

COMMITTEE ON THE
STATUS OF ENDANGERED
WILDLIFE IN CANADA

OTTAWA, ONT. K1A 0H3
(ONTARIO) K1A 0H3
(819) 997-4991

COMITÉ SUR LE STATUT
DES ESPÈCES MENACÉES
DE DISPARITION AU
CANADA

OTTAWA

(819) 997-4991

le 6 juin 1995

AUX MEMBRES DU CSEMDC

RAPPORT FINAL DU STATUT DE LA MOUCHEROLLE VERT (*EMPIDONAX*
VIRESCENS)

A notre réunion d'avril 1994, l'oiseau la moucherolle vert (*Empidonax virescens*) a été désigné "en danger de disparition". Ross James a maintenant terminé le rapport et vous en trouverez un exemplaire ci-joint.

La coordonatrice du Secrétariat

Sylvia Normand
a/s Service canadien de la faune
Environnement Canada
Ottawa (Ontario)
K1A 0H3

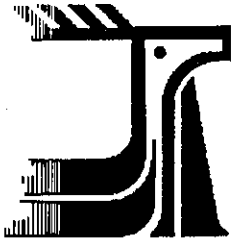
p.j.

c.c. Liste d'envois

Les personnes-contacts du SCF pour les espèces en péril
Les membres du sous-comité sur les oiseaux

COSEWIC - A committee of representatives from
federal, provincial and private agencies which
assigns national status to species at risk in
Canada.

CSEMDC - Un comité de représentants d'organismes
fédéraux, provinciaux et privés qui attribue un
statut national aux espèces canadiennes en péril.



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OTTAWA (ONT.) K1A 0H3
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**STATUS REPORT ON THE ACADIAN FLYCATCHER
*EMPIDONAX VIRESCENS***

IN CANADA

BY

ANNETTE M. PAGE

AND

MICHAEL D. CADMAN

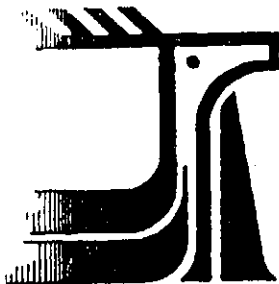
**STATUS ASSIGNED IN 1994
ENDANGERED**

**REASON: FEW REMAINING PATCHES OF HABITAT SUFFICIENTLY
LARGE TO SUSTAIN POPULATIONS; VERY SMALL NUMBERS
REMAINING AND SHOWING EVIDENCE OF DECLINE;
CONTINUING THREATS TO HABITAT.**

OCCURRENCE: ONTARIO

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Committee
on the Status
of Endangered
Wildlife
in Canada

Comité sur le
statut des espèces
menacées
de disparition
au Canada

JUNE 1990

Ottawa, Ont. K1A 0E7 (819) 997-4991

NOTES

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DEFINITIONS

- SPECIES:** "Species" means any species, subspecies, or geographically separate population.
- VULNERABLE SPECIES:** Any indigenous species of fauna or flora that is particularly at risk because of low or declining numbers, occurrence at the fringe of its range or in restricted areas, or for some other reason, but is not a threatened species.
- THREATENED SPECIES:** Any indigenous species of fauna or flora that is likely to become endangered in Canada if the factors affecting its vulnerability do not become reversed.
- ENDANGERED SPECIES:** Any indigenous species of fauna or flora that is threatened with imminent extinction or extirpation throughout all or a significant portion of its Canadian range.
- EXTIRPATED SPECIES:** Any indigenous species of fauna or flora no longer known to exist in the wild in Canada but occurring elsewhere.
- EXTINCT SPECIES:** Any species of fauna or flora formerly indigenous to Canada but no longer known to exist anywhere.

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**STATUS REPORT ON THE ACADIAN FLYCATCHER
*EMPIDONAX VIRESCENS***

IN CANADA

BY

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**STATUS ASSIGNED IN 1994
ENDANGERED**

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A. ABSTRACT

The Acadian Flycatcher (*Empidonax virescens*) currently breeds in Canada only within the Carolinian Forest Region of southwestern Ontario. The species is area-sensitive, requiring large (at least 30 ha) mature forests with tall trees, closed canopy, and open areas in the understorey for breeding. Prior to settlement, this habitat was widespread and extensive in the Carolinian Region, but clearing and fragmentation of most of the large forests in the area have drastically reduced both the quantity and quality of breeding habitat. Forests continue to be cleared and fragmented and, at present, very little suitable breeding habitat for the species remains in southern Ontario. Long-term data indicate that species breeding in the forests of eastern North America and migrating to the neotropics have undergone significant declines in recent years due to forest clearing and fragmentation on both the breeding and wintering grounds. It is expected that these declines will continue to occur as habitat continues to be destroyed. Little is known of the pre-settlement Acadian Flycatcher population in Canada, but because of fairly large populations in Michigan and Ohio at that time, and the availability of large amounts of suitable breeding habitat in Ontario, it is reasonable to assume that the species was widespread and fairly common in Ontario prior to settlement. By the mid-1980s, however, only 41 to 75 pairs of Acadian Flycatchers were estimated to be breeding annually in Canada, and in 1992 38 birds (28 of which were on territory, and 10 of which were migrants only) were recorded. The species is very rare in Ontario, and is inconspicuous and not well known among naturalists, so its population trends in recent years would be difficult to discern. Nevertheless, recent declines have been noted at Rondeau Provincial Park, and other declines have undoubtedly occurred throughout the Carolinian Forest Region of Ontario as forest cover has declined. Because of these declines, as well as the extremely small population size and continuing loss of suitable habitat, it is recommended that the Acadian Flycatcher be designated as Endangered in Canada.

B. DISTRIBUTION

B.1. Americas

Breeding

The Acadian Flycatcher breeds only in North America, from southeastern South Dakota, northern Iowa, extreme southeastern Minnesota, southern Wisconsin, southern Michigan, extreme southern Ontario, northeastern Pennsylvania, southern New York, Massachusetts, Vermont and (probably) southern New Hampshire south to central and southern Texas (west to Tom Greene County), the Gulf coast and central Florida, and west to eastern Nebraska, central Kansas and central Oklahoma (American Ornithologist's Union 1983; see Figure 1).

Wintering

The Acadian Flycatcher winters on the Caribbean slope of Nicaragua, on both slopes (more commonly on the Caribbean) of Costa Rica and Panama (including Taboguilla and the Pearl islands), and in northern and western Colombia, northern Venezuela and western Ecuador (American Ornithologists' Union 1983; see Figure 1).

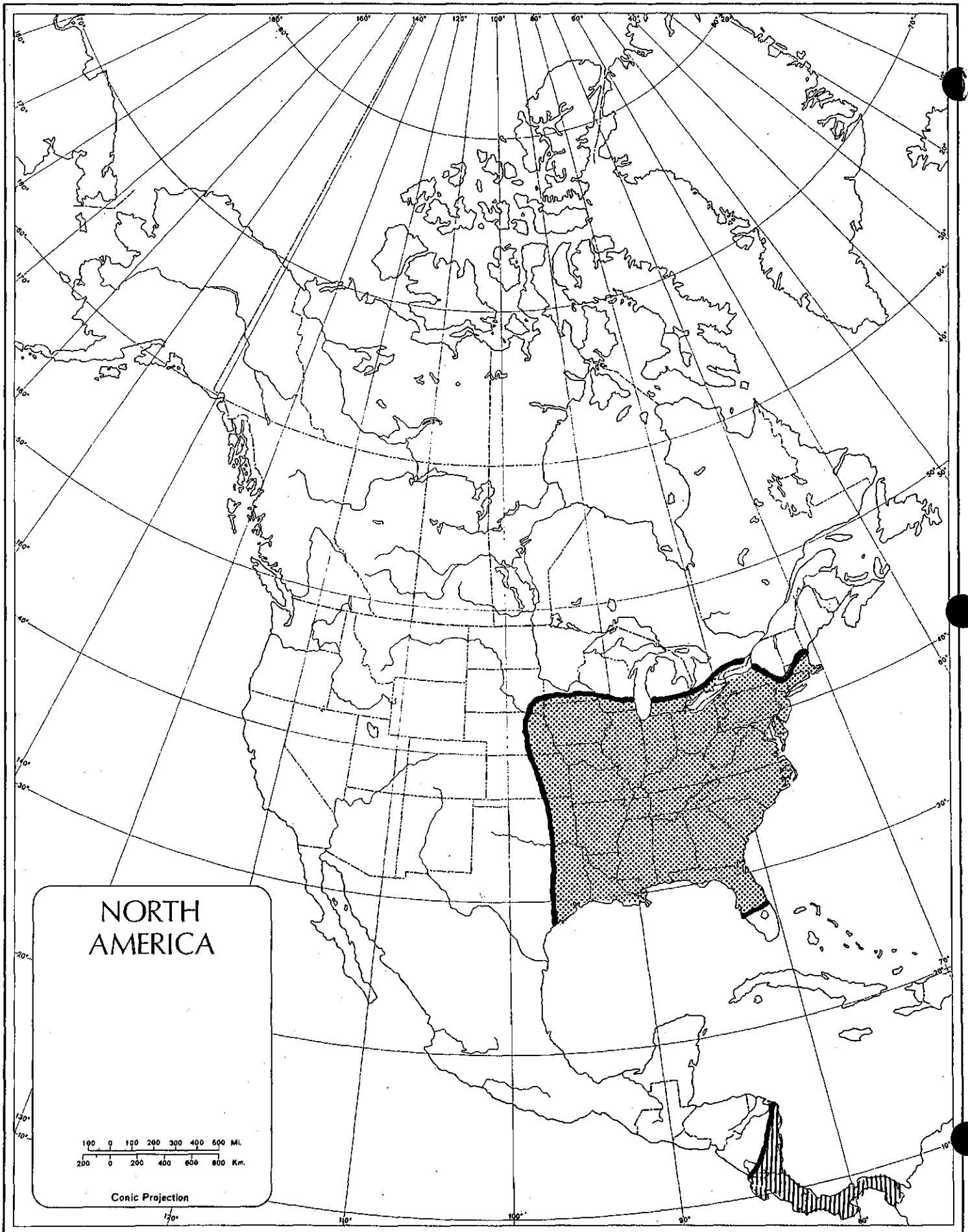


Figure 1.

Principal breeding and winter ranges of the Acadian Flycatcher in North America. Stippled area indicates the breeding range, and vertical lines indicate the winter range.

Migration

In migration, the Acadian Flycatcher occurs regularly (but uncommonly recorded) on the Gulf-Caribbean slope of Middle America from northeastern Mexico south to Costa Rica, and casually west to western South Dakota (at least formerly) and western Nebraska, and through the Bahamas (recorded from Grand Bahama, New Providence and Cay Lobos) and western Cuba. It is accidental in southeastern British Columbia (Barriere area) and Arizona (Tucson) (American Ornithologists' Union 1983).

B.2. Canada

Breeding

In Canada, the breeding range of the Acadian Flycatcher is restricted to the Carolinian Forest Region and adjacent areas of the southern Great Lakes Forest Region in southern Ontario (Cadman *et al.* 1987; see Figure 2), where it is a rare summer resident (James 1991). During the Breeding Bird Atlas project (1981-1985), the species was recorded in only 29 (2%) of 1824 squares surveyed in southern Ontario (Cadman *et al.* 1987). In addition, there has been repeat usage over several years in only 8 places (Rondeau and Wheatley Provincial Parks, Springwater Forest Conservation Area, Wilson Tract, Mistele-Baker Bush, Dundas Valley, Westover, and Point Abino Marcy Woods), and of these places, numbers have been greatly reduced at Rondeau, there has been no recent usage at Wheatley aside from two nests reported from there by A. Woodliffe in 1981, and there have been no recent reports from Point Abino. This indicates that even in protected areas numbers have declined, meaning that these areas do not necessarily offer security for the Acadian Flycatcher.

The majority (86%) of Breeding Bird Atlas records (1981-1985) were within the Carolinian Forest Region, and the remainder (14%) were in the extreme southern portion of the southern Great Lakes Forest Region adjacent to the Carolinian. The species is thinly spread throughout its available habitat in Ontario, which is sparsely distributed within its range in the province (Woodliffe 1987). Prior to the Atlas project, the species was known to breed in small numbers in only seven counties in the province, primarily along the north shore of Lake Erie (Peck and James 1987). Intensive coverage during the Atlas found breeding evidence in 10 counties or regional municipalities (Elgin, Essex, Haldimand-Norfolk, Hamilton-Wentworth-Brant, Kent, Lambton, Middlesex, Niagara, Toronto, and Waterloo). Breeding was confirmed during the Atlas in Elgin, Kent, Lambton, and Middlesex Cos. (Cadman *et al.* 1987). In addition, breeding was confirmed in Haldimand-Norfolk R.M. in 1987, but the site was logged in 1988 and no birds were found that year (ORBBP files). Some Atlas records were located well away from the Lake Erie shore, including a nest found west of London in Middlesex Co. and singing males observed in Waterloo Co., northeast and northwest of Brantford (Brant Co.), and within the city of Toronto (Woodliffe 1987).

Since the Atlas project, Acadian Flycatchers have been reported during the breeding season farther north in Wellington (Weir 1988; Ridout 1992), Oxford (Weir 1988, 1989a, 1990, 1991), Northumberland (Weir 1989a), and Leeds (Ridout 1992) Cos., (ORBBP files), but no confirmed breeding evidence has been reported from any of these areas. In 1981 and 1987, there were single-unsustained reports of the species in the Georgian Bay Islands National Park, Muskoka District.

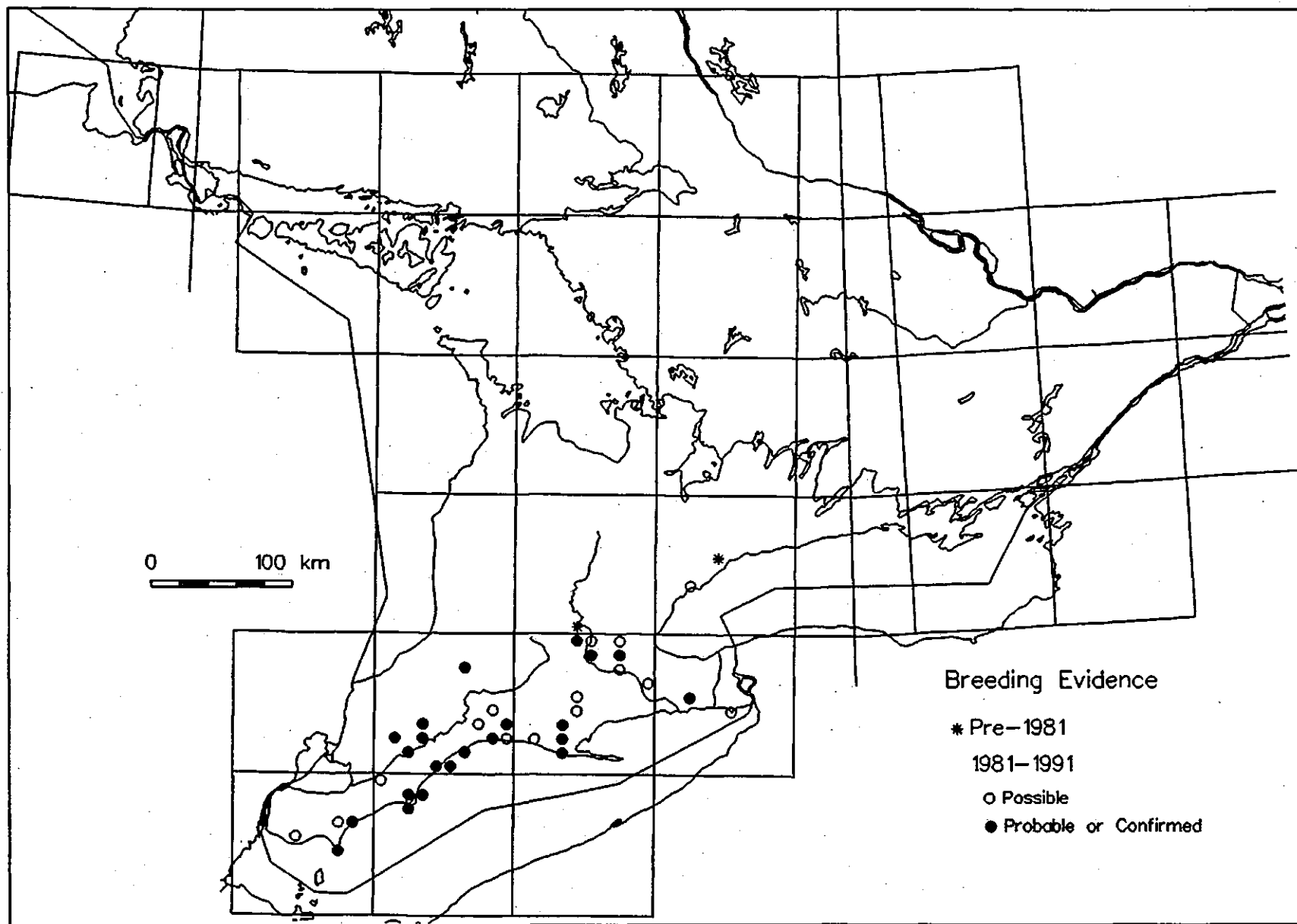


Figure 2. Symbols denote 10-km squares (within 100-km blocks) in which the Acadian Flycatcher was reported to the Breeding Bird Atlas and the Ontario Rare Breeding Bird Program in Ontario.

The best known breeding location in the province has historically been Rondeau Provincial Park. As of the late 1930s, Rondeau was the only known breeding locality in Ontario (Baillie and Harrington 1937), and small numbers still regularly breed there (Godfrey 1986). On June 12, 1993 three Acadian Flycatchers (at least two of which were different individuals) were found at Rondeau, but a search for nests was not conducted (A. Woodliffe, pers. comm. 1993).

Intensive coverage during the Haldimand-Norfolk Natural Areas Inventory (1985-1986) revealed breeding evidence in five locations in that area: South Walsingham Sand Ridges, Vanessa Swamp, Delhi-Big Creek Valley, Deer Creek Valley, and northeast of Sweets Corners (McCracken 1987). Together with more recent breeding evidence from Haldimand-Norfolk (ORBBP files, M. Gartshore pers. comm.), it is apparent that woodlands in the Long Point area (particularly Walsingham Woods/Wilson Tract where at least one bird summered in 1985, 1989, 1991, and 1993) are important to the species in Ontario. The Haldimand-Norfolk region has a relatively high percentage of forest cover (16%) compared to other parts of the Carolinian Forest Region in Ontario (i.e. Essex County has less than 3%) (Gartshore *et al.* 1987).

Other sites in Ontario which have been used by breeding Acadian Flycatchers for two or more years include Springwater Forest Conservation Area, Elgin Co., where breeding was confirmed during the Atlas and possible or probable breeding was reported from 1988 to 1991 inclusive (ORBBP files); Mistele-Baker Bush, Elgin Co., where confirmed breeding evidence was recorded in 1985 and 1986, and probable breeding in 1989 (ORBBP files); Dundas Valley, Hamilton-Wentworth R.M., where the species was present in every year but one from 1979 to at least 1985 inclusive (ORBBP files); and near Westover, Hamilton-Wentworth R.M., where a nest with eggs was found in 1976 (Wormington 1977) and a singing male was heard in 1984 (Atlas data). The species was present during the breeding season at Wheatley Provincial Park for two to three years in a row in the early 1980s, and two nests were found there in 1981, but it hasn't been found there in recent years (A. Woodliffe, pers. comm. 1993). Woodliffe did not find any Acadian Flycatchers on his Forest Bird Monitoring Program (FBMP) plot in 1993, and described the species as "pretty sporadic" at Wheatley.

One of the most valuable breeding sites in the province is the Point Abino Marcy Woods in Niagara R.M., which has long been a regular Acadian Flycatcher location. Breeding was first confirmed there in 1956 (Beardslee and Mitchell 1965). No Acadian Flycatchers were found there during the Ontario Rare Breeding Bird Program's (ORBBP's) field seasons (1989-1991) (ORBBP files), but this site is a very extensive Carolinian woodland and the species could very easily be overlooked. There are no other woods of this size remaining along the east end of Lake Erie.

East of Lake Erie there are June records from Whitby Twp., Durham R.M. (Tozer and Richards 1974), and a pair of Acadian Flycatchers was present on a farm in Prince Edward Co. during the summer of 1966 (Sprague 1969). The most northerly and easterly confirmed breeding record in Ontario concerns a nest (from which one young successfully fledged) found in Pickering Twp., Durham R.M. in 1973 (McLaren 1974).

Although the Acadian Flycatcher is not known to breed in Quebec and is considered to be accidental there (Godfrey 1986; Nature Conservancy data 1993), it has been recorded three times during the breeding season. A specimen was taken at Point Natashquan on June 22, 1928 (Todd 1963), and an individual sang in prime Alder Flycatcher habitat at Lake Sergent from July 22 until August 4, 1984 (Yank and Aubry 1984). Between 1984 and 1989 one possible breeding record was reported to the Quebec Breeding Bird Atlas (J. Gauthier, pers. comm. 1993).

The Acadian Flycatcher is not known to breed in Manitoba (Godfrey 1986), but, dubiously because of the difficulties of identifying the species, Chamberlain (1887) reported breeding at Duck Mountain in 1884 and described the species as not uncommon there. The species has been recorded once in British Columbia (specimen: Leonie Lake, June 9, 1934) (Godfrey 1986).

Non-breeding

The Acadian Flycatcher is virtually indistinguishable from other eastern Empidonax species by sight alone, and when it first arrives in spring it is notoriously quiet (Woodliffe 1987); identification becomes even more difficult in the fall. Consequently, information concerning migration is very limited, but the species is considered to be a rare migrant in Ontario (James 1991). It is a relatively late spring migrant (Peterjohn 1989). Usual dates in Ontario range from mid May to late August, but it has been recorded from late April to late September (James 1991). Ussher (1965 in Speirs 1985) calculated a 13 year average arrival date at Rondeau to be May 21, with the earliest arrival on May 10. The species normally migrates through Point Pelee in late May and the first week of June (T. Hince, pers. comm. 1993). Average date of first arrival at Prince Edward Point is May 23, with the earliest arrival recorded on May 17 (Weir 1989b). Little is known of the average departure from the province in fall. Ussher (1965 in Speirs 1985) gave August 19 as the latest date for Rondeau Provincial Park.

C. PROTECTION

As are most other North American birds, the Acadian Flycatcher 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. Between 1981 and 1990, 11 sites reported to the ORBBP were located within parks (Point Pelee National Park, and Wheatley and Rondeau Provincial Parks), offering the species a small amount of additional protection.

Recent amendments to the Planning Act under Bill 163, which have been approved by the Provincial Government but will not come into effect until the legislation is proclaimed, would apply to Acadian Flycatcher habitat if the species is officially designated as "endangered", "threatened" or "vulnerable" in Ontario. These amendments fall under the Natural Heritage, Environmental Protection and Hazard Policies, and state that: "Development will not be permitted ... in significant portions of the habitat of endangered species and threatened species. Development will not be permitted on adjacent lands if it negatively impacts the ecological functions of the features listed above." Significant portions of the habitat of vulnerable species, significant natural corridors, significant

woodlands south of the Canadian Shield, areas of natural and scientific interest, shorelines of lakes, rivers and streams, and significant wildlife habitat will be classified into areas where either: "no development is permitted; or development may be permitted only if it does not negatively impact the features or the ecological functions for which the area is identified" (Ministry of Municipal Affairs 1994) In addition, the existing Trees Act allows municipalities to pass a bylaw restricting and regulating the cutting of trees; some municipalities have included special restrictions for environmentally significant areas (B. Vankierkhof pers. comm.). Both of these Acts may offer the Acadian Flycatcher some additional protection in Ontario.

If the Acadian Flycatcher is officially designated as endangered in Ontario, the Endangered Species Act would also offer the species and its habitat some additional protection in that province.

D. POPULATION SIZE AND TREND

Globally, the Acadian Flycatcher is demonstrably secure (Nature Conservancy ranks), and it is widespread and sometimes common throughout most of its range in the eastern United States. The Nature Conservancy considers the species to be widespread, common, and secure in Michigan, and Breeding Bird Atlas data (1983-1988) from Michigan (Brewer *et al.* 1991) show that the species, which was first listed in the state in 1839 (Wood 1951), is clearly more common in southern Michigan than in Ontario at similar latitudes. The Acadian Flycatcher has always been widespread and common in Ohio (Thompson 1983; Peterjohn and Rice 1991), but Bull (1974) described a great decrease in numbers of Acadian Flycatchers in New York State since 1900. Prior to 1900, the species was common in the lower Hudson Valley, fairly common in the western portion of Long Island, and rare to uncommon elsewhere (Eaton 1914 in Bull 1974; Eaton 1988). Langille (1884 in Bent 1963) stated that the species was a very common summer resident in upland woods of western New York. There were no breeding records during much of the middle of the century, and by the mid-1970s the Acadian Flycatcher had become only a rare migrant in New York (Bull 1974). Bull (1974) stated that the decline in New York was consistent with the species having abandoned the greater part of its northeastern breeding range. New York Breeding Bird Atlas data (1980-1985) indicate that the species had become reestablished by the early 1980s, apparently moving back into the state along river valleys (probably from Ohio and western Pennsylvania) (Eaton 1988). The Nature Conservancy considers the Acadian Flycatcher to be rare or uncommon in New York. New York data suggest that prior to 1900 the species was common in much of the northeastern United States, but then disappeared and is now re-establishing in formerly occupied areas. Such a trend might be explained by the deforestation and subsequent reforestation of much of the northeastern United States.

In Ontario, the Acadian Flycatcher was probably fairly widely distributed in the Carolinian Forest prior to settlement and clearing of the forest. However, by the time ornithologists were collecting data in the mid-1800s, much of the Carolinian Forest had already been cleared and the Acadian Flycatcher was considered a rare bird. More extensive coverage in recent years has helped to define the species' range, confirming that it is restricted almost entirely to the Carolinian Forest Region and that it is a rare species in the province (James 1991). Approximately 1% of the Acadian Flycatcher's total North American breeding range is in Ontario, but a large portion of the suitable habitat in that area has been altered or destroyed and is now unusable.

The relative scarcity of records in the late 19th and early 20th centuries may have been in part due to a lack of familiarity with the species on the part of the observers. By sight alone it is virtually indistinguishable from other closely-related flycatchers, and Kelley (1978) described it as having inconspicuous breeding habits. Because the population is so thinly spread throughout the limited available breeding habitat, pressures from other pairs will be small and the species probably exhibits little singing or other territorial behaviour during the nesting cycle (Woodliffe 1987). Saunders and Dale (1933) blamed the low number of sightings on a lack of searching in suitable habitats (interiors of large woodlands), and this may still be a problem today, although there are very few large woodlands remaining within the species' range in Ontario. Also, ornithological coverage in Ontario has never been greater than in recent years because of the Atlas, ORBBP and intense regional projects such as the Natural Areas Inventory of Haldimand-Norfolk R.M., and it is unlikely that many significant breeding areas have been overlooked. Nevertheless, the concentration of recent records in the Haldimand-Norfolk area is at least partially the result of more intensive coverage of forest interior areas, and it is likely that more birds would be found with species-specific surveys.

The first record of the species in Ontario was a specimen (date unspecified) taken at Hyde Park, Middlesex Co. (Morden and Saunders 1882), and the first known nesting was discovered on June 24, 1884, near Dunnville, now Haldimand-Norfolk R.M. (Saunders 1910). Breeding was confirmed in Rondeau Provincial Park with the discovery of two nests with eggs in June 1931 and another four nests with eggs in June 1933, and at that time Rondeau was the only known breeding location in the province (Baillie and Harrington 1937). Although the species continues to breed quite regularly in small numbers at Rondeau Provincial Park (Godfrey 1986), numbers apparently diminished there in the previous decade, and its status as a breeding bird at Rondeau has changed from uncommon but regular, to rare (Woodliffe 1987). The deer population at Rondeau has increased significantly in recent years, resulting in a loss of almost the entire understorey due to the tremendous grazing pressure by the deer; this may partially explain the decrease in Acadian Flycatcher numbers in the park. However, high water levels and severe winds that resulted in toppling trees are a more likely cause of changes in forest canopy affecting this species (A. Woodliffe pers. comm. 1994).

During the 1970s and 1980s, increased coverage led to more reports of the Acadian Flycatcher and an expansion of its known breeding range in Ontario. On July 9, 1973 a nest was discovered in Pickering Twp., Durham Co. (McLaren 1974). This is the most northerly and easterly confirmed breeding record in the province. Another new nesting location was discovered near Westover, Hamilton-Wentworth R.M. on July 7, 1976 (Wormington 1977).

Currently, the Acadian Flycatcher is not present at Point Pelee National Park during the breeding season, although it is sometimes heard on migration in late May and early June (T. Hince, pers. comm. 1993). Hince (pers. comm. 1993) believes that the species likely did breed historically in the Park when suitable wetland forest habitat was available, but this has been largely decimated, such that the forest is now quite open with not much canopy, making it unsuitable breeding habitat for the Acadian Flycatcher.

Based on Atlas data, an annual breeding population of 41 to 75 pairs was estimated for southern Ontario, which is probably high for any one year as it is based upon estimates from any period during the five years of the project (1981 through 1985). Only four squares (one each in Kent, Lambton, Middlesex, and Waterloo Cos.) were estimated to contain two to 10 pairs during the Atlas project, and none had higher estimates (Cadman *et al.* 1987). In 1992, a total of only 38 birds was reported from various locations in southern Ontario; 10 of those were migrants only, leaving only 28 birds on territory in 1992 and that was with surveys under the ORBBP (Ridout 1992). In addition, fifteen of the 28 birds on territory were at only one location (in the Walsingham area), a location that has been subject to logging in the past and is not a protected area (Ridout 1992). In other years, only one (1989 and 1993) or two (1991) singing males were known to have summered in the Walsingham area. These recent numbers and estimates indicate that the Acadian Flycatcher breeding population in Ontario is extremely small. The larger populations in nearby Ohio, and those evident in Michigan at the same latitudes as the Carolinian Forest Region in Ontario, support the contention that the species would be considerably more common in Ontario if sufficient habitat were available. The Nature Conservancy considers the species to be imperiled and very vulnerable to extirpation in Ontario and Canada.

Long-term data indicate that species breeding in eastern North America and migrating to the neotropics are in a state of major decline as a result of deforestation and fragmentation of larger forests (Hounsell 1991). The largest declines have occurred in neotropical migrants that are specialized for the forest interior, and in many cases are area-sensitive (Hounsell 1991), as is the Acadian Flycatcher. Analysis of eastern United States and Canadian BBS data revealed that most neotropical migrant breeding populations in North America were stable or increased from 1966 to 1978, but declined from 1978 to 1987; the declines were significantly greater among the forest-wintering species (Robbins *et al.* 1989). From 1966 to 1978, the continental Acadian Flycatcher population significantly increased at a rate of 1.2% per year, but from 1978 to 1987 it declined significantly at a rate of 1.3% per year (Robbins *et al.* 1989). Reasons for the increase during the early years of the BBS are unknown. Too few have been reported on BBS routes in Ontario to show population trends there.

Since settlement, forest loss and fragmentation in the Carolinian Region of southern Ontario has been extensive (see Section E.3 and Figures 3 and 4), and very few forests large enough to support viable breeding populations of Acadian Flycatchers remain. This has undoubtedly resulted in a drastic decline in the population size since settlement, and it is predicted that declines in this and other neotropical migrant species will continue to occur as forests are cleared and fragmented to meet the ever-growing needs of our society (Robbins *et al.* 1989; Hounsell 1991). Because the species becomes more numerous within extensive forests (Peterjohn 1989), populations within individual woodlots in Ontario are, for the most part, likely to remain small and scattered. Not only does this negatively affect reproductive potential, but small, isolated populations are less diverse and have reduced genetic variability; many more individuals are required to ensure long-term viability than are required for short-term genetic integrity (Riley and Mohr, in prep.).

In summary, the Acadian Flycatcher population breeding in Ontario is very small and scattered throughout the small amount of suitable habitat remaining in the province. Evidence suggests that numbers have declined considerably since settlement, and that this decline will continue as habitat continues to be destroyed.

E. HABITAT

E.1. Habitat preferences

The Acadian Flycatcher breeds in mature, extensive deciduous woods (primarily beech-maple) within the Deciduous Forest Region of eastern North America, including the Carolinian Forest Region of extreme southern Ontario (Peck and James 1987; Peterjohn and Rice 1991). The species occupies the understories within the interiors of these woodlands, and although it can be numerous in mesic woods, especially near small streams or standing water, it is also regularly found in relatively dry woods where streams are absent (Peterjohn and Rice 1991). Tall trees, closed canopy, and an open space in the understorey (at least two metres beneath the lower tree branches) for foraging are required (Peck and James 1987; Eaton 1988; Walkinshaw and Brewer 1991).

The Acadian Flycatcher is an area-sensitive species, requiring large tracts of mature undisturbed forest in which to breed (Robbins 1979). Using Breeding Bird Survey data from central and eastern Maryland, Robbins (1979) estimated the minimum forest area required to sustain viable breeding populations of Acadian Flycatchers to be 80 acres, or 30 ha, but minimum size requirements vary depending on the region in which studies have been undertaken- a species requiring a 10 ha woodlot in one region may need a 100 ha tract in another (Terborgh 1992 in Riley and Mohr, in prep.), depending, perhaps, on the amount of woodland in the general area. Robbins (1980) found the species to be dramatically less common in woodlots below 36 ha than in larger woods. In Ohio, breeding pairs of Acadian Flycatchers tend to inhabit the interiors of extensive woodlands, especially those exceeding 100 acres in size, and although they are regularly found in smaller woods located near tracts of extensive forest, they normally avoid small isolated woodlots less than 30 acres in size, margins of forests, and narrow wooded corridors along fencerows and streams (Peterjohn and Rice 1991). Floodplain forests must be more than 400-500 feet wide before they become suitable for nesting Acadian Flycatchers (Peterjohn and Rice 1991). Few such extensive woodlots remain in the Carolinian Forest Region of southern Ontario, and consequently pairs are more likely to be found scattered throughout smaller, more isolated woodlots.

Habitat preferences on the wintering grounds are similar to those on the breeding grounds (Fitzpatrick 1990). The Acadian Flycatcher overwinters in mature neotropical forests (Erhlich *et al.* 1988), and spends more than half of its life cycle there. Dramatic declines in available habitat have been noted in many parts of the neotropics, and as of 1989 tropical deforestation was proceeding at an annual rate of 1% to 3.5% (Robbins *et al.* 1989). This, coupled with similar declines in quantity and quality of habitat on the breeding grounds, has caused population declines in many neotropical migrants, including the Acadian Flycatcher (Robbins *et al.* 1989; Hounsell 1991).

E.2. Distribution of habitat

Prior to settlement, extensive amounts of suitable breeding habitat could be found throughout the Carolinian Forest Region of southern Ontario and adjacent areas of the Southern Great Lakes Forest Region. Since settlement, however, these forests have been greatly destroyed or fragmented, such that at present, very little suitable breeding habitat remains in southern Ontario. Most remaining large forests are located in portions of Haldimand-Norfolk and Hamilton-Wentworth R.Ms. (Figures 3 and 4), and these areas are where most recent Acadian Flycatcher records have been reported from.

E.3. Trend in quality and quantity of critical habitat

Since European settlement, the amount of forest cover in the Carolinian Forest Region of Ontario has been drastically reduced, individual forests have become smaller and fragmented, the amount of forest interior has declined, and the amount of "edge" habitat has increased. As a result, suitable Acadian Flycatcher breeding habitat has undoubtedly been greatly reduced in the province. In fact, many remaining forests may be too small to sustain viable Acadian Flycatcher breeding populations, although further studies need to be done before this can be said with confidence.

Prior to settlement, much of southern Ontario was forested both on the shield and off, and much of that forest was probably mature. In the Carolinian Region, forests were primarily deciduous, with cedar and tamarack swamps in some low-lying areas. The Great Lakes-St. Lawrence Forest Region had a more northern mix of trees, including more conifers. Perhaps up to 10% of the forest consisted of forest openings, providing habitat for "edge" species.

Studies in existing mature hardwoods forests reveal that southern Ontario's forests would have been generally stable with a low rate of natural disturbance. Large scale disturbances, such as catastrophic wildfire, were relatively rare, with perhaps 1000 years between stand destructions (Lorimer 1989). Stand destructions would be more frequent in areas of shallow sandy soils such as the Oak Ridges Moraine. About 20% of the forested landscape would consist of young stands originating after catastrophic disturbances, and 80% would be old or mature affected primarily by partial stand destruction and a high frequency of small gap disturbances (Lorimer 1989). Small disturbances resulted from disease, insect infestations, creeping fires, drought and blowdowns, and could change the species composition of the forest without complete stand replacement. Over a long period of small scale disturbance, mature forest would be patchy and uneven aged, with a fine-grained mosaic of generation stages (Noss 1991). About 70% of the stand area would be occupied by mature or large trees, with less than 10% in gaps at any one time.

The amount of suitable habitat for the Acadian Flycatcher has undoubtedly decreased greatly with the clearing of forests in the Carolinian Forest Region. Whereas the presettlement forest was extensive and mature, today's remaining woodlands are primarily small, young and fragmented. Presettlement forest conditions in the Carolinian Forest Region would have been ideal for the Acadian Flycatcher, which breeds in the interiors of large tracts of undisturbed mature forest.

The available information confirms the overall loss of forest south of the Canadian Shield. Thirty of the counties south of the Shield now have less than 25% of their landscapes forested, and most of the Carolinian Forest Region counties have far less than that: Essex and Kent counties have less than 5% forest cover remaining (Riley and Mohr, in prep.). Eastern Elgin and western Haldimand-Norfolk still support 16-25% forest cover (Gartshore 1988).

Agricultural statistics collected through the Census of Canada provide one of the best sources of information on trends in area of land covered in forest (Table 1, Figure 5). It is important to note that by 1891, when statistics were first collected, much of southern Ontario's forest had already been removed. The area of woodland on reporting farms in the Carolinian Forest Region at that time averaged 19.4% per county. This percentage dropped quickly to only 8.2% in 1911, and then stayed at approximately that level until 1971 when it dropped to 7.4%, and 1981 when it dropped further to 6.6%. The loss of woodland on farms in the Carolinian Forest Region from 1891 to 1981 averaged 63% per county (Table 1, Figure 5), and was highest in Essex and Kent counties which lost 93% and 85% of their woodlands on farms, respectively (Table 1). Losses in other counties with important known Acadian Flycatcher breeding sites are somewhat smaller (56% in Haldimand-Norfolk R.M., 60% in Hamilton-Wentworth R.M., and 61% in Niagara R.M.), but still significant (Table 1). Clearly, the woodlands of the Carolinian Forest Region, and particularly those of the extreme southwest, have been and continue to be severely depleted by human activity.

As well as habitat loss, habitat degradation (in the form of forest fragmentation) has occurred at an alarming rate in southern Ontario, especially in the Carolinian Forest Region (see Figures 3 and 4). Hounsell (1991) described southern Ontario as "an agriculturally-dominated landscape" and "a vast area of extensive forest fragmentation." Many conservation biologists believe that "habitat fragmentation is the most serious threat to biological diversity and is the primary cause of the present extinction crisis" (Noss 1987 in Riley and Mohr, in prep.). A recent study by Cheryl Pearce (1993) found that 95% of the remaining forest patches in her 60 km x 60 km (360,000 ha) study area (Lake Erie shoreline north to Woodstock in the west and the Six Nations Reserve in the east) are less than 24 ha in area, while 99% of the remaining forest patches are less than 100 ha in area. Only six of the remaining 11,064 patches are greater than 1000 ha. In addition, most of the forest patches in the study area are very elongated with highly convoluted margins (i.e. high edge/area ratios), and could be considered forest corridors rather than forest patches. Most of the remaining patches could have no functional forest interior at all (the actual amount depends on the edge width criterion used): using a 0-100 m edge zone, 8,882 of the 11,064 patches (80%) would have no functional forest interior remaining, and if a 0-300 m edge zone was used, 9,547 patches (86%) would have no functional forest interior. Many authors (cited in Pearce 1993) have suggested that true forest interior habitat could be more than 60 m to 600 m from the non-forest/forest margin for animals ("faunal edge"). Since the Acadian Flycatcher is a forest-interior species, the required distance from forest edge to forest interior habitat is probably closer to 600 m than 60 m. One area which is large enough to still have functioning forest interior is the St. Williams Forest/Backus Woods/Wilson Tract area, which forms a large, almost continuous forest cover. However, these woods have been dissected by small forest access roads and hiking trails, and further fragmentation could reduce or even eliminate interior conditions (Pearce 1993). It is important to mention that the area studied by Pearce (1993) is the most heavily forested area remaining in the Carolinian Region. The area of forest interior in other

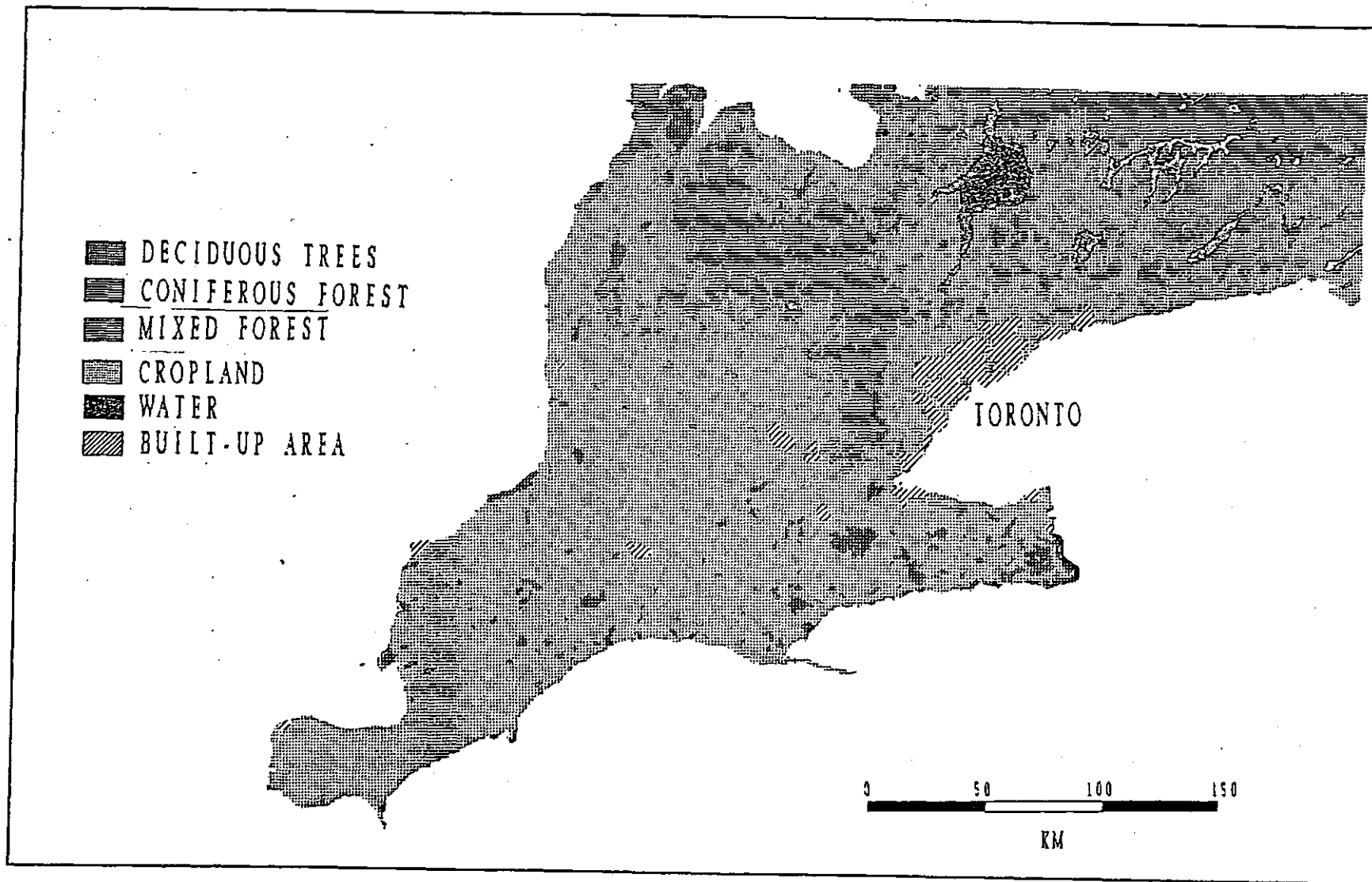


Figure 3. Habitat types across southern Ontario

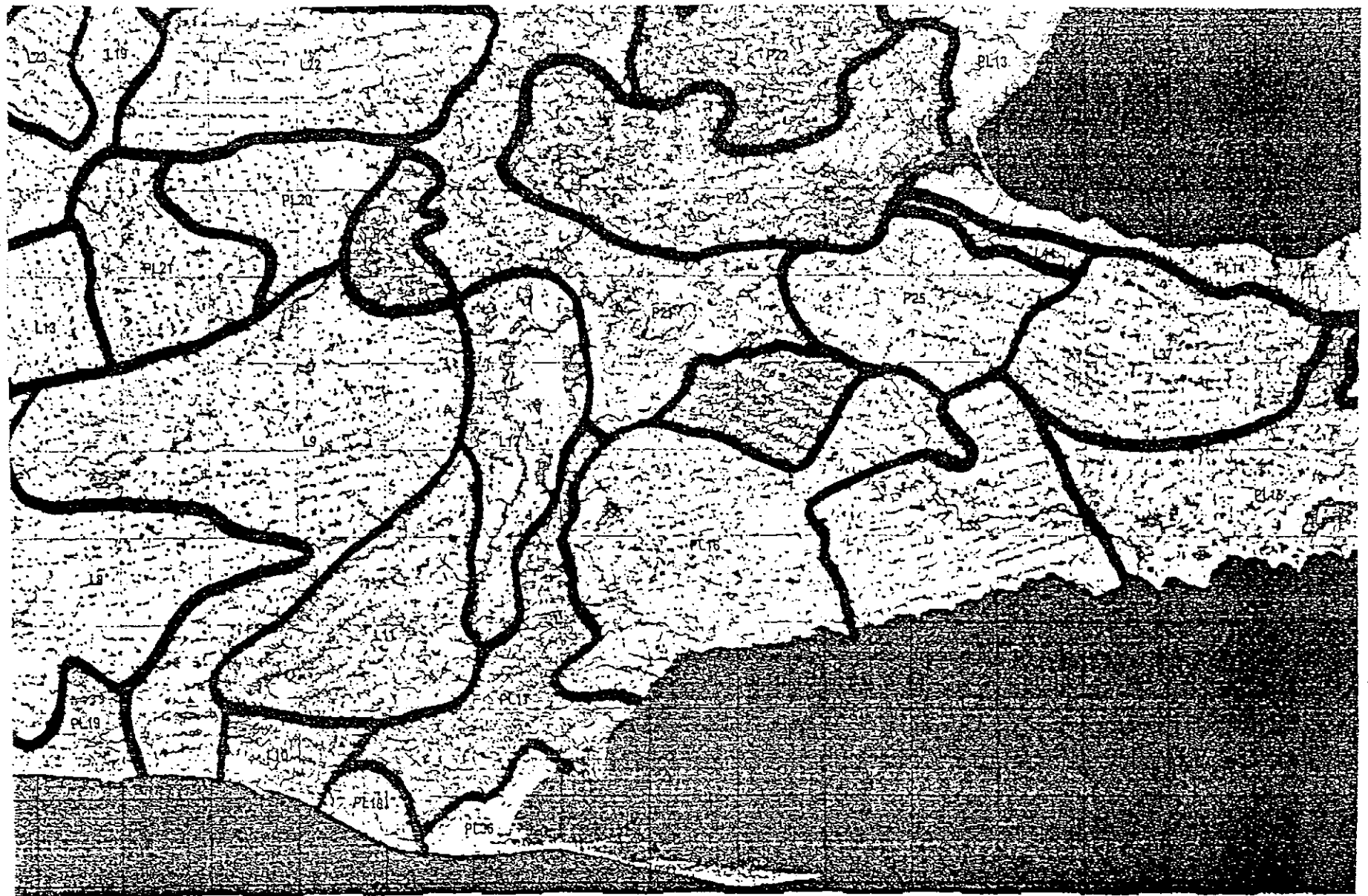


Figure 4. Aerial photo showing a sample of the amount of forest cover remaining in southern Ontario

Percent Woods on Farms

All Carolinian Counties

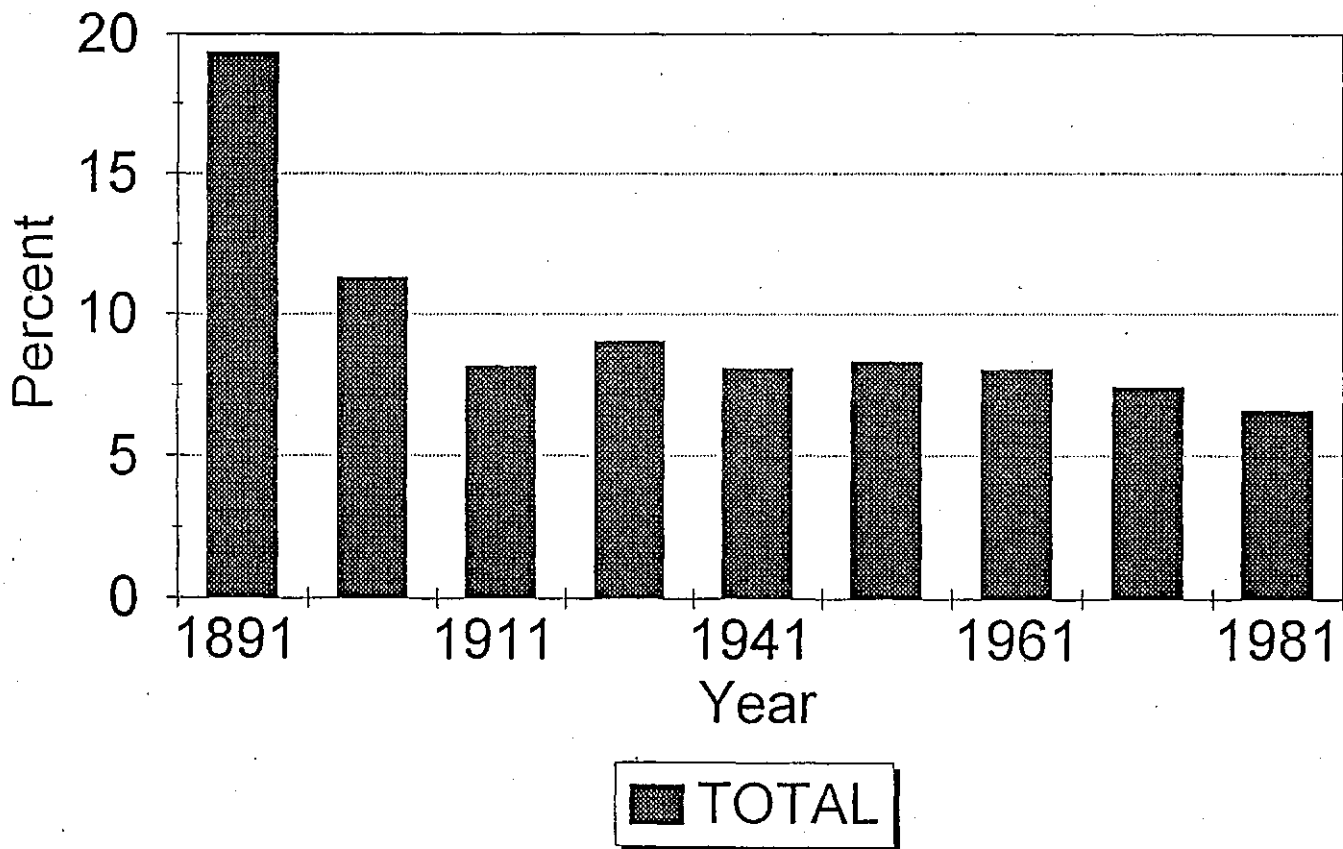


Figure 5. Percentage of woodlands remaining on farms in the Carolinian Forest zone of southern Ontario (from Census of Canada Agricultural statistics).

Table 1. Comparison of the percent of woodland on farms in the Carolinian Forest Region in 1891 and 1981 (From Census of Canada Agricultural data).

<u>County</u>	<u>% in 1891</u>	<u>% in 1981</u>	<u>% lost</u>
Brant	22.4	6.8	70
Elgin	14.7	9.5	35
Essex	23.8	1.7	93
Haldimand-Norfolk	25.4	11.1	56
Halton	22.1	11.6	48
Hamilton-Wentworth	16.9	6.7	60
Kent	15.2	2.3	85
Lambton	24.0	7.6	68
Middlesex	15.5	6.4	59
Niagara	17.5	6.8	61
Oxford	15.2	6.1	60

parts of the Carolinian Region is far lower, with some areas, such as Essex and Kent Cos., having essentially no forest interior remaining. This may mean that the St. Williams Forest/Backus Woods/Wilson Tract area is the only one left in Ontario where breeding has been regular in recent years, and that is sufficiently large (i.e. more than 30 ha) to support an Acadian Flycatcher breeding population. However, more study is needed before this can be said with confidence.

Using site-specific Atlas and ORBBP data, Steve Hounsell (Ontario Hydro pers. comm.) summarized the spatial characteristics of the woodland sites for the Acadian Flycatcher in relation to the surrounding landscape. The data used in the summary are not based on any extensive systematic searches for the species, so only limited conclusions can be made from them. The summary showed that almost all Acadian Flycatcher records are in woodlands that are larger than the average size for the area in which they occur. However, as an unknown but probably high proportion of total woodland area occurs in large woodlands, additional analysis is required to determine whether the species differentially chooses larger woodlands.

Widespread fragmentation and clearing of forest habitat in both the breeding and wintering range has led to declines in many area-sensitive, forest-dwelling neotropical migrant species, including the Acadian Flycatcher, throughout eastern North America (Robbins *et al.* 1989; Hounsell 1991). Factors contributing to the overall decline in this group of bird species (loss of habitat heterogeneity, potential barriers to dispersal between woodlots, area-dependent biotic interactions with predators, brood parasites such as the Brown-headed Cowbird, and interspecific competition) become more common and/or effective as forest size declines, or forest edge become more prevalent (Ambuel and Temple 1983 in Hounsell 1991; Wilcove 1985 in Hounsell 1991). Large woodlots dominated by edge (possessing a high edge-to-area ratio) are also of little value to these species. Pearce (1993) stated that "the fragmentation of forest cover into small isolated patches, and the reduction in functioning forest interior, leave the forest more susceptible to blowdown, drought, disease, and insect infestations, and invasions through the edge zones by small predators such as raccoons, blue jays, and cats, and cowbirds. These stresses, combined with increased competition for a shrinking habitat, may account for 80% to 100% of the lack of nesting success of neotropical migrant songbirds, even in forests of 1,000 to 2,000 ha." Floodplain forests must be more than 400-500 feet wide before they become suitable for nesting Acadian Flycatchers (Peterjohn and Rice 1991). Species that are area-sensitive or sensitive to habitat edges, have low annual reproductive rates, or nest in conspicuous places are most apt to decline as woodland patches become smaller and forest edge increases (Ambuel and Temple 1983 in Hounsell 1991; Temple 1986 in Hounsell 1991). Ecological generalists and edge inhabiting species, on the other hand, benefit (Temple 1986 in Hounsell 1991).

Hounsell (1991) has proposed a method of categorizing landscapes into those with high, medium, and low conservation value, as defined: "landscapes with high conservation value have a high percent forest cover; high degree of neighbourhood and connectivity, facilitating the efficient colonization of discrete forest patches; component patches are typically large with forest interior effectively buffered from edge effects, with occasional extensive tracts acting as a colonizing source area. As the percent forest cover declines within the landscape and component patches become either more edge-dominated and/or smaller and more isolated, the conservation value will decrease to the point of virtually no value, at which point, regional extirpations of species can be expected." From Hounsell's perspective, much of the Carolinian forest in Ontario is of low or medium low conservation value, which happen to correspond to areas denuded or partially denuded of large forest tracts (areas that are unlikely to support species such as the Hooded Warbler). However, because of the scarcity of woodlots throughout the Carolinian region, it is essential that all woodlots be protected at all costs, not just those with 'high' conservation value. In fact, the need to protect woodlots with 'low' conservation value (i.e. in Essex and Kent Cos. in extreme southwestern Ontario) is more urgent than anywhere, as these woodlots are all that remain in the area.

Selective logging may sometimes benefit Hooded Warblers, but it could be detrimental to Acadian Flycatchers (R. James pers. comm. 1994). Because there are not enough forests of sufficient size left in the province to manage separate areas for these two species, selective logging is not recommended as a management practice for the Hooded Warbler.

E.4. Habitat protection

Thirteen (45%) of 29 Acadian Flycatcher breeding stations reported in the Carolinian Forest Region during the Atlas are within naturalist club nature reserves, conservation areas, "Environmentally Sensitive Areas", provincial parks, national parks, and/or national wildlife areas, and are afforded some (but still insufficient) protection (McColeman and Eagles 1990). Eleven sites reported to the ORBBP between 1981 and 1990 were located within national or provincial parks. The most serious immediate threats to the Acadian Flycatcher's breeding habitat are ongoing forest clearing and fragmentation, and it is essential that all remaining large, mature tracts of forest within the species' breeding range be protected from further alteration.

F. GENERAL BIOLOGY

F.1. Reproductive Capability

Like other small passerine species, the Acadian Flycatcher matures in one year and generally has a short life span, but the longevity record is 10 years (Clapp *et al.* 1983). The female selects the nest site and builds the nest. In Ohio, nest construction usually starts during the last half of May and continues until mid-June (Peterjohn 1989). In Michigan the nesting season begins in late May during warmer years, and early June during cooler years (Walkinshaw 1966). The Acadian Flycatcher usually lays three (but sometimes two to four) eggs (Bent 1963; Godfrey 1986; Ehrlich *et al.* 1988), and lays one each day until the clutch is complete (Walkinshaw 1966). Fifteen nests reported to the Ontario Nest Records Scheme contained one to three eggs (2 nests-1 egg; 3 nests-2 eggs; 10 nests-3 eggs) (Peck and James 1987). Egg dates in Ontario range from June 8 to July 30 (James 1991).

Incubation is performed entirely by the female and lasts from 13 to 15 days, and the young remain in the nest for 13 to 15 days (Ehrlich *et al.* 1988). Therefore, a successful nesting attempt (from egg laying to fledging) would take anywhere from 29 to 33 days to complete. In Ohio, recently fledged young may appear anywhere between the last week of June and the first week of September (second nestings), but are most often seen during July (Peterjohn 1989). During Ontario's Atlas, recently fledged young were discovered in Lambton Co. on July 9, and in Elgin Co. on July 4 (Atlas data). One young fledged from a nest at Point Abino (1956) on August 17 (Beardslee and Mitchell 1965), and one young had fledged from a nest in Pickering Twp. by August 2 (McLaren 1974). During warmer years when nesting begins earlier, the species will usually attempt a second brood in Michigan, so further south the species should always be double-brooded (Walkinshaw 1966).

Nesting success, average annual survival rate, reproductive rate, growth potential, and age/sex ratio of the existing Acadian Flycatcher population in Ontario are very poorly known. A study of the Least Flycatcher (*Empidonax minimus*) found that only 38% of nests successfully fledged young, and that predation accounted for 83% of nest failures (Briskie and Sealy 1989). The study also found that daily survival probabilities of nests were lowest during laying and highest just before fledging. Of 121 Acadian Flycatcher nests observed in Michigan, 88 (73%) had young hatch in them and 78 (65%) fledged young; of 319 eggs, 216 (68%) hatched and 183 (57%) fledged (Walkinshaw 1966). Limited information suggests that although three eggs are usually laid in Ontario (Peck and James 1987), less than three young usually successfully fledge. Of six nests with information on fledgling success reported to the Atlas, one was known to fledge two young, two fledged one young (and in one of them, two eggs remained unhatched), one contained four unfledged young, one contained two unfledged young, and one contained one cowbird (Atlas data). Of three historical nests, one successfully fledged one young (McLaren 1974), one contained only one egg which hatched and fledged (Beardslee and Mitchell 1965), and one was damaged (unhatched and broken eggs were found on the ground) (Wormington 1977).

F.2. Species Movement

The Acadian Flycatcher is a long-distance migrant, and generally returns to Ontario from Central and South American wintering grounds in mid to late May. After the males stop singing in late summer, the species is very difficult to detect and identify, and consequently there is little information on the fall migration. James (1991) gives the average departure time from Ontario as late August.

In spring migration, the Acadian Flycatcher occurs in low numbers along the north shore of Lake Erie. In the 1970s it was a rare and irregular transient at Point Pelee in spring (Stirrett 1973), and at present it is often heard in migration at Pelee in late May and the first week of June (T. Hince, pers. comm. 1993). The species is not a common migrant at either Rondeau Provincial Park or Long Point; the average number observed or banded per spring at Long Point is two to three, and there were none at Long Point in spring 1993 (J. McCracken, pers. comm. 1993). In 1985, an annual record of eight individuals were banded during spring migration at Long Point (Shepherd 1986).

The small breeding population in Ontario is widely scattered throughout the Carolinian Forest Region wherever suitable forests are found. Locations where the species is noted with some regularity in the breeding season include Wheatley and Rondeau Provincial Parks, the Long Point area (especially Walsingham Woods), Mistele-Baker Bush, Springwater Forest Conservation Area, Point Abino Marcy Woods, Dundas Valley, and near Westover (see section B.1-Breeding). Most of these areas offer the species some degree of protection (see sections C and E.3).

There is little information regarding the species on its wintering grounds, and it is unknown whether it concentrates in any specific areas during the winter.

F.3. Behaviour/Adaptability

The Acadian Flycatcher seemingly prefers mature beech-maple forests in summer, but it will readily occupy other woodland communities (Peck and James 1987; Peterjohn 1989). However, it is quite highly specialized with respect to habitat, nest location, and food. Breeding habitat must contain large tracts of mature dense woodlands with tall trees, closed canopy, and open spaces in the understorey for foraging (DeGraaf *et al.* 1980). Extensive woodlots are required for successful nesting, but individual territories are quite small and may be no more than one or two hundred yards across (Bent 1963). Four territories in Illinois ranged from 1.7 to 4.3 acres (0.7 to 1.7 ha), and 80 territories in Michigan ranged from 1.8 to 4.2 acres (0.5 to 1.7 ha) (DeGraaf *et al.* 1980). Although in larger woodlots several pairs may be present, the Acadian Flycatcher is a solitary nester and does not ordinarily leave its woodland during the nesting season (Bent 1963; Godfrey 1986). This, together with its small size and difficulty in identification, make it a very easy species to overlook.

The species is monogamous, and usually forms long-term pair bonds (Ehrlich *et al.* 1988). A study conducted in Michigan found that only one pair did not mate for life (Walkinshaw 1966). There is a strong fidelity to the breeding territory, and a pair often returns to the same territory (and sometimes even the same nest) in successive years (McCracken 1987; DeGraaf *et al.* 1980). Each pair has its own definite territorial limits which are actively defended by the male (Bent 1963). There is little evidence that the female actively defends the territory, but she appears to defend the area around the nest (Kellner and Ritchison 1988). Studies have shown that female Acadian Flycatchers may sing when their nest is approached (Mumford 1964 in Kellner and Ritchison 1988; Kellner and Ritchison 1988), and it is believed that this may serve an aggressive or defensive function, and may also play a role in the formation and maintenance of pair-bonds. It may also serve to keep the male and female aware of each other's location (Kellner and Ritchison 1988). Evidence suggests that singing by female *Empidonax* species may be more common than is currently believed (Kellner and Ritchison 1988). Female Willow Flycatchers also sing under natural conditions, while female Alder Flycatchers apparently do not (Seutin 1987 in Kellner and Ritchison 1988).

Nests are flimsy, shallow, semi-pensile structures which are usually suspended from forks or crotches on a low (or the lowest) drooping, horizontal limb well away from the trunk, usually near the end of the limb (Ehrlich *et al.* 1988; Peck and James 1987). Nests typically hang at heights of eight to 20 feet (Peterjohn 1989), but in Ontario heights have ranged from six to 30 feet (Peck and James 1987). Ontario nests have been constructed of fine grasses, vine tendrils, plant down, spider webs, and bits of leaves and other vegetative debris, and were thinly lined with grasses, rootlets, and bark strips (Peck and James 1987). They characteristically have strands of vegetation dangling below them, which in Ontario ranged from 10 to 30.5 cm (4 to 12 inches) in length (Peck and James 1987). Nests are frequently placed over small creeks and ravines or other clearings, and are generally shaded (Godfrey 1986; Peck and James 1987; Peterjohn 1989; DeGraaf *et al.* 1980).

The diet of the Acadian Flycatcher consists primarily of flying insects such as wasps, bees, ants, beetles, and moths, and its primary methods of foraging, like other flycatchers, are hawking, gleaning, and flight gleaning (DeGraaf *et al.* 1980). It may also eat berries and a few seeds during the breeding season (Ehrlich *et al.* 1988). Beal (1912 in Bent 1963) found the diet from spring to fall to consist of 97% animal and 3% vegetable matter.

Any human disturbance to the Acadian Flycatcher's habitat (i.e forest clearing and fragmentation, and the resulting decline in habitat quality) is a serious threat to its survival (see sections D and E.3). Because its diet consists almost exclusively of insects, pesticide use may also negatively affect this species (Robbins *et al.* 1989).

The Acadian Flycatcher's breeding habits are quite inconspicuous (Kelley 1978), and it is not overly tame, aggressive, or curious, meaning that its normal behaviour does not expose it to danger. The species is not susceptible to special conditions such as fire, fluctuating water levels, severe winters, or wet or dry seasons, but it is very susceptible to human activities leading to the destruction and alteration of extensive woodlots. It is also susceptible to cold spells or other conditions that affect insect populations.

Captive breeding and transplanting programs have never been attempted in Ontario, and are not recommended at this time. In 1962 at the Patuxent Wildlife Research Centre in Maryland, 169 individuals of neotropical species (warblers and flycatchers) were netted and removed from a study plot as part of a simulated pesticide study. The intent was to return these birds to the study plot, but the agency responsible for caring for them could not keep them alive, and consequently none were returned (Robbins 1979).

G. LIMITING FACTORS

The primary limiting factor for populations of Acadian Flycatchers in Canada is the dependence of the species on extensive, mature tracts of forest with tall trees, closed canopy, and open spaces in the understorey. Consequently, it is negatively affected by forest clearing and fragmentation, which is particularly important within the species' range in Canada where most of the suitable forests have been altered or destroyed. Suitable breeding habitat is now only sparsely distributed throughout the species' range in Canada, and this has resulted in the small population becoming very thinly distributed throughout available woodlots (Woodliffe 1987).

In Ontario, three of 20 nests (15%) reported to the Ontario Nest Records Scheme contained Brown-headed Cowbird (*Molothrus ater*) eggs (Peck and James 1987), and three of 35 records (8.6%) in the Detroit-Windsor area showed cowbird parasitism (Kelley *et al.* 1963). A study conducted in southern Michigan found 25 (21%) of 121 nests parasitized by cowbirds (Walkinshaw 1966). Walkinshaw's study also found that each cowbird that hatched was almost always fatal to the Acadian Flycatcher eggs or young. Forest fragmentation and the resultant increase in edge habitats has enhanced this problem, as well as increasing natural predation on nests and young by other species of birds and mammals. However, the Acadian Flycatcher may occasionally build a double nest as a defense mechanism against cowbird parasitism; nests with cowbird eggs built into the lower story of the nest by the Acadian Flycatcher and fresh flycatcher eggs in the upper story of the nest have been found (Bendire 1895 in Bent 1963; Walkinshaw 1966).

H. SPECIAL SIGNIFICANCE OF THE SPECIES

The Acadian Flycatcher is generally widespread and common throughout most of its range in the eastern United States, but in Wisconsin it is officially designated as Threatened. Because of the inaccessibility of its breeding habitat and the difficulty in distinguishing it from several other eastern Empidonax species, it is relatively unknown to the general public and therefore the degree of public interest is likely minimal.

The Gray Flycatcher (Empidonax wrightii) was assessed by COSEWIC in 1992, but no designation was required. No other Empidonax species are currently considered to be rare, threatened, or endangered in Canada.

The Acadian Flycatcher is at the northern edge of its range in Canada, and such marginal populations are considered to be valuable in terms of genetic composition and adaptability (Scudder 1989 in Cannings 1992). Also, morphological similarities between it and other eastern Empidonax species make it scientifically interesting.

Carolinian Forest habitat critical to the survival of the Canadian population of the Acadian Flycatcher supports breeding populations of other bird species which are rare in Canada, including the Red-bellied Woodpecker (Melanerpes carolinus), Cerulean Warbler (Dendroica cerulea), Hooded Warbler (Wilsonia citrina), Prothonotary Warbler (Protonotaria citrea), and Louisiana Waterthrush (Seiurus motacilla). Many rare, threatened, and endangered plants such as the Cucumber Tree (Magnolia acuminata), Eastern Prickly Pear Cactus (Opuntia humifusa), American Chestnut (Castanea dentata), and Blue Ash (Fraxinus quadrangulata), to name only a few, are also found within the Carolinian Forest Region.

I. EVALUATION AND PROPOSED STATUS

The Acadian Flycatcher is widespread and sometimes common throughout much of its range in the eastern United States, though numbers drop off considerably on the periphery of its range in northeastern and northcentral states. In Canada, it breeds only in and adjacent to the Carolinian Forest Region of southern Ontario where it is a rare bird, with an estimated 40 to 75 pairs thought to breed.

Studies in the U.S. show that the Acadian Flycatcher is an area-sensitive species, which is dramatically less common in woodlots below 36 hectares than it is in larger woods (Robbins 1980). The clearing of much of the Carolinian Forest by settlers led to a marked reduction in the amount of habitat available for the species, and undoubtedly a large decline in numbers. Breeding Bird Survey data indicate a significant decrease in numbers in eastern North America from 1978 to 1987 (Robbins et al. 1989).

Although there are no historical data with which to compare population trends over the long term in Ontario, the Acadian Flycatcher's habitat has been largely destroyed since settlement and it is logical to assume that the species has declined in numbers along with its habitat. The fact that the

species is widespread in southern Michigan (Brewer *et al.* 1991), which has more remaining forest than southern Ontario, is also suggestive that its population in southern Ontario was severely reduced by forest clearing. Furthermore, only a small percentage of the original forested area of the Carolinian Region is still wooded, and little of that is in large woodlands, but the Acadian Flycatcher is regularly reported from the most extensively wooded areas remaining. This strongly suggests that the species has undergone a severe decline in the province along with its habitat.

Some of the Acadian Flycatcher's most important breeding sites are in Provincial Parks (such as Rondeau and Wheatley), so the species enjoys a small degree of protection. Outside of parks, forest habitat in the Carolinian Region generally continues to be removed and altered.

In summary, the Acadian Flycatcher population in Canada has probably been greatly reduced by habitat destruction, and this decline will likely continue as habitat continues to be altered or destroyed. Given its small population size, area-sensitivity and sensitivity to habitat loss and degradation, the small amount of suitable habitat remaining in Ontario and the continued threats to this habitat, it is appropriate that the species be designated "endangered" in Canada.

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