Northern Goshawk Diet During the Nesting Season in Southeast Alaska

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Research Note

Northern goshawks (Accipiter gentilis; hereafter, goshawks) occur throughout forests of North America and have received much attention as a target species for management (Reynolds et al. 1992, Iverson et al. 1996, Andersen et al. 2003). Goshawks nest in forest stands with high timber volumes and dense overstory canopies above relatively open understories (Reynolds et al. 1982, Squires and Reynolds 1997, Daw and DeStefano 2001), and goshawk foraging is often associated with similar high-volume forest stands (Widén 1989, Beier and Drennan 1997). This association with foraging is often associated with similar high-volume forest stands above relatively open understories (Reynolds et al. 1982, Squires and Reynolds 1997, Daw and DeStefano 2001), and goshawk foraging is often associated with similar high-volume forest stands (Widén 1989, Beier and Drennan 1997). This association with high-volume forests has caused concern about the effects of forest management on goshawk populations (Crocker-Bedford 1990, Kennedy 1997, Andersen et al. 2003). Initially, management for goshawks concentrated on nesting habitat (Reynolds et al. 1982, Reynolds 1983), but recently the focus has been on managing for abundant and available prey populations (Reynolds et al. 1992, Graham et al. 1999). Thus, understanding the goshawks’ diet is a practical step in any attempt to manage this species.

Across their range, goshawks consume a wide variety of small- to medium-sized birds and mammals associated with forested habitats, including grouse, tree squirrels, corvids, large passerines, woodpeckers, and hares (Cramp and Simmons 1980, Squires and Reynolds 1997). However, goshawks can also be local specialists, so diet patterns might be different across geographic scales.

In 1991, the Alaska Department of Fish and Game (ADF&G) and the United States Forest Service (USFS) began cooperative studies of goshawks in southeast Alaska, USA. Roughly 80% of southeast Alaska is managed by the USFS as part of the 6.8 million ha Tongass National Forest (hereafter, Tongass). This region contains some of the largest remaining tracts of pristine temperate rainforest in the world and has supported industrial-scale logging of old growth forests for ~50 years (Iverson et al. 1996, USFS 1997). Concern for the effects of this logging led to the filing of a petition to list the goshawk as endangered in this region (Federal Register 1995); this petition continued to be litigated in federal court through 2004 (P. Schempf, U.S. Fish and Wildlife Service, personal communication). The most contentious issues for the Tongass relate to management of medium- to high-volume forests, which are critical to wildlife and valuable to the timber industry (Schoen et al. 1988).

A better understanding of goshawk diet during the nesting season in southeast Alaska can provide insight into the importance of different habitats for nesting goshawks. The USFS recognizes that the link among goshawk prey species, prey habitats, and habitat management practices are key elements for conservation of the goshawk and the biotic communities in which it occurs (Reynolds et al. 1992, Iverson et al. 1996). Our objectives were to describe and quantify the nesting season diet of northern goshawks in southeast Alaska, USA, and to examine spatial and temporal variability in goshawk diet within this region.

Study Area

We studied northern goshawk food habits in the Alexander Archipelago of southeast Alaska, USA (Fig. 1), which comprises thousands of islands and is characterized by steep, rugged topography, and coastal fjords. This landscape is naturally fragmented by mountainous terrain, wetlands, and forest patches of various sizes. A cool and wet maritime climate characterizes the region. Precipitation was distributed evenly throughout the year but varied throughout the region, ranging from 130–600 cm (Harris et al. 1974, Farr and Hard 1987).

The forests of southeast Alaska, USA, are coastal, temperate rainforests dominated by western hemlock (Tsuga heterophylla) and Sitka spruce (Picea sitchensis), and they occur at low elevations as a mosaic with muskegs and other wetlands (Neiland 1971). The forest floor is a complex terrain of decaying logs and tipped-up root wads cloaked in shrubs, herbs, ferns, and mosses (Alaback 1982, Schoen et al. 1988). Industrial-scale timber harvesting in this region significantly added to the already fragmented landscape in some portions of the archipelago, and approximately 15% of the original forest containing commercial timber was harvested (Iverson et al. 1996, USFS 1997).

The natural fragmentation in this landscape, combined with anthropogenic changes (e.g., logging, species introductions to islands), created a mosaic of goshawk prey occurrence. Based on this, we qualitatively delineated 2 areas in southeast Alaska, USA. We defined a prey-rich area as all of southeast Alaska, except for Prince of Wales Island (POW) and its associated islands (Fig. 1).