

ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract

Element Code: ABNKC10010
Data Sensitivity: Yes

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Haliaeetus leucocephalus* Linnaeus
COMMON NAME: Bald Eagle; American Eagle, White-headed Eagle, White-headed Sea Eagle, Black Eagle, Fishing Eagle, Washington Eagle
SYNONYMS: *Falco leucocephalus* Linnaeus
FAMILY: Accipitridae

AUTHOR, PLACE OF PUBLICATION: Linnaeus, Syst. Nat., ed. 12, vol. 1, 1766, p. 124.
Based on The Bald Eagle, *Aquila capitae alba* Catesby, Carolina, vol. 1, p. 1.

TYPE LOCALITY: "in America, Europa = South Carolina."

TYPE SPECIMEN: USNM 151567 (adult male). C.H. Townsend, 22 Jun 1895. Unalaska Island (=Aleutian Islands), Aleutians West Census Area, Alaska, United States. In Proc. Biol. Soc. Washington 11: 145. June 9, 1897.

TAXONOMIC UNIQUENESS: Currently in the Accipitridae family, there are 217 species world-wide, 20 are found in the western world. These include kites, eagles, buteos, accipiters, and harriers. *Haliaeetus leucocephalus*, the Bald Eagle, is one of 3 species making up the genus *Haliaeetus*, and 1 of 4 species comprising the subfamily Accipitrinae. It is the only species in this subfamily that is indigenous to North America (Peterson 1990).

DESCRIPTION: The Bald Eagle is a unique species in that it has five distinct plumage phases; Immature, White-belly I, White-belly II, Adult transition, and Adult (Clark and Wheeler 1987). The names of these phases may vary in the literature, but the number of phases will not. It should be noted that sexes are alike in all plumages.

Natal downs (first 3 weeks): The down is short with hairlike structures among the down and is off-white in color. Eventually the color turns grayish, but white basally. It is dense and is like sheared wool. Feathers first begin to appear on the shoulders, then the head, followed by the lateral underparts, and finally the upper tarsus.

Immature: In the first full plumage, head is uniform dark brown. Beak and cere are dark, and the color of the iris is dark brown. The back and upper wing coverts are tawny brown and contrast with dark flight feathers. White axillary spots and diagonal white lines are present on underwings. The breast is dark brown, while the belly is pale to dark tawny. Some individuals may have white streaking, usually where breast and belly meet. The tail is longer than in subsequent plumage's, is broadly rounded, and is sometimes dark, but mostly dirty white.

White-belly I (Basic I Plumage): This phase usually occurs in the first spring when the bird is around 1 year of age. The head is brown, and has a buffy superciliary line, contrasting with a dark brown band extending through the eye and posteriorly. The iris lightens to a light brown or amber, and the beak and cere fade to a slaty color (grading to a yellowish buff next to cere). The belly is white with few to many short dark streaks, while the breast is darker forming a distinct bib. Some white feathers appear on the upper wing coverts and back. The upper back

has a whitish or buffy brown inverted triangle on an otherwise dark dorsum. New flight feathers have more whitish areas, while new whitish secondaries have dark tips. The legs and feet are yellow, while the talons are black.

White-belly II (Basic II Plumage): This phase occurs when the bird is 2 years of age. This phase is similar to the 1 year old phase, however, the superciliary line is larger and whitish, while the dark band behind the eye is narrower. Cheeks and throat are whitish, and the crown is a palish gray-brown. The color of the iris is pale whitish yellow, the cere is yellowish, and the beak has lightened to a horn-color (darkish gray) with a few dirty yellow spots. The dorsum tends to darken, and the inverted light triangle is less prominent. The bib on the upper breast remains distinct (usually). All but 2-3 immature secondaries have been replaced by shorter feathers, while the wing is now narrower than in the immature and white-belly I phases; upperwing coverts are usually all brown, and the wing lining is more or less white.

Adult Transition (Basic III Plumage): This plumage is acquired at 3 years of age, and is highly variable. The head lightens and the body darkens from the white-belly I phase. Individuals usually acquires an osprey-like dark eye-line. The white on the head does not extend onto the neck, as it does on adult birds; brown flecking does occur on the forehead and crown of the head. The iris is pale yellow in color, and the cere and beak are yellow with dark smudges on beak; the cere may be mottled darkish-yellow. White spots and white diagonal lines on underwings fades. The body feathering is dark brown, but may still have a hint of a lighter inverted triangle on the back. The subadult tail is retained until the spring of the fifth year (4 years of age), and is largely white with some brown flecking proximally, with the brown becoming heavily mottled toward the tips. The legs and feet are yellow, and the talons are black.

Adult (Basic V Plumage): Plumage is acquired at 4 years of age. Head and neck is white, sometimes with a few brown spots or gray flecking around eyes (even in older birds). Beak and cere are bright yellow, and the iris is pale lemon-yellow. Body, wing coverts, and flight feathers are dark brown. The tail coverts and tail are white. Although the female is larger than the male, the average body measurements for both sexes are as follows:

Length: 70-90 cm (79); 27-35 in (31)
Wingspread: 180-225 cm (203); 71-89 in (80)
Weight: 2.0-6.2 kg (4.3); 4.4-13.6 lb (9.5)

AIDS TO IDENTIFICATION: The Bald Eagle is most similar to the Golden Eagle (*Aquila chrysaetos*), however, there are differences. The head of the Bald Eagle protrudes from the body in flight, more than half the tail length, while the head of a Golden Eagle protrudes less than half a tail length. The trailing edge of the wing is straighter on bald eagles. Immature and subadult Golden Eagles have white on the underwing, restricted to the base of the flight feathers; while the white on the Bald Eagles is restricted to the underwing coverts and axillars. Another difference is that perched Golden Eagles show the golden nape, yellow cere and bicolored beak, while the Bald Eagles have the cere and beak uniformly colored and no golden nape present. In addition, the tarsi of the Bald Eagles are bare, while the Golden Eagles' tarsi is completely covered with buffy feathers.

ILLUSTRATIONS:

Color drawing (Clark and Wheeler 1987)
B&W photos (Clark and Wheeler 1987:150-151)
B&W drawings (Palmer editor 1988:187, 216)
Color drawing (Peterson 1990:181, 189)

Color drawings (Scott 1987:185, 209)
Color photos (Terres 1980:503-504)
Color photos (Digibird web site, www.digibird.com)
Map of Distribution (Buehler 2000: 01)

TOTAL RANGE: Restricted to North America, mainly Canada and the United States of America. It is believed to occur in two populations, the first being the northern population, which are those individuals occurring north of the 40th parallel North Latitude. The southern population are those individuals found south of that latitude (Hildebrandt 1981). It is locally common during the breeding season in Florida; the Chesapeake Bay; Coastal Main through the Maritime Provinces; Great Lakes; the boreal lake region from Western Ontario to coastal British Columbia; most of Alaska, especially the south eastern coast; Washington south to northern California; and the greater Yellowstone areas of Western Wyoming, south-central Montana, and Eastern Idaho. Small local breeding populations exist along the Gulf Coast of Texas and Louisiana, coastal South Carolina, along the Mississippi River, in central Arizona, and in Baja California, Mexico. Large winter concentrations have been noted along Chilkat River in Alaska, in Klamath Basin in Oregon, and along the upper Mississippi River.

According to Larry A. Forbis (Date?), the southwest distribution of this bird includes central Arizona, west-central New Mexico, Baja Peninsula on Isla Cresciente near Almejao Bay, Mexico, and up the coast near Las Tinajas. They also have been found in Sonora, Mexico.

RANGE WITHIN ARIZONA: Historically, bald eagles nested on the Mogollon Rim at Stoneman Lake, Mormon Lake, and Lake Mary, however, no breeding currently occurs there (mainly wintering populations). A small resident population can be found in Central Arizona, while a wintering population of bald eagles is found in both Central and Northern Arizona. Territories and nesting localities have occurred in the Bill Williams River Drainage, upper and lower Verde and Salt Rivers (including winter and non-breeding sightings on the Black River, and on Cherry Creek), Roosevelt Lake, Gila River (only when favorable conditions are available), Colorado River (sporadically observed wintering individuals), and the Mogollon Rim and White Mountain Lakes (Tibbits, Cross, and Ward 1990).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Female Bald eagles are slightly larger than males (79-90 inch wing span versus 72-85). Northern birds are larger than southern birds. Bald eagles can live as long as thirty years, but average closer to fifteen to twenty. They become sexually mature at four to five years of age. Once paired, bald eagles remain together until one dies, though the survivor will not hesitate to accept a new mate. Hunting area varies between 1,700 and 10,000 acres, but can be smaller if food is abundant. An eagle's lifting weight is about four pounds. As well as hunting for food, they will eat carrion and will steal from others.

Migration: Bald eagles that have nested tend to stay on or near their nesting locality through the year if food is available and the weather is bearable. If they do vacate the area, they go whatever distance is necessary to find adequate food and shelter. There tend to be extensive southern migrations from northern regions, especially of younger birds. Generally, young of northern populations tend to migrate south earlier and return north later than older migrants (Palmer ed. 1988).

Because of the eagle's endangered status, humans have used several techniques to aid in the repopulation of this species, these include; 1) Hacking - the rearing of young birds to independence in areas where the species had ceased to breed, 2) Fostering - when eaglets are put into nests where unproductive adults are present, 3) Translocation - when viable eggs are put into nests where adult birds are unproductive. Hacking has been found to be the most successful, and translocation the least (Palmer ed. 1988).

When eaglets are present, at least 1 parent remains in constant attendance for the first 2 weeks. Night brooding lasts about 3 to 4 weeks. Both parents may feed the eaglets, but by 6 to 9 weeks of age, the eaglets are well able to tear off pieces of food for themselves. Survival of both young at nests containing 2 eaglets is frequent, and appears to depend on the ability of the parent to provide food. The larger of 2 eaglets usually gets fed first, and if food is scarce, may get all of it resulting in the death of the smaller eaglet. This is termed siblicide and usually occurs at 3 to 8 weeks of age, and occurs more with golden eagles. Later in nest life, parents spend less time near the young. Eaglets, however, see and recognize their parents at a great distance. During this later stage, eaglets spend much time in preening, flight preparation (flapping), hunting and fighting play, and sunbathing. Eaglets attain flight around 10-11 weeks of age, and usually leave the nest a week to 2 weeks later. After dispersal or migration, the usual pattern of birds aged 1 to 3 years, is to return to the general region of their birth (Palmer ed. 1988).

REPRODUCTION: "Bald Eagles are believed to form a lifelong pair bond; if a mate is lost, a replacement is found rather quickly. The female and male of a previously mated pair, may arrive on the breeding grounds separately or they may meet during migration and arrive together. Bond maintenance may be enhanced by soaring together, billing, stroking each other, joint nest-building or repair, sitting together on the nest, and having the male bring food to the female. Pairs that are uninhibited (low density of birds in area) can breed as early as 4 years of age. A younger bird of either sex may be acquired as a mate or foster parent to replace a lost mate. A high density of established nesters in an area, can inhibit breeding by other reproductive aged pairs. The laying rate is normally 2-5 days after the first egg is laid, which usually occurs in the morning. Incubation follows laying of the first egg. Clutch size is usually 2 and more often 3 than 1. The eggs are white, rather rough, and without luster. If the first clutch is taken (Fails) early enough, the female may lay a second clutch after an interval of 4 weeks or more. Dates of first clutch varies geographically:

Arizona = Late January to the third week of February

Florida = As early as October

Alaska, Washington, Western Canada = Late April to May

Incubation lasts 35 days, the nestling stage lasts 77 days, and first flight occurs around 112 days" (Palmer ed. 1988)

FOOD HABITS: Bald Eagles in Arizona have a diet comprised mainly of fish (catfish, suckers, and carp; and yellow bass <6 in), followed by small mammals (jackrabbits, cottontails, squirrels, and woodrats), carrion (including large mammals), avian (normally waterfowl, mainly American Coots), and to a lesser extent various herps, such as the Sonora Mud and Spiny Softshell turtles, and unidentified snakes that are usually dead (Grubb 1988). Fish consumption increases in the diet as the nesting season progresses, while the consumption of mammals declines. These eagles are also opportunistic, and will pirate meals from other raptors as well, such as Ospreys and other eagles. Both parents may feed eaglets, usually by tearing food, and dropping it into open mouths. By the 4th week, young eaglets have to reach for the food from the adults.

HABITAT: Bald Eagles inhabit coastal areas, estuaries, unfrozen inland waters, and some arid areas of the western interior and southwestern portion of the U.S. They like areas with high water-to-land edge, and areas with unimpeded views including both horizontal and vertical aspects. Areas selected for as wintering habitat will have an adequate food supply, and have open water such as river rapids, impoundments, dam spillways, lakes, and estuaries.

They typically have 4 types of perches; 1) Guard/Sentry Perch - these perches are located in tall trees, cliff and ridge tops, and cliff faces, where the nest can be watched, 2) Foraging Perch - these perches are normally adjacent to or overhanging the river or lake, and are low to moderate in height, 3) Shade Perch (warm arid areas) - these are areas that provide adequate shade during warm periods of the year, 4) Roost Perch - These perches are mainly used for resting at night, and are usually sheltered from the elements (e.g. wind), and are near to or possessing a good view of the nest. Bald eagles will use guard and foraging perches for loafing. Communal roosts are common in the winter, and are found in areas that provide protection from adverse weather conditions, and may be comprised of several individuals. These include sheltered valleys, forested bottomlands, and coniferous trees.

Breeding habitat of bald eagles in Central Arizona is found mainly within 2 of the biotic life zones described by C.H. Merriam (1890-1910: in Lowe 1976, and in Hildebrandt 1981);

1) Lower Sonoran Life Zone is from the desert valley surrounding Phoenix upstream into lower portions of the Canyon country of the Salt and Verde Rivers. This habitat is of the saguaro-paloverde community type between 200-800 meters, in valley floors and hillsides.

2) Upper Sonoran Life Zone is found farther upstream in the canyons and on the surrounding hillsides, and is characterized by coarse-soiled, rocky hillsides, talus and cliffs. It is composed of desert grassland and transition community types. Lower slopes possess perennial bunch grass, jojoba, cactus, yucca and agave. Middle and upper slopes often grade into the chaparral community type. Upper slopes are of the pinyon pine habitat type.

Nesting habitat as described by Palmer 1988, consists of areas with tall trees (usually old growth) that are taller than surroundings. The type of tree used varies geographically, for example Engelmann Spruce, Lodge Pole Pine, and Douglas-fir are common trees used in the Rocky Mountains. Ideally, the nest lies below the top of the crown in a live tree, where young are sheltered above from the elements. In treeless areas, the nest is usually on a high place such as a cliff face. Bald Eagles nesting in Arizona typically nest on cliff faces, ledges, and pinnacles (Grubb 1985). Cliff nests are generally located within 183.0 m (600.0 ft) of the river bank and approximately 92.0 m (300.0 ft) above water (USFWS 1982). Collection of nest material (limbs, branches, and debris) is done by both sexes, but actual construction of the nest is thought to be done by the female. The lining consists of finer items, such as sedges, grasses, moss etc. The nest usually measures 0.3-1.0 m high, and 1.0-2.0 m in the top diameter. The cup or cavity measures 14 inches in diameter and 4 inches deep. Continually used nests can become quite large, and normally last no more than a few years (Palmer 1988).

ELEVATION: In Arizona, have been observed from 460 - 7,930 feet (140 - 2419 m).

PLANT COMMUNITY: Lower and Upper Sonoran Life Zones, including Saguaro-paloverde, desert grassland, chaparral, and pinyon-juniper community types (see discussion in the HABITAT section).

POPULATION TRENDS: The population trend in Arizona is up, which coincides with the national trend, and may be due to better census techniques, a greater volunteer bird watching force, and increased public awareness. Bald Eagles were first documented in Arizona by Coues in 1866. The first recorded breeding attempt was at Stoneman Lake (southeast of Flagstaff, Arizona) by Mearns in 1890. Bald Eagle breeding was observed at Saguaro Lake, Bartlett Dam, and in the Salt River Canyon in the 1930's. In 1986, 11 of the original 25 documented breeding areas were occupied, but 10 new ones were discovered for a total of 21 active breeding areas (Forbis Date?). In 1992, 28 breeding areas were occupied in Arizona, with only 36% successfully fledging young (total of 14 fledged). Productivity in this year may have been down due to the weather; frequent rains and flooding occurred this year (Endangered Species Technical Bulletin 1992).

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: SC, Sonoran Desert DPS (USDI, FWS 2010)
[LT USDI, FWS 1995]
[LE USDI, FWS 1978]

STATE STATUS: WSC (AGFD, WSCA in prep)
[State Endangered AGFD, TNW 1988]

OTHER STATUS: Bureau of Land Management Sensitive (USDI, BLM AZ 2008)
Forest Service Sensitive all forests (USDA, FS Region 3, 2007)
[Forest Service Sensitive (Apache-Sitgreaves, 2000)]
[Forest Service Sensitive (USDA, FS Region 3 1988)]
Group 2 (NESL, 2008)
[None NESL, 2000]
[Group 3 (NNDFFG, NESL 1994)]
Group P (Mexican Federal Endangered Species List, 2000)
[Group P (Mexican Federal Endangered Species List, 1994)]

MANAGEMENT FACTORS: When managing for this species, managers should be aware of possible population declines due to habitat loss, prey loss, and reproductive impairment from pesticides and heavy metals. In addition, they should be aware of potential losses due to illegal shooting, trapping, food poisoning (ingestion of carrion from e.g. poisoned coyotes), electrocution from power lines, collisions, and various accidents.

PROTECTIVE MEASURES TAKEN: In Arizona, the use of "Hacking", fostering (of eaglets), and translocation of eggs should be continued when situations warrant it. In 1978, the Tonto National Forest in Arizona initiated the Bald Eagle Nest Watch Program, which began with 1 individual and has grown to 25+ individuals. The three principal goals of this program are Bald Eagle conservation, data collection on nesting and breeding activities, and education of the public about Bald Eagles and the sensitivity of these breeding areas. These nest watchers are also important in policing known territories and nest sites.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: BIA – Fort Apache, Fort McDowell, and San Carlos Reservations; BLM – Kingman Field Office; USFS – Apache-Sitgreaves, Coconino, Prescott, and Tonto National Forests; USFWS – Havasu National Wildlife Refuge (not since 1979); AGFD – Alamo Wildlife Area and Becker Lake; Lake Pleasant County Park; Private.

SOURCES OF FURTHER INFORMATION**REFERENCES:**

- Arizona Game and Fish Department. 1988. Threatened Native Wildlife in Arizona. Arizona Game and Fish Department Publication. Phoenix, AZ. P. 14.
- Arizona Game and Fish Department. In prep. Wildlife of special concern in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. 32 pp.
- Beatty, G.L. 1993. Arizona bald eagle nest watch program, summary report 1991-1992. Arizona Game and Fish Department, Nongame and Endangered Wildlife Program. Pp. 1-87.
- BISON, Biota Information System of New Mexico, Web site, (<http://nrmhp.unm.edu/bisonm/bisonquery.php>)
- Buehler David, The Birds of North America, No. 506, 2000.
- Clark, W.S. and B.K. Wheeler. 1987. Peterson field guides: Hawks. Houghton Mifflin Company. Boston, Massachusetts. Pp. 81-85, 150-151.
- Collie, M.R. and F.R. Knoll. 1988-1990 surveys. Distribution of wintering bald eagles Verde Valley, Arizona. interim report. USDA USFS Prescott National Forest, Verde Ranger District. Pp. 1-15.
- Coues, E. 1866. List of the birds of Fort Whipple, Arizona: proceedings of the Academy of Natural Science at Philadelphia.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. The birders handbook: a field guide to the natural history of North American birds. Simon and Schuster Inc., New York, New York. P. 220.
- Forbis, L.A. (USFS-Tonto National Forest). Status and trends of Bald Eagles breeding in Arizona, 1975-1986. Southwest Raptor Management Symposium and Workshop. Pp. 282-288.
- Grubb, T.G. In Press 1985. Status, research and management of breeding Bald Eagles in Arizona. Proceedings of Bald Eagle Days. Pp. 1-15.
- Grubb, T.G. 1988. Foraging ecology of breeding Bald Eagles in Arizona, 1983-1985. USDA Forest Service, Rocky Mountain Forest and Range Experimental Station, Arizona State University. Tempe, Arizona. Pp. 1-18.
- Hildebrandt, T.D. 1981. The ecology of breeding southern Bald Eagles (*Haliaeetus leucocephalus leucocephalus*) in Arizona, 1977 and 1978. Arizona State University, M.S. Thesis. Pp. 1-96.
- Lowe, C.H. editor. 1964. The vertebrates of Arizona. University of Arizona Press. Tucson, Arizona. P. 270.
- Mexican Federal Endangered Species List, Secretaria De Medio Ambiente, Recursos Naturales y Pesca, 1994.
- Mexican Federal Endangered Species List, Secretaria De Medio Ambiente, Recursos Naturales y Pesca, 2000.
- NatureServe Explorer: An online encyclopedia of life [web application]. 2001 Version 1.6. Arlington Virginia, USA: NatureServe. Available: <http://natureserve.org/explorer>. (Accessed: November 12, 2002).

- Navajo Nation, Navajo Endangered Species List 1994.
 Navajo Nation, Navajo Endangered Species List 2000.
 Navajo Nation, Navajo Endangered Species List 2008.
 Palmer, R.S. editor. 1988. Handbook of North American birds, Volume 4, diurnal raptors (Part I). Yale University Press. New Haven, Connecticut. Pp. 187-237.
 Peterson, R.T. 1990. Peterson field guides: western birds. Houghton Mifflin Company, Boston, Massachusetts. Pp. 180-181, 188-189.
 Root, T. 1988. Atlas of wintering North American birds: an analysis of Christmas bird count data. 1988. University of Chicago Press. Chicago, Illinois. P. 52.
 Scott, S.C. editor. 1987. Field guide to the birds of North America, 2nd edition. National Geographic Society. Washington, D.C. Pp. 184-185, 209.
 Terres, J.K. 1980. The Audubon Society encyclopedia of North American birds. Alfred A. Knopf Inc. New York, New York. Pp. 477, 503-504.
 Tibbits, T.J., M.J. Cross and D.K. Ward. 1990. 1990 Arizona Bald Eagle Nest Survey, Final report and recommendations. Arizona Game and Fish Department, Nongame Branch, Wildlife Division. Phoenix, Arizona. Pp. 1-15.
 USDA, Forest Service, SW Region Sensitive Species list, 1988.
 USDA, Forest Service, Apache-Sitgreaves National Forest, List of Endangered, Threatened, Proposed, and Sensitive Species, 2000.
 USDA, Forest Service, SW Regional Forester's List of Sensitive Animals, September 21, 2007.
 USDA, Forest Service web site: <http://www.fs.fed.us/database>.
 USDI, Fish and Wildlife Service. 1978
 USDI, Fish and Wildlife Service. 1982. Bald Eagle recovery plan (southwestern population). U.S. Fish and Wildlife Service, Albuquerque New Mexico. Pp. 1-65.
 USDI, Fish and Wildlife Service. 1992. Endangered species technical bulletin. 17(9-11): 13.
 USDI, Fish and Wildlife Service. 1995. Endangered and Threatened Wildlife and Plants; Final Rule to Reclassify the Bald Eagle from Endangered to Threatened in all of the Lower 48 States. Federal Register 60(133): 36000-36010.
 USDI, Fish and Wildlife Service. 2010. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List the Sonoran Desert Population of the Bald Eagle as Threatened or Endangered Distinct Population Segment. FR 75(37): 8601-8621.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

- Greg Beatty – U.S. Fish and Wildlife Service, Phoenix, Arizona.
 James Driscoll – Arizona Game and Fish Department, Phoenix.
 Teryl Grubb - USDA, Forest Service.
 Tom Hildebrandt - Arizona Game and Fish Department.
 Tim Tibbits - National Parks Service, Organ Pipe Cactus National Monument.

ADDITIONAL INFORMATION:

Used in religious ceremonies by native American Indians particularly Zuni and Pueblo.

Revised: 1995-03-13 (SMS)
 1995-Sum (LZW)
 1997-02-27 (SMS)
 2002-11-13 (RHB)
 2010-02-26 (SMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.