Bald Eagles in the Meadowlands & Beyond

Edited by Jim Wright, *New Jersey Meadowlands Commission*
Foreword by David Wheeler, *Conserve Wildlife Foundation*

Cover photo of Bald Eagle over Disposal Road, Lyndhurst, by Ron Shields.
Cover Inset and above: The pair of eagles, Alice and Al, nesting in Ridgefield Park (see Page 31).

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LEFT: The Bald Eagle has symbolized America since the birth of this nation. Photo by Bill Menzel.

Introduction

By Marcia Karrow

The United States is home to roughly 900 species of birds. But when it comes to crowd-pleasers, the Bald Eagle soars above the rest.

The reason for its overwhelming popularity is simple: The Bald Eagle has everything going for it.

With its six-foot to eight-foot wingspan, muscular body and scalpel-sharp talons, the Bald Eagle sits atop the food chain. And with that distinctive white head and wide white tail, it is unmistakable as well.

Most important, the Bald Eagle symbolizes America, and it has adorned everything from our coins and currency to advertisements and logos ever since the birth of our nation.

In recent years, the Bald Eagle has also come to embody hope. This majestic bird nearly went extinct a few decades ago for reasons ranging from DDT to habitat loss, but they have made an astounding rebound.

The Meadowlands has a special kinship with the Bald Eagle. A few decades ago this region was the punch line of Jersey jokes -- home to orphan landfills, illegal dumping and rampant water pollution. And like the Bald Eagle, this region has made an incredible recovery. Bald Eagles are seen regularly year-round throughout the region in Bergen and Hudson counties, and a pair has successfully nested just beyond our boundaries. But for all the times we see the Bald Eagle these days and read about its comeback, few of us know much about this incredible bird.

With this book, the Meadowlands Commission hopes to change all that.

Marcia Karrow is the Executive Director of the New Jersey Meadowlands Commission.

Foreword

By David Wheeler

Welcome to "*Bald Eagles in the Meadowlands and Beyond*."

The first time I saw a Bald Eagle in New Jersey was in the Meadowlands. I was hiking the trails near Richard W. DeKorte Park in Lyndhurst on a sunny, brisk day, when high above I recognized the silhouette of a raptor in flight. As it came further into view, my jaw dropped in shock - I was staring at the unmistakable white head and sturdy brown body of a Bald Eagle!

Just two decades ago, the Meadowlands was still quite the secret, overlooked by many as a nature destination and viewed through the aged prism of old stereotypes. Yet the Meadowlands has recovered against overwhelming odds to become one of New Jersey's top wildlife viewing regions. It's certainly one of my favorites!

Here in the shadow of New York City, in a compelling dichotomy of industry and nature, wildlife thrives anew. Herons and egrets stalk the shallows. Diamondback Terrapins sun on banks and protruding rocks. Muskrats swim the channels, their straight tails leaving a symmetrical wake.

And up above? All sorts of raptors soar in flight, many of them recovering from past declines just as the Meadowlands region itself has.

Perhaps none is as inspiring a success story as the Bald Eagle. The return of this all-American emblem from just a single pair in New Jersey in the early 1980s to roughly 120 nesting pairs in our state today is simply mind-blowing.

My organization, Conserve Wildlife Foundation of New Jersey, is proud to be a part of the Bald Eagle's inspirational comeback in the Garden State, and to be a part of this book.

In addition to our biologists working closely in the field with New Jersey Endangered and Nongame Species Program (N.J. ENSP) scientists, we are committed to engaging the public, and especially our youngest generation, about our state's unparalleled biodiversity. Our outreach and education efforts include resources for students and educators, nature programs in New Jersey state parks, a speakers bureau, and lively, interactive webcams — including the Duke Farms EagleCam (which now has had nearly 9 million views online), the Jersey City FalconCam, and the Forsythe National Wildlife Refuge OspreyCam.

As you flip through these pages, you'll be tempted to dwell on the countless amazing images — from John James Audubon's depiction of the "White-headed Eagle" to recent eagle photographs from New Jersey and beyond, such as Ron Shields' shot of a Bald Eagle at the Kearny Marsh (left).

But I hope you'll also take the time to enjoy the text as well. We include chapters by noted raptor expert Scott Weidensaul, the American Eagle Foundation, Ron Popowski of the U.S. Fish & Wildlife Service and Kathy Clark of New Jersey's Endangered and Nongame Species Program, and my own organization -- plus an interview with Clark.

If you think the Bald Eagle is a remarkable bird now, just wait until you read this book!

David Wheeler, Executive Director of Conserve Wildlife Foundation, is the author of "Wild New Jersey: Nature Adventures in the Garden State." He has written for a wide range of media on wildlife and the environment in New Jersey.

LEFT: Eagle in the Kearny Marsh. Photo by Ron Shields.

An immature eagle (left) fights with an adult eagle for a fish. Photo by Greg Gard.

By Conserve Wildlife Foundation

Bald Eagle Basics

"Emblem of the republic, standing for freedom to enjoy life, liberty, and the pursuit of happiness, it must be owned that our national bird is a piratical parasite whenever he gets the chance."

— Neltje Blanchan, "Birds that Hunt and are Hunted,"1902.

Identification: Adult Bald Eagles are distinguished by their full white heads and tails and dark brown, almost black bodies. Adults also have yellow legs, bills, and eyes. Sub-adult and juvenile birds are brown overall with some white mottling. Juvenile birds reach their adult size by the time they can fly at approximately 12 weeks of age.

White heads and tails do not appear until the birds are between four and five years of age. Both sexes have similar plumage, although the female is slightly larger than the male. With a wingspan of six to seven feet, eagles are larger than most birds. They are often confused with vultures and Golden Eagles from a distance.

Distribution and Habitat: Bald Eagles are restricted to North America and are usually found near open water. They require a nesting location that is safe from the threat of human disturbance, and they choose a nesting tree accordingly.

Diet: Bald Eagles eat mostly fish and other aquatic animals. They are extremely opportunistic though, and will eat almost anything that presents itself as a meal. They can also feed on waterfowl, muskrat, turtles, and carrion.

Life Cycle: Eagles usually build large stick nests close to water in some of the tallest trees in the forest. By nesting in a tall tree, they can place the nest within

LEFT TO RIGHT:

Bald Eagles by the Oradell Reservoir. Photo by Al Barrera.

Young Bald Eagle in the Kearny Marsh. Photo by Roy Woodford.

Bald Eagles can live up to 28 years in the wild. Photo by Jerry Barrack.

the shelter of the crown but still be above the surrounding trees, enabling them to arrive and depart from the nest with ease. Pairs frequently return to the same nest year after year and add to it.

Over time, some nests can reach 10 feet across and weigh up to 2,000 pounds. Pairs lay one to three eggs and incubate for about 35 days.

Both males and females will share incubating responsibilities. Upon hatching, the chicks are helpless and require close parental care. After about five weeks, the young birds begin to stand up and feed themselves when the adults deliver food. Young birds fledge the nest at approximately 11 weeks of age. Adults will continue to feed young near the nest for up to eight weeks while the young learn to fly and hunt.

Bald Eagles by the Numbers

Length: 28-38 inches
Weight: 6.5-14 pounds
Life span: Up to 28 years in the wild, 36 years in captivity.
Clutch size: 1-3

Chapter Two

By The American Eagle Foundation

The Bald Eagle in America, 1620 — 1967

"The figure of this noble bird is well known throughout the civilized world, emblazoned as it is on our national standard, which waves in the breeze of every clime, bearing to distant lands the remembrance of a great people living in a state of peaceful freedom."

— John James Audubon, "Birds of America"

It is impossible to know how many Bald Eagles inhabited North America when the first European settlers arrived, but there must have been hundreds of thousands.

Revered by Native Americans, the Bald Eagle was sometimes killed for its feathers used in ceremonial headdresses. However, the deep respect Native Americans had for the eagle limited the number killed.

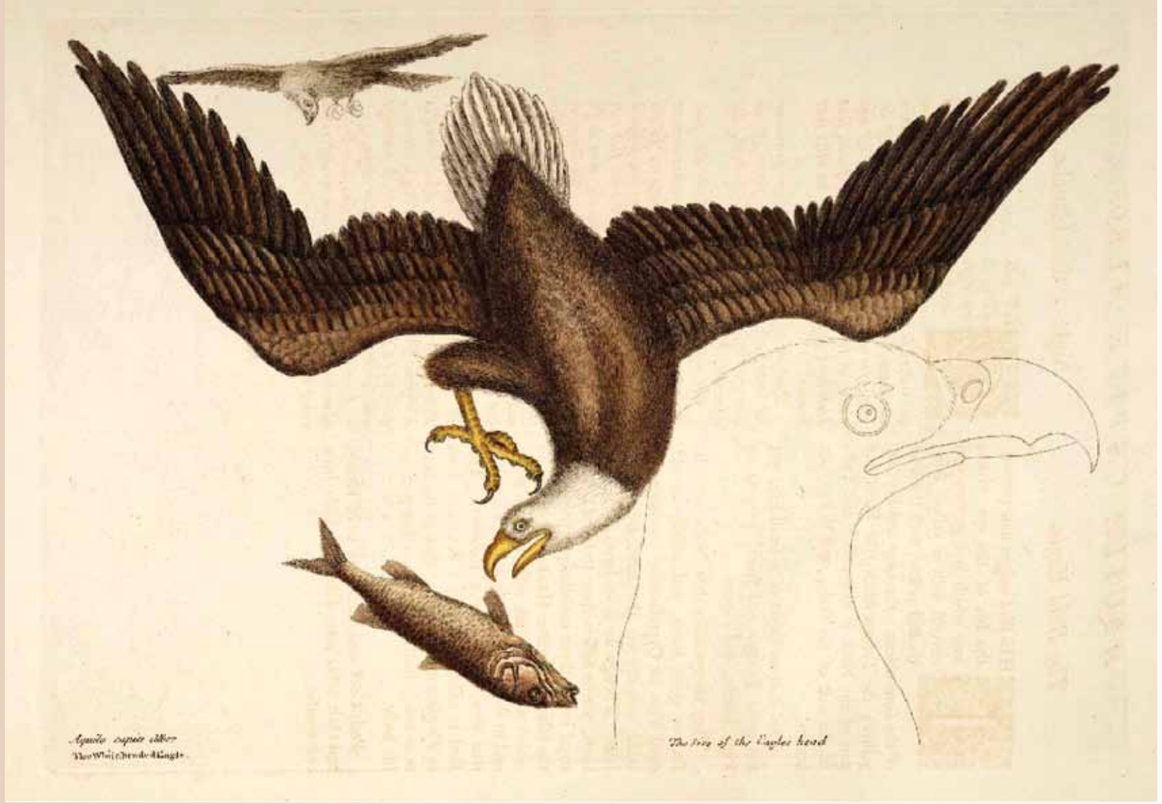
In contrast, the early settlers viewed the Bald Eagle as vermin and shot them on sight. This wanton killing, in addition to the decline of suitable natural habitat and loss of the food supply (fish, waterfowl, etc.) along shorelines where settlers continued to build and expand, greatly reduced the number of Bald Eagles.

By 1782, their population had declined substantially. The U.S. Fish and Wildlife Service estimates "as many as 100,000 nesting Bald Eagles lived in the continental United States, excluding Alaska" at that point.

Further reductions occurred in the mid-1800s to late-1800s, starting in the East and progressing westward, coinciding with the movements of the early pioneers. However, as late as the mid-1800s, Bald Eagles were frequently seen by those living in New York City and were "extremely abundant on the floating ice of the [Hudson] river," according to one account.

The decline of the Bald Eagle throughout the late 1800s was noted on the Western

RIGHT: "White-Headed Eagle with Yellow Catfish," from "Birds of America," illustration by John James Audubon, the author, 1828



plains, and experts speculate that this drop in population could have been due to the decimation of the American Bison and the complete extinction of the Passenger Pigeon. Both flocks of pigeons and carrion from herds of bison must have supplied a plentiful food source for the Bald Eagle at one time.

Further decline resulted from man's deliberate attacks on the Bald Eagle. Not only did eagles suffer from direct shootings, but the poisoning and trapping of wolves are known to have contributed to the death of many Bald Eagles.

Due to the killings, loss of food supply, and changes in habitat and suitable nesting sites, Bald Eagle populations

remained low until the 1940s. In 1940, the Bald Eagle Act was passed to provide some protection for the eagle. Increased public awareness of the plight of the eagle and the building of dams and reservoirs throughout the United States allowed the Bald Eagle population to slowly begin to rebound.
At the height of this recovery, the Bald Eagle faced its most serious threat to survival: the pesticide DDT. Used safely as a powder disinfectant for U.S. troops in World War II, DDT became a deadly killer when transformed into a spray pesticide. This spray was first used in the South to fight mosquito infestations, but its use became widespread across the country within a short time.

From its slow recovery in the 1940s, the Bald Eagle suddenly plunged into a desperate decline. By 1963, the Bald Eagle population of the lower 48 states had fallen to a mere 417 nesting pairs of eagles.

In 1962, a former marine biologist and lifelong naturalist, Rachel Carson, chronicled the lethal effects of DDT on bird populations in her landmark book, "Silent Spring." In the case of Bald Eagles, the effects of the use of this pesticide took at least a generation to be felt.

Since Bald Eagles live fairly long lives, small amounts of DDT continued to accumulate in the fatty tissues of the eagle over a long period of time.

This process of accumulation, called biological amplification, allowed many eagles to survive for years. However, immediate effects were found on the reproductive capacity of Bald Eagles that had accumulated significant amounts of the chemical.

Calcium production became inhibited in affected eagles which resulted in thin, fragile egg shells which would crack under the weight of the adult eagles (the parents take turns sitting on the eggs to hatch them). Several generations of eagles were lost before the truth of Rachel Carson's words hit home.

Adapted from the American Eagle Foundation's "American Bald Eagle: Recovery from Near Extinction."

Vanderbilt University's Learning Technology Center also helped produce this material.

LEFT: "Bald Eagle catching a fish" from "The Natural History of Carolina, Florida, and the Bahama Islands." Illustration by Mark Catesby, the author, 1771.

ABOVE:"Bald Eagle," from "The Hawks and Owls of the United States...," Illustration by Robert Ridgway, 1893.

"Eagle Air, the Meadowlands." Photo by Roy Woodford.

By Scott Weidensaul

American Icon

One of the first acts of the United States Continental Congress in 1776, after severing its ties with Britain, was the creation of a national seal, an emblem of the new nation's ideals and goals. The choice of a seal, and the symbols to go on it, fell to Thomas Jefferson, Benjamin Franklin and John Adams, all among the drafters of the Declaration of Independence.

The trio's first ideas were complex and full of biblical or classical references — Hercules, Moses and the Pharaoh, the Goddess of Justice — and weren't accepted by Congress. Later committees began considering eagles, although at first they toyed with the sort of double-headed eagles found on many European coats of arms. Finally, in 1782 the secretary of the Congress, Charles Thomson, got the task of taking the earlier proposals and creating a simple, effective seal.

His idea, after some alterations, was accepted by Congress on June 20, 1782. It showed a Bald Eagle with a striped shield on its chest, holding the olive branch of peace in one foot and the arrows of war in the other. In its beak was a banner with Jefferson's motto *E Pluribus Unum* (From Many, One), and a constellation of thirteen stars is over its head. In the first versions the eagle was somewhat scrawny and chicken-like, but through the nineteenth and twentieth centuries the seal was revised several times, making the eagle appear more powerful and realistic.

Much has been made of Ben Franklin's dissent over the choice of the Bald Eagle. Franklin, in a letter to his daughter, claimed that the Bald Eagle was a poor national symbol — for, Franklin said, ". . . he is a bird of bad moral character; he does not get his living honestly," but steals fish from the Osprey.

Whatever Franklin's reservations about eagles may have been, some scholars believe his recommendation that the United States pick the wild turkey was meant as a joke.

In choosing an eagle for a national emblem, Congress was perpetuating a tradition that stretches back thousands of years. The Roman legions went to battle behind standards that bore the image of the imperial eagle, and across Europe and Asia, even earlier cultures like the Sumerians had chosen eagles (usually booted eagles like the Golden, rather than sea-eagles like the Bald) as their totemic or battle symbols.

Closer to home, the eagle was a symbol of the Iroquois confederacy, perched at the top of the great Tree of Peace, watchful for enemies.

Few ancient cultures, however, made eagles such ubiquitous symbols as does modern America. Next to the U.S. flag, no other American symbol has such wide use in day-to-day life; Bald Eagles appear on coins, stamps, flagpoles, weather vanes, Boy Scout badges (the highest rank being Eagle), and in countless varieties of advertisements and logos.

Oddly, although the national symbol is a raptor, none of the states has chosen one as its official state bird. Most picked songbirds; a few, game species like grouse or pheasants; and several others, waterbirds like loons, pelicans, or gulls. Even Mississippi, long known as the Eagle State because of the Bald Eagle on its coat of arms, chose a mockingbird.

-- Reprinted from "The Raptor Almanac," Lyons Press, 2004

Scott Weidensaul is a noted author, naturalist and raptor expert.

LEFT: "Great Seal of the United States," from a design by Charles Thomson, 1782.

"Eagle in flight," obverse of U.S. $20 gold piece, designed by Augustus Saint-Gaudens, latter 1908.

RIGHT: Pesticides with DDT were commonplace 50 years ago. Photo courtesy of NJMC.

Bald Eagle egg. Photo by Kathy Clark, N.J. ENSP.

By Ron Popowski and Kathy Clark

New Jersey's Bald Eagles: From 1 to 135

In 1982, New Jersey's only remaining Bald Eagle nest failed for at least the sixth consecutive year.

Every year, the eagle eggs at the Bear Swamp nest were just too thin to withstand normal incubation — a result of residual contamination from the pesticide DDT. With hopes of securing a future for the species in the Garden State, biologists intervened. "In a delicate procedure, we removed the

egg after just two weeks, replacing it with a fake egg to keep the adults incubating at the nest," says Kathy Clark, a biologist with the New Jersey Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP).

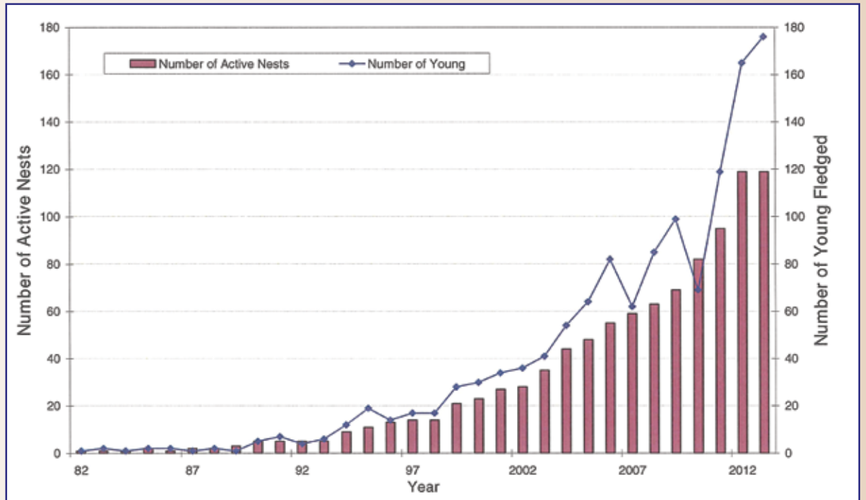
"The real egg was delivered to the U.S. Fish and Wildlife Service's Patuxent Wildlife Research Center in Maryland for artificial incubation."

With the help of lightweight, incubating chickens, the eagle egg hatched. After two weeks of monitoring, the eaglet was placed back into the nest at Bear Swamp. Artificial incubation continued successfully at Bear Swamp until 1989, when a new adult female, unimpaired by DDT, began nesting and was able to hatch eggs without assistance. The eagle nest remains active today.

While biologists worked to make Bear Swamp productive, they tackled another project that involved bringing in young wild eagles from Canada, where they were common, and raising them until fledging. The project ran from 1983 through 1990, and resulted in the release of 60 young eagles.

"Bald Eagles now grace the skies over New Jersey's coastal rivers, estuaries, farmland and woodlands," says Clark. "But this resurgence blossomed only recently, after decades of work by biologists in our program and the U.S. Fish and Wildlife Service."

In 2012, ENSP monitored 135 eagle pairs during the nesting season, 119 of which produced eggs with 165 young successfully fledged. The success marks an important time for both agencies, which are celebrating 40 years of state and federal endangered species legislation that enables the recovery of imperiled wildlife.



Bald Eagle nests and young produced annually, 1980-2013.

LEFT: Bald Eaglets in the nest at Duke Farms. Photo by Mick Valent, N.J. ENSP. Photo courtesy of Duke Farms.

ABOVE: Chart showing dramatic rise of the number of Bald Eagle nests and young fledged from 1982 to 2013. Chart by Kathy Clark, N.J. ENSP.

A look back over the last 40 years weaves a complex history for the Bald Eagle. Long before the introduction of the pesticide DDT, habitat destruction, shootings, and poisonings had greatly reduced the nation's eagle population. Just as persecution of eagles and other birds of prey was fading, post-war chemical introductions began, threatening these same top-tier birds.

DDT was used heavily in New Jersey, in part for mosquito control, and by 1970, only the Bear Swamp nest remained. Consequently, the Bald Eagle was listed as endangered under New Jersey's new Endangered and Nongame Species Conservation Act in 1973, and as federally endangered throughout the lower 48 states, under the Endangered Species Act (ESA) in 1978.

Thanks to the banning of DDT, habitat protection afforded by the ESA, and intensive conservation work by many partners, the Bald Eagle was deemed nationally recovered in August 2007.

The Bald Eagle remains protected under the Bald and Golden Eagle Protection Act and the New Jersey Endangered and Nongame Species Conservation Act. In the Garden State, this bird still faces disturbance and habitat loss. Volunteers and biologists actively monitor and search for nests to continue habitat protection efforts.

"With continued management and monitoring by concerned landowners and volunteers, the future of the Bald Eagle in New Jersey looks bright," says Clark.

Ron Popowski is a supervisory biologist for the U.S. Fish & Wildlife Service. Kathy Clark is a biologist with the N.J. ENSP.

LEFT: Bald Eagle on Christmas Day near Exit 16W in East Rutherford. Photo by Jana Brusich.

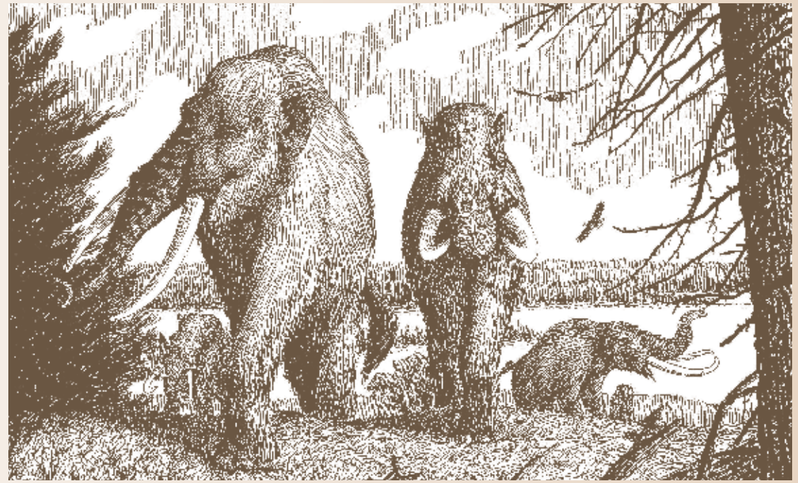
ABOVE: Soaring Bald Eagle. Photo by Ron Shields.

By Jim Wright

Bald Eagles in the Meadowlands

As recently as five years ago, seeing a Bald Eagle in the Meadowlands was a rare event.

In fact, two well-known books written nearly a decade earlier, "The Meadowlands" by Robert Sullivan and "Fields of Sun and Grass" by John R. Quinn, made no mention of the bird -- although Quinn's book did feature an illustration of Mastodons and Bald Eagles in what is now Ridgefield Park, just north of the Meadowlands District.



LEFT: Immature Bald Eagle over a Carlstadt Marsh with One World Trade Center in distance. Photo by Jim Wright, NJMC.

RIGHT: Mastodons and Bald Eagles in what is now Ridgefield Park, from "Fields of Sun and Grass." Illustration by John R. Quinn, the author, 1997.

LEFT: Eleven eagles were perched in the same tree in the Meadowlands one day during the winter of 2013-2014. Photo courtesy of the NJMC.

THIS PAGE: Banded Bald Eagle on Disposal Road, Lyndhurst (hatched in Connecticut). Photo by Louis Balboa.

When a colleague showed me a 2004 photo of an eagle devouring a duck or a gull on the ice-covered Shorebird Pool outside our office at DeKorte Park in Lyndhurst, I was amazed.

On the Christmas Bird Count that year, NJMC Naturalist Mike Newhouse and I saw one Bald Eagle in a Carlstadt Marsh near the Hackensack River, and we were thrilled.

Fast forward to January 2014, more than five years later. Following up on a report that several Bald Eagles were roosting in a marshy area off-limits to the public, two naturalists and I went to the site to conduct a point count of the eagles.

No sooner did we arrive than we counted 11 Bald Eagles perched in one tree. That's right: 11 eagles -- enough for a pro football team.

We did not want to flush the birds from their perch, so we drove to the other side of the natural area and entered on foot across a crust of snow. By the time the "Eagle" tree came into view, most of the eagles had flown.

We got our spotting scope and scanned the adjacent mud flats and marsh, and in the distance, Bald Eagle after Bald Eagle came into view. All were just below eye level, perched on small islands. We did

a count and could not believe the final tally. So we counted again. And again we got the same result: 19 Bald Eagles, in one place at one time.

A week later, I did another tally at the same location, and counted "only" 11 eagles. How times have changed in just a few years. The Meadowlands, once a wasteland of polluted landfills and waterways, is -- slowly but surely -- getting healthy again, and the eagles know it.

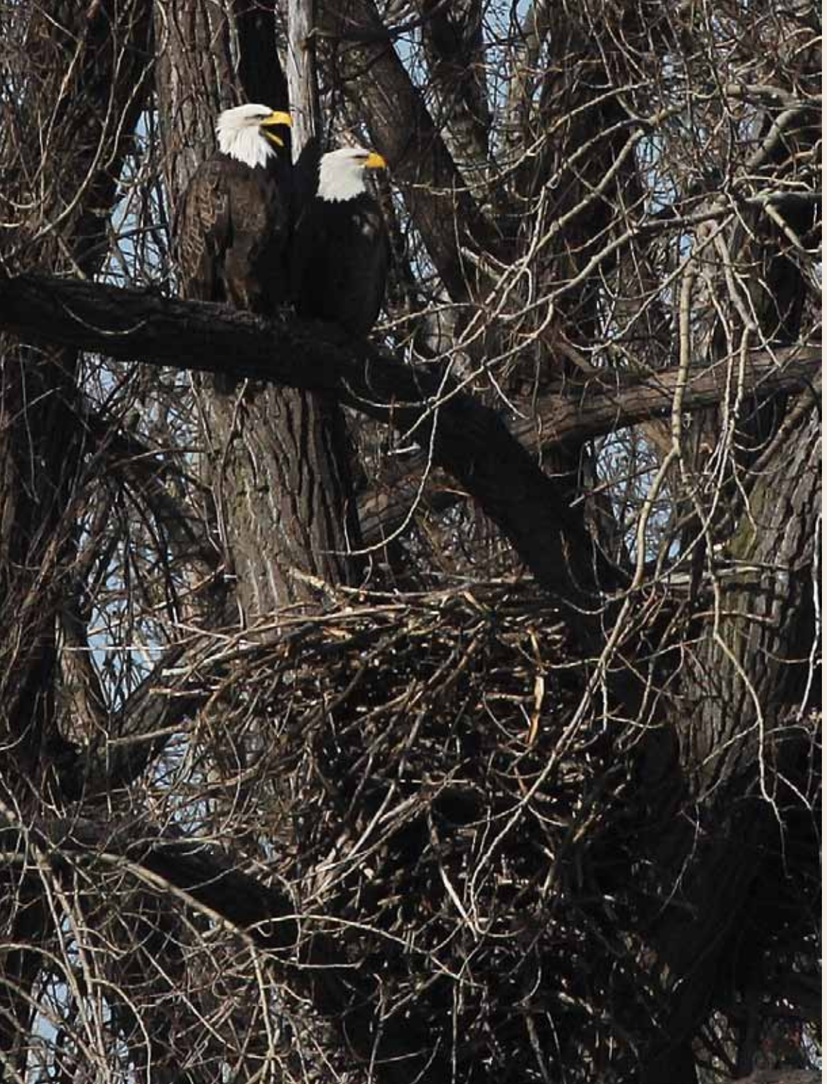
Nature photographers often share their latest Meadowlands Bald Eagle photos on the Meadowlands Commission's nature blog. As you can see from the photos that accompany this chapter, we are getting an assortment of birds, young and old, banded and unbanded.

What's more, seeing a Bald Eagle on the Commission's twice-monthly nature walks with the Bergen County Audubon Society is no longer uncommon, but the reaction is always the same. No matter how far away the bird is in the sky, folks clamor to get a look at the magnificent raptor with its white head and white tail. To this day, a Bald Eagle is always the biggest crowd-pleaser on our walks, bar none.

These days we don't just look for any Bald Eagle. We look for an adult Bald Eagle that has come to be known as Alice, named after Alice Leurck, the birder who photographed this particular raptor in flight near Overpeck Creek in the spring of 2010.

LEFT PAGE: (Left) Alice's full wingspan reveals she is missing a flight feather on her left wing. Photo by Allan Sanford. (Right) Alice's leg bands showed that she is from New York State. Photo by Alice Leurck, for whom the eagle was named.

THIS PAGE: Alice in flight with transmitter antenna in view. Photo by Alice Leurck.



When Alice the human got home and looked at her pictures, she realized that the eagle had a transmitter on its back. A great mystery had begun.

The Meadowlands Commission checked with environmental agencies in New Jersey, Virginia, Maryland, New York, Maine and Quebec to see if they had equipped any eagles with transmitters, but we came up empty.

When the Commission posted photos of the eagle on our nature blog, a reader suggested we check to see if the eagle's legs were banded, because Bald Eagle banders in various states use bands with different color combinations.

Alice the human checked her photos and, sure enough, she was able to make out the bands in one of the shots. The left leg had a red/black band, and the right leg had a silver band.

Armed with that information, we learned that the bird was originally from Northern Manhattan and hacked six years earlier, in 2004. ("Hacked" means that the young raptor was raised by human caretakers until it could be released into the wild.)

LEFT: Al and Alice by their nest in Ridgefield Park. Photo by Jim Wright, NJMC.

RIGHT: Bald Eagle. Illustration by John S. Wright Sr.

Peter E. Nye, Leader of the Endangered Species Unit of the Wildlife Diversity Group for the New York State Department of Environmental Conservation, wrote: "Yep, this is a NY band: We've put red/black on captive-reared and/or hacked birds over the years, but not too many."

Fast forward a year, and photographer Mike Malzone took a picture of a Bald Eagle with a transmitter antenna near the same location. Could it be the same eagle?

Turns out it was, and turns out she and her mate were nesting in Ridgefield Park along the Overpeck Creek, a few wing flaps from the Hackensack River. The location, in a busy former industrial site, was less than ideal.

Thus, when the pair successfully fledged two hatchlings, there was much quiet rejoicing. And when we saw the bird again during one of our nature walks that November, several birders decided that our huge avian neighbor needed a name. After all, it's not every individual wild bird that you can identify by sight.

Someone suggested she be called "Alice," after the photographer who "discovered" her. Everyone agreed.

And what about a name for Alice the Eagle's mate? Since Alice the human's husband was named Al ... Alice and Al the eagles came to be. Soon Al and Alice had their own Facebook Page, Friends of the Ridgefield Park Eagles, with more than 300 "likes."

The pair then proceeded to fledge two more hatchlings in 2012 and again in 2013.

By then, the word was out that eagle aficionados could view the nest through binoculars or a spotting scope from across the Overpeck Creek in Ridgefield.

Although the nest failed in the spring of 2014, we still see Alice in the region. We know it's Alice because of the transmitter. As for Al, we'd like to think he's close by as well.

Jim Wright is a communications officer and photographer for the New Jersey Meadowlands Commission. He wrote the coffee-table book "The Nature of the Meadowlands for the NJMC and keeps its nature blog, meadowblog.net.

Q&A with Eagle Expert Kathy Clark

Kathy Clark joined New Jersey's Endangered and Nongame Species Program (ENSP) in 1984, shortly after graduate school. She took over the projects researching and managing Peregrine Falcons and Ospreys a couple of years later, and assisted on the Bald Eagle project while ENSP was still hacking eagles and tracking the only remaining nest. She learned about eagles and handled them early on in the course of that work. She has been involved in banding more than 400 New Jersey eagles since 1990. Fifty-two of those birds have been encountered over the years, either due to injury or being resighted in the wild.

Kathy was gracious enough to share some of her storehouse of knowledge and know-how in this interview.

What's the biggest reason for the Bald Eagle's comeback nationally?

The No. 1 reason for the comeback is listing the Bald Eagle as "endangered." That set in motion many different means of protecting eagles from direct and indirect actions that would hold them back, and provided funding to initiate population recovery.

Another major factor was the ban on use of DDT in the United States in 1972. DDT and its derivatives are still found nearly everywhere (in soil and animal tissues), but the levels are below toxic levels.

What's the biggest reason for the eagles' rebound in the Meadowlands region?

We are seeing eagles return to areas throughout New Jersey that offer good habitat, and the Meadowlands is no different. Eagles love expanses of open water, marshes, and woodlands. They rely on open water and marshes for food, and they need large trees for nesting and for cover during bad weather.

RIGHT: Kathy Clark with a seven-week-old nestling while Dr. Erica Miller examines it at a nest in Oradell. Photo courtesy of N.J. ENSP.

The eagles that are occupying habitat where eagles have been long-absent also find themselves without competition, which is a bonus.

Has the improved water quality of the Hackensack River and improved food chain played a role?

Yes, definitely. Eagles are very water-dependent in terms of their day-to-day living, since their diet is mostly fish, turtles and waterfowl. Impaired water quality is (and was) cause for concern for all aquatic organisms.

Many contaminants are still in those waters, but the levels are no longer quite as toxic as two to three decades ago.

How active a role does the state's Endangered and Nongame Species Program and Conserve Wildlife Foundation play in the well-being of eagles in New Jersey?

We in the ENSP are involved on a daily basis. We respond to questions arising from DEP permit applications and make decisions on the types of activities that may disturb or otherwise threaten nesting and foraging eagles throughout the state.

We try to maintain consistency in the regulatory protections for eagle nests, but each nest is a little different due to its surroundings — the type of vegetation, the openness, how visible surrounding activities may be, the degree to which each pair tolerates ongoing activity, and other factors.

During the nesting season, ENSP and CWF staff coordinate more than 75 Eagle Project volunteers who actually do all the observations; all their information is tallied weekly so that we have a good understanding all through the nesting season. Some nests can only be viewed by aircraft, so I do a couple of surveys by helicopter using donated aircraft time.

Of course, our role has changed a lot over the last 30 years, because we try to monitor the entire state with our volunteers so we can understand and protect the nesting population the best way possible.

Has our knowledge of Bald Eagles increased much since the eagles started making their comeback?

We have learned a lot about eagles and their habitat requirements. When New Jersey had just one eagle nest, and it was in the center of a unique, old-growth forest a mile from Delaware Bay, we thought, "That's what eagles need."

Then new nests got established in the rural mix of farmland, marsh and bay, so we redefined their habitat. Eagles continue to nest in greatest density in that rural-land mix near the great tributary rivers, but they are now nesting on northern New Jersey reservoirs, in the Pine

LEFT: Immature Bald Eagle on the ice at Oradell Reservoir. Photo by Al Barrera.

ABOVE: Adult Bald Eagle in flight. Photo by Bill Menzel.

Barrens, along Atlantic Coast rivers, and on northeastern New Jersey rivers and lakes. So they are educating us with their choices of nesting habitats, perhaps driven by a diet that is primarily aquatic but also broad in scope.

What is the future of the Bald Eagle in New Jersey and in the Meadowlands?

Eagles are evolving within our environment. In the 1990s there were relatively few nesting pairs, and all were in sparsely populated areas (mainly South Jersey). Those individuals were extremely wary of people and developed areas. In recent years, we have seen eagles begin to occupy empty habitats within developed areas, and those pairs are raising young that may see people as part of the environment.

That is a good thing as long as people do not act to directly threaten eagles and they continue to "give them space."

The great news is that eagles are reoccupying long-vacant habitats throughout New Jersey, so they are willing to try living alongside people in a way they didn't before. However, eagles in general still require significant parcels of land and water that are mostly free of disturbances that could distract them from caring for their eggs and young; they must be on guard for people and predators that approach them because, as large birds, they need time to respond.

Do they tend to nest near where they were hatched or fledged?

Only in a regional sense. Eagles from southern New Jersey may tend to nest in southern New Jersey or nearby Delaware. Eagles from northern New Jersey nests may tend to nest there and nearby southern New York or eastern Pennsylvania. However, also generally speaking, males may often

LEFT: Immature Bald Eagle at the Kearny Marsh. Photo by Roy Woodford.

ABOVE: Immature Bald Eagle being chased by a Great Black-backed Gull in Overpeck Creek near nest site. Photo by Jerry Barrack.

return to their region of origin while females may end up paired with a male on his territory.

What are the biggest concerns for Bald Eagles in New Jersey?

Habitat. Are the people of New Jersey willing to maintain as wild land adjacent to open waters, rivers, and marshes? The large tracts of land that support our resident and wintering eagle populations must contain forest cover, open waters and marshes for hunting, and quiet areas for nesting.

Eagles are one of our "umbrella" species: if we can maintain healthy populations of these large-area species, we may be able to maintain viable populations of the wildlife that require smaller acreages.

Do Bald Eagles ever try to nest a second time in a season if the first attempt fails?

Yes, but it depends on when they fail. If the nest is disrupted in the first 2-3 weeks of the 5-week incubation process, they will usually re-cycle in about 2 weeks and lay a second clutch. If the failure is late in incubation it becomes questionable. Only rarely will they nest again if the eggs hatch but then fail.

What are the most likely causes of a failed nest?

We've seen a lot of reasons for failure. Eggs that fail to hatch despite the full incubation period may be contaminated with PCBs or organochlorine pesticides that are still remnant in the ecosystem. PCB contamination can also continue to impair the embryo in the first few days of life, causing the hatchling to die and the nest to fail.

When contamination is not the issue, failure can happen due to infertile eggs (most common in newly mature eagles), a predator disrupting the nest (perhaps breaking eggs), or disturbance that causes the eagles to leave or to incubate insufficiently during cold periods.

Also, as the eagle population increases, there will be more eagle-eagle fights over nest territories; those battles can result in adults getting injured and/or replaced in the pair, and thus causing the nest to fail for a season.

Any notable recent technological advances?

Yes! We are using satellite transmitters on eagles to track individual's movements after fledging. The satellite tags are solar-powered so they can last for four years. The newest variation on this tag uses satellites to record the GPS location, but uses cell towers to transmit the data, which is cheaper and faster.

Researchers in Chesapeake Bay have fielded more than 100 transmitters and merged data to identify important roosting habitats; that's a great way to focus land conservation and planning to maintain good eagle populations.

For you, what is the quirkiest thing about Bald Eagles?

Probably one of the quirks of all the raptors (maybe all wildlife): You can watch them with a telescope constantly and for hours, and they won't move or do something interesting until you happen to look away for a moment.

RIGHT: Immature Bald Eagle with a satellite transmitter attached. ENSP biologists have deployed a limited number of transmitters to track the movements and habitat use of eagles post-fledging and through their pre-nesting years. This technology is invaluable to help identify the habitats to be preserved in order to maintain Bald Eagles in New Jersey and the mid-Atlantic region. Photo by Mick Valent, N.J. ENSP.

What is your most memorable encounter/ sighting?

Possibly the encounter I had this past February, when I responded to a call of two grounded eagles in Cape May. When I arrived, there were indeed two adult eagles, their talons locked, and they laid next to a road with neither willing to let go. They had been like that for an hour and a half before I arrived, and they were exhausted.

Only after we approached did one finally let go and fly away -- he had been the winner and still looked strong. I captured the other one, the "loser," who was soaking wet from the snow but otherwise had only minor injuries.

Another memorable sighting was the eagle that died in 2013 near a nest in Maryland. She had been hacked from the Cumberland County hack site in 1988, and had nested in Aberdeen Proving Ground all these years, her identity unknown

until she was found and her band was read. She had raised many chicks there, and the local nest watcher expressed how she was more beautiful than all the others. Twenty-five years old, which is old for a wild eagle.

Has it been personally fulfilling for you to see and experience the eagles' recovery?

It has been an unbelievable campaign of conservation on many levels. There were (and are) all kinds of partners who have come together to bring back eagles from the brink -- not only professionals in many agencies but a huge number of regular people including landowners and neighbors who became eagle nest stewards.

And it worked! The eagles responded. It's encouraging that we could help eagles recover, and it's inspirational as we try to recover other wildlife species.

FROM LEFT TO RIGHT: Eaglet with banded legs. Photo by Kathy Clark, N.J. ENSP. Kathy Clark preparing to return an eaglet to its nest in Warren County. Photo by Dave Chanda, N.J. Division of Fish and Wildlife. Eagles at sunset. Photo by Al Barrera.

Other Rebounding Raptors

The Bald Eagle may be the most prominent raptor species to rebound in the Meadowlands, but there are many more.

Significantly, a region that was once on the endangered list itself is also home to endangered Peregrine Falcons and Northern Harriers (when nesting), threatened American Kestrels and Ospreys, as well as several species of special concern: Red-shouldered Hawks, Barn Owls, Barred Owls, Long-eared Owls and Short-eared Owls.

In all, at least 16 birds on the state's watch lists nest in the Meadowlands, and the Bald Eagle has successfully nested just north of the district.

On the following pages is a photo gallery of the other nine Meadowlands raptors on New Jersey's watch lists.

RIGHT: American Kestrel in Lyndhurst. Photo by Greg Gard.

BELOW: A young Northern Harrier (left) and an adult female Northern Harrier (right) hunting over the remediated Kingsland Landfill, Lyndhurst. Photo by Roy Woodford.

RIGHT: An immature Gray Ghost (male Northern Harrier) in Lyndhurst. Photo by Roy Woodford.

LEFT: Northern Harrier dueling a banded Peregrine Falcon (which is flying upside-down) in Lyndhurst. Photo by Jim Wright, NJMC.

RIGHT: Peregrine Falcon in North Arlington. Photo by Mike Girone.

LEFT: Peregrine Falcon with prey, Kearny Marsh. Photo by Ron Shields.

RIGHT: Osprey with fish over DeKorte Park, Lyndhurst. Photo by Greg Miller.

LEFT: Red-shouldered Hawk by the Kearny Marsh. Photo by Ron Shields.

RIGHT: Short-eared Owl in Lyndhurst. Photo by Fred Nisenholz.

LEFT TO RIGHT: Long-eared Owl in Lyndhurst (photo by Louis Balboa), Barred Owl in Little Ferry (photo by Doug Morel), Barn Owl in Kearny (photo by Jim Wright) and Barn Owl in flight in Lyndhurst (photo by Muhammad Faizan).

About the New Jersey Meadowlands Commission

We are the zoning and planning agency for the 30.4-square-mile Meadowlands District along the Hackensack River, covering parts of 14 municipalities in Bergen and Hudson counties in New Jersey.

Just six miles from Manhattan, the Meadowlands offers panoramic views, wildlife galore and an inspirational natural experience for the entire family. While the Meadowlands region has long been prized for its close proximity to New York City, only in recent decades have its unique environmental qualities been better understood – and properly protected.

The New Jersey Meadowlands Commission (NJMC) was formed in 1969 to clean up dozens of orphaned landfills marred by illegal dumping and oversee appropriate development and solid waste disposal while protecting and improving the delicate environmental conditions in the District. The NJMC has played an important role in this transformation by combating illegal dumping and helping to improve the water quality of the Hackensack River and its marshes.

Over the years, the NJMC has helped to protect thousands of acres of wetlands and worked with others to create 21 parks and more than eight miles of trails in the District. The Commission also aims to educate others about the natural wonders in the Meadowlands through popular programs for schoolchildren and adults, nature walks, and pontoon boat and canoe tours of the Hackensack River.

RIGHT: New Jersey Meadowlands Commission in Lyndhurst with the Environment Center's Marshview Pavilion in the background. Photo courtesy of NJMC.

About Conserve Wildlife Foundation

Conserve Wildlife Foundation of New Jersey (CWF) utilizes science, research, habitat restoration, education, public engagement, and volunteer stewardship to protect at-risk species of wildlife across the state and beyond.

While some imperiled wildlife species — like Bald Eagles, Peregrine Falcons, and Ospreys — are enjoying an inspiring recovery, others are on the brink of extinction or extirpation from our state. Threats like climate change, invasive species, sprawl, pollution, and disease continue to impact many of New Jersey's most at-risk wildlife species.

As such, CWF partners with a wide range of entities — from government agencies and other conservation organizations to businesses, civic groups, and schools — in order to ensure these endangered and threatened wildlife species have the support they need. Our team of biologists utilizes an innovative and creative approach that incorporates both cutting-edge technology and common-sense solutions to give wildlife the opportunity to survive in our dynamic times.

Find out about how you can support, volunteer, or partner with our organization at www.ConserveWildlifeNJ.org.

FACING PAGE: Peregrine Falcon eyas (chick) at Conserve Wildlife Foundation's nestbox in Jersey City. Photo courtesy of Conserve Wildlife Foundation.

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Pages showing photographs or art are in italic

Facing page: Adult eagle fishing on the Oradell Reservoir as a female Common Merganser flees. Photo by Al Barrera.

Acknowledgements

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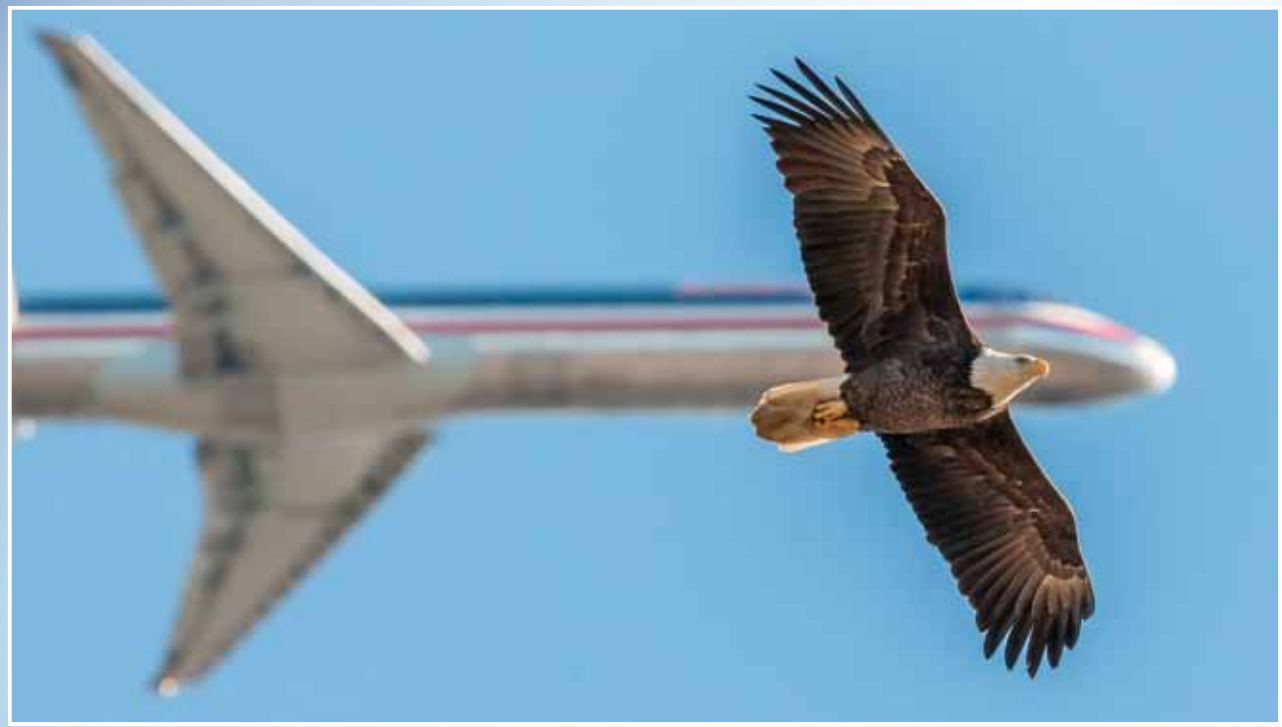
Finally, Alice and Al, the Bald Eagles, were also crucial to making this book possible.

--Jim Wright for the NJMC
Lyndhurst, August 6, 2014

FACING PAGE: This photo of eaglets in a nest at the Egg Island Wildlife Management Area on New Jersey's Delaware Bayshore was taken in May 2014. Photo by Kathy Clark, N.J. ENSP

"Bald Eagles in the Meadowlands & Beyond" is a crowd-sourced project about the remarkable comeback that our national symbol has made not only in northern New Jersey but across America.



The book features contributions by the New Jersey Meadowlands Commission, Conserve Wildlife Foundation, Kathy Clark and the N.J. Endangered and Nongame Species Program, the American Eagle Foundation, Scott Weidensaul, Ron Popowski of the U.S. Fish and Wildlife Service, and photographers (in alphabetical order) Louis Balboa, Jerry Barrack, Al Barrera, Jana Brusich, Dave Chanda of the N.J. Division of Fish and Wildlife, Muhammad Faizan, Greg Gard, Mike Girone, Alice Leurck, Greg Miller, Bill Menzel, Doug Morel, Fred Nisenholz, Ron Shields, Allan Sanford, Mick Valent of the N.J. ENSP, Roy Woodford, and Jim Wright.

Photo above by Roy Woodford