Bald Eagle
Haliaeetus leucocephalus

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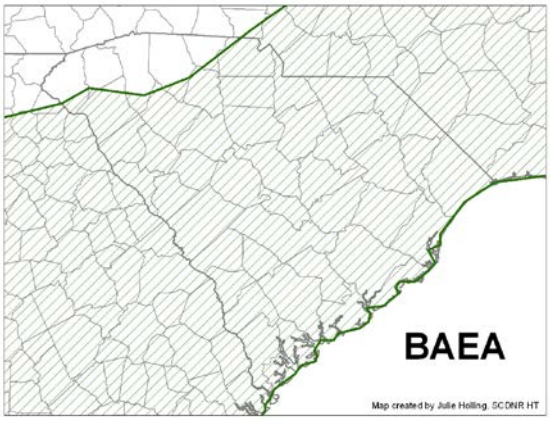
DESCRIPTION

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 3 genera, of which 8 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. Their eyes are large and yellow. Juveniles have a dark head and tail in addition to the dark body. The eyes and bill are dark but the feet and legs are like those of the adults. As the juvenile ages, its body plumage becomes mottled with white and in 4-5 years will reach adult plumage.

South Carolina's nesting population of Eagles is smaller in stature than their northern counterparts with a mean wingspan of 188 cm (6 ft., 2 in.) and a mean weight of 3.27 kg (7.14 lbs.). 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) 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 contiguous 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). The Bald Eagle was removed from the Endangered Species list in June of 2007 and receives protection by the Eagle Protection Act under the Office of Migratory Birds at the US Fish and Wildlife Service. It continues to be listed 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) (Nature Serve 2012). On September 11, 2009 a final rule was published in the Federal Register on two permit regulations that allow for take of Eagles and Eagle nests during the course of conducting otherwise lawful activities to protect human safety (USFWS). The current management guidelines and conservation measures can be found at this website: http://www.fws.gov/southeast/es/Baldeagle/.

POPULATION SIZE AND DISTRIBUTION

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 more 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 2009 the State's population had increased to 251 pairs (Figure 1).

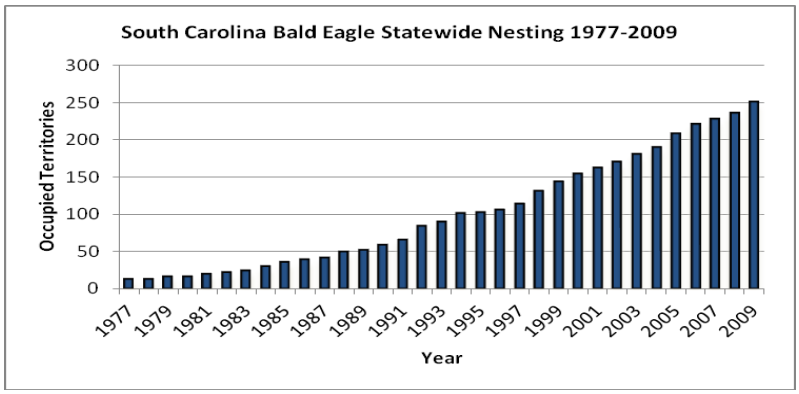


Figure 1: Nesting

Since 1979, mid-winter surveys of adult and juvenile Eagles in South Carolina have been conducted as part of a national effort. The 2009 survey resulted in 652 Eagles counted during mid-winter (Figure 2), up from 36 during the first survey.

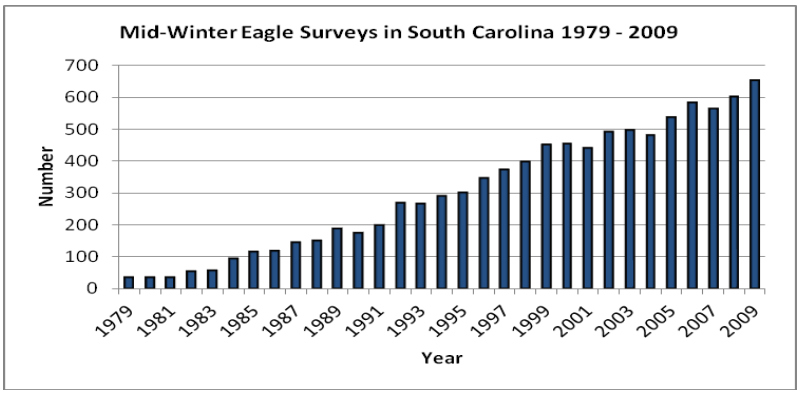


Figure 2: Surveys

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 1 km (0.62 mi.) 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 perches and roosts with minimal disturbance. Large manmade reservoirs in South Carolina have provided 240,000 ha (592,800 ac.) 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% 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%. This is undoubtedly one major reason for Eagle recovery. Additionally, since Eagles have been removed from the Endangered Species list, they lost some of the habitat protection previously afforded to the species. This may lead to habitat degradation that can make current and future nesting habitat unsuitable. Past annual monitoring of nesting territories also resulted in compliance of land management recommendations. This compliance may drop off without monitoring.

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 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% (Mulhern 1970) to less than 20% 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 powerline configurations have been developed and implemented.

Reproductive effort of South Carolina nesting Eagles was documented on an annual basis for 33 years. Additionally, fledging success of South Carolina nesting Eagles has been documented during the same period. Adult mortality rates of 12% per year have been calculated based on banded Eagles at nesting territories. These surveys ran from 1977 to 2009.

CONSERVATION RECOMMENDATIONS

- Periodic monitoring 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 powerline 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 the Clemson Institute of Environmental Toxicology, Southeastern Cooperative Wildlife Study group (UGA), and the USFWS Wildlife Health Laboratory to monitor contaminants in Eagles.
- Monitor a different portion of the state annually to keep an index of known territories so SC can participate in the federal delisting monitoring plan.
- Determine the etiology of Avian Vacuolar Myelinopathy (AVM); document the current extent of the disease; evaluate the potential for future disease; and develop management

strategies to minimize impacts. Conduct post mortem examination of fresh dead Eagles to evaluate impacts of AVM and WNV.

- Continue to ship suitable carcasses to the National Feather Repository for distribution to Native Americans.
- Monitor the causes of injury and mortality of Eagles after delisting to document effects of delisting.
- 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.

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. An indicator of success is 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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