

# Management Plan for the Lewis's Woodpecker (*Melanerpes lewis*) in Canada

## Lewis's Woodpecker



2011

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## PREFACE

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996) agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of management plans for listed Special Concern species and are required to report on progress within five years.

The Minister of the Environment and the Minister responsible for the Parks Canada Agency are the competent ministers for the management of the Lewis's Woodpecker and have prepared this management plan, as per section 65 of SARA. It has been prepared in cooperation or consultation with the Government of British Columbia.

Success in the management of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this plan and will not be achieved by Environment Canada, the Parks Canada Agency, or any other jurisdiction alone. All Canadians are invited to join in supporting and implementing this management plan for the benefit of the Lewis's Woodpecker and Canadian society as a whole.

Implementation of this management plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

## ACKNOWLEDGMENTS

The significant efforts of the management team are gratefully acknowledged. The team members are: Tanya Luszcz (Management Team Chair) and Véronique Connolly (Environment Canada, Canadian Wildlife Service); Francis Iredale, Orville Dyer, Ted Antifeau, Jared Hobbs and Julie Steciw (B.C. Ministry of Natural Resource Operations); Tom Dickinson (Thompson Rivers University); Bernadette Manuel (Nicola Tribal Association, NTA); Chris Gill (consultant on behalf of NTA); Suzanne Beauchesne (consultant); Mary Sandy (Esh-kn-am Cultural Resources Management Services); Ralph Gravelle (Tobacco Plains Indian Band); and Dan Wigle (St. Mary's Band). Considerable input to current (or earlier) versions of the management plan from the following individuals is also gratefully recognized: Megan Harrison, Lucy Reiss, Dan Shervill and Kevin Fort (Environment Canada, Canadian Wildlife Service); John Surgenor, Todd Manning, Chris Wood, Ross Vennesland, Leah Ramsay, Sue Crowley and Randy Harris (B.C. Government); Ian Mackenzie (Grasslands Conservation Council of B.C.); Rick Howie, John Cooper, Dick Cannings, Margaret Holm, and Lisa Scott (consultants); Shyanne Smith (Garry Oak Ecosystem Recovery Team); Irene Manley (Fish and Wildlife Compensation Program); Jamie Smith, Xiang Zhu, and Fred Bunnell (University of British Columbia); Howie Richardson, A. Michael Bezener, and Bryn White (Okanagan University College); and Allison Haney and Lisa Rockwell (contractors).

## EXECUTIVE SUMMARY

Lewis's Woodpecker (*Melanerpes lewis*) is a medium-sized migratory woodpecker. It is a semi-colonial nester that breeds in low elevation habitats of the southern interior of British Columbia. The Lewis's Woodpecker was assessed as Special Concern in 2001 by the Committee on the Status of Endangered Wildlife (COSEWIC) in Canada as a result of range contraction, small population size and loss of large nesting trees in urban and agriculture developments. The species was listed on Schedule 1 of the *Species at Risk Act* (SARA) in 2003.

This species status was re-examined by COSEWIC and designated Threatened in April 2010, as a result of ongoing population declines both globally and in Canada, and recent surveys which have shown the species to be far less numerous than previously believed. A decision regarding up-listing the species under SARA is pending the outcome of consultation. If the Lewis's Woodpecker is later listed as Threatened under SARA, Environment Canada will lead the preparation of a recovery strategy within two years of the date of listing.

The current population estimate for Lewis's Woodpecker in British Columbia is 315-460 breeding pairs occurring in the southern interior of British Columbia. The historic population size is not known and there are insufficient Breeding Bird Survey data to obtain reliable trend information. In British Columbia, the Lewis's Woodpecker occupies three general habitat types: 1) dry open Ponderosa Pine (*Pinus ponderosa*) or Douglas-fir (*Pseudotsuga menziesii*) forests or open grassland with scattered trees, 2) mature to old riparian cottonwood (*Populus* spp.) stands typically adjacent to open habitats, and 3) relatively recently burned (<30 years) Ponderosa Pine and Douglas-fir dominated forests with standing snags.

The main threats to populations of Lewis's Woodpecker in Canada are breeding habitat loss (due to urban and agricultural development, removal of snags, firewood cutting, and pine beetle outbreaks), interspecific competition from European Starlings, and fire suppression (which results in forest in-growth and deterioration of habitat conditions).

The objective of this management plan is to increase the breeding population of Lewis's Woodpeckers in the six geographic regions across their current range in Canada to approximately 600 pairs by 2040.

Broad strategies and measures to achieve the objective of this management plan are presented in the section, Broad Strategies and Conservation Measures.

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## 1. COSEWIC SPECIES ASSESSMENT INFORMATION

**Date of Assessment:** November 2001

**Common Name (population):** Lewis's Woodpecker

**Scientific Name:** *Melanerpes lewis*

**COSEWIC Status:** Special Concern

**Reason for Designation:** Population is relatively small and part of the Canadian range has been lost. Required breeding habitat – large trees in open habitats – is under pressure from urban and agricultural developments.

**Canadian Occurrence:** British Columbia (B.C.)

**COSEWIC Status History:** Designated as Special Concern in April 1999. Status re-examined and confirmed in November 2001.

This species status was re-examined by COSEWIC and assessed as Threatened in April 2010, as a result of ongoing population declines both globally and in Canada, and recent surveys which have shown the species to be far less numerous than previously believed. If the Lewis's Woodpecker is later listed as Threatened under SARA, Environment Canada will lead the preparation of a recovery strategy within two years of the date of listing.

## 2. SPECIES STATUS INFORMATION

Globally, the rank assigned to the Lewis's Woodpecker is G4 (apparently secure; NatureServe 2009). However, within several jurisdictions, the species is listed as vulnerable to critically imperiled (Table 1).

Table 1. List and description of various conservation status ranks for the Lewis's Woodpecker (from NatureServe 2009, B.C. Conservation Data Centre 2010, and B.C. Ministry of Environment 2010).

	<b>Global (G) Rank</b>	<b>National (N) Rank</b>	<b>Sub-national (S) Rank</b>	<b>COSEWIC Status</b>	<b>B.C. Conservation Status</b>
<b>Lewis's Woodpecker</b> ( <i>Melanerpes lewis</i> )	G4 (apparently secure)	Canada: N3 (vulnerable)  U.S.A.: N4N4B (apparently secure/ breeding and non-breeding)	British Columbia (S2B)  Arizona (S4) California (SNR) Colorado (S4) Idaho (S4B) Kansas (SNA) Montana (S2B)	SC (Special Concern) April 1999  T (Threatened) April 2010	Red List (B.C. CDC)  Conservation Framework Priority 2 under Goal 3 <sup>1</sup>

			Navajo Nation (S4) Nebraska (S1) Nevada (S3) New Mexico (S3B, S3N) Oklahoma (S2) Oregon (S2S3B) South Dakota (S3B,S3N) Utah (S2) Washington (S2S3) Wyoming (S2)		
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G/N/S 1: Critically Imperiled; 2: Imperiled; 3: Vulnerable; 4: Apparently Secure; 5: Secure; NR: Unranked; NA: Not Applicable; B: Breeding.

B.C. CDC: British Columbia Conservation Data Centre

<sup>1</sup> Goal 3: Maintain the diversity of native species and ecosystems. Priority 2: second-highest priority.

### 3. SPECIES INFORMATION

#### 3.1. Species Description

Lewis's Woodpecker (*Melanerpes lewis*) is a medium-sized (26-28 cm in length) woodpecker with a greenish black head, back, wings, and tail, and a distinctive pinkish red belly. It has a dark red face patch and prominent silvery gray collar and upper breast (see cover photo). The plumage coloration of Lewis's Woodpecker distinguishes it from other woodpeckers. Viewed from afar, it resembles a crow, jay or nutcracker; particularly in flight. Sexes are similar in size and colour. Juveniles are distinct from adults, being overall black and more brownish-black dorsally, generally lacking the extensive gray, red, and pink coloration of adults. In both adults and juveniles the legs and feet are gray, the bill is black, and the iris is dark.

#### 3.2. Population and Distribution

Lewis's Woodpecker occurs only in western North America, from southern British Columbia to the U.S.A.'s international boundary with Mexico, and its breeding distribution is closely associated with that of Ponderosa Pine (*Pinus ponderosa*; Tobalske 1997; Figure 1). Lewis's Woodpecker is mainly migratory and typically winters in the pine-oak ecosystems of southern Oregon south to northern Baja California, Mexico (Hadow 1973, Tobalske 1997), although one to six birds per year have wintered in the Okanagan Valley between 2000 and 2008 (National Audubon Society 2008). In Canada, Lewis's Woodpecker currently breeds only in the southern interior of British Columbia (Figure 2; Tobalske 1997). The largest numbers of breeding individuals are in the Okanagan-Similkameen and Thompson-Nicola regions, followed by the East Kootenay Trench, Boundary and the Cariboo-Chilcotin. Lewis's Woodpecker is rare in the West Kootenay (Table 2; Luszcz and Sawicz 2007, Beauchesne 2007).

The approximate area occupied by Lewis's Woodpecker in Canada, excluding cases of vagrancy, is thought to be between 1,921-2,806 ha based on a 6.1 ha territory size and a population estimate of 315-460 pairs (the territory size is based on a study from Washington and Oregon; Thomas et al. 1979). The location of this area of occupancy is not static, but rather changes over time based on the suitability of habitat. This is less than 10% of the global range for the species. Habitat that has been identified as potentially suitable for Lewis's Woodpecker is shown in Figure 2.

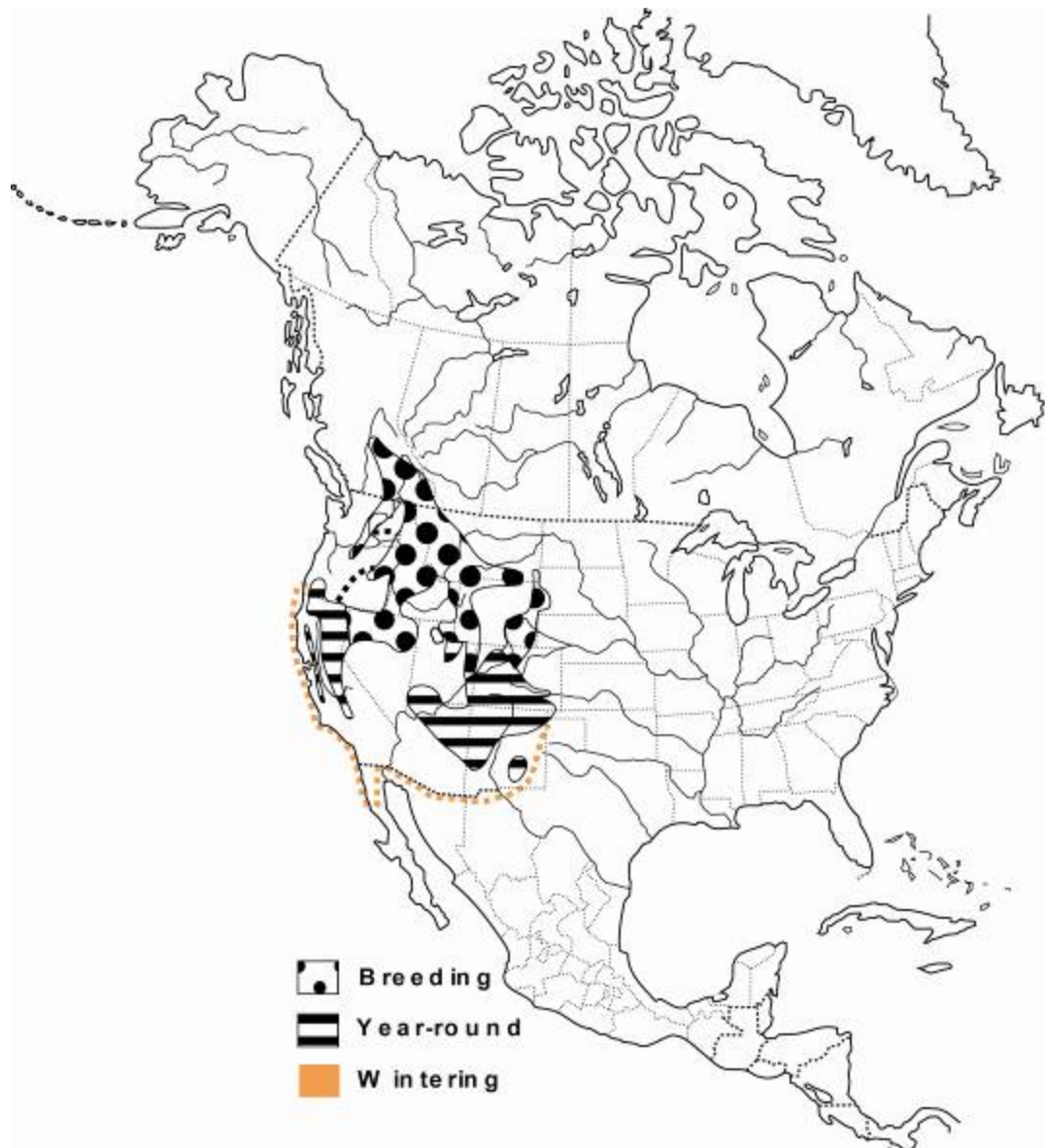


Figure 1. Global distribution of Lewis's Woodpecker. Polka dots show breeding season only (with the exception of rare wintering birds); horizontal lines shows year round distribution. The species winters irregularly south and west to the dotted line (Birds of North America Online 2005).



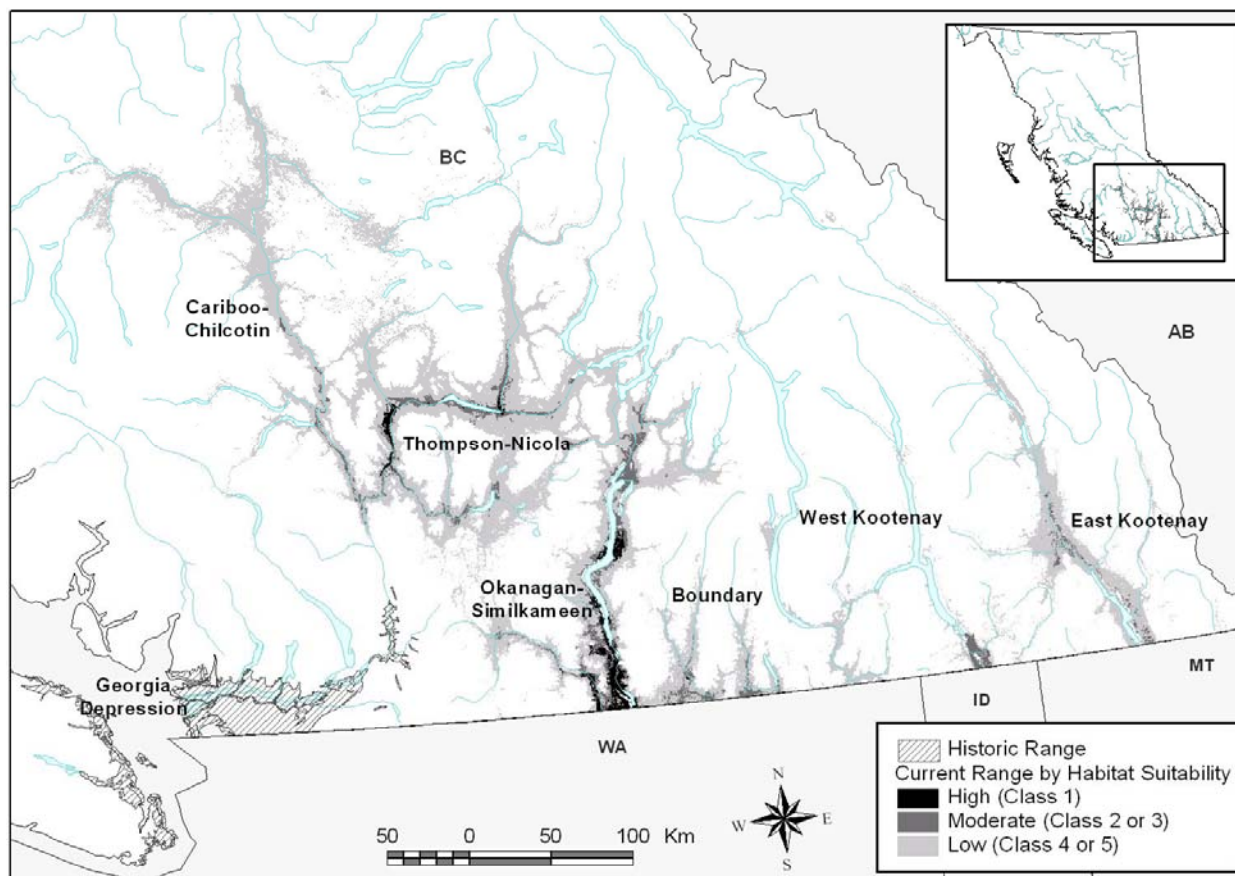


Figure 2. Distribution of potentially suitable breeding habitat for Lewis's Woodpecker in British Columbia. Suitability classes, based on Lewis's Woodpecker densities (from stand watch surveys) and forest cover (VRI) mapping, range from 1 (High) to 6 (Nil; B.C. Ministry of Water, Land and Air Protection 2004). British Columbia inset map not to scale.

Based on surveys conducted in 2006-2007, the total population of Lewis's Woodpeckers in British Columbia is currently estimated at 315-460 breeding pairs (Table 2). This represents less than 1% of the species' global population. Surveys to date have focused on obtaining information about occupied areas and suitable habitat, and have not been specifically designed to determine population size. Therefore, these are coarse estimates based on the best available information.

Table 2. Lewis's Woodpecker population estimates for British Columbia, 2006-2007.

Region	Number of breeding pairs <sup>1</sup>
Cariboo-Chilcotin	10-20
Thompson-Nicola	75-125
Okanagan-Similkameen	110-145
Boundary	50-55
East Kootenay	70-100
West Kootenay	0-15
<b>Total estimated breeding pairs:</b>	<b>315-460</b>

<sup>1</sup> Beauchesne and Cooper (2007) for Kootenay estimate; Dulisse (2006) for West Kootenay estimate; Luszc and Sawicz (2007) for all other estimates.

Although a range-wide population decline of approximately 60% between 1960 and 1999 has been inferred from Christmas Bird Count (1960-1989) and Breeding Bird Survey (BBS) data (Tobalske 1997), there are insufficient data from BBS to provide credible trends for this species in Canada (Collins and Downes 2009). In the East Kootenay region, 22% fewer nests were found in 2007 than in a survey of the same geographic area a decade earlier (Beauchesne and Cooper 2007). There is evidence that the species' range in Canada has contracted considering that extirpation of breeding populations has occurred in the lower Fraser River Valley and on Vancouver Island (Cowan 1940, Figure 2), in southwestern Alberta (Semenchuk 1992), and in the area surrounding Golden and Revelstoke, British Columbia (Cooper et al. 1998). This range contraction is believed to be the result of habitat loss attributable to urban expansion, riparian flooding due to hydroelectric development, and fire suppression.

### 3.3. Needs of the Lewis's Woodpecker

Lewis's Woodpeckers are birds of open forest, riparian woodland or grassland with scattered trees (Tobalske 1997). In British Columbia, Lewis's Woodpecker breeding habitats currently include the following (Campbell et al. 1990, Cooper et al. 1998, Cooper and Beauchesne 2000, Cooper and Gillies 2000):

1. dry open Ponderosa Pine or Douglas-fir (*Pseudotsuga menziesii*) forests, and open grasslands, with fire-maintained features, low stem densities, veteran Ponderosa Pines or Douglas-firs, abundant wildlife trees, and rich herb and shrub layers;
2. mature to old riparian cottonwood (*Populus* spp.) stands typically adjacent to grassland, agricultural field, shrub-steppe, or open woodland habitats; and
3. relatively recently burned (<30 years) Ponderosa Pine and Douglas-fir dominated forests with standing snags resulting from stand-destroying fires.

In British Columbia, the open forest and grassland, and riparian habitat types are typically found at <950 m elevation, whereas burned forest habitats can occur as high as 1265 m elevation (T. Antifeau, pers. comm., Cooper et al. 1998). A fourth habitat type found in the Georgia Depression (southeastern Vancouver Island and the lower Fraser Valley), open Garry oak forest, was historically used by Lewis's Woodpeckers for breeding (Campbell et al. 1990).

The presence of large trees in a state of partial to advanced decay for nesting (Tobalske 1997, Cooper and Beauchesne 2000; Zhu 2006) and relatively open areas for foraging appears to be essential for Lewis's Woodpecker (Bock 1970, Sousa 1983, Tobalske 1997, Cooper et al. 1998). Lewis's Woodpecker typically uses existing nest holes or natural cavities (Bock 1970, Saab et al. 2004; Zhu 2006), but will excavate its own cavities in highly decayed wood (Tobalske 1997). Unlike other woodpeckers, Lewis's Woodpeckers lack the skull structure and highly developed bill that facilitate wood excavation (Goodge 1972), which may explain their greater reliance on trees with existing cavities. Lewis's Woodpeckers will frequently re-use nest trees and often the same cavity (Linder 1994, Cooper and Gillies 2000, Ferguson and Iredale 2007). In foraging areas, an understory layer of shrubs, grass or herbaceous cover that produces berries or provides habitat for insect populations is an important Lewis's Woodpecker breeding habitat component (Sousa 1983; Cooper and Beauchesne 2000). They will abandon breeding habitats if insect prey abundance is limited (Bock 1970).

Periodic fire in Ponderosa Pine forests is thought to be important in creating suitable habitat characteristics for Lewis's Woodpecker (Cooper and Gillies 2000, Saab and Vierling 2001), and fire suppression may represent a limiting factor affecting the abundance and reproductive success of the species in this habitat type (Saab et al. 2004, Gentry and Vierling 2007, Saab et al. 2007, S.M. Beauchesne unpubl. data).

In British Columbia, Lewis's Woodpeckers nest in live and dead coniferous and deciduous trees. Of 224 nests found in 2006, 70% were in dead trees, 28% were in live trees, and 2% were in utility poles (Luszcz and Sawicz 2007). Ponderosa Pine, Black Cottonwood (*Populus trichocarpa*) and Douglas-fir are the most common nest tree species in British Columbia (Luszcz and Sawicz 2007). Lewis's Woodpeckers also have nested in Western Larch (*Larix occidentalis*), Trembling Aspen (*Populus tremuloides*), and Paper Birch (*Betula papyrifera*; Cooper et al. 1998; Luszcz and Sawicz 2007). Historically, Lewis's Woodpeckers also nested in Garry Oak (*Quercus garyana*) trees in the Georgia Depression (Beauchesne and Cooper 2002).

Lewis's Woodpeckers are not strongly territorial; individuals sometimes nest semi-colonially or in close proximity to one another (Tolbaske 1997). Nest distributions have been described as clumped (Linder 1994; Tolbaske 1997), and multiple active nests have been found in the same tree (Tashiro-Vierling 1994, Vierling 1997, Cooper and Beauchesne 2000). When territory defense does occur, it includes only the area around the nest cavity and immediate vicinity (Tobalske 1997). The size of territories (when birds are exhibiting territoriality) has not been recorded in British Columbia. Territorial behaviour has been studied in Washington and Oregon, and an average territory size of 6.1 ha per pair (equivalent to a 138 m radius circle around the nest) has been recorded (Thomas et al 1979). Home ranges for Lewis's Woodpeckers may broadly overlap; foraging flights of more than 1 km from the nest have been observed (S. M. Beauchesne unpubl. data, Newlon 2005).

Most Lewis's Woodpeckers winter in pine-oak ecosystems of southern Oregon south to northern Baja California, Mexico. Loss of wintering habitat (oak woodlands and their acorns) in the southwestern U.S.A. may be as important to population declines in Lewis's Woodpecker as the loss of breeding habitat (C. Bock pers. comm. in Cooper et al. 1998). The few birds that do over-winter in British Columbia typically use urban areas, orchards or vineyards (Siddle and Davidson 1991, D. Cannings, pers. comm.). The availability of storage sites for seeds or grains is an important habitat feature which may be provided by crevices in power poles or the bark of old cottonwoods (Tashiro-Vierling 1994, Tobalske 1997, Vierling 1997). Wintering habitat is considered limited due to the lack of available forage.

## 4. THREATS

### 4.1. Threat Assessment

Table 3. Threat Assessment Table

Threat	Level of Concern <sup>1</sup>	Extent	Occurrence	Frequency	Severity <sup>2</sup>	Causal Certainty <sup>3</sup>
<b>Habitat Loss or Degradation</b>						
Urban and agricultural development	High	Widespread	Current	Continuous	High	High
Removal of snags (for safety or aesthetics)	Medium	Widespread	Current	Continuous	Unknown	Medium
Firewood cutting	Medium	Localized	Current	Continuous	Medium	Medium
Mountain and Western Pine Beetle outbreaks	Medium	Localized	Current and Anticipated	Recurrent	Unknown	Low
Inappropriate livestock grazing	Low	Widespread	Current	Seasonal	Unknown	Low
<b>Exotic, Invasive or Introduced Species</b>						
Competition for nest sites with European Starling ( <i>Sturnus vulgaris</i> )	Medium	Widespread	Current	Seasonal	High (Okanagan) Unknown (rest of range)	High (Okanagan) Low (rest of range)
<b>Changes in Ecological Dynamics or Natural Processes</b>						
Fire suppression	Medium	Widespread	Current	Continuous	High (East Kootenay) Medium (rest of range)	High
Storms	Low	Widespread	Current	Recurrent	Low	Low
Climate change	Low	Widespread	Anticipated	Unknown	Unknown	Low
<b>Accidental Mortality</b>						
Removal of nest trees during breeding season	Low	Localized	Anticipated, possibly current	Seasonal	Low	Low
Vehicular traffic	Low	Widespread	Current	Seasonal	Low	Low

Table 3 continued.

Threat	Level of Concern <sup>1</sup>	Extent	Occurrence	Frequency	Severity <sup>2</sup>	Causal Certainty <sup>3</sup>
<b>Disturbance or Harm</b>						
Human intrusion	Low	Localized	Current	Seasonal	Unknown	Low
Avian pest control in vineyards	Low	Localized	Current	Seasonal	Unknown	Low
<b>Pollution</b>						
Insecticides	Low	Localized	Unknown	Continuous	Unknown	Low

<sup>1</sup> Level of Concern: signifies that managing the threat is of (high, medium or low) concern for the recovery of the species, consistent with the population and distribution objectives. This criterion considers the assessment of all the information in the table).

<sup>2</sup> Severity: reflects the population-level effect (High: very large population-level effect, Moderate, Low, Unknown).

<sup>3</sup> Causal certainty: reflects the degree of evidence that is known for the threat (High: available evidence strongly links the threat to stresses on population viability; Medium: there is a correlation between the threat and population viability e.g. expert opinion; Low: the threat is assumed or plausible).

## 4.2. Description of Threats

Threats are listed in order of decreasing level of concern. Threats ranked as “low level of concern” in Table 3 are not described in this section.

### *Urban and agricultural development*

Development (e.g., urban and agricultural) has reduced the quantity and quality of habitat for Lewis's Woodpecker over the past century (Cooper et al. 1998, Lea 2008). For example, two suitable habitat types in the Okanagan - Similkameen (open Ponderosa Pine and riparian Black Cottonwood forests) have been reduced in area of extent since the 1800's by 53% and 63%, respectively (Lea 2008). Habitat known to have been occupied by Lewis's Woodpeckers was recently lost during construction of a road bypass in the Kamloops area (T. Dickinson, pers. comm.). Continued habitat loss throughout much of the Lewis's Woodpecker range in British Columbia is anticipated, due to continued human population growth and expansion. Loss of wintering habitat (oak woodlands and their acorns) in the southwestern U.S.A. may be as important to population declines in Lewis's Woodpecker as the loss of breeding habitat (C. Bock pers. comm. in Cooper et al. 1998); however, the level of severity of this impact to populations in Canada is unclear.

### *Firewood cutting*

Lewis's Woodpeckers are not currently threatened by commercial forest harvesting because the stand densities in their nesting habitats are too low for harvesting to be economically viable. However, selective removal of current and future nest trees for firewood, human-safety, aesthetic, or other reasons, is likely to have an important negative impact on this species (Fraser et al. 1999); the threat to Lewis's Woodpecker population viability is unknown. There is considerable evidence illustrating the loss of Lewis's Woodpecker nest trees to firewood cutting, including trees with multiple nests (Cooper et al. 1998; Beauchesne and Cooper 2007; T. Antifeau pers. comm.).

### *Removal of snags (for safety or aesthetics)*

Danger tree removal practices in forest management operations, in parks and protected areas with public access, along transportation and transmission corridors and on private lands continue to be a source of habitat degradation through the removal of suitable nest trees.

### *Mountain and Western Pine Beetle outbreaks*

Pine beetle outbreaks represent a significant potential threat to Lewis's Woodpecker habitat. Mountain and Western Pine Beetles (*Dendroctonus ponderosae* and *D. brevicornis*) have infested 83,325 ha of Ponderosa Pine forests within Lewis's Woodpecker's Canadian range (MacLauchlan et al. 2008). This outbreak may create a short-term supply of decaying trees suitable for nesting Lewis's Woodpeckers, but the length of time these trees remain suitable may be far shorter compared to trees that died from other causes and subsequently decayed naturally. Anecdotal observations from the Thompson region suggest that many pine beetle-killed trees are falling within a few years of death (T. Dickinson, T. Manning, pers. comm.).

While the loss of individual nest trees may not impose significant population effects on Lewis's Woodpecker, the cumulative loss of nest trees to firewood cutting, danger tree removal, and Pine Beetle mortality has had a population effect.

### *Competition for nest sites with European Starling (*Sturnus vulgaris*)*

Competition for nest cavities from introduced species (e.g., European Starlings *Sturnus vulgaris*) is frequently listed as a threat to Lewis's Woodpeckers (Campbell et al. 1990, Lewis et al. 2002, Galen et al. 2003, COSEWIC 2010). In the Okanagan, 43% of cavities used by Lewis's Woodpeckers in one year were occupied by earlier nesting European Starlings in the following year (Zhu 2006). The magnitude of this threat in other parts of the Canadian range of Lewis's Woodpecker is unclear, as some sources indicate a level of tolerance between the two species. In situations where nest cavities are limited and populations of starlings are very large, competition may be more intense, and the cumulative negative effect on Lewis's Woodpecker populations may be significant (Campbell et al. 1997).

### *Fire suppression*

Fire plays an important role in maintaining the open structure in Lewis's Woodpecker breeding habitats, and fire suppression in lowland Ponderosa Pine forests is believed to be a significant threat. Fire suppression leads to degradation of breeding habitat by allowing dense stands of young Ponderosa Pine to develop and allowing invasion by Douglas-fir (Cooper et al. 1998). Fire suppression is believed to have contributed to the extirpation of Lewis's Woodpeckers from the Fraser River Valley area; Lewis's Woodpeckers were common in Vancouver and North Vancouver between 1920 and 1940 in areas that had been burned or logged, but disappeared as forests regenerated and ongoing fire suppression prevented new open habitats from being created (Cooper et al. 1998).

Stand-replacing fires in mature and old-growth forests can create new Lewis's Woodpecker habitat by creating open habitat with standing snags, but the quality of these burn habitats declines over time with post-fire succession (COSEWIC 2010). Therefore, if the rate of habitat creation via fire is lower than the rate of habitat degradation due to succession, suitable Lewis's Woodpecker habitat will decline in the long term. If the fires are too heat-intense, they may completely destroy Lewis's Woodpecker nesting habitat.

## **4.3. Actions Already Completed or Underway**

### *Habitat Protection*

- Approximately 116,314 ha (or 5%) of the most suitable Lewis's Woodpecker habitat (suitability classes 4 and 5, B.C. Ministry of Water, Land and Air Protection 2004) falls within existing federal and provincial ecological reserves, parks, protected areas, and private conservancies (Environment Canada unpubl. data).
- The B.C. Ministry of Environment has used *Land Act* provisions to protect riparian cottonwood breeding habitat.

### *Habitat Management*

- As of February 2010, B.C. Ministry of Environment established 51 Lewis's Woodpecker Wildlife Habitat Areas (WHAs) under the *Forest and Range Practices Act* representing a total area of 1437 ha.
- The Rocky Mountain Trench Ecosystem Restoration Program (<http://www.trench-er.com>) is working to restore open grassland and open forest habitat using maintenance burns, understory slashing and prescribed burning between 2011 and 2017, on a total of 9,300 ha in the Kootenays. It is not known precisely how much suitable or potentially suitable Lewis's Woodpecker habitat exists within the target sites (R. Harris, pers. comm.).
- In the East Kootenay Trench, the Rocky Mountain Trench Ecosystem Restoration Program is inoculating selected live trees with native heart rot fungi for the purpose of creating future wildlife trees for cavity-nesters.
- Approximately 169,540 ha (or 7%) of the most suitable Lewis's Woodpecker habitat (suitability classes 4 and 5, B.C. Ministry of Water, Land and Air Protection 2004) falls within Important Bird Areas (Environment Canada unpubl. data).

- A pilot nest box program for Lewis's Woodpecker was initiated by the Fish and Wildlife Compensation Program and Nature Conservancy of Canada in 2008 in the East Kootenay region to temporarily create more nesting opportunities until suitable natural cavities are available. Twelve nest boxes were erected.

### *Research, Monitoring and Evaluation*

- To address distribution and population size knowledge gaps, multiple inventories have been conducted throughout the species' range in British Columbia (Cooper and Beauchesne 2000; J. Hobbs unpubl. data; Dulisse 2006; Luszcz and Sawicz 2007; Jactett et al. 2007; Ferguson and Iredale 2007; Beauchesne and Cooper 2007; Nicola Tribal Association, unpubl. data).
- Habitat suitability has been assessed by GIS analyses and predictive modelling in various parts of the province through projects led by Environment Canada, B.C. Ministry of Environment, and the Grasslands Conservation Council of British Columbia.
- A study of Lewis's Woodpecker nest site selection and reproductive success was conducted in the South Okanagan in 2004 and 2005 (Zhu 2006).
- The Wildlife Tree Stewardship Program Okanagan-Similkameen (WiTS-OS) has been monitoring Lewis's Woodpecker nest trees on private and other lands in the South and Central Okanagan and Similkameen valleys since 2007 with the help of volunteers.

### *Education, Outreach and Engagement*

- To encourage private landowners and naturalists to report sightings of Lewis's Woodpecker, fact sheets, articles and specific requests have been periodically distributed since 2006.
- Outreach and engagement with fruit and grape growers in the Okanagan and Similkameen Valleys has occurred between 2006 and 2009 through the Okanagan Similkameen Conservation Alliance and the South Okanagan Similkameen Stewardship Program.
- Coldwater, Cook's Ferry, and Siska Bands, through Esh-kn-am Cultural Resources Management Services (CRMS), are conducting interviews with elders from the Nlaka'pamux Bands concerning First Nation relationships, management knowledge, stories and legends with this species. This information will be integrated into management strategies and habitat plans in conjunction with proposed field studies on the three bands' Indian Reserves.
- Garry Oak Ecosystem Recovery Team distributes information on the extirpated Georgia Depression population of Lewis's Woodpecker, including an informational insert on the species in their field manual, *Species at Risk in Garry Oak and Associated Ecosystems in British Columbia* (GOERT 2003).



## 5. MANAGEMENT

### 5.1. Management Objective

The objective of this management plan is to:

- Increase the breeding population of Lewis's Woodpeckers in the six geographic regions across their current range in Canada to approximately 600 pairs by 2040.

#### *Rationale for Management Objective*

Lewis's Woodpecker populations have declined in total numbers, extent of occurrence and area of occupancy. Their historic population size is not known and there are insufficient data for population viability analysis. Three broad-scale bird conservation planning processes have each set a Lewis's Woodpecker population objective of a 50% increase in the next 30 years (Partners in Flight British Columbia and Yukon 2003; Canadian Intermountain Joint Venture 2003; Whitehorne et al. 2011). The trends used in those plans suggested that the population of Lewis's Woodpeckers would need to be doubled in order to return to 1970's levels. The current population estimate is 315-460 pairs, and therefore a 50% increase would be 473-690 pairs. The average of this range is 582, resulting in the management objective of approximately 600 pairs to be achieved by 2040 across six regions (proportional to the current population estimates in each region). These represent discrete geographic areas as follows: Cariboo-Chilcotin, Thompson-Nicola, Okanagan-Similkameen, Boundary, West Kootenay, and East Kootenay.

### 5.2. Broad Strategies and Conservation Measures

1. Secure<sup>1</sup> unprotected breeding habitat around known nesting locations.
2. For each secured area, develop and implement a strategy that will maintain the site as suitable in perpetuity
3. Initiate management/stewardship of Lewis's Woodpecker nest trees and foraging habitats on unsecured crown lands, private land, and Indian Reserve lands following best management practices (BMPs; Appendix B).
4. Conserve migration stopover and overwintering habitat through existing international partnerships.
5. Conduct an assessment of threats of unknown severity on Lewis's Woodpecker populations in Canada, to determine if other measures are required to maintain or increase population levels.
6. Conduct research and monitoring to improve knowledge of breeding habitat use and demographic trends.

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<sup>1</sup> Securement may include land acquisition, redesignation of Crown land as protected areas or wildlife management units (e.g., WHAs), or restriction of allowable uses of lands through bylaws, legislation or conservation covenants.

*Rationale for Management Strategies*

Strategy 1: Because habitat loss is thought to be the main reason for the decline of Lewis's Woodpecker populations in Canada, it will be necessary to secure high quality breeding habitat to meet the management objective.

Strategy 2: Land that has been conserved must be subject to appropriate management to ensure that the quality of the habitat is maintained over the long term.

Strategy 3: Because not all breeding habitat can be secured, stewardship and management approaches must be developed for unprotected areas.

Strategy 4: Canada supports approximately 1% of the estimated global population of Lewis's Woodpeckers (Rocky Mountain Bird Observatory 2007). Given that maintaining migration stopover and wintering habitats is equally important to maintaining breeding sites to the survival of the Lewis's Woodpecker in Canada, it is important to work collaboratively with American and Mexican counterparts to understand and minimize potential limiting factors and threats among all habitats.

Strategy 5: Additional investigation needs to occur because there are knowledge gaps regarding the severity of threats such as snag removal, pine beetle infestations, livestock grazing, and competition from European Starlings outside of the Okanagan region.

Strategy 6: Monitoring at a broad scale within each of the six regions is required to determine population trends and will help to address how management actions are benefiting Lewis's Woodpecker populations in Canada. Inventory will help clarify population distribution and size.

**5.3. Implementation Schedule**

The actions and implementation schedule identified for Lewis's Woodpecker to achieve the management goal and objectives are summarized in Table 4. Increased productivity and/or population size are an anticipated outcome of all actions.

Several BMPs exist for Lewis's Woodpecker (Appendix B). They include general wildlife measures developed for Wildlife Habitat Areas under the Identified Wildlife Management Strategy in British Columbia (British Columbia Ministry of Water, Land, and Air Protection 2004), and BMPs developed from research and management in the U.S.A.

**Table 4. Implementation schedule.**

Action	Priority	Threats or concerns addressed	Responsibility <sup>1</sup>		Timeline
			Lead <sup>2</sup>	Other	
Broad Strategy 1: Secure unprotected breeding habitat around known nesting locations.					
Use a stewardship plan and work with existing stewardship programs and initiatives to conserve habitat surrounding known nest locations (that are not already within an existing ecological reserve, park, protected area, or conservancy).	High	Habitat loss	EC, Land managers/ owners	Gov. B.C., TLC WiTS-OS, FWCP	Apr 1, 2011 - Dec 31, 2015
Broad Strategy 2: For each secured area, develop and implement a strategy that will maintain the site as suitable in perpetuity.					
Increase nesting opportunities for Lewis's Woodpecker using a variety of methods on a site-specific and experimental basis (e.g., ecosystem restoration by prescribed burning combined with silvicultural techniques, fungal inoculations, and nestboxes) <sup>3</sup> . Use the results of prescribed burning experiments to develop a Prescribed Burning Guide for establishing Lewis's Woodpecker nesting habitat.	Medium	Habitat loss; Fire suppression	Gov. B.C., FWCP	Gov. B.C.	Ongoing
Review BMPs to ensure that they are accurate; work with all jurisdictions and private landowners to encourage use of BMPs.	Medium	All	EC, Gov. B.C.		Apr 1, 2011 - Dec 31, 2015
Restore Black Cottonwoods in lowland riparian floodplains (<950 m elevation), in areas with adjacent suitable foraging habitat.	Medium	Habitat loss: development, inappropriate livestock grazing	EC	TNT, TLC, ONA	Ongoing
Manage WHAs through general wildlife measures (GWMs) for range or forest activities (Appendix B).	Medium	Habitat loss: snag removal; inappropriate livestock grazing	Gov. B.C.		Ongoing
Broad Strategy 3: Initiate stewardship/management of Lewis's Woodpecker nest trees and foraging habitats on unsecured Crown, private, and Indian Reserve lands following BMPs.					
Review existing land use policies, environmental assessments, and development proposals for their impacts on Lewis's Woodpecker habitat. Develop related BMPs and incorporate into land development and management.	High	All	EC	Gov. B.C.	Apr 1, 2011 - Dec 31, 2015 / ongoing
Work with land managers to limit further loss in the amount and quality of breeding and foraging habitat from (and increase retention and recruitment of wildlife trees in) road and transmission line maintenance, range use, ecosystem restoration, and pine beetle and forest management.	High	Habitat loss: snag removal	Gov. B.C. (on non-federal lands)	EC	Ongoing
Work with Gov. B.C. to ensure that firewood cutting permits clearly identify wildlife tree values, and permit conditions are enforced.	High	Habitat loss: firewood cutting	EC	Gov. B.C.	Apr 1, 2011 - Dec 31, 2015, ongoing

Action	Priority	Threats or concerns addressed	Responsibility <sup>1</sup>		Timeline
			Lead <sup>2</sup>	Other	
Broad Strategy 4: Conserve migration stopover and overwintering habitat through existing international partnerships.					
Collaborate with Partners in Flight Western Working Group and other American and Mexican partners to coordinate cross-border conservation efforts for Lewis's Woodpecker.	High	All	EC		Ongoing
Broad Strategy 5: Conduct an assessment of threats of unknown severity on Lewis's Woodpecker populations in Canada, to determine if other measures are required to maintain or increase population levels.					
Quantify the cumulative impact of breeding habitat loss and degradation from threats of unknown severity including pine beetle outbreaks, firewood cutting, livestock grazing, and competition with invasive species.	High	Habitat loss	EC		Unknown
Consult with CWS Landbird Committee and Partners in Flight regarding their strategies for investigating aerial insectivore declines to help evaluate the pesticide threat.	Medium	Pesticides	EC		Apr 1, 2011 - July 31, 2011
Broad Strategy 6: Conduct research and monitoring to improve knowledge of breeding habitat use and demographic trends.					
Test and refine existing habitat suitability model using recent inventory data.	High	Habitat loss	EC	Gov. B.C.	Sept. 1, 2011-ongoing
Develop, test and implement range-wide monitoring strategy to provide reliable population trends and estimates. Use this monitoring data to improve population size estimates.	High	All	EC	Gov. B.C.	Jan 2, 2011 - July 31, 2011
Determine the relationships between habitat types and nest productivity.	High	Habitat loss	EC	Gov. B.C.	
Establish a WHA effectiveness monitoring protocol.	Medium	Habitat loss: inappropriate livestock grazing, snag removal	Gov. B.C.		Unknown
Determine territory size for Lewis's Woodpeckers across all breeding habitat types in Canada. If it is determined that territories in Canada are larger than 6.1 ha, habitat conservation objectives will need to be revised.	Medium	Habitat loss	EC		Unknown
Consult with GOERT on their planning, restoration and management, and outreach and education work on the Georgia Depression population.	Low	Habitat loss	EC	GOERT	Apr 1, 2011 - Dec 31, 2015

<sup>1</sup> EC = Environment Canada, Gov. B.C. = Government of British Columbia, FWCP = Fish and Wildlife Compensation Program, WiTS-OS = Wildlife Tree Stewardship Program Okanagan-Similkameen, GOERT = Garry Oak Ecosystem Recovery Team, TLC = The Land Conservancy, TNT = The Nature Trust, ONA = Okanagan Nation Alliance.

<sup>2</sup> Identification of government agencies and non-governmental organizations is intended to be advice and does not commit the agency or organization to implementing the listed action. Implementing actions will be contingent upon each organization's or agency's priorities and budgetary constraints.

<sup>3</sup> Specific recommendations for tree stocking densities, preferred tree species, canopy closure, wildlife tree densities and recruitment, and herb and shrub heights and densities for restoration of Lewis's Woodpecker breeding habitat in grassland, open forest and closed forest habitats in the East Kootenay Trench are provided in Cooper et al. (2004). These recommendations may be useful throughout the range of Lewis's Woodpeckers in British Columbia.

## 5.4. Measuring Progress

Environment Canada is responsible for monitoring the implementation of this management plan because Lewis's Woodpecker is listed on Schedule 1 of the *Species at Risk Act*.

Every five years, success of management plan implementation will be measured against the following performance indicators:

- Has unprotected habitat surrounding known nest locations been secured?
- Have management strategies been developed and implemented for each secured area?
- Has management/stewardship following BMPs been initiated on unsecured lands?
- Have migration stopover and overwintering habitat been conserved through international partnerships?
- Have threats of previously unknown severity been assessed, and their actual severity defined?
- Has research/monitoring been conducted to improve knowledge of breeding habitat use and demographic trends?

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## APPENDIX A: EFFECTS ON THE ENVIRONMENT AND OTHER SPECIES

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that strategies may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the strategy itself, but are also summarized below in this statement.

Most of the measures listed in this management plan (monitoring, research, and habitat protection) are not intrusive, so are not expected to have negative effects on non-target species. Enhancement of habitat for Lewis's Woodpeckers should benefit or be neutral for most other wildlife species at risk associated with riparian cottonwood habitat, (e.g., Western Screech-Owl [*Megascops kennicottii*]), open Ponderosa Pine forests (e.g., Flammulated Owl [*Otus flammeolus*]), and grasslands (e.g., Burrowing Owl [*Athene cunicularia*]). However, some habitat enhancement activities, such as prescribed burns, could negatively affect other species (e.g., rare plant species or wildlife species that prefer more closed forest structure). All sites will have to be carefully evaluated to determine which suite of species will benefit the most from restoration and management efforts. A balance will be required to ensure that all species have sufficient habitat areas for conservation and recovery.

## APPENDIX B: BEST MANAGEMENT PRACTICES FOR LEWIS'S WOODPECKER

In all situations, the goal should be to retain current and future nest trees for Lewis's Woodpecker in close proximity to good foraging habitat.

### *Urban and park management*

- Have potential danger trees assessed by a certified danger tree assessor following the protocol described in the *Wildlife/Danger Tree Assessor's Course Workbook* (Wildlife Tree Committee of B.C. 2005) so that every effort can be made to retain (and if necessary, modify to remove dangerous portions) wildlife trees as an alternative to removal.
- Re-route trails away from known nest trees.

### *Forest Management*

- Maintain open (< 25% canopy closure) forests, dominated by Ponderosa Pine, Black Cottonwood or Douglas-fir with some large (preferably  $\geq 45$  cm dbh; minimum 30 cm dbh) snags (decay class 2-4 for Ponderosa Pine and Black Cottonwood, and 4-7 for Douglas-fir) and recruitment trees (British Columbia Ministry of Water, Land, and Air Protection 2004). Decay classes are as follows: 2 is alive but unhealthy, damaged or deformed; 4 for a conifer is dead in early stages of decay with few branches remaining, whereas 4 for a hardwood is dead in advanced stages of decay with most branches lost; 7 for a conifer is dead with increasing deterioration, branches and bark are mostly gone and there is significant height loss (Fenger et al. 2006).
- Maintain mature riparian cottonwood stands (paper birch and trembling aspen also beneficial) with variable canopy closure (5-80%) with the presence of large trees (preferably  $\geq 45$  cm dbh; minimum 30 cm dbh; British Columbia Ministry of Water, Land, and Air Protection 2004).
- Where available, maintain larger diameter wildlife trees (66-87 cm dbh for ponderosa pine; 68-96 cm dbh for cottonwood; and 52-66 cm dbh for Douglas-fir; British Columbia Ministry of Water, Land, and Air Protection 2004).
- In areas where Lewis's Woodpeckers occur, retain as many standing dead and damaged trees as possible for nesting (minimum of 6 snags per hectare, if available), as well as for future recruitment nest trees, during thinning and logging (Saab and Dudley 1998; British Columbia Ministry of Water, Land, and Air Protection 2004).
- In managed forests and in salvage operations, retain clusters of trees rather than uniformly distributed trees (Saab and Dudley 1998). Hazard trees can be incorporated into patches and planned as no work zones if appropriate, otherwise maintain snags as described in the *Wildlife/Danger Tree Assessor's Course Workbook* (WTC 2005).
- Provide naturally vegetated linkages between riparian areas, open forest, and reserve areas of similar quality (British Columbia Ministry of Water, Land, and Air Protection 2004).

### *Restoration*

- In grasslands, Ponderosa Pine and Douglas-fir forests near Lewis's Woodpecker nest sites, consider using prescribed burns to remove conifer regeneration and encroachment, as long as impacts to other species and ecosystems are acceptable (Saab and Dudley 1997).
- Where prescribed burning is used as a tool to maintain open habitats, existing wildlife trees suitable for nesting may be damaged (Bagne et al. 2008). Techniques such as reducing fuel around the tree by raking and removal, and wrapping snags or veteran tree trunks with fire resistant material may therefore be employed to avoid loss of wildlife trees (Machmer 2002, Cooper et al. 2004).
- Where controlled burns are not practical (i.e., near human habitation, other structures, or wildlife trees, in stands with too much in-growth) or are potentially damaging to other species and ecosystems, commercial or non-commercial thinning, brushing or mowing may be used in an attempt to mimic the effect of fire, to open up the stand (Cooper et al. 2004).
- Consider creating nest trees, in areas where low densities of potential nest trees are documented as a threat, by killing trees directly, by topping  $\geq 7\text{m}$  above ground where possible, or inoculating the stem with fungus to create decay (Manning 2008; Fenger et al. 2006; Harestad and Keisker 1989). Fungal inoculation can also be applied in conjunction with topping, prescribed fire, or other mechanical wounding treatments to facilitate tree decay.
- Any treatments conducted to create wildlife trees should ideally be done in the early fall (Sept-Oct) when there is a greater potential of airborne sap-rot or heart rot fungal spores being present (to naturally infect the tree if these fungi exist nearby), and also because trees are flowing less sap at this time of year (which reduces the tree's defence to injury and potential fungal infection; Allen et al. 1996).

### *Range Use*

- Livestock grazing should be limited ( $< 10\%$  of browse utilization) where the Lewis's Woodpecker occurs so that native understory vegetation necessary for an insect prey base is not destroyed (Jackman 1975; British Columbia Ministry of Water, Land, and Air Protection 2004).
- Do not concentrate livestock in areas with known nest sites and areas with large concentrations of nesting Lewis's Woodpeckers, as cattle may destroy some decayed wildlife trees suitable for nesting (Cooper et al. 2004) and trample the understory vegetation that supports the insect prey base.

### *Disturbance*

- Avoid frequent or prolonged human disturbance at nest sites during the breeding season (May-August).