

# WILLIAMSON'S SAPSUCKER

## *Sphyrapicus thyroideus*

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### Species Information

#### Taxonomy

Two subspecies of *Sphyrapicus thyroideus* are recognized, both of which occur in British Columbia (McTaggart-Cowan 1938; AOU 1957; Cannings 1998). The “Western” subspecies, *S. thyroideus thyroideus*, breeds in central-southern British Columbia and the “Rocky Mountain” subspecies, *S. thyroideus nataliae*, breeds in extreme south-eastern British Columbia.

#### Description

Medium-sized woodpecker. The male has a distinctly black back and breast, with white rump and wing patches; it has a bright red chin and throat and its belly is yellow. The female has a brown head with dark brown and white barring on the back, wings and sides; females lack the white wing patch and red throat, and the belly is variably yellow. Juveniles resemble adults but are duller in colour. They attain adult plumage by the first winter.

#### Distribution

##### Global

Breeds from the southern Interior of British Columbia south through the eastern Cascades and Rocky Mountains to northern Baja, northern Arizona, and northwestern New Mexico (AOU 1983; Kratter 1991; Dobbs et al. 1997). Winters from the southwestern United States south to southwestern California and north-central Mexico (Dobbs et al. 1997). In Canada, it occurs only in British Columbia and extreme southwestern Alberta.

#### British Columbia

The Williamson's Sapsucker is an uncommon or rare migrant and summer visitor to the southern Interior of British Columbia (Campbell et al. 1990). It has the most restricted distribution and lowest abundance of the four species of sapsuckers that occur in British Columbia (Campbell et al. 1990). Breeding occurs from the International Boundary north to at least Scottie Creek in the southern Interior (Cooper 1995) and Whiteswan Lake in the Kootenays (Campbell et al. 2000). There is a gap in the distribution between the two subspecies from the Greenwood to Cranbrook areas (Cooper 1995).

##### Forest region and districts

*S. thyroideus nataliae*

Southern Interior: Rocky Mountain

*S. thyroideus thyroideus*

Southern Interior: Arrow Boundary, Cascades, Kamloops, Okanagan Shuswap, Rocky Mountain

##### Ecoprovinces and ecosections

*S. thyroideus nataliae*

SIM: COC, EKT, EPM, FLV, MCR, SPK

*S. thyroideus thyroideus*

SIM: CCM, SCM, SFH, SPM

SOI: GUU, NIB, NOB, NOH, OKR, PAR, SHB, SOB, SOH, STU, THB

##### Biogeoclimatic units

ESSF: mw (very rare)

ICH: dw, mk1, mk2, mw2, xw

IDF: dk1, dk1a, dk2, dm, dm1, dm2, mw1, mw2, un, xh1, xh1a, xh2, xh2a, xw

MS: dk, dm1, dm2, xk

PP: dh1, dh2, xh1, xh1a, xh2, xh2a

## Williamson's Sapsucker (*Sphyrapicus thyroideus*)



Note: This map represents a broad view of the distribution of potential habitat used by this species. The map is based on several ecosystem classifications (Ecoregion, Biogeoclimatic and Broad Ecosystem Inventory) as well as current knowledge of the species' habitat preferences. This species may or may not occur in all areas indicated. More detailed maps are available for this species from the Ministry of Sustainable Resource Management.

### **Broad ecosystem units**

CR, DF, DL, DP, IG, IS, OV, PP, SD, WR

### **Elevation**

Williamson's Sapsuckers breed at middle to higher elevations on the Thompson-Okanagan Plateau at least as far east as Greenwood, and west to Manning Park and Lytton. It also likely breeds at similar elevations in the southern East Kootenay, from the Flathead River north to Whiteswan Lake. It has been recorded breeding at elevations of 850–1490 m (Campbell et al. 1990; Cooper 1995; Gyug 1997). A few non-breeding individuals wander beyond their normal range (Campbell et al. 1990).

### **Life History**

#### **Diet and foraging behaviour**

Before the eggs hatch, adults feed exclusively on conifer sap and phloem. After nestlings are present, diet switches to mainly ants (Stallcup 1968; Crockett 1975). Trees used for obtaining sap are often ringed with "sap wells." These sap wells are visited several times each day, and sap trees are usually smaller than expected on the basis of availability (Dobbs et al. 1997).

#### **Reproduction**

Males establish breeding territories after arriving on breeding grounds and pairs form after females arrive, 1–2 weeks later (Crockett and Hansley 1977). Nesting habitat includes relatively open, mid-elevation coniferous forests. Cavities are excavated in trees infected with *Fomes* species or other fungal species that cause heart rot. In British Columbia, nest trees are usually conifers (Campbell et al. 1990); in other areas trembling aspen (*Populus tremuloides*) is most commonly used (Dobbs et al. 1997).

Pairs often reform between years and may reuse the same nest tree, although new cavities are usually excavated each year (Conway and Martin 1993). In one 5-year study in British Columbia, only 3 of 18 original nest trees were still being used at the end of 5 years; as pairs often moved to alternate nest trees in their areas (L. Gyug, pers. comm.).

Clutches contain four to six eggs, eggs are incubated for 12–14 days, and nestlings fledge after about 32 days (Crockett and Hansley 1977; Martin and Li 1992; Martin 1995). In British Columbia, nests with eggs or young could be found between 23 April and 15 July (Cooper 1995). Adults and young disperse from the nesting area within a few days after young fledge (Crockett and Hansley 1977). One brood is produced annually (Dobbs et al. 1997).

#### **Site fidelity**

Pairs often reform between years and may reuse the same nest tree, although new cavities are usually excavated each year (Conway and Martin 1993).

#### **Home range**

Elsewhere, home ranges have been suggested to be between 4 and 9 ha (Crockett 1975) in Colorado, and 4 and 6.8 ha in the western United States (mean home range size) (Thomas et al. 1979; Sousa 1983), but these are likely underestimated. Densities in the western United States ranged from 1 to 4.1 breeding pairs/40 ha (Stallcup 1968; Bock and Lynch 1970; Winternitz 1976).

There is very limited information for British Columbia, but home ranges are focused on the nest tree and are likely >20 ha (Manning and Cooper 1996; Gyug 1997). North of Greenwood, B.C., one Williamson's Sapsucker home range was determined by radio-telemetry data to be at least 54.2 ha (Manning and Cooper 1996). Densities of breeding pairs near Johnstone Creek (northwest of Rock Creek, B.C.), were estimated to be 1 pair/120 ha (Gyug 1997).

#### **Movements and dispersal**

The Williamson's Sapsucker is a migratory woodpecker that returns to British Columbia from late March through mid-April; fall migrants depart by mid-September (Campbell et al. 1990).

### **Habitat**

#### **Structural stage**

Nesting: 6–7

Foraging: 4–7

## Important habitats and habitat features

### Nesting

Mixed western larch (*Larix occidentalis*), interior Douglas-fir (*Pseudotsuga menziesii*), and ponderosa pine (*Pinus ponderosa*) forests are important nesting habitats. In British Columbia, nests have largely been found in coniferous trees, particularly western larch, but also in ponderosa pine (especially near Princeton), Douglas-fir, lodgepole pine (*Pinus contorta*), Engelmann spruce (*Picea engelmannii*), white spruce (*Picea glauca*), paper birch (*Betula papyrifera*), and black cottonwood (*Populus balsamifera*) (Cannings et al. 1987; Morgan et al. 1989; Campbell et al. 1990; Cooper 1995; Manning and Cooper 1996; Gyug 1997, 1999). However, in the western parts of its range in British Columbia (STU and PAR ecoregions), trembling aspen appears to be the preferred nest tree species (Cooper 1995). Dobbs et al. (1997) note that Williamson's Sapsuckers usually nest in aspen where it is available.

Of the 28 nests known from British Columbia, 22 were found in conifers particularly western larch ( $n = 12$ ) (Campbell et al. 1990). In the East Kootenay and the Southern Okanagan Highland, it is usually associated with mixed coniferous forests with stands of mature western larch. In northeastern Oregon, Williamson's Sapsucker also appear to prefer western larch; western larch comprised 62% of the live trees with nests, although dead western larch, ponderosa pine, Douglas-fir, and grand fir (*Abies grandis*) were also used (Bull et al. 1986). In Oregon, 53% of the nests occurred in the grand fir stand types and basal area was the best discriminator between used and unused habitat (Bull et al. 1986). The emphasis on grand fir is probably because these stands provide large, decaying western larch and ponderosa pine suitable for nest sites and live Douglas-fir trees for a source of sap. Williamson's Sapsucker preferred stands with <75% canopy closure, basal areas <34 m<sup>2</sup>/ha, two or three canopy layers, and >1 dead tree/0.1 ha (Bull et al. 1986).

In British Columbia, north of Greenwood, nest trees were on south-facing slopes; none were found on north-facing slopes (Manning and Cooper 1996). However, nest trees near Rock Creek and Midway

occurred on any and all aspects if slopes were <30%; but if slopes were >41%, all nest trees were on north- or west-facing slopes (Gyug 1997, 1999).

Williamson's Sapsuckers usually excavate a new nest cavity every year, although nest trees may be used in successive years (Cooper 1995; Dobbs et al. 1993). The Williamson's Sapsucker needs live or recently dead trees containing heart rot decay for cavity excavation (wildlife tree classes 2–5). Similar to the research findings in Oregon, all nest trees found at Wallace Creek, B.C., were in live larch with evidence of decayed wood in the upper bole (tree decay class 2 with dead or broken soft tops) (Manning and Cooper 1996). In Oregon, of 86 nest trees, 51% were found in "hard snags" (dead <3 yr.) and 49% in live trees (Bull et al. 1986). Also, 73% of Williamson's Sapsucker nest trees had 75% of the original bark, and a mean of 61% of the branches were remaining and 64% of the nest trees had broken tops (Bull et al. 1986).

They generally require larger trees (i.e., >30 cm dbh but coniferous nest trees are usually >50 cm dbh) (Table 1). In three recent studies conducted in the Arrow Boundary forest district (Northern Okanagan Highland and Selkirk Foothills ecoregions) the Williamson's Sapsuckers clearly selected larger diameter (>60 cm dbh) western larch as nest trees (Gyug and Bennett 1995, Manning and Cooper 1996, Gyug 1999). Gyug (1997) found Williamson's Sapsucker nests in large live western larch 70–110 cm dbh. No nest trees have been recorded as single trees standing alone in an opening, but are usually found within an open stand or within a patch of larger trees (Manning and Cooper 1996).

It is likely that the condition (i.e., heartwood decay), structural characteristics (i.e., tree diameter and height), and abundance of suitable nest trees are limiting factors influencing Williamson's Sapsucker distribution and abundance in some areas of their range. Cannings et al. (1987) suggested that the distribution of western larch may be a limiting habitat factor for this species in the Okanagan. Stands of +200- year-old western larch are the best nesting habitat available in British Columbia, but not all such stands have the veteran larch needed as

**Table 1.** Characteristics (mean ± SD) of Williamson’s Sapsucker nest trees from three locations

Forests	Location	n	Tree dbh (cm)	Tree height (m)	Nest height (m)	Citation
Western larch, ponderosa pine	Oregon	86	70 ± 26.4	24 ± 10.1		Bull et al. 1986
Ponderosa pine, Douglas-fir	Colorado	40	23.5			Crockett and Hadow 1975
Aspen, western larch	British Columbia	25			2–18	Campbell et al. 1990

nest trees (Gyug 2000). Veteran larch needed for nest trees are usually much older than the “stands” they occur in, and have survived one or two stand-maintaining fires.

**Foraging**

Live trees, in open to semi-open (<75% canopy cover) mixed coniferous forests that include western larch, Douglas-fir, grand fir, and trembling aspen are important foraging habitat (Crockett and Hadow 1975; Bull et al. 1986; Dobbs et al. 1997). North of Greenwood, Williamson’s Sapsuckers preferentially fed in pole/sapling stage (20–40 years age) Douglas-fir and western larch stands (Manning and Cooper 1996). The mean dbh of trees used for sap wells in these stands was 27.6 cm (Douglas-fir) and 44.2 cm (western larch).

**Roosting**

This sapsucker roosts in natural or excavated cavities in trees (Dobbs et al. 1997), probably similar in size and species composition to those used for nesting.

**Conservation and Management**

**Status**

The “Rocky Mountain” Williamson’s Sapsucker (subspecies *nataliae*) is on the provincial *Red List* in British Columbia. The “Western” Williamson’s Sapsucker (subspecies *thyroideus*) is on the provincial *Blue List*. Their status in Canada has not been determined (COSEWIC 2002). (See Summary of ABI status in BC and adjacent jurisdictions at bottom of page.)

**Trends**

**Population trends**

There are few breeding records for the *nataliae* subspecies during the last 5 decades and, presumably, there is a very small population (Cooper 1995; Cannings 1996; Fraser et al. 1999). The *thyroideus* subspecies also has a small population. Population trends are unknown, but Fraser et al. (1999) suggest that the *nataliae* subspecies may be declining whereas the *thyroideus* subspecies is likely stable or slowly declining.

Summary of ABI status in BC and adjacent jurisdictions (NatureServe Explorer 2002)

Subspecies	BC	CA	ID	MT	OR	WA	Canada	Global
Rocky Mountain	S1S2B		S5B, SZN	S4B, SZN			N2?B, N?N	G5TU
Western	S3B, SZN	S3			S4B, S3N	S4B, SZN	N3B, N?N	G5TU

## Habitat trends

High suitability habitat for Williamson's Sapsucker is likely declining in British Columbia because of the harvesting of stands of old and mature western larch, ponderosa pine, and Douglas-fir.

## Threats

### Population threats

A small population restricted to the southern Interior of British Columbia makes this species vulnerable to extirpation.

### Habitat threats

The primary threat to this species' habitat throughout most of its range in British Columbia is logging of mature or old western larch and Douglas-fir stands. Locally, near Princeton and perhaps in other areas, logging of old-growth ponderosa pine threatens small populations. In British Columbia, this sapsucker nests mainly in large decadent western larch, and occasionally in other tree species including Douglas-fir, trembling aspen, and ponderosa pine. Clearcuts usually remove habitat while selection logging often removes large trees that are needed for recruitment as future nest trees (Cooper 1995; Fraser et al. 1999). Cutting of decadent western larch identified as danger trees near work areas may remove high quality nest trees.

## Legal Protection and Habitat Conservation

The Williamson's Sapsucker, its nests, and its eggs are protected from direct persecution in Canada and the United States by the *Migratory Birds Convention Act*. In British Columbia, the same are protected under the provincial *Wildlife Act*.

Only a few nesting areas are currently within protected areas (e.g., Manning Park, Okanagan Mountain Park, and Yellow Pine Ecological Reserve) (Cooper 1995; Fraser et al. 1999).

Virtually all habitat is Crown land; thus habitat conservation may be partially addressed by the old forest retention, wildlife tree retention area, and riparian reserve recommendations in the results

based code. Patches of mature or old forest habitat that include potential nest trees should maintain breeding pairs because of relatively small home ranges and the fact that foraging can be accommodated in younger (20–40+ years) stands.

## Identified Wildlife Provisions

### Sustainable resource management and planning recommendations

The objective for this species is to maintain wildlife trees >60 cm dbh for coniferous species and >30 cm dbh for deciduous species for nesting across the breeding range and over time. Consider wildlife tree retention area and old growth management area objectives for the Williamson's Sapsucker in the following forest districts: Rocky Mountain, Kamloops, Okanagan Shuswap, Cascades, and Arrow Boundary.

Blocks should be assessed to identify potentially suitable WTR areas. Table 2 provides recommendations for WTR areas and OGMAs.

It is recommended that salvage not occur in WTR areas and OGMAs established to provide habitat for this species. In addition, these areas should be designed to include as many suitable wildlife trees as possible that should be maintained over the long term (>80 years).

In addition, the following general practices could provide for suitable habitat for Williamson's Sapsuckers.

- ❖ Use partial cutting silvicultural systems to maintain habitat attributes suitable for Williamson's Sapsuckers in areas scheduled for harvesting. These can include silvicultural systems that employ some type of patch retention (e.g., WTR areas and RMAs), or other partial cutting system that retains scattered trees with suitable habitat attributes.
- ❖ In areas scheduled for harvesting, regardless of the silvicultural system chosen, retain ALL VETERAN western larch and ponderosa pine as wildlife trees. Also retain some mature western larch, ponderosa pine, or Douglas-fir >60 cm dbh, especially if these trees have broken or dead tops, evidence of heart rot decay (fungal conks,

**Table 2.** Preferred WTP considerations for Williamson’s Sapsuckers

Attribute	Characteristics
Size (ha)	at least 0.25 ha; preferably larger
Location	see “Biogeoclimatic units” above
Tree features	signs of woodpecker use (i.e., cavities); structural defects such as dead or broken tops, or presence of fungal conks and other evidence of internal tree decay
Tree species	veteran larch preferred when available, but also ponderosa pine, Douglas-fir, and grand fir; trembling aspen in the western part of the range
Tree size (dbh)	70–96 cm or larger (after Bull et al. 1986); in the absence of trees with the preferred dbh, deciduous trees $\geq 30$ cm dbh and $\geq 50$ cm dbh for coniferous species should be retained for recruitment
Wildlife tree class	class 2–6, especially with soft dead or broken tops, or fungal conks

large stem scars), or evidence of wildlife use (e.g., nest cavities). In the western parts of the sapsuckers’ range, retain some live aspen  $> 30$  cm dbh with broken tops, stem scars, canker faces, fungal conks, or nest cavities. Retain in patches.

- ❖ Leave advance regeneration, pole-saplings, and deciduous vegetation around wildlife trees to enhance their habitat quality.
- ❖ Employ silvicultural stand tending practices to promote semi-open stands ( $< 75\%$  canopy crown closure) containing trees with suitable habitat attributes for Williamson’s Sapsucker. Variable density planting and spacing treatments, and prescribed understorey burning can produce open stands of this description.
- ❖ Increase retention of mature and old stands with mixed western larch, Douglas-fir, and lodgepole pine on south-facing slopes in the ICH, MS, and on north-facing slopes in the IDFxh1 and IDFdml. Increase retention of large diameter ponderosa pine in the IDFdk.
- ❖ Due to the importance of mature and old western larch for breeding and foraging habitat for Williamson’s Sapsucker, areas known to contain large, decadent western larch should be included in landscape level planning strategies that can incorporate areas with suitable habitat attributes for this species (e.g., OGMAs, ungulate winter range).

### Wildlife habitat area

#### Goal

Maintain known Williamson’s Sapsucker breeding sites.

#### Feature

Establish WHAs at known nest sites, especially where high suitability habitat containing large diameter western larch and ponderosa pine exist.

#### Size

Typically between 20 and 50 ha around known nest trees, depending on the extent of remaining high suitability habitat occurring within the estimated home range (i.e., smaller WHAs are acceptable when habitat features are abundant within the home range area).

#### Design

The WHA should include, where present, mature or old western larch stands. Important features to include are veteran larch with dead or broken tops and/or evidence of heart rot decay (e.g., fungal conks, canker faces, large stem scars, existing nest cavities). In the western parts of its range, large diameter live trembling aspen with evidence of heart rot decay is also used for nesting.

Williamson's Sapsucker also prefers large (>60 cm dbh) dead trees with advanced stages of wood decay for cavity excavation. Include as many wildlife trees as operationally possible within the WHA to provide a range of present and future nest and roost trees.

## General wildlife measure

### Goals

1. Maintain suitable nesting trees.
2. Ensure WHA is windfirm.

### Measures

#### Access

- Do not construct roads unless there is no other practicable option.

#### Harvesting and silviculture

- Do not salvage or harvest.

#### Pesticides

- Do not use pesticides.

## Additional Management Considerations

Recruitment of future nest trees can be enhanced by retaining large-diameter western larch, ponderosa pine, and Douglas-fir green leaf trees (i.e., class 1 or class 2 seed trees) in harvest openings. These trees should be reserved in patches for at least one rotation length or longer to reach suitable diameter and condition (i.e., with dead or broken tops) for use by sapsuckers. Retention of advance regeneration, saplings, and deciduous vegetation around green leaf trees will enhance their habitat quality.

In areas with high suitability/capability for Williamson's Sapsucker habitat (these will be areas with old and mature western larch and Douglas-fir), and especially around nest trees and potential nest trees, silvicultural systems such as variable retention, which mimic the effects of stand-maintaining fire events, or the use of prescribed fire (i.e., understory burning), should be used to maintain large diameter larch and Douglas-fir across harvest rotations. This is particularly important where large structurally defective class 2 trees and large dead trees, are found.

Old larch and Douglas-fir are seral species that often remain after stand-thinning or stand-destroying fires (Meidinger and Pojar 1991).

Western larch should also be planted as future recruitment nest trees on sites where this is silviculturally appropriate.

## Information Needs

1. Breeding territory and home range size.
2. Effectiveness of partial cutting silvicultural systems for provision of habitat attributes suitable for Williamson's Sapsucker.

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