1. **Species:** Boreal Owl (*Aegolius funereus*)

2. **Status:** Table 1 summarizes the current status of this species or subspecies by various ranking entity and defines the meaning of the status.

Table 1. Current status of *Aegolius funereus*

Entity	Status	Status Definition
NatureServe	G5	*Species is Secure* At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
CNHP	S2	*Species is Imperiled* At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
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 *Aegolius funereus* is accepted as valid (ITIS 2015).

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

In the western U.S., populations are restricted to subalpine forests in the Rocky Mountains, Blue Mountains, and Cascade Ranges. The southernmost records occur in mountains of northwestern New Mexico (Hayward 1994). Known occurrences within the past 20 years in the planning area total 11 observations (Table 2). Surveys conducted on the Conejos Peak Ranger District have reported additional observations recently (R. Ghormley, pers. comm.).

Statistically reliable trend information for this species within the planning area is not available.

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

Known Occurrences in the past 20 years	11
Year Last Observed	2014

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

Boreal owls in the western U.S. occur in subalpine forest habitats characterized largely by subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*) and adjacent transition forests (Hayward 1994). Habitat composition within territories reported for Colorado is predominately spruce-fir interspersed with meadows (81%) and lodgepole pine to a lesser extent (9%) (Ryder et al. 1987).

Boreal owls are secondary cavity nesters and nest primarily in cavities excavated by pileated woodpecker (*Dryocopus pileatus*) and northern flicker (*Colaptes auratus*) cavities or in nest boxes.

Nest initiation in Colorado ranged from mid-April through June 1 with clutches ranging from one to four eggs (Ryder et al. 1987). Egg-laying dates for Idaho ranged from mid-April through mid to late-May with fledging completed by mid-June to mid-July (Hayward et al. 1993).

Both in Idaho and Colorado, home range areas shifted seasonally after the breeding season. In Idaho, annual home range averaged 3,775 acres. Center of winter and summer ranges were separated by average of 1.5 miles (Hayward et al. 1987). During summer in Idaho, owls used cool microsites mostly in mature or older spruce-fir stands at higher elevations for roosting in response to heat stress sensitivity. Winter roost sites were divided evenly between spruce-fir and lodgepole pine stands at elevations that averaged approximately 600 feet lower than summer sites (Hayward et al. 1993).

Prey items in Colorado consist mainly of voles (i.e., southern red-backed vole (*Myodes gapperi*), long-tailed vole (*Microtus longicaudis*), montane vole (Microtus montanus)) with lesser frequencies of shrews (*Sorex* spp.), and passerine birds (Ryder et al. 1987).

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

Nests located in Idaho were generally in large trees or snags within mature or older stands of mixed conifer, spruce-fir, or aspen. Tree diameter at the cavity averaged 16 inches (range 10-24 in) and tree dbh averaged 25 in (range 13-44 in). Predominant tree species within nest stands consisted of old mixed conifer, old Engelmann spruce, old aspen, and old Douglas-fir. Forest structure within the nest stand included complex forest with higher basal area, more large trees, and less understory development than available sites. Tree densities at nest sites averaged 23 trees per acre 15 inches diameter at breast height (dbh) or greater and an upper canopy cover (> 26 ft above ground) averaging 30 percent; however, the forest immediately surrounding nest trees had open structure. Tree species selected for nesting included ponderosa pine, aspen, Douglas-fir, and Engelmann spruce (Hayward et al. 1987, 1993).

Roost trees reported for boreal owls in Colorado consisted mainly of Engelmann spruce and subalpine fir, with lesser use noted for lodgepole pine (Ryder et al. 1987). Summer roost sites in Idaho occurred in more dense stands with canopy cover averaging 63.5 percent. Winter roosts contained fewer trees, but averaged only slightly lower canopy cover (58.5 percent) (Hayward et

al. 1993). Nest trees in Colorado and within the planning area are primarily restricted to aspen. This usually occurs in aspen clones within spruce-fir stands. Flicker holes in aspen trees are preferred, although one active nest site was located in a spruce snag (R. Ghormley 2015, pers. comm).

7. Threats and Risk Factors

Major threat may be indirect effects of forest harvesting practices. These may reduce primary prey populations, remove forest structure used for foraging, and eliminate nesting cavities (Hayward et al. 1993). Other risk factors that may affect species density and distribution are likely to include large-scale stand replacement fire, and large-scale insect outbreaks.

8. Key literature:

Ryder, R. A., D. A. Palmer, and J. J. Rawinski. 1987. Distribution and status of the boreal owl in Colorado. Pages 169-174. in R.W. Nero, C.R. Knapton, and R.H. Hamre, editors. Biology and conservation of northern forest owls. Symposium proceedings, Winnipeg, Manitoba.

Hayward, G.D., P.H. Hayward, and E.O. Garton. 1987. Movements and home range use by boreal owls in central Idaho. Pages 175-184. in R.W. Nero, C.R. Knapton, and R.H. Hamre, editors. Biology and conservation of northern forest owls. Symposium proceedings, Winnipeg, Manitoba.

Hayward, G.D. Review of Technical Knowledge+Boreal Owls. 1994. Pages 92-127 in Hayward, G. D. and J. Verner. 1994. Flammulated, boreal, and great gray owls in the United States: A technical conservation assessment. USDA Forest Service, GTR RM-253.

Hayward, G.D., P.H. Hayward, and E.O. Garton. 1993. Ecology of boreal owls in the northern Rocky Mountains, U.S.A. Wildlife Monographs 124: 3-59.

Ghormley, R. 2015. Randy Ghormley, Forest Wildife Biologist, Rio Grande National Forest. Personal Communication.

9. Map of Known Occurrences and Modeled Suitable Habitat

Forested vegetation modeled to represent boreal owl potential suitable habitat totals 399,512 acres on the RGNF (Figure 1). Parameters selected from the FSVeg database consist of Engelmann spruce, subalpine fir, lodgepole pine, and aspen with habitat structure 4B or 4C, canopy cover greater than 55 percent, and diameters averaging 9 inches or greater. Limitations exist in refining selection of tree diameter size. Size classifications in the FSVeg database include Large (9"-15.9"dbh) and Very Large (16"+ dbh). Due to these limitations, this model likely overestimates acres of potential suitable habitat within the planning area by including some stands in the Large class that may not support trees large enough for nesting.

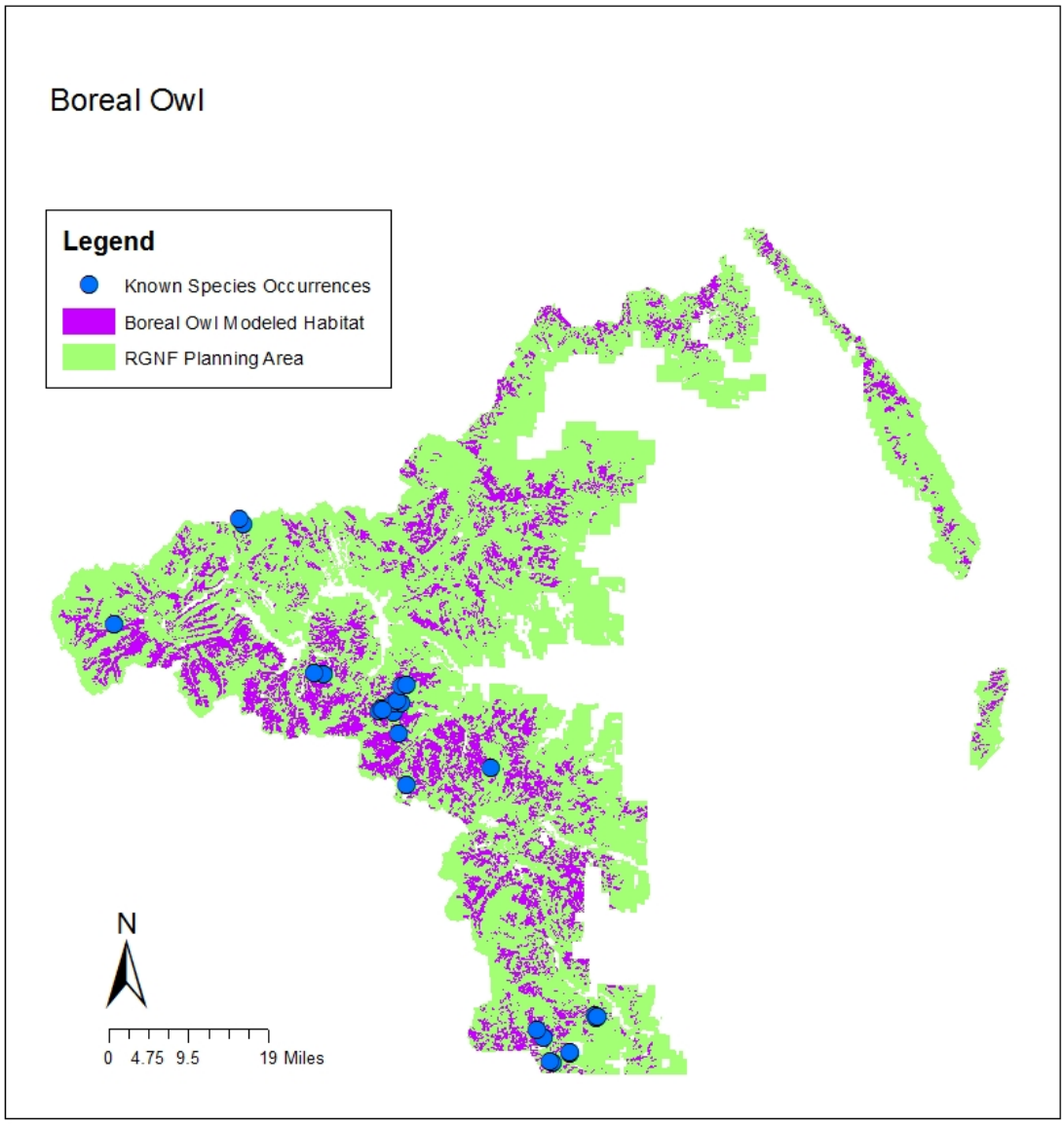

Figure 1. Boreal Owl Modeled Habitat and Known Occurrences.