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Cold Adaptations in Birds

spend the night together in tree cavities to significantly reduce their heat loss. And finally, I found this interesting tidbit about Saw-whet Owls. Their diet is mainly small rodents; but they also take insects. They sometimes cache their dead prey items in the snow. Later, they will assume an incubating posture to thaw frozen prey.

So, the suggestion is that during the winter when there seems to be a paucity of birds to watch, take time to observe the temperature-regulating actions, especially those of shorebirds and gulls. They are the most readily observed and interpreted of bird behaviors.

Northern Saw-whet Owl. Photo by Eric Huish

NORTHERN GOSHAWK NEST ACTIVITY AS AN INDICATOR OF HABITAT QUALITY ON THREE NATIONAL FORESTS IN SOUTHERN UTAH

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Introduction

The Northern Goshawk (Accipiter gentilis) has been a species of concern in the western United States since it was thought to be in decline in the 1970s. Loss of critical breeding and wintering habitat has contributed, in part, to this decline. In the U.S., the goshawk was listed in 1991 as a sensitive species for the Intermountain Region of the Forest Service. This region includes all National Forests in Utah. The goshawk also holds the status of a Management Indicator Species (MIS) on all six National Forests in Utah (USDA Forest Service 1999). The aim of the Forest Service was to use goshawk conservation to provide special management practices for mature or old-growth forests with an emphasis on maintaining their prey populations (Kenward 2006). Goshawks prey on small- to medium-sized mammals and birds (Reynolds et al. 1992) and are top predators in their food chain. Their presence in forest habitat is indicative of a sufficient prey base of frugivorous, insectivorous, and granivorous birds and mammals. These prey items indicate in turn, that the ecosystem is healthy at the most basic habitat level, supporting the secondary consumers that form the goshawk prey base.

According to a status report presented by Boyce et al. (2006), this aim of forest preservation, if not wholly successful, has resulted thus far in an integrated management of habitats to maintain biodiversity, which has not only benefitted goshawks but countless other species as well. The status as a sensitive and MIS species requires annual monitoring efforts by Forest Service biologists and managers to track goshawk population trends and to address any activities on the forests that may affect goshawk nesting activity and the biodiversity of the forest as a whole.
Based on the process described above, the presence of goshawk territories and nesting activity can be useful indicators of habitat quality on Southern Utah National Forests. Consistent monitoring of goshawk population dynamics will help managers identify higher quality habitat in each forest as well as lower-quality habitat that can be improved for goshawks, benefiting countless other species in the forest ecosystem.

Methods and Materials

As part of this monitoring effort, biologists and seasonal technicians recorded goshawk territories, total number of nests, active nests, and nest tree species from 1991 to 2006 across three National Forests: Dixie National Forest, Manti-LaSal National Forest, and Fishlake National Forest. We defined an active nest as one that has contained incubating eggs (Gavin et al. 1998). Nest sites were located through survey efforts and incidental finds. Nest territories included all alternate nests, usually 1-5 in number (Squires and Reynolds 1997), within an area approximately 10-100 hectares, or about 24.7-247 acres (Reynolds et al. 1982, Woodbridge and Detrich 1994, cited in Squires and Reynolds 1997). Presence of adult birds was confirmed through visual sightings of birds incubating on the nest and movement and defensive behavior around the nest. Nest activity was confirmed by visual sightings of adults incubating, confirmed eggs in the nest, and nestling/fledgling activity on and around the nest. Suitable goshawk nesting habitat was assumed to be that which is used during summer nesting activities, and was determined on the Dixie and Fishlake National Forests using the parameter of all forested landscapes except 'woodlands,' which are considered winter range for goshawks. On the Manti-LaSal National Forest, suitable habitat was determined using the parameter of forested landscapes that factored in specific vegetation types and tree densities.

Results and Discussion

Table 1 shows the number of nests, territories, total acreage, total suitable acreage and breeding goshawk densities on each forest. The Dixie National Forest has the highest number of territories and nests by double or

<table>
<thead>
<tr>
<th>Forest</th>
<th>Territories</th>
<th>Nests</th>
<th>Total acreage</th>
<th>Total suitable acreage</th>
<th>Ave. density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishlake National Forest</td>
<td>39</td>
<td>72</td>
<td>1,525,688</td>
<td>1,454,356</td>
<td>1 breeding pair/456,269 acres</td>
</tr>
<tr>
<td>Dixie National Forest</td>
<td>147</td>
<td>373</td>
<td>1,964,341</td>
<td>654,473</td>
<td>1 breeding pair/24,814 acres</td>
</tr>
<tr>
<td>Manti-LaSal National Forest</td>
<td>65</td>
<td>132</td>
<td>1,413,111</td>
<td>356,194</td>
<td>1 breeding pair/38,507 acres</td>
</tr>
</tbody>
</table>

more compared with the other two forests. It has the second largest amount of suitable nesting habitat of the three, only less than half of Fishlake National Forest. The average goshawk density on Dixie National Forest is between 2 and 20 times higher than the other forests, indicating that the Dixie National Forest contains better goshawk habitat, is the most widely surveyed for goshawks, or both. Manti-LaSal National Forest is about a quarter the size of Fishlake National Forest, but has about double the known territories and nests, as well as over ten times as many nesting goshawk pairs per acre. Improved monitoring efforts on Manti-LaSal and Fishlake National Forests may reveal higher numbers of nesting goshawks.

Figure 1 shows the tree species in which goshawks nested on each forest, calculated as a percentage of the total tree species used for nesting. Aspen (Populus tremuloides) was the main nest-tree species that goshawks utilized in both Fishlake (87.5%) and Manti-LaSal
Northern Goshawk Nests

National Forests (60.6%). The remaining 5 nest tree species on both forests represented only 15% or less of the total percentage. Dixie National Forest, however, exhibits much higher diversity, including 10 nest-tree species, twice as many as the other forests. Goshawk nests on this forest were also found in aspen (38.2%), which barely surpassed the percentage of those found in Ponderosa pine (Pinus ponderosa) (31.6%). Douglas fir (Pseudotsuga menziesii) trees represented 11.8% on this forest, and the remaining 7 species comprised the other 18.4%.

These results indicate that the habitat in the Dixie National Forest differs considerably from Fishlake or Manti-LaSal National Forests.

Dixie National Forest is only the second largest of the three for goshawk suitable nesting habitat and more monitoring efforts have been conducted on it because of its utilization for natural resources such as logging. Habitat included in and adjacent to known nest sites must be surveyed for wildlife disturbance effects before any natural resource projects can take place. Natural resource project areas without known nests must be surveyed as well. A higher number of surveys performed on Dixie National Forest may account at least in part for finding nests in trees other than aspen, in which goshawk nests are the most conspicuous. In general, more researchers and search time will find more nests (Krebs 1999). However, it seems improbable that this accounts for finding enough goshawk nests in different trees to reduce Aspen importance by almost half or more as compared to the other forests surveyed.

Figure 2 shows the active territories over time in all three forests. Dixie National Forest has the highest number of active nests, which seem to have increased consistently from 1991 to 2006, except for a few low years in early 2000. This net upward trend shows that goshawk populations are ultimately increasing on the forest, and the habitat seems to be well maintained. The trends for Manti-LaSal National Forest indicate that goshawks are slowly increasing on average and the overall trend is positive. This forest seems to contain quality goshawk habitat as well, though with only about half as many active territories or less as on Dixie National Forest. Fishlake National Forest contains the lowest number of active territories of the three forests, fluctuating between 0 and 8. Fishlake may contain adequate goshawk habitat, but may not be as well surveyed. Birders on this forest and on Manti-LaSal National Forest should keep an eye out for goshawks in appropriate habitat. Any new nests or territories found would aid this monitoring effort.

Acknowledgments

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![Diagram of Northern Goshawk Nesting Activity](image_url)

Figure 2. Active goshawk territories on all three forests from 1991 to 2006.

**Literature Cited**


THE BIRDS OF SAN JUAN COUNTY, UTAH

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Why bird San Juan County? There are a number of reasons besides the remarkable and unparalleled beauty of the region. While a number of avian studies have been conducted in the county, comparatively little is known about its birds, both with respect to those species that may be observed in the county as well as to their abundance. For the sake of comparison I will contrast San Juan County with Washington County which is much better known to recreational birders. San Juan County, while beautiful, is remote, isolated, largely undeveloped, and mostly inaccessible. It is found in the southeast corner of Utah and is the state’s largest county, with an area of 7,933 square miles (Wikepedia 2007). At 2,430 square miles Washington County is less than one-third its size (Wikepedia 2007).

San Juan County contains the greatest topographic variability found in any single county in Utah. From Mount Peale in the LaSal Mountains (12,721') to Lake Powell at its current pool level (about 3600') there is an elevation difference of roughly 9,000 feet. While Washington County contains Utah’s geographic low point in Beaver Dam Wash (2,350'), the high point in the county is Signal Peak, found in the Pine Valley Mountains (10,365'). This is an elevation difference of about 8,000'.

The significance of these differences lies in the variety and the extent of the habitats that may be found in the counties. San Juan County contains all of the habitats found in Washington County with the exception of Mohave desert. It contains more extensive areas of alpine tundra, subalpine and montane grasslands, subalpine forests, mixed conifer and ponderosa pine forests, pinion-juniper woodlands, and juniper savannas, and desert shrublands and semidesert grasslands. San Juan County also contains more water and more extensive stands of riparian habitat than Washington County. About three square miles of Washington County is covered by water, while 113 square miles of San Juan County is water-covered (Wikepedia 2007). Although water and riparian habitat cover less than 1%