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Division of Fish and Wildlife

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New Jersey Bald Eagle Project, 2006

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NEW JERSEY DIVISION OF
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Conserve Wildlife

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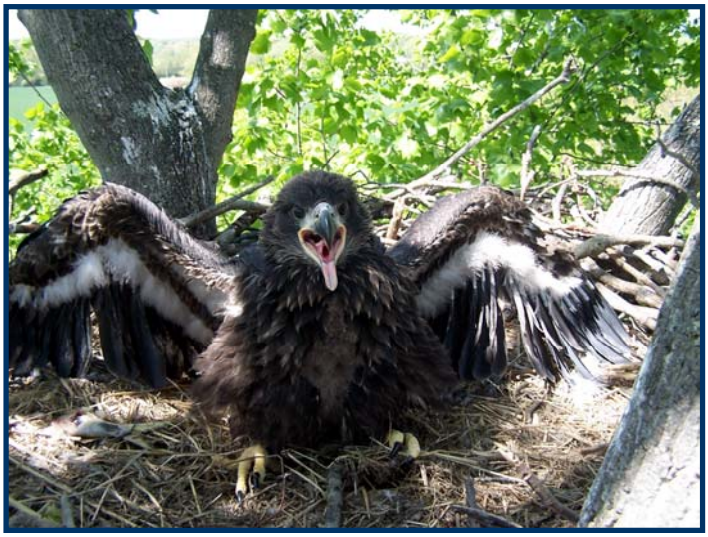

Photo above by Larry Niles at the Teaburner nest, April 28, 2006
Cover photo by Kim Steininger of a NJ-banded bird at Conowingo, MD, November 20, 2005

New Jersey Bald Eagle Management Project, 2006

Prepared by: Larissa Smith and Kathleen Clark

Project personnel: Larry Niles, Kathleen Clark, Michael Valent, Larissa Smith, Kris Schantz, Melissa Craddock, Peter Winkler

Abstract

The Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) biologists and volunteer observers located and monitored bald eagle nests and territories. A new record high of 59 eagle pairs was monitored during the nesting season; 55 of those were active (with eggs), three others were territorial (in a nest area) and it was unknown where one pair was nesting. Southern New Jersey remained the state's stronghold, with 50 percent of all nests located in Cumberland and Salem counties. Five new nests were found this season, one in the south, three in central and two in the north. Forty-seven nests were successful in producing 82 young, for a productivity rate of 1.49 young per active nest. ENSP staff banded and took blood samples from 20 eaglets at 10 nests. Six nests failed to produce viable hatchlings and for the most part the causes were unknown. ENSP staff, regional coordinators, and volunteers reported a total of 192 bald eagles counted in the January 2006 annual Midwinter Eagle Survey. Forty eagles were recorded in northern NJ and 152 in the south. 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 dichlorodiphenyltrichloroethane, 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 biologists within the Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP), resulted in a population increase to 55 active pairs by 2006. ENSP recovery efforts – implemented since the early 1980's – have resulted in an exceptional recovery as New Jersey's eagle population has rebounded from the edge of extirpation.

Recovery efforts were multifaceted. In 1982, after the Bear Swamp nest – New Jersey's only remaining nest since 1970 – had failed at least six consecutive years, ENSP biologists removed the egg for artificial incubation, 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 successfully 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. Disturbance is the greatest of these, as people are naturally attracted to the sight of them (Niles et al. 1991). Habitat destruction is also a common problem. Further, accumulation of contaminants may threaten the eagle population in some areas of NJ.

ENSP biologists continually work to manage and reduce disturbance in eagle habitats, especially around nest sites. A corps of experienced volunteers, as well as public education and established viewing areas, are crucial to this effort. Biologists also work to 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 also 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 local areas of continued 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 nesting populations in NJ and the northeast, as each state's recovery efforts show results. In recognition of this success, the federal government upgraded the status of the bald eagle from endangered to threatened in July, 1995, and in 2000 proposed federal de-listing. In 2006 the U. S. Fish and Wildlife Service again proposed de-listing, and a decision on that proposal is expected in 2007. The eagle's status remains state endangered and state regulatory protection will remain unchanged.

Methods

Nest Survey

All known nest sites are monitored from January through July. Volunteer observers watch nests from a minimum 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 staff contact volunteers weekly to discuss their observations. Dates are recorded for incubation, hatching, banding, fledging, and, if applicable, nest failure. Hatching dates are used to schedule eaglet banding, and observers' notes determine if closer nest investigation by ENSP biologists is warranted.

Observers report other bald eagle sightings to ENSP biologists, who analyze the information for clues to potential new nest locations. ENSP staff and volunteers investigate territorial bald eagles for possible nests through field observations. When enough evidence has been collected to suggest a probable location, ENSP biologists often conduct aerial surveys of the region to locate a nest.

When necessary, nests are secured from disturbance with barriers and/or posted signs. ENSP 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 a select number of nests, 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. 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

The nationwide Midwinter Bald Eagle Survey is conducted every January to monitor population levels. The ENSP contracted New Jersey Audubon Society's Cape May Bird Observatory and Allan Ambler of the Delaware Water Gap National Recreation Area to coordinate the surveys in southern and northern NJ respectively. These researchers organized volunteers to cover all suitable and known wintering habitats, then tracked the number of individual eagles observed on both days of the survey using plumage characteristics and time observed. Their results, as well as those from ENSP volunteers at northern reservoirs, were compiled by ENSP biologists to determine statewide totals. Final results were tabulated by ENSP staff according to standardized survey routes, and provided to the Raptor Research and Technical Assistance Center in the federal Bureau of Land Management. For the fourth year volunteers also mapped eagle activity during the two-day survey; these data delineating critical eagle wintering habitat will be incorporated into the NJ Landscape Project.

Results

Nest Survey

The statewide population increased to 59 pairs in 2006, up from 53 in 2005. Fifty-five pairs were known active (meaning they laid eggs). Forty-seven nests were known to be successful in producing 82 young, for a productivity rate of 1.49 young per active nest, which is 50 percent higher than the 0.9-1.1 young per nest required for population maintenance (Figure 2). Of the territories that were not active, two pairs, Navesink and Mansquan River, were housekeeping, actively working on nests all season; the Hopewell-West pair was seen at working at the nest early in the season then left, and it is unknown whether they nested elsewhere; the Delaware Water Gap pair has not been relocated since their nest tree fell in 2005.

Most nests were located in the southern part of the state, particularly within 20 km of Delaware River and Bay (Map 1). All nests and important dates are listed in Table 1. Most nests (43, 73%) were located on private land, compared to 16 (27%) on public and conservation lands. Disturbance was a management issue at many nests, and posting and regular surveillance by staff and nest observers was essential to assuring success.

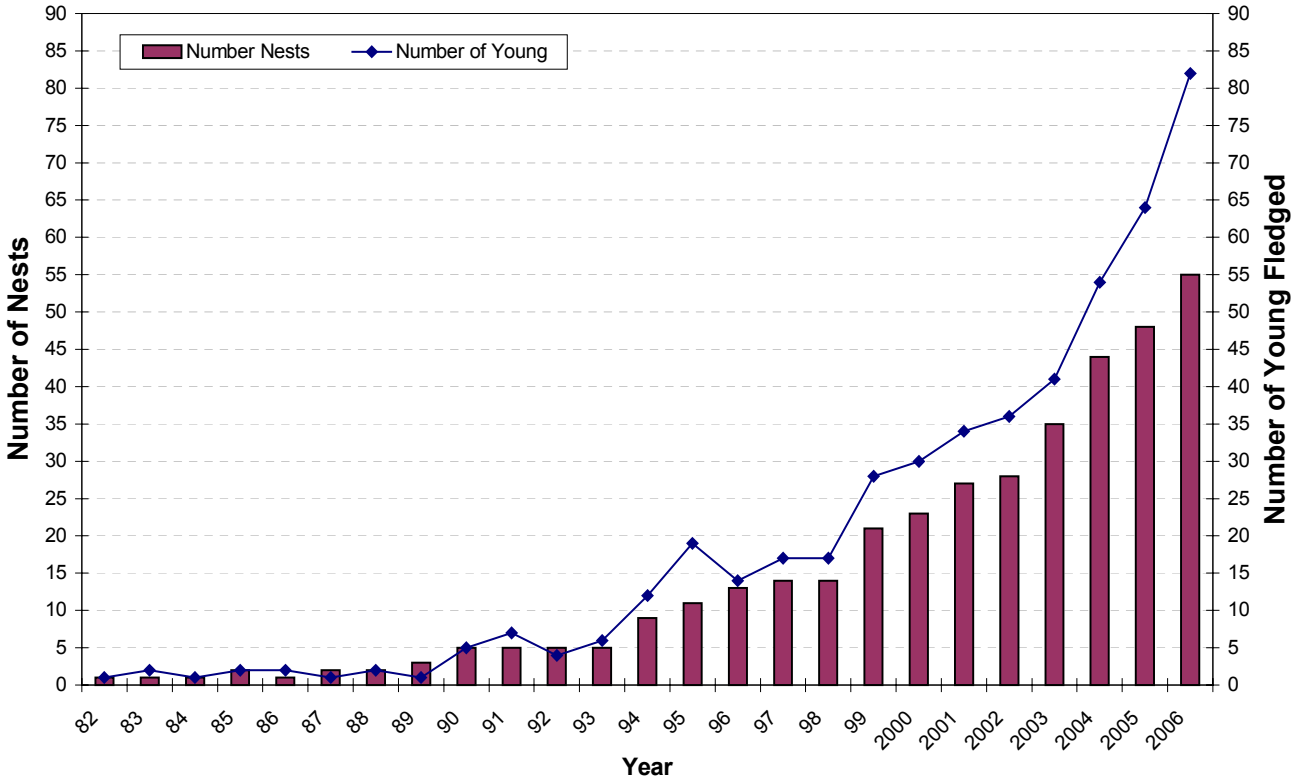

Figure 1. The number of active bald eagle nests and young produced in NJ, 1982-2006.

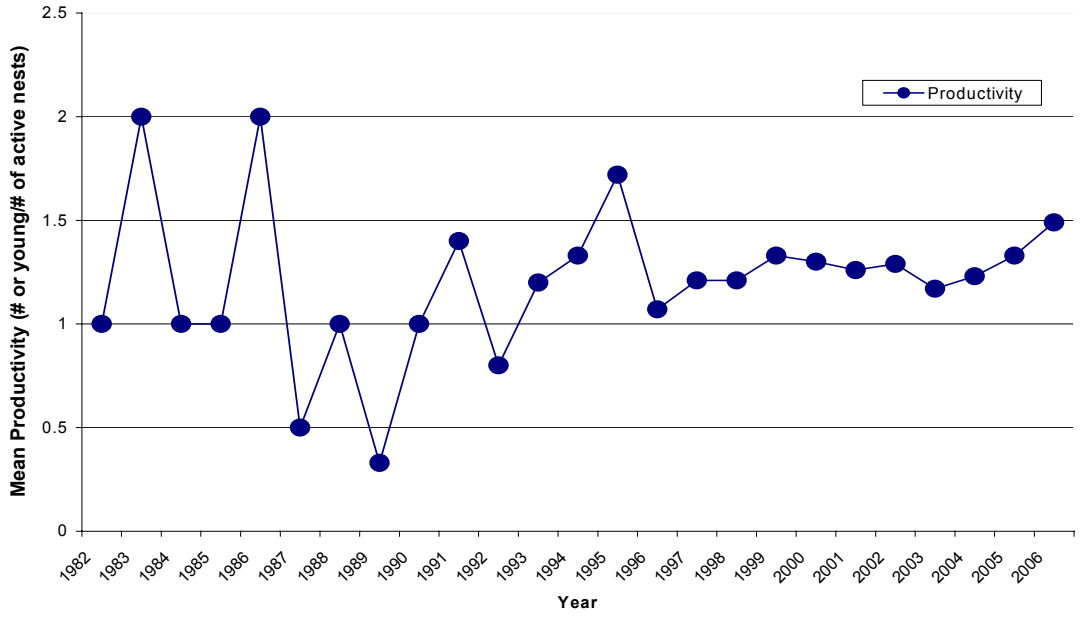

Figure 2. Productivity Of Eagle Nests in New Jersey, 1982-2006

1 Wanaque
2 Rockaway
3 Little Swartswood
4 Delaware Water Gap
5 Merrill Creek Reservoir
6 Round Valley Reservoir
7 South Branch
8 Princeton
9 Navesink River
10 Manasquan River
11 Manasquan Reservoir
12 Prospertown
13 Fort Dix Military Reservation
14 Burlington County/Delaware River
15 Rancocas Creek 1
16 Camden County
17 Mantua Creek
18 Raccoon Creek
19 Bridgeport
20 Oldman's Creek
21 Swedesboro
22 East Lake
23 Mannington Meadows 1
24 Mannington Meadows 2
25 Supawna
26 Alloways Creek 2
27 Alloways Creek 3
28 Elsinboro
29 Alloways Creek 1
30 Stow Creek 1
31 Elmer
32 Stow Creek 2
33 Wheaton Island
34 Bayside
35 Cohansey River-Greenwich
36 Cohansey River-Teaburner
37 Chohansey River-Shepards Mill
38 Cohansey River-Hopewell West
39 Cohansey River-Tindells Landing
40 Cohansey River-Middle Marsh
41 Cohansey River-Dix
42 Seabreeze
43 Nantuxent
44 Turkey Point
45 Dividing Creek
46 Bear Swamp
47 Union Lake
48 Maurice River (Millville)
49 Maurice River (North)
50 Maurice River (Commercial)
51 Heislerville
52 South Dennis
53 Belleplain
54 Tuckahoe
55 Egg Harbor
56 Lake Lenape
57 Galloway
58 Mullica River
59 Wading River

Map 1. Bald Eagle Nest Sites, 2006

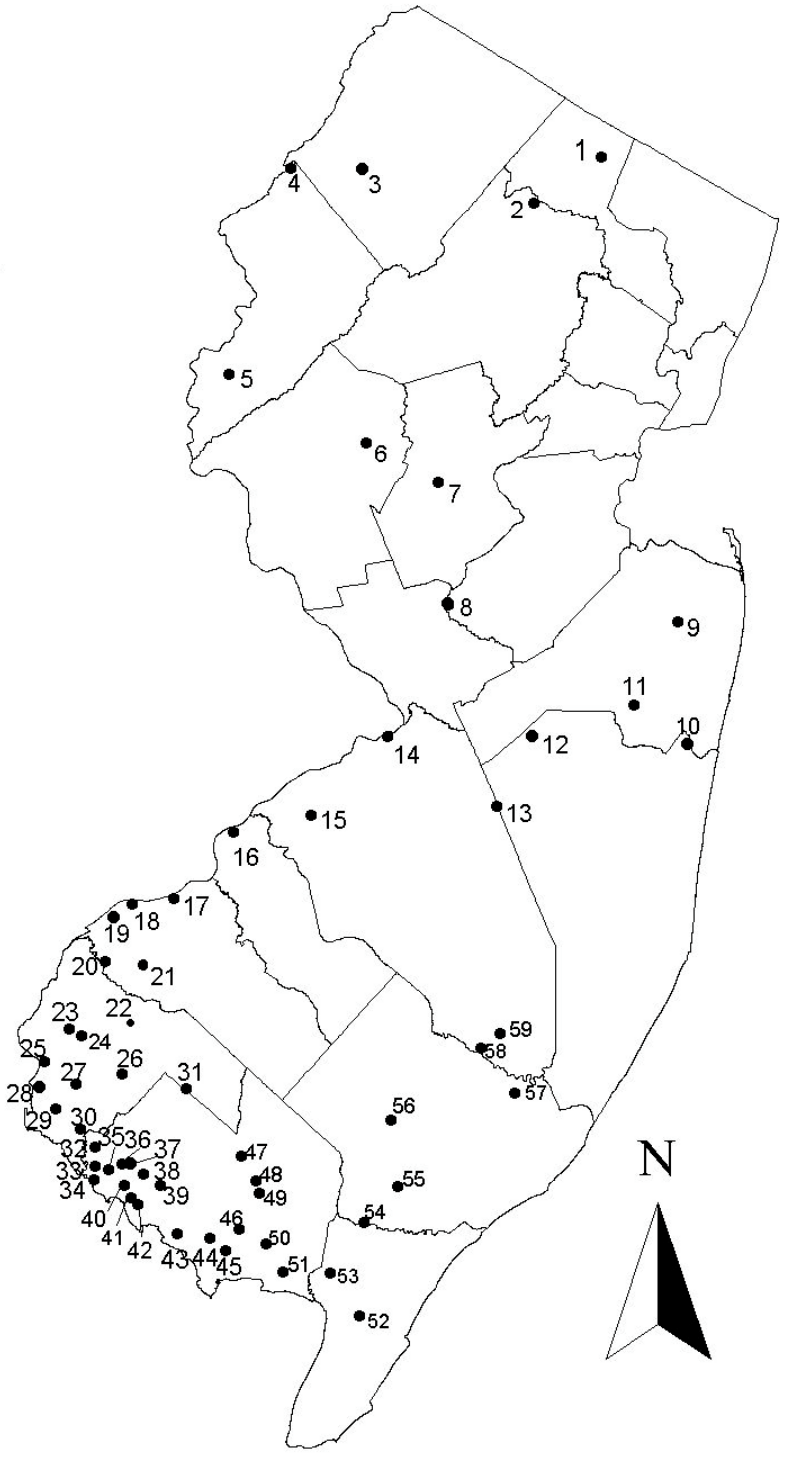

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Table 1. Production and Significant Dates of Bald Eagles Nesting in NJ, 2006

NEST SITE	Incubation	Hatching	Banding	Fledging	No. Fledged	Failed/Reason	Notes
Alloways Creek 1-Hancocks	3/6	4/12		7/8	2		6/19 nest fell, young okay
Alloways Creek 2-CE	3/3	4/7	5/19	7/2	1		
Alloways Creek 3-Quinton	3/8	4/15		7/5	2		
Bayside	2/14	3/26		6/11	2		
Bear Swamp	2/16	<3/23		6/15	2		
Belleplain	~2/15	~3/29		~6/14	1		Flown 3/24 bird sitting; Flown 5/3 5wk. Chick
Bridgeport	<3/17	~4/11		6/12	1		New nest
Burlington Co./Del. R.	<3/1	4/9			0	4/26;unknown	
Camden County	3/30	5/5		8/2	1		
Cohansey (Middle Marsh)				6/15	1		New nest, found with 7wk chick
Cohansey (Dix)	2/26	4/5		6/15	2		New nest
Cohansey (Greenwich)	2/9	3/14	4/28	6/14	2		
Cohansey (Teaburner)	2/5	3/11	4/28	6/14	1		
Cohansey (Shepards Mill)	2/3	3/12		5/28	2		
Cohansey (Hopewell)							Unknown where nesting
Cohansey (Tindells Landing)	1/31	3/10		6/12	1		
Delaware Water Gap							Unknown where nesting
Dividing Creek	<4/3/06				0	failed; unknown	F 5/4, nothing in nest
East Lake	2/5	3/12		6/5	2		

Table 1. Continued

Elsinboro	2/20	3/26		6/16	1		New nest
Egg Harbor River	<2/21	3/31		~5/31	2		Flown 3/24, sitting; Flown 5/3 2 7wk. Chicks
Elmer Nest	~2/06	~4/10			1		
Fort Dix	2/14	3/20	5/5	6/26	2		
Galloway	2/25	3/30	5/10	6/15	3		
Heislerville	2/4	<3/21		6/23	2		
Lake Lenape	2/24	3/29	5/10	6/17	1		
Little Swartswood	2/11	3/22		7/4?	2		
Manasquan Reservoir	1/31				0	3/23;unknown	
Manasquan River							New nest found 3/28, housekeeping
Mannington Meadows 1		<4/16		unknown	1		
Mannington 2	3/5	4/7	5/19	7/10	3		
Mantua Creek	2/28				0	3/9;unknown	
Maurice River (Mauricetown)	<3/24F	~4/5			2		Flown 5/3, 2 4wk. chicks
Maurice River North	<3/24F	~3/20			3		New nest; Flown 5/3 3 6wk chicks
Maurice River (Millville)	2/17	4/7		~6/23/06	2		
Merrill Creek	2/24	3/31	5/12		2		
Mullica River	3/5	~4/16			1		
Nantuxent Creek	2/15						
Navesink River							Did not lay eggs; housekeeping

Table 1. Continued

Oldman's Creek	2/13	3/19		6/14	2		
Princeton	3/3	4/6	5/17	6/18	2		
Prospertown	<3/21	4/8		6/25	1		New nest, found incubating
Raccoon Creek	3/3	4/8		7/2	1		2 chicks; 6/6 nest fell, 1 injured
Rancocas Creek 1	3/2	4/5		7/3	1		
Rockaway	3/3	4/12		7/3	1		
Round Valley	~2/27	~4/3		~6/21	2		
Seabreeze	2/19	3/26		6/15	3		
South Branch	3/8	4/3		7/7	2		
South Dennis	2/9				0	3/17;unknown	
Stow Creek N. (Canton)	2/14	3/24		6/9	1		
Stow Creek S. (Raccoon Ditch)	2/1	3/8		5/24	2		
Supawna Meadows	2/19	3/26		7/6	1		
Swedesboro	<3/10						New pair, found 3/10/06
Tuckahoe	3/1	4/11	5/22		3		
Turkey Point	2/20	4/3		6/30	3		
Union Lake	2/23	3/29			0	5/4; unknown	2 chicks; Flown 5/4, nothing in nest
Wading River	2/14	3/19			2		
Wanaque	3/5	4/2		~6/24	2		
Wheaton Island	2/21	3/30		6/15	2		
Totals 59 pairs	**Active 55**				**82**		

New Nesting Pairs

In 2006 six new pairs of eagles were located in New Jersey.

Bridgeport – In 2004 this was a territorial, housekeeping pair on private land along the Delaware River. In 2006 the pair built another nest within a quarter mile, on the edge of a woodlot. They successfully fledged one chick.

Elsinboro – Found nesting early in the season, this new pair built a nest along the edge of a field north of Alloways Creek. The pair fledged one young bird.

Little Swartswood – This pair was started working on a nest in November 2005 along the edge of a lake partly owned by the NJ Division of Parks and Forestry in Sussex County. A portion of the water nearest the nest was posted to protect the pair and an educational sign was placed at the boat ramp. The pair successfully fledged two young.

Manasquan River – For several years it was suspected that an eagle pair was nesting on this river. This pair was found in spring working on a nest along the river. They did not lay eggs this season but ENSP and nest observers will continue to monitor this pair in 2006.

Prospertown – This pair was found incubating in a nest on property owned by Six Flags-Great Adventure. The nest is located on the edge of a lake owned by the Division of Fish and Wildlife. This first year pair successfully fledged one young. Great Adventure staff worked with ENSP biologists to monitor and protect this pair.

Swedesboro – This new pair was reported from a wooded lot along a tributary of Raccoon Creek in Gloucester County. The pair began incubation in early March, but failed soon after. Staff and volunteers are working to protect this nest and will monitor the pair in the upcoming season.

2006 Nest Highlights

For the first time since 1991, the Raccoon Creek pair (now nesting on the Delaware River) hatched two young birds on their own. This success was likely related to a new female in the pair as of 2005; she is of NJ origin, wearing a green color band in addition to the federal band. On June 6 the nest observer found that the nest had fallen out of the tree and both eight-week old nestlings were on the ground. A team went out and captured both grounded nestlings, finding that one had a fractured wing. An osprey platform was quickly erected on site and the healthy nestling was placed there to keep it off the ground; the parents continued to care for it. The injured nestling was examined and treated at Tri-State Bird Rescue and Research, but was unreleasable and was placed at the Mercer County Wildlife Center where it is used for education.

Another highlight was the Rancocas Creek pair fledging one young for the first time since 2002. On October 26, 2005, the male of this pair was found dead; the female found a new mate and the pair relocated the nest near Willingboro.

Also notable was the Camden County eagles successfully fledging their own young this year. The female of this pair disappeared during courtship in February 2006. A new female was seen with the male in early March, and to our surprise went through a fast courtship period to lay eggs by the

end of March. This is the first time since this establishing in 2003 that this pair raised their own young.

Missing pairs included eagles that attempted to nest in 2005 in the New Jersey Palisades Interstate Park. That nest tree fell while the eagles were incubating eggs, and the birds were not relocated in 2006.

Middle Marsh nesting territory

The eagles occupying Middle Marsh on the Cohansey River in Cumberland County are an example of the difficulty of tracking individual pairs as the eagle population grows and nesting becomes denser. The original pair at Middle Marsh has moved their nest several times over the years. A second pair is known to nest in nearby Dix Wildlife Management Area (the "Dix" pair). As these pairs move and build alternate nests, we can no longer assume that we know a pair's identity: the territories in this particular area appear have become smaller as pairs nest closer, and nesting locations shift annually. This may be an issue primarily in the Cohansey River area, where tracking pairs and territories by name year to year will become more difficult.

Potential Nest Sites

ENSP biologists and observers actively searched for possible nesting bald eagles in several different locations. The searches were in response to the many reports of eagles engaging in breeding behaviors. Areas that remain promising are Big Timber Creek, Batsto Lake, Oswego Lake, Williamstown, Carney's Point, and middle Delaware River, which all have year-round eagle activity. In addition, several inland reservoirs in the north hold promise of eventual eagle nesting.

Wintering Eagle Survey

A total of 192 bald eagles were observed during the Midwinter Survey on January 14-15, 2006 (Table 2). This was the highest count since the survey began in 1978, with 13 more birds than last year's record of 179 (Figure 3). Southern New Jersey's Delaware Bay region continued to host the majority of the state's wintering birds.

One hundred fifty-two bald eagles were counted in southern NJ, of which 98 were adults (Table 2; Elia 2006). Most southern eagles were observed in the Delaware Bay region (43%), followed by the lower Delaware River (35%) and Atlantic Coast watersheds (22%). The transects with the highest counts were Salem County with 44 eagles, Maurice River/Turkey Point/Bear Swamp with 20 eagles, and the Cohansey River with 19 eagles.

In northern NJ, the best habitats are along the Delaware River, in the Delaware Water Gap National Recreation Area, and the inland reservoirs. The Water Gap hosted 7 bald eagles (Ambler 2006), while the inland reservoirs and lakes had 27. Six eagles were counted in northeastern NJ along the Palisades on the Hudson River.

Most survey volunteers recorded details on individual eagles sighted, including point locations on maps. Point locations were digitized and will be used to design critical wintering habitat areas.

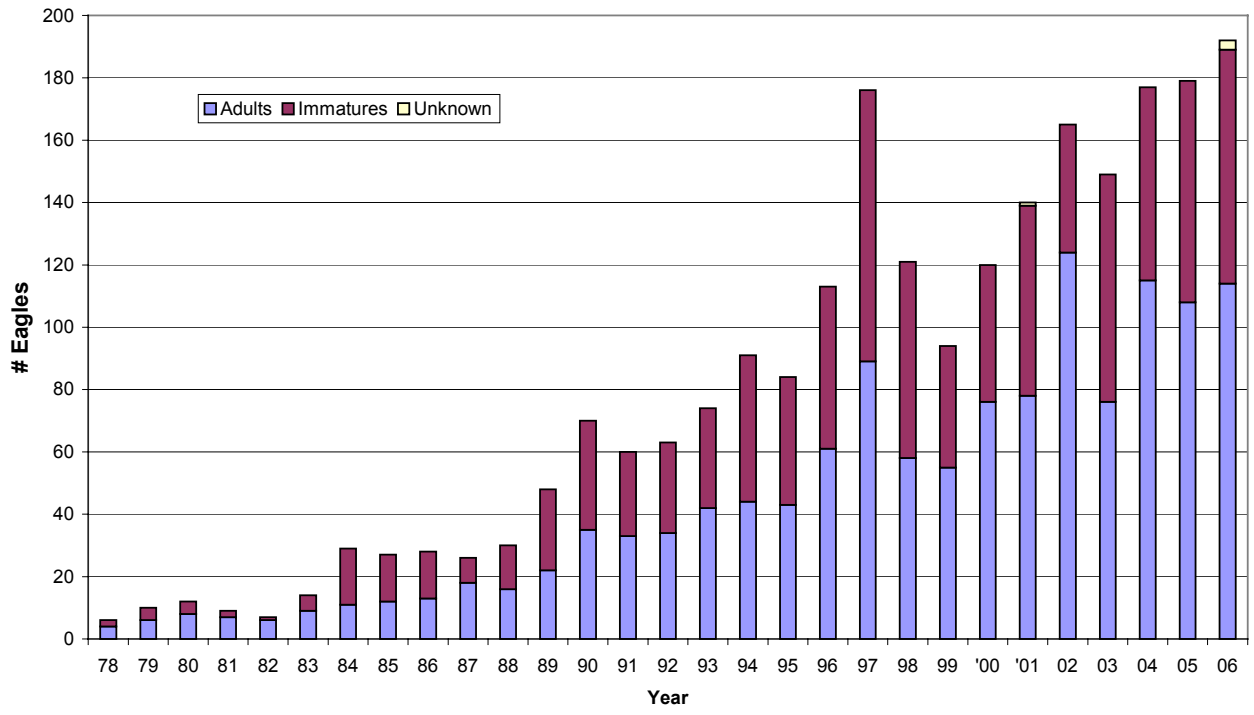

Figure 3. Midwinter Bald Eagle Counts 1978 - 2006

Table 2. Bald Eagles counted in the NJ Midwinter Bald Eagle Survey, January 14-15, 2006

Region	Survey Transect	Subregion	BE Total	Adult	Immature	Unkn. BE	Golden
South	Brigantine NWR	AC	0	0	0	0	0
	Cohansey River	DB	19	14	5	0	0
	Delaware River - Riverton to Trenton	SD	1	1	0	0	0
	Fortescue to Stow Creek	DB	11	8	3	0	0
	Fort Dix	AC	2	2	0	0	0
	Great Egg Harbor & Tuckahoe Rivers	AC	11	5	6	0	0
	Manahawkin to Lower Bass River	AC	0	0	0	0	0
	Manasquan Reservoir	AC	0	0	0	0	0
	Maurice River, Turkey Point, Bear Swamp	DB	20	12	8	0	0
	Mullica & Wading Rivers	AC	17	8	9	0	1
	Oldman's Creek	SD	2	2	0	0	0
	Princeton	SD	0	0	0	0	0
	Raccoon Creek	SD	4	4	0	0	0
	Rancocas Creek	SD	2	2	0	0	0
	Salem County	SD	44	29	15	0	0
	Stow Creek	DB	4	2	2	0	0
	Swimming River Reservoir	AC	0	0	0	0	0
	Thompson's to Reeds Beach	DB	11	6	5	0	0
	Whitesbog	AC	4	3	1	0	0
South	**Subtotal**		**152**	**98**	**54**	**0**	**1**
North	Delaware River - Columbia to Trenton	ND	0	0	0	0	0
	Delaware Water Gap	DWG	7	2	2	3	0
	Hudson River - Pallisades	P	6	2	4	0	0
	Jersey City Reservoirs (Boonton & Split Rock)	IR	5	1	4	0	0
	Merril Creek Reservoir	IR	2	2	0	0	0
	Newark Watershed (Clinton & Charlottesburg)	IR	8	4	4	0	0
	Oradell Reservoir	IR	4	2	2	0	0
	Round Valley Reservoir	IR	0	0	0	0	0
	Wanaque & Monksville Reservoir	IR	8	3	5	0	0
North	**Subtotal**		**40**	**16**	**21**	**3**	**1**
State	**Total**		**192**	**114**	**75**	**3**	**1**

Subregions: AC=Atlantic Coast, DB=Delaware Bay, DWG=Delaware Water Gap, IR=Inland Reservoirs, ND=Northern Delaware River, P=Palisades-Hudson River, SD=Southern Delaware River

Contaminants Research

Blood samples collected from 20 nestlings in 2006 were frozen for future analysis when funding is available. Analysis is pending on previously-collected samples and will be reported in 2007.

Recoveries

An eagle was recovered dead near Stanton, Delaware on January 1, 2006. The bird was one of three young banded at the Stow Creek nest on May 20, 1991.

On October 26, 2005 an adult bald eagle was found dead in a field near the Rancocas Creek, Moorestown Township, Burlington County. The bird was banded and had been released by hacking by the ENSP in 1989 at Tuckahoe. The bird had been a mate in the Rancocas Creek pair. The cause of death was a perforated duodenum (upper small intestine), possibly from a fish spine.

An unbanded adult eagle was found dead at the end of October 2005 near High Hill Road, Burlington County, and picked up by USFWS special agent D. Manera. Cause of death was unknown.

On August 25, 2006 a juvenile eagle was recovered in Cheviot, Columbia County, New York. The bird was found on the Hudson River railroad tracks and the cause of death is believed to be impact with a train. This female bird had been banded on May 22, 2006 at the Tuckahoe River nest.

A dead eagle was found in September of 2005 at the Trail Ridge Landfill in Starke, Florida. This male bird had been found injured on June 12, 2004, as a two year-old in Liberty Corner, Somerset County, NJ. The eagle was treated at the Raptor Trust in Millington, NJ, and after two months of care was successfully released on July 30, 2004 in the Great Swamp National Wildlife Refuge. We suspect it was a bird of Florida origin.

Photo of an adult feeding a 4-week old chick at Supawna Meadows by nest observer Helen Swanson. To date, this is the only nest on a man-made structure in NJ.

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