COSEWIC
Assessment and Status Report

on the

Olive-sided Flycatcher
Contopus cooperi

in Canada

THREATENED
2007

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada

COSEPAC
Comité sur la situation
des espèces en péril
au Canada

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COSEWIC
Assessment Summary

Assessment Summary – November 2007

Common name
Olive-sided Flycatcher

Scientific name
Contopus cooperi

Status
Threatened

Reason for designation
This songbird has shown a widespread and consistent population decline over the last 30 years; the Canadian population is estimated to have declined by 79% from 1968 to 2006 and 29% from 1996 to 2006. The causes of this decline are uncertain.

Occurrence
Yukon Territory, Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador.

Status history
Designated Threatened in November 2007. Assessment based on a new status report.

COSEWIC
Executive Summary

Olive-sided Flycatcher
Contopus cooperi

Species information

The Olive-sided Flycatcher (*Contopus cooperi* (Swainson), French: Moucherolle à côtés olive) is a medium-sized songbird 18-20 cm in length. Adults are a deep brownish olive-grey above and on the sides and flanks, with white on the throat, centre of breast and belly. The wings are dark with pale, indistinct wing bars, and the bill is stout. The most distinctive features of the Olive-sided Flycatcher are its tendency to conspicuously perch on the top of tall trees or snags while foraging and the song—a loud three-note whistle: *Quick*, *THREE BEERS!.*

Distribution

The Olive-sided Flycatcher breeds throughout much of forested Canada and in the western and northeastern United States. Approximately 54% of its breeding range is in Canada. The winter distribution is more restricted, being primarily in Panama and the Andes Mountains from Venezuela to Peru and Bolivia.

Habitat

The Olive-sided Flycatcher is most often associated with open areas containing tall trees or snags for perching. Open areas may be forest openings, forest edges near natural openings (such as rivers, muskeg, bogs or swamps) or human-made openings (such as logged areas), burned forest or open to semi-open mature forest stands. There is evidence that birds nesting in harvested habitats experience significantly lower breeding success than those nesting in natural (e.g. burned) openings. Generally, forest habitat is either coniferous or mixed coniferous. In the boreal forest, suitable habitat is more likely to occur in or near wetland areas.

Biology

Olive-sided Flycatchers arrive on their Canadian breeding areas between April and June but predominantly mid-late May. They are monogamous, with territories generally well spaced. Nests are typically placed in coniferous trees. Average clutch size is three and a single-brood is raised. Nest success is apparently high (approximately 65%), although no information on hatchling or fledgling success is available. Lifespan and survivorship of adults is also unknown. Birds begin fall migration in late July, with most birds travelling to the wintering grounds sometime between mid-August and early September.

Population sizes and trends

Breeding Bird Survey (BBS) data indicate significant and widespread declines in Olive-sided Flycatcher populations throughout North America and in Canada (4.0% annual decline for the period 1968-2006, 3.3% annual decline for the period 1996-2006, total decline over that decade 29%). The checklist-based Étude des populations d'oiseaux du Québec (ÉPOQ) in Quebec has also recorded a decline in the Olive-sided Flycatcher in Quebec. In Ontario, the Ontario Breeding Bird Atlas project has found a 7% decline in breeding range between 1981-1985 and 2001-2005.

Limiting factors and threats

Olive-sided Flycatchers are generally associated with sparse canopy cover, suggesting that they may respond positively to forest management such as timber harvest. Indeed, their abundance is often higher in early to mid-successional stands derived from wildfire or commercial timber harvest. Their continued population declines, despite apparent increases in the amount of suitable potential habitat on the breeding grounds are therefore puzzling. Evidence from the western United States suggests that there is significantly lower nest success in harvested stands compared with fire origin stands. Resolution of the role of forest management in Olive-sided Flycatcher population decline in Canada is hampered by thinly distributed populations.

Habitat alteration and loss on migration and wintering grounds may also be a contributing factor in population declines. Support for this is provided by the consistent population declines across a wide breeding range, whereas non-breeding areas are more geographically restricted. However, there are no data linking declines in a particular breeding location with specific non-breeding populations. There are no monitoring data for the Olive-sided Flycatcher from migration and wintering grounds to assess trends there.

Special significance of the species

The Olive-sided Flycatcher is a widespread Neotropical migrant with a large portion of its breeding range in Canada.

Existing protection or other status designations

The Olive-sided Flycatcher is classified as G4 (apparently secure) globally and in the United States, and N5 (secure) in Canada by NatureServe; provincial NatureServe rankings also range from S4 to S5 (apparently secure to secure) in all provinces except Labrador (S2S3 Imperiled or vulnerable) and Newfoundland (S3S4 Vulnerable or apparently secure). No NatureServe rankings are available for the Northwest Territories or the Yukon. In contrast, the IUCN red book lists the Olive-sided Flycatcher as 'Near Threatened', nearly qualifying as 'Vulnerable" (similar to the COSEWIC Threatened status) when assessed in 2004. The Olive-sided Flycatcher is protected in Canada by the *Migratory Birds Convention Act* (1994) and by similar pieces of legislation in Mexico and the United States.

COSEWIC HISTORY

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. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS (2007)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* 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. Definition of the (DD) category revised in 2006.

Environment Canada
Canadian Wildlife Service

Environnement Canada
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Canada

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

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SPECIES INFORMATION

Name and classification

Scientific name: *Contopus cooperi* (Nuttall, 1831)

English name: Olive-sided Flycatcher

French name: Moucherolle à côtés olive

Classification: Class: Aves, Order Passeriformes, Family Tyrannidae

Morphological description

The Olive-sided Flycatcher is a medium-sized songbird, 18-20 cm in length. Its plumage is deep brownish olive-grey above and on sides and flanks, strongly contrasting with the white breast and belly. The wings are dark, with indistinct pale greyish wing bars and white edging to the tertial and inner secondary feathers. White tufts above the wing along the side of the rump are also distinctive, but not always visible. The tail appears relatively short. The bill is stout, with the upper mandible blackish and the lower mandible pale with a dark tip. The sexes are similar in appearance, although males often have longer wing length (male: 103-117 mm, female: 96-109 mm, Pyle 1997). Juvenile flycatchers are similar to adults, except that their upperparts are brownish and the wing-bars and tertial feather edges are buffy.

The Olive-sided Flycatcher is well known for its tendency to conspicuously perch on the top of tall trees or snags while foraging, and for its song—a loud three-note whistle: *Quick, THREE BEERS!*. This song can be heard from up to a kilometre away. Its characteristic call is a loud, rapid series of piping notes – “pip-pip-pip” or “quick-quick-quick”. The Olive-sided Flycatcher is distinguished from the Eastern (*C. virens*) and Western (*C. sordidulus*) wood-pewees by its larger size, stockier build and distinctive plumage.

Genetic description

There is no information on genetic structuring within the Canadian population.

DISTRIBUTION

Global range

The Olive-sided Flycatcher has a wide breeding range across Canada and in the western and northeastern United States (Figure 1). Highest breeding densities are west of the Rocky Mountains from southern BC to California (Altman and Sallabanks 2000). It winters primarily in Panama and the Andes Mountains from Venezuela to Peru and Bolivia, but is occasionally found wintering in other parts of Central and South America.

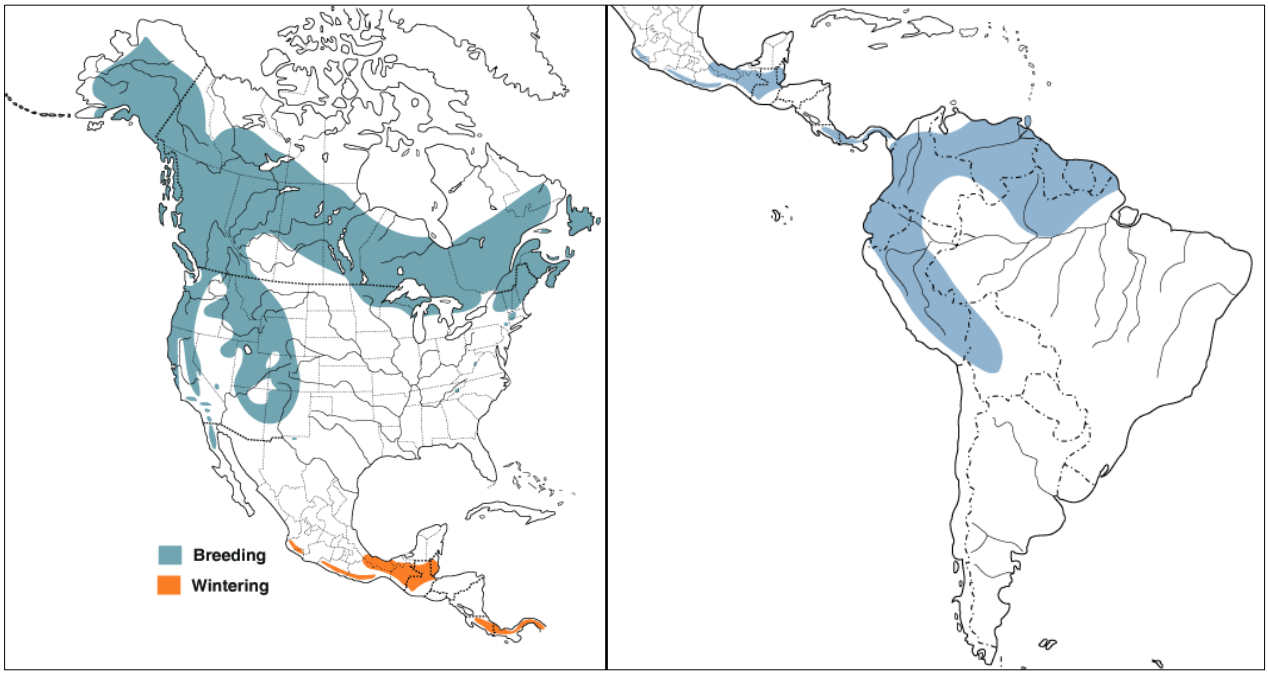

Figure 1. Global range of the Olive-sided Flycatcher (wintering range in orange on left and blue on right), from Altman and Sallabanks (2000).

Canadian range

The Olive-sided Flycatcher breeds throughout most of forested Canada (Figure 1). It is common in the southern Yukon from Beaver Creek east to the La Biche River, and possibly central Yukon where it is seen regularly in the Tintina Trench area and other scattered locations (Sinclair *et al.* 2003). In the Northwest Territories, the Olive-sided Flycatcher is found primarily to the east of Great Slave Lake and Great Bear Lake (NT/NU Bird Checklist Survey Database). The Olive-sided Flycatcher is recorded throughout most forested areas of British Columbia (except the Queen Charlotte Islands) (Campbell *et al*. 1990) and Alberta (except the southern parkland and grassland regions) (McGillivray and Semenchuk 1998). In Saskatchewan, Smith (1996) describes the Olive-sided Flycatcher as a fairly common summer resident throughout the subarctic and boreal forests. In Manitoba, it is an uncommon breeder in the boreal forest, and is not often recorded in other forested areas further south (Manitoba Avian Research Committee 2003). In Ontario it is widespread throughout the boreal forest zone and in the Great Lakes-St Lawrence forest to approximately Lake Simcoe in the south (Cheskey 1987). It does not breed in the Carolinian forest zone. In Quebec it is widespread south of the 52nd parallel (Gauthier and Aubry 1996). The Olive-sided Flycatcher is found throughout the Maritimes and on the island of Newfoundland, although less abundantly in eastern New Brunswick and western Prince Edward Island (Erskine 1992). This widely distributed species would be found on almost all Aboriginal lands in forested Canada.

Approximately 54% of the species' breeding range is in Canada (P. Blancher unpubl. data).

HABITAT

Habitat requirements

The Olive-sided Flycatcher is most often associated with natural forest openings, forest edges near natural openings (such as wetlands) or open to semi-open forest stands and will use human-made openings (such as clearcuts) (Altman and Sallabanks 2000). The species will use early successional forest, although the presence of tall snags and residual live trees for foraging and nesting is essential. Open forest habitat used by Olive-sided Flycatchers is generally dominated by conifers or mixed forest, and is often near water or wetlands (ON: Cheskey 1987, BC: Campbell *et al*.1990, QC: Gauthier and Aubry 1996, YT: Sinclair *et al*. 2003). In boreal Canada it may be particularly associated with open habitat of muskeg, bogs and swamps dominated by spruce (*Picea* spp.) and tamarack (*Larix laricina*) (ON: Cheskey 1987, QC: Gauthier and Aubry 1996, MB: Manitoba Avian Research Committee 2003). In the boreal forest of western Canada (BC, AB, SK, YT, NT) the Olive-sided Flycatcher was generally associated with young forest (0-30 years) post-fire or young forest (0-10 years) and post- clearcut harvest that contained residual live trees. It was also found in old mixedwood forest (>125 years post-fire) (Schieck and Song 2006). In the Atlantic Provinces, the Olive-sided Flycatcher is found in open woodland and other forested areas where scattered trees remain after clearcutting or fire. They are less common in areas dominated by hardwoods, or where dense young second-growth forest has developed after fires or farm abandonment (Erskine 1992). In Alaska, perches used by males while singing were 1.4 times taller than the surrounding canopy and generally white spruce (*P. glauca*) containing a dead top, or completely dead white spruce trees (Wright 1997).

In Ontario, nests are most often placed in conifers, such as white spruce, black spruce, jack pine (*Pinus banksiana)* and balsam fir (*Abies balsamea)* (Peck and James 1987). In Alaska, Wright (1997) found that nests were placed in predominantly live (81% of nest trees) coniferous trees that were 0.9 times shorter than the surrounding canopy. Nest height averaged 6.4 m (range 3-12 m) above the ground. Robertson and Hutto (2007) found that successful nests were generally found under thicker canopy cover than unsuccessful nests.

Open areas with tall trees or snags for perching are required for foraging. The species generally forages from a high prominent perch where it sallies forth to intercept flying insects and then returns to the same perch. This habitat structure is used throughout the year.

While Olive-sided Flycatchers may use logged habitats in lieu of natural openings such as patches of burned forest, there is evidence that these areas may act as ecological sinks. Robertson and Hutto (2007) found that pairs nesting in selectively logged habitats in Montana had only half the breeding success compared with pairs nesting in natural openings.

Winter habitat is similar in structure but not in composition to that on the breeding grounds, being regularly observed along forest borders and in semi-open areas of the Andean foothills (BirdLife International 2005). However, this association with forest edges or clearings may be an artifact of the difficulties (and thus lack of observations) of studying birds in more intact forest stands in the Andes.

Habitat trends

In western forests, the Olive-sided Flycatcher can be found in both old growth forest (Carey *et a*l. 1991; Schieck and Hobson 2000; Schieck and Song 2006) or in early to mid-successional forests derived from wildfire or timber harvest (Medin 1985; Medin and Booth 1989; Evans and Finch 1994; Hutto 1995; Steventon *et al.* 1998; Davis *et al*. 1999; Lance and Phinney 2001; Meehan and George 2003, Schieck and Song 2006). McGarigal and McComb (1995) found that Olive-sided Flycatchers were more abundant in a fragmented landscape of late-seral Douglas-fir (*Pseudotsuga menziesii*)-western hemlock (*Tsuga heterophylla*) forest with a high degree of edge habitat than unfragmented landscapes, suggesting that they may prefer edge habitat. Similar trends are expected in the eastern boreal forests of Canada, where the Olive-sided Flycatcher is associated with forested wetland, open forest, forest edge or early successional forest containing snags (e.g. Drapeau *et al*. 2000).

On the surface then, it would seem that although the amount of old-growth forest has obviously decreased over the past century or more, the amount of habitat attractive to Olive-sided Flycatchers could be remaining more or less constant since forest harvest continues to create openings favoured by the birds. Erskine (1992) suggests that the amount of suitable habitat may have actually increased since European settlement. The key question is whether this attractive habitat created by timber harvest is suitable for successful breeding or not. The continued decline of Olive-sided Flycatchers across their breeding range (BirdLife International 2004) despite their reputed positive association with timber harvest suggests that either breeding habitat supply may not be the only limiting factor for this species or that early successional forests created by timber harvest are unsuitable in some way for successful breeding and are acting as ecological sinks. Robertson and Hutto (2007), as mentioned above, present evidence that harvested landscapes harbour more nest predators and birds that nest there suffer significantly greater egg and nestling loss.

Altman (1997) suggested that habitat loss in the South American wintering grounds was a potential factor in population declines; Orejuela (1985) stated that 85% of Andean montane forests have been significantly altered. Diamond (1991) estimated that, if habitat loss continued at present rates, the Olive-sided Flycatcher would lose 39% of its winter habitat between 1980 and 2000.

Habitat protection/ownership

Because the Olive-sided Flycatcher is found in forested landscapes throughout Canada, the majority of its distribution lies on Crown lands subject to forest management. Habitat protection must be carried out largely through forest management planning guidelines separately administered in each province and territory, and on federal lands (including Aboriginal lands). In some southern areas (e.g. Vancouver Island and the Maritime Provinces), remaining habitat is also found on extensive private lands. Olive-sided Flycatchers breed in numerous provincial and national parks.

BIOLOGY

Little information is available on the breeding ecology and survivorship of the Olive-sided Flycatcher; most current knowledge has been gained from studies in Alaska (Wright 1997) and Oregon (Altman 1999). Information provided here has been primarily summarized from these sources and Altman and Sallabanks (2000).

Reproduction

Olive-sided Flycatchers are monogamous, with nesting pairs generally well-spaced. In Alaska, 16 territories ranged in size from 10.5-26.4 ha, with a mean size of 18.4 ha. In the Sierra Nevada, larger territories are reported (up to 45 ha). Territory borders in Alaska were frequently associated with drainage features, rather than having a common territorial border with another territory.

Pair bonds are formed when females arrive on the breeding grounds. There are two records of the same pair together in consecutive years, so inter-seasonal pair bonds may be possible. Females choose the nest site, construct the nest from twigs and rootlets, and lay one egg per day for an average clutch size of 3 (range 2-5). This is a rather low clutch size for a songbird; the Olive-sided Flycatcher and its congeners apparently have the lowest reproductive rate of all passerine genera in North America (Altman and Sallabanks 2000).

Incubation is performed solely by the female, with males providing food to the female during this period. The incubation period ranges from 15-19 days. The female broods the nestlings for the first week, with both parents feeding the young. The nestling period lasts from 17-23 days, and fledglings depend on parents for food for up to one week post-fledging. If an early season nesting attempt fails, the pair may attempt to re-nest; up to 3 nesting attempts have been reported. However, there is no evidence of re-nesting after successfully rearing one brood.

Olive-sided Flycatchers apparently breed on their first return to the breeding grounds (i.e. in their second year). The proportion of birds breeding in any given year is unknown, but the presence of unpaired males may indicate that females may not breed every year.

There is no information on hatchling or fledgling success. It is therefore not possible to measure fecundity for this species. However, there is some information on nest success. In central Alaska, 8 of 13 pairs (62%) fledged young, and in northwest Oregon 82 of 126 pairs (65%) fledged young. In Montana, Robertson and Hutton (2007) found 61% nest success in naturally burned habitats but only 30% success in harvested habitats.

Survival

Lifespan and survivorship of adults is unknown. Two birds that survived at least 7 years after first capture have been recovered during banding studies (one in California and one in Ontario) (Altman and Sallabanks 2000).

Dispersal/migration

Olive-sided Flycatchers arrive in Canada between April and June, but predominantly in mid- to late May. They begin fall migration in late July to early August. Olive-sided Flycatchers travel over 8,000 km between their wintering and breeding grounds, with migration and wintering periods accounting for over half the annual cycle. The availability of resources, changes to habitat and inclement weather can all reduce survivorship of migrants during winter and migration periods (Moore *et al*. 1995). In addition, Neotropical migrants generally do not deposit enough fat to travel non-stop between the breeding and wintering grounds, and so must make frequent stops to feed. Migration pathways and wintering locations of Canadian breeding populations are unknown as Olive-sided Flycatchers are rarely recorded in mist nets at migration monitoring stations.

Olive-sided Flycatchers may have strong breeding site fidelity, although data are scarce. From banding recapture data there is also evidence to indicate wintering ground site fidelity (Altman and Sallabanks 2000).

Interspecific interactions

There have been no reported predation attempts on Olive-sided Flycatchers. However, Olive-sided Flycatcher remains have been found at a Peregrine Falcon (*Falco peregrinus)* eyrie in Alaska (Cade *et al.* 1968). The sallying foraging behaviuor of adults is expected to make them easy targets for raptors. Squirrels and jays are suspected to be important nest predators, although there are no reports for Canada. In Oregon, a Gray Jay (*Perisoreus canadensis)* was observed taking 2 Olive-sided Flycatcher eggs (Altman and Sallabanks 2000). Both sexes aggressively defend the nest area, attacking both potential predators and human intruders. Robertson and Hutto (2007) suspect that increased predation was the primary cause for significantly reduced breeding success in harvested habitats versus those in naturally burned areas; red squirrels (*Tamiasciurus hudsonicus*), Gray Jays and Common Ravens (*Corvus corax*) were all more than twice as common on their harvested plots.

Behaviour/Adaptability

The Olive-sided Flycatcher is a passive sit-and-wait predator that remains perched until flying insects are sighted. They then actively pursue prey until capture and then return to the perch. Hymenopterans (bees, wasps, ants, etc.) form the largest percentage of the diet in the breeding season, accounting for up to 83% of stomach contents in 63 stomachs examined (Beal 1912, cited in Altman and Sallabanks 2000). Hymenoptera also formed a large component of the diet in the wintering grounds in Costa Rica (Sherry 1984). Meehan and George (2003) found that beetle remains formed a large part of Olive-sided Flycatcher feces in California.

POPULATION SIZES AND TRENDS

Search effort

The Olive-sided Flycatcher is conspicuous because of its loud song and tendency to perch on tall trees in open habitats. Despite this, there are few data on its ecology and abundance. Only three studies, in Alaska (Wright 1997), Oregon (Altman 1999) and Montana (Robertson and Hutto 2007) have specifically studied Olive-sided Flycatcher ecology. All other avian community surveys and breeding bird atlases conducted in Canada have documented this species in low numbers. Typically few individuals are recorded during point count surveys, and nests are hard to find, making breeding confirmation difficult.

Only the BBS and the checklist-based Étude des populations d’oiseaux du Québec (ÉPOQ, Association Québécoise des groupes d'ornithologues 2006) in Quebec have recorded the Olive-sided Flycatcher in sufficient numbers to describe population trends. Both monitoring programs do not account for habitat change that may occur at survey locations and do not have complete coverage of Olive-sided Flycatcher range either nationally (BBS) or within Quebec (ÉPOQ). Partners in Flight and the Canadian Wildlife

Service have identified the inadequate coverage of BBS routes in the northern boreal part of the range of the Olive-sided Flycatcher as being a significant impediment to understanding national and regional population trends (Dunn 2005, Dunn *et al*. 2005). Altman and Sallabanks (2000) note, however, that the densest populations of Olive-sided Flycatchers are found in the western mountains from BC south to California, areas well-covered by the BBS. Wright (1997) found that the BBS survey protocol was well suited to detect the Olive-sided Flycatcher if singing males were present.

In Ontario, Ontario Breeding Bird Atlas data show a 7% decline in breeding range (measured by occupied atlas squares, adjusted for effort) between 1981-1985 and 2001-2005; this loss seems to be more serious in the southern parts of the species' range (Birds Ontario, unpub. data). Because of the tendency to travel high in the canopy, this species is not well surveyed at migration monitoring stations. No Canadian migration monitoring stations have sufficient data to reliably assess population trends, although Thunder Cape Bird Observatory has found a negative (statistically non-significant) trend in spring captures and a positive (statistically non-significant) trend in autumn captures from 1995 to 2005 (Bird Studies Canada 2006).

Abundance

The Olive-sided Flycatcher is locally and patchily distributed and generally found at low densities throughout its range in Canada (0.05-3.49 birds per BBS route). In Canada, it reaches its highest densities in southern Yukon (3.49 birds per BBS route) and the coastal forests of British Columbia (2.39 birds per BBS route) (Sauer *et al*. 2005). Using estimates from BBS data, Rich *et al*. (2004) estimated the world population at 1.2 million individuals in the 1990s; this would have declined to about 700,000 in 2005 given known North American population trends. About 450,000 birds are estimated to breed in Canada (P. Blancher, unpublished data).

Fluctuations and trends

BBS data indicate widespread and statistically significant declines in Olive-sided Flycatcher populations across North America, with a significant 3.5% mean annual decline in North America (Sauer *et al.* 2005) for the period 1966 to 2005, and a 4% mean annual decline in Canada for the period 1968 to 2006 (Downes *et al*. 2007). The latter trend translates into a 79% decline over that 38-year period. These declines are strongest west of the Rockies where the highest breeding densities of Olive-sided Flycatchers are found (Altman and Sallabanks 2000).

The decline became steeper from 1985 to 1993, resulting in a more serious negative trend estimate for 1986 to 2006 (-5.3%), but has lessened since then (Table 1, Figure 2); the 10-year trend calculated from the 1996 to 2006 data is a significant annual decline of 3.3 %. The latter trend translates into a population decline of 29% over that decade.

Population trends at the provincial level are difficult to assess because of the smaller sample sizes in BBS data at that scale. Declining trends from BBS data from British Columbia, Ontario, Quebec and New Brunswick are statistically significant over the entire BBS survey period and the last 20 years (Table 1). In Quebec, these declines follow an increase in abundance from the mid-1970s to the mid-1980s which is described by both the BBS and the ÉPOQ (Figure 3). At Tembec's Tree Farm Licence #14 in southeastern British Columbia, the Olive-sided Flycatcher population was also observed to be stable for the period 1999-2004 (Bayne 2005).

Table 1. Canadian Breeding Bird Survey trends for the Olive-sided Flycatcher (from Downes *et al*. 2007). Trend is presented as percentage change per year, with probability P (* = p<0.05, n = 0.05 < p < 0.1, no value = not significant), based on N survey routes. Provinces and territories with insufficient data to calculate trends are not shown.

Region	1968-2006			1968-1985 trends			1986-2006 trends			1996-2006 trends		
	Trend	P	N	Trend	P	N	Trend	P	N	Trend	P	N
Canada	-4.0	*	468	-3.2	*	255	-5.3	*	394	-3.3	*	309
Yukon	–			–			-0.4		24	2.1		21
British Columbia	-5.7	*	110	-8.6	*	59	-5.2	*	103	-2.2		84
Alberta	2.3		67	17.7	n	23	-4.2		59	-12.7		47
Manitoba	-3.8		22	–			-3.0		20	2.6		18
Ontario	-9.5	*	70	-5.5	*	51	-13.2	*	47	-3.0		29
Quebec	-3.7	*	69	6.8	n	43	-11.2	*	48	-14.8	n	34
New Brunswick	-6.7	*	35	-6.1	n	27	-10.0	*	32	-11.7	n	24
Nova Scotia	-0.1		31	-0.5		24	-0.7		27	-2.7		24
Newfoundland and Labrador	-1.8		15	–			–			–		

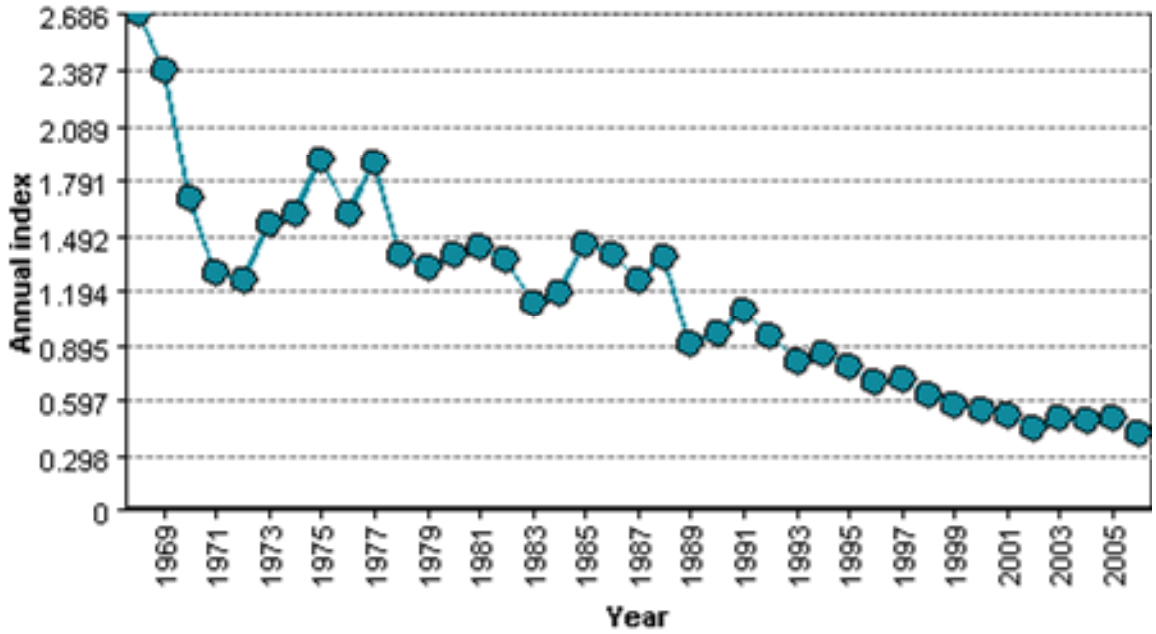

Figure 2. Annual population indices for the Olive-sided Flycatcher in Canada, based on Breeding Bird Survey (BBS) data (1968-2006).

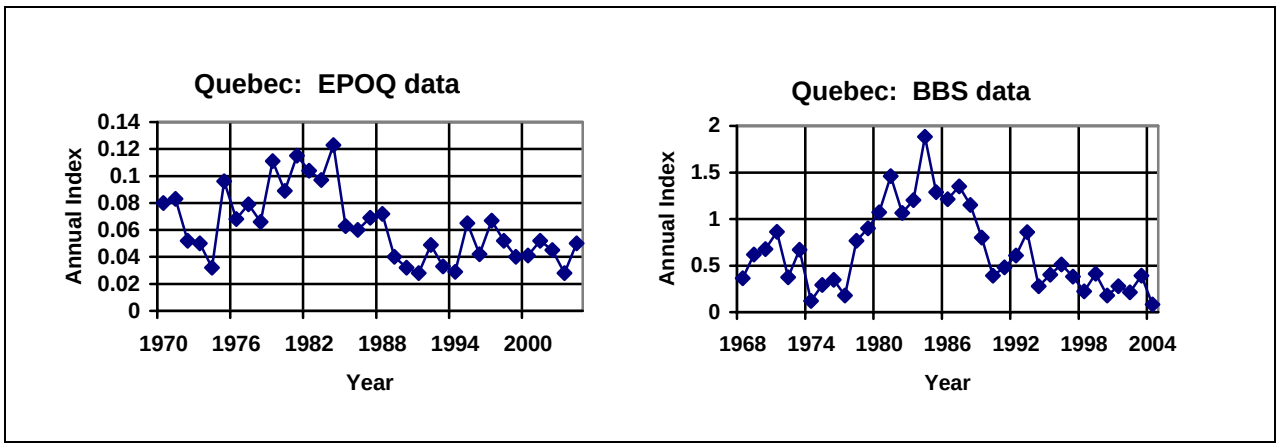

Figure 3. Left: Annual population indices for the Olive-sided Flycatcher in Quebec, based on the mean number of birds observed per Étude des populations d'oiseaux du Québec (ÉPOQ) checklist. Only daily checklists produced between May 15 and July 13 in which observers stayed at least 30 minutes in the field, away from bird feeders were considered. Right: Breeding Bird Survey annual abundance indices for the Olive-sided Flycatcher in Quebec.

Table 2. United States Breeding Bird Survey trend results (from Sauer *et al.* 2005). Trend is presented as percentage change per year, with probability P, based on N survey routes.

Region	1966-2004 trends			1966-1979 trends			1980-2004 trends		
	Trend	P	N	Trend	P	N	Trend	P	N
United States	-3.5	0.00	511	-2.5	0.04	201	-3.1	0.00	458
Alaska	-2.1	0.13	55	–	–	–	-2.3	0.10	55
Arizona	4.2	0.6	10	–	–	–	1.3	0.89	9
California	-3.9	0.00	115	-3.1	0.08	71	-4.0	0.00	105
Colorado	0.1	0.97	46	-3.0	0.77	4	0.3	0.85	45
Idaho	-3.1	0.08	20	-5.6	0.66	4	-3.4	0.07	19
Maine	-0.6	0.90	38	-3.6	0.63	13	-4.0	0.19	34
Michigan	-7.2	0.46	12	-10.2	0.34	2	-9.8	0.41	11
Minnesota	-2.5	0.51	26	1.0	0.91	10	-4.8	0.26	25
Montana	-2.4	0.09	19	0.4	0.97	5	-2.0	0.16	17
New Hampshire	-7.8	0.00	13	-0.4	0.90	10	-12.6	0.06	6
New Mexico	2.3	0.69	8	–	–	–	4.0	0.53	7
New York	-7.3	0.00	20	-10.3	0.04	16	-11.0	0.00	10
Oregon	-4.3	0.00	72	-4.2	0.03	28	-1.7	0.11	69
Utah	-4.9	0.29	18	–	–	–	-6.5	0.11	18
Vermont	-3.0	0.48	13	-7.1	0.17	9	0.3	0.98	9
Washington	-2.5	0.01	47	0.5	0.88	20	-3.7	0.00	45
Wisconsin	-0.3	0.85	19	4.7	0.12	6	0.4	0.85	16
Wyoming	-1.0	0.80	13	–	–	–	-1.5	0.72	13

Rescue effect

BBS results suggest Olive-sided Flycatcher populations in the United States are undergoing similar declines to those observed in Canada (Sauer *et al.* 2005, Table 2). The Olive-sided Flycatcher appears to use similar habitat in the United States and Canada, so immigrants would be adapted for conditions in Canada. The close proximity between US and Canadian populations would also mean that immigration is possible. However, similar declines in the relative abundance of the Olive-sided Flycatcher in the United States suggest that surplus individuals may not be available to immigrate to suitable, but vacant, habitat in Canada. Natural rescue of Canadian populations by populations in the United States is therefore possible, but very unlikely unless reasons for population declines in the United States can also be identified and addressed.

LIMITING FACTORS AND THREATS

The causes for the declines in Olive-sided Flycatcher populations are unclear but are almost surely related to habitat loss and change. Several authors have suggested habitat alteration on the wintering grounds may be a significant factor (Petit *et al.* 1993, Altman and Sallabanks 2000). Diamond (1991) predicted that the Olive-sided Flycatcher would lose 39% of its non-breeding habitat between 1980 and 2000, in addition to habitat lost prior to 1980. However, precise estimates for changes to non-breeding habitat are not available, and there are no data linking declines in particular breeding locations with specific wintering populations.

In eastern North America, Olive-sided Flycatcher habitat has changed with alterations to forest structure, urbanization, loss of wetlands and their associated edge habitats and the reforestation of abandoned farms. This may explain declines in the Atlantic provinces, as well as parts of southern Ontario and southern Quebec. However, Gauthier and Aubry (1996) have suggested that the large-scale clearcutting of older forests in eastern Canada may have changed forest structure to favour the Olive-sided Flycatcher and may explain the peak in their abundance in Quebec in the 1980s.

Hutto and Young (1999) have speculated that Olive-sided Flycatchers are an early post-fire dependent species that is attracted to managed (harvested) forests that have similar structural conditions to early post-fire habitat, but that these habitats may function as ecological sinks. In a Montana study, Robertson and Hutto (2007) found that Olive-sided Flycatchers preferred to nest in selectively logged habitats, but that breeding success in that habitat was only half of that in natural burned openings. Their data suggested that increased nest predation in the logged habitats was the reason for reduced success. These findings are supported by data from Altman and Sallabanks (2000), who report that nest success for Olive-sided Flycatchers was highest in early post-fire habitats (62%, n=16) in the Cascade Mountains of west-central Oregon compared to semi-open forest (49%, n=33), to harvest units that retained trees (39%, n=89) or at forest edge (33%, n=31). Conversely, in northwest California, Meehan and George (2003) found that the probability of nest loss was lower in unburned habitat (early seral forest) than in burned habitat (formerly predominantly clearcut). These differences may be explained by different amounts of standing trees following fire in a clearcut versus fire in a mature stand, although this has not been tested. Burned habitat in the Californian study also had reduced arthropod biomass and lower foraging rates than unburned forest.

The continued decline of Olive-sided Flycatchers across their breeding range despite the continued addition of early seral habitat (through harvest) to the landscape suggests that forest management practices may be a significant factor in population decline. Regional differences in population trends, though difficult to assess because of low sample sizes, may result from differing forest harvest practices that could impact nest predator and insect prey populations in different ways.

Another possible, but undocumented, cause of continued population declines could be a general reduction in insect prey, either on the breeding or wintering grounds. Pesticides have been suggested as the cause of such a decline, but there is no specific evidence for this in the case of Olive-sided Flycatchers (Altman and Sallabanks 2000). Similar population declines have occurred in a wide range of aerial insectivore bird species (e.g. Chimney Swift, Common Nighthawk), most of which winter in South America as well.

The low reproductive rate of this species suggests that adult survivorship would have to be high to maintain populations.

SPECIAL SIGNIFICANCE OF THE SPECIES

The Olive-sided Flycatcher is a widespread Neotropical migrant with a large portion of its breeding range in Canada.

EXISTING PROTECTION OR OTHER STATUS DESIGNATIONS

The Olive-sided Flycatcher (and its nests) is protected in Canada, Mexico and the US under the *Migratory Birds Convention Act* 1994. The IUCN Red Book lists the Olive-sided Flycatcher as 'Near Threatened', nearly qualifying for listing as 'Vulnerable' (similar to the COSEWIC Threatened status) under criteria A2bc+3bc when assessed in 2004 (BirdLife International 2004). The criteria A2bc+3bc stands for: (A) a reduction in population size based on (2) an observed, estimated, inferred or suspected population size reduction of ≥30% over the last 10 years calculated using (b) an index of abundance appropriate to the taxon and (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat, and (3) a population size reduction of ≥30%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years) using (b) and (c).

The global, national and provincial NatureServe conservation rankings for the Olive-sided Flycatcher are listed in Table 3. Only the Newfoundland and Labrador populations are listed as vulnerable; all other provincial and national rankings list the Olive-sided Flycatcher as 'Apparently secure' or 'Secure'.

Table 3. NatureServe (2005) global, national and provincial status for the Olive-sided Flycatcher.

Location	Status	Description
Global	G4	Apparently secure
USA	N4B	Apparently secure
Canada	N5B	Secure
Alberta	S4B	Apparently secure
British Columbia	S4B	Apparently secure
Labrador	S2S3	Imperiled or Vulnerable
Manitoba	S5B	Secure
New Brunswick	S5B	Secure
Newfoundland and Labrador	S3S4B	Vulnerable or Apparently secure
Northwest Territories	SNRB	Not ranked
Nova Scotia	S4S5B	Apparently secure to Secure
Ontario	S5B	Secure
Prince Edward Island	S5B	Secure
Quebec	S5	Secure
Saskatchewan	S4B	Apparently secure
Yukon	SNRB	Not ranked

TECHNICAL SUMMARY

***Contopus cooperi* (Nuttall, 1831**)
Olive-sided Flycatcher Moucherolle à côtés olive
Range of Occurrence in Canada: YT, NT, BC, AB, SK, MB, ON, QC, NB, NS, PE, NL

Extent and Area Information

• *Extent of occurrence (EO)(km²)*	Ca. 8 million km²
• *Specify trend in EO*	Apparently stable
• *Are there extreme fluctuations in EO?*	No
• *Area of occupancy (AO) (km²)* • *Based on population estimate of 225,000 pairs X territory size of 20 ha*	Ca. 45,000 km²
• *Specify trend in AO* • *Data from Ontario Breeding Bird Atlas*	Declined by 7% in Ontario from 1985 to 2005
• *Are there extreme fluctuations in AO?*	No
• *Number of known or inferred current locations*	Not applicable
• *Specify trend in #*	
• *Are there extreme fluctuations in number of locations?*	
• *Specify trend in area, extent or quality of habitat*	Unknown

Population Information

• *Generation time (average age of parents in the population)*	Unknown; probably about 3 years.
• *Number of mature individuals [calculated from BBS data by P. Blancher]*	Ca. 450,000
• *Total population trend:*	Declining
• *% decline over the last/next 10 years or 3 generations.* • *From BBS data (1996-2006)*	29% decline over 10 years, 79% decline 1968-2006 (38 years)
• *Are there extreme fluctuations in number of mature individuals?*	No
• *Is the total population severely fragmented?*	No
• *Specify trend in number of populations*	
• *Are there extreme fluctuations in number of populations?*	
• *List populations with number of mature individuals in each:*	

Threats (actual or imminent threats to populations or habitats)

Habitat loss or degradation on both the wintering and breeding grounds may be key factors. While this species uses harvested forest habitats, some studies indicate nesting success is significantly lower there. Declining insect populations may be important as well; other aerial insectivore bird species have shown similar population declines.

Rescue Effect (immigration from an outside source)

• *Status of outside population(s)?* **USA: Declining** (according to BBS data, US population declined by 74% between 1966 and 2005).	
• *Is immigration known or possible?*	Possible
• *Would immigrants be adapted to survive in Canada?*	Yes
• *Is there sufficient habitat for immigrants in Canada?*	Apparently
• *Is rescue from outside populations likely?*	No

Quantitative Analysis

Current Status

COSEWIC: Threatened (2007) IUCN Red List Near Threatened.

Status and Reasons for Designation

Status: Threatened	**Alpha-numeric code**: Does not strictly meet any of the criteria, but assessed as Threatened because of a 79% decline from 1968 to 2006, a 29% decline since 1996, and because there is no evidence that the decline has ceased.
Reasons for Designation: This songbird has shown a widespread and consistent population decline over the last 30 years; the Canadian population is estimated to have declined by 79% from 1968 to 2006 and 29% from 1996 to 2006. The causes of this decline are uncertain.	

Applicability of Criteria

Criterion A: (Declining Total Population): Comes very close to meeting Threatened A2b using Canadian Breeding Bird Survey data (29% decline over last 10 years).
Criterion B: (Small Distribution, and Decline or Fluctuation): Range too large.
Criterion C: (Small Total Population Size and Decline): Population too large.
Criterion D: (Very Small Population or Restricted Distribution): Population and range too large.
Criterion E: (Quantitative Analysis): Not done.

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BIOGRAPHICAL SUMMARY OF REPORT WRITERS

Dr. Jennie Pearce was born in Australia and immigrated to Canada in 1999. In both countries her research has focused on spatial modelling of the distribution and abundance of wildlife; her PhD was on the endangered Helmeted Honeyeater *Lichenostomus melanops cassidix*. She is particularly interested in testing the accuracy of spatial models and how these can be used for solving landscape management concerns, such as conservation of endangered species, managing forests in an ecologically sustainable framework and allocating resource extraction industries over landscapes. She is also interested in the use of bioindicators for sustainable forest management, particularly for birds, large and small mammals, amphibians, carabid beetle and spider communities. She has published more than 25 scientific papers in this area, as well as participated in numerous workshops and conference proceedings.

Born in England, Dr. David Anthony Kirk immigrated to Canada in 1989 and since then has worked as a self-employed research ecologist. He has completed 13 previous COSEWIC status reports (6 full reports and 7 updates). Most of his current research focuses on monitoring biodiversity at broad scales; he also works on the effects of farming and forestry on plants, invertebrates and birds. Outside Canada, his research ranges from studying the effects of introduced hares on vegetation and avifauna of islands in the Seychelles, conservation of maquis vegetation in North Africa, and resource partitioning among sympatric vultures in South America. He has published more than 25 scientific papers, in addition to numerous technical reports; his literature reviews are on subjects as diverse as the impacts of genetically modified organisms on Canadian biodiversity, to evaluating the economic value of birds as predators of pests in farmland, the effects of Double-crested Cormorants *Phalacrocorax auritus* on Carolinian island vegetation, and ways to mitigate predation by mesopredators on turtle and other species at risk.

COLLECTIONS EXAMINED

No collections were examined during preparation of this Status Report.