

1. **Species:** Northern Goshawk (*Accipiter gentilis*)
2. **Status:** Table 1 summarizes the current status of this species or subspecies by various ranking entity and defines the meaning of the status.

Entity	Status	Status Definition
NatureServe	G5	<i>Species is Secure</i> At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
CNHP	S3B	<i>Species is Vulnerable</i> At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors. (B=Breeding)
Colorado State List Status	SGCN, Tier 2	Species of Greatest Conservation Need
USDA Forest Service	R2 Sensitive	Region 2 Regional Forester's Sensitive Species
USDI FWS ^b	N/A	N/A
^a Colorado Natural Heritage Program.		
^b US Department of Interior Fish and Wildlife Service.		

The 2012 U.S. Forest Service Planning Rule defines Species of Conservation Concern (SCC) as “a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area” (36 CFR 219.9). This overview was developed to summarize information relating to this species' consideration to be listed as a SCC on the Rio Grande National Forest, and to aid in the development of plan components and monitoring objectives.

3. Taxonomy

Genus/species *Accipiter gentilis* is accepted as valid (ITIS 2015).

4. Distribution, abundance, and population trend on the planning unit [12.53.2,3,4]:

Northern goshawks are holarctic and occupy a wide variety of boreal and montane forest habitats throughout the Nearctic and Palearctic (Johnsgard 1990 summarized in Kennedy 2003). Based on sighting data prior to 1992 in Colorado, Andrews and Righter (1992) found the goshawk distributed across the western half of Colorado during summer, and across all of the state during the winter and migration periods. Analysis of recent sighting data shows the goshawk's breeding distribution to be primarily west of 1050 longitude and confirmed breeding sightings occur in the western half of the state with wide winter distribution across all of Colorado (Kennedy 2003).

There are no long-term indices of trends or estimates of goshawk breeding population size derived from standardized, widespread surveys in North America (Braun et al. 1996, Kennedy 1997 summarized in Kennedy 2003). In addition, there is not sufficient information available to make a status determination for the Colorado breeding range. A recent landscape study conducted

in the San Juan Mountains of Colorado suggests substantial changes in landscape structure and fragmentation of mature forest have occurred in this area between 1950 and 1993. The degree to which these landscape changes impact regional goshawk persistence is unknown. However, if the trend in the San Juan Mountains is representative of regional trends, goshawk habitat is probably declining in FS Region 2 (Kennedy 2003).

A total of 75 occurrences are reported for the planning area during the past 20 years (Table 2). As of 2015, the planning area supports at least 15 known active nesting territories, three historic territories, and two other potential territories. Nest territories in the planning area are closely tied to older aspen stands that with structural characteristics to support nest platforms. Current trend of the population within the planning area is not identified and complete post-fledging areas have not been investigated or delineated. .

Table 2. Known Occurrence Frequency within the Planning Area (NRIS database)

Known Occurrences in the past 20 years	75
Year Last Observed	2015

5. Brief description of natural history and key ecological functions [basis for other 12.53 components]:

Goshawks nest in a variety of habitat types throughout their range, but seem to prefer mature forests with large trees on moderate slopes with open understories. They nest in either coniferous, deciduous, or mixed-pine forests, depending on availability. Nest trees are usually one of the largest trees in the nest area; most territories contain several alternative nest trees (Squires and Reynolds 1997).

Timing of clutch completion ranges from early April to early June, varying among pairs, geographic areas, and years, but completed on average between late April and mid-May. The incubation period has been estimated at 30–44 days. Hatching has been reported from late May through June with considerable variation. The nestling period ranges from 37 to 45 days and young generally fledge between late June and late July. This period begins when the young leave the nest, and continues until they are no longer dependent on the adults for food. In New Mexico, this period occurs from early August to early September beginning when the young are approximately 80 days of age and lasting 32-43 days. For the first 3 weeks after fledging, juveniles tend to remain within 300 m of the nest, after which distance from nest tree increases with time until dispersal (summarized in Kennedy 2003).

The existence and extent of goshawk migratory behavior is geographically and temporally variable, and may be closely tied to food availability. The limited information on migration patterns indicates the goshawk is a partial migrant (Squires and Reynolds 1997).

6. Overview of ecological conditions for recovery, conservation, and viability [12.53 7, 9?, 10, 11, 12]:

Breeding season habitat includes nesting, post-fledging areas (PFA) and foraging habitat. The nest area encompasses about 30 acres surrounding the nest tree, which may be coniferous or deciduous, and is often the largest tree in the stand.

Ferland (2006) studied 41 goshawk nest sites on the San Juan and Rio Grande National Forests and reported aspen as the most common nest tree selected followed by ponderosa pine,

Engelmann spruce, and lodgepole pine. Forest types selected for nesting were aspen, mixed conifer, ponderosa pine, and spruce-fir. Of the 41 goshawk nests, 37 (90%) were in mature forests with canopy closure $\geq 40\%$, 3 (7%) were in mature forests with canopy closures $< 40\%$, and 1 (2%) was in a sapling-pole forest with canopy closure $< 40\%$ percent. Elevations ranged from 7,000 to nearly 11,000 feet. Mean slopes were significantly less than random sites within the study area and both mean and median distance to the nearest non-forest edge was greater for nest trees than for random locations.

Typical goshawk breeding areas contain several alternative nests that are used over several years. Although goshawks may use the same nest in consecutive years, goshawk breeding areas often contain 1–5 or more alternative nests that are used by pairs over several years and are usually located within 0.25 mi of each other (Reynolds and Wight 1978, Speiser and Bosakowski 1987, Reynolds et al. 1994, Woodbridge and Detrich 1994, Reynolds and Joy 1998, Dewey et al. in press, summarized in Kennedy 2003).

The PFA surrounds the nest area and is defined as the area used by the family group from the time the young fledge until they are no longer dependent on the adults for food. Kennedy et al. (1994) reported PFAs in New Mexico averaged 420 acres in size, while McGrath (2003) determined that PFA use by fledglings only encompassed about 205 acres. At both the 205-acre and 420-acre PFA scales, Ferland (2006) reported a higher proportion of mature forest than found at random sites, but it was not significant. Additionally, there was a slightly smaller proportion of mature forest surrounding nest sites at the territory scale versus random sites.

Reynolds et al. (1992) identified goshawk breeding season foraging areas in the Southwest as encompassing 5,400 acres. Results from several studies suggest goshawks use all forest types for foraging, but appear to select forests with a high density of large trees, greater canopy cover and high canopy closure, high basal area and relatively open understories in which to hunt. Several studies also report a tolerance for a broad range of forest structures. It is also important to note that while some habitats may be avoided by foraging goshawks, they may actually be important in terms of prey production (Kennedy 2003).

Based on habitat characteristics described by Ferland (2006) for the San Juan Mountains, suitable habitat was modeled for northern goshawk on the RGNF. Attributes queried from the FSveg database were aspen, ponderosa pine, lodgepole pine, and Engelmann spruce forest cover types with habitat structure 4B or 4C. Modeled suitable habitat totals 519,511 acres within the planning area (Figure 1).

7. Threats and Risk Factors

The primary threat to goshawk populations is alteration of its preferred habitat from timber management practices. Potential threats to habitat caused by various silvicultural treatments include forest fragmentation, creation of even-aged and monotypic stands, potential increase in area of younger age classes, and loss of tree species diversity. Goshawk nesting and foraging habitat has also likely been affected by fire suppression which has allowed increased forest density and created a shift from frequent low-intensity fire to more intense stand-replacement fires. Human disturbance associated with forest management and other activities may affect goshawks and can cause nest failure, especially during incubation (Kennedy 2003).

8. Key literature:

Ferland, C.L. 2006. Northern goshawk breeding habitat selection within high-elevation forests of southwestern Colorado. MS Thesis. Oregon State University, OR. 64 pp.

Kennedy, P.L. 2003. Northern Goshawk (*Accipiter gentilis atricapillus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/northerngoshawk.pdf> [06/24/2015].

Kennedy, P.L., J.M. Ward, G.A. Rinker, and J.A. Gessaman. 1994. Post-fledging areas in northern goshawk home ranges. *Studies in Avian Biology* 16:76-82.

McGrath, M.T., S. DeStefano, R.A. Riggs, L.L. Irwin, and G.J. Roloff. 2003. Spatially explicit influences on northern goshawk nesting habitat in the interior Pacific Northwest. *Wildlife Monographs* No. 154. Supplement to the *Journal of Wildlife Management* 67(4).

Squires, John R. and Richard T. Reynolds. 1997. Northern Goshawk (*Accipiter gentilis*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the *Birds of North America Online*: <http://bna.birds.cornell.edu/bna/species/298> [06/24/2015].

9. Map of Known Occurrences and Modeled Suitable Habitat

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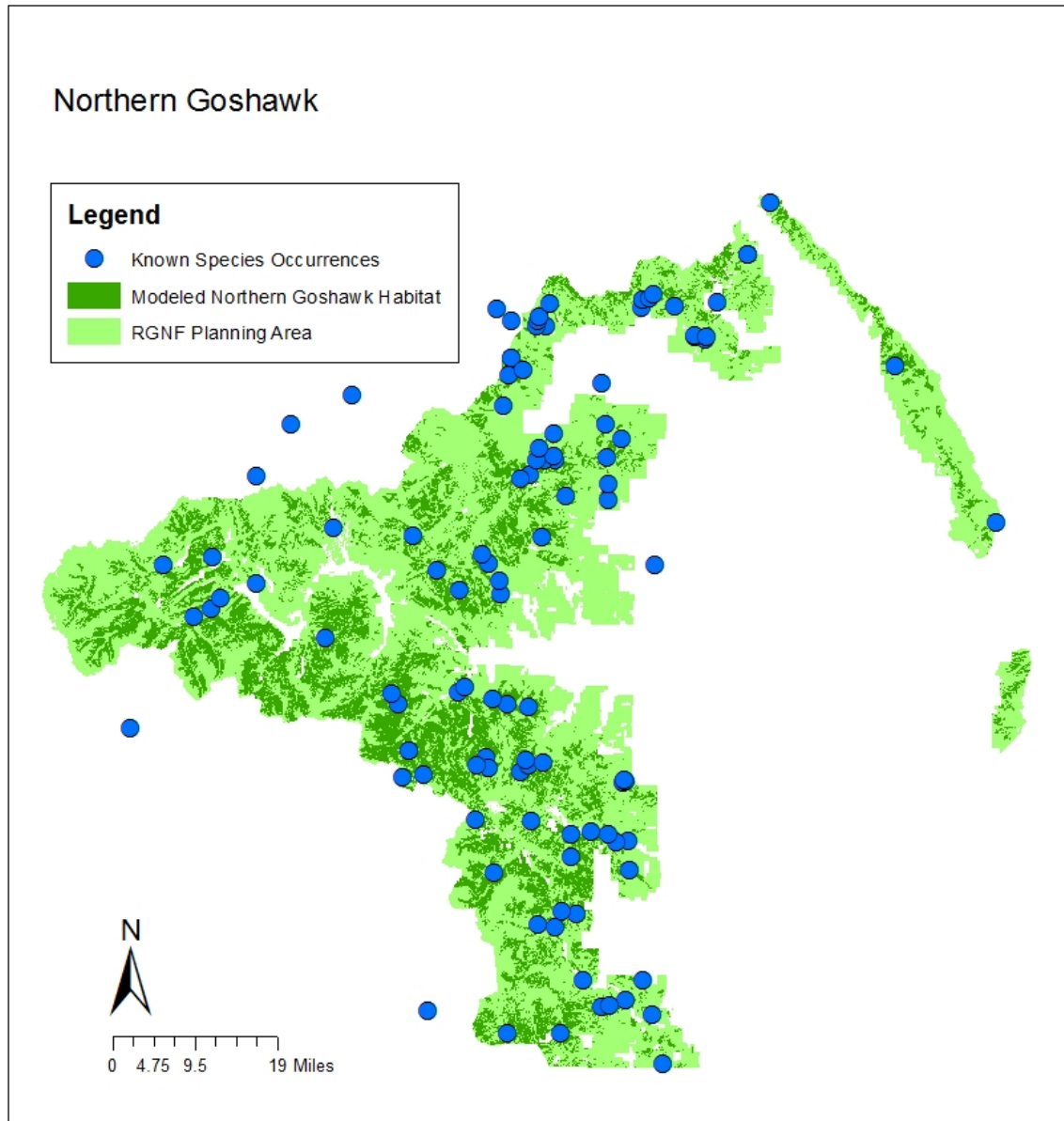


Figure 1. Northern Goshawk Modeled Habitat and Known Occurrences.