Liberty Wildlife
Rehabilitation Foundation

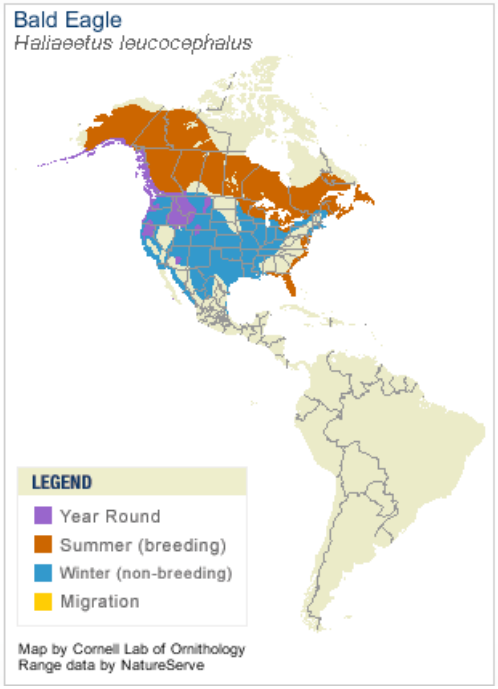
Liberty Wildlife

Education Program's Natural History

Bald Eagle

Bald Eagle (Haliaeetus leucocephalus)

Range: The Bald Eagle is found only in North America from Alaska through Canada and the United States to Northern Mexico. The northern populations migrate to the southern range during the winter. The world population of Bald Eagles is estimated to be 100,000 with over half that number found in Alaska (Hawk Mountain; U.S. Fish & Wildlife Service). In 2007, biologists documented nearly 10,000 nesting pairs in the lower 48 contiguous states (U.S. Fish & Wildlife Service).



Habitat: The Bald Eagle requires a habitat that provides an adequate supply of moderate-size to large fish; a nesting site usually of large trees within several miles of water; and a reasonable degree of freedom from nesting site disturbances by humans.

Description: On average the Bald Eagle measures from 28 to 38 inches and weighs from 7 to 14 pounds. The wingspan measures from 6 to 7½ feet. The males will be at lower end of these measurements while the females, which can be 25% larger, will be at the top end. Size will also depend on the location. Bald Eagles living in the colder northern limits of their range will be larger than those living in warmer climates.

The Bald Eagle's plumage is quite variable depending on the age of the bird and the sequence of the molt. The adult Bald Eagle's plumage is unmistakable: evenly dark brown with the distinctive white head and tail, yellow iris, legs and beak. The legs are unfeathered. Adult

plumage is typically acquired after the 5th year and occasionally after the 4th year. Immature Bald Eagles, ages 1-4½, have brown plumage with various degrees of white streaks and a brown to yellowish brown beak based upon their age.
In their first year, most individuals are dark brown with a dark beak, dark eyes, white auxiliary (armpit) patches, isolated white body and wing feathers, and whitish markings on the upper side of their tail. The underside of their tail is usually whitish with dark edges and a wide, dark terminal band.


Bald Eagle fledgling, 1 day out of the nest. Florida, March.

In their second year, most eagles have a whitish belly, a whitish triangle on their back, a wide, whitish line over their eyes, and a grayish beak.
In their third year, the crown and throat are whitish in contrast to a dark eyeline, the beak is pale yellow, and the eyes are whitish or yellow.
By their fourth year some Bald Eagles resemble adults. Many, however, have whitish heads with a dark eye stripe, and some have white spots on their bodies and wings.
A year later in their first adult plumage, a few individuals retain a trace of an eye stripe, and have some black on the tips of their tail feathers. (Hawk Mountain)
Immature Bald Eagles are often confused with Golden Eagles.


Immature Bald Eagle (Sub-adult I), Utah, January

The Bald Eagle is a highly vocal raptor issuing shrill, high pitched calls and twittering. One biologist described the call saying "It cannot fittingly be called a scream, but is rather a snickering laugh expressive of imbecile derision, rather than anything else" (Cornell). Often the cry is issued with the head tossed back. The male's calls are higher pitched than the female's. The call can be heard at the following sites:
http://www.youtube.com/watch?v=hlq2kcYQcLc
http://soundbible.com/604-Bald-Eagle-Call.html
http://ngm.nationalgeographic.com/ngm/0207/sights_n_sounds/media2.html

Hunting/Prey: The Bald Eagle hunts from either a perch or soaring position. They may perch on a large exposed branch for hours to conserve energy, awaiting a feeding opportunity. From a dive it will go into a shallow glide and grasp the fish or other prey, using its large back talon to pierce vital organs and killing it almost immediately. Most sources limit its lifting power to between 3 and 4 pounds, indicating it can carry heavier prey only short distances (Bald Eagle Information). Another source estimated the eagle capable of carrying about one-half its

weight: 3-7 pounds (Palmer, 1988a). It may also wade into shallow water to capture prey or take food from other birds, particularly the osprey.
The Bald Eagle is an opportunist forager favoring fish (alive or dead) as its primary food. Waterfowl (particularly coots) and other birds and mammals such as hares, rabbits and rats are a secondary source of food. In some studies, carrion (fish, road kill, and dead livestock) was found to be as much as 12% of its annual diet (Johnsgard).
View Bald Eagles hunting: http://www.youtube.com/watch?v=4rq4X5NGUVI

Breeding/Nesting: Breeding and nest building periods vary with range locations. Nest building generally begins 1 to 3 months prior to egg-laying. Arizona birds may begin laying eggs in December but most do not begin until January or February. Farther north, the Bald Eagles will begin nesting in March and April. Typically the Bald Eagle begins to breed at 4 to 5 years of age. Breeding may occur at younger age in areas where the eagle population is growing. Where the population is established, only older birds breed (Wheeler).
Pairs typically remain together until one dies. Both sexes build or refurbish each year the large stick nest which they line with greenery. Nests are typically in the highest tree and near water. They favor large conifers or cottonwoods depending upon the availability. Ground nests may be built on islands where there are no terrestrial predators. Often the eagles will build alternate nests in their established territory. New nests may be 1 to 3 feet deep and 3 to 6 feet in diameter. Older nests can be up to 12 feet deep and 8½ feet in diameter and weigh more than two tons (Wheeler; Hawk Mountain).
Typically the pair will produce only 1 brood each season. In the southern range, a replacement clutch is possible if eggs are taken or destroyed during incubation (Cornell). Females lay a clutch of one to four eggs, but usually two that are laid two to four days apart; sometimes as much as several weeks apart (Johnsgard).
Incubation is estimated at 34 to 35 days. Both sexes will participate in the incubation. It is not uncommon for the younger chick not to survive, either because the older one will kill it or it will starve because the older one claims more food. The young remain in the nest from 10 to 12 weeks before fledging (Johnsgard; Wheeler). Both sexes provide food to the young, with the male providing the majority. The adult tears a piece of food from the prey and offers it to the young from her beak. The young grow quickly, adding about a pound of weight every four or five days. At six weeks, the eaglets are almost as large as their parents. Their appetites are the greatest at eight weeks. After fledging, the young may stay by the nest until the first winter and be fed by the parents.

Lifespan: In the wild, the longest living Bald Eagle was recorded as 28 years and in captivity, 36 years (Cornell). Another source indicated the oldest Bald Eagle in captivity was 48 years old (Terres 1980). Most sources record the average lifespan to be either between 15 and 20 years or between 20 and 30 years in the wild and longer in captivity.

Threats: Humans either directly or indirectly represent the single greatest cause of mortality. (Cornell Some of the main threats are: impact with wires or vehicles or structures, gunshots, electrocution, lead poisoning from ingested bullet fragments and pellets in carcasses of game animals not retrieved by hunters (three pellets can kill an eagle), poisoning meant for varmints, disease, starvation, and possibly drowning or dying of hypothermia in the water.). A 1985 study reported that between 1963 and 1984, shooting, trapping and intentional or accidental poisoning was the leading cause of death (38% of mortalities) even though prohibited by law. Nestlings may be killed by Bobcats, Great Horned Owls and Raccoons. Fledglings on the ground may be killed by wolves or coyotes.

Bald Eagle numbers in the U.S. were estimated to be between 300,000 and 500,000 in the 1700's. With the coming of settlers, the eagle numbers began to decline through loss of habitat and nest disturbance. Bald Eagles were shot, trapped and poisoned by settlers because of their perceived threat to livestock and game. Between 1917 and 1952, over 128,000 bounties were paid in Alaska because Bald Eagles were thought to impact the salmon fishing. A subsequent study showed the Bald Eagle's impact was negligible. By the 1930's people became aware of the declining population in the contiguous 48 states, which resulted in the passage of the Bald Eagle Act in 1940. The Act (amended in 1962 to include the Golden Eagle) prohibited the killing, selling, or possessing the species. With its passage, the Bald Eagle population began to recover. At about the same time, the eagles began to experience the effect of the widespread use of DDT. The DDT washed into waterways and was absorbed by the fish. Consequently, the Bald Eagles which ate the fish became infected with the poison. Although the poison was not lethal to the eagles themselves, it caused a thinning of the eggshells which were often broken during incubation resulting in a decline in the population. In 1967, the Secretary of the Interior listed the Bald Eagle south of the 40th parallel under the Endangered Species Preservation Act of 1966. This act was strengthened to the current Endangered Species Act in 1973. Under this act, The Bald Eagle was listed as endangered throughout the lower 48 states, except for Michigan, Minnesota, Oregon, Washington, and Wisconsin where it was designated as threatened. Despite these laws, as late as 1970, it was reported that in Wyoming over 700 Bald Eagles were shot for which shooters were paid $25 for each carcass. The eagles were thought to predate on livestock.

In 1972, the use of DDT was banned in the United States. In 1995, with an increase in the eagle population, the Bald Eagle was reclassified from "endangered" to "threatened" in the lower 48 states. In June 2007, the Interior Department removed the Bald Eagle from the endangered species list. However, in 2008 a Federal district court in Phoenix halted the removal of the desert Sonoran Bald Eagle from the list until a study was completed to determine if the Sonoran Bald Eagle is a separate subspecies.

Other Bald Eagle Facts:

- The Bald Eagle's Latin name **Haliaeetus Leucocephalus** translate**s** to "white head sea eagle."
- The Bald Eagle's name "bald" is derived from one of several possible Old English words, "balde" or "piebald" or "bald" which meant "white" or "shining white" thus; when the English settlers arrived in this country, they called this white-headed eagle the Bald Eagle.

- There are two recognized subspecies of the Bald Eagle:
    - Haliaeetus Leucocephalus leucocephalus generally found in the southern United States below the 40º north latitude;
    - Haliaeetus Leucocephalus alascanus found in the northern United States, Canada and Alaska north of the 40º north latitude. The two subspecies will integrate in the central and northern states.
- Although no longer listed as endangered, the Bald Eagle continues to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.
- Shortly after signing the Declaration of Independence in 1776, the Continental Congress appointed Thomas Jefferson, John Adams and Benjamin Franklin to select a design for an official national seal. One of the first proposals included a golden eagle. After six years, several more committee reports and lots of disagreement, Congress assigned the task of developing the seal to its Secretary, Charles Thomson. Thomson created a new design in which he replaced the golden eagle with the American bald eagle on June 20, 1782. Congress approved it on the same day. His drawing remains the basis for today's seal containing the American bald eagle. For several years after its adoption, Benjamin Franklin still questioned the wisdom of including the Bald Eagle on the seal, writing to his daughter in 1784: "*He [the Bald Eagle] is a bird of bad moral character; he does not get his living honestly. You may have seen him perched in some dead tree where, too lazy to fish for himself, he watches the labor of the fishing hawk and, when that diligent bird has at length taken a fish and is bearing it to his nest for his young ones, the bald eagle pursues him and takes the fish. With all this injustice, he is never in good case*." Franklin argued that the turkey would be a better symbol: "*a much more respectable bird and a true native of America*" while conceding the turkey was "*a little vain and silly [but] a Bird of Cou*rage." Congress was never convinced.

- The largest number of Bald Eagles will be found in Alaska and Canada. The largest concentration of Bald Eagles can be found in the Chilkat Valley (Chilkat Bald Eagle Preserve) in Alaska where up to 3,500 eagles will feed on salmon during the fall and winter.
- The Bald Eagle has the largest amount of research and literature of any raptor in North America, and perhaps in the world. (Johnsgard)
- There are several ways to distinguish an immature Bald Eagle from a Golden Eagle: In flight, an eagle with dark wing linings and no white on the head is probably a Golden Eagle; Perched: A Golden Eagle's legs are entirely feathered while an immature Bald Eagle's lower legs are bare.
- The Bald Eagle is more closely related to kites than to the Golden Eagle. In turn, the Golden Eagle is more closely related to hawks like the Red-tailed Hawk than to the Bald Eagle.
- An eagle can exert upwards of 300 - 400 pounds per square inch with its closed talons; about 10 times stronger than the grip of an adult human hand. (Hawk Quest)
- The eagle's nest is called an aerie.
- The largest recorded Bald Eagle nest was found in St. Petersburg, Florida and measured 9½ feet wide and 20 feet high and weighed more than two tons. (National Geographic; Cornell)
- A nest site in Vermillion, Ohio was used annually for 34 years until the tree blew down. The nest was estimated to weigh over 2 tons (Cornell).

- If a Bald Eagle grasps a fish too large to take from the water, it uses its wings to swim to shore. Although they are very strong swimmers, they may suffer hypothermia from the cold water or drown.
- The Bald Eagle has over 7,000 feathers which weigh about 1½ pounds (700 grams). Thirty per cent (30%) of these feathers are found on the head. The feathers weigh more than twice its skeleton at about 12 ounces (250 – 300 grams). The skeleton is only 5 or 6% of the eagle's total weight. (Brodkorb 1955; Bald Eagle Information).
- The Bald Eagle's vision allows it to see fish a mile away (National Geographic).
- Contrary to the 2007 PowerPoint presentation entitled "The Rebirth of the Eagle" or "The Eagle Story," the eagle cannot extend its life another 30 - 40 years by flying to a mountain, and over a 5 month period of time being reborn after removing its beak and plucking out its talons and feathers. This is a well circulated myth (www.snopes.com). The presentation can be viewed at http://www.slideshare.net/targetseo/rebirth-of-the-eagle-photo-presentation
- Hawaii is the only state in the United States that does not have a Bald Eagle population.
- Typically during a level flight, the Bald Eagle will fly at between 30 and 35 miles per hour. However, in a dive, it can attain a speed of 100 m.p.h. (Bald Eagle Information, National Geographic)
- The Bald Eagle's call heard in movies or on television is usually is that of a red-tailed hawk since the Bald Eagle's cry in not particularly regal in sound.
- In 1986, the U.S. Supreme Court's held that Native Americans must abide by the Bald Eagle protective laws. The U.S. Fish and Wildlife Services since the 1970's has collected eagle body parts and feathers from eagles that have been found dead in the wild, illegally killed or confiscated and eagles in rehabilitation facilities and zoos. These items are stored at the National Eagle Repository in Commerce City, Colorado. Native American tribes can requests these parts for their ceremonial uses. Annually, the Repository receives about 900 Bald and Golden Eagle carcasses for distribution (Wheeler).

Bald Eagles roosting in the Alaska Chilkat Eagle Preserve

Updates:

Flurry Of Eagles

Arizona population increases, but protection debate persists

Photo by DJ Craig.

By Pete Aleshire

As of Friday, November 15, 2013

As volunteers and biologists labor to safeguard Arizona's population of bald eagles, the legal battles about their future continue.

The Arizona Game and Fish Department reports that an increasing number of bald eagles have established territories in and around Rim Country, including nesting territories on several Rim lakes along Tonto Creek and the Verde River. Biologists hope that the eagles will establish nesting territories on other high country lakes, Fossil Creek and additional stretches of Tonto Creek and the Verde River.

This year, Game and Fish posted nestwatchers at 10 or 15 breeding areas with heavy recreational traffic. Studies suggest that since 1983 the nestwatchers have saved at least one chick annually, increasing production by about 7 percent — a significant edge for a small population.

For instance, the nestwatchers found a 4-year-old eagle at Canyon Lake with a broken wing. Biologists captured the bird and took it to Liberty Wildlife Rehabilitation in Scottsdale, which tended to the bird until they could release it back into the wild. Tags showed that the eagle had hatched in 2008 from a nest on the Lower Verde River.

Arizona has two populations of eagles — one migratory, one local. Large numbers of migrating bald eagles pass through the state every fall and spring. Many of those birds nest in Canada, Alaska and elsewhere during the spring and summer, where they take advantage of big rivers teaming with fish. They then migrate south during the harsh winters.

However, a small population of eagles nests in Arizona, mostly along rivers and lakes where they can build nests in cliff faces — or sometimes cottonwood trees. These eagles lay eggs in February, hatch their young in the early spring then feed them in the nest on into the summer. The young eventually leave the nest and take to wandering. However, after four or five years, the young eagles return to the general area where they were born to look for mates and a nesting territory of their own. This population of young, Arizona born eagles has steadily expanded the number of nesting pairs. Apparently, very few of the non-Arizona migratory eagles ever establish nesting territories here.

Photo by DJ Craig

In 2013, three additional pairs of Arizona-born eagles set up housekeeping locally, bringing the number of breeding pairs in the state to a record 68.

Nonetheless, a legal battle continues centered on the U.S. Fish and Wildlife's decision to take the desert-nesting bald eagles off the endangered species list along with bald eagles nationally.

The Tonto Apache Tribe, the San Carlos Apache Tribe, several other tribes, the Centers for Biological Diversity and the Maricopa Audubon Society have all opposed that decision tenaciously, with repeated appeals.

The eagle advocates maintain that the desert-nesting eagles should retain protection since they're a separate population with distinct adaptations whose local extinction would create a gap in the range of the bald eagles overall.

Federal court judges have upheld those complaints several times, ruling that the Fish and Wildlife Service repeatedly ignored its own rules in concluding that the Arizona eagles weren't a distinct population, didn't fill a significant gap in the range of the eagles and weren't in danger of extinction locally.

The Fish and Wildlife Service eventually succeeded in satisfying a federal court judge that it had followed all the correct procedures to take the Arizona eagles off the endangered species list. Both bald eagles and golden eagles remain protected from killing and harassment under federal laws besides the endangered species act. However, the endangered species act gives federal officials the ability to protect the habitat of an endangered species, as well as the animals themselves. That's a crucial extra level of protection, say advocates, since the bald eagles rely on riparian areas — one of the most endangered types of habitat in the state.

The Centers for Biological Diversity and Maricopa Audubon have filed a fresh complaint seeking to overturn that decision and continue to file information in support of their civil suit seeking to force the federal government to put the Arizona eagles back on the list.

The latest filings include numerous memos and reports obtained from the U.S. Fish and Wildlife Service.

Generally, those memos and e-mails demonstrate that Arizona-based federal biologists and wildlife repeatedly concluded that the desert nesting bald eagles do constitute an endangered population under the terms of the endangered species act. The biologists concluded that the somewhat smaller Arizona eagles have adapted to their difficult environment. They bear their young earlier and nest more often on cliff faces rather than big trees, when compared to eagles elsewhere. Moreover,

those adaptations could prove important to the larger population in the future if a warming climate changes conditions.

However, officials in the regional and national office of the U.S. Fish and Wildlife Service repeatedly overruled the recommendations of the local federal biologists, despite the repeated court orders directing the agency to go through the procedures again.

Agency e-mails entered into the court record showed that higher level officials repeatedly directed the on-the-scene experts to submit a report that would support the apparently pre-determined decision to drop the Arizona eagles from the list.

Lady Liberty "Libby"

Libby was a year old when she was found on the ground in Minnesota in 1989 with part of her left wing damaged by an apparent gunshot. Authorities there transported her to the Minnesota Raptor Center at the University of Minnesota. For two years the facility's staff attempted to repair Libby's wing to give her full flight. After several surgeries, they determined that Libby could not be returned to the wild. In 1991, she was placed with Liberty Wildlife where Joe Miller began working with her in an effort to have her become part of Liberty's Education Program. After just weeks, Libby was already eating on the glove for Joe. Within months, she gained the confidence and trust in her trainer to became an integral part of the Education Program. To give Libby greater public appearances than just he can provide, Joe selects experienced volunteers and works with them to gain Libby's trust so they may also present her to programs. Now she travels throughout the state with one of her handlers to such events as Game and Fish's Eagle Appreciation events and Eagle Scout ceremonies.

Sonora

Sonora

In the spring of 2007 still not able to fledge, Sonora and a nest mate were attacked in the nest by a swarm of killer bees. Sonora escaped from the nest and fell to the ground, breaking her wing. Her nest mate did not survive the attack. Sonora was transported by Arizona Game and Fish to Liberty Wildlife. After a thorough examination and rehabilitation, Sonora regained the use of her injured wing, but not sufficiently to ensure her ability to hunt successfully. Arizona Game and Fish concurred that Sonora's impairment classified her as non-releasable and she was placed with Liberty Wildlife. Since that time, Sonora has become part of Liberty's nascent flight program in which she has dazzled stunned audiences with the majesty of her flight and regal presence.

Aurora

Aurora

Aurora was the only one of three eaglets from a nest in Wisconsin that fledged. While in the nest, a stick punctured her left eye. She fell from the nest and was not fed by her parents for four days. She was rescued by nest watchers on July 8, 2002 and transported to Wind River Wildlife Rehabilitation Center. As a result of Aurora's loss of vision in her left eye, she was unable to develop the necessary depth perception to survive in the wild and was transferred to rehabilitator Randie Segal. In 2011 because of health issues, Randie brought Aurora to Liberty and transferred her permit to Liberty where she has become a favorite at Boy Scouts' Eagle Courts of Honor, parades, and civic events.

Laddie (photo pending)

A member of the Arizona Game and Fish transported Laddie to Liberty Wildlife in early 2013 with a wing injury. The nest watchers who had been assigned to Laddie's nest, reported that the adult Bald Eagles had chased a Golden Eagle from their nesting area. However, the intruder circled around and grabbed the 4-week-old Laddie from the nest but could not carry her and dropped her through the nest tree. In the fall, Laddie's left radius was broken and the ulna suffered approximately 15 breaks. The wing was pinned and splinted. The bones mended extremely well, however, Laddie suffered some nerve damage to the wing and the feathers grew in leaving a gap in the wing, both which limited her flight ability. With her non-releasable status, Laddie became a valuable part of Liberty's education program.

Paco (photo pending)

Paco was transported as a nestling to Liberty Wildlife by a member of the Arizona Game and Fish in April 2014. He had been blown from his nest near Horseshoe Lake. In the fall, he suffered a fractured left wing near the elbow and was experiencing internal bleeding. Once his medical situation stabilized, surgery was undertaken to repair the wing. The fracture healed but due to its location, Paco could not fully extend his wing and was determined to be non-releasable.

Compiled by Max Bessler

Sources: Cornell Lab of Ornithology "Birds of North America On-Line," Cornell Lab of Ornithology "All About Birds," The Audubon Society Encyclopedia of North American Birds by John Terres, The Peregrine Fund, University of Michigan "Museum of Zoology, U.S. Fish and Wildlife Service, Hawk Watch International, The Raptor Center, National Geographic, Bald Eagle Information Center, Defenders of Wildlife, Discovery Channel, Alaska Department of Fish and Game, Arizona Department of Game and Fish, Raptors of Western North America by Brian K. Wheeler