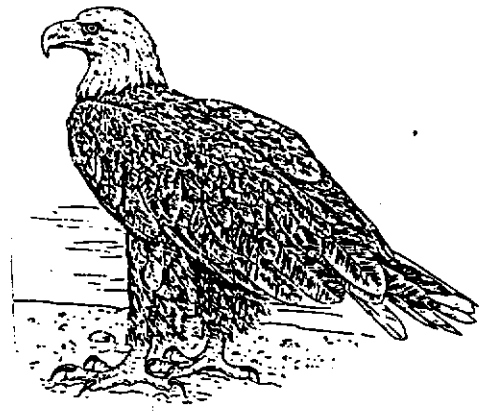
Natural Heritage & Endangered Species Program

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
Field Headquarters
Route 135
Westborough, MA 01581
(508) 792-7270, ext. 200

MASSACHUSETTS ENDANGERED SPECIES

BALD EAGLE
Haliaeetus leucocephalus (Linnaeus)

ETYMOLOGY: The genus name is of Greek origin "*haliaetos*," meaning a bird, a sea eagle; the species name is of Greek origin "*leukos*" meaning white and "*kephale*" meaning head.

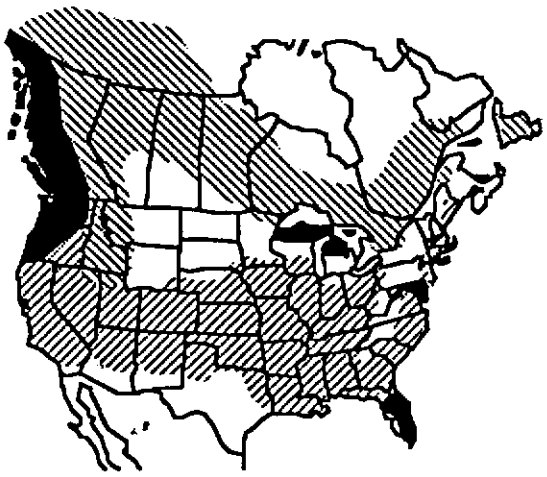


DeGraaf, Richard M. and Rudis, Deborah D. New England Wildlife. Amherst, MA:U.S. Dept. of Agriculture,. N.E. Forest Experiment Station, Technical Report NE-108, 1986.

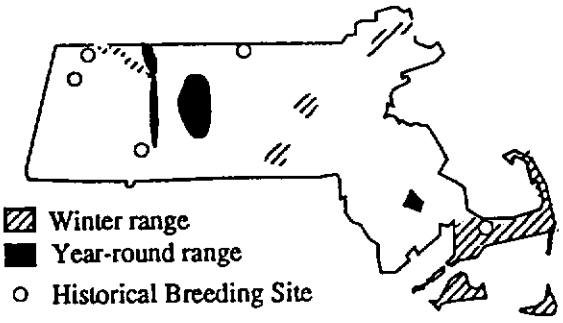
DESCRIPTION: The Bald Eagle is one of the most impressive and majestic birds in North America. It is one of eight species in the genus Haliaeetus, the "fish" or "sea" eagles, and is the only member of the genus that regularly occurs in North America. This species is one member of the family of *Accipiters*, all of which are in the order *Falconiformes*. It is also the largest raptor (bird of prey) in Massachusetts, attaining a wingspan of 2.0 to 2.2 meters (6.5 to 7.0 feet) with a body length of 0.9 meters (3.0 feet), and a weight ranging from 3.6 to 6.6 kilograms (8 to 15 lbs.) at maturity. Both sexes are similar in appearance but the females are notably larger than the males as is true with most raptor species.

Adult Bald Eagles are distinctively colored with a white head and tail, brown body, pale yellow eyes, and bright yellow beak and feet. The adult plumage is attained at 4 to 5 years of age. The plumage of immature Bald Eagles may vary considerably. Immatures go through a sequence of plumage types before reaching maturity. These plumages include a uniformly dark phase in the first year, followed by phases with various amounts of white on the belly, back, wings, tail, and head. The eye and beak color also change with age, from dark brown and blackish-gray at hatching to bright yellow in adults. In all feathered stages, the tail is rounded and the lower half of the tarsus is unfeathered.

Bald Eagles fly with heavy, deep strokes and soar on flattened wings. In silhouette, the beak, head, and neck are almost as long as the tail.



Range of Bald Eagle
- Winter Range
- Summer range
- Year-round range



- Winter range
- Year-round range
- o Historical Breeding Site

Distribution of Bald Eagle in Massachusetts

SIMILAR SPECIES IN MASSACHUSETTS: The large size and distinctive plumage of the Bald Eagle make it very easy to distinguish from all other birds in Massachusetts, with the exception of the Golden Eagle (*Aquila chrysaetos*). Both grow to approximately the same size, but the white head and tail of the adult Bald Eagle differentiates it from the Golden Eagle. Immature Bald Eagles may be confused with both the immature and the adult Golden Eagle. They can be distinguished because the adult Golden Eagle is nearly uniformly dark without any of the white mottling found on the immature Bald Eagle. Immature Golden Eagles have white wing patches and a white area at the base of the tail, which immature Bald Eagles do not have. The Golden Eagle's head and neck are shorter, rather than longer, than the tail. The Golden is feathered to the base of the leg, and the lower legs of the Bald eagle are unfeathered.

The turkey vulture is similar to an immature bald eagle in size and general coloration. At a distance, a distinction can be made by looking at the birds as they soar. Turkey vultures hold their wings somewhat upright, forming a shallow "V" when soaring and rock from side to side as they ride thermal air currents. Bald eagles hold their wings straight out from their body while soaring, with only the tips of the primary feathers curved slightly upward. Eagles do not rock from side to side as they soar, but rather make broad, sweeping circles as updrafts lift them skyward. At close range, the turkey vulture's small, featherless head which is red in adults and gray in juveniles makes identification quite simple.

RANGE: Bald Eagles occur from Alaska and Canada south throughout the United States to Florida and Baja California. In the lower 48 states, they occur sporadically over a wide area with notable seasonal concentrations in Florida, the Chesapeake Bay area, the Mississippi Valley and Pacific Northwest. In Massachusetts, occurrences are possible statewide, especially during migration in March-April and September-October; however, wanderers can appear virtually anywhere at anytime. In Massachusetts, Bald Eagles utilize the Quabbin Reservoir, part of the Connecticut River, and the Assawompsett Pond system throughout the year as both nesting and winter habitat. Bald Eagles also overwinter along the Merrimack River and along the coast of Cape Cod, Buzzard's Bay and the islands of Martha's Vineyard and Nantucket. Historically, the Bald Eagle bred throughout most of North America. Today, it is recolonizing much of its historic range where suitable habitat still exists.

HABITAT IN MASSACHUSETTS: Bald Eagles usually inhabit coastal areas, estuaries, and larger inland waters. This species requires a high amount of water-to-land edge incorporating stands of forest for nesting and trees projecting above the forest canopy for perching, an adequate supply of moderate-sized to large fish, an unimpeded view, and reasonable freedom from human disturbance. Wintering eagles require suitable roost trees for communal night roosting. In some cases these roosts may be 20 km or more from feeding areas and are in locations that are protected from the wind by vegetation or terrain, providing a more favorable thermal environment. The use of these protected sites helps minimize the energy stress encountered by wintering birds. The absence of a suitable night roost could limit the use of otherwise suitable habitat.

LIFECYCLE/BEHAVIOR: Courtship occurs in mid- to late- winter and is a spectacular sight consisting of aerial loops, cartwheels, dives, and ending with the prospective mating pair locking their talons together and diving straight down for hundreds of feet while spinning head over heels. Bald Eagles may live up to 30 years but mortality is relatively high in the immature age classes. They mate for life, but if one of a pair dies or is killed, the other will actively court another mate. Sexual maturity is reached at four to six years of age, but the birds may be considerably older before they breed for the first time.

The breeding and nesting season for Bald Eagles in Massachusetts begins in March. After courtship, the mated pair builds a large nest made with sticks and lined with sprigs of pine, grasses, and other soft materials. The male eagle collects the nest material and delivers it to his mate, who is responsible for most of the actual nest construction. Once the nesting site is chosen, the mated pair will return every year to the same site and add to the existing structure. The nests are located in hardwoods or conifers from 9 to 37 meters (30 to 120 feet) above the ground and may measure up to 3.6 meters (12 feet) high and 2.6 meters (8.5 feet) wide, with a weight of hundreds of pounds. Trees selected (also for roosting and sometimes perching) are typically older trees , taller than their surroundings. Ideally, the nest lies below the top of the crown in a live tree, where the young are sheltered above from the elements and the parent birds have adequate aerial access generally from the direction of the nearest water.

The female Bald Eagle lays one to three (two average) dull white eggs several days apart, usually by in late March or early April. The eggs are incubated (mostly by the female) for approximately 35 days until hatching. The eggs do not hatch at the same time, giving the first hatchling a significant advantage over its siblings.

Competition for food is intense, and if the adult eagles are not able to provide enough for all of their young, the older chick will take advantage of its greater strength and size to seize most of the food provided by the parents, causing its younger siblings to starve. This behavior increases the probability that at least one chick will survive. Young eaglets grow rapidly and may eat up to two pounds of fish per day. Ten weeks after hatching, they begin to make short flights from the nest, spending much time with the parent birds observing the adults as they catch and find food. By late fall the adults will no longer care for their young and the chicks begin life on their own. The entire breeding cycle, from nest construction to fledging of young, last six months. Most Bald Eagles appear to nest within 200 miles of where they hatched.

When available, fish (both marine and freshwater) is the Bald Eagle's preferred food. Fish may be captured by swooping from a perch or by coursing low over the water and dropping straight down when a fish is spotted. An eagle may plunge into the water to capture fish and may also steal fish from an osprey by harassing it until it drops its catch so the eagle can seize it. Prey too large to carry may be dragged to shore. Birds, especially waterfowl, are sometimes taken by bursting into a large flock and pursuing a straggler until it tires and can be captured. Bald Eagles also take crippled waterfowl and seabirds, small mammals and carrion, particularly dead fish.

In winter, eagles of all ages gather in large numbers in areas with open water where fish or other food sources are abundant. This "social grouping" is believed to facilitate locating and acquiring food and may possibly aid in establishing or maintaining pair bonds.

POPULATION STATUS IN MASSACHUSETTS: The history of the Bald Eagle is one of contradictions. On the one hand, its noble image has been portrayed on public documents, coin, currency, etc. as our nation's symbol since 1782 making it one of the most well-known creatures on earth. While on the other hand, its environment has been reduced and degraded, and the bird itself treated as vermin throughout North America for a century. As a direct result of mortality from deliberate killing by people incorrectly believing that the eagles killed livestock and drastic habitat changes (forest clearing and agriculture) as the human population increased, the Bald Eagle decreased in numbers in much of its range for many years. From 1917 to 1940 in Alaska alone where a bounty was placed on the Bald Eagle, at least 100,000 Bald Eagles are believed to have been killed. In the 20th century, the occurrence of man-made chemicals and pollutants in the environment is implicated in death, increased susceptibility to death, and diminished reproductive success. DDT and its metabolites, as well as other organochlorines, are well documented as causing eggshell thinning, breakage, and toxicity. One indirect chemical effect that is occurring is the phenomenon known as acid rain. Hundreds of Northern Hemisphere lakes have become so acidic that they no longer support viable fish populations. Lakes throughout New England, and the northern regions of Minnesota, Wisconsin and Michigan are considered most vulnerable to acidification. Early indications are that until the problem of acidification of lakes is addressed successfully, the future is uncertain for the aquatic-based biota on which the eagle is dependent in certain parts of its range. Additional disturbance has resulted from the growing human population, including a great increase in outdoor recreation and use of waterside areas, and timber cutting as well as continued shooting.

From 1982 to 1988, forty-one young Bald Eagles from Michigan and Canada were relocated to Quabbin Reservoir in Massachusetts. As a result of these efforts, Bald Eagles were confirmed as successfully breeding in the state in 1989, after an absence of more than 80 years. As of 1995, eight pairs of Bald Eagles have bred, producing a total of 52 wild young. Recovery efforts in many other states have also been successful. During the 1995 midwinter Bald Eagle survey in Massachusetts, 63 Bald Eagles were counted: Quabbin Reservoir(39), Merrimack River(9), Connecticut River(9), Wachusett Reservoir(2), Lake Assawompsett(2), and outer Cape Cod(2). To date, there are 9 pairs of Bald Eagles nesting in the state: Quabbin Reservoir(5), Connecticut River(3), and Plymouth County (1). Although the Bald Eagle is protected by the Migratory Bird Treat Act (1913), the Bald Eagle Act (1940; full protection except in Alaska; strengthened 1971), and the Endangered Species Act (1966), on February 14, 1978, its recognized status had become such that is was officially listed at the Federal level as Endangered in 43 of the lower 48 states and as Threatened in 5 others (MI, MN, OR, WI, & WA). The Federal status of the Bald Eagle was changed from Endangered status to Threatened status in 1995.

MANAGEMENT RECOMMENDATIONS: Critical to the survival of the Bald Eagle is the preservation and protection of its wetland habitat and maintaining the integrity of its known breeding, roosting, and wintering areas. In addition to these protection measures, preservation of its habitat along its migratory routes is also of great importance. In order to keep present populations secure, continued monitoring on both the state and regional level of eagle population growth and changes is also of utmost importance. Every effort should be made to eliminate human

disturbance in nesting and wintering areas through increased public education/ awareness of its detrimental effects on eagle populations. The Bald Eagle is still persecuted by wanton shooting and stepped-up law enforcement of laws presently in place protecting this species is needed to eliminate senseless killing. Lastly, identification and elimination of contaminant problems such as lead, mercury poisoning, indiscriminate poisons set for mammals, pesticides, acid rain, etc. must be closely monitored. With continued sound management and increased public awareness, the future of the Bald Eagle looks bright and promising and may truly be conservation's great success story.

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1995

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