

Forest Development Plan
Red- and Blue-listed Species Inventory
for Woodpeckers in 1997:

Lewis' Woodpecker, White-headed Woodpecker and
Williamson's Sapsucker

by

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EXECUTIVE SUMMARY

Inventory was conducted for the red-listed white-headed woodpecker and the blue-listed Williamson's sapsucker and Lewis' woodpecker in selected forest development plan areas in the Boundary, Merritt, Vernon and Penticton Forest Districts. Forest development plans and woodlot boundaries were reviewed for overlap with the nesting habitat of these species.

Williamson's sapsuckers were detected in 11 locations on initial playbacks with single nests found in 5 of these locations and three nests found in one location on subsequent nest searches. Including the three Williamson's sapsucker nests found in 1996, large (>70 cm dbh), live western larches and dead standing birch trees are most important for nesting. Most of the Williamson's sapsucker nests (82%) were in a narrow elevation band from 1020-1190 m elevation with additional nests at 1400 and 1490 m, all located on the plateau between the Okanagan Valley and the Kettle Valley at Midway.

4-ha Wildlife Tree Patches should be placed around the 11 Williamson's sapsucker nest sites we have found in the past two years. However, further information is required on nest site fidelity and annual nest site choice to determine if placement of permanent WHAs around existing nests is the best long-term strategy for this species.

No Lewis' woodpeckers were found in the actual Forest Development Plan areas or woodlots although they were noted occasionally outside these areas. Only one Lewis' woodpecker nest was found in 1997 in a burn-killed ponderosa pine at the edge of the Westbridge burn of 1985. In general, very few cutting permits and very few woodlots overlap with Lewis' woodpecker nesting habitat.

White-headed woodpeckers were not detected in 1997 and appear deserving of their red-listed status.

Sixty-seven nests of woodpeckers and sapsuckers were found in total (33 in 1996, 34 in 1997), 57 of which were incidental to the search for red- and blue-listed species. The majority of nests (88%) were either in large live trembling aspen, large dead birch, or very large live western larch.

In 1998, the Williamson's sapsucker nest sites should be checked for re-nesting. Rechecking nests and inventorying any new Cutting Permit areas on FDPs of 1998 should require 20 field days by a crew of two, and 10 office days by two people in 1998 (total of 60 person days).

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INTRODUCTION

This project was designed to collect inventory and habitat information for white-headed woodpecker, Williamson's sapsucker and Lewis' woodpecker within selected Forest Development Plans within the Southern Interior Region of B.C. Environment. These species have been designated on the Red and Blue Lists by B.C. Environment (1995) and are generally very uncommon and/or their distribution not well known. Breeding habitat requirements for these species were previously determined during the previous year (see Gyug 1996) of inventory for these species and is not repeated in this report.

The specific objectives of this report were to:

- conduct inventory for the species listed above within the identified Forest Development Plan areas to a presence/absence level for nesting pairs,
- produce detailed maps showing positive locations and all sampling sites or transect locations, and
- record information on other Red or Blue-listed species observed in the search areas.

Acknowledgements

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STUDY AREA

The study area was in the southern interior of British Columbia (see Figures 1 and 2). The nominal study area included the Merritt, Penticton, Vernon Forest Districts of the Kamloops Forest Region of the B.C. Ministry of Forests and the Boundary Forest District of the Nelson Forest Region of the B.C. Ministry of Forests although the species inventoried here do not occur throughout these Forest Districts.

The study area is in the Southern Interior Ecoprovince and includes parts of the Northern Cascade Ranges, Interior Transition Ranges, and Thompson-Okanagan Plateau Ecoregions. Actual inventory was undertaken in parts of the Southern Thompson Upland, Northern Thompson Upland, Southern Okanogan Basin, Okanagan Range, and Southern Okanogan Highland Ecosections while the bulk of the sampling was in the southern part of the Northern Okanogan Highland Ecosection. This study area includes the following Biogeoclimatic (BEC) Zones that were inventoried: PPxh1, IDFxh2, IDFdK2, IDFdK1, IDFxh1, IDFdM1, MSdM1 and MSdM2 (Lloyd et al. 1990, Braumandl and Curran 1992).

SUMMARY OF EXISTING INFORMATION

Existing information was summarized in Gyug (1996) for the three target inventory species. This section of Gyug (1996) is repeated verbatim here as a service for those who may not have copies of that report on hand.

Excerpted from Gyug (1996):

Lewis' Woodpecker (*Melanerpes lewis*)

Lewis' woodpecker was the subject of a fairly recent status report in British Columbia (Siddle and Davidson 1991) as well as being described in a species account in the Managing Identified Wildlife Handbook of the Forest Practices Code of B.C. (B.C. Min. of Forests and B.C. Env't. 1996). To briefly summarize these here, "Lewis' woodpecker breeds locally throughout lowland areas of B.C.'s southern interior from the U.S. border north to Williams Lake, Revelstoke and Invermere. . . from sea level to 1150 m elevation. Its centre of breeding abundance is in the Okanagan Valley." (B.C. Min. of Forests and B.C. Env't. 1996). Optimal breeding habitats contain large snags (>30 cm dbh) and an open tree canopy (<25%). Other desirable breeding habitats are partially logged or burned forest and deciduous and riparian woodlands-particularly black cottonwood forests.

White-headed Woodpecker (*Picoides albolarvatus*)

The white-headed woodpecker was the subject of a recent status report in British Columbia (Cannings 1995) as well as being described in a species account in the Managing Identified Wildlife Handbook of the Forest Practices Code of B.C. (B.C. Min. of Forests and B.C. Env't. 1996). To briefly summarize these here, "white-headed woodpeckers nest locally in the southern Okanagan valley from Osoyoos north to Naramata. . . This species requires dry, open (<70% canopy cover) of mature forest (age class 7-9) with large diameter (>60 cm dbh) ponderosa pine." (B.C. Min. of Forests and B.C. Env't. 1996). Home range sizes of 100-400 ha will limit this species to large areas of this type of habitat.

Williamson's Sapsucker ssp. *thyroideus* (*Sphyrapicus thyroideus thyroideus*)

Williamson's sapsucker was the subject of a recent status report in British Columbia (Cooper 1995) as well as being described in a species account in the Managing Identified Wildlife Handbook of the Forest Practices Code of B.C. (B.C. Min. of Forests and B.C. Env't. 1996). To briefly summarize these here, the *thyroideus* subspecies of Williamson's sapsucker breeds in the Thompson-Okanagan Plateau, west to Manning Park and Lytton. They require

dry, open to semi-open stands of mature or old douglas-fir, ponderosa pine, and western larch between 780 and 1300 m elevation although stands of large diameter hardwoods are occasionally used for nesting (FPC 1996). Home range sizes as small as 4 ha (data from outside B.C.) indicate this species may be able to use relatively small patches of suitable habitat.

End of Excerpt from Gyug (1996)

METHODS

Selection of Forest Development Plan (FDP) areas to be inventoried were selected firstly for occurrence within the mapped range of each species, and secondly for nesting habitat characteristics based on forest cover typing from the forest cover maps and elevational constraints. No Forest Development Plans from Tree Farm Licences were reviewed and no searches conducted within Tree Farm Licences. The following Forest Development Plans were reviewed:

Penticton Forest District:

- Weyerhaeuser Canada Ltd. (Forest Licence only),
- Gorman Bros. Lumber Ltd.,
- Riverside Forest Products Ltd. (Forest Licence only),
- Small Business Forest Enterprise Program,
- All Woodlots;

Boundary Forest District:

- Pope and Talbot Ltd. (Forest Licence only),
- Weyerhaeuser Canada Ltd.,
- Small Business Forest Enterprise Program,
- All Woodlots;

Merritt Forest District:

- Weyerhaeuser Canada Ltd.,
- Tolko Industries Ltd.,
- Aspen Planers Ltd.,
- Ardew Wood Products Ltd.,
- Small Business Forest Enterprise Program,
- All Woodlots;

Vernon Forest District:

- Small Business Forest Enterprise Program,
- All Woodlots.

Tapes of the calls and drums of white-headed woodpeckers and/or Williamson's sapsuckers were played to listen for responses using the protocol suggested by the RIC manual (1996, p.59) from early May through early June. Where Williamson's sapsuckers were detected, we returned to search for nests in late June. The method relies on hearing the begging calls of young woodpeckers in the nest, or keying in on drumming or calling adults to find the nest. To detect nests, fairly intensive surveys covering a high proportion of the area to be sampled were required where we tried to cover every portion of an area likely to hold a nest by approaching all points within that area to within 100 m. All occurrences of woodpeckers or sapsuckers heard or seen were recorded. All young heard from a nest were investigated to determine the species of nesting woodpecker or sapsucker. Exact locations for all woodpecker and sapsucker nests were determined using a GPS receiver, or by plotting the nests on 1:15,000 air photos or maps for later determination of UTM coordinates.

RESULTS

Inventories were conducted in 30 areas (Tables 1 and 2, Figures 1 and 2). Table 1 and Figure 1 present results for areas where nest searches were undertaken. Table 2 and Figure 2 present results from areas only visited during initial playbacks because none of the target species were encountered. These covered 2 woodlots in the Merritt Forest District, 2 woodlots in the Vernon Forest District, 1 woodlot, 3 Cutting Permit (CP) areas and 1 Small Business area in the Penticton Forest District, and 10 woodlots, 7 CP areas and 4 Small Business areas in the Boundary Forest District.

Table 1. Species of woodpeckers and sapsuckers found during nest searches in woodlots, and proposed Cutting Permits and Small Business sales.

Table 2. Species of woodpeckers and sapsuckers found in woodlots, and proposed Cutting Permits and Small Business sales that were only inventoried using playbacks.

No Forest Development Plans were found to target low-elevation valley bottom forest stands or the very open stands that Lewis' woodpeckers prefer, although the area of four woodlots did occur in this type of habitat and these were inventoried. One FDP area was re-inventoried where the white-headed woodpecker sightings were made in 1996 and one other FDP area where white-headed woodpeckers might be present. Twelve other FDP areas and eleven woodlots were selected primarily because of their potential as Williamson's sapsucker breeding habitat--mature Douglas-fir, ponderosa pine and western larch forests.

White-headed Woodpecker

Figure 1. Results and inventory areas of Forest Development Plan and Woodlot locations where nest searches were conducted in 1997 in the southern interior of British Columbia.

Figure 2. Forest Development Plan areas and Woodlots where red- and blue-listed woodpecker species were not encountered during playbacks in 1997 in the southern interior of British Columbia.

White-headed woodpeckers were not detected in 1997 even on the Rock Ovens CP area where they were detected in 1996.

Williamson's Sapsucker

Williamson's sapsuckers were detected during initial playbacks at 11 locations in a fairly limited geographical area east of the Okanagan Valley and west of Midway. Nests were subsequently found at 6 of these locations in late June (Table 3, Figure 1). Nests were detected both by listening for adults drumming or calling and by hearing the young at the nest before any adults were heard. In areas where there was only one nest in a wide area, adults appeared to be very quiet in late June while in areas where nests were more common (particularly Johnstone Creek) adults drummed much more frequently.

Table 3. Locations and physical data for Williamson's sapsucker observations during playbacks and nest searches.

Overall density of occupied Williamson's sapsucker nests appears to be very low, even in "ideal" habitat. Many potentially suitable nesting trees (large dead-top western larch) were seen in the area of Woodlot 411-1 at Johnstone Creek. Three nests were found in the woodlot, one adult was drumming just east of the woodlot, and one adult was heard drumming northeast of the woodlot in the vicinity of the nest found in 1996. This would make for five possible nesting pairs in an area of about 600 ha. This would make for a density of about one pair per 120 ha in what is close to ideal nesting habitat for Williamson's sapsuckers. Individual birds were seen or heard up to about 250 m from the nests they probably occupied so that actual territory sizes for a nesting pair were at least 20 ha based on this radius. We do not have any estimate of density of potential nesting trees but suspect that it is higher in this area than in most other areas that we examined. Johnstone Creek is at the center of the where this subspecies is common in Canada, and these densities are probably not repeated anywhere else in Canada except perhaps in portions of Tree Farm Licence 8 at Ingram and Wallace Creeks, and perhaps Tree Farm Licence 15 north of lower Vaseux Creek. Densities of Williamson's sapsuckers at all other locations are much lower than 1 pair/120 ha.

Williamson's sapsucker nest sites were either in western larch/Douglas-fir forests or in wet western larch/Douglas-fir/spruce/birch forests. Exceptions included a young lodgepole pine forest with a few western larch veteran trees and the edge of the 12-year old Westbridge burn where an estimated 75% of the standing trees were fire-killed. Most of the Williamson's sapsucker nests (82% of 11 nests found in 1996 and 1997) were in a narrow elevation band from 1020-1190 m elevation with additional nests at 1400 and 1490 m. Nests were all in IDFdm1 or IDFxh1. Site series included a wide range from sub-mesic to hygric sites. Slopes varied from flat to 47% with only 27% of 11 nests on sites steeper than 15%. Aspects of the steeper sites (with slope >15%) tended to be northerly sites (105°, 270° and 320°) probably because steep south-facing slopes tend to be dominated by Douglas-fir and ponderosa pine in the IDFxh1 and IDFdm1 rather than by the large western larch that Williamson's sapsuckers appear to prefer for nesting.

Including all the data (3 nests in 1996 and 8 nests in 1997), Williamson's sapsucker nests were most commonly found in very large, live western larch (N=7). The diameter range of western larch used for nesting was 70-110 cm dbh with all of the 7 nests in live western larches. Live western larch trees typically had broken or dead tops. Other species used for nesting were small and dead paper birch (26-32 cm dbh, N=2), live black cottonwoods (96 cm dbh, N=1) and dead ponderosa pines (70 cm dbh, N=1). Height of nests in birch was typically low with snag heights of 11-17 m and nest heights of 5-6 m. Height of nests in western larches were typically much higher with an average tree height of 31 m (range 23-45 m) and average nest height of 20.5 m (range of 9.5-40 m).

Lewis' Woodpecker

Lewis' woodpeckers were never found in areas actually being inventoried but were sometimes seen near these areas. At least 5 Lewis' woodpeckers were seen at 550 m elevation in the BGxh1 just west of Woodlot 1500 in the Pentiction Forest District.

This concentration of Lewis' woodpeckers was also discovered in the FNOCEPS inventories of 1996. In the Boundary Forest District, one was seen entering a possible nest in a black cottonwood 2 km up the Ingram Creek Road in the PPdh1 at 700 m elevation, and one was seen along the Sidley Mt. Road in the IDFdm1 at 1130 m in a riparian stand among farms. Two Lewis' woodpeckers (probably representing two pairs) were observed in the burned area of the Garnet Fire of 1994 behind Campbell Mt. near Pentiction. This was outside of the inventoried area but was an area that was very briefly visited because the most recent sighting of a white-headed woodpecker in the entire inventory area had been made there during the 1996 Pentiction Christmas Bird Count. (We did not observe any white-headed woodpeckers there.)

Only one Lewis' woodpecker nest was found in 1997: 600 m north of Woodlot 1468 in Boundary Forest District. The nest was in the IDFdm1 at 1190 m elevation. The nest was in a 35 cm dbh tree burned and killed in the Westbridge fire of 1985. The bark of the tree was burned beyond recognition but the tree was believed to be a western larch.

Woodpecker Nests

Seven other species of woodpeckers were found in the areas searched, with red-naped sapsuckers being the most commonly found species (Table 1). Thirty-four woodpecker nests were found in 1997. Including all the nesting data for all species of woodpeckers in both 1996 and 1997, the most commonly used nest tree was trembling aspen (42% of 67 nests found), followed by paper birch (24%), western larch (22%), ponderosa pine and Douglas-fir (each at 4.5%), and black cottonwood and spruce (each at 1.5%). Nests in aspen were most commonly in live trees (82% of 28 nests) as were nests in western larch (87% of 15 nests). In contrast, most nests in birch were in dead trees (81% of 16 nests). Diameters of aspen and birch used for nesting were similar with a mean of 37 cm dbh for aspen (range of 20-60 cm dbh) and a mean of 32 cm dbh for birch (range 22-49 cm dbh). However, western larch used for nesting were much larger on average (62 cm dbh; range 26-110 cm). All nests in ponderosa pine trees (N = 3) were in large dead trees (range of 40-70 cm dbh) killed by fires. Only three nests were found in Douglas-fir trees, all greater than 45 cm dbh, with two of these dead and one alive. Only one nest (red-naped sapsucker) was found in a live spruce (53 cm dbh with a broken top) and one nest (Williamson's sapsucker) in a live black cottonwood (96 cm dbh). No woodpecker or sapsucker nests were found in

lodgepole pine trees, even though these were among the more common trees in many of the areas sampled.

DISCUSSION

White-headed Woodpecker

Based on only one observation during these inventories in 1996, and no nest records, white-headed woodpeckers do indeed appear to be deserving of their red-listed status in British Columbia. There does not appear to be much remaining old-growth ponderosa pine habitat in the Okanagan. All stands we found had received some logging impact although the impacts varied greatly depending on how much of the original stand had been logged. Many of these stands are now being considered for present logging. Stands that appeared relatively intact with numerous standing snags were usually on very broken ground and were not very good growing sites, and not very productive woodpecker sites in general based on the paucity of observations made in such habitats. We did not come across any completely intact old growth ponderosa pine stands during this inventory. However, one stand was encountered during other woodpecker inventories in TFL 15 (CP 55, Block 2) in an (as yet) unroaded area just south of Inkaneep Creek that was on a fairly good growing site. Relatively intact mature stands with numerous snags and fairly dense forest on good growing sites that include ponderosa pine should be regarded as premium sites in the southern Okanagan and considered as first candidates for Wildlife Tree Patches or old-growth reserve areas.

Williamson's Sapsucker

Three other FDP areas in the Penticton Forest District were considered for inventory for Williamson's sapsucker because they were in the IDF, but were not actually inventoried because they were considered low quality Williamson's sapsucker habitat. These included Gorman's CP 317, Liddell Cr. and CP 319, Bull Cr., and Weyerhaeuser's Forest Licence A47982, CP 5, Horn Cr. These were on the west side of Okanagan Lake where Williamson's sapsuckers appear to be largely absent based both on our inventory results and the sightings made by other birders over the years (see also Cannings et al. 1987). Cannings et al. (1987) hypothesized that this was because of the lack of western larch west of Okanagan Lake but Williamson's sapsucker does occur sporadically westward to Princeton and Kamloops, but they appear to be largely associated with aspen or cottonwood stands rather than conifer stands in those areas. We have found them too rare to effectively inventory on a site-by-site basis. Inventory in those areas will have to rely on sightings made largely by local birders.

Based on a very limited geographic range in Canada, their uncommonness even within that range, and their apparent dependence on very large western larch (this study and Gyug and Bennett 1995) in this area, this subspecies is probably deserving of its blue-listed status. I could find no previously published record of nesting in birch trees in B.C. so that this may be a new finding. Also, the one nest found at 40 m height in a western larch is apparently the highest recorded in B.C. (previously noted maximum was 18 m cited in B.C. Min. Forests and B.C. Env't. 1996).

Lewis' Woodpecker

No Lewis' woodpeckers were found in the actual Forest Development Plan areas or woodlots although they were noted occasionally outside these areas. Only one Lewis' woodpecker nest was found in 1997 in a burn-killed ponderosa pine at the edge of the Westbridge burn of 1985. In general, very few cutting permits and very few woodlots overlap with Lewis' woodpecker nesting habitat.

CRITIQUE OF INVENTORY PROTOCOLS

For presence/absence surveys for woodpeckers, the RIC protocol suggests call playback during the breeding season as the preferred method (RIC 1996). This method proved to be quite efficient in my opinion, especially in directing efforts of nest searches when we only returned to sites where a target species had been detected on playback surveys. The recommended RIC method for absolute density is still for spot-mapping, but I believe the nest search method is more efficient and less time-consuming. The main drawback is that there is only 2-3 weeks of the year when this method can be used, but the same is true for spot-mapping of breeding pairs.

My suggestion at this point is to allow for 10 areas to be inventoried next year. This would only include newly proposed Cutting Permits in Initial Plan Stage, as all the likely spots to inventory for these species were undertaken in 1996 and/or 1997. Forest Development Plan review in 1998 should take 5 office days by a team of biologist and technician. Roadside callback surveys at 10 areas would take 10 crew field-days. Nest searches at areas with positive playback responses should allow for an additional 5 crew field-days. In 1998, the Williamson's sapsucker nest sites found in 1996 and 1997 should be checked for re-nesting. Data tabulation and report writing would take an additional 5 biologist and technician days. Total estimated time required would be 20 field days by a crew of two, and 10 office days by a biologist and by a technician.

MANAGEMENT CONCERNS

Williamson's sapsuckers

Wildlife Tree Patches (WTPs) of at least 4-ha should be put around the 11 Williamson's sapsucker nest sites discovered in 1996 and 1997. I believe that the 11 nests we have already found should be revisited in 1998 to determine how many of these trees are being re-used, or whether pairs find alternate nesting trees in some areas. Two of the nests found in 1996 were revisited in 1997. No Williamson's sapsuckers were heard or seen near one of the 1996 nests (CP 451, TFL 15) in late May 1997, and no Williamson's sapsuckers were seen at another 1996 nest (CP 211, Johnstone Creek) in 1997 although drumming was heard about 300 m northeast of the nest. My concern is that placing WHAs around the trees used for nesting in any one particular year may not allow for repeated nesting in coming years. Protection of specific trees suitable for nesting near these areas may also be necessary so that a "tree-centred" Wildlife Tree Patch of the minimum size needed to keep that tree from being cut for safety reasons may allow for the retention of more potential nesting trees than placing 4-ha WHAs around particular nest trees that may not be used every year.

The information necessary to make this sort of decision of whether a "tree-centred" small WTP approach or "nest-centred" larger WTP approach would be more suitable is really not available yet. The required data would probably have come out of the Wallace Creek Williamson's sapsucker radio-tracking program where WTPs have existed in western larch forests for 25 years, but that program was not funded in 1997 after the initial year of 1996. This sort of information is required for effective management of this species in B.C. where Williamson's sapsuckers appear to rely more on western larch than anywhere else in their range.

Very large western larch appear to be very important to Williamson's sapsuckers. I do not know of any estimates of how many stands still contain such prime nesting trees (live western larch >75 cm dbh) but there may not be that many, and there is no inventory of this particular feature. Throughout the geographic area of their greatest abundance (from the Okanagan valley east to Greenwood and within 30 km of the U.S. border), wildlife tree patches should be centred on such large western larch.

Where larch is lacking, Williamson's sapsucker appear to be very uncommon, and depend on aspen, or in this area birch, for nesting. In these areas, wildlife tree patches should be targeted for wet draws or gullies where large birch or aspen (>25 cm dbh) are abundant. One of the Williamson's sapsucker nests we found in a birch was in an area that had been long ago high-graded for large spruce (or perhaps Douglas-fir as well). The other Williamson's sapsucker nest in a birch was in a Woodlot that has had some logging in the past, however birch was never targeted during that logging. These birch snags used for nesting are long dead and the wood quite soft. They would not be

deemed as safe or sound trees under any safety rating system. Given present Worker's Compensation Board safety regulations, these sites would probably now be treated differently and the standing birches presently used for nesting would be felled at the time of timber harvesting or any other silvicultural activity. Consequently, while older methods of timber harvesting might have left some of these natural hardwood stubs for nesting, it appears that present regulations would not allow it, and there is little choice but to use wildlife tree patches to preserve nesting habitat.

The 12-year old Westbridge burn was used for nesting by both Williamson's sapsuckers and Lewis' woodpeckers. The 3-year old Garnet Fire appeared to be quite well used by Lewis' woodpeckers. Should any new fires occur in the very limited area previously outlined as primary Williamson's sapsucker habitat (i.e., the IDFdm1 and IDFxh1 south of Ed James Lake in Boundary Forest District and the IDFdm1 and IDFxh1 south of Maclean Creek in Penticton Forest District), serious consideration should be given to not conducting any salvage logging in this area. Proposals to "high-grade" western larch snags as "opportunity wood" should also not be considered within this area because of the high value to Williamson's sapsuckers and the very limited range where Williamson's sapsuckers occur in this province.

It should also be noted that a major part of Tree Farm Licence 15 and the southern end of Tree Farm Licence 8 Block 1 are in the area of prime Williamson's sapsucker nesting habitat, and numerous nests have already been found in these areas. This inventory only covered areas in the provincial forest outside of Tree Farm Licences, but parallel inventories should also be undertaken in these particular parts of these Tree Farm Licences.

Comments on selected Cutting Permits or Woodlots

Penticton Forest District, Woodlot 1500

A Williamson's sapsucker was found in the center part of the woodlot on initial playbacks but no nest was found on subsequent searches in late June. The most valuable area of the woodlot for woodpeckers and sapsuckers appeared to be a bench running SW to NE in the center of the woodlot where all woodpecker and sapsucker observations were made in the woodlot on the 2 visits. This bench is a wet receiving site where birch is abundant. WTPs established in this woodlot should concentrate on this bench. Most other areas of the woodlot are Douglas-fir forest mixed with western larch and ponderosa pine, and most have been logged over in the past. The only places where many coniferous snags appear to be common are on the rockiest and most rugged parts of the woodlot. However, even in these places no woodpeckers were noted.

Penticton Forest District, Gorman's Bros. Lumber, CP 315, Rock Ovens

The white-headed woodpeckers that were glimpsed in 1996 were not present in 1997, or on subsequent visits by several people to the site in 1996. I do not believe they are resident in the area of CP 315. The proposed Block 2 of CP 315 targets the area where the white-headed woodpeckers were seen. However, much of this proposed block appears to be very poor growing sites where large trees appear to be growing out of rock slabs and boulder fields so that I do not think the final area of Block 2 will actually be as proposed. The proposed Block 6 of CP 315 targets the last piece of mature forest on a good growing site in its immediate vicinity, and was the only site in the area where 4 woodpecker species were seen during playbacks. Wildlife Tree Patches must be made within this proposed block, since the forest outside is largely unsuitable for nesting and foraging woodpeckers because of previous high-grading and lack of good growing sites.

Penticton Forest District, Weyerhaeuser Canada Ltd., CP 166, McLean Creek

The Williamson's sapsucker nest found here was not in any of the proposed blocks. However, suitable nest trees (large, dead top western larch) are relatively uncommon in the area, because there has been much clearcutting and high-grading in the area in the past. In the Williamson's sapsucker nest tree, a mountain chickadee was also nesting. The red-naped sapsucker nest tree was a dead birch that had at least 15 previous sapsucker nest holes in it from previous years. These facts indicate that suitable cavity-nesting trees may be at a premium in this area. For instance, proposed Block 166-6 of about 18 ha contains only one suitable nesting tree (a very large, dead-top western larch veteran). WTP planning must take into account high value nesting trees in the entire area of CP 166.

Boundary Forest District, All proposals in the IDFdm1 and IDFxh1 west of Rock Creek and south of a straight line between Ed James Lake and the southeast corner of TFL 15 (Sidley Mt., McKinney Cr., Rock Cr. and Johnstone Cr. areas).

This appears to be the heart of the distribution of Williamson's sapsuckers in the Boundary Forest District outside of Tree Farm Licence 8 Block 1. However, even within this very limited area of about 10,000 ha, Williamson's sapsuckers were not found in every area where playbacks were done, or where nest searches were undertaken. Nesting habitat in many places within this triangle has been negated by previous high-grading of large western larch. Some of the area is unsuitable because they are immature forest types with no remaining veteran trees. Areas that appear to be largely suitable, and where we found Williamson's sapsuckers include Woodlots 1623, 411-1, 1622 and 478-1, proposed Small Business sales include A45651, and A48486, and proposed Cutting Permits include CP 282-1 and 277-1. Large, live broken-top western larch appear relatively common in these areas and should be targeted as the centers of

any proposed WTPs in this area. Cutting of large western larches on an opportunistic basis, or for firewood, should be discouraged in this particular area.

On sites where large western larch are not found in this area, sites with birch should be targeted for WTPs. Other forest types that appear particularly useful to other nesting woodpeckers (particularly red-naped sapsuckers and pileated woodpeckers) are riparian sites with large diameter aspen and/or cottonwood on them. This was particularly the case on Woodlot 411-1.

Boundary Forest District, All proposals in the IDFdm1 and IDFxh1 in the Nicholson and Bubar Creek areas.

This area is also in the heart of Williamson's sapsucker distribution in the Boundary Forest District but the only place where we found nesting Williamson's sapsuckers in this area was in the 12-year old Westbridge burn (along with nesting Lewis' woodpeckers). The forest in this area did not appear to be as useful to Williamson's sapsuckers as the forests immediately to the west of this area across the Kettle Valley. I am not sure if this is because of a lack of nesting opportunities or other reasons.

CONCLUSION

Inventory was conducted for red and/or blue-listed woodpeckers--white-headed woodpeckers, Williamson's sapsuckers and Lewis' woodpeckers--in selected forest development plan areas in the Boundary, Merritt, Vernon and Penticton Forest Districts.

White-headed woodpeckers were not detected in 1997. Williamson's sapsuckers were detected in 11 locations on initial playbacks with single nests found in 5 of these locations and three nests found in one location on subsequent nest searches. Including the three Williamson's sapsucker nests found in 1996, large (>70 cm dbh), live western larches and dead standing birch trees are most important for nesting. Most of the Williamson's sapsucker nests (82%) were in a narrow elevation band from 1020-1190 m elevation with additional nests at 1400 and 1490 m, all located on the plateau between the Okanagan Valley and the Kettle Valley at Midway. 4-ha Wildlife Tree Patches should be placed around the 11 Williamson's sapsucker nest sites we have found in the past two years. However, further information is required on nest site fidelity and annual nest site choice to determine if placement of permanent WHAs around existing nests is the best long-term strategy for this species.

Sixty-seven nests of woodpeckers and sapsuckers were found in total (33 in 1996, 34 in 1997), 57 of which were incidental to the search for red- and blue-listed species. The majority of nests (88%) were either in large live trembling aspen, large dead birch, or large live western larch.

No Lewis' woodpeckers were found in the actual Forest Development Plan areas or woodlots although they were noted occasionally outside these areas. Only one Lewis' woodpecker nest was found in 1997 in a burn-killed ponderosa pine at the edge of the Westbridge burn of 1985. In general, very few cutting permits and very few woodlots overlap with Lewis' woodpecker nesting habitat.

In 1998, the Williamson's sapsucker nest sites should be checked for re-nesting. All the most likely woodlots and planned Cutting Permits were inventoried in 1997. Rechecking nests and inventorying any new Cutting Permit areas to inventory should require 20 field days by a crew of two, and 10 office days by two people in 1998 (total of 60 person days).

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