# 6.5 WILLIAMSON'S SAPSUCKER SPECIES ACCOUNT

**SPECIES NAME:** **Williamson's Sapsucker** **(*Sphyrapicus throideus*)**

**SPECIES CODE:** **B-WISA**

## INTRODUCTION:

This document provides the background information for rating Williamson's sapsucker habitat values for pre-defined ecosystem units in TFL 15, south-central British Columbia. Information on habitat requirements, life requisites, and habitat / landscape use patterns of Williamson's sapsucker has been accumulated from a variety of sources, including literature reviews, species experts, and previous inventory and mapping efforts.

## STATUS:

| | |
|---|---|
| **Status in Canada (COSEWIC 1998):** | **No Formal Designation** |
| **Status in British Columbia (CDC 1999):** | |
| **Provincial Management List:** | **Blue** |
| **Global Rank:** | **G5TU** |
| **Provincial Rank:** | **S3B, SZN** |
| **Identified Wildlife (Y/N):** | **N** |

## DISTRIBUTION:

***Continental Range:***

The North American distribution of Williamson's sapsucker is restricted primarily to the western half of the continent. The species breeds from the southern interior of British Columbia southward through the mountainous areas of California and into northern New Mexico. The species winters from southwestern U.S. through north central Mexico.

***Provincial Range:***

Within British Columbia, two subspecies of Williamson's sapsucker occur. *S. t. thyroideus* breeds in the Okanagan region east to Midway, while *S. t. nataliae* breeds in the East Kootenay area. *S. t. thyroideus* is the subspecies of Williamson's sapsucker that occurs in TFL 15 and surrounding area. The subspecies breeds from Lightning Lakes, Lytton, and Hat Creek east to Midway and from Anarchist Mountain north to Scottie Creek (Campbell et al. 1990, Cooper 1995). Although *S.t. nataliae* is expected to breed in the vicinity of Cranbrook and south to Newgate and the Flathead river drainage, the last published breeding record was in 1938, and the subspecies may be extirpated from British Columbia (Cooper 1995).

Population estimates for *S.t. thyroideus* are generally expected to be small (Campbell *et al.* 1990). Morgan *et al.* (1989) determined densities in one study to be <0.1male/100ha. Cannings *et al.* (1987) did not provide any quantitative data but suggested that populations in the Southern Okanagan Highland ecosection were sizable and stable. Density estimates from other studies are variable. Hansley (1977) reported maximum densities of breeding pairs at 25 / 100 ha, Stallcup (1968) estimated 4.5 pairs / 100 ha in Colorado, and Bock *et al.* (1978) reported 5 pairs / 100 ha in California. Cooper (1995) indicated that there are no population density estimates from British Columbia, however given that the Okanagan area is at the

northern fringe of the species' range, it is likely that density estimates for the British Columbia area are lower than in the southern portions of their range.

***Range of Williamson's Sapsucker in the Project Area:***

| | |
|---|---|
| **Ecoprovinces:** | Southern Interior |
| **Ecoregions:** | Thompson-Okanagan Plateau, Okanagan Highland |
| **Ecosections:** | Northern Okanagan Highland, Southern Okanagan Highland, Northern Okanagan Basin, Southern Okanagan Basin |
| **Biogeoclimatic Zones:** | PPxh1, MSdm1, IDFxh1, IDFdm1 (Stevens 1995) |

***Elevational Range:***

Commonly, throughout the range of Williamson's sapsucker, breeding occurs at mid to high elevations ranging from 1,500 - 3,200 m (Dobbs *et al.* 1997, Crockett and Hadow 1975, Winkler *et al.* 1995). In the Okanagan area, breeding occurs at 1050 - 1200 m, however in areas near Cache Creek and Merritt, nesting has been observed at 850-1100 m (Cooper 1995, Cannings *et al.* 1987). RIC (1997) has identified the breeding elevations of the species to range from 850 - 1,300 m.

## KEY LIFE REQUISITES:

Williamson's sapsucker is a summer resident of Interior Douglas-fir (IDF), Montane Spruce (MS), and lower Engelmann Spruce-Subalpine Fir (ESSF) biogeoclimatic zones. Its habitat selection indicates an affinity to both pure coniferous and mixed coniferous/deciduous forests, however many researchers have proposed that Williamson's sapsucker are obligate users of western larch forests within the IDF and MS biogeoclimatic zones (Cooper 1995, Cannings *et al.* 1987).

### Living Habitat:

Living habitat for Williamson's sapsucker within TFL 15 is generally described by the species' reproducing habitat. Typically, most Williamson's sapsucker habitat characterizations do not indicate numerous habitat types to address various life requisites. More commonly, life requisites such as nesting, living, feeding, and security are all addressed by the same habitat type, including habitat structural features. Godfrey (1986) described the habitat of Williamson's sapsucker to be open coniferous woodland (especially western larch, Douglas-fir, and ponderosa pine), and, on occasion, burntlands, in the mountains of southern interior British Columbia.

### Feeding Habitat:

Feeding patterns of Williamson's sapsucker are directed at foraging for insects, sap, and phloem (Cooper 1995, Bull *et al.* 1986, Ehrlich *et al.* 1988, Jackman 1975, Crockett 1975, Beal 1911, Stallcup 1968). Studies of Williamson's sapsucker diets suggest seasonal changes based on the breeding status of individual birds. In particular, Stallcup (1968) and Crockett (1975) observed that prior to the hatching of young, their diet is exclusively sap and phloem, however the diet of breeding adults shifts to insects (mainly ants) after the young hatched. However, the diets of unpaired and unmated adults did not display the same shift, implying to some that the shift in diets may be related to the requirements of the hatchlings. This trend was partially observed by Beal (1911) who analyzed the diet contents of 17 Williamson's sapsuckers collected during the breeding season and found an estimated 86% content of ants.

Feeding habitats of Williamson's sapsucker within the Okanagan area have not been described. However, inferences from other studies suggest that feeding occurs in live coniferous trees, mainly western larch and Douglas-fir (Crockett and Hadow 1975, Bull *et al.* 1986, Stallcup 1968, Smith 1982).

## Security / Thermal Habitat:

Crockett and Hansley (1977) noted potential predators of Williamson's sapsucker to be northern goshawks *(Accipiter gentilis*) and long-tailed weasels (*Mustela frenata*). Security and thermal habitat preferences have not been described for Williamson's sapsucker, however it is assumed that the habitat requirements for this life requisite are provided by nesting, foraging, and living habitats. Therefore, security and thermal habitat was not rated separately in this model.

## Reproducing Habitat:

Williamson's sapsucker is exclusively a cavity nester (Erskine and McLaren 1972, Keisker 1987, Harstad and Keisker 1989, Godfrey 1986). Nesting trees are typically dead snags, however live and decaying trees are also used depending on the degree of heartwood decay. Most nests observed in British Columbia were in coniferous trees, such as western larch, Douglas fir, and ponderosa pine, however nests have also been observed in aspen (Canning *et al.* 1987). Dobbs *et al.* (1997) cites several researchers who indicate that throughout the range of the Williamson's sapsucker, aspen snags are preferred over conifer snags, however the variation in nesting tree species appears to be dependent upon geographic distribution (Crokett and Hadow 1975, Scott *et al.* 1980, Conway and Martin 1993, Sousa 1983, Li and Martin 1991, Bull *et al.* 1986, Raphael and White 1984). In the western portion of its range, trembling aspen are used much more extensively as a preferred nest tree (Cooper 1975).

Information about preferred structural features of nest trees is relatively sparse. Studies completed in California, Oregon, and Colorado found nests in dead tops of live trees (58%) or snags (40%). Information from the various studies on the dbh (diameter at breast height) of nesting trees averaged 70cm and 82cm with 51% in dead trees and 49% in live trees. Minimum dbh was 30 cm. An average of 23.5 cm dbh was determined for 40 aspen used for nesting in Colorado (Raphael and White 1984, Bull *et al.* 1986, Crockett and Hadow 1975).

## Migrating Habitat:

Typically, the Williamson's sapsucker arrives on the breeding grounds of southern British Columbia by mid-April and most leave by mid-September (RIC 1997). However, there is a relative paucity of information on migration habitat preferences for Williamson's sapsucker. Currently, migrating habitat is expected to be similar to reproducing, feeding, and general living habitat. An overlap of wintering and breeding grounds on portions of the species' range in the United States echoes this point (Cooper 1995). As a result, migrating habitat was not rated separately for this model.

## SEASONS OF USE:

Williamson's sapsucker habitat will be rated on the basis of two seasons of use (spring and growing), as follows (Table 26).

| Table 26: Seasons of Use Rated for Williamson's Sapsucker | | | | |
|---|---|---|---|---|
| **SEASON** | **CODE** | **DESCRIPTION (as relates to use by Williamson's sapsucker)** | **DURATION** | **LIFE REQUISITE THAT MUST BE MET** |
| Winter | W | Cold period; Williamson's sapsuckers are not present in British Columbia during this season | November<br>December<br>January<br>February<br>March<br>April | N/A |
| Spring | P | Northward migration followed closely by reproduction | May<br>June | Reproducing / Migrating / Feeding / Security |
| Growing | G | Fledging of young then feeding in preparation for southward migration | July<br>August<br>September<br>October | Feeding / Security / Migrating |

The use of seasonal nomenclature (winter, spring, and growing) is based on that defined by RIC (1998) for the Southern Interior Ecoprovince.

## HEIRARCHY OF LIFE REQUISITES:

Based on available research, Cannings *et al.* (1987) suggested that the limited distribution of western larch may, in turn, restrict the distribution of Williamson's sapsucker in the Okanagan. Western larch are commonly used as a nest tree and, therefore, nesting habitat is the primary limiting factor and will be incorporated into the hierarchy of life requisites as follows:

1. ***Reproducing habitat***
2. ***Growing season feeding habitat***
3. ***Spring / Fall migrating habitat***

## QUANTIFIABLE ECOSYSTEM ATTRIBUTES:

This section describes how each life requisite for Williamson's sapsucker relates to specific ecosystem attributes such as site series, vegetation cover, etc. Table 27 below is a summary of these ecosystem attributes and life requisites.

| Table 27: Quantifiable Ecosystem Attributes for Williamson's Sapsucker Habitats | | | |
|---|---|---|---|
| **Season** | **Primary Life Requisite** | **Rating Code** | **Quantifiable Ecosystem Attribute** |
| Spring (Implied) | Security – Thermal | **RE*** | • Typically nests in dead or decaying snags of western larch, interior Douglas-fir, and ponderosa pine forests, however nests in aspen have been documented;<br>• Nests in mixed or coniferous woodlands in the Okanagan;<br>• Nest cavities range from 1- 18 m from the ground with the average ranges of 2.4 - 6.9 m;<br>• Nesting trees are typically large >30 cm;<br>• Average dbh measurements of nesting trees from various studies, included 23.5 cm for aspen, 50.9 cm for pine, live aspens 36.2 cm and for snags 38.1 cm;<br>• Nesting habitats usually have higher snag densities (7.7 snags/ha) and taller snags than surrounding forest;<br>• Documented records of breeding territory have included 6.8 ha, >0.8 ha, and an average of 4 ha;<br>• In British Columbia, home range is anticipated to be greater than 20 ha. |
| Growing | Feeding | FDG* | • Feeding occurs in open to semi-open coniferous forests (<75% canopy cover);<br>• Coniferous trees include western larch, ponderosa pine, Douglas-fir, grand fir, and aspen;<br>• Drier habitats hillsides with gentle slopes;<br>• Mean dbh of feeding trees was 21 cm;<br>• Did not forage in burned areas. |
| *** Life requisites that were rated in the field during data collection.** | | | |

## MODEL ASSUMPTIONS:

1. Open, mature coniferous habitats generally provide the higher rated habitats.

2. Western larch is the preferred nest tree, followed by Douglas fir, aspen, and ponderosa pine.

3. Most reproducing by Williamson's sapsucker will require snags that provide cavities.

4. Site modifiers that influence habitat suitability ratings for Williamson's sapsucker and generally require a downgrade in ratings include "a" (active floodplain – all seasons) and "z" (very steep, greater than 100% slope – all seasons).

# WILLIAMSON'S SAPSUCKER
# HABITAT SUITABILITY RATINGS

## RATED LIFE REQUISITES:

The life requisites that have been selected for the final ratings include:

- FDG (Growing Season / Feeding)
- RE (Reproducing)

## HABITAT SUITABILITY RATINGS SCHEME:

Habitats are rated for Williamson's sapsucker using a 4-class rating scheme, acknowledging the species' moderate to high mobility and researchers' intermediate knowledge level about its habitat requirements (Table 28).

**Table 28: Habitat Suitability Rating Scheme for Williamson's Sapsucker**

| Suitability Rating | Level of Use by Williamson's Sapsucker | Suitability Limits (%) |
|---|---|---|
| H | High | 76 – 100 |
| M | Moderate | 26 – 75 |
| L | Low | 1 – 25 |
| N | Nil | 0 |

## PROVINCIAL BENCHMARKS:

The provincial benchmarks for Williamson's sapsucker have not been identified by the Ministry of Environment, however given the limited distribution of the species within the province, it is reasonable that the following ecoprovinces contain the highest rated habitats in the province (Table 29).

**Table 29: Highest Rated Ecoprovinces for Williamson's Sapsucker in British Columbia**

| |
|---|
| Southern Interior Mountains |
| Southern Interior |

The IDF, MS, and ESSF have been identified as the most commonly used biogeoclimatic zones by Williamson's sapsucker.

## REFERENCES:

**Beal, F.E.L. 1911.** Food of the woodpeckers of the United States. US Dept. Agr.; Biol. Surv. Bull. 37.

**Bock, C.E., M. Raphael, and J.H. Bock. 1978.** Changing avian community structure during early post-fire succession in the Sierra Nevada. Wilson Bull. 89:119-123.

**Bull, E.L., S.R. Peterson, and J.W. Thomas. 1986.** Resource partitioning among woodpeckers in northeastern Oregon. U.S. Dep. Agric. For. Serv., LaGrande, Oreg. Res. PNW-444. 19 pp.

**Campbell, R.W., N.K. Dawe, I. McTaggart-Cowan, J.M. Cooper, G.W. Kaiser, and M.C.E. McNall. 1990.** The birds of British Columbia. Vol.2. Royal B.C. Mus., Victoria, B.C. and Can. Wildl. Serv., Delta, B.C. 636 pp.

**Cannings, R.A., R.J. Cannings, and S.G. Cannings. 1987.** Birds of the Okanagan valley, British Columbia. Royal B.C. Mus., Victoria, B.C. 420 pp.

**Conway, C.J. and T.E. Martin. 1993.** Habitat suitability for Williamson's sapsuckers in mixed-conifer forests. J.Wildl. Manage. 57:322-328.

**CDC (Conservation Data Centre). 1999.** BC Conservation Data Centre: Rare Vertebrate Animal Tracking List. BC Ministry of Environment, Lands and Parks, Victoria, BC. http: www.env.gov.bc.ca/wld/cdc/listdef.htm

**Cooper, J.M. 1995.** Status of the Williamson's sapsucker in British Columbia. Ministry of Environment, Lands and Parks, Wildlife Branch. Victoria, BC. 16 pp.

**COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 1998.** Canadian species at risk, April 1996. Committee on the Status of Endangered Wildlife in Canada. Ottawa, ON. 21 pp.

**Crockett, A.B. 1975.** Ecology and behavior of the Williamson's sapsucker in Colorado. Ph.D. Thesis, Univ. Colo., Boulder, Colo. 137 pp.

**Crockett, A.B. and H.H. Hadow. 1975.** Nest site selection by Williamson's sapsucker in Colorado. Ph.D. Thesis., University of Colorado. Boulder, CO.

**Crockett, A.B. and P.L. Hansley. 1977.** Coition, nesting, and postfledging behavior of Williamson's sapsucker in Colorado. Living Bird 16:7-19.

**Dobbs, R.C., T.E. Martin, and C.J. Conway. 1997.** Williamson's sapsucker. The Birds of North America. The American Ornithologist's Union. The Academy of Natural Sciences of Philadelphia.

**Erlich, P.R., D.S. Dobkin, and D. Wheye. 1988.** The birder's handbook. Simon and Schuster Inc. NewYork, NY. 785 pp.

**Erskine, A.J. and W.D. McLaren. 1972.** Sapsucker nest holes and their use by other species. Can. Field-Nat. 86:357-361.

**Godfrey, W.E. 1986.** The birds of Canada. Natl. Mus. of Can., Ottawa, Ont. 595 pp.

**Hansley, P.L. 1977.** Breeding bird survey: open aspen grove, scattered conifers. Amer. Birds 31:72-73.

**Harestad, A.S. and D.G. Keisker. 1989.** Nest tree use by primary cavity-nesting birds in southcentral British Columbia. Can. J. Zool. 67:1067-1073.

**Jackman, S.M. 1975.** Woodpeckers of the Pacific northwest: Their characteristics and their role in the forests. M.S. Thesis. Oregon State University. Corvallis, OR. 147 pp.

**Keisker, D.G. 1987.** Nest tree selection by primary cavity-nesting birds in south-central British Columbia. British Columbia Ministry of Environment. Wildlife Branch, Victoria, BC Wildl. Rep. No. R-13. 67 pp.

**Li, P., and T.E. Martin. 1991.** Nest site selection and nesting success of cavity-nesting birds in high elevation forest drainages. Auk 108:405-418.

**Morgan, K.H., S.P. Wetmore, G.E.J. Smith, and R.A. Keller. 1989.** Relationships between logging methods, habitat structure and bird communities of dry interior Douglas-fir, ponderosa pine forest of British Columbia. Tech. Rep. Ser. No. 7.1 Can. Wildl. Serv., Delta, B.C. 48 pp.

**Raphael, M.G. and M. White. 1984.** Use of snags by cavity-nesting birds in the Sierra Nevada. Wildl. Mono. 86:1-66.

**RIC (Resources Inventory Committee). 1997.** Standardizing inventory methodologies for components of British Columbia biodiversity: Woodpeckers and sapsuckers. Resources Inventory Committee Approved Standard Version 1.1. Victoria, BC.

**RIC. 1998.** British Columbia wildlife habitat rating standards. Draft April 1998. BC Ministry of Environment, Lands and Parks, Victoria, BC. 108 pp.

**Scott, V.E., J.A. Whelan, and P.L. Svoboda. 1980.** Cavity-nesting birds and forest management. Pages 311-324 *in:* Management of wester forests and grasslands for nongame birds: Proc. Workshop. US Dept. Agr.; Forest Service Gen. Tch. Rep. INT-86.

**Smith, K.G. 1982.** On habitat selection of Williamson's and "Red-naped" yellow-bellied sapsuckers. Southwest. Nat. 27:464-466.

**Sousa, P.J. 1983.** Habitat suitability index models: Williamson's sapsucker. US Fish and Wildl. Serv.; Biol Rep. 82(10.47). Washington DC, WA. 13 pp.

**Stallcup, P.L. 1968.** Spatio-temporal relationships of nuthatches and woodpeckers in ponderosa pine forests of Colorado. Ecology 49:831-843.

**Stevens, V. 1995.** Wildlife diversity in British Columbia: Distribution and habitat use of amphibians, reptiles, birds, and mammals in biogeoclimatic zones. Province of British Columbia, Ministry of Forests Research Program, Ministry of Environment, Lands, and Parks Habitat Protection Program. 288 pp.

**Winkler, H., and D.A. Christie, and D. Nurney. 1995.** Woodpeckers: an identification guide to the woodpeckers of the world. Houghton Mifflin Co. Boston, MA.