

Boreal Owl (*Aegolius funereus*)

NMPIF level: Biodiversity Conservation Concern, Level 1 (BC1)

NMPIF assessment score: 12

NM stewardship responsibility: Low

National PIF status: No special status

New Mexico BCRs: 16

Primary breeding habitat(s): Spruce-Fir Forest

Summary of Concern

At the southern tip of its range in New Mexico, Boreal Owl is New Mexico's only species of concern that breeds exclusively in high-elevation, spruce-fir habitat. It is threatened by loss of mature spruce-fir forest stands, which may take a century or more to regenerate.

Associated Species

Broad-tailed Hummingbird (SC2), Gray Jay, Brown Creeper, Pine Grosbeak, Pine Siskin

Distribution

Boreal Owl has a circumboreal distribution across forests of Europe, Asia and North America. In the Western Hemisphere, its range extends in a broad, continent-wide band from north-central Alaska to Maine and eastern Canada. In the western United States, the range also extends southward in subalpine habitat of the Rocky Mountain chain (Hayward and Hayward 1993).

The southernmost distribution of this species occurs in northern New Mexico. Although rare, it is considered a resident in the San Juan, Sangre de Cristo, and Jemez Mountains (Stahlecker and Rawinski 1990, Parmeter et al. 2002). Surveys farther south in the Sandia, Mogollon, and Sacramento Mountains were unsuccessful, and it is likely subalpine habitat is too limited there to support viable populations (Stahlecker and Duncan 1996).

Ecology and Habitat Requirements

In the western United States, Boreal Owls occupy subalpine forests composed of fir species and Engelmann spruce, with patches of aspen. Most suitable habitat in New Mexico is at elevations of 10,000 ft or higher, where almost all records have occurred (Stahlecker and Duncan 1996). Individuals occupy a new roost site each day, typically fairly low (15 ft average) in conifers with average stem diameter of roughly 1 ft (Palmer 1986). Roost sites have higher canopy cover, higher basal area, and greater tree density than paired random sites (Hayward et al. 1993). Adjacent foraging areas are typically mature forest where minimal herbaceous cover (in summer) and snow crust (in winter) facilitates access to prey. Subalpine habitat contains aspen stands averaging 2-3 ac in size (Hayward and Hayward 1993).

Courtship activities begin from mid-February to mid-April depending on the year, with nest initiation from mid-April to late May. Boreal Owls nest in tree cavities, typically in aspen or conifer snags located in stands of mature older forest. Northern Flicker holes are most commonly used. Nesting sometimes occurs in younger forest stands if suitable nest cavities or nest boxes are available, but only when mature forest habitat is lacking. Home ranges may be large, 1,000-1,500 ha, and may overlap considerably. Owls may traverse much of the home range over a 2-3 week period, roosting at different locations each day (Palmer 1986). Home ranges are occupied year-round but activity may shift to somewhat lower elevations in winter (Hayward et al. 1987). Red-backed voles and other *Microtus* spp. form the majority of the Boreal Owl diet (Hayward and Hayward 1993).

Conservation Status

Species Assessment

DISTRIBUTION	1
THREATS	4
GLOBAL POPULATION SIZE	3
LOCAL POPULATION TREND	3
IMPORTANCE OF NEW MEXICO TO BREEDING	1
COMBINED SCORE	12

Boreal Owl is a Biodiversity Conservation Concern, Level 1 species for New Mexico, with a combined vulnerability score of 12. From NMPIF it receives a vulnerability score of 4 for threats to breeding in the state. Boreal Owl is listed as threatened in the state of New Mexico.

Population Size

PIF estimates a species population of 46 million, of which 30% occurs in the United States and Canada. Size of the New Mexico population is unknown, but small.

Population Trend

Little or no BBS data exist for this species, and information regarding long-term trends is very difficult to obtain. Both PIF and NMPIF assign scores of 3, indicating an unknown population trend.

Threats

Boreal Owls require mature, older forests to provide quality nesting, foraging, and summer roosting habitat. They also require nest cavities in relatively large diameter aspens or snags.

Local populations in New Mexico mountains may be threatened by catastrophic fire, triggered by drought and a history of fire suppression. Boreal Owls may also be threatened by timber cutting operations. Clearcut forest areas may remain unsuitable for roosting or foraging up to a century, and new nest trees will not develop for nearly two centuries (Hayward and Hayward 1993).

Management Issues and Recommendations

Management for Boreal Owl in New Mexico should focus on maintaining large, mature stands of subalpine forest in the state's northern mountains.

NMPIF Recommendations

- Maintain 5-30-ac stands of older forest with greater tree density and canopy cover than surrounding areas, interspersed with open meadow and aspen woodland patches.
- Avoid intensive timber cutting in known occupied habitat. Leave large diameter snags and aspen trees standing.

Species Conservation Objectives

NMPIF Objectives

- Maintain existing populations in the San Juan, Sangre de Cristo, and Jemez Mountains.

Sources of Information:

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