ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** ABNKC12060
Data Sensitivity: YES

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Accipiter gentilis* (Linnaeus)
COMMON NAME: Northern Goshawk
SYNONYMS: *Falco gentilis*, *Accipiter gentilis atricapillus* Wilson (subspp. in United States)
FAMILY: Falconiformes: Accipitridae

AUTHOR, PLACE OF PUBLICATION: *Falco gentilis* Linnaeus, Syst. Nat., ed. 10, vol. 1, 1758, p. 89. *Accipiter gentilis atricapillus* (*Falco atricapillus* Wilson), Amer. Orn., vol. 6, 1812, P. 80, pl. 52, fig. 3.

TYPE LOCALITY: *Falco gentilis*: "in Alpibus = Dalecarlian Alps, Sweden."
U.S. subspecies *A. g. atricapillus*: "within a few miles of Philadelphia [Pennsylvania]."

TYPE SPECIMEN: Type of *A.g. atricapillus*: USNM A08508 (Adult male). G. Suckley, -- -- 18--. Fort Steilacoom, Pierce Co., Washington, in Bair, Brewer, and Ridgway, Hist. of N. Amer. Birds (Land Birds) 3: 238, 240, January 1874.

TAXONOMIC UNIQUENESS: Three North American species in genus. At least 5 subspecies of *A. gentilis* in Eurasia, two found in Arizona: *A.g. atricapillus* and *A.g. apache.* According to NatureServe (2001), the validity of subspecies *apache* is questionable. Snyder and Snyder (*In* Glinski 1998) reports that although the validity of the *apache* race has been questioned, and it is not currently recognized on the American Ornithologists' Union checklist, the balance of opinion appears to be swinging again toward recognition (Whaley and White 1994).

DESCRIPTION: *Accipiter gentilis* is the largest accipiter in Arizona, exhibiting the least size difference between sexes. Females are larger that males, averaging 2.4 pounds in weight, while males average 1.9 pounds. Adult lengths range from 45.7-65.0 cm (18.0-26.0 in.), wingspan 96.5-117.0 cm (38.0-46.0 in.). Short wings and a long tail aid the goshawk in maneuvering through dense woods. The wing chord of adult females averages 35.3 cm (13.9 in) and 32.8 cm (12.9 in) in males; the tail averages 26.7 cm (10.5 in) in females and 23.1 cm (9.1 in) in males. Conspicuous light eyebrow, flaring behind eye, separates black crown from variably gray back. Under parts white with fine gray barring; appear light gray at a distance with conspicuous fluffy under tail coverts. The tail is gray with black transverse bars. Eye color ranges from yellow, orange, and deep mahogany in older birds (gray in nestlings); legs

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and feet yellow. Tarsus is feathered halfway to feet, only one third in Cooper's Hawk (*A. cooperii*).

Juvenile: brown above, buffy below, with dense, blurry breast streaking, heaviest on flanks; tail has wavy, dark bands bordered with white and thin white tip; under tail coverts have dark streaks. Light colored eyebrow stripe visible on juvenile but may also appear on immature *A. coóperii*

AIDS TO IDENTIFICATION: **Adult:** larger than *Corvus brachyrhynchos* to *Buteo jamaicensis*; variably gray upper body, light gray breast and light eyebrow stripe. *A. gentilis* twice as big as *A. striatus.*

Juvenile: Can be difficult to distinguish from immature *A. coóperii* which is smaller, has light eyebrow ridge less often. Juvenile goshawk under tail coverts are streaked, seldom so in *A. coóperii*. Juvenile goshawk tail barring is not lined up between feathers, giving a zigzag appearance *A. coóperii* does not have. Dark bars on goshawk's tails are bordered by thin light colored bars, not so on *A. coóperii*. Juvenile *A. coóperii* usually have light colored under parts with relatively fine streaks on breast, *A. gentilis* tends to have dense streaking. This gives juvenile *A. coóperii* a brighter appearance, especially at a distance in flight.

ILLUSTRATIONS:

Color drawings (Scott 1988:190)
Color photos (Terres 1980:506)
B&W photos (Block et al. 1993:34-38)
Color drawing (Sibley 2000)
Color photo (Clark 1987)
Color drawing of egg (Baicich 1997)
Color drawing (National Geographic 1987)
Color photo (*In* Http://www.falconeriaitaliana.com/images/album/finn.htm)
Color photo (*In* http://I-bird.com/Gallery/GALNGoshawk562.htm)
Color photo of juvenile (Http://www.mbr-pwrc.usgs.gov/Infocenter/Photo/Images/h3340pi/jpg)
Color photo of nestlings (*In* http://www.sw-center.org/swcbd/species/goshawk/goshawk.html)
Color photo (Glinski 2002)
Color drawing (Sloan, *in* Glinski 1998: pl. 11)

TOTAL RANGE: Breeding range is Holarctic: northern hemisphere from timberline in Alaska and Canada south to Mexico and northwestern Connecticut and from timberline in Scandinavia and Siberia south to Morocco, Iran, Tibet and Japan. Non-breeding: throughout their breeding range, and irregularly southward.

RANGE WITHIN ARIZONA: Statewide, they breed in high, forested mountains and plateaus, usually above 6,000 ft. Population on Kaibab Plateau exhibits one of the highest breeding densities known (Kennedy 1989).

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SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The goshawk's alarm call is a slower and much more intimidating version of the *kek kek kek kek kek* alarm call of Cooper's Hawk, best rendered as *gek gek gek gek gek gek gek*. The alarm and solicitation calls of both species are often imitated by Stellar's Jays, resident in the vicinity of their nests. These realistic imitations are a source of frequent false alarms for those searching for accipiter nests. (Snyder and Snyder, in Glinski 1998). Home ranges during nesting vary from 94 to 3500 hectares depending on sex and habitat characteristics. Home ranges of males are typically larger than those of females, while the home ranges of non-breeders are poorly known, but may be larger than those of breeders. Predators include: Great Horned Owls, martens, fishers and wolverines.

REPRODUCTION: Onset of breeding is generally delayed until two years of age. They may mate and lay eggs earlier but eggs generally are infertile. Lifelong pair bonds are formed when birds sexually mature. Nesting pairs have strong site fidelity, returning to same tract of woods for nesting. The same nest may be used by a pair for up to 5 consecutive years. They may attempt nesting for 1 to 5 years in territories following logging, even with low reproductive success.

Nest building begins in March, with breeding activity beginning approximately mid-April, with eggs laid by late April. They maintain 1 to 8 alternate nests within a nest area. Nest heights vary according to tree species and regional tree-height characteristics. Nests are usually constructed in the lower one-third of nest trees or just below the forest canopy, and range from 9 m in Alaska to 16.9 m in New Mexico. The nest is a large shallow untidy structure of dead twigs, lined with pieces of bark and leafy green twigs or bunches of conifer needles, which are constantly renewed. Usually 2-4 eggs is produced. The pale bluish-white eggs are short sub elliptical, non-glossy and rough-textured, 5- x 45 mm. Incubation, is principally performed by the female and takes 28-38 days. Hatching is asynchronous. Mostly the female performs brooding and feeding of nestlings; the male brings food to the nest. The young begin flying at 35-42 days and become independent at about 70 days. The nestlings are semi-altricial and downy. The first down is short, silky and thick above, sparser below and white. The second down is longer and woollier; gray tinged above and white below. Irides gray. Cere and feet light yellow. Captive breeding is relatively difficult and of questionable value in this species, since it is primarily threatened by habitat loss.

FOOD HABITS: Forages during short flights alternated with brief prey searches from perches. Also hunts by flying rapidly along forest edges, across openings and through dense vegetation. Prey is taken on the ground, in vegetation or in the air. Despite being larger, females do not take heavier prey than males. Dominant mammalian prey includes tree squirrels, rock squirrels, and cottontails. Band-tailed Pigeons, Mourning Doves, Stellar's Jays, and Northern Flickers are the principal avian prey in Arizona, with Montezuma Quail comprising 20 percent of prey remains in southeastern Arizona nests (Snyder and Snyder, in Glinski 1998).

HABITAT:

Breeding: Overall, goshawks nest in a wide variety of forest types including deciduous, coniferous and mixed forests. They typically nest in mature or old growth forests, generally selecting larger tracts of forests over smaller tracts. In Arizona, goshawk's nest most commonly in ponderosa pine forests along the Mogollon Rim and on the Kaibab Plateau, and in Arizona pine and ponderosa pine forests in the southeastern mountains. Occasionally, they breed in relatively low elevation oak forests in the southeastern portion of the state. The lowest-elevation nest found was at 4,900 feet. (Snyder and Snyder, *in* Glinski 1998). In the western U.S. they characteristically nest in coniferous forests including those dominated by ponderosa pine and lodgepole pine, or in mixed forests dominated by various coniferous species including fir, Douglas-fir, cedar, hemlock, spruce. They will also nest in deciduous forests with aspen, paper birch and willow. **Non-breeding:** Habitat requirements during winter, are poorly understood.

ELEVATION: According to unpublished records in the HDMS (AGFD accessed 2003), they have been located at elevations of 4,750-9,120 ft (1,448-2,780m).

PLANT COMMUNITY: Ponderosa pine and mixed conifer forests, including some riparian habitats.

POPULATION TRENDS: Little historical information on goshawk densities exists, but populations appear to have undergone dramatic declines over last 50 years. The most complete data is from the Kaibab National Forest showing a reduction from approximately 130 breeding pairs in 1972 (Crocker-Bedford, 1990) to approximately 30 occupied territories (Zinn and Tibbitts 1990). A total of 107 nesting territories (1991-1996) were located on a 1,754 km2 study area on the Kaibab Plateau (BNA 1997). According to Snyder and Snyder (in Glinski 1998), "the goshawk was probably never abundant in Arizona, although it is widespread in high mountain habitats and can be locally abundant."

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1996)
[C2 USDI, FWS 1991]

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

OTHER STATUS: Bureau of Land Management Sensitive – ssp. *atricapillus* (USDI, BLM AZ 2010)
[Bureau of Land Management Sensitive USDI, BLM AZ 2008]
Forest Service Sensitive (USDA, FS Region 3 1999, 2007)
Group 4 (NNDFW, NESL 2001, 2005)

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Determined Threatened (Secretaria de Medio Ambiente 2000)

MANAGEMENT FACTORS: Timber harvest is the principal threat to breeding populations. In addition to the relatively long-term impacts of removing nest trees and degrading habitat by reducing stand density and canopy cover, logging activities conducted near nests during the incubation and nestling periods can have an immediate impact: nest failure due to abandonment. Breeding areas need protection from excessive logging. Crocker-Bedford (1986) proposes 20-200 acre buffers. Kennedy (1990) recommends 1600-acre buffers. Kaibab National Forest 1991 goshawk buffers are 20 acres. Other factors are fire suppression, loss of prey habitat, insect and trees disease outbreaks, and grazing can result in loss of nesting habitat.

PROTECTIVE MEASURES TAKEN: Protection from logging around breeding sites varies from National Forest to National Forest. Kaibab National Forest buffers are 20 acres (1991).

SUGGESTED PROJECTS: Research needs to address several areas:

1. Intensive surveys of National Forests to find unknown breeding territories.
2. Monitoring of known populations to detect declines in breeding success.
3. Color banding studies to gain access to information such as degree of site fidelity and survivorship data.
4. Perform habitat analysis on known goshawk territories to refine management data.
5. Additional studies on population size, trends and life history (life span, fidelity, dispersal, diet composition, habitat use).
6. Inventory and monitoring techniques need to be improved.
7. Need to evaluate the effects of pesticides and extent of movement patterns of all populations.

LAND MANAGEMENT/OWNERSHIP: BIA - Navajo Nation; BLM - Kingman and Arizona Strip Field Offices; DOD - Fort Huachuca Military Reservation, Navajo Army Depot; NPS - Chiricahua National Monument, and Grand Canyon and Saguaro National Parks; USFS - Apache-Sitgreaves, Coconino, Coronado, Kaibab, Prescott, and Tonto National Forests; State Land Department; TNC Ramsey Canyon; Private.

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ADDITIONAL INFORMATION:

"Goshawk" was derived from the Anglo-Saxon words *gos* for goose and *havoc* for hawk-hence, a hawk that captures geese ("Goose Hawk"). *Gentilis* is Latin for noble. It was named during the era when only the nobility could fly this bird in falconry.

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