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New Jersey Bald Eagle Management Project

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New Jersey Bald Eagle Management Project, 2000

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Abstract:

Endangered and Nongame Species Program (ENSP) biologists within the Division of Fish and Wildlife and volunteer observers located and monitored bald eagle nests and territories, and cooperators coordinated the annual midwinter bald eagle survey. A total of 25 eagle pairs, 23 active (with eggs) and 2 territorial pairs were monitored during the nesting season. Most nests (19) were located in southern NJ, while 4 were in central and 2 were in northern NJ. Sixteen nests were successful in producing 29 young, for an “unmanaged” productivity rate of 1.26 (young/active nest). The nest at Raccoon Creek received a foster chick from Maryland, which brought the total number of young fledged to 30, for a “managed” productivity rate of 1.30. In addition, ENSP biologists gave a NJ nestling to the failing nest at Rancocas Creek, enabling them to fledge their first in three years. ENSP staff banded and took blood samples from 13 eaglets at nine nests. ENSP staff and biologists used radio telemetry to monitor the local movements of the Raccoon Creek, Rancocas Creek and two of the Galloway fledglings. Five nests, Alloways Creek 2, Cohansey River (Hopewell), Mannington Meadows, Nantuxent Creek and Wading River, failed to produce viable hatchlings. The Mannington Meadow and Nantuxent Creek nests each failed when the respective adult males died during incubation and the females abandoned. Disturbance and possibly contaminants may have played roles in the failures at Cohansey (Hopewell) and Alloways Creek 2. The reason for failure at the Wading River nest was unknown. Three eggs were collected from the Rancocas Creek nest and incubated in the lab. Two hatched and died within 24 hours, the third egg was analyzed for contaminants. One egg was collected from the Raccoon Creek nest and analyzed for contaminants. ENSP staff, regional coordinators, and volunteers reported a total of 120 bald eagles counted in January’s midwinter survey, 24 in the north and 96 in the south.

Introduction

New Jersey was once home to more than 20 pairs of nesting bald eagles. As a result of the use of the pesticide dichlorodiphenyltrichloroethane, more commonly known as DDT, the number of nesting pairs of bald eagles in the state declined to only one by 1970 and remained at one into the early 1980’s. Use of DDT was banned in the United States in 1972. That ban combined with restoration efforts by biologists within the NJ Division of Fish and Wildlife’s Endangered and Nongame Species Program (ENSP) acted to increase the number of New Jersey bald eagles to 23 active pairs in 2000. ENSP recovery efforts - implemented in the early 1980’s - are now bearing fruit, as New Jersey's eagle population rebounds from the edge of extirpation.

In 1982, after Bear Swamp - New Jersey's only active bald eagle nest since 1970 - had failed at least six consecutive years, ENSP biologists removed the egg for artificial incubation, and fostered the young back to the nest. The necessity of this fostering technique was due to eggshell thinning as a result of DDT contamination. The eggs, if left in the nest for the adult eagles to incubate, would crack under the birds' weight. Fostering 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 amount of time. Mortality rates are high in young eagles (as high as 80%), and they do not reproduce until four or 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 have contributed to the increase in nesting pairs since 1990 (Figure 1).

Bald eagles nesting in NJ face many threats. Disturbance is the greatest threat to eagles, as people are naturally attracted to the sight of them (Niles et al. 1991). Habitat destruction is also a common problem. Further, in the long term, there is evidence that accumulation of contaminants may threaten the eagle population in NJ, especially in the Delaware Bay region.

ENSP biologists continually work to manage and reduce disturbance in eagle habitats, especially around nest sites. Education and established viewing areas are important in this effort, as are the efforts of eagle project volunteers. Biologists also work to protect habitat in a variety of ways, including working with landowners, land acquisition experts, and through the state's land use regulations. ENSP is continuing to investigate the possible 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 exhibit some reproductive impairment relative to other areas (Steidl 1991, Clark et al. 1998). ENSP monitors these species during the nesting season to evaluate nest success and assess any problems that occur.

The ENSP, with the Division's Bureau of Law Enforcement and volunteer assistance, works intensively to protect bald eagle nest sites. However, with increasing competition for space in the most densely populated state in the nation, it is becoming clear that all of the eagles' critical habitat needs to be identified and, where possible, protected. Critical habitat for eagles are areas used for foraging, roosting, perching and nesting.

The population of wintering bald eagles has grown along with the nesting population, especially in the last ten years (Fig. 2). This growth reflects increasing nesting populations in NJ and the northeast, as each state's recovery effort pays off. In recognition of this success, the federal government upgraded the status of the bald eagle from endangered to threatened in July of 1995 and has proposed de-listing the bald eagle altogether. The federal status change reflects the increasing eagle population nationwide, but the eagle is still a state-listed endangered species, and regulatory protection remains the same.

Methods

Nest Survey

All known nest sites are monitored from January through July. Volunteer observers watch nests from a minimum distance of 400 yards using binoculars and spotting scopes, for periods of two or more hours each week. They record all data including number of birds observed, courtship or nesting behaviors, incubation and exchanges, feeding, and other parental care behaviors which provide valuable information on the nesting status. ENSP staff contact volunteers weekly to discuss their observations. Dates are recorded for incubation, hatching, banding, fledging, and, if applicable, nest failure. This information is used to schedule eaglet banding, and to determine if closer nest investigation by ENSP biologists is warranted.

Numerous observers report statewide bald eagle observations to ENSP biologists, who analyze the data for potential nest locations. ENSP staff and volunteers investigate territorial bald eagle pairs for possible nest sites through field observations. When enough evidence has been collected to substantiate a probable location, ENSP biologists conduct aerial surveys of the region to locate a nest.

All 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 acts to enforce protection measures as needed.

When nestlings are between five and eight weeks old, biologists enter the nest site to band the young. 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 and color band. A veterinarian examines each bird and takes a blood sample for contaminant analysis. Blood is collected and stored frozen pending analysis by a technical lab. Nest trees are not climbed the first season to avoid associating undue disturbance with the new site.

The adjacent shores of Raccoon Creek are being developed rapidly and the eagles that nest there have moved considerably along the creek. It is therefore important to delineate the critical habitat for those birds. For a third year, to assist in the definition of such areas, ENSP staff placed a radio transmitter on the eaglet that was fostered into that nest. The fostered eaglet at Rancocas Creek was also outfitted with a radio transmitter as well as two of three eaglets at the Galloway nest. Telemetry equipment enabled ENSP biologists and volunteer staff to monitor the eaglets movements after fledging.

Wintering Eagle Survey

The nationwide Midwinter Bald Eagle Survey is conducted every January to monitor population levels. The ENSP contracted Vince Elia of New Jersey Audubon Society's Cape May Bird Observatory and Allan Ambler of the Delaware Water Gap National Recreation Area to

coordinate the survey in southern and northern NJ respectively. These researchers organized volunteers to cover all suitable and known wintering habitat, 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 additional volunteers in the north were compiled by ENSP biologists to reflect 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.

Results

Nest Survey

Twenty-five nests were monitored in 2000 (Map 1). Twenty-three of the nests were active, characterized by incubating eggs (Table 1). Two housekeeping pairs maintained the 24th and 25th nests. Sixteen nests were successful in producing 29 young, for an “unmanaged” productivity rate of 1.26 (young/active nest), slightly greater than that required for population maintenance (0.9-1.1 young/active nest). One nest, Raccoon Creek, received a foster eaglet from a nest in Maryland, for a “managed” productivity rate of 1.30 (young/active nest). The number of nests has increased markedly over the last ten years (Fig. 1). All nests and potential sites are described individually below.

Alloways Creek 1

The Alloways Creek 1 eagle pair rebuilt their nest in the same willow oak (*Quercus phellos*) as last year's nest. Incubation began on March 2, hatching on April 7. The eaglet was banded on May 20 and fledged on July 8. Salt-water intrusion is rapidly damaging the nest tree.

Alloways Creek 2

For the second year the pair nested in an oak (*Quercus sp.*), on the upper Alloway Creek drainage in a large contiguous forest. The pair began incubation around February 29. Nest failure was reported on April 12. The reason for this failure was unknown.

Bear Swamp

The eagle pair at Bear Swamp nested in a tulip poplar (*Liriodendron tulipifera*) tree that they had used in 1998. The pair began incubation on February 23 and the young hatched on March 29. The three eaglets fledged around June 2. The Bear Swamp pair, which has fledged 29 eaglets from 1974 through 2000, is the longest occupied nest territory in the state.

Belleplain (East Creek Pond)

The Belleplain State Forest eagles built a new nest this year in a pitch pine (*Pinus rigida*), in the same general area as last year's nest in a large contiguous forest. This nest is not viewable from the ground. On March 13 biologists flew over the nest and observed incubation of one egg.

Aircraft time was difficult to schedule during the rest of the nesting season. On August 17 biologists flew over and located the nest, and there was no sign of adult or juvenile eagles. On August 30 we received a report from Belleplaine State Forest Ranger Jennifer Curcio, reporting the observation of a first-year eagle twice during the month of August in the Belleplaine area. We therefore assume that the Belleplaine nest fledged at least one eagle.

Burlington County/ Delaware River

For the second year these eagles have nested atop a huge tulip poplar in Burlington County near the Delaware River. The pair began incubation on February 21 and brooding was observed around March 28. Biologists attempted to band the eaglets, but the nest tree was unclimbable. Three eaglets fledged near the end of June.

Cohansey River (Fairfield)

The Fairfield eagle pair moved their nest to a new location this year. The incubation date was unknown, the eaglets hatched on March 18. Three eaglets fledged around June 7.

Cohansey River (Greenwich)

A new nest discovered by observers was built in a tulip poplar across the creek from last year's nest. The pair began incubation on February 5, and brooding was observed on March 11. Of the three eaglets, one died and another was fostered into the failing Rancocas Creek nest. The remaining eaglet was banded by state biologists on April 26 and fledged on June 12.

Cohansey River (Hopewell)

This nest, in an American beech (*Fagus grandifolia*) next to an agricultural area, was the most recent to be found on the Cohansey River, which has the highest number of nests in New Jersey. The pair began incubation on February 19, and the nest failed on March 28. There are two possible reasons for the failure, contaminants and disturbance near the nest tree, but neither were confirmed.

Fort Dix

Military personnel found a new nest at the Fort Dix Military Reservation on April 4, 2000. The nest was built in the top of a pitch pine in a large contiguous forest. When found, there was one eaglet a few weeks old in the nest. This eaglet fledged around the 28th of July.

Galloway Township

For the second year the Galloway pair built a nest within 50 yards of their 1998 nest atop a pitch pine on a tidal creek tree hummock. Incubation began on February 2, and brooding behavior was observed on April 25. Three eaglets were banded by biologists on May 10, and the two oldest eaglets were outfitted with transmitters. The eaglets fledged around the end of June. The female, outfitted with a transmitter, mainly took short flights near the nest island. On September

2, her transmitter was found hanging from tree, having been removed by her. The male took longer flights and was last seen September 2, over Port Republic.

Lake Lenape

For the second year the Lake Lenape pair nested in the ENSP-built nest, atop a super-canopy pitch pine in a large contiguous pine forest. Incubation was first observed during February 17, with hatching around the 22nd of March. ENSP staff banded both eaglets on May 10. The eaglets fledged around June 1.

Mannington Meadows (Horne Run)

For the second year the pair nested atop a large black oak (*Quercus velutina*) lying between a farm field and tidal water spit. The pair began incubating on February 12. On March 4 the adult male was found dead in a field 75 yards from the nest tree. It was later determined that he died from electrocution, and had originally been banded in 1982 in Maryland. The female stopped incubating, but defended the nest for three days against three different eagles. The last of these she bonded with and the pair was seen in the general area, though they did not attempt to renest.

Maurice River

For the second year the eagle pair nested atop a partially dead red maple (*Acer rubrum*). The tree lies on a forested peninsula jutting out into the rich Maurice River estuary. The new nest proved quite difficult to observe. Incubation began on February 16, and brooding was first observed on March 24. One eaglet fledged around June 17.

Merrill Creek Reservoir

For the second year a bald eagle pair built a new nest in a white pine (*Pinus strobus*) adjacent to the reservoir. This is only the second pair in northern NJ. We expect the number to grow as other reservoirs in northern NJ are colonized. ENSP staff worked closely with reservoir personnel to protect the nest site. The pair began incubating on February 22, and brooding behavior was observed on March 20. One eaglet was banded on May 11, and it fledged on June 12. An egg, buried in the nest material, was recovered and held for analysis.

Mullica River

A pair of housekeeping eagles was found along the Mullica River by a nest observer. The pair maintained a nest in a pitch pine and stayed in the area all summer. By the fall both eagles were back in the nest area.

Nantuxent Creek

The pair reoccupied last year's nest in a large white oak (*Quercus alba*). Incubation began on March 15. On April 20, the male from the nest was killed on impact with power lines as it was leaving Cedar Creek with a fish in its talons. The bird had been banded originally in Delaware in

1993. The female abandoned incubation on April 21, but was observed with another bird within about one week.

Navesink River

In the winter of 1997 a pair of immature eagles was reported remaining on the lower Navesink River late into the spring. The following winter, a pair of eagles with the male showing signs of white plumage in his head, again remained in the area well into the spring. By the middle of January 1999, the pair had begun building a nest. In February, it was reported that the male of the pair had a green leg band, which indicates that he hatched from a NJ nest. Throughout the spring, the pair of eagles worked on and maintained their nest. The pair returned to this nest in 2000 and began incubation on March 4. Hatching was reported on April 8 and two birds fledged on July 1.

Raccoon Creek (Delaware River)

Like last year, the bald eagle pair initially returned to their 1996 nest on Raccoon Creek. They split their time between working on that nest and the Delaware River site they have been using since 1997. On March 30, ENSP biologists placed an eaglet from Maryland into the nest and removed one failed egg. Biologists returned May 17 to band and place a transmitter on the eaglet. The eaglet fledged on June 12 and his movements were followed until the transmitter signal was lost on August 8.

Rancocas Creek

This pair reoccupied their 1998 nest built in a red oak (*Quercus rubrum*), which is near their 1996 nest. The Rancocas nest site, surrounded by nearby houses, is unique in NJ. This nest faces great potential for disturbance. On March 24, a foster eaglet was introduced from the Cohansey (Greenwich) nest, since no nestlings of the correct age were available from Maryland. On May 15 the eaglet was banded and a transmitter attached. The eaglet fledged on June 3. The transmitter's signal was last recorded on October 22.

Round Valley Reservoir

The bald eagles again reoccupied the red oak nest used since 1996 near Round Valley Reservoir. This nest is very difficult to observe from land. On April 14, an ENSP biologist flew over the nest and observed one eaglet. The exact date of fledging is unknown.

Stow Creek

The bald eagle pair returned to their nest in the large sycamore tree (*Platanus occidentalis*) in an active farm field, the nest used since 1990 (except for 1998 when ospreys occupied it). Their 1998 nest had blown down in a severe wind storm. The nest is visible from the Stow Creek viewing platform, developed under New Jersey's Watchable Wildlife Program (Appendix A). Incubation began on February 23, and brooding was observed on March 29. On June 19 one of the eaglets was spotted on the roof of an old building beneath the nest tree; it had either jumped

or fallen from the nest. On July 1 an eaglet was found badly decomposed under the nest. The two remaining eaglets fledged on June 26. From 1990 through 2000 the Stow Creek eagle pair has successfully raised 22 eaglets, making them the most productive pair in the state.

Supawna Meadows

The Supawna eagles built a new nest on a PSE&G transmission tower in Supawna Meadows National Wildlife Refuge. The pair began incubating February 9 and hatched March 18. ENSP biologists, with the help of PSE&G climbers, banded the eaglet on May 9. The eaglet fledged June 6. This was the first active year for this pair, though they were territorial in 1999.

Union Lake

The eagles, for the seventh consecutive active nesting season, reoccupied their nest atop a large pitch pine near Union Lake. As usual, ENSP staff marked a small cove near the nest as a "Restricted Area," which was enforced by the Bureau of Law Enforcement, to minimize nest disturbance. The pair started incubating on February 25, and the young hatched on March 28. ENSP biologists banded two eaglets on May 17, and they fledged in late June.

Wading River

The bald eagle pair re-nested in the pitch pine adjacent to the tidal river. Incubation began on February 22, and for the second year in a row the nest was abandoned on March 1. The reason for the failure was unknown, but disturbance is suspected.

Potential Nest Sites

ENSP biologists and observers actively searched for possible nesting bald eagles in several different areas. The searches were in response to the many reports of eagles engaging in breeding behaviors. Areas which look promising were Batsto Lake, Oswego Lake, Mantua Creek, and the Great Egg Harbor River which have year-round eagle activity. Also promising is the Manasquan Reservoir, which has a pair of wintering eagles. In addition, several inland reservoirs and the Delaware Water Gap area in northern NJ hold promise of eventual eagle nesting.

Telemetry Study

Raccoon Creek (Delaware River)

ENSP biologists, for the third year in a row, equipped a fostered eaglet in the Raccoon Creek eagles' nest with a radio transmitter. At 9 weeks of age, although with a different fat to muscle tissue ratio than an adult, an eaglet's body has reached the size of an adult eagle. At that point, the harness, which bears the transmitter, can be fitted onto the eaglet without risk of injury as the bird completes its growth.

On May 17, 2000, the 9-week old eaglet in the Raccoon Creek nest was banded and received its backpack transmitter. The eaglet was returned to the nest and had three more weeks to become accustomed to the harness while preparing to fly. Three and one-half weeks later the eaglet fledged and tracking began. His movements were tracked weekly from dawn to dusk (Map 2).

Overall, the movements of this bird were local in the area around the nest; the farthest flight from the nest that was observed was less than a quarter mile. Possibly associated with boat activity near the nest territory on the Delaware River, the eaglet and one adult were observed flying from that area on August 7th to a nearby pond where the adults have been observed roosting at various times. The following day the signal from the eaglet's transmitter was found in the same general area of the pond in the morning and was gone that evening. At no time after that date was the signal detected again.

A survey flight was made on August 17th but this eaglet was not found again.

Rancocas Creek Nest

On June 3, nearly three weeks after being fitted with a radio transmitter, the eaglet fledged. The young eagle was found approximately a mile away from the nest perched in a treeline that borders agricultural fields and a housing development. The eaglet was tracked weekly from dawn to dusk by ENSP biologists for the first two months after fledging. After that period, ENSP volunteers tracked the eaglet a few hours at a time several days a week (Map 3).

The young eagle roosted in the same treeline for the majority of the time he remained in the nest area. His roosting location was easily visible from a nearby house and the owner kept in close contact with the ENSP volunteers who were tracking the eagle. An exception to his usual roosting location occurred on the evening of July 20 when he was found six miles away at Rancocas State Park. On four separate occasions, the eagle left the area for several days and returned to his previous roost area. Each time the eagle left, ENSP volunteers searched the surrounding areas but did not locate the eagle's signal.

On two occasions the young eagle was seen over the Rancocas Creek. It is believed that he was also fishing in a large pond near his roost location. His signal was last received on October 22.

Galloway Nest

Transmitters were placed on two of the three Galloway eaglets to determine their foraging habitat. After the eaglets fledged on June 27th, their movements were monitored at least once a week by ENSP staff and volunteers (Map 4).

The female eaglet stayed near the nest island, taking short flights around the island. She was also seen on several occasions feeding down in the creek. On August 3rd she was spotted soaring over Mott's Creek about two miles from the nest. On August 7 her signal was picked up in Mattix Run about one mile southeast from the nest. For the next few weeks she stayed in the general area of Mattix Run and the nest island. On September 2nd, volunteers Jack Conner and Bert Hixon, concerned that her signal was not moving, canoed Mattix Run to try and locate the

signal. Jack and Bert found the transmitter hanging from a cedar tree near Mattix Run, southeast of the nest island; the young eagle had removed the harness holding the transmitter.

The male eaglet stayed near the nest island, taking short flights around the island and down to the creek to feed until July 21st (Map 5). On July 22nd he was spotted about 3 miles from the nest soaring over the marsh between Mott's Creek Road and Oyster Creek. After this, the male was seen on and around the nest island, and several times flying over the marsh between Mott's Creek and Oyster Creek. On August 16th he took a longer flight to Forsythe National Wildlife Refuge, where he was spotted flying low over the trees near Gull Pond, about 4 miles from the nest. On August 24th the eagle's signal was found in Burlington County, near Swan Bay Wildlife Management Area, and September 1st he again flew to this area. The male was last seen September 2nd over Port Republic begging for food from an adult eagle. This eaglet was found dead on December 10 at the Forsythe National Wildlife Refuge; cause of death was unknown, as the carcass was quite decomposed.

Wintering Eagle Survey

A total of 120 bald eagles were observed during the midwinter survey on January 8 and 9, 2000 (Table 2). This count is 56 eagles short of 1997's record of 176 (Figure 2). Southern New Jersey continued to host the majority of the state's wintering birds due to large open water areas and relatively warmer temperatures.

Ninety-six bald eagles were counted in southern NJ, of which 62 were adults (Sutton and Elia 2000). The distribution of eagles was: Delaware Bay watersheds (47%), Atlantic Coast watersheds (38%) and the lower Delaware River (16%). The three transects with the highest number of sightings were the Mullica and Wading Rivers with 17, Maurice River, Turkey Point, Bear Swamp also with 17 and Fortescue with 13.

As usual, northern NJ, with 24 bald eagles, had fewer eagles than the south. The main sites for northern New Jersey's wintering eagles were the Delaware Water Gap (25%) and northern reservoirs (67%). Two eagles were counted at the Palisades-Hudson River route (8%).

Contaminants Research

Bald eagles are very sensitive to chemical contamination in the environment and their food chain. Some of these chemicals accumulate in the food chain and cause reproductive problems in eagles and other raptors. ENSP biologists continued to monitor contaminants in bald eagles in three ways: sampling blood from eagle nestlings at banding time, testing eggs that become available, and testing certain tissues of adult birds recovered dead. At this time, three nests have been failing chronically due to contaminants including PCBs and DDE; several other nests are in the vicinity, and are vulnerable to the impacts of accumulating organochlorine contaminants.

Eggs from failing nests at Raccoon Creek, Mannington Meadow, and Rancocas Creek nests have been especially valuable to diagnose and monitor the contaminant problem. In 2000, ENSP biologists collected three eggs in late incubation from the Rancocas Creek nest, where no young have been produced for three years, and incubated them in the lab. Two hatched and died within

24 hours, presumably due to PCB toxicity, and the third was analyzed for contaminant residues. The results showed excessive PCB levels that could have caused embryonic mortality. We collected one egg from the Raccoon Creek nest, which has failed for the last nine years, and fostered a chick from a Maryland nest. That egg failed to hatch, and was analyzed for contaminants, revealing high PCB residues similar to previous eggs from that nest. Eggs from Mannington Meadow nest were not available, since the nest failed early in incubation when the male died.

In 2001, samples of tissues from breeding adults, recovered dead in 2000, will be analyzed. These birds, including the 18 year-old male from Mannington and the 14 year-old female from Stow Creek, will be especially important in helping to track the exposure and contaminant levels of Delaware Bay eagles. We hope to secure funding to continue the next phase of analysis of eaglet blood; previous work has shown this is an excellent monitoring tool for the population as a whole.

Recoveries

Ten eagles and one eaglet were recovered in 2000:

- On February 29, an eagle was found dead, car-struck, on Route 30 near Hammonton, as it came off a lake with a fish in its talons. This bird had been banded in May 1996 in Delaware. ENSP biologists checked the area for potential nesting habitat, but no nearby nests were found.
- On March 3, an adult male eagle was found dead in a field approximately 75 yards from the Mannington Meadow nest. It was determined that the bird died from electrocution. It had been banded originally in May 1982 in Maryland, and had probably nested at the Mannington nest since the nest was initiated in 1987.
- On April 21, an adult eagle was seen flying into an electrical line as it flew off Cedar Creek with a fish; the bird died due to impact injuries. This bird was the male from the Nantuxent nest, and had been banded as an eaglet in May 1993 on the Murderkill River in Delaware.
- On April 29, an adult eagle was found dead (and decomposed) in Port Elizabeth, Cumberland County. The bird was probably one of the adults from the Maurice River 2 nest. The eagle had been banded in 1993 in Edwardsville, N.C.
- An adult female eagle was found injured in Greenwich on May 29. The eagle had to be euthanized due to severe injuries to the wing, later determined to have been electrocuted. She had originally been banded in August, 1986, one of the Canadian eaglets hatched in Dividing Creek by ENSP biologists. She had been nesting at the Stow Creek nest.
- On July 1, one of the eaglets from the Stow Creek nest was found badly decomposed under the nest tree. The eaglet had last been seen on June the 19th on the roof of an old building beneath the nest tree; it was not yet able to fly. It had either fallen or jumped from the nest onto the roof.
- An injured male two to three year-old eagle was found on August 8 in Millstone Township, Monmouth County. The eagle was taken to the Raptor Trust, where it had to be euthanized due to its condition.
- On August 29, an adult bald eagle was found injured along Pancoast Road in Hancocks Bridge, Salem County. The eagle was taken to Tri-State Bird Rescue and Research in

Delaware, where it was found to have a shoulder injury. The bird was not able to fully recover from this injury and was euthanized.

- Another adult female bald eagle was found weak and unable to fly on October 8, at the Unimin sand plant in Cumberland County. The eagle was taken to Tri-State Bird Rescue and Research where it recovered, thanks to the efforts of Dr. Erica Miller and staff. The eagle was released on November 21 in the close vicinity to where it was found.
- On October 25 a juvenile eagle was found dead along side of a road in Cumberland County. The bird is presumed to have been hit by a vehicle. The eagle was a second year male and not banded.
- Finally, the male fledgling from the Galloway nest was found dead on the Forsythe National Wildlife Refuge in Oceanville on December 10th. The body was too badly decomposed to determine cause of death.

Acknowledgments

The ENSP relies upon a team of dedicated observers and cooperators for the success of the Bald Eagle Project.

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We wish to express our sorrow for the passing of Richard Hinchman, a kind and patient man who greeted our annual arrival graciously and contributed generously to the productivity and enthusiasm of the banding team.

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Table 1. Production and significant dates of Bald Eagles nesting in NJ, 2000.

| Nest Site | Incubation | Hatching | Banding | Fledging | No. Fledged | Notes |
|------------------------|------------|----------|---------|----------|-------------|--|
| Alloways Creek 1 | 3/2/00 | 4/7/00 | 5/20/00 | 7/8/00 | 1 | Nest fell 6/20 - 6/21/99. Prev. falls:12/22-23/98 and 1/18/99 |
| Alloways Creek 2 | 2/29/00 | N/A | N/A | N/A | 0 | Nest failed 4/12 or 4/13 |
| Bear Swamp | 2/23/00* | 3/29/00* | N/A | 6/2/00* | 3 | Nest inaccessible |
| Belleplain | 3/13/00F | unknown | N/A | unknown | 1 | Flew over 3/13, observed one egg. Flew over 8/17 no eagles present |
| Burlington Co./Del. R. | 2/21/00 | 3/28/00* | N/A | 6/21/00* | 3 | Nest inaccessible |
| Cohansey (Fairfield) | unknown | 3/18/00 | N/A | 6/7/00 | 3 | |
| Cohansey (Greenwich) | 2/5/00 | 3/11/00 | 4/26/00 | 6/12/00 | 1 | 1 eaglet died, one introduced to Rancocas Creek nest. |
| Cohansey (Hopewell) | 2/19/00 | N/A | N/A | N/A | 0 | Nest failure 3/28/00 |
| Fort Dix | unknown | unknown | N/A | *7/28/00 | 1 | New Nest |
| Galloway | 2/2/00 | 3/25/00 | 5/25/00 | 6/27/00 | 3 | Transmitters placed on two of the eaglets |
| Lake Lenape | 2/17/00 | 5/22/00 | 5/10/00 | 6/1/00 | 2 | |
| Mannington Meadows | 2/12/00 | N/A | N/A | N/A | 0 | Nest failed 4/21/00 |
| Maurice River 1 | 2/16/00 | 3/24/00 | N/A | *6/9/00 | 1 | Nest inaccessible |
| Maurice River 2 | N/A | N/A | N/A | N/A | 0 | House Keeping Pair |
| Merrill Creek | 2/22/00 | 3/20/00 | 5/11/00 | 6/12/00 | 1 | |
| Mullica River | N/A | N/A | N/A | N/A | 0 | House Keeping Pair |
| Nantuxent Creek | 3/15/00 | 4/19/00 | N/A | N/A | 0 | Nest failed April 21 |
| Navesink River | 3/4/00 | 4/8/00 | N/A | 7/2/00 | 2 | |
| Raccoon Creek | N/A | N/A | 5/17/00 | 6/12/00 | 1 | Eaglet introduced from MD March 30 Transmitter placed on bird |
| Rancocas Creek | N/A | N/A | 5/15/00 | 6/3/00 | 1 | Eaglet introduced from Greenwich nest March 24 Transmitter placed on eaglet |
| Round Valley | unknown | 4/14/00F | N/A | unknown | 1 | |
| Stow Creek | 2/23/00 | 3/29/00 | N/A | 6/26/00 | 2 | |
| Supawna Meadows | 2/9/00 | 3/18/00 | 5/9/00 | 6/6/00 | 1 | |
| Union Lake | 2/25/00 | 3/28/00 | 5/17/00 | 6/30/00 | 2 | |
| Wading River | 2/22/00 | N/A | N/A | N/A | 0 | Nest failed March 1 |

* These dates are estimates based on events with known dates.

F This is the date of flyover, actual incubation & hatching dates are unknown

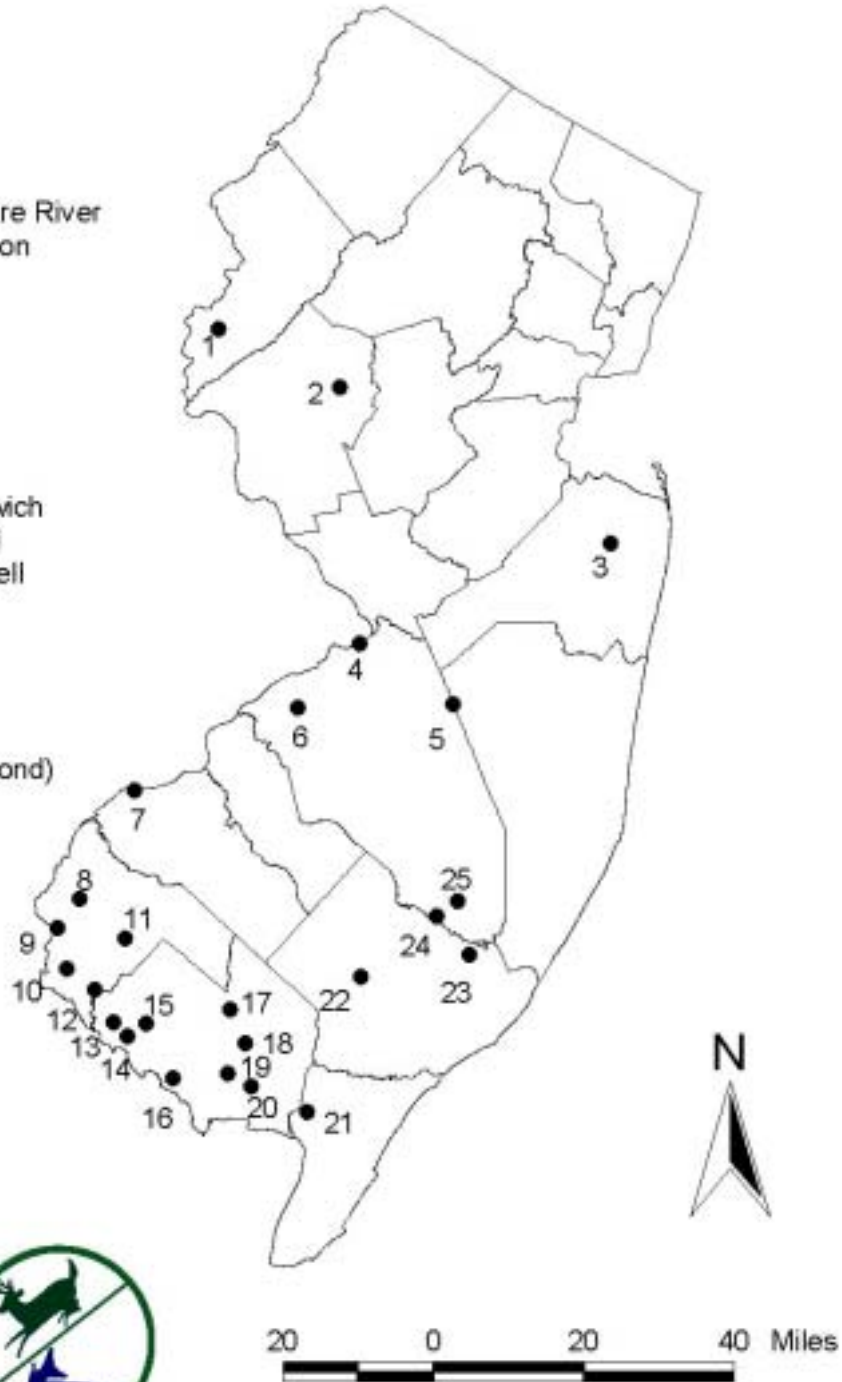
Table 2. Bald Eagles counted in the NJ Midwinter Bald Eagle Survey, January 8 & 9, 2000

| Region | Survey Transect | Subregion | Bald Eagle Total | Adult Bald Eagle | Immature Bald Eagle | Unknown Bald Eagle | Golden Eagle |
|--------------|---|-----------------|------------------|------------------|---------------------|--------------------|--------------|
| South | Brigantine NWR | AC | 4 | 3 | 1 | 0 | 1 |
| | Cohansey River | DB | 8 | 6 | 2 | 0 | 0 |
| | Delaware River - Riverton to Trenton | SD | 2 | 2 | 0 | 0 | 0 |
| | Fortescue to Stow Creek | DB | 13 | 5 | 8 | 0 | 0 |
| | Great Egg Harbor & Tuckahoe Rivers | AC | 4 | 1 | 3 | 0 | 2 |
| | Manahawkin to Lower Bass River | AC | 5 | 4 | 1 | 0 | 0 |
| | Manasquan Reservoir | AC | 2 | 1 | 1 | 0 | 0 |
| | Maurice River, Turkey Point, Bear swamp | DB | 17 | 12 | 5 | 0 | 0 |
| | Mullica & Wading Rivers | AC | 17 | 9 | 8 | 0 | 1 |
| | Oldman's Creek | SD | 0 | 0 | 0 | 0 | 0 |
| | Raccoon Creek | SD | 2 | 2 | 0 | 0 | 0 |
| | Rancocas Creek | SD | 2 | 2 | 0 | 0 | 0 |
| | Salem County | SD | 9 | 8 | 1 | 0 | 0 |
| | Stow Creek | DB | 4 | 2 | 2 | 0 | 0 |
| | Swimming River Reservoir | AC | 2 | 2 | 0 | 0 | 0 |
| | Thompson's to Reeds Beach | DB | 3 | 2 | 1 | 0 | 0 |
| | Whitesbog | AC | 2 | 1 | 1 | 0 | 0 |
| | South | Subtotal | | 96 | 62 | 34 | 0 |
| North | Delaware River - Columbia to Trenton | ND | 0 | 0 | 0 | 0 | 0 |
| | Delaware Water Gap | DWG | 6 | 4 | 2 | 0 | 0 |
| | Hudson River - Palisades | P | 2 | 1 | 1 | 0 | 0 |
| | Jersey City Reservoirs (Boonton & Split Rock) | IR | 2 | 1 | 1 | 0 | 0 |
| | Merril Creek Reservoir | IR | 2 | 2 | 0 | 0 | 0 |
| | Newark Watershed (Clinton & Charlottesburg) | IR | 1 | 1 | 0 | 0 | 0 |
| | Oradell Reservoir | IR | 0 | 0 | 0 | 0 | 0 |
| | Round Valley Reservoir | IR | 2 | 2 | 0 | 0 | 0 |
| | Wanaque & Monksville Reservoir | IR | 9 | 3 | 6 | 0 | 1 |
| North | Subtotal | | 24 | 14 | 10 | 0 | 1 |
| State | Total | | 120 | 76 | 44 | 0 | 5 |

Subregion: 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

MAP 1. Bald Eagle nest sites, 2000

- 1 Merrill Creek Reservoir
- 2 Round Valley Reservoir
- 3 Navesink River
- 4 Burlington County/Delaware River
- 5 Fort Dix Military Reservation
- 6 Rancocas Creek
- 7 Raccoon Creek
- 8 Mannington Meadows
- 9 Supawna
- 10 Alloways Creek 1
- 11 Alloways Creek 2
- 12 Stow Creek
- 13 Cohansey River- Greenwich
- 14 Cohansey River-Fairfield
- 15 Cohansey River- Hopewell
- 16 Nantuxent Creek
- 17 Union Lake
- 18 Maurice River 2
- 19 Bear Swamp
- 20 Maurice River 1
- 21 Belleplain (East Creek Pond)
- 22 Lake Lenape
- 23 Galloway
- 24 Mullica River
- 25 Wading River



Conserve
Wildlife



As directed by the State of New Jersey
Department of Environmental Protection



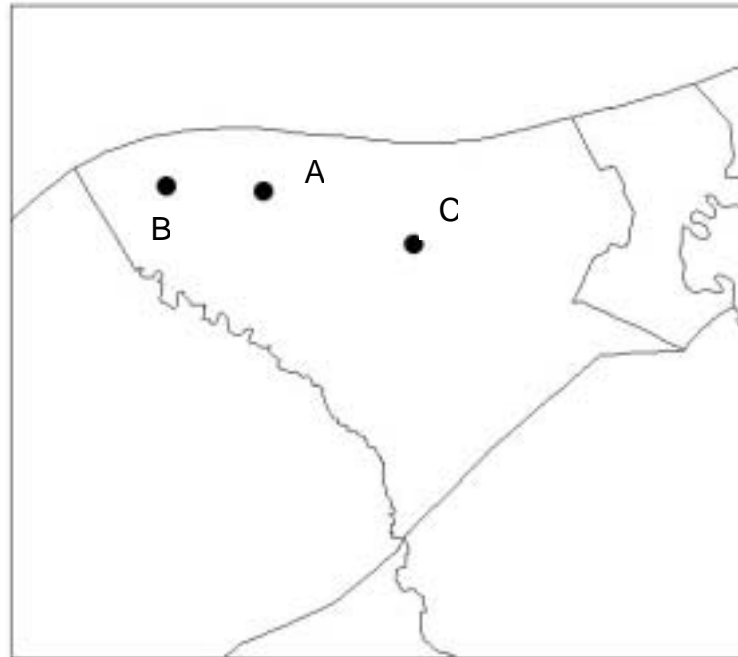
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MAP 2. Raccoon Creek juvenile bald eagle telemetry locations, 2000.

A: June 22, 29
July 12, 19,
25

B: August 3

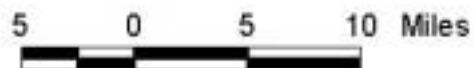
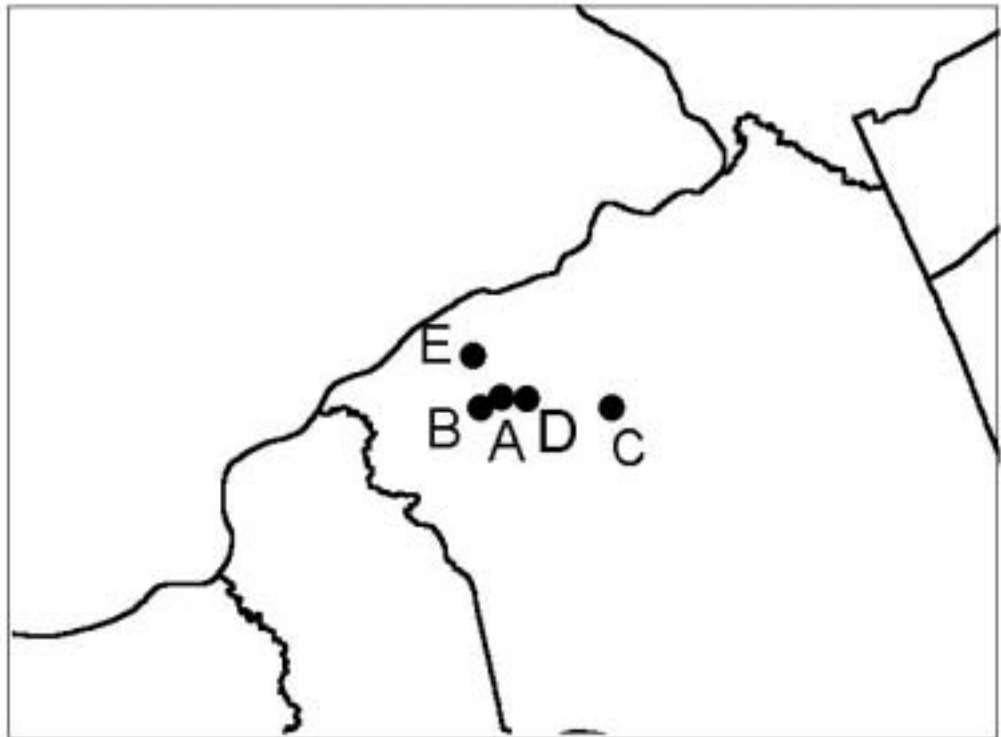
C: August 7, 8



MAP 3. Rancocas Creek juvenile bald eagle telemetry locations, 2000.

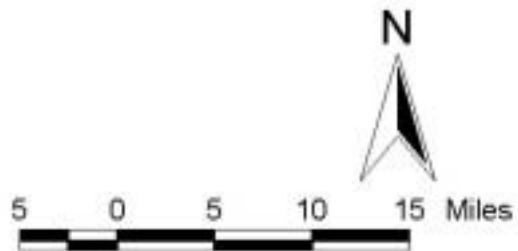
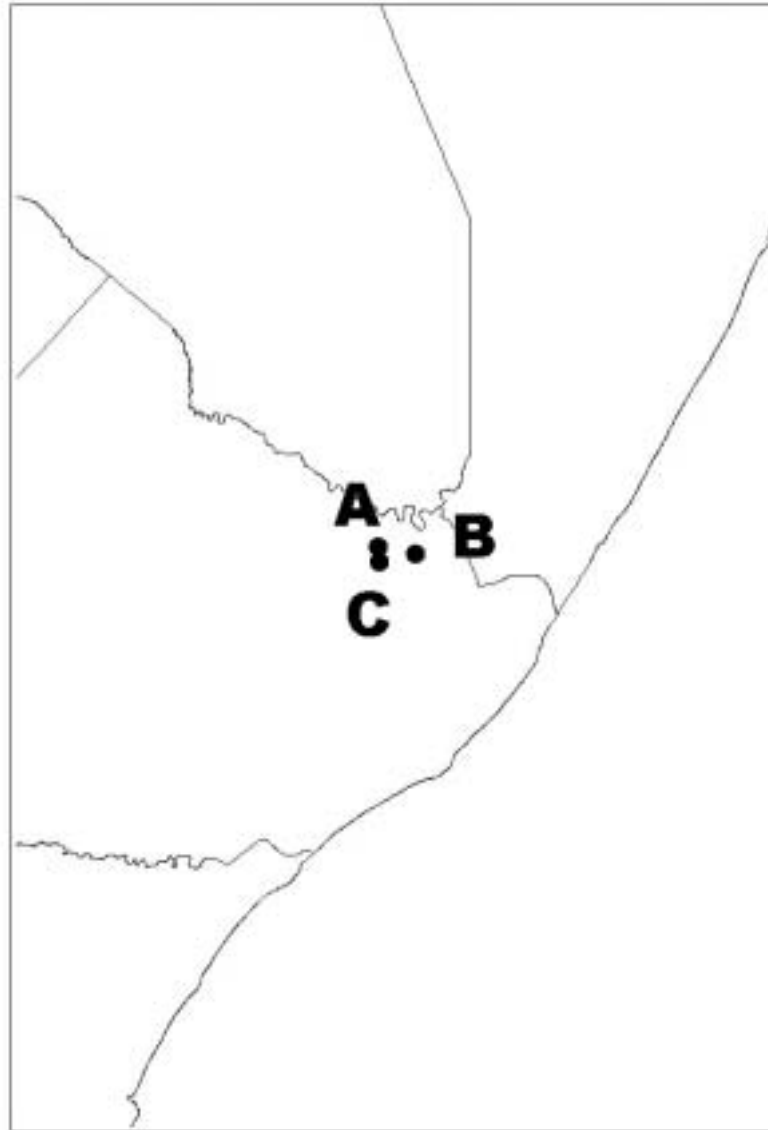
- A*: June 3
- B: June 5, 14, 21, 28
July 5, 20, 25
August 2, 5, 6, 11, 13-18, 20, 22-24, 26
September 2-3, 7, 11-18, 21, 27
October 1, 4, 6-8, 13, 14, 22
- C: July 20
- D: October 6
- E: October 7

*Location A is nest site



MAP 4. Galloway female juvenile bald eagle telemetry locations, 2000.

A*: June 29, 30
July 1, 3, 4, 8, 11,
12, 13, 15,
18, 21, 22,
27, 28
Aug. 2, 4
B: Aug. 3
C: Aug. 7, 13, 14, 16,
17, 18, 19,
22, 23, 24, 28
*Location A is nest island



MAP 5. Galloway male juvenile bald eagle telemetry locations, 2000

- A: *June 29, 30
July 1, 3, 4, 8, 11,
12, 13, 15, 18, 21
August 13, 14,
- B: July 22, 27, 28
August 2, 3, 4, 18, 28
- C: August 7
- D: August 16
- E: August 24
September 1
- F: September 2

*Location A is nest island

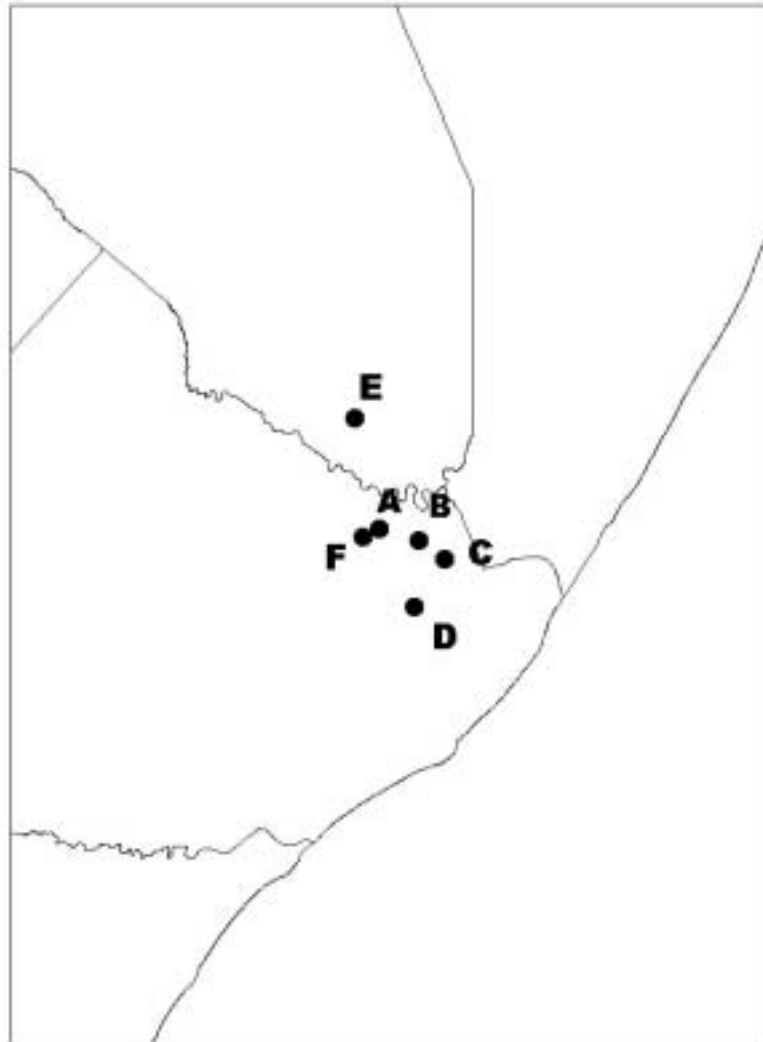


Figure 1. Bald Eagle Nests and Young in NJ, 1982-2000

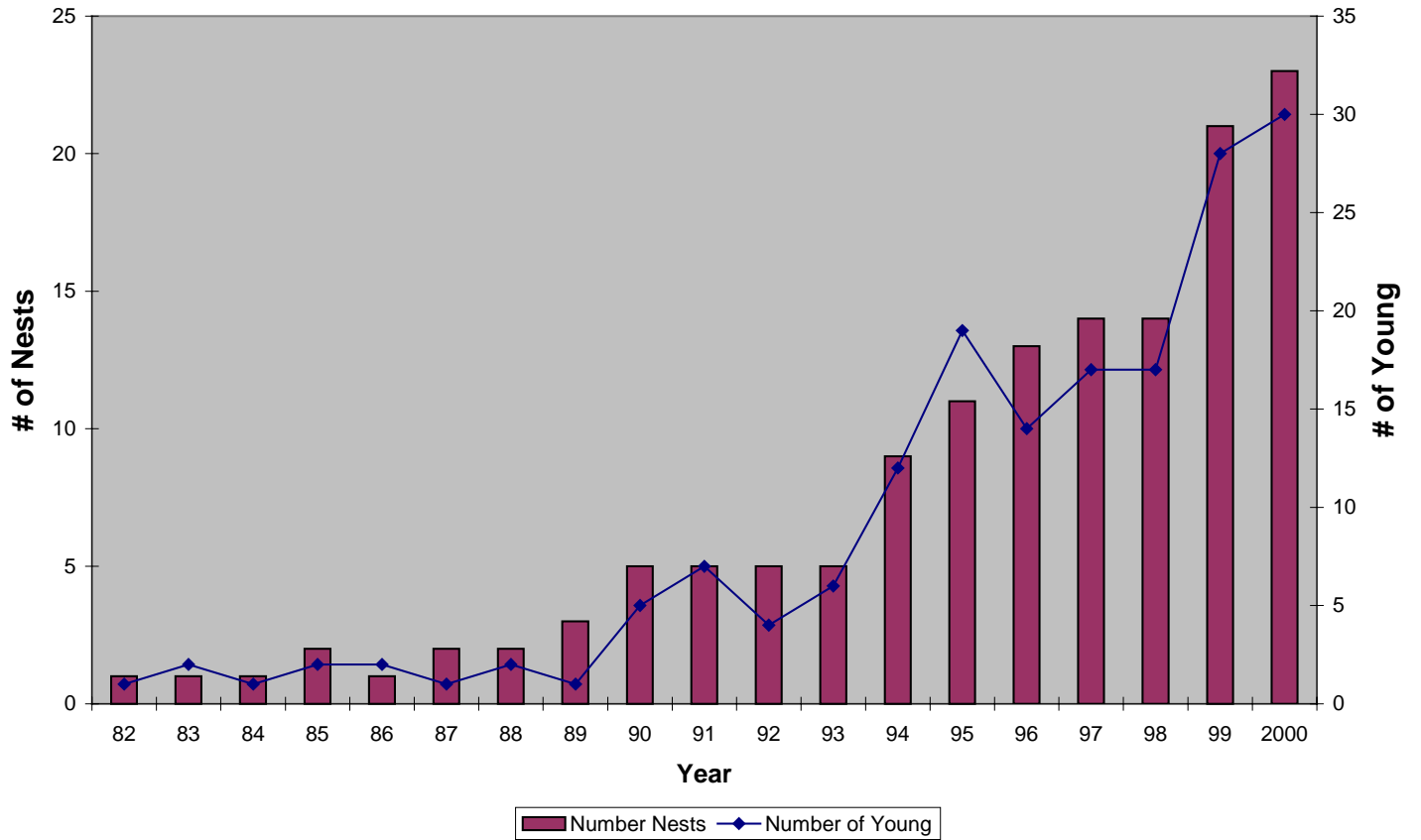
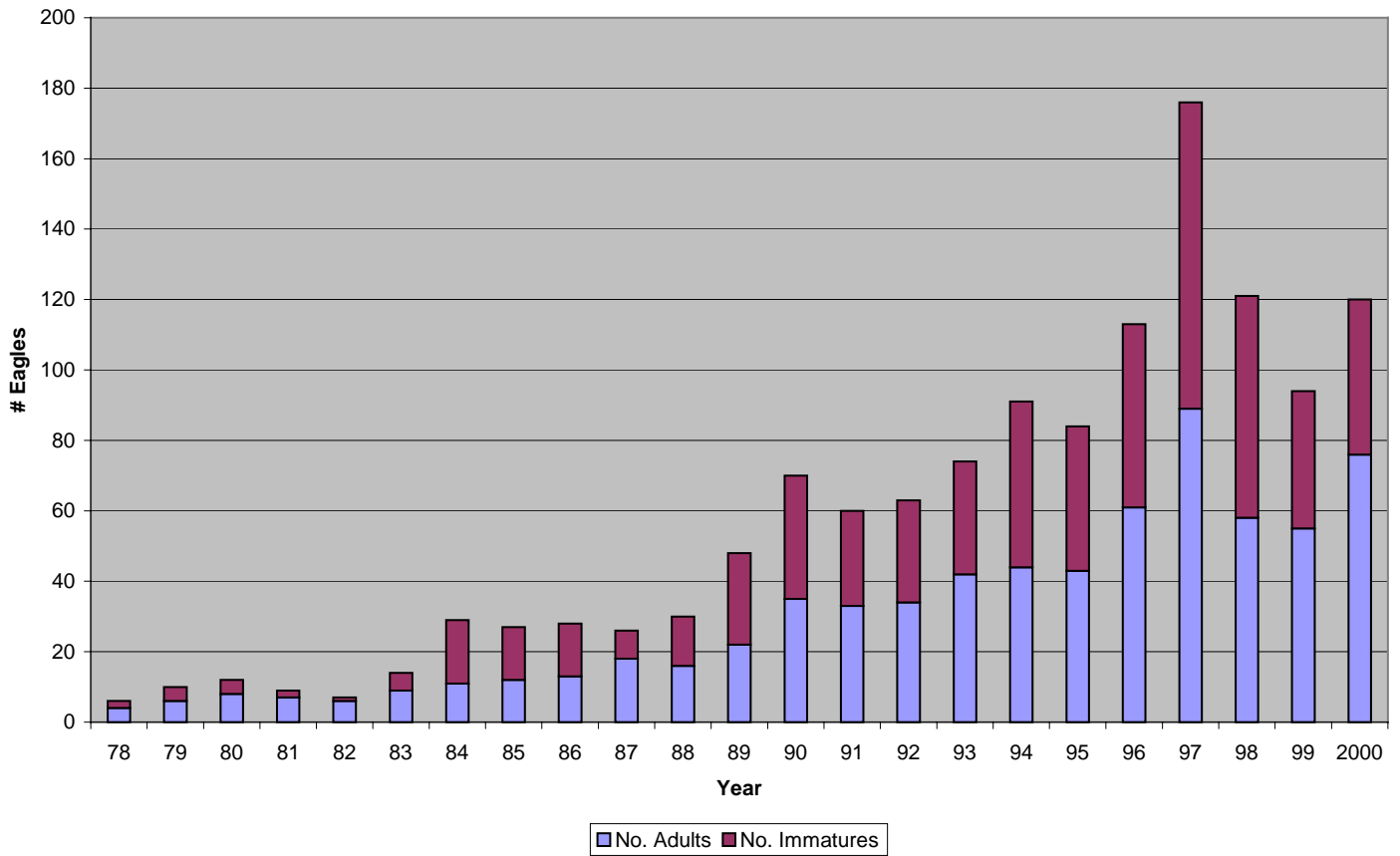


Figure 2. Midwinter Bald Eagle Counts 1978 - 2000.



APPENDIX A

STOW CREEK VIEWING AREA

At the Stow Creek viewing area DFGW/ENSP biologists work in cooperation with the private landowner to protect the nest of a pair of bald eagles. The nest, roughly 7 feet in diameter by 4.5 feet deep, has been the home of 20 young eagles since 1990. Bald eagles are very sensitive to human disturbance, however, and will abandon their nest sites if people encroach too closely during nesting. For this reason, all viewing must be from the shoulder of New Bridge Road or the observation deck on the west side of the creek.

Directions: From the junction of New Jersey 49 and New Jersey 45 in Salem, travel 0.7 mile east on NJ 49 to County Route 658. Turn right onto CR 658 (Hancock's Bridge Road) at the sign for Hancock's Bridge. CR 658 makes a left turn onto Grieve's Parkway in 0.3 mile. Turn right onto CR 623 (New Bridge Road) and travel about 8 miles to the parking area on the right (south) side of the road, just before the bridge over Stow Creek.

The above excerpt was taken from the New Jersey Wildlife Viewing Guide.