COSEWIC
Assessment and Update Status Report

on the

Sage Thrasher
Oreoscoptes montanus

in Canada

ENDANGERED
2000

COSEWIC
COMMITTEE ON THE STATUS OF
ENDANGERED WILDLIFE IN
CANADA

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AU CANADA

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For additional copies contact:

COSEWIC Secretariat
c/o Canadian Wildlife Service
Environment Canada
Ottawa, ON
K1A 0H3

Tel.: (819) 997-4991 / (819) 953-3215
Fax: (819) 994-3684
E-mail: COSEWIC/COSEPAC@ec.gc.ca
http://www.cosewic.gc.ca

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Sage Thrasher — ©Photo by Peter LaTourrette, 2001.

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COSEWIC
Assessment Summary

Assessment Summary – November 2000

Common name
Sage Thrasher

Scientific name
Oreoscoptes montanus

Status
Endangered

Reason for designation
In Canada, this species occurs in very small numbers within a restricted range. Sagebrush habitat availability and quality are under significant pressure in British Columbia, the only province where the species breeds reguarly.

Occurrence
British Columbia, Alberta, Saskatchewan

Status history
Designated Endangered in April 1992. Status re-examined and confirmed in November 2000. Last assessment based on an update status report.

COSEWIC
Executive Summary

Sage Thrasher
Oreoscoptes montanus

Description

A small thrasher (slightly smaller than an American Robin) with, when compared to other thrashers, a relatively short bill and tail. Drab greyish-brown above with grey-brown stripes below; face appears streaked with a whitish supercilium and black streaks on the sides of the throat. Sexes are similar. Song is a long, musical series of warbling notes.

Distribution

The Sage Thrasher breeds from extreme southern British Columbia, central Idaho and south-central Montana south through the Great Basin to northeastern Arizona, west-central and northern New Mexico, northern Texas, and western Oklahoma. It also breeds, at least irregularly, in southeastern Alberta and southern Saskatchewan. The Sage Thrasher winters from central California, southern Nevada, northern Arizona, central New Mexico and central Texas south to central Mexico.

Habitat

Sage Thrashers breed in shrub-steppe environments dominated by sagebrush. While the size of the shrubs is not important for foraging habitat, they require large sagebrush (ca. 1 m high) for nesting.

General Biology

Sage Thrashers return to Canada in spring and early summer, building bulky nests of sticks in large sagebrush. They lay four or five eggs in the nest, and can raise two broods in one season, though this has not been documented as yet in Canada. In spring and summer they feed largely on insects, especially grasshoppers and beetles, switching to a mixed diet of berries and insects in late summer and early fall.

Population Size and Trends

The Canadian breeding population varies from year from lows of about 6 adults to highs of 20 or 30. The general trend has likely been slowly downward as two or three minor breeding sites have been converted to intensive agriculture or housing; the highest estimated population in the past century was about 35 pairs.

Limiting Factors and Threats

All threats relate to habitat quality and quantity. There are imminent threats to all habitat on private and Indian lands in the south Okanagan and Similkameen valleys; sagebrush habitats on these lands are likely to be converted to intensive agriculture (mostly vineyards), housing, and golf courses. Overgrazing has been a problem in the past, since it reduces the size of sagebrush and promotes the establishment of annual grasses, particularly cheatgrass, both of which are factors that reduce habitat suitability for Sage Thrashers. Overgrazing is less of a problem now than it was previously, at least on Crown Lands, but continues to affect private ranchlands in some cases.

Existing Protection

The Sage Thrasher and its nests and eggs are protected in Canada and the United States from hunting and collecting under the Federal Migratory Birds Convention of 1916. It is also protected in British Columbia, Alberta and Saskatchewan under their respective provincial Wildlife Acts. Sage Thrasher habitat is protected in British Columbia by the Nature Trust of British Columbia, which has long-term leases on 1084 ha at White Lake. Protected area designations, expected before the end of 2000, may protect a further 1100 ha of habitat in the south Okanagan and Similkameen valleys through the provincial Land and Resource Management Plan process. In Saskatchewan, a considerable amount of apparently suitable habitat is protected within Grasslands National Park, although this area is not used regularly by Sage Thrashers at present.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) determines the national status of wild species, subspecies, varieties, and nationally significant populations that are considered to be at risk in Canada. Designations are made on all native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fish, lepidopterans, molluscs, vascular plants, lichens, and mosses.

COSEWIC MEMBERSHIP

COSEWIC comprises representatives from each provincial and territorial government wildlife agency, four federal agencies (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biosystematic Partnership), three nonjurisdictional members and the co-chairs of the species specialist groups. The committee meets to consider status reports on candidate species.

DEFINITIONS

Species	Any indigenous species, subspecies, variety, or geographically defined population of wild fauna and flora.
Extinct (X)	A species that no longer exists.
Extirpated (XT)	A species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A species facing imminent extirpation or extinction.
Threatened (T)	A species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events.
Not at Risk (NAR)**	A species that has been evaluated and found to be not at risk.
Data Deficient (DD)***	A species for which there is insufficient scientific information to support status designation.

* Formerly described as “Vulnerable” from 1990 to 1999, or “Rare” prior to 1990.
** Formerly described as “Not In Any Category”, or “No Designation Required.”
*** Formerly described as “Indeterminate” from 1994 to 1999 or “ISIBD” (insufficient scientific information on which to base a designation) prior to 1994.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list.

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The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.

Update
COSEWIC Status Report

on the

Sage Thrasher
Oreoscoptes montanus

in Canada

Richard J. Cannings

2000

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SPECIES INFORMATION

Name, Classification and Taxonomy

The Sage Thrasher, *Oreoscoptes montanus*, is the only member of the genus *Oreoscoptes*, and is probably more closely related to the mockingbirds of the genus *Mimus* than to thrashers in the genus *Toxostoma* (Reynolds *et al.* 1999). There are no recognized subspecies, though birds in northern populations tend to have longer tails.

Description

A small thrasher (slightly smaller than an American Robin) with, when compared to other thrashers, a relatively short bill and tail. Drab greyish-brown above with grey-brown stripes below; face appears streaked with a whitish supercilium and black streaks on the sides of the throat. Sexes are similar. Song is a long, musical series of warbling notes.

DISTRIBUTION

North American range

The Sage Thrasher breeds from extreme southern British Columbia, central Idaho and south-central Montana south through the Great Basin to northeastern Arizona, west-central and northern New Mexico, northern Texas, and western Oklahoma (Figure 1) (American Ornithologists' Union 1998). It also breeds, at least irregularly, in southeastern Alberta and southern Saskatchewan (Godfrey 1986, O'Shea 1988). The Sage Thrasher winters from central California, southern Nevada, northern Arizona, central New Mexico and central Texas south to central Mexico (American Ornithologists' Union 1998). Breeding distribution based on Breeding Bird Survey data is shown in Figure 2.

Canadian range

In Canada, the Sage Thrasher breeds regularly only in the southern Similkameen and Okanagan Valleys of British Columbia (Godfrey 1986) (Figure 3). It breeds irregularly in southwestern Saskatchewan (Eastend and Govenlock; Godfrey 1986) and southeastern Alberta (south of Medicine Hat; O'Shea 1988) (Figure 4).

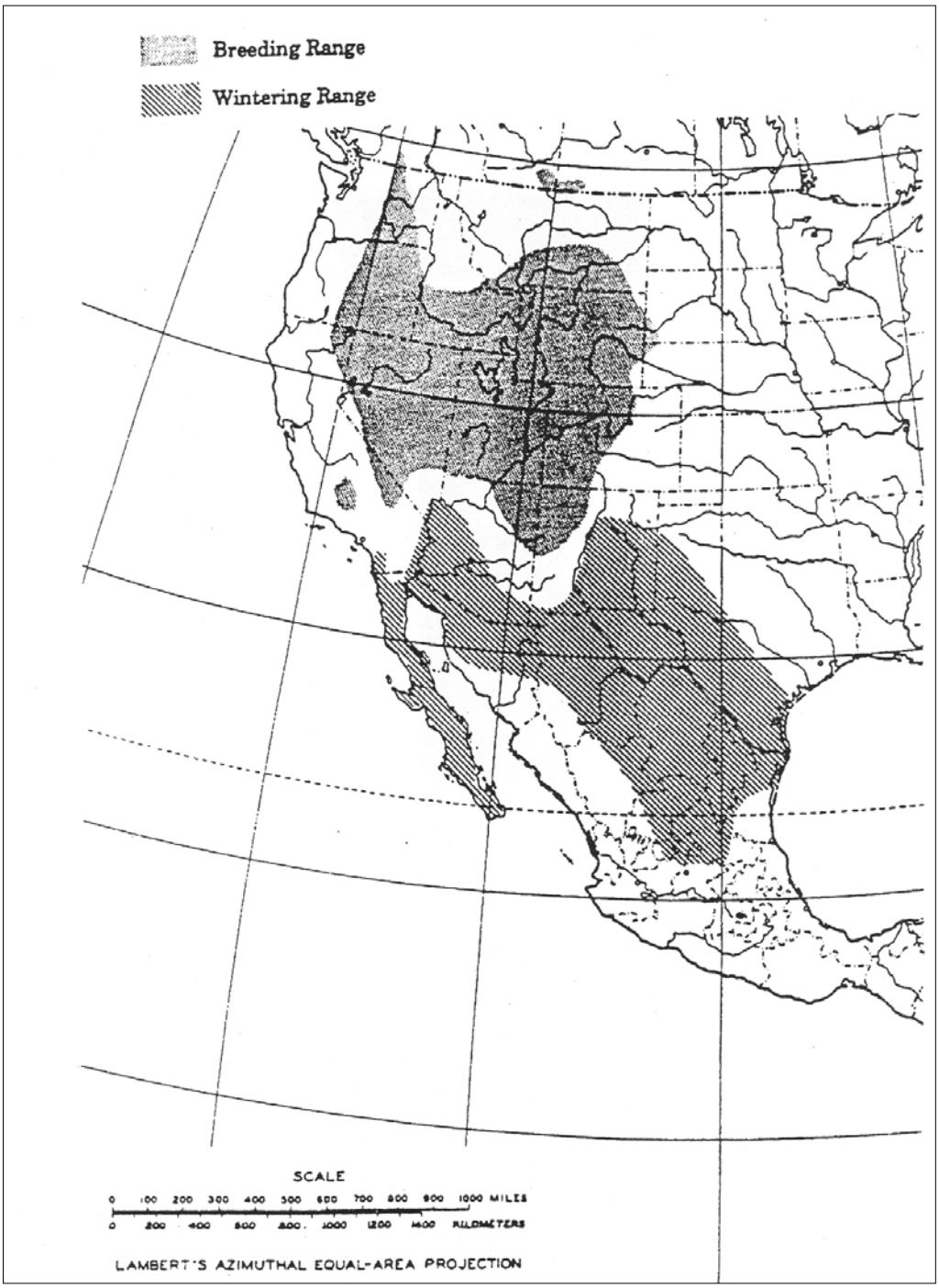


Figure 1. Range of the Sage Thrasher (from Cannings 1992).

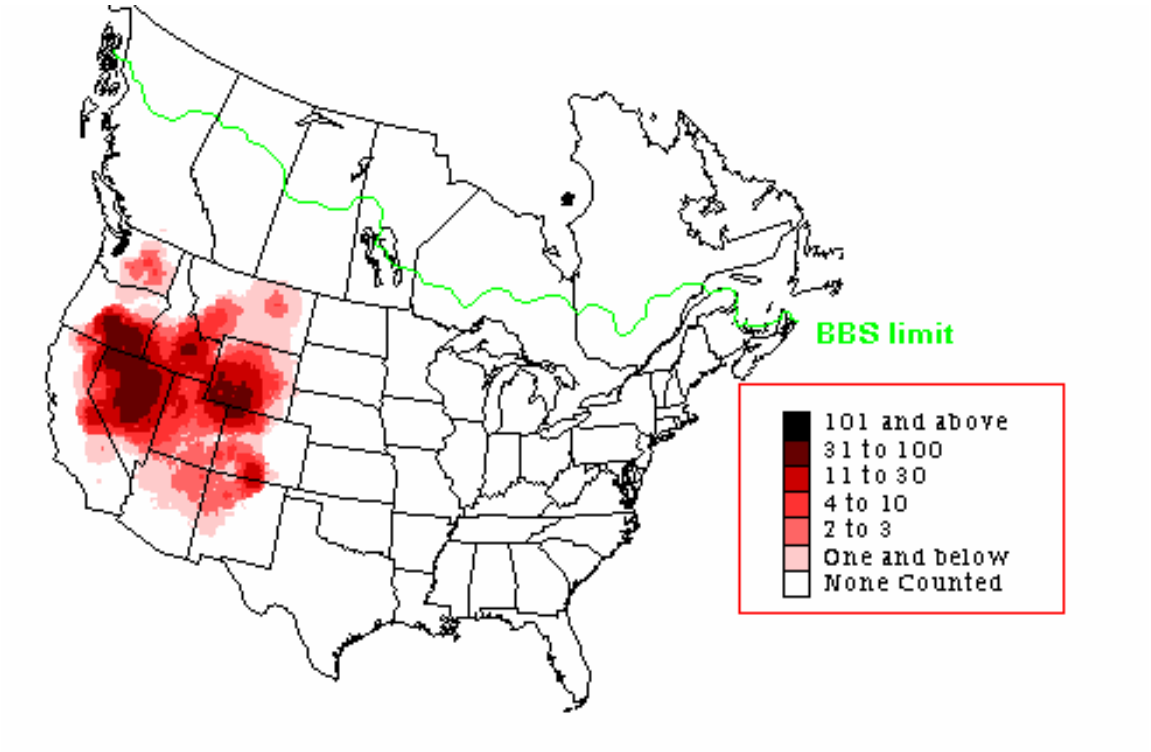
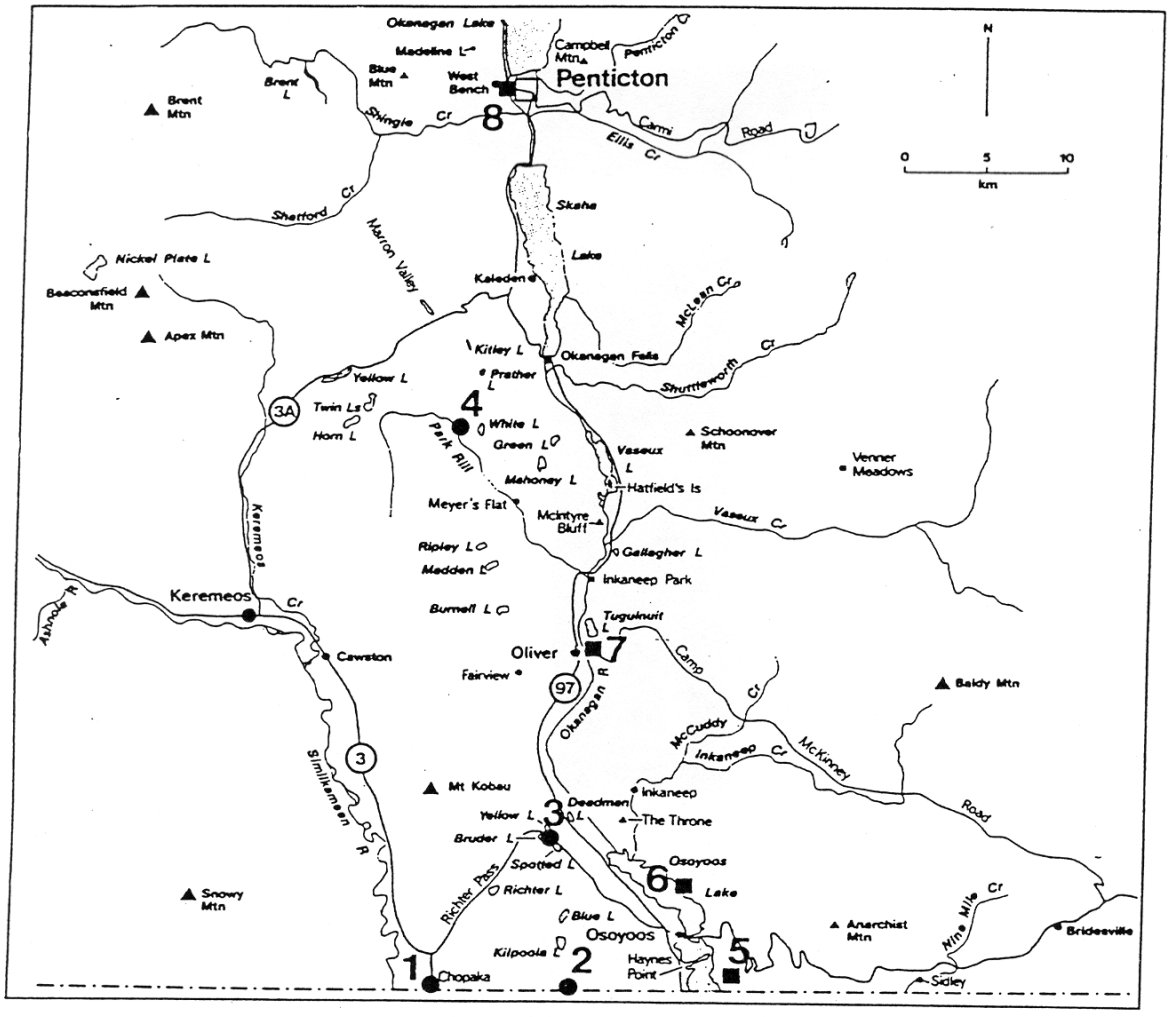


Figure 2. Breeding distribution of the Sage Thrasher based on Breeding Bird Survey data.

Little change has occurred in the past decade with regards to Canadian distribution. In British Columbia, Sage Thrashers are still reported annually from the Chopaka border crossing and Kilpoola Lake areas of the Similkameen Valley, and almost annually from White Lake near Oliver. Perhaps the most interesting recent report was of an old nest found west of Cache Creek along the Fraser River (Campbell *et al.* 1997). There are three records of singing birds from the Thompson Valley and one from the Fraser Valley near Lytton (Cannings 1992), but this is the first indication of possible nesting in this area. Also of interest is the report of a singing male just east of Oliver in 1992 (S.G. Cannings, pers. comm.). Although no nest was found, this was the first report in more than 60 years from this site (Darcus 1932).

One pair of Sage Thrashers nested in Alberta from 1988 to 1990, but have not been reported since (D. Baresco, pers. comm.). There are no recent records from Saskatchewan, but this may reflect observer effort rather than complete absence of birds (W. Harris, pers. comm.).



● Sites with recent (1970-present) records of documented or probable breeding: 1, Chopaka; 2, Kilpoola Lake; 3, Richter Pass; 4, White Lake.

■ Sites with no breeding records since 1970: 5, Osoyoos Lake southeast; 6, Osoyoos Lake northeast; 7, Oliver; 8, Penticton.

Figure 3. Sites in the south Okanagan and Similkameen valleys where Sage Thrashers have been know to or have probably nested (from Cannings 1992).

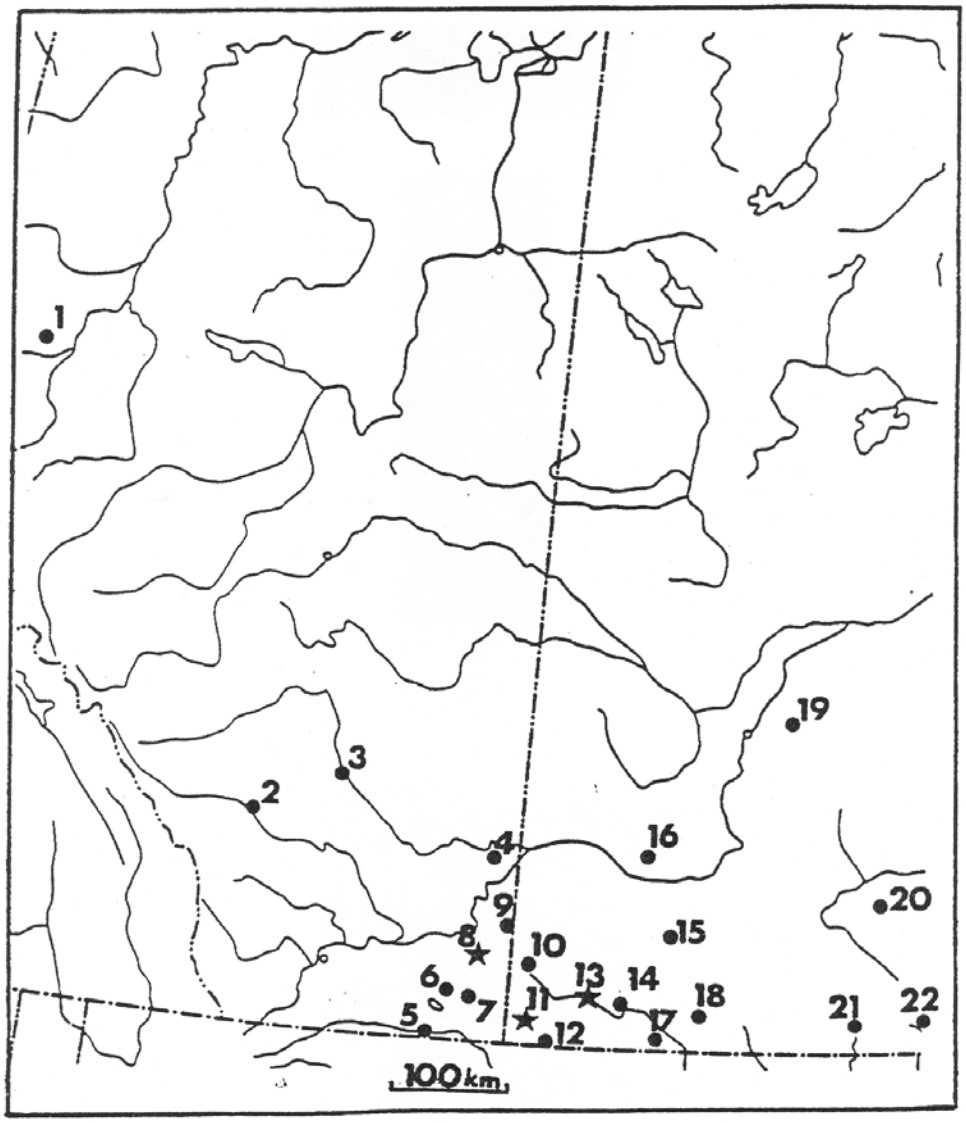


Figure 4. Sites of Sage Thrasher sightings in Alberta and Saskatchewan; stars indicate definite breeding records: 1, Grande Prairie; 2, Calgary; 3, Drumheller; 4, Bindloss; 5, Milk River east of Aden; 6, Orion; 7,Manyberries; 8, Black and White Trail, southeast of Medicine Hate; 9, Walsh; 10, Merryflat; 11, Govenlock; 12, Lower Battle Creek; 13, Eastend; 14, Frenchman River south of Shaunavon; 15, Braddock; 16, Matador; 17, Rosefield; 18, Otter Creek; 19, Porter Lake; 20, Regina; 21, Big Muddy Creek; 22, Bromhead (from Cannings 1992).

HABITAT

Definition

The Sage Thrasher is a sagebrush obligate, since during the breeding season it is almost entirely dependent on sagebrush environments (Braun *et al.* 1976). Breeding birds are occasionally noted in similar shrub-steppe habitats such as greasewood (*Sarcobatus vermiculatus*) and antelope-brush (*Purshia tridentata*) (Reynolds *et al.* 1999, Smith *et al.* 1997).

In general, numbers of territorial birds are significantly and positively correlated with sagebrush cover and negatively correlated with annual grasses such as bluegrasses (*Poa* spp.) and cheatgrass (*Bromus tectorum*) (Wiens and Rotenberry 1981, Dobler *et al.* 1996, Reynolds *et al.* 1999). In central Washington Sage Thrashers are associated with good or fair quality rangeland, and are generally absent from poor quality, heavily overgrazed areas; where adequate shrub cover exists, their numbers are positively correlated with perennial grasses, especially bluebunch wheatgrass (*Elymus spicatus*) (Stepniewski 1999).

Sage Thrashers prefer sites with medium-sized sagebrush 30-60 cm high, with some larger sagebrush (> 1 m high) for nesting (Wiens and Rotenberry 1981, Reynolds *et al.* 1999). They prefer sites with good sagebrush cover, large patch size, decreased disturbance and similarity of habitat within 1-km radius (Knick and Rotenberry 1995a). Sagebrush cover at nest sites ranged from 11 to 44 % (Rich 1980). Occupied sites were characterized by loamy and shallow soils rather than sandy soils (Reynolds *et al.* 1999).

Shrubs used by Sage Thrashers for nesting are larger than average; in British Columbia they average 132 cm $\pm$ 32SD in height and 168.3$\pm$57.5SD in width (R. Millikin pers. comm.). In Alberta and Saskatchewan, sagebrush attains this size only on alluvial soils along creeks and rivers, and in coulees (Wayne Smith, Robert Gardner, and Chel Macdonald, pers. comm.).

In late summer and fall, Sage Thrashers often forage in fruit and berry farmlands adjacent to sagebrush habitats (Bent 1948); wintering birds use a variety of scrub, brush, and thicket habitats (American Ornithologists' Union 1998).

Trends

The area of suitable habitat available in Canada has slowly been declining over the past 50 years. Few sites have been lost entirely, although vineyard developments on the Inkameep Indian Reserve (Osoyoos Indian Band) have destroyed several hundred hectares of shrub-steppe habitat on the east side of Osoyoos Lake. The habitat in this area is probably suboptimal for Sage Thrashers, since it is a mix of antelope-brush (*Purshia tridentata*), sagebrush (*Artemisia tridentata*) and rabbitbrush (*Chrysothamnus nauseosus*), but thrashers have nested there in the past. Further agricultural, housing and tourism developments on the Inkameep Reserve threaten several hundred more

hectares of this habitat, but there are indications that about 500 ha may be protected (C. Louie, fide T. Slater, pers. comm.). Most of the private land (ca. 50 ha) on the Richter Pass site is now in 5-acre lots on which the habitat is degraded to various degrees.

In British Columbia, the Ministry of Environment, Lands and Parks (1999) identified 27,478 ha of habitat in the south Okanagan and Similkameen valleys as suitable for Sage Thrasher breeding and/or foraging, though not necessarily occupied by thrashers (Figure 5). This total is based on analysis of air photos taken in 1987, and does not take into account recent habitat losses mentioned above.

There are serious concerns about loss of habitat in the United States, where almost all loss is due to intensive agriculture. Of particular concern to Canadian populations is the fact that about half of the suitable habitat has been lost in Washington and most of remaining habitat is severely fragmented (Reynolds *et al.* 1999). A similar situation exists in Montana, where the loss of habitat has had an impact on populations that would normally expand into Saskatchewan and Alberta given proper climatic conditions (B. Luterbach, pers. comm.).

Protection/Ownership

Of the 27,478 ha of habitat in the south Okanagan and Similkameen valleys considered suitable for Sage Thrasher breeding and/or foraging (Ministry of Environment, Lands and Parks 1999), 42% was private land, 28% Indian Reserve, 26%, provincial Crown Land and 4% conservation land (protected areas). Much of this habitat is probably suboptimal and unoccupied. In terms of known Sage Thrasher sites, the three sites in the extreme south Okanagan and Similkameen valleys—the Chopaka border crossing, Kilpoola Lake and Richter Pass—are a mix of privately owned and Crown Land. Most of the Crown Land at these sites has been proposed for protected status (i.e. provincial park) through the Land and Resource Management Plan process now nearing completion. The two protected area candidate sites shown in Figure 6 that contain suitable Sage Thrasher habitat, Chopaka and Kobau, have 753 and 400 ha of suitable habitat respectively. A final decision on this status is expected by September 2000 (G. Furness, pers. comm.).

Sage Thrasher habitat at White Lake is owned by the National Research Council, but the Nature Trust of British Columbia has 67 to 70 year exclusive-use leases (for grazing or research) over the entire basin (1084 ha), so the habitat is considered secure at the moment. The Inkameep Indian Reserve (Osoyoos Indian Band) has extensive areas of suitable habitat (including the Oliver site mentioned above), but most of this habitat has either already been planted to vineyards in the past two years or is slated for vineyard development over the next few years.

Grasslands National Park in southwestern Saskatchewan protects considerable amounts of suitable habitat, but no such protected areas exist in similar habitat in Alberta.

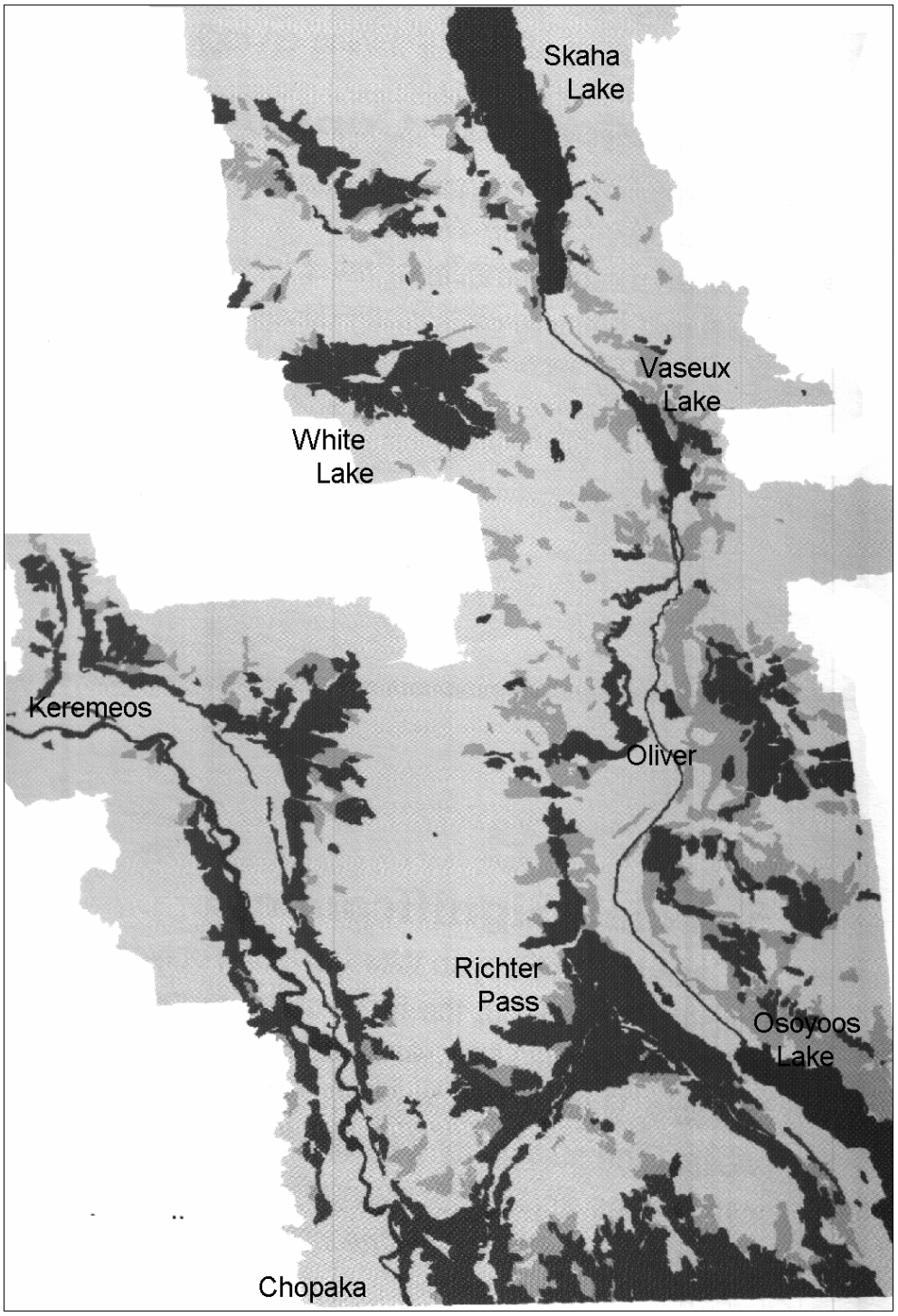


Figure 5. Habitat suitability for Sage Thrasher in the south Okanagan and Similkameen Valleys, British Columbia. Dark grey areas indicate suitable breeding habitat, mid-grey areas indicate suitable foraging habitat (from Ministry of Environment, Lands and Parks 1998).

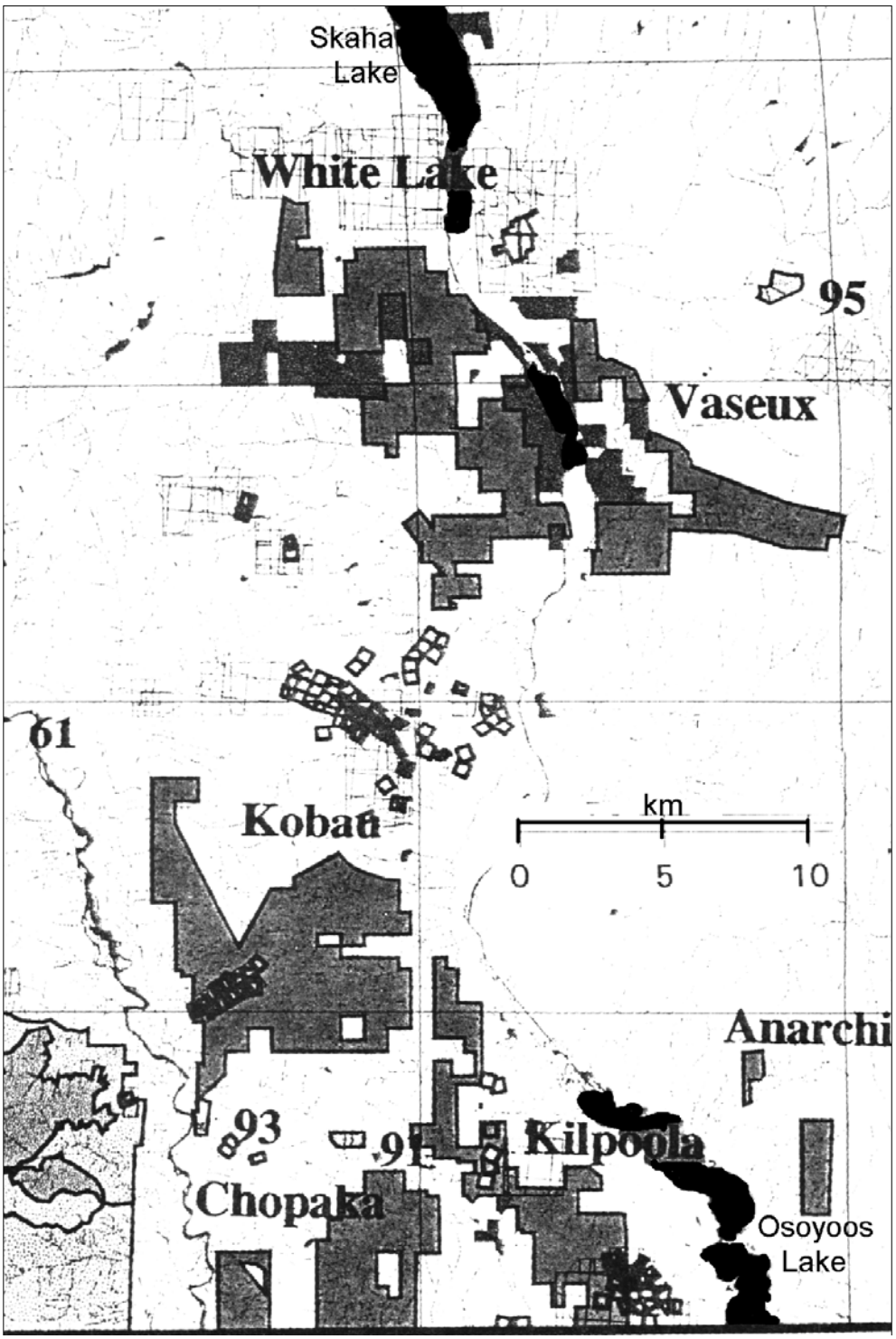


Figure 6. Proposed protected areas (dark grey) from the Okanagan-Shuswap Land and Resource Management Plan process. Portions of the Kobau, Chopaka and Kilpoola areas contain suitable Sage Thrasher habitat.

GENERAL BIOLOGY

General

Sage Thrashers are typical of most other songbirds in that the male establishes a breeding territory and advertises it with song early in the breeding season. They form monogamous pairs, and both sexes build the nest, incubate the eggs and care for the young. During the breeding season they are primarily insectivorous, but also eat berries later in the summer and fall.

Reproduction

Sage Thrashers place their nests in shrubs, usually sagebrush. In British Columbia, nests range from 8 to 154 cm (mean 36 cm) above the ground and average 27.3 cm from exterior edge of sagebrush and 37.7 cm from main stem (R. Millikin, pers. comm.). These data are very similar to those from a recent study in Idaho, where nests averaged 32 cm from the ground and 26 cm from the exterior edge of the plant (Belthoff and Rideout 1999). The most important factor in nest placement seems to be the amount of cover above nest; nests are placed just below densest vegetation in vertical profile (Rich 1980, Castrale 1982), almost invariably about 50 cm below the top of the plant (Petersen and Best 1991). In Idaho, Sage Thrasher nests are more concealed (placed in larger, thicker shrubs) than those of Brewer's or Sage Sparrows (Belthoff and Rideout 1999).This cover over nests is critically important for protection from predation; in 15 nests where cover was removed, all were predated within 24 hours (Reynolds *et al.* 1999).

The clutch sizes of six nests at White Lake, British Columbia ranged from four to five eggs, with a mean of 4.5 (Cannings *et al.* 1987). Two nests from Saskatchewan held five eggs and five newly-hatched young respectively (Potter 1937). Larger sample sizes from southern Idaho give mean clutch sizes of 3.5 and 4.1 respectively (Reynolds 1981, Gooding 1970). These data suggest that clutch sizes at the northern end of the Sage Thrasher's range may average larger than those at the core of the range.

Sage Thrashers can raise two broods per season in the central part of their breeding range (e.g. southern Idaho, Reynolds 1981), but there is no evidence of this occurring in Canada (Cannings 1992).

Breeding territory size is about 1 ha: in Idaho 0.96 (0.64-1.64, n=7; Reynolds and Rich 1978); in Washington 0.5-1.7 ha (n=7, Gooding 1970).

Survival

Little if anything is known about survival rates and demographics within Sage Thrasher populations.

Movements

Sage Thrashers are highly migratory, leaving British Columbia in late August and September (Cannings *et al.* 1987); the latest date is a record of a group of five birds seen at Chopaka on 29 September 1991 (Stefan Zaremba). In some years, birds return as early as April or early May, the earliest record being 4 April (Cannings *et al.* 1987). Interestingly, three of the British Columbia interior records from north of the Okanagan have occurred in April as well, and are obviously spring migration overshoots. However, the bulk of the breeding population may not arrive before the end of May—only 23 of 130 British Columbia records are from earlier than 1 June. This is especially interesting when one realizes that some of the most intensive searches for Sage Thrashers take place on or near the Victoria Day weekend in the last half of May, and that the seasonal distribution histograms of most "Okanagan rarities" consequently show a distinct peak in late May (Cannings *et al.* 1987). That peak is lacking in the Sage Thrasher histogram (Cannings *et al.* 1987:311); sightings instead peak about 10 June and remain high for the rest of that month. Preston (1990) found no thrashers on a 16 June visit to Chopaka, but saw three or four on 4 and 13 July, a pattern consistent with recent reports from searches there by birdwatchers. It seems probable, therefore, that many Sage Thrashers do not arrive in British Columbia until late May or June, and perhaps represent birds which have attempted to breed in Washington state in early May and have moved north after their first breeding attempt.

The earliest and latest dates for Saskatchewan are 2 May and 22 August; it is difficult to establish a meaningful phenology from the few Alberta records, but Sage Thrashers are likely there from early May to late August as well.

Nutrition and Interspecific Interactions

Sage Thrashers are opportunistic insectivores in spring and early summer, foraging on the ground for ants, ground beetles, grasshoppers, crickets and true bugs (Stephens 1985, Reynolds *et al.* 1999). In late summer, family groups move into thickets along draws to feed on berries and caterpillars (Stepniewski 1999).

Behaviour/Adaptability

The Sage Thrasher displays little flexibility in its habitat preferences, and is considered a classic sagebrush obligate for both nesting and feeding in the breeding season (Braun *et al.* 1976). Almost all Sage Thrasher nests are built in or under sagebrush (Potter 1937, Reynolds and Rich 1978, Rich 1978, 1980, Reynolds 1981, Cannings *et al.* 1987, O'Shea 1988).

Populations drastically affected by techniques employed to reduce sagebrush, including crested wheatgrass (*Agropyron cristata*) plantings (Reynolds and Trost 1980), fire and herbicides. Burned areas still lack thrashers 9 years after the fire, and populations remain suppressed on sites treated with herbicides 22 years earlier (Kerley and Anderson 1995). Removal of only the largest sagebrushes eliminates Sage Thrashers from an area because of their nesting requirements.

The spread of cheatgrass (*Bromus tectorum*) has had a negative effect on Sage Thrasher populations through its influence on fire regimes in western grasslands (Knick and Rotenberry 1997). Cheatgrass, an annual species, tends to occur in large monocultures that are highly flammable, increasing the spread of fire and loss of sagebrush and other shrubs, and through a feedback mechanism, accelerates the spread of annuals such as cheatgrass.

These fires and large-scale agricultural developments have destroyed and fragmented large areas of Sage Thrasher habitat throughout its range (Knick and Rotenberry 2000), reducing the potential for population flow to the periphery of its range in southern Canada. On a positive note, Sage Thrashers seem to tolerate habitat fragmentation better than other sagebrush obligates (e.g. Sage Sparrow, *Amphispiza belli*, and Brewer's Sparrow, *Spizella breweri*), but prefer homogenous habitats with relatively high sagebrush cover (Knick and Rotenberry 1995). In the first year of an ongoing study in southeastern Idaho, Sage Thrashers were almost twice as abundant on plots in fragmented habitats (habitat patches 35 to 200 ha) than in plots in unfragmented habitat (Belthoff and Rideout 1999).

Belthoff and Rideout (1999) found that Brown-headed Cowbird parasitism was higher for all types of nesting bird species in fragmented rather than continuous habitat, but this would not affect Sage Thrasher breeding success since this species rejects cowbird eggs (Sullivan 1988).

POPULATION SIZE AND TRENDS

At the continental scale, populations are stable where suitable habitat remains, but "its numbers have been dramatically reduced, and in some cases, local populations eliminated, where there has been wholesale conversion of sagebrush rangeland" (Reynolds *et al.* 1999). At a regional level, Sage Thrasher populations appear to be decreasing in south but increasing in California, Colorado and Oregon (Reynolds *et al.* 1999).

As with many species at the edge of their range, Sage Thrasher numbers in Canada fluctuate from year to year, with some sites being only occasionally occupied. However, Sage Thrasher populations also fluctuate considerably towards the centre of the range as well, perhaps due to local climatic variability (Reynolds 1981). Darcus (1932) discussed the year-to-year numbers at White Lake, British Columbia as follows:

> The late C. de B. Green informed me that previous to 1914 a number of pair resorted annually to this station; but apparently it was rare or absent during the period between 1920 and 1931. In 1930 a single bird was observed. During the season of 1931 there was a return of the species to this breeding station in numbers. I visited the locality on five occasions and estimated that there were about fifteen pair present.

The highest count at White Lake in the past 30 years was five pairs in 1969 (Cannings *et al.* 1987), since then numbers have ranged from 0 to 2 pairs annually. Since 1981, Sage Thrashers have been reported regularly only from Chopaka, where up to six or ten pairs nest annually. Preston (1990) searched the Chopaka, Richter Pass, Kilpoola Lake, and White Lake sites for six days in 1990 and found only three singing males and a fourth silent bird, all at Chopaka. While surveying Brewer's Sparrows in sagebrush habitat throughout the south Okanagan in 1991, Dwight Harvey (pers. comm.) counted 11 Sage Thrashers singing: 1 at White Lake, 4 south of Kilpoola Lake, and 6 at Chopaka.

At its historical maximum, the British Columbia spring population of Sage Thrashers may have been as high as 30 or more pairs, but recently maximum numbers have been in the range of 5 to 12 pairs. At least two breeding sites mentioned by Darcus (1932)—one near Oliver and another at Penticton [probably what is now the West Bench]—have likely been developed for agriculture or housing; no breeding thrashers have been reported near those localities since.

In Saskatchewan and Alberta, populations are too small (and often absent) to detect any trend (B. Luterbach, W. Harris, pers. comm.).

Populations in the core range are generally stable where suitable habitat exists. Breeding Bird Survey trends over the period 1966 to 1996 show significant decrease of 4 % per annum in the Intermountain Grasslands, but significant increases in Colorado (4.4 % per annum) and Oregon (2.6 % per annum) (Sauer *et al.* 1997). These trends are mapped in Figure 6. In eastern Washington, the population contiguous with British Columbia, densities range from 0.09 to 0.2 individuals per hectare (Dobler *et al.* 1996).

One important factor to consider in terms of possible movement of birds from the core population in the United States to the Canadian breeding range is the relative isolation of the latter. The closest populations to Canada are in the Columbia Basion of Washington and in Montana; both these populations are isolated from the heart of the species' range in the Great Basin and the western Great Plains of Colorado (Figure 2). The Okanagan population is futher isolated from the Columbia Basin population by a gap of about 40 km (Smith *et al.* 1997).

LIMITING FACTORS AND THREATS

Because of the Sage Thrasher's dependence on the sagebrush environment, almost all of the factors limiting its populations concern the loss, alteration, or degradation of this environment.

Loss of sagebrush habitat to agriculture, strip mining and residential developments has caused great concern for birds dependent on that environment in the United States (Braun *et al.* 1976). Huge areas of sagebrush in Washington state have been converted to wheatfields in the past century, especially since the construction of the

Grand Coulee Dam (Weber 1980). Sizeable areas of Alberta Sage Thrasher habitat have been lost to agricultural development of dryland farming areas (Bruce MacGillivray, pers. comm.).

Approximately half of the historic area of sagebrush steppe in the United States has been lost to intensive agriculture, and only half of the remaining portion is in good grazing condition with native understory remaining (West 1996).

There are few data concerning the effects of pesticides on Sage Thrashers. Aerial application of Malathion (585 gm/ha) in Idaho reduced the insect population available to breeding thrashers, but there were no significant effects on nestling survival (Howe *et al.* 1996).

SPECIAL SIGNIFICANCE OF THE SPECIES

The Sage Thrasher is one of a small suite of bird species totally dependent on sagebrush habitats for their existence. A monotypic species in a monotypic genus, it has been disappearing from local sites over the past century as sagebrush rangelands have been converted to intensive agriculture or burned to remove shrub cover. While still common at the centre of its range, populations at the north and south edges of its range are steadily declining.

Several species that share the arid shrub-steppe environment with Sage Thrashers are also species of concern in Canada. Sage Grouse (*Centrocercus urophasianus*) are considered Endangered in Canada by COSEWIC, while Great Basin spadefoot toads (*Spea intermontana*) and Long-billed Curlews (*Numenius americanus*) are listed as Vulnerable. In British Columbia, tiger salamanders (*Ambystoma tigrinum*), Lark Sparrows (*Chondestes grammacus*) and Brewer's Sparrows are on the provincial Red List of candidate species for threatened or endangered status.

EVALUATION AND PROPOSED STATUS

Existing Legal Protection or Other Status

As are most other North American birds, the Sage Thrasher and its nests and eggs are protected in Canada and the United States from hunting and collecting under the Federal Migratory Birds Convention of 1916. It is also protected in British Columbia, Alberta and Saskatchewan under their respective provincial Wildlife Acts. The impact of these measures is likely negligible, since this species is rarely intentionally killed or harassed.

The Sage Thrasher is designated as Endangered by COSEWIC and is on the British Columbia Red List of potentially threatened or endangered species. It is listed in Alberta as Status Undetermined (S?). The Sage Thrasher is ranked globally as G5, in

Saskatchewan it is S2B and in British Columbia it is S1B. Adjacent states have ranked it as follows: Washington, S3; Oregon, S4; Idaho, Montana and Wyoming, S5; North Dakota, S?; South Dakota, S2.

Assessment of Status and Author's Recommendation

Very little has changed with regards to Sage Thrasher numbers and habitat availability in Canada over the last decade. Some habitat (at White Lake) is now protected under long-term leases to the Nature Trust of British Columbia and more may well be included in new protected areas set aside under the Okanagan-Shuswap Land and Resource Management Plan that is nearing completion. On the other hand, several hundred hectares of suitable (though perhaps suboptimal) habitat on the east side of the Okanagan Valley has been lost in the past two years to vineyard development.

Few, if any, Sage Thrashers have been seen in Alberta and Saskatchewan for the past ten years. Although large areas of good habitat exist in those provinces, it is clear that at present it lies too far from core breeding areas to the south to be used regularly.

The discovery of an old nest well northwest of the present breeding range in British Columbia provides intriguing evidence of a possible range extension. Sage Thrashers are notoriously cyclic (or irregular) in numbers at the northern end of their range, but if they ever did establish a regular breeding population in the Thompson-Fraser area the amount of suitable habitat available to them would increase by a factor of ten.

The Sage Thrasher was assigned a status of Endangered in 1992 on the basis of very few breeding sites in the country and development threats on most of those sites. If the Kobau (Richter Pass) and Chopaka sites (Figure 5) are protected through the Okanagan-Shuswap LRMP process, development threats would cease on those sites, the best in the country. If and when that happens, the Sage Thrasher could perhaps be downlisted to Threatened, but until then it should remain as Endangered.

TECHNICAL SUMMARY

DISTRIBUTION

Extent of occurrence: ___270__km^2
Area of occupancy: ___10_____km^2

Extent of occurrence based on the estiamed area of suitable habitat in the south Okanagan-Similkameen (Min. of Environment, Lands and Parks 1999), area of occupancy an estimate of habitat are that has territories on a regular basis.

POPULATION INFORMATION

Total number of individuals in the Canadian population: ca. 25 (early summer)
Number of mature individuals in the Canadian population (effective population size): ca. 25
Generation time: 1 year
Population trend (check off as apprpriate): _____ declining _____increasing ___X_ stable _____unknown
Rate of population decline (if appropriate): ____% in 10 years or three generations (whichever is longer).
If data are only available for a period shorter than 10 years or three generations, _____% decline in _____years.
Number of sub-populations: 2-3
Is the population fragmented? __X___YES _____NO
number of individuals in each subpopulation (give range): 2-20
number of extant sites: __3_____
number of historic sites from which species has been extirpated: ____2____
Does the species undergo fluctuations? __X___YES _____NO

THREATS

- loss of habitat to agriculture and housing developments
- overgrazing, degradation of habitat
- fire

RESCUE POTENTIAL

Does species exist outside Canada? __X___YES _____NO
Is immigration known or possible? __X___YES _____NO
Would individuals from the nearest foreign poplation be adapted to survive in Canada? ___X__YES _____NO
Would sufficient suitable habitat be available for immigrants? __X___YES _____NO

STATUS AND SUMMARY OF REASONS

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Recent information on Sage Thrashers and their habitat in British Columbia was provided by Pam Krannitz and Rhonda Millikin. Steve Knick and Jim Belthoff provided data from recent studies in southern Idaho. Dennis Baresco and Doug Collister updated Alberta information, while Wayne Harris, Guy Wapple, Robert Kreba and Bob Luterbach provided information on Sage Thrashers in Saskatchewan. Grant Furness and Ron Erickson furnished details on conservation efforts in British Columbia. Funding provided by the Canadian Wildlife Service, Environment Canada.

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THE AUTHOR

Richard Cannings was born and raised in the Okanagan Valley in a bird-watching family. He received his BSc from the University of British Columbia and an MSc from Memorial University of Newfoundland, where he studied the breeding biology of Horned Larks. He was the curator of the Cowan Vertebrate Museum at the University of British Columbia for 15 years, then moved back to the Okanagan Valley, where he now works as a consulting biologist out of his home in Naramata. He has been the chair of the South Okanagan Ecosystem Recovery Team and has written provincial and/or national status reports for Sage Thrasher, White-headed Woodpecker, Canyon Wren, Gray Flycatcher, Yellow-breasted Chat, Long-eared Owl, Grasshopper Sparrow, and Great Basin Spadefoot Toad. He has co-authored several books including “The Birds of the Okanagan Valley, British Columbia” and “British Columbia: A Natural History.” He now works part time for Bird Studies Canada as British Columbia Programs Coordinator. His primary research interest is the breeding biology of small owls, particularly the Northern Saw-whet Owl.

EXPERTS CONSULTED

Dennis Baresco
Doug Collister
Wayne Harris
R. Wayne Campbell
Pam Krannitz
Rhonda Millikin
Bob Luterbach
Steve Knick
Jim Belthoff