Hairy Woodpecker
(Picoides villosus)

Paul Cotter

Traits of the hairy woodpecker—contrasting black and white (sometimes smoky) coloration, distinctive undulating flight, loud drumming, and willingness to come to feeders—are familiar to many observers in North American forests and woodlands (Fig 1). This species characteristically probes trees for insects, its primary food item, but also feeds on fruit and seeds. A charismatic year-round resident of Southeastern Alaska (Southeast), the hairy woodpecker can be observed in all forested areas of the Tongass National Forest (Gabrielson and Lincoln 1959). In the Tongass, as elsewhere, hairy woodpeckers are primary excavators; they hollow out their nests in trees, often in the trunk or upper regions of snags. These nests are later available for use by other wildlife species. The hairy woodpecker is associated with the varied structure of mature and old-growth forests (Jackson et al. 2002). Because the species is strongly affiliated with old-growth forest habitats, population trends of the hairy woodpecker may serve as indicators of old-growth forest health. Further, because other bird species are at least partly dependent on abandoned hairy woodpecker cavities, declines in hairy woodpecker populations may foreshadow declines in other avian species. Recently, the U.S. Fish and Wildlife Service (USFWS) has expressed interest in developing a monitoring strategy for hairy woodpeckers (M. Kissling, USFWS, Juneau, AK, personal communication 2004). The reliance of this species on old-growth forest habitats for breeding and wintering makes it a logical choice for a Management Indicator Species (MIS) for measuring old-growth forest health in the Tongass.

FIG 1. A male hairy woodpecker at a feeding site in southeastern Alaska. (Bob Armstrong)

STATUS IN SOUTHEASTERN ALASKA

Distribution

The hairy woodpecker is widely distributed throughout Southeast and across the Tongass. Gabrielson and Lincoln (1959) summarized early records throughout Southeast. Stotts et al. (1999) observed them in 8 of 11 Research Natural Areas (RNAs). Johnson (2003) frequently observed hairy woodpeckers and characterized them as uncommon to fairly common resident breeders on all large river systems he surveyed. Hairy woodpeckers were regularly recorded on 10 of 12 (83%) Southeast routes for the Breeding Bird Survey (BBS) (Cotter and Andres 2000).

Abundance

Although their distribution includes the entire forested region of Southeast, hairy woodpeckers (and other woodpeckers) occur in low densities compared to common songbird (passerine) species. On Tongass RNAs, Stotts et al. (1999) recorded hairy woodpeckers on 7% of all point count stops (0.07 birds/point), and based on inventory data, considered this abundance uncommon (average abundance = 0.68 – 1.42 observations/day).

Johnson (2003) listed hairy woodpeckers as confirmed or probable breeders at 9 of 11 major riparian areas across the Tongass. Detections on point counts varied from 0 individuals per point (on 1 river) to 0.14 individuals per point. Johnson (2003) detected hairy woodpeckers in similar densities along both coastal and trans-mountain rivers throughout the Tongass National Forest. Kissling (2003) considered hairy woodpeckers uncommon in undisturbed habitats (0.1 birds/acre [0.04/ha]).

Taxonomic Considerations

Extreme geographic variation in size and plumage has resulted in a confusing taxonomy of hairy woodpeckers across North America. As many as 21 subspecific variants have been proposed. Although the number of recognized subspecies is still in debate, two main population groups, divided geographically into Western North America/Middle America and Boreal/Eastern North America populations, are generally recognized (Jackson et al. 2002). In the Tongass National Forest, only one subspecies is recognized, Picoides villosus harrisi (Gibson and Kessel 1997), belonging to the Western North America/Middle America group.

Significance to the Region and Tongass National Forest

Hairy woodpeckers, whose preferred habitat is undisturbed old-growth forest, breed and winter in old-growth stands across Southeast and the Tongass. The Tongass contains the largest tracts of undisturbed old-growth forest in the nation. The strong affiliation with old growth justifies the candidacy of the hairy woodpecker as an MIS. Negative impacts on hairy woodpecker populations may also affect those species that use abandoned woodpecker cavities for nesting.

Special Management and Conservation Designations

The hairy woodpecker is currently listed as a Management Indicator Species (MIS) in the Tongass National Forest.

HABITAT RELATIONSHIPS

Hairy woodpeckers are considered to be snag-dependent and primary excavators in the Tongass National Forest (Hughes 1985, U.S. Forest Service [USFS] 2002). In the only detailed habitat study of Tongass hairy woodpeckers, Hughes (1985) compared hairy woodpecker and snag densities in old-growth forest stands near Hawk Inlet, Admiralty Island, consisting of large, medium, and small trees. Despite no difference in snag densities between forest classes, he found higher winter densities of hairy woodpeckers in large-tree stands (5 birds/100 acres [40.5 hectares]) compared with medium (0.7 birds/100 acres [40.5 hectares]) and small-tree (0.8 birds/100 acres [40.5 hectares]) stands (Fig 2). Hughes (1985) found that very old, broken-top snags with heartwood decay were more likely to possess nesting holes than snags with intact tops, no heartwood decay, or both. Incidence of heartwood decay increases with stand age, suggesting that older stands are preferred habitat for primary and secondary excavators.

In its supplemental environmental impact statement to the Tongass Land Management Plan, the USFS (2003) suggested (based on the habitat suitability model developed by Suring [1988]) that winter habitat may be most limiting to hairy woodpeckers and that habitat patch size required for hairy woodpeckers is likely greater than 500 acres (220 hectares). Although possible, these assertions are based on data from other geographic areas; how well they apply to the Tongass is not known. Clearly, defining habitat, seasonal, and food-supply limitations and minimum patch size for hairy woodpeckers in the Tongass would help in

FIG 2. Comparison between large-tree (a) and small-tree (b) old growth in southeastern Alaska. Large-tree stands have larger diameter trees and snags suitable as nesting habitat for cavity nesting birds. (John Schoen)

establishing conservation and management strategies for the species.

Hairy woodpeckers occurred on a higher percentage of point counts in low- and mid-elevation hemlock-spruce than for any other habitat surveyed by Andres et al. (2004). In an analysis of bird-habitat associations of Southeast BBS routes, Cotter and Andres (2000) found highest densities of hairy woodpeckers at points with greater than 60% of dense needleleaf forest cover.

The USFS considers the habitat requirement of the hairy woodpecker to be "high-volume old-growth forest with tall, large diameter trees and decadent timber" (for example, downed trees and snags) (USFS 2002). A preliminary study of habitat use by hairy woodpeckers suggests they are more closely associated with large interior-patch, old-growth habitat than with edge habitats. This study, a cooperative effort between the USFWS and the USFS, will further define nesting habitat requirements of primary excavators and may help develop a reliable survey protocol for hairy woodpeckers in the Tongass (Kissling, personal communication 2004). Recently active nests found in this study were in medium-size, dead western hemlock (Tsuga heterophylla) with some exterior decay, but hard, intact wood. Although primarily found in old-growth coniferous forests, hairy woodpeckers also breed in mixed forests along large rivers in the Tongass. In these large-river habitats, nests have been located in both cottonwood and spruce snags (Gibson 1986, Johnson 2003).

IMPLICATIONS FOR CONSERVATION

Hairy woodpeckers may be dependent on and are found in highest densities in old-growth habitats in the Tongass (Hughes 1985, Stotts et al. 1999, Cotter and Andres 2000). Fragmenting and converting old growth to a mix of clearcuts and young forest stages will likely reduce densities of hairy woodpecker populations in affected areas (Hughes 1985). Widespread harvesting of old-growth timber on public and private lands in Southeast presents the greatest challenge for maintaining quality nesting, foraging, and wintering habitat for hairy woodpeckers (Hughes 1985).

Old-growth forests are characterized by an environmental setting with ecological attributes important to the species inhabiting them. Many of these attributes are not found in younger forest stages. For hairy woodpeckers, large-diameter, dead snags, including those with broken tops, are considered prime nesting locations. These nesting sites are found in much higher densities in structurally complex old-growth forest (Hughes 1985). Snags within second growth forest are rarely used because they lack sufficient diameter for nests (Suring 1988). Therefore, conversion of old-growth stands to clearcuts and younger successional stages will likely reduce existing hairy woodpecker habitat (Fig 3).

Impacts of forest fragmentation on hairy woodpecker populations have not been well researched, but it is believed hairy woodpeckers in the Tongass require a minimum old-growth stand size of at

least 500 acres (220 hectares) (Hughes 1985, USFS 2003). Fragmentation of habitat often has deleterious effects on forest birds by reducing structural and microclimatic conditions of the interior forest. Aside from loss of habitat, fragmentation increases forest edge area; this change can improve predator access and affect ecological dynamics of the forest through microclimatic effects (DellaSala et al. 1996).

The USFS (2002) has cited several possible objections to including hairy woodpeckers as an MIS, including (1) woodpecker habitat needs may be addressed by monitoring of other species, (2) the difficulty and presumed expense of monitoring, (3) the current lack of a monitoring protocol that is sensitive to Tongass-level population change, and (4) the difficulty in connecting population changes with human-caused habitat change in the forest. The USFS suggests that "an effective monitoring protocol may not be practical because hairy woodpeckers have low densities across the forest and are difficult to detect. In addition, an effective protocol may be cost prohibitive to implement" (USFS 2003). If the USFS determines it is unable to adequately monitor the hairy woodpecker, the likelihood of the species being removed from the MIS list increases.

Both the USFS and the USFWS recognize the importance of including an old-growth-dependent, primary excavator on the MIS list. The USFS recently contracted the USFWS to develop and test a survey protocol for primary excavators in the Tongass, a project that is ongoing (Kissling, personal communication 2004).

Recent work suggests that hairy woodpeckers respond strongly to broadcast surveys, a technique in which woodpecker calls are amplified and played in the forest, followed by periods of listening for birds responding to the broadcast. This technique, often used for owl surveys, can easily be standardized and may provide a relatively easy and cost-effective strategy for monitoring hairy woodpeckers in the Tongass National Forest (Kissling, personal communication 2004).

The inadequacy of monitoring protocols for land bird species in roadless areas of the Tongass National Forest, as in most of Alaska, has long been recognized. Boreal Partners In Flight, a cooperative effort between government agencies, and non-governmental organizations, has developed and is currently testing the Alaska Off-road Breeding Bird Survey (ORBBS). This project builds on the national BBS by focusing on areas not served by roads. Eighteen randomly-selected plots, each containing 25 point counts, have been established in the Tongass. The plan calls for a biennial rotation for sampling each plot, resulting in surveys of 9 each year. It was developed to detect a 50% population change in a given species during a 25-year period (G. Baluss, USFS, Juneau, AK, personal communication 2004). The effectiveness of this plan, and the road-based BBS, on monitoring hairy woodpeckers in the Tongass is currently being analyzed (C. Handel, U.S. Geological Survey, Anchorage, AK, personal communication 2004).

FIG 3. Second-growth forests have few snags and no large diameter trees and snags suitable for nesting habitat for hairy woodpeckers and other cavity nesting birds. (John Schoen)

Under a short-rotation (<250 years) harvesting schedule, old-growth forest is essentially a nonrenewable resource. Conversion of old-growth stands to younger stands has occurred at a steady pace in Southeast, especially in the highly productive southern portions of the forest. Large-scale timber harvesting reduces woodpecker habitat by altering the complex ecological structure afforded by old-growth forest stands. Patch-size reduction and forest fragmentation likely diminish woodpecker capability through direct and indirect effects. Therefore, the long-term effects of forest management on hairy woodpeckers and other birds affiliated with old growth should be considered when making land-use decisions in Southeast forests.

REFERENCES CITED

Andres, B., M. Stotts, and J. Stotts. 2004. Breeding birds of research natural areas in southeastern Alaska. Northwestern Naturalist 85:95-103.

Cotter, P.A., and B.A. Andres. 2000. Breeding bird habitat associations on the Alaska Breeding Bird Survey. Information and Technology Report USGS/BRD/ITR-2000-0010. U.S. Biological Survey, Biological Resources Division. 53 pp.

DellaSala, D., J. Hagar, K. Engel, W. McComb, R. Fairbanks, and E. Campbell. 1996. Effects of silvicultural modifications of temperate rainforest on breeding and wintering bird communities, Prince of Wales Island, Southeast Alaska. Condor 98:706–721.

Gabrielson, I., and F. Lincoln. 959. Birds of Alaska. Wildlife Management Institute, Stackpole Co., Harrisburg, PA. 922 pp.

Gibson, D. 1986. Birds observed in the Hyder area, Southeastern Alaska, 10-20 June 1986. Unpublished report. University of Alaska Museum, Fairbanks, AK. 11 pp.

_____ and B. Kessel. 1997. Inventory of the species and subspecies of Alaska birds. Western Birds 28(2):45–95.

Hughes, J. 1985. Characteristics of standing dead trees in old-growth forests on Admiralty Island, Alaska. Thesis, Washington State University. 101 pp.

Jackson, J., H. Ouellet, and B. Jackson. 2002. Hairy woodpecker (Picoides villosus). In A. Poole and F. Gill, editors. Birds of North America. No. 702. Philadelphia Academy of Sciences and American Ornithologists' Union.

Johnson, J. 2003. Breeding bird communities of major mainland rivers of Southeastern Alaska. Thesis, Utah State University, Logan, UT.

Kissling, M. 2003. Effects of forested buffer width on breeding bird communities in coastal forests of Southeast Alaska with a comparison of avian sampling techniques. Thesis, University of Idaho.

Stotts, M., B. Andres, and J. Melton. 1999. Breeding bird and vegetation community surveys of Research Natural Areas in the Tongass National Forest. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, AK. 36 pp.

Suring, L. 1988. Habitat capability model for hairy woodpeckers in Southeast Alaska: winter habitat. U.S. Forest Service, Juneau, AK. 15 pp.

U.S. Forest Service. 1997. Tongass land management plan revision. R10-MB-338b. U.S. Department of Agriculture, Ketchikan, AK.

_____. 2002. Tongass monitoring and evaluation, 2001 report. USDA Forest Service Alaska Region, Juneau, AK.

_____. 2003. Tongass land management plan revision: final supplemental environmental impact statement. R10-MB-48a. USDA Forest Service Alaska Region, Juneau, AK.