



### Slender-Billed Nuthatch (*Sitta carolinenses aculeata*)

**Conservation Status**—The slender-billed nuthatch is one of two subspecies of *S. carolinenses* (commonly called the white-breasted nuthatch) occurring in Oregon. Slender-billed nuthatches are listed as an ISSSSP Sensitive Species in Washington, and designated as an Oregon Conservation Strategy species because populations are “low and declining” (ODFW 2006:314). The slender-billed nuthatch has no special federal status in Oregon, but the species is designated as a USFWS species of concern in Washington (USFWS 2009). Factors causing the decline of slender-billed nuthatch populations are reported to be loss of large-diameter oaks and a subsequent reduction in the availability of tree cavities (Hagar 2003), as well as competition for cavity nest sites (Viste-Sparkman 2005).

**Distribution**—White-breasted nuthatches are a widely-distributed, year-round resident of North America (Grub and Pravosudov 2008). Mitochondrial DNA analysis suggests that the eight recognized subspecies of *S. carolinenses* are organized into four monophyletic clades that have differentiated *in situ* during the fragmentation of the continental Tertiary forest caused by Late Miocene and Pliocene orogeny, and through further population isolation caused by glacial cycles and climatic shifts (Spellman and Klicka 2007).

In Oregon, *S. carolinenses aculeata* is distributed across wooded slopes of the major interior valleys west of the Cascade Range; *S. carolinenses tenuissima* occurs in forested areas east of the Cascade crest (Hagar 2003). Slender-billed nuthatches probably have never been common in the Willamette Valley, at least since European settlement (Gabrielson and Jewett 1940). Today, the subspecies is considered to be rare across most of the Valley, but can be locally common in stands of oak (*Quercus* spp.), mixed oak-conifer woodlands, and nut orchards (Hagar 2003).

**Ecology**—Today, slender-billed nuthatches are most closely associated with woodlands dominated by Oregon white oak (*Quercus garryanna*) in the Willamette Valley (Hagar 2003). Slender-billed nuthatches also frequently use stands of mature ponderosa pine (Anderson 1976, Contreras 1997), a habitat type that is now exceedingly rare in the Willamette Valley, but was much more extensive on the pre-European landscape (Hibbs et al. 2002). Hagar and Stern (2001) reported a positive relationship between the relative abundance of slender-billed nuthatches and the average diameter of oaks in Willamette Valley woodlands. In another Willamette Valley study, Viste-Sparkman (2005) found that the population density of slender-billed nuthatches was strongly associated with oak canopy cover and the stand frequency of large oaks (diameter breast height >50-cm; >20 in). DeMars (2008) reported that slender-billed nuthatches will use relatively isolated, individual oak trees on agricultural landscapes.

Investigations into the response of slender-billed nuthatches and other subspecies of *S. carolinensis* to patch size and landscape configuration have yielded conflicting findings. In the Willamette Valley, Vista-Sparkman (2005) reported that slender-billed nuthatch density was greater in small oak woodland patches and was positively associated with increasing landscape edge density. Similarly, white-breasted nuthatches were found to be more closely associated with edges rather than interiors of oak woodlands in California (Sisk and Margules 1995). However, studies conducted in Illinois (Blake and Karr 1987) and the Mid-Atlantic States (Robbins et al. 1989) reported that the abundance of white-breasted nuthatches was positively associated with larger woodland patches. In Ontario, the presence of the species was unrelated to the amount or configuration of forest cover on the landscape (Villard et al. 1999). The discrepancy among these findings could be due to sensitivity of the species response to the scale and extent of the study area, as well as to the types of patches and edges (e.g., oak woodland-conifer forest, oak woodland-dry prairie) represented on the study area (Thompson et al. 2002). Vista-Sparkman (2005) posited several ecological explanations for the association between slender-billed nuthatch density and woodland edges—her principle assertion being that oaks near woodland edges grow larger and have more fully-developed crowns than interior trees, attributes associated with greater availability of food and tree cavities.

The slender-billed nuthatch is primarily a bark-forager, using its long bill to probe into bark crevices for insects (Hagar 2003). However, the species will sometimes glean foliage of trees and shrubs for food (Anderson 1976). The greater abundance and diversity of arthropods that has been observed in trees with furrowed bark compared to smooth-barked trees (Jackson 1979) offers a possible explanation for the close-association between slender-billed nuthatch abundance and large-diameter oaks, which are characterized by increasingly fissured bark as trees mature. Insects comprise most of the diet during all seasons of the year; weevils (Coleoptera and Curculionida) reportedly are the most common prey items in the Willamette Valley (Anderson 1976). Plant seeds, especially those of sedge (Cyperaceae), are a minor component of the winter diet (Anderson 1976).

Slender-billed nuthatch pairs hold year-round territories, but defense behavior declines outside of the breeding season (Hagar 2003). Nesting has been observed as early as mid-April in Oregon, but most nesting/rearing activities peak during June (Adamus et al. 2002). Slender-billed nuthatches are a secondary cavity-nester, usually using a tree cavity excavated by a woodpecker. During a 2-year study in the Willamette Valley, 52 out of a total of 77 nests discovered were in Oregon white oak trees (Viste-Sparkman 2005). On average, nest trees were 71 cm diameter breast height (DBH), range 10-137 cm DBH and contained 8.2 cavities per tree (Viste-Sparkman 2005). The average height of nest cavities was 6.1 m (95% confidence interval [CI] 4.9-7.3 m) and branch diameter at the nest cavity averaged 49 cm (CI 43-55 c; Viste-Sparkman 2005). Of 41 nests discovered by Viste-Sparkman (2005) in 2004, 10 were in cavities used the previous year.

No home range or territory size estimates are available for the slender-billed nuthatch. However, a research summary compiled by Grubb and Pravosudov (2008) found that territory sizes for *S. carolinensis* across the US, as well as a Eurasia congener range between 10-40 ha (25-98 ac); territory sizes tending toward the smaller end of the range in closed-canopy forest and larger territories in open woodlands. Our literature review did not reveal any descriptions of natal dispersal

**Habitat Management/Restoration**—Slender-billed nuthatches reach their highest densities in oak or mixed oak-conifer woodlands. Trees used for nesting are characterized by their large diameter, open-grown form, and multiple cavities in the stem and large branches. Oregon white oak stands occupied by slender-billed nuthatches are characterized by relatively high canopy cover (40-97%) and oak basal area (mean 24 m<sup>2</sup>/ha; Vista-Sparkman 2005).

**Non-Habitat Limiting Factors**— There is surprisingly little information describing sources of mortality or non-habitat limiting factors for such a widespread species. In the Willamette Valley 13 of 25 nests monitored during 2003-2004 failed; of the 13 failed nests, 11 were taken by unspecified predators (Vista-Sparkman 2005). Owls and hawks are assumed to be predators of adult nuthatches (Grubb and Pravosudov 2008)

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