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VARIABLES ASSOCIATED WITH NORTHERN GOSHAWK NESTING ON THE DIXIE NATIONAL FOREST

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Introduction

The Northern Goshawk (Accipiter gentilis) is a large forest raptor in the northern hemisphere that preys on small to medium-sized birds and mammals in mature forests (Squires and Reynolds 1997). Because forest structure and composition in the southwest have undergone significant change since pre-settlement times due to fire suppression, timber harvesting, livestock grazing, mining, and recreational use (Reynolds et al. 1992), the goshawk has been listed as a Forest Service sensitive species for Region 4, which includes the Dixie National Forest in Utah. This ranking dictates that for all actions on the Forest, effects to the species must be addressed. On all of the six National Forests in Utah, the goshawk also holds Management Indicator Species (MIS) status. For those Forests, ground-disturbing activities must be addressed as they will affect goshawk population trend and viability. Significant time and resources are applied to gathering population and trend data to fulfill these obligations.

Nest Characteristics


The topographic location relative to the slope may also be an important nesting factor. Hennessy (1978) found that in northern Utah, 50% of goshawk nests were on the lower third of the drainage slope. Reynolds et al. (1992) cites that most nest sites are in drainages or canyon bottoms, protected by northerly-exposed slopes. Nests are usually placed on flat to moderately sloped (1-40% grade) land where trees are larger and grow at a higher density (Reynolds 1978, Hennessy 1978, Shuster 1980, Hayward and Escano 1989, Reynolds et al. 1992). Elevations in northern Utah ranged between 1,737 and 2,469 m (Hennessy 1978).

Goshawks begin breeding activities in April (Moore and Henny 1983, Moore 1980, Hennessy 1978). Clutches of 2-4 eggs are laid in mid-May, and incubation lasts about 30 days, with the nestling period extending through mid-July (Reynolds 1975, Moore 1980). Young are fledged between July 15 and August 15 and may be dependent on adults for food until September 30 (Hennessy 1978, Saunders 1982, Reynolds 1975). Goshawks typically build more than one nest, placing alternates in adjacent trees or up to 0.5 miles away (Reynolds et al. 1992). Goshawks may alternate between these nests on an annual or semi-annual basis, use the same nest for years in a row, or even build a new nest in the same area (Reynolds 1975, Reynolds et al. 1992, Reynolds and Wight 1978).

Methods and Materials

This study was constructed from known goshawk nest sites from 1986-2006 on the Dixie National Forest in southern Utah. Nest location data were collected through survey efforts during breeding season and incidental finds year-round for 21 consecutive years. Universal Transverse Mercator (UTM) locations were taken with handheld Global Positioning System (GPS) units. The specific nest characteristics studied include nest tree species, tree diameter at breast height (DBH), elevation, slope and the overall topography of the nest site. Data were collected from extant nest sites, as well as from previous years’ monitoring forms. Slope and elevation were determined with GIS using ArcMap and Digital Elevation Models (DEMs). All other variables were classified during in-field observation. Occupancy and nest activity data were obtained for each
Northern Goshawk Nests

Results and Discussion

On the Dixie National Forest, 374 nests composing approximately 147 territories have been identified in the 21 years since 1986. Goshawks on this forest, on average, prefer a DBH of 52 cm (21 in, Table I), larger than the average in northern Utah (33 cm, 13 in) (Hennessy 1978), but well within the cited range of 33-110 cm (13-43 in) (Squires and Reynolds 1997). The average elevation of goshawk nest trees on the Dixie is 2,627 m (8,620 ft, Table 1), with a higher minimum (1,967 m, 6,454 ft) and maximum (3,204 m, 10,511 ft) than the northern Utah study (ranging between 1,737 m and 2,469 m) (Hennessy 1978).

The average slope of goshawk nest locations on the Dixie is a 10% grade (Table 1), which is also within the value range cited previously (Squires and Reynolds 1997). Table 2 shows that Dixie goshawks prefer the drainage bottom or the slope, particularly the middle of the slope, for the topographical location of their nests. Reynolds et al. (1992) reports that in general, most nest sites are in drainage bottoms. Our findings differ somewhat from the northern Utah study in which about half the goshawk nests were situated on the drainage slope’s lower third (Hennessy 1978).

Goshawks on the Dixie utilized 10 different tree species for nesting during the study period. Nests were found in aspen most frequently, composing 38.2% of the total nest tree species. Goshawks nested in Ponderosa pine (31.6%) almost as much as aspen. Douglas fir contained 11.8% of the goshawk nests and the remaining 18.4% was shared among the other 7 tree species. Hennessy (1978) also found the majority of goshawk nests in northern Utah in aspens (60.7%), but none in either Ponderosa pine or Douglas firs. This may be due to differences in habitat between forests in northern and southern Utah, or due to a smaller sample size in the Hennessy (1978) study.

Acknowledgments

We would like to thank the USDA Dixie National Forest for funding this project and providing data, as well as the following individuals: Priscilla Summers, Lydia Allen, Nate Yorgason, Jake Schoppe, Lisa Young, Joanne Stenten and Matthew B. Lee.

Literature Cited


Northern Goshawk Nests


Table 1. Average, minimum and maximums are shown in metric and standard units for tree diameter at breast height (DBH), elevation and slope percentage variables in goshawk nests on the Dixie National Forest.

<table>
<thead>
<tr>
<th></th>
<th>DBH centimeters</th>
<th>DBH inches</th>
<th>Elevation meters</th>
<th>Elevation feet</th>
<th>Slope %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>52</td>
<td>21</td>
<td>2,627</td>
<td>8,620</td>
<td>10</td>
</tr>
<tr>
<td>Minimum</td>
<td>23</td>
<td>9</td>
<td>1,967</td>
<td>6,454</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>127</td>
<td>50</td>
<td>3,204</td>
<td>10,511</td>
<td>38</td>
</tr>
</tbody>
</table>

Table 2. The number of active goshawk nests in each topography category on the Dixie National Forest.

<table>
<thead>
<tr>
<th>Topography</th>
<th>Nests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage bottom</td>
<td>114</td>
</tr>
<tr>
<td>Drainage slope - lower</td>
<td>46</td>
</tr>
<tr>
<td>Drainage slope - mid</td>
<td>67</td>
</tr>
<tr>
<td>Drainage slope - upper</td>
<td>16</td>
</tr>
<tr>
<td>Flat</td>
<td>48</td>
</tr>
<tr>
<td>Ridge</td>
<td>6</td>
</tr>
</tbody>
</table>
Figure 1. Percentage of the total nest tree species utilized by goshawks on the Dixie National Forest.

Observed from the Utah CBC Database

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Introduction

The Christmas Bird Count (CBC) database is online and includes 106 (soon to be 107) years of survey information, and is growing with each annual count. This article discusses some observations, trends, and changes in a few selected species recorded on Utah CBCs during the last 20 years. The Christmas Bird Count is based on standardized 15-mile diameter circles which are surveyed annually between December 15 and January 5 (National Audubon Society 2002). Count year numbers are used for identification of the survey period; for example, CBC-99 refers to the count period of December 1998 to January 1999. The most recent count was CBC-107, for the period of December 2006 to January 2007. The most accurate way to analyze the data is by using the “birds per party hour” statistic (bpph) as varying efforts expended are accounted for. However, I’ve also used total numbers of individuals counted in my discussions, as these numbers are often easier to understand. I have deemphasized the sparrows, as information on wintering sparrows can be found in Evans, 2005. The order of the observations is not important, but somewhat follows the taxonomic order of the bird checklist (UOS 2004).

Results and Discussion

The Canada Goose is listed as a common permanent resident of Utah. There has been a documented increase in numbers of nesting (summer residents) over the past few years. However, winter numbers are variable with no trend established. High numbers on CBC-106 and CBC-107 (14,387 and 14,176 respectively), are offset by the increased number of counts and the increased survey effort. In fact, the 40-year high for bpph was 39.1 on CBC-78 when only 3,122 birds were counted. Canada Geese have been recorded each year during the last 40 years except on CBC-87 and CBC-88. Around the Great Salt Lake, these were the high water years of 1986 and 1987. I don’t know if counts like the Bear River Migratory Bird Refuge could not be counted or if the high water “pulled” the geese away from other active counts. And, I don’t know how this event affected the rest of the state. In recent years, bpph has been running from 12-14 whereas for the five counts after CBC-88 the bpph varied from 5.5-16.