

Bald Eagle

Haliaeetus leucocephalus

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DESCRIPTION

Taxonomy and Basic Description

The family *Accipitridae* contains 59 species of eagles worldwide (Grossman and Hamlet 1964). Sea and fish eagles account for 11 species comprising three genera, of which eight are in the genus *Haliaeetus*. The bald eagle is the only species of sea eagle to regularly occur on the North American continent. Two subspecies of *leucocephalus* are described based on size and weight. These are of questionable merit because of a continuous gradient in size from north to south throughout the range; therefore, the subspecies *leucocephalus* and *alascanus* are not recognized in this report.



Adult bald eagles are large raptors with a distinctive white head and tail that contrasts with the dark brown body. They also possess a bright yellow bill and feet with unfeathered lower legs. Eyes are large and yellow. Juveniles have a dark head and tail in addition to the dark body. Eyes and bill are dark but the feet and legs are like adults. As the juvenile ages, its body plumage becomes mottled with white and in 3-4 years will reach adult plumage.

Bald eagles in South Carolina are smaller than their northern counterparts with a mean wingspan of 188 cm (6 feet 2 inches) and a mean weight of 3.27 kg (7.14 pounds). Eagles from the northern portion of their range can be twice as heavy. Eagle chicks are full grown when they leave the nest and frequently weigh more than adults.

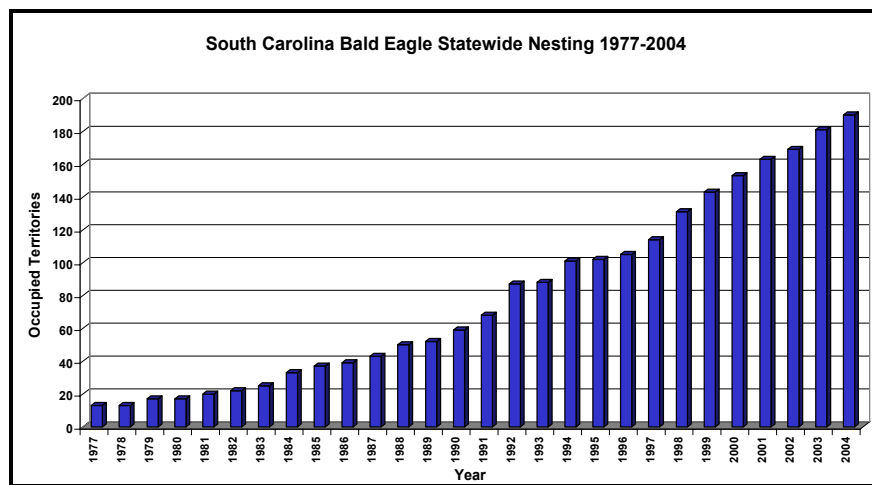
Status

Bald eagles (*Haliaeetus leucocephalus*) are protected under the Eagle Protection Act (16 U.S.C. 668-668d) as of June 8, 1940, as amended on October 23, 1972. Bald eagles below the 40th parallel were listed as endangered on March 11, 1967 and subsequently received protection under the Endangered Species Act of 1973 (16 U.S.C.1531-1543). On February 14, 1978, listing status was changed to endangered throughout the conterminous United States except for Washington, Oregon, Minnesota, Wisconsin and Michigan, where the bald eagle was designated as threatened. Bald eagles were reclassified as threatened in all lower 48 states on July 12, 1995 (50CGR Part17) and are currently being considered for delisting. The bald eagle continues to

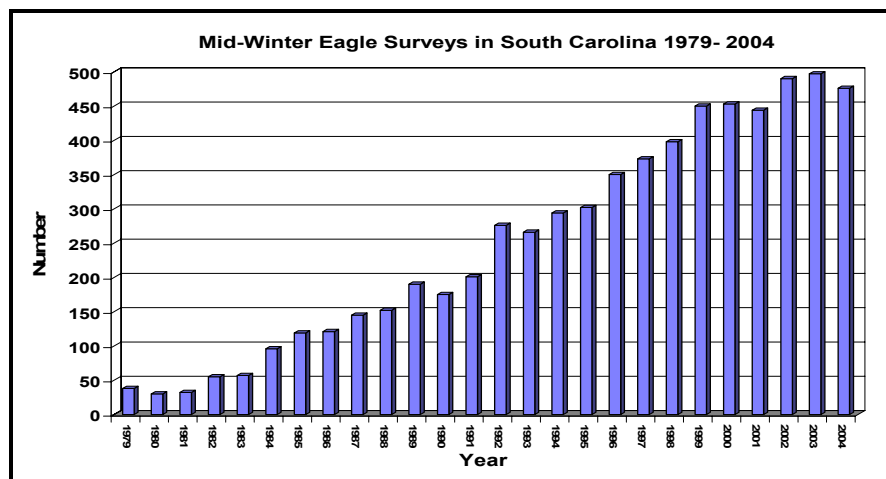
receive protection under the South Carolina Nongame and Endangered Species Conservation Act as a state endangered species. In South Carolina, the bald eagle is considered an imperiled species (S2) (NatureServe 2005).

POPULATION DISTRIBUTION AND SIZE

During the early 1960s, the nesting eagle population was estimated at about 412 pairs in the 48 contiguous states (Sprunt and Ligas 1963). In 1982, the number of nesting pairs was up to 1,482 (Green 1985). Based on the most recent data, there are 7,066 nesting pairs of bald eagles in the lower 48 states. Eagles nest in every state except Hawaii and Vermont. South Carolina ranks twelfth in the nation in terms of the numbers of nesting bald eagle pairs. In 1977, there were 13 occupied nesting territories in South Carolina and by 2004 the state's population increased to 190 pairs (see graph below).



Since 1979, mid winter surveys of adult and juvenile eagles in South Carolina have been conducted as part of a national effort. The 2004 survey resulted in 481 eagles counted during mid-winter (see graph below), up from 36 during the first survey.



HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Eagles require large trees with an open limb structure for nesting and are usually located on the forest/marsh ecotone within one km (0.62 miles) of open water. Large trees allow for large nests that can support nesting for many years without falling. The large size may also reduce fratricide or premature fledging. The open limb structure provides easy access and a clear view of foraging habitat. Nesting habitats initially selected by eagles usually have limited disturbance, although eagles are showing remarkable adaptability when confronted with moderate habitat alterations, often due to development in established territories. Trees suitable for perching and future nesting sites are also important components of stable nesting territories.

Fresh, brackish and marine habitats provide suitable foraging sites and include open water, marsh and riverine types. Prime habitats are characterized by having shallow, slow moving water with abundant fish and bird prey. Preferred sites have suitable perch and roost sites with minimal disturbance. Large manmade reservoirs in South Carolina have provided 240,000 ha (592,800 acres) of new inland eagle foraging habitat. Concentrations of eagles may be found below hydroelectric dams where they forage on injured fish. Impounded marsh managed for waterfowl is preferred foraging and nesting habitat.

CHALLENGES

Shooting has historically been the most significant cause of mortality in eagles. Between 1961 and 1965, 62 percent of eagles found dead were shot. More recently, the percentage of eagles that died as a result of illegal shooting has declined to under 20 percent. This is undoubtedly one major reason for eagle recovery. Delisting the bald eagle may mislead the public by inferring that eagles are no longer protected and could result in increased shooting mortality. Additionally, when eagles lose protection under the Endangered Species Act, they may lose much of the habitat protection currently afforded to the species. This may lead to habitat degradation that can make current and future nesting habitat unsuitable.

Chemical contamination of eagle habitat has long been a problem for this top carnivore. Eagles have been shown to be sensitive to a variety of toxins, particularly persistent organo-chlorine pesticides, such as DDT. Pesticide poisoning has been greatly reduced and is another reason for recovery of the species. However, even with many new products on the market, the problem persists. In addition, lead poisoning in eagles has also been identified as a significant problem (Pattee 1981). There is a chronic problem with barbiturate poisoning of eagles at landfills where eagles feed on animals that have been euthanized. Deposition of mercury in eagle foraging habitat poses a potential threat to the health of bald eagle populations.

Currently there are two emerging diseases affecting eagles. West Nile virus (WNV) and Avian Vacuolar Myelinopathy (AVM) have both been identified as new sources of eagle mortality. Recovery of the bald eagle population will result in larger concentrations of eagles and less fit individuals as a result of competition. This may lead to an increased risk of disease.

Finally, other significant sources of mortality in eagles include electrocution at power lines and collision trauma.

CONSERVATION ACCOMPLISHMENTS

Conservation accomplishments directly and indirectly affecting this species are varied. Through public education and effective law enforcement, shooting mortality has declined from 62 percent (Mulhern 1970) to less than 20 percent of diagnosed mortalities (Locke 1982). A ban on widespread use of DDT was implemented in 1972. Since then, an array of effective pesticides has been developed that have limited impacts on non-target species. Bald eagle management guidelines for nesting territories have been developed and implemented and non-toxic shot has been required for waterfowl hunting. Finally, a variety of raptor safe power line configurations have been developed and implemented.

Reproductive effort of South Carolina nesting eagles has been documented on an annual basis for 28 years. Additionally, fledging success of South Carolina nesting eagles has been documented each year for 28 years. Adult mortality rates of 12 percent per year have been calculated based on banded eagles at nesting territories.

CONSERVATION RECOMMENDATIONS

- Determine the etiology of Avian Vacuolar Meilinopathy (AVM), document the current extent of the disease, evaluate the potential for future disease and develop management strategies to minimize impacts.
- Continue to evaluate the effects of habitat alterations on the long-term viability of eagle nesting territories.
- Continue monitoring the level of shooting mortality and react with increased active and proactive law enforcement in the event of an increase.
- Continue to implement raptor safe power-line configurations with a variety of power companies and cooperatives.
- Continue to work with DHEC, veterinarians and landfill operators to eliminate barbiturate poisonings of eagles at landfills.
- Work with Clemson Institute of Environmental Toxicology, Southeastern Cooperative Wildlife Study group (UGA) and the USFWS Wildlife Health Laboratory to monitor contaminants in eagles
- Conduct standardized monitoring of nesting eagles prior to delisting to serve as baseline information to evaluate the effects of delisting.
- Monitor the causes of injury and mortality of eagles before and after delisting to document effects of delisting.
- Conduct post mortem examination of fresh dead eagles to evaluate impacts of AVM and WNV.
- Conduct active surveillance of known and potential AVM disease.
- Continue to monitor banded breeding adult to refine adult mortality rates.
- Continue to partner with the International Center for Birds of Prey to provide public education, raptor rehabilitation and to document the causes of injury and death of eagles.
- Continue to participate in the Southeastern Bald Eagle Working Group.

MEASURES OF SUCCESS

The bald eagle is a species with deferred maturity, low annual reproductive potential, and is sensitive to environmental contaminants. Therefore, utilizing adaptive management to implement conservation actions is important. Indicators of success include high annual survivorship. Maintaining annual survivorship greater than 85% can best be accomplished by minimizing anthropogenic sources of mortality such as shooting, barbiturate poisoning and AVM disease. Management of nesting territories should maintain 1.0 young per occupied territory by minimizing human disturbance and providing adequate perch and nest trees. Eagle mortality and impairment of reproduction by contaminants should be prevented by reducing current and future environmental contamination of territories and important prey base species.

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