers weekly with an update and are available to discuss observer questions and data. Dates are recorded for incubation, hatching, banding, fledging, and, if applicable, nest failure. A nesting territory is considered “occupied” if a pair of eagles is observed in association with the nest and there is some evidence of recent nest maintenance. Nests are considered “active” if a bird is observed in an incubating position or if eggs or young are detected in the nest.

Observers report other bald eagle sightings to ENSP or CWF biologists, who review the information for clues to potential new nest locations. ENSP staff and volunteers investigate territorial bald eagles for possible nests through field observations. When evidence suggests a probable location, biologists may conduct aerial surveys of the region to locate a nest. Following guidance from the US Fish and Wildlife Service’s post-delisting monitoring plan (USFWS 2009), we maintain a list of occupied nests and territories for population monitoring.

When necessary, nests are protected from disturbance with barriers or posted signs. Staff works in partnership with landowners and land managers to cooperatively protect each nest. Volunteers notify ENSP staff immediately if any unusual or threatening activities are seen around the nest site. The Division’s Bureau of Law Enforcement conservation officers act to enforce protection measures as needed, and provide routine assistance as well.

At select sites, ENSP biologists enter the nest site to band young when nestlings are between five and eight weeks old. A biologist climbs the tree and places nestlings into a large duffel bag and lowers them, one at a time, to the ground. A team records measurements (bill depth and length, eighth primary length, tarsal width, and weight) and bands each eaglet with a federal band and a

green state color band with an alpha-numeric code. A veterinarian examines each bird and takes a blood sample for contaminant analysis. Blood is collected and stored following techniques in Bowerman et al. (1994). Samples are stored frozen pending analysis by a technical lab. Nest trees are generally not climbed the first season to avoid associating disturbance with the new site.

Wintering Eagle Survey

In recent years, we in New Jersey did not participate in the National Mid-Winter Eagle survey in January. As eagle numbers have increased in NJ we found that the count no longer covered all important eagle areas, and that volunteer efforts could be put to better use. Biologists asked eagle project volunteers to search for locations where eagles roost and otherwise concentrate in the winter months of January and February.

Results

Nest Survey

The statewide population increased to 172 territorial pairs in 2016, up from 161 last year. One hundred-fifty pairs were known active (meaning they laid eggs), the same number as last year (Figure 1). One hundred thirty-two nests (88%) were known to be successful in producing 216 young, for a productivity rate of 1.44 young per known-outcome active nest, which is above the required range of 0.9 to 1.1 young per nest for population maintenance. Twenty-two pairs maintained territories but did not lay eggs. Most nests were located in the southern portion of the state, particularly within 20 km of Delaware River and Bay (Figure 2). The majority of nests were located on private land, while the rest were on state, federal, county and conservation-organization lands. Disturbance was a management issue at many nests, and posting and regular surveillance by staff and nest observers were essential to increase the chance of success.

All documented nests and significant dates of the nesting season are listed in Table 1. Excluded from our nesting population data are 37 previously-documented nest sites that were unoccupied, and where no new nest could be found (or search effort was lacking; Table 2).

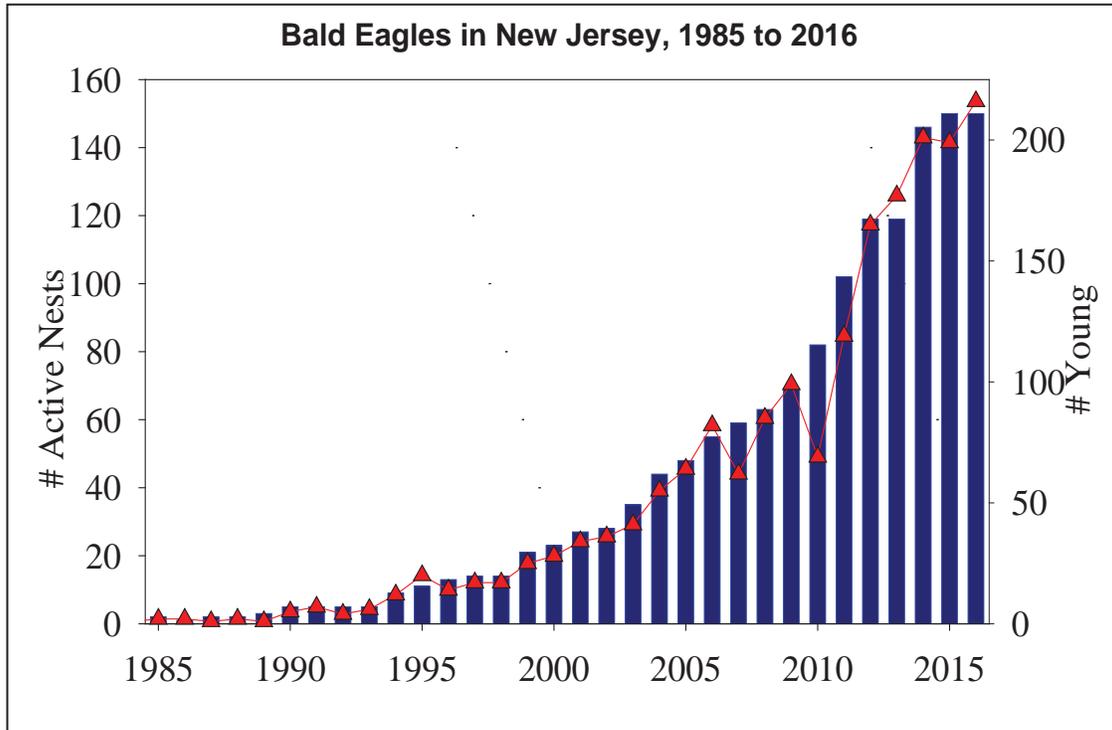
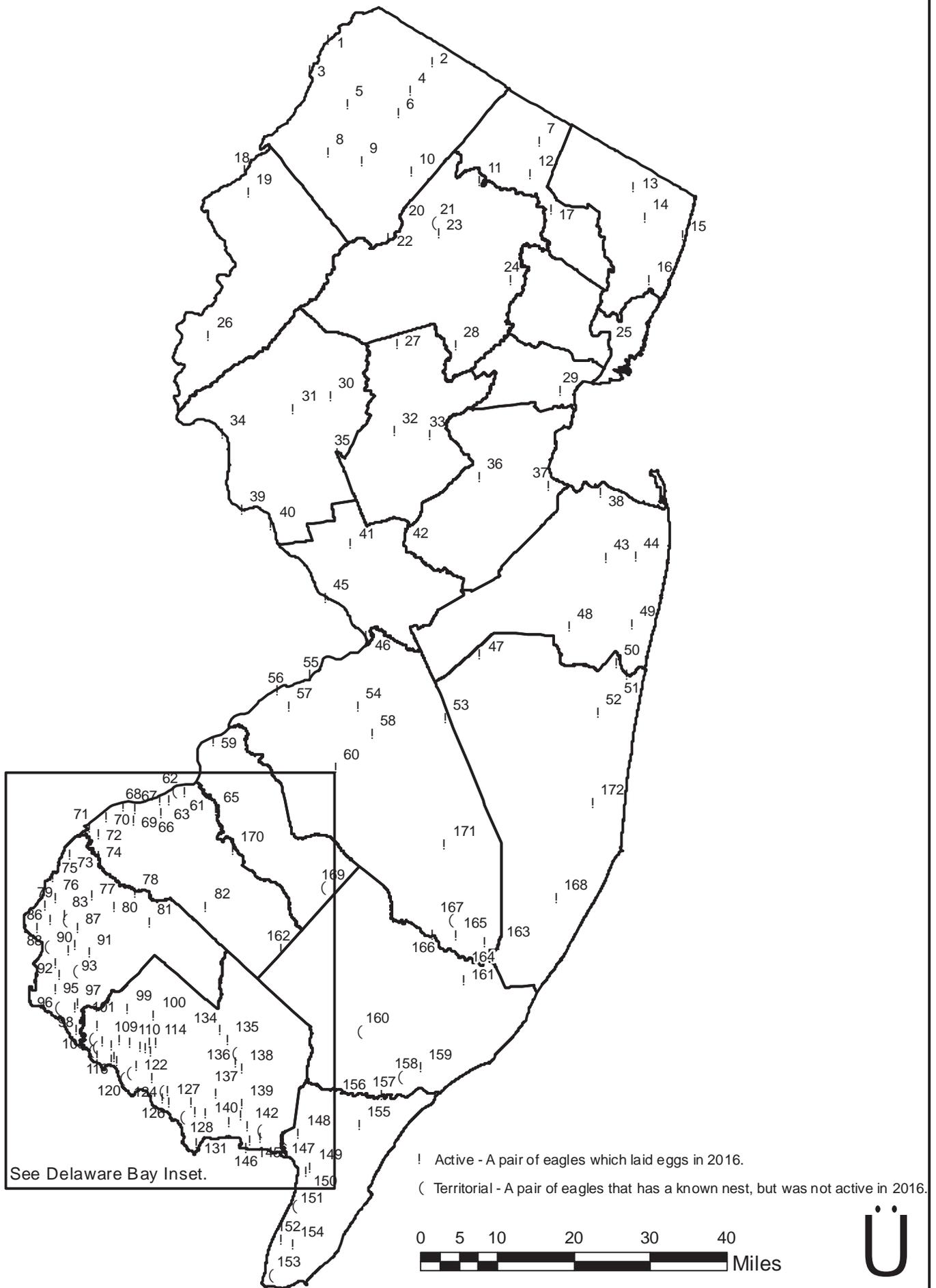


Figure 1. Number of bald eagle nests and young fledged in New Jersey, 1985 through 2016. Blue bars are number of nests and red triangles are number of young produced each year.

Figure 2. Bald Eagle nest sites, 2016.

01 Minisink Island	51 Brielle	101 Newport Meadows	151 Dias Creek West
02 Bassetts Bridge	52 Kettle Creek	102 Davis Mill	152 Fishing Creek
03 Dingmans Ferry	53 Fort Dix	103 Mad Horse Creek	153 Higbee
04 Wantage	54 Fairgrounds	104 Wheaton Island	154 Rio Grande
05 Culvers Gap	55 Burlington Island	105 Bayside A	155 Cedar Swamp Cr
06 Lewisburg Swamp	56 Delanco	106 Bayside B	156 Tuckahoe A
07 Wanaque A	57 Rancocas Creek A	107 Cohansey (Greenwich A)	157 Tuckahoe B
08 Little Swartswood	58 Pemberton	108 Cohansey (Greenwich B)	158 Patcong (Lower)
09 Hyper Humus	59 Camden	109 Cohansey (Sheppards Mill)	159 Patcong Creek B
10 Newton Reservoir	60 Medford	110 Cohansey (Loatman)	160 South River-Atlantic
11 Charlottesburg-Rockaway	61 Eagle Point	111 Cohansey (Hopewell West)	161 Galloway
12 Wanaque B	62 National Park	112 Cohansey (Hopewell Central)	162 Cedar Lake (Gloucester)
13 Woodcliff Lake	63 Woodbury Creek	113 Cohansey (Hopewell East)	163 Ballanger Creek East
14 Oradell Reservoir	64 Mantua A	114 Cohansey CC	164 Ballanger Creek West
15 Palisades B	65 Timber Creek	115 Cohansey (Tindells)	165 Wading River B
16 Overpeck Creek	66 Mantua Creek B	116 Tindall Island	166 Mullica River
17 Point View Reservoir	67 Dupont/Raccoon Creek	117 Cohansey (Middle Marsh C)	167 Wading River A
18 Poxono Island	68 Mond's Island	118 Cohansey (Middle Marsh A)	168 Cedar Run (Ocean)
19 Yards Creek	69 Gibbstown	119 Cohansey (Middle Marsh B)	169 Blue Anchor
20 Lake Hopatcong A	70 Bridgeport	120 Seabreeze B	170 Turnersville
21 Picatinny/Lake Denmark	71 Birch Creek B	121 Seabreeze A	171 Chatsworth
22 Lake Hopatcong B	72 Swedesboro (Birch Creek)	122 Husted's Landing	172 Forked River
23 Mount Hope Lake	73 Penns Grove	123 Sayre's Neck	
24 Parsippany	74 Oldman's Creek	124 Bay Point Road	
25 Kearny	75 Deepwater	125 Nantuxent Creek A	
26 Merrill Creek	76 Humphrey's (Salem)	126 Nantuxent Creek D	
27 Far Hills/Ravine Lake	77 Pilesgrove	127 Nantuxent Creek B	
28 Great Swamp	78 Upper Oldmans	128 Fortescue	
29 Linden	79 Pennsville	129 Turkey Point A	
30 Round Valley	80 Salem River	130 Turkey Point B	
31 Stanton Station	81 Daretown	131 Egg Island	
32 Duke (Raritan River)	82 Silver Lake	132 Dividing Creek	
33 Manville	83 Mannington A (Horne Run)	133 Bear Swamp	
34 Milford Tower	84 Penns Neck	134 Union Lake	
35 Three Bridges	85 Mannington Meadows C	135 Maurice River (Millville North)	
36 Westons Mill Pond	86 Supawna Meadows B	136 Maurice River (Millville)	
37 Cheesequake Creek	87 Mannington B (Halls Run)	137 Maurice River (Bluffs)	
38 Keansburg Cell	88 Supawna Meadows A	138 Maurice River (Burcham)	
39 Bulls Island	89 Fenwick Creek	139 Maurice River (Mauricetown)	
40 Lambertville Tower	90 Keasbeys Creek	140 Maurice River (Bowkers)	
41 Pennington	91 Quinton	141 Port Norris	
42 Princeton	92 Elsinboro	142 Matt's Landing	
43 Navesink River/Reservoir	93 Alloways Creek C	143 Heislerville	
44 Parker's Creek	94 Alloways Creek F	144 Riggins Ditch	
45 Trenton	95 Grossup	145 Sadie Lane	
46 Crosswicks Creek	96 Devil's Gut	146 East Point	
47 Prospertown	97 Stow Creek A	147 Stipson Island	
48 Manasquan Reservoir	98 Stow Creek C	148 Belleplain	
49 Shark River	99 Shiloh Tower	149 Dennis Creek	
50 Manasquan River	100 Sunset	150 Goshen	

2016 Bald Eagle Nest Status



2016 Bald Eagle Nest Status

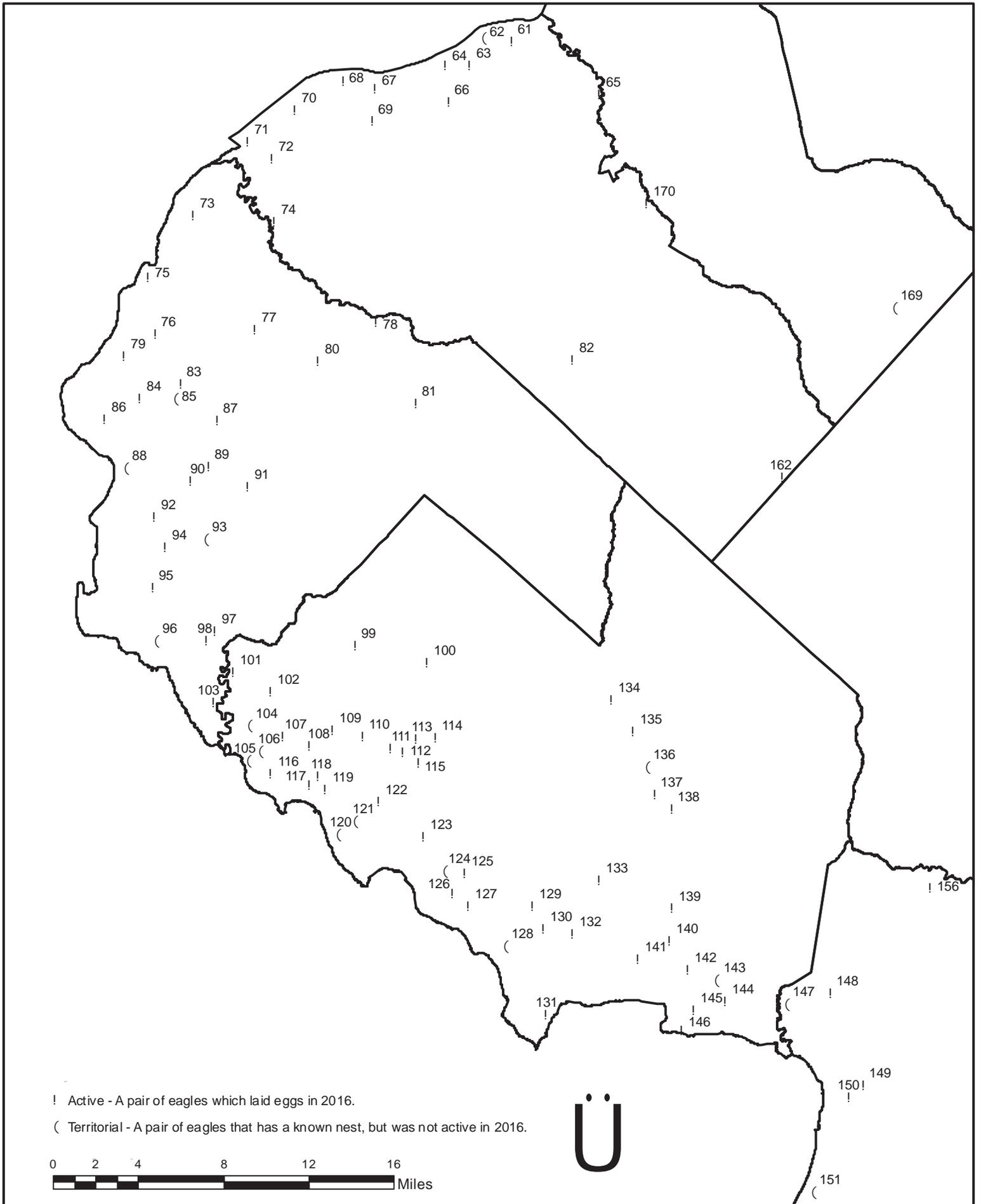


Table 1. Production and estimated dates for bald eagle nests in NJ, 2016. T=Territorial

NEST SITE	Incubation	Hatching	Banding	Fledging	No. Fledged	Failed date	Notes
Alloways Creek C	T						
Alloways Creek F	2/17	3/23		6/19	2		
Ballanger Creek East	2/17	3/23		6/15	2		
Ballanger Creek West	2/17	4/4		7/5	1		
Bassett's Bridge	Unk	Unk			2		
Bay Point Road	T						
Bayside A	T						
Bayside B	T						
Bear Swamp	3/22				0	4/19	
Belleplain	3/22	4/19			2		
Birch Creek B	2/20	3/19		6/25	2		
Blue Anchor	T						
Bridgeport	2/16				0	4/18	
Brielle	Unk	5/15			0	6/10	New pair
Bulls Island	2/20	3/24		6/15	2		
Burlington Island	2/17	4/1		6/24	1		
Camden	3/10	4/18		6/18	1		
Cedar Lake (Gloucester)	2/27	4/16		7/9	1		
Cedar Run (Ocean)	2/10	3/15		6/8	1		New pair
Cedar Swamp Creek	2/19	3/25		6/9	1		
Charlottesville (Rockaway)	2/28				1		
Chatsworth	3/4	4/8		7/5	1		
Cheesequake Creek	2/7				0	3/15	
Cohansey (Greenwich A)	2/14	3/16		6/8	1		
Cohansey (Greenwich B)	Unk	Unk		unk	1		
Cohansey(HopewellCentral)	2/22	3/28		6/20	1		
Cohansey (Hopewell East)	Unk	Unk		unk	1		New nest tree
Cohansey(Hopewell West)	2/22	3/28		6/20	1		
Cohansey (Loatman)	2/22	3/22		6/14	1		
Cohansey (Middle Marsh A)	2/14	3/19		6/25	1		
Cohansey (Middle Marsh B)	2/21	3/26		6/25	2		
Cohansey (Middle Marsh C)	2/14	3/19		6/17	2		
Cohansey(Sheppards Mill)	2/20	3/22		7/14	2		
Cohansey(Tindells Landing)	1/31				0	3/5	
Cohansey CC	2/17	3/26		6/17	2		
Crosswicks Creek	2/19				0	4/13	
Culvers Gap	3/1	4/10		7/2	2		

Daretown	3/20	4/25		7/16	1		Tree cut down, first clutch destroyed 2/9. Pair renested.
Davis Mill	2/20	3/16		6/8	2		
Deepwater	3/28	5/18		8/5	1		
Delanco	2/22	3/29		6/23	2		
Dennis Creek	2/16	3/22		6/14	2		New pair
Devils Gut	T						GH owl took over nest
Dias Creek West	T						
Dingman's Ferry	Unk				2		
Dividing Creek	1/31				0	3/16	
Duke (Raritan River)	2/18	3/26	5/9	6/18	2		
Dupont/Raccoon Creek	2/19				0	4/14	
Eagle Point	3/4				0	3/17	
East Point	Unk				1		New pair
Egg Island	2/2	3/8	4/21	5/31	2		
Elsinboro	1/30	3/23		5/30	2		
Fairgrounds	2/10	3/25		6/14	1		
Far Hills/Ravine Lake				6/11	2		
Fenwick Creek	2/20	3/26		6/25	2		
Fishing Creek	3/22	4/14			2		
Forked River	Unk				1		New nest tree
Fort Dix	2/14	3/20		5/30	3		
Fortescue	T						
Galloway	2/2	3/12	4/21	6/23	3		
Gibbstown	2/4	3/19	5/3	6/24	2		
Goshen	2/23	3/6		5/29	1		New pair
Great Swamp	2/3	3/9		6/2	1		
Grossup	3/24	4/11		6/30	2		New pair
Heislerville	T						
Higbee Beach	T						
Humphrey's (Salem)	3/7	4/11		7/4	1		New pair
Husted's Landing	2/7	3/16		5/29	1		
Hyper Humus	4/10	5/15		8/7	1		
Keansburg Cell	3/6	4/10		6/12	1		
Kearny	2/21	3/27		7/2	1		
Keasbeys Creek	2/13				0	3/5	
Kettle Creek	2/20	3/26		6/21	3		
Lake Hopatcong A	Unk				1		
Lake Hopatcong B	2/20			7/14	3		
Lambertville Tower	Unk				0	5/3	
Lewisburg Swamp					1		
Linden	3/5	4/17		7/5	2		

Little Swartwood	2/17	3/23	5/11	6/22	2		
Mad Horse Creek	2/2	3/11		6/6	1		
Manasquan Reservoir	2/5				0	3/4	
Manasquan River	2/6	3/14	4/25	6/3	3		
Mannington Meadows A	2/14	3/18		6/10	2		
Mannington Meadows B	2/29	4/5		6/23	1		
Mannington Meadows C	T						
Mantua Creek A	2/29	4/4		6/26	3		
Mantua Creek B	2/5	3/13		2			
Manville	2/22	3/30		6/20	2		
Matts Landing	3/5	4/9		7/2	2		New pair
Maurice River- Bluffs	2/23	3/29		6/21	1		
Maurice River- Bowkers	1/27	3/2		5/25	2		
Maurice River- Burcham	2/20	3/20		6/12	2		
Maurice River-Mauricetown	3/22				1		
Maurice River-Millville	T						
Maurice River-Millville North	2/8	3/14		6/5	3		
Medford	2/15	3/22	5/3	6/23	1		
Merrill Creek Res.	3/3	4/8		7/4	1		
Milford Tower	2/20				1		
Minisink Island				6/15	3		
Mond's Island	3/1				0	4/30	
Mount Hope Lake		4/10			2		
Mullica River	2/5	3/11		6/3	1		
Nantuxent Creek A	2/20	3/26			0	4/3	
Nantuxent Creek B	2/18	3/26		6/17	1		
Nantuxent Creek D	3/26	4/30		7/28	3		2 nd clutch
National Park	T						New pair
Navesink River	3/10	4/14		6/11	1		
Newport Meadows	3/5	4/10		7/3	1		
Newton Reservoir	2/25	3/27	5/11	6/19	2		
Oldmans Creek	2/12	3/18		6/19	1		
Oradell Reservoir	Unk				1		
Overpeck Creek	2/19				0	3/8	
Palisades B	2/12	3/22		6/19	3		
Parkers Creek		5/1			1		New pair
Parsippany	3/6	4/11		7/4	2		
Patcong Creek B	1/31	3/6		6/7	1		
Patcong (Lower)	T						New pair
Pemberton	1/18	2/24		6/6	3		
Pennington	2/15	3/21		6/13	2		
Penns Grove	3/7	4/11		6/22	2		

Penns Neck	3/5	4/11		7/4	2		
Pennsville	2/18	3/24		6/16	2		
Picatinny/Lake Denmark	T						
Pilesgrove	2/10			3/24	0	3/24	
Point View Reservoir	Unk				1		
Port Norris	2/12	3/19		6/8	2		
Poxono Island	Unk				2		
Princeton	2/19	3/31		6/13	1		
Prosperstown	1/29	3/4	4/8	5/27	2		
Quinton	2/21	4/2			0	4/17	
Rancocas Creek	2/22	3/23		6/15	1		
Riggins Ditch	2/21	3/27		6/12	3		
Rio Grande	2/15	3/22		7/14	2		
Round Valley	3/1	4/4		6/24	2		
Sadie Lane	2/21	3/27		6/12	1		New pair
Salem River	1/17	2/25		6/12	3		
Sayres Neck	1/31	3/3	4/14	5/29	2		
Sea Breeze A	T						
Sea Breeze B2	T						
Shark River	2/6	3/14		6/13	1		
Shiloh Tower	2/2	3/5		6/4	2		New pair
Silver Lake	2/5	3/11		6/3	2		
South River-Atlantic	T						
Stanton Station	3/11	4/12		7/4	2		
Stipson Island	T						
Stow Creek A (North)	2/2	3/12		6/6	2		
Stow Creek C	1/31	3/3		5/26	3		
Sunset	1/19	2/23		6/24	2		
Supawna Meadows A	T						
Supawna Meadows B	3/5	4/9		7/2	2		
Swedesboro-Birch Creek	1/31	3/10		6/2	1		
Three Bridges	2/24	3/30	5/9	6/20	2		
Timber Creek	2/17	3/24		6/22	3		New pair
Tindall Island	2/20	3/22		6/14	1		
Trenton	2/17				1		
Tuckahoe A	3/22				1		
Tuckahoe B	2/14	3/20		6/12	2		New nest tree
Turkey Point A	2/20	3/26		7/1	3		
Turkey Point B	2/17				0	3/26	
Turnersville	2/24	3/21		6/5	2		
Union Lake	3/22				0	4/19	
Upper Oldmans	2/20	3/25		6/15	2		

Wading River A	T						
Wading River B	2/21	3/16			2		New pair
Wanaque A	Unk				1		
Wanaque B	Unk				2		
Wantage	2/28	4/10			1		
Westons Mill Pond	2/9				0	3/9	
Wheaton Island	T						
Woodbury Creek	3/4	4/10		7/3	1		
Woodcliff Lake	2/17	3/25			2		
Yards Creek	3/8				1		
Total Nests Monitored	172						
Total Nests Active/Known Outcome	150						
Successful Nests	132						
Failed Nests	20						
Young Fledged	216						

Table 2. Previously documented eagle nests that were not used, or could not be documented, in 2016.

Absecon	Cedar Pond (Passaic)	Marshalltown	Silver Lake Tower
Alloways Creek-B CE	Center (Elmer)	Nantuxent C	South Dennis
Alloways Creek-D	Cohansey Green Swamp	Old Bridge	Spruce Run
Alloways Creek-E	Egg Harbor River	Oyster Creek	Stow Creek B
Alloways Hope Creek	Farrington Lake	Palisades A	Swainton
Arrowhead Lake	Green Pond	Patcong Creek A	Tocks Island
Beesley's Point	Harrisonville	Penns Neck Lower	Wildwood Bay
Bidwell Creek	Lake Lenape	Pequest	
Burlington Co/Del. River	Lake Muscontecong	Pompton Lakes	
Canton Sheep Farm	Liberty Loop	Salem River Tower	

New Nesting Pairs and Territories

In 2016, fifteen new pairs of eagles were found in New Jersey, described here:

Brielle – There are now several pairs of eagles along the Manasquan River. A pair of eagles was observed frequenting this area during 2015. During 2016 they were found to have constructed a nest on an island in the town of Brielle. The nest was difficult to view but on May 15 feeding was observed when chicks were too small to be seen. Unfortunately, the nest failed sometime after that date and was vacant by June 10.

Cedar Run (Ocean) – This new nest was discovered in a tree along the back edge of the marsh near Manahawkin. It is difficult to view from any location; it successfully fledged one chick. A pair of eagles was observed in this vicinity during 2015 but a nest was not found.

Dennis Creek – This new pair was found nesting in a tree line along the salt marsh in Cape May County. The pair produced two chicks.

East Point – In late April a pair of eagles nesting close to Delaware Bay was discovered by volunteers. The nest is in the marsh and difficult to view. When found the nest had one large chick which was assumed to have fledged.

Goshen – A nest was found in early January on an island in the marsh of Cape May County. The pair started incubating the end of February and fledged one young chick late May.

Grossup – This new pair nested on a transmission tower outside of Hancock's Bridge in Salem County. They fledged two young.

Humphrey's (Salem) – This pair nested along the edge of a farm field in Salem County. They fledged one chick in early July.

Matts Landing – After an unsuccessful nesting attempt in 2015, this pair relocated and fledged two young. They nested in a wildlife management area in Cumberland County.

National Park – This territorial pair built a nest along the Delaware River in Gloucester County.

Parker's Creek – This new nest was discovered on an osprey nest platform on federal property in Monmouth County during the spring of 2016. They successfully fledged one young.

Patcong (Lower) – This new nest was discovered during a flyover of eagle nests. It is located in the marsh along lower Patcong Creek in Atlantic County. The pair was territorial and was not known to incubate eggs.

Sadie Lane – This new pair nested in a pine tree along the edge of Delaware Bay marsh in Cumberland County. They began incubating in February and fledged one young bird in early June.

Shiloh Tower – A new pair of eagles built their nest on a cell phone tower in Shiloh, Cumberland County. The pair successfully raised and fledged one chick.

Timber Creek – A nesting pair of eagles had been suspected for several years along Big Timber Creek. In 2015 a nest was found believed to be eagles but never used. In 2016 a pair built a nest along the creek and raised three chicks. Unfortunately the nest monitors noticed that one of the chicks wings didn't look right, as it was unable to fully extend it. On July 1 the volunteers saw the third chick wasn't in the nest, but the adults were still around. The volunteers went out and found the chick under the nest unable to fly. The bird was taken to Tri-State Bird Rescue and Research in DE. Veterinarians determined the elbow had been dislocated with changes in the joint suggesting it happened weeks earlier; they postulated this bird's wing was stepped on by an adult or sibling. This bird's wing was permanently damaged, prohibiting flight, and the decision was made to euthanize the bird.

Wading River B – This nest was discovered on an island in the marsh along the lower Wading River during the fall of 2015, and fledged two young in 2016.

2016 Season Highlights

Telemetry

Endangered and Nongame Species Program biologists, with the Conserve Wildlife Foundation, have attached satellite transmitters on several eagle fledglings over the past four years. Mapping showing tagged eagle movements can be viewed on the CWF website.

“Nacote” was banded as a nestling in the summer of 2014 and fledged in July. Just weeks after fledging he made a big northern movement in August, 2014, heading due north and out of transmission range. He returned to northern New York where his transmitter's data downloaded to our computers, showing he'd spent most of the fall in a remote area of Quebec. He returned to southern NJ in November, 2014, and has spent the rest of 2015 and 2016 in Atlantic, Cape May and Cumberland counties. He has been photographed several times at Forsythe NWR in Atlantic County.

“Oran” is an eagle banded and tagged as a nestling on Delaware Bay in 2015. After fledging he spent late summer and fall moving across Cumberland and Cape May counties. On November 17, 2015, he flew across Delaware Bay and spent the winter in the farmland and woodlands of Maryland's eastern shore. He returned to NJ in spring, 2016, and spent most of his time ranging around Cumberland County. In mid-July he made a two-day flight to Maine, and went out of range along the Quebec/Maine border. He returned into cell range in late September as he flew to the Maine coast. By October 3 he was back in Cape May County. Oran had been around the lower Maurice River on October 24 when his tag stopped transmitting; 11 days later the tag “pinged” from a farm field in Maryland. A Maryland state biologist investigated for us, and found the transmitter in a harvested corn field, with no sign of any eagle. The transmitter was intact but the harness was in pieces, looking like it had gone through the harvester. We cannot know what happened, but it's possible the backpack harness came loose and Oran pulled it off.

We won't know for sure unless we get a resighting of Oran that includes identification of his green color band, number E/17.

In 2012 and 2013, we tagged other eagle nestlings with satellite tags, two of which are still actively transmitting. "Harmony 2" (banded D/64) fledged in 2012 and spent her first winter on lower Chesapeake Bay before traveling to Maine. She has spent the last three years in a 100-mile swath of western Connecticut and Massachusetts, making us suspect she will end up nesting there.

In 2013, we tagged "Haliae" (D/88) as a Merrill Creek nestling. She fledged and spent the winter of 2013-14 ranging around northern Chesapeake Bay in MD. In April, 2014, she headed through PA and NY and into Canada. In June she was back in NJ's Warren County, though she continued to wander and spent that summer in northern Maine and Canada. In fall, 2014, she headed to eastern PA, and has spent most of 2015 and 2016 on Maryland's eastern shore.

These tagged eagles are helping us to identify good eagle habitat and overnight roost areas with more precision. The movements and habitat use patterns are fascinating to watch, and are helping us to understand our eagle populations in new light.

Potential Nest Sites

Biologists and observers actively searched for possible nesting eagles in several locations. The searches were in response to reports of eagles engaging in breeding behaviors. Areas that remain promising are Batsto Lake, Oswego Lake, Indian Mills Lake, Williamstown, Evesham, Flemington/Raritan River, Canoe Brook Reservoir, White Lake, Musconetcong River and middle Delaware River, all of which have year-round eagle activity. In addition, several inland reservoirs in the north hold promise for eagle nesting.

Recoveries of Eagles in New Jersey

During this reporting period, 36 eagles were recovered, and of those, five were treated and released after injuries; one is still in rehab. The remaining birds were found dead, died while in care or were euthanized for these reasons: electrocution (7), impacts with vehicles (4), impacts with train (3), impacts with plane (1), or unknown objects (1); eagle-eagle fighting (3), lead poisoning (2), prior injury (1), and unknown circumstances (8). The details follow below in Table 3.

Table 3. Bald eagles recovered injured or found dead in this project year.

Date Found	Condition found	Location Found	County	Location/Facility	Comments	Band	Color	Origin & Date	age	sex	Outcome
12/7/15	injured	Pittstown	Hunterdon	Raptor Trust (TRT)	Captured 12/10/15 in backyard				4 yrs	M	Lead pellets and leg fracture repaired.
12/19/15	injured	Mays Landing	Atlantic	TSBRR	Hit by vehicle				AD	F	Released 9/20/16 at Stokes SF. Euthanized
12/20/15	injured	Great Bay Blvd.	Ocean	TSBRR	Down in marsh since 12/15				JUV	M	Died 12/26/15
1/24/16	injured	Salem	Salem	TSBRR	Puncture wounds from eagle fight causing debilitation				AD	F	Euthanized 1/27/16
2/16/16	dead	Rt 70 near Presidential Lakes	Burlington	Assunpink DFW	Lead poisoning				4yr	F	Found next to cranberry bog
3/1/16	dead	Broadkill Beach	(DE)		Unknown	0629-45841	B/36	Dividing Creek;4/25/03	13	F	Found buried in sand; resighted 5/1/15 and 10/10/15. Prime Hook Beach, DE
3/3/16	dead	Cape May Co Landfill	Cape May	Tuckahoe DFW	Impact	0679-01791	D/52	Maurice River Bluffs;4/27/2010	4 yrs	M	Dead. Found 30' from a low power line.
3/15/16	dead	Egg Harbor City	Atlantic	SRO DFW	Impact with train						Dead/necropsy
3/16/16	injured	1017/Shunpike Lower Twp.	Cape May	none-released	Conflict with another F				AD	F	Banded and released on site. 0709-04913
3/16/16	injured	1017/Shunpike Lower Twp.	Cape May	none-released	Conflict with another F				AD	F	Banded and released on site. 0709-04910
3/19/16	dead	Hopewell	Cumberland	Tuckahoe DFW	Fight with another eagle	629-46844	C/36	Navesink; 5/9/07	9yrs	M	Found dead in field, talon-locked with a live eagle that was stunned by impact (see next).
3/19/16	injured	Hopewell	Cumberland	TSBRR	Fight with another eagle						Injured in fight (with C/36); euthanized 3/22 due to injuries.
3/27/16	dead	Egg Harbor	Atlantic			629-45866	B/60	Newbold; 5/7/04	12	M	Dead. Remains found under osprey nest.
4/8/16	dead	Hopewell	Cumberland	Tuckahoe DFW	Electrocution	0679-01712	C/78	Wheaton; 5/1/09	7	M	Dead/necropsy
4/20/16	dead	Oyster Creek Nuclear Plant	Ocean		Electrocution					UN	Dead/necropsy
4/23/16	dead	Port Norris	Cumberland	Tuckahoe DFW	Electrocution				AD		Dead/necropsy
7/1/16	injured	Timber Creek eagle nest	Gloucester	TSBRR	Grounded by wing injury			Big Timber Creek	JUV		Fledged poorly and later euthanized due to permanent wing injury that occurred in nest.
7/1/16	recent	Fort Monmouth	Monmouth	Toms River Avian	Premature fledging			Ft. Monmouth	JUV	F	Returned to nest.
7/24/16	dead	Pennsville	Salem	TSBRR	Electrocution				AD		Dead/necropsy
8/3/16	dead	Cape May County Landfill	Cape May	Tuckahoe DFW	Electrocution						Dead/necropsy
8/5/16	dead	Unionville Rd,Wantage	Sussex		Electrocution				JUV		
8/8/16	injured	Lafayette Twp	Sussex	Avian Wildlife/TRT	Hit by vehicle				IMM		Died of injuries.
8/29/16	dead	Colonial Pipe, West Deptford	Gloucester	SRO DFW	Found dead				IMM		Dead/necropsy
8/30/16	injured	Winslow Twp	Gloucester	Mercer Co Wildlife	Found injured				IMM		Died overnight at Mercer County
9/8/16	dead	Lower Alloways Creek	Salem	TSBRR	Electrocution	0709-01822	none	Newark,DE 2/2/12	8 yrs	F	Dead/necropsy
10/5/16	injured		Mercer	Mercer Wildlife	Emaciated condition	0679-00176		Wisconsin	JUV	M	Died 10/6/16
10/28/16	dead	New Brunswick train station	Middlesex	Assunpink DFW	Hit by train				AD		Dead/necropsy
10/28/16	injured	Cumberland Co. Landfill	Cumberland	TSBRR	Grounded, lethargic				AD		Responded to chelation. Released 11/5/2016.
10/31/16	dead	Joint Base-McGuire	Burlington		Killed by plane				IMM		Dead/necropsy
11/17/16	dead	NJ Turnpike, exit 5	Burlington		Hit by vehicle	0629-46856	D/48	Manasquan Res. 4/8/08	8	M	Dead/necropsy
11/18/16	dead	Jobstown-Juliustown Rd	Burlington		Remains found in field	0679-01755	D/19	Manasquan Res. 3/25/11	5		Dead
11/21/16	injured	Cumberland Co. Landfill	Cumberland	TSBRR	Grounded						Died at TSBRR. Necropsy by USFWS.
11/29/16	dead	Fortescue Rd, Downe Twp.	Cumberland	Tuckahoe DFW	Found dead				AD		Dead/necropsy
11/30/16	dead	NJ Transit train tracks, Galloway	Atlantic	Tuckahoe DFW	Found dead				AD		Dead/necropsy
12/6/16	injured	Franklinville	Gloucester	TSBRR	Found in field on ground				IMM		Fractured wing; in treatment
12/7/16	injured	Chatsworth	Burlington	Mercer	Found in cranberry bog				4yr	F	Died 12/8/16; lead poisoning

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We dedicate this year's project report to the memory of Eagle Project Volunteer

Elmer Clegg

Elmer joined the NJ Eagle Project in 1991 when eagles began nesting in his hometown, and his love affair with bald eagles took flight. With his partner and wife, Bunny, Elmer went above and beyond to protect his beloved eagles. He mentored many new volunteers including his son and daughter-in-law. We will miss him dearly, but his memory will live on in every eagle that soars through the NJ skies.



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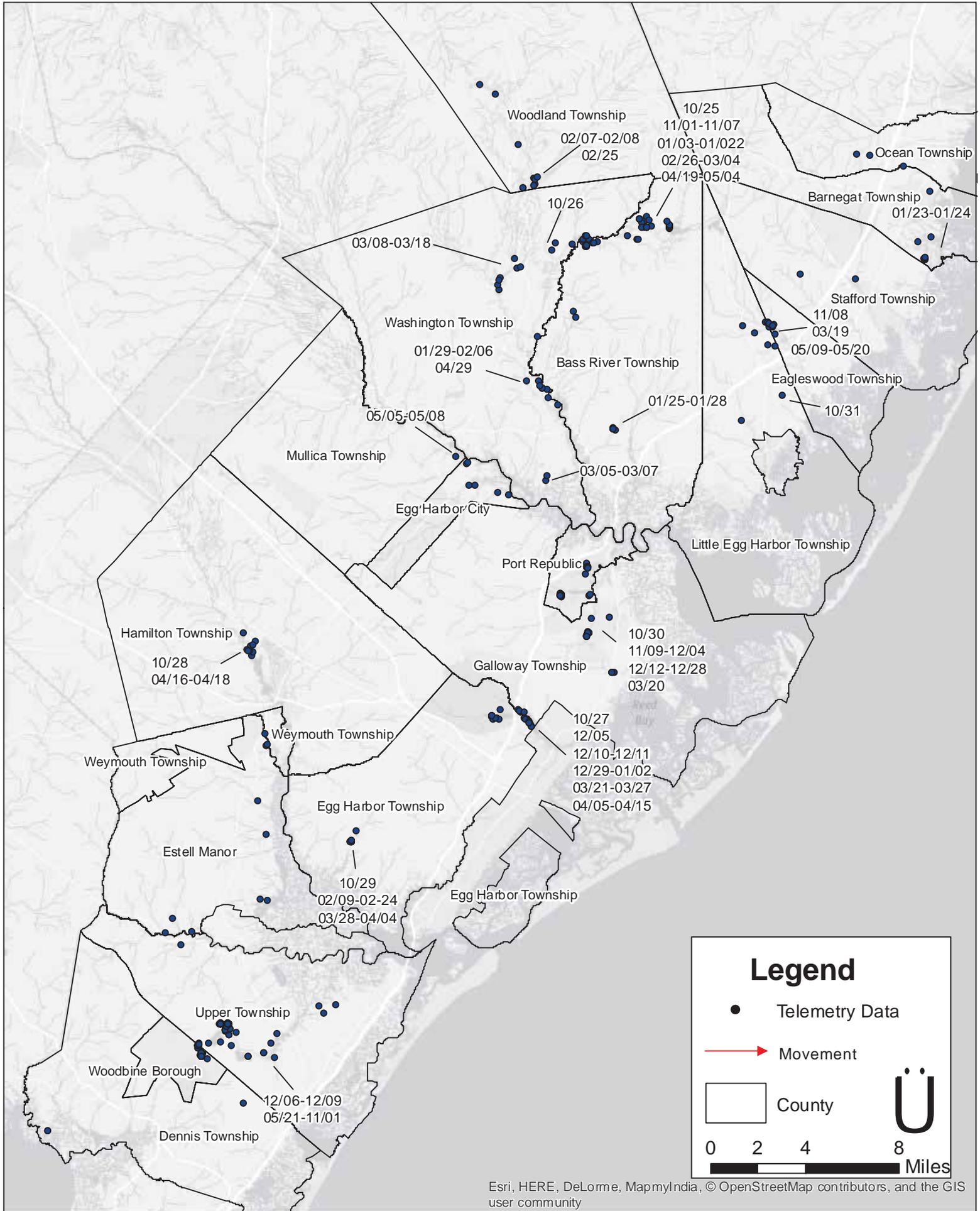


Composite photo of an eagle in flight on Barnegat Bay, by Northside Jim.

Appendix 1. Map of the movements of Bald Eagle D/95, “Nacote,” using satellite tracking in 2016. Mapping showing his movements since fledging in 2014 can be found on the Conserve Wildlife Foundation’s website: www.ConserveWildlifeNJ.org.

Appendix 2. Map of the movements of Bald Eagle E/17, “Oran,” using satellite tracking during 2016. Mapping showing his movements since fledging in 2014 can be found on the Conserve Wildlife Foundation’s website: www.ConserveWildlifeNJ.org.

D/95 - Male, 2016 (10/26/2015 - 11/01/2016)



Map labels and data points:

- Woodland Township: 02/07-02/08, 02/25
- 10/25
- 11/01-11/07
- 01/03-01/022
- 02/26-03/04
- 04/19-05/04
- Ocean Township
- Barnegat Township: 01/23-01/24
- Stafford Township: 11/08
- 03/19
- 05/09-05/20
- Eagleswood Township: 10/31
- Washington Township: 03/08-03/18
- 01/29-02/06
- 04/29
- Bass River Township: 01/25-01/28
- 03/05-03/07
- Mullica Township: 05/05-05/08
- Egg Harbor City
- Little Egg Harbor Township
- Port Republic
- Galloway Township: 10/30, 11/09-12/04, 12/12-12/28, 03/20
- Hamilton Township: 10/28, 04/16-04/18
- Weymouth Township
- 10/27, 12/05, 12/10-12/11, 12/29-01/02, 03/21-03/27, 04/05-04/15
- Egg Harbor Township: 10/29, 02/09-02-24, 03/28-04/04
- Estell Manor
- Upper Township
- Woodbine Borough
- Dennis Township: 12/06-12/09, 05/21-11/01

E/17 - Male, 2016 (10/26/2015 - 10/24/2016)

