Williamson's Sapsucker Conservation and Management in South-central British Columbia

2012 Survey

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It was a pleasure to be able to contribute to this very important initiative.

Executive Summary

The Williamson's Sapsucker (Cassin, 1852) is nationally listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). It is on Schedule One of the Canadian federal Species at Risk Act (SARA). In BC, the Williamson's Sapsucker is red-listed by the BC Conservation Data Center and is recognized as a "Priority 1" status by the BC Conservation Framework.

There are two known subspecies of Williamson's Sapsucker in BC: *Sphyrapicus thyroideus natalia* and *Sphyrapicus thyroideus thyroideus*. The *S. thyroideus natalia* subspecies occurs in the south-east corner of BC, from Newgate east to the Flathead River and north to Kimberly and White Swan Lake. The *S. thyroideus thyroideus* subspecies occurs from the United States border to 35 km north of Cache Creek (Fraser River valley) and 50 km north of Kamloops (Thompson River valley). The western limit of its range is Manning Park and the eastern limit is just west of Grand Forks (BC CDC 2012). In the US, Williamson's Sapsuckers (both subspecies) occur primarily in the western mountain ranges and are absent from the Central Great Basin ranges of Nevada. The species occurs from Washington, Wyoming, Montana, and Idaho, south through Oregon, Nevada, Colorado, and Utah, to northern California, Arizona, and New Mexico. The Williamson's Sapsucker winters from California, Arizona, and New Mexico, through Texas to central Mexico. This project focuses on the *S. t. thyroideus* subspecies.

Call playback surveys, to identify occupied territories, were conducted from May 3rd to June 3rd, 2012. Nest searches were conducted from June 4th to June 30th, 2012. A total of 56 sites were identified for call playback surveys prior commencement of fieldwork. Each site contained between four and 70 call playback stations. A total of 1,037 call playback stations were completed for a combined total of 4,472 survey minutes. Nest searches were conducted for a combined total of 692 hours. A total of 75 Williamson's Sapsucker nests were found during the nest searches; two incidental nests were reported by naturalists.

It is recommended that more surveys are conducted in future years to monitor the population trends, abundance and range of this species. This report summarizes the 2012 survey efforts.

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Introduction

Species Information

There are two known subspecies of Williamson's Sapsucker (Cassin, 1852) in BC: *Sphyrapicus thyroideus natalia* and *Sphyrapicus thyroideus thyroideus*. The *S. thyroideus natalia* subspecies occurs in the south-east corner of BC, from Newgate east to the Flathead River and north to Kimberly and White Swan Lake. There are relatively few known breeding locations of the *S.t.natalia* sub-species. This project focused on the *S. thyroideus thyroideus* subspecies which occurs from the United States border to 35 km north of Cache Creek and 50 km north of Kamloops in the Thompson River valley. The western limit of it the species range is Manning Park, the eastern limit is just west of Grand Forks (BC CDC 2012).

In the continental United States (US), Williamson's Sapsuckers (both subspecies) occur primarily in the western mountain ranges and are absent from the Central Great Basin ranges of Nevada. The species occurs from Washington, Wyoming, Montana, and Idaho, south through Oregon, Nevada, Colorado, and Utah, to northern California, Arizona, and New Mexico. The species winters from California, Arizona, and New Mexico, through Texas to central Mexico.

There are no described morphological or behavioral differences between the two subspecies; as such, the following species account refers to both subspecies. The Williamson's Sapsucker is a medium-sized migratory woodpecker with an average total length of 23 cm (range 21-25 cm) and weighing 44-64 g (COSEWIC 2005). Unlike all other woodpeckers, the male and female Williamson's Sapsucker are sexually dimorphic in plumage. The male has a glossy black back and breast with a white rump, supercilium, and moustache, large white wing patches and a yellow belly and a red throat. The female has a brown head, extensive brown and white barring on her back, side, and wings, and a white rump. The juveniles resemble the adults except that the young males do not have a red throat (COSEWIC 2005).

Williamson's Sapsuckers are monogamous. Males return to BC, from their winter habitats in the US, in late March and beginning establishing and defending a territory. As the breeding season progresses the males defend an increasingly smaller area that is eventually limited only to the nest tree (Cooper 1995). Little research has been conducted on size of the breeding territory. In Western Larch (*Larix occidentalis*) habitat in Canada, breeding territories appear to range from 17-54 ha (COSWEIC 2005).

Females return one to two weeks after the males and excavation of a nest cavity begins shortly after pair formation. Excavation lasts three to four weeks but in some cases the pair may re-use an existing cavity excavated in previous years. Clutch size is usually four to six eggs although clutches of three to seven eggs have been recorded. Incubation takes about two weeks (BC CDC 2012) and nestlings fledge 26-33 days after hatching. Once fledged, the young may remain in the vicinity of the nest tree for a few days or weeks or they may disperse (COSEWIC 2005).

Williamson's Sapsuckers feed exclusively on coniferous tree sap and phloem fibres during the non-breeding period and during the breeding period until the eggs hatch. Douglas-firs (*Pseudotsuga menziesii*) are the most commonly used trees, although Western Larch, Ponderosa Pine (*Pinus ponderosa*) and Lodgepole Pine (*Pinus contorta*) are occasionally used. Once the eggs have hatched the diet shifts as adults feed predominantly on carpenter ants (*Camponotus* spp.) and wood ants (*Formica spp.*) (BC CDC 2012). The young are raised primarily on carpenter ants. Other insects are sometimes

captured; berries may also constitute a major part of the diet during the winter (COSEWIC 2005). Woody structures, such as standing dead or live trees, snags, decaying stumps, and fallen logs, provide necessary habitat for the ants (BC CDC 2012).

Williamson's Sapsuckers occur at middle to high elevations and have been recorded breeding between 700 - 1,520 m ASL (COSEWIC 2005). In BC, the *S. t.* thyroideus subspecies have two distinct breeding habitats. West of Okanagan Lake, the birds are associated with Ponderosa Pine, Douglas-fir, and Trembling Aspen (*Populus tremuloides*) (BC CDC 2012). Suitable Trembling Aspen groves must be adjacent to or within a coniferous forest. East of Okanagan Lake, Williamson's Sapsuckers are associated with mixed coniferous forests (primarily Western Larch and Douglas-fir) (BC CDC 2012). Suitable Western Larch forests are characterized by mature (>200 year old) trees with a diameter at breast height (DBH) greater than 70 cm. The forest must also feature medium-sized coniferous trees for sap wells (usually Douglas-fir) and large trees with copious amounts of carpenter ants (COSEWIC 2005).

Williamson's Sapsuckers nest in stands varying from very open forests with only a few scattered trees to densely forested areas. They require three habitat elements:

- Trees for cavity excavation or existing tree cavities;
- Live coniferous trees for sap wells; and
- Standing live and/or dead trees for gleaning ants.

It appears that stand structure is not as important as the presence of individual elements. Stands can be quite varied and still be suitable habitat, provided they contain the three habitat elements (COSEWIC 2005).

Migration away from breeding areas in BC typically occurs in September, although Williamson's Sapsuckers have been occasionally recorded in parts of BC as late as October.

Legal Protection

The Williamson's Sapsucker is nationally listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). It is on Schedule One of the Canadian federal Species at Risk Act (SARA). In BC, the Williamson's Sapsucker is red-listed by the BC Conservation Data Center and is recognized as a "Priority 1" status by the BC Conservation Framework.

The Williamson's Sapsucker is also identified by the BC Ministry of Environment (MOE) on the Category of Species at Risk and as a priority species for conservation and management under the Government Actions Regulation (GAR) component of the Forest and Range Practices Act (IWMS-BC MWLAP 2004b). As such, the sites detected during these surveys are entitled to protection through the designation of Wildlife Habitat Areas (WHAs) with the intent of conserving and maintaining habitat attributes deemed important, for breeding, to the species.

Goals and Objectives

The information gathered during the 2012 survey effort is intended to help address knowledge gaps in distribution, population size, demographics and habitat requirements for Williamson's Sapsucker in BC. The results of this work will be used to guide habitat protection and restoration measures (i.e. map WHAs) to assist the province of British Columbia in meeting recovery objectives for the Williamson's Sapsucker. Specific Objectives included:

- Survey suitable habitat, as identified by biologist Les Gyug, to determine current occupancy status;
- Locate and confirm nesting pairs of Williamson's Sapsuckers; and
- Identify and map new WHAs on breeding areas occupied by Williamson's Sapsuckers on Crown Land.

Study Area

The Williamson's Sapsucker project covered an area of southern of BC from Merritt, south to Princeton, and east to Greenwood. The survey area was split into four general areas: Merritt, Princeton, Okanagan, and Boundary. In general, surveys were conducted in second-growth forested areas dominated by Douglas-fir, Ponderosa Pine, and/or Western Larch.

Merritt Area

The Merritt study area is located from the Promontory Hills north of the Nicola River east to the Coquihalla Highway. It extends south along the west side of the Coldwater River valley and along Highway 5A to Allison Lake. Surveys were also done along the Kane Valley Road from Highway 5 to Highway 5A. The area occurs within two biogeoclimatic (BEC) zones: Interior Douglas-fir (IDF) and Ponderosa Pine (PP). The subzones in which nests were found in include IDF dry mild (IDFdm1), dry cool (IDFdk1), very dry hot (IDFxh2 and IDFxh1), and very dry (IDFx2), and PP very dry hot (PPxh2). The IDF is located in the rain-shadow of the Coast, Cascade, and Columbia mountains and is characterized by warm, dry summers and cool winters. Trembling Aspen stands are common throughout the zone. The Ponderosa Pine zone is the driest forested zone in BC and one of the warmest. Douglas-fir trees are sometimes mixed in with the Ponderosa Pine in parts of this zone.

Princeton Area

The Princeton survey area extends along the east side of Highway 5A and Highway 3 from just south of Allison Lake to south of Princeton. Surveys were also conducted along Copper Mountain and Darcy Mountain roads. The area occurs within the Interior Douglas-fir, Ponderosa Pine, and Montane Spruce (MS) BEC zones and nests were found in three subzones: IDF very dry hot (IDFxh1 and IDFxh1a) and dry cool (IDFdk1). The Montane Spruce zone contains a variety of trees species including several species of spruce (*Picea spp.*), Douglas-fir, and Lodgepole Pine.

Okanagan Area

The Okanagan study area is located along the east side of the Okanagan Valley from Okanagan Falls to Osoyoos. The area occurs within the Interior Douglas-fir, Ponderosa Pine, and Montane Spruce BEC zones. The subzones nests were found in include: IDF very dry hot (IDFxh1) and dry mild (IDFdm1), and MS dry mild (MSdm1).

Boundary Area

The Boundary study area is located from approximately 10 km east of Osoyoos along Highway 3, east to Greenwood. The majority of the surveys were done north of the highway as far north as the junction of the Kettle and West Kettle Rivers. The area occurs in the Interior Douglas-fir, Ponderosa Pine, Interior Cedar-Hemlock (ICH) and Montane Spruce BEC zones. Nests were found in the following subzones: IDF dry mild (IDFdm1) and MS dry mild (MSdm1).

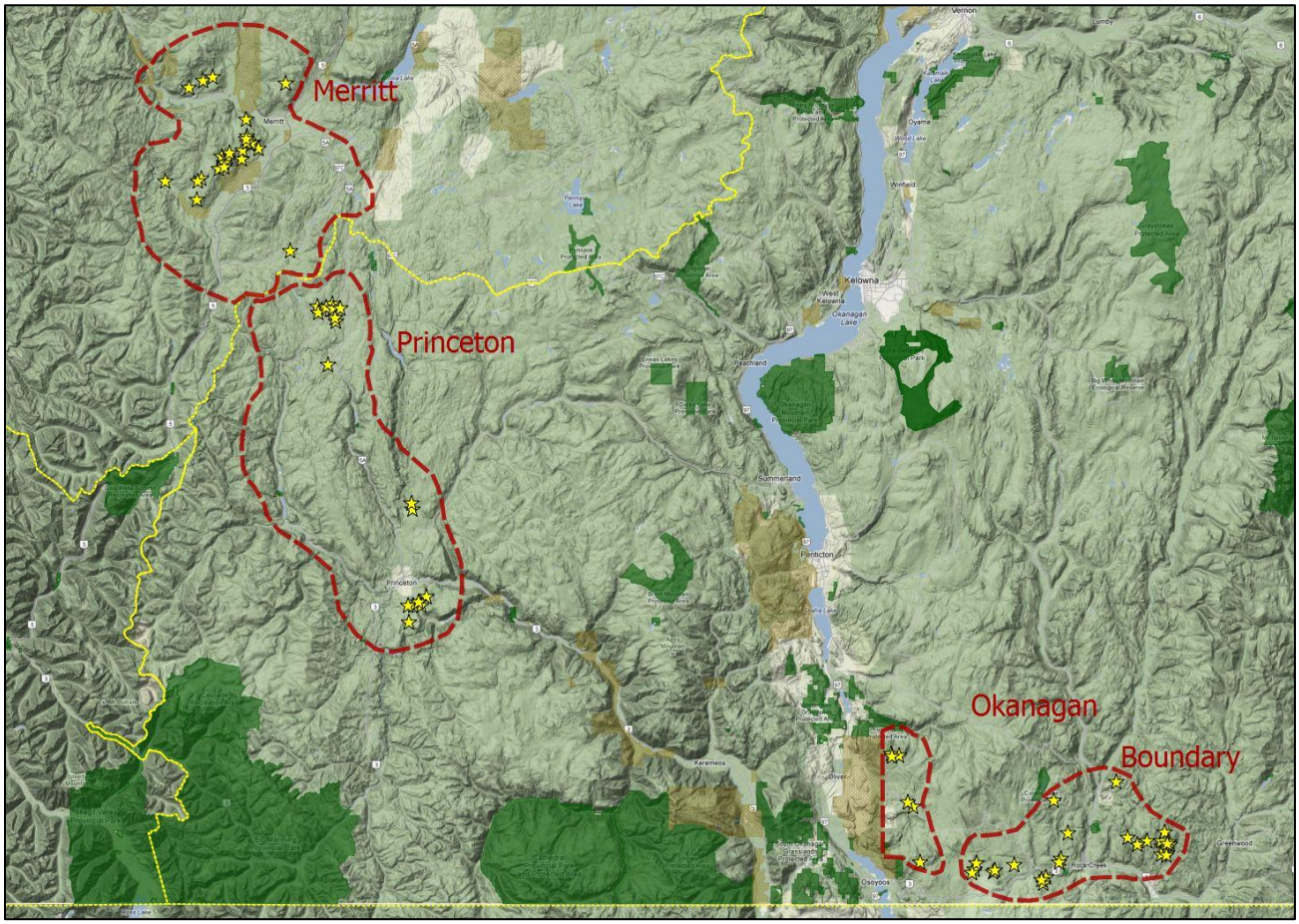

Figure 4: Survey areas are depicted in red (dashed lines), the MOE regional boundary is depicted in yellow (dashed line) and Williamson's Sapsucker nests, detected in 2012, are depicted as yellow stars.

Methods

Prior to the commencement of field surveys, pre-planning work was led by Les Gyug. Using a suitability model call playback points were plotted over potentially suitable habitats. In general, points were laid out in a grid format with each point 400m away from any other point. In some cases the spatial location of some points were repositioned if a road was nearby; this was to allow surveyors easier access to increase survey efficiency. Once in the field, areas were prioritized according to site quality and ease of access to further optimize survey efficiency.

An Apple iPad (Version III, 4G; 64 GB) was pre-loaded with ortho-photos of the study areas prior to survey implementation. A shape file containing the call playback points was also loaded into the iPad for reference in the field. The iPad was used effectively as a GIS tablet; using two GIS applications (GIS Roam and GPS Kit) to efficiently locate the search areas while working in the field. The call playback points were also loaded into a GPS (Garmin Map60Csx) to aid in navigation. Survey areas were accessed by road and/or by hiking.

Call playback Surveys

Upon arrival at the call playback station, surveyors broadcast the male territorial call and drum. A 20-30 second series of Williamson's Sapsucker drumming, chee-ur calls, and scold calls were broadcast using a Fox-pro© NX3 megaphone. Each series of calls was repeated three times (for a total of 1-1.5 min) and then observers listened and watched for Williamson's Sapsuckers for 3 minutes (total station time = 4 min). If a sapsucker was detected, surveyors collected a Universal Transvers Mercator (UTM) coordinate (NAD 83) using a Garmin Map 60Csx GPS unit (NAD 83). For each station observers also noted the weather (temperature, wind speed, cloud cover, and precipitation) and survey time. If a Williamson's Sapsucker was detected, the following information was recorded:

- Type of detection (visual, drumming, or calling)
- Direction to detection
- Distance to detection
- Number of birds seen and/or heard
- Life stage (adult or juvenile – all birds were adults during call playback surveys)
- Sex (male, female, unknown)
- Activity (always territorial during call playback surveys)

If the surveyors determined that a bird was detected more than once (from different call playback stations) surveyors assigned the bird a temporary identification (e.g., A, B, etc.).

Call playbacks were ceased if a Williamson's Sapsucker detection was made at a survey site; surveyors would then move on to the next station. If the sapsucker appeared to be close to the next call playback station, surveyors would omit the adjacent station. Surveys were not conducted in adverse weather conditions (i.e. moderate or heavy rain, wind speed >20 km/h (Beaufort scale 4)). Call playback and nest search surveys generally started within an hour of sunrise and continued until the entire area identified for survey at each site was satisfactorily surveyed.

Nest Searches

Upon completion of call playback stations Les Gyug analyzed the data and determined locations for nest searches. Using the direction and distance to the detections found during the call playback surveys, Les plotted all potential territories. The new set of points and polygons were loaded into the GPS and iPad prior to commencement of this next phase of the project.

Upon arrival at the potential territory, surveyors played the same territorial call used in the call playback searches to attempt to locate any Williamson's Sapsuckers in the area. There was no set time requirement for the nest-search call playback stations. Nest searches were generally limited to approximately one hour or until a nest was found.

For each nest search, the search time was recorded. If a Williamson's Sapsucker was detected surveyors attempted to find the nest by following the direction of the response. If the search was unsuccessful but a Williamson's Sapsucker was detected observers recorded the same information that was recorded during call playback surveys. Surveyors returned to some of the nest search sites after all sites had been visited once if no nest was found.

For each nest found, observers noted the following characteristics:

- Sex and age class of sapsuckers present
- Estimated nestling age
- Adult activity (courtship, drumming, feeding by bark gleaning or at sap wells, incubating, living, rearing, territorial, travelling/flying)
- Nest tree species
- Wildlife tree code or decay stage
- Nest tree diameter at breast height (DBH)
- Nest tree height

While conducting nest searches, surveyors would follow the bird(s) and collect a UTM coordinate in areas that appeared to be being used for foraging and territory defense.

Results

Call playback surveys were conducted from May 3rd to June 3rd, 2012. Nest searches were conducted from June 4th to June 30th, 2012. A total of 56 sites were identified for call playback surveys. Each site contained between 4 and 70 call playback stations. A total of 1,037 call playback stations were completed for a combined total of 4,472 survey minutes. Nest searches were conducted for a combined total of 692 hours.

More than 200 Williamson's Sapsucker detections were made during call playback surveys. From the detections, 153 potential territories were identified and plotted for subsequent nest search surveys. Each nest search site had between one and six identified possible nest trees.

A total of 75 Williamson's Sapsucker nests were found during the nest searches. An additional two nests were found (and reported) incidentally by non-project personnel. The overall nest search success rate was 0.11 Williamson's Sapsucker nests/hour. This does not include the two incidental nests as they were not part of the regular surveys nor does it include nests for non-target species (i.e. Red-naped Sapsuckers). Each survey area, analyzed separately, yielded the following nest detection success rate:

- Merritt area – 0.13 nests/hour (n=26 nests)
- Princeton area – 0.16 nests/hour (n=18 nests)
- Okanagan area – 0.06 nests/hour (n=6 nests)
- Boundary area – 0.10 nests/hour (n=27 nests)

The nests were found in three BEC zones or seven BEC subzones. Table 1 shows the number and percentage of nests found in each zone and subzone. The majority (82%) of nests were found in the Interior Douglas-fir and 14% were found in the Montane Spruce zone. The remaining nests were found in the Ponderosa Pine BEC zone.

Table 1: Williamson's Sapsucker nest distribution in BEC zones and subzones during 2012 surveys.

BEC zone	Subzone	Number of nests	Percentage of total nests	
Interior Douglas-fir	IDFdk1	12	16	82
	IDFdm1	20	26	
	IDFxh1	12	16	
	IDFxh1a	1	1	
	IDFxh2	18	23	
Montane Spruce	MSdm1	11	14	
Ponderosa Pine	PPxh2	3	4	
TOTAL	**7**	**77**	**100**	

Williamson's Sapsucker nests were found in four tree species: Trembling Aspen (*Populus tremuloides*), Douglas-fir, Western Larch, and Ponderosa Pine. The majority of nests were found in Trembling Aspen and Western Larch (see Table 2).

Table 2: Species of Williamson's Sapsucker nest trees found during 2012 surveys.

Nest tree species	Number of nests	Percentage of total nests
Trembling Aspen	32	43
Western Larch	26	34
Ponderosa Pine	12	16
Douglas-fir	7	9
TOTAL	**77**	**100**

In the Merritt and Princeton areas the majority of nests were found in Trembling Aspen. In the Okanagan and Boundary areas the majority of nests were found in Western Larch (see table 3). More nests were found in the Merritt and Boundary areas than in the Princeton and Okanagan areas however this is likely an artifact of differences in study area sizes (and applied effort). The Merritt and Boundary areas were much larger than the Princeton and Okanagan areas.

Table 3: Species of Williamson's Sapsucker nest trees found in each study area.

Study Area	Nest tree species	Number of nest trees	
Merritt	Trembling Aspen	25	36
	Ponderosa Pine	7	
	Douglas-fir	4	
Princeton	Trembling Aspen	5	8
	Ponderosa Pine	3	
Okanagan	Western Larch	4	6
	Trembling Aspen	1	
	Ponderosa Pine	1	
Boundary	Western Larch	22	27
	Douglas-fir	3	
	Trembling Aspen	1	
	Ponderosa Pine	1	

The decay stage of each nest tree was recorded. More than 50% of the nest trees were in stage 2 (see table 4). Decay types were also recorded for each tree (i.e., DT=dead top, BT=broken top, CF=cake fork, HR=heart rot, FS=basal fire scar, INJ=physical injury, etc.). Heart rot was the most commonly recorded decay type with 43 of the 76 nest trees infected with varying severities of heart rot (56.6%) (see table 5).

Table 4: Decay stages of Williamson's Sapsucker nests found during the 2012 surveys. The five unknown trees were given decay types but not classes (1=heart rot, 1=dead, 1=broken top, 1=fire scar and broken top, 1=unknown).

Decay stage	Number of trees	Percentage of total trees
2	43	57
3	16	21
4	8	10
5	1	1
6	3	4
7	1	1
unknown	5	6
TOTAL	**77**	**100**

Table 5: Decay types found in Williamson's Sapsucker nest trees during the 2012 surveys. Many trees had more than one decay type and some had no decay types recorded for them.

Decay type	Number of trees
Heart rot	43
Broken top	17
Dead top	9
Fire scar	8
Cake fork	5
Injured	1
None recorded	11

The average DBH of nest trees was 54.8 cm (range 25-153 cm). In most cases, nest cavity height and tree height were estimated by the surveyors; average nest cavity height was 13.4 (range 4-45 m) (two nest cavity heights were not recorded). Average tree height was 23.5 m (range 5-60 m). Nests were found between 804-1,462 m ASL (average 1,099 m ASL).

Call playback surveys can be used to assess presence of Williamson's Sapsuckers however results should be interpreted cautiously as survey efficacy (i.e. ability to detect all Williamson's Sapsuckers present in the survey area) is limited by individual sapsucker response rates, observer skill/bias, acoustic conditions (e.g. weather, wind, traffic), time of year, and proximity to the individual birds at each station. During the call playback surveys, sapsuckers were very territorial and seemed highly responsive. During the nest search component of the project Williamson's Sapsuckers appeared to be less responsive and were not as likely to respond to the call playback. As such, nest detection was, at times, challenging. Increased survey effort (i.e. repetition) resulted in an increased confidence of detection however detection is never absolute; sapsuckers that are present during the nesting phase can often go undetected even after extensive call playback. Despite the limitation of this methodology it still provides a very cost-efficient method for surveying this species.

Discussion

Williamson's Sapsucker call playback surveys were conducted during the breeding season when the species is known to be most responsive (April and May). Once the eggs are laid (early June), individuals became less responsive or not responsive at all until later in the season. After the eggs hatch and the chicks are a few days old adult Williamson's Sapsucker responsiveness appears to peak again. As such, adult Williamson's Sapsuckers were less responsive during the first part of the nest searches but their diminished detectability was compensated by increased detectability of juvenile birds in the nest. As the breeding season progresses juvenile begging calls, from inside the nest, become increasingly audible. The combination of increasingly responsive territorial adults and noisy begging juveniles meant that nest searches became much easier, and thus more efficient, during the latter part of June.

During the call playback surveys each Williamson's Sapsucker detection was recorded. This species tends to respond predictably to acoustic lure surveys by approaching the call playback station (perceived conspecific intruder) directly in order to defend their territories (Les Gyug pers.comm. 2012). By recording the distance and direction of the response from the resident territorial adults the general location of the territory epicenter was determined.

The success rate of nest searches varied between the four study areas, with Princeton having the highest success rate and the Okanagan area having the lowest. Lack of potentially suitable habitat in the Okanagan area combined with lower average elevations of survey areas (i.e. less suitable habitat) may have contributed to the lower nest detection success rate in the Okanagan. In total, 82% of nests were found in the IDF, 14% of nests were found in the MS BEC zone and 4% were found in the PP BEC zone. These results are biased as allocation of effort was inconsistent between the three BEC zones so no conclusions regarding the species selective preference, by BEC, can be suggested.

An analysis of tree species selection for all nests detected in 2012 suggests that nest tree species selection appears to vary regionally. Within the IDF zone the species seems to preferentially select Trembling Aspen or Western Larch trees for nesting. The species was found occasionally nesting in Douglas-fir and Ponderosa Pine however their use of these other two species was perceptibly lower relative to availability (anecdotal observation). It should be noted that in the Merritt and Princeton areas Western Larch trees are absent and so the fact that nests were predominantly detected in Trembling Aspen is not unexpected for this area. In the Okanagan and Boundary areas, where Western Larch is available, larch was used most frequently for nesting even though Trembling Aspen trees are also available in these areas. The absence of Western Larch from the Princeton and Merritt portions of the study area is likely the underlying factor behind the differential selection of nest tree species in these areas. In summary, Williamson's Sapsuckers appear to prefer to nest in Western Larch where it is available within their breeding range however their range is not restricted by the current distribution of Western Larch as they can also use Trembling Aspen to provide suitable nest structures. This result is consistent with other studies.

During the nest searches, each nest tree detected was assigned to a decay class (DC). An analysis of decay class (DC) selection for all nests detected in 2012 suggests that the species seems to preferentially selected DC-2 trees for nesting. Tree 'defects' result in a softening of heartwood, thus facilitating easier cavity excavation by primary excavators whilst maintaining structural integrity to ensure wind-firmness. More than half the nest trees were recorded as DC-2; these trees are still alive but are characterized by

at least one type of defect (e.g., dead/broken top, dead limbs, dying). None of the Williamson's Sapsucker nests were found in live healthy trees (DC-1).

An analysis of DBH correlations for detected nests suggests that Williamson's Sapsuckers prefer nesting in mature trees. The smallest DBH recorded during this study was 25 cm. This observation may be attributed to the fact that mature trees are more likely to have more defects and decay relative to smaller trees. With the exception of a single tree, all nest trees displayed some form of defect (with associated decay). None of the nests were in healthy live trees.

An analysis of nest height suggest that the species prefers to nest in cavities well above the ground (the lowest nest found during the 2012 surveys was four metres above the ground). There does not appear to be any consistency in the nest tree height (ranged from 5-60 m).

Finally, an analysis of elevation associated with breeding/nest records showed results consistent with the current literature for this species. This study did not result in the detection of any nests that exceed the currently known breeding elevation of the species in BC. The highest elevation nest detected in 2012 was 58m lower than the current highest elevation nest record for this species in BC. It is possible that future surveys in this area may result in an expansion of the birds known elevation range in future years.

In summary, each of these conclusions were based on field observations only and should be interpreted accordingly. While analysis of the above-described nest tree 'selection' characteristics was not a formal component of this inventory project these results are consistent with reported results for this species, both in BC and in other parts of the species range in the US.

Management Recommendations

At a landscape level efforts should be made to maintain and conserve occupied habitat and to promote enhancement and conservation of suitable habitats. At the local level, assessment of occupied Williamson's Sapsucker territories facilitates conservation through stewardship actions on private lands or designation of protected WHAs on crown land. The following actions are suggested for future years:

- expand surveys throughout existing range of the species to better determine range;
- continue to expand on 2012 surveys to determine the geographic and elevation limits of Williamson's Sapsucker across the province;
- monitor known populations to assess population health, productivity and trend;
- develop WHA designation for all new and known occurrences of Williamson's Sapsucker; and
- promote conservation and habitat stewardship on private lands where Williamson's Sapsuckers are known to occur.

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Appendices

Appendix 1: Confidential Folio of site locations and directions

Available separately in MS Excel, Garmin, ARC Shape or KML.