COMMITTEE ON THE
STATUS OF ENDANGERED
WILDLIFE IN CANADA

OTTAWA, ONT. K1A 0H3
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COMITÉ SUR LE STATUT
DES ESPÈCES MENACÉES
DE DISPARITION AU
CANADA

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

UPDATED STATUS REPORT ON THE KING RAIL

RALLUS ELEGANS

IN CANADA

BY

ANNETTE M. PAGE

STATUS ASSIGNED IN 1994

ENDANGERED

REASON: FEW PATCHES OF REMAINING HABITAT ARE LARGE ENOUGH TO SUPPORT POPULATIONS; VERY SMALL POPULATION SIZE SHOWING CONTINUED DECLINES. CONSIDERED ENDANGERED OR CRITICALLY IMPERILED IN ALL ADJACENT STATES.

OCCURRENCE: ONTARIO

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

Committee on the Status of Endangered Wildlife in Canada

Comité sur le statut des espèces menacées de disparition au Canada

JUNE 1990

OH3 (819)
Ottawa, Ont. K1A [illegible] 997-4991

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EXTINCT SPECIES: Any species of fauna or flora formerly indigenous to Canada but no longer known to exist anywhere.

UPDATED STATUS REPORT ON THE KING RAIL

RALLUS ELEGANS

IN CANADA

BY

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STATUS ASSIGNED IN 1994

ENDANGERED

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A. ABSTRACT

In 1985, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) declared the King Rail (Rallus elegans) a rare species in Canada. However, when that report was written, very little was known about the species' abundance, distribution, or status in Canada. With the completion of the Atlas of the Breeding Birds of Ontario and the Ontario Rare Breeding Bird Program (ORBBP), much more of this information has become available, and a reevaluation of the King Rail's national status was deemed necessary. The updated report focuses on current distribution in Canada, as well as population size and trend (Canada and the United States) and changes in habitat quality and quantity. Because there have been no major changes in distribution in the United States, protection of the species, habitat preference, general biology, limiting factors, and special significance of the species since the original report was prepared, these sections are omitted from the updated report. Please refer to the original COSEWIC report (Cosens 1985) for information on any of these areas.

In Canada, the King Rail breeds regularly or somewhat regularly at only three places, possibly four or five places, in southern Ontario, and at only one place (Walpole Island Indian Reserve) is the population likely to be more than two or three pairs at best. At the other locations (Hillman Marsh near Point Pelee, Long Point, and possibly Rondeau and Presqu'ile Provincial Parks), with random fluctuations there may be none in some years. Since settlement, the King Rail has declined in numbers throughout its range in Canada, largely as a result of vast habitat destruction and degradation. This is particularly evident in the Lake St. Clair marshes, where the species was thought to be a common breeder in the late 1800s, but is now considered to be only a rare summer resident. The species was also believed to be common in large marshes in Prince Edward Co. in early 1940s, but it apparently no longer breeds anywhere in that county. Most states bordering southern Ontario have also experienced significant declines in King Rail numbers since settlement, and the species is officially endangered in Indiana, Kentucky, Michigan, Ohio, and Pennsylvania.

Using Hewitt's (in Cosens 1985) old (and possibly inaccurate) estimate of breeding densities, and data for areas covered by marsh where the King Rail is known to have bred (the St. Clair Marshes, Long Point and surrounding area, Point Pelee, Rondeau, Presqu'ile, and Prince Edward County), Cosens (1985) estimated a breeding population of 291 pairs for southern Ontario, assuming a constant breeding density throughout the province; however, when all marshes inventoried by Dubsky (1982) were included, this estimate rose to 306 breeding pairs. Only 20 to 52 pairs were estimated to be breeding in the province in any one year during the Breeding Bird Atlas project, and a recent estimate of 35 to 47 pairs suggests

that the population is within the range indicated by the Atlas. Consequently, Cosens' (1985) estimate appears to be quite inaccurate. In 1993, only three calling birds were recorded in southern Ontario (with the exception of Walpole Island) during the pilot Wetland Bird Monitoring Program.

Because of the very low population size, continued threats to (and vulnerability of) suitable breeding habitat, and the fragmented and localized distribution of both habitat and breeding birds in Canada, the King Rail is very vulnerable to extirpation from Canada. Consequently, a status of endangered is recommended for the King Rail in Canada.

B. DISTRIBUTION IN CANADA

Historically, the King Rail was thought to be a common breeder in marshes bordering Lake St. Clair, the Prince Edward Co. marshes, and possibly Point Pelee (Morden and Saunders 1882; McIlwraith 1886; Taverner and Swales 1907; Snyder et al. 1941; Cosens 1985). At present, the species is a rare summer resident near Lake Erie (James 1991), and is known to breed only in the Lake St. Clair marshes (including Wapole Island), Hillman Marsh, the Long Point area, and possibly Rondeau Provincial Park (Peck and James 1983; McCracken 1987; P.A. Woodliffe, pers. comm. 1992). There are a small number of recent records from Presqu'ile Provincial Park, but only one confirmed breeding record (1987) exists (S. LaForest, pers. comm. 1992). Figure 1 shows one historical breeding season record from a marsh which has since been drained in Flamborough, Hamilton-Wentworth R.M. (ORBBP files).

Breeding was not confirmed in the province during either the Breeding Bird Atlas (1981-1985) or the ORBBP (1989-1991). Nine Atlas records were of "possible" breeding, while the remaining seven were of "probable" breeding (Cadman et al. 1987). Most (75%) Atlas records were from the Carolinian Forest Region, with the rest from the Southern Great Lakes Forest Region. All birds reported to the ORBBP were from the Carolinian Forest Region. Figure 1 shows the scattered and small breeding distribution in Ontario, according to data from the Atlas and the ORBBP.

The King Rail is a rare migrant in southern Ontario, north to the Bruce Peninsula and Ottawa (James 1991). Non-breeding birds have been recorded at the Nottawasaga River, Simcoe Co. (Devitt 1967); Crane Lake on the Bruce Peninsula (Godfrey 1986); Ottawa (Baillie 1940); Luther Marsh, Wellington Co. (Brewer 1977); and Toronto (Fleming 1906; Speirs 1938 in Speirs 1985). The species is also an occasional, rare winter straggler in the south. Winter records include Point Pelee, the Cataraqui marshes in Kingston (Quilliam 1973), Middlesex Co. (Saunders and Dale 1933), and Point Abino, Niagara R.M. (Beardslee and Mitchell 1965).

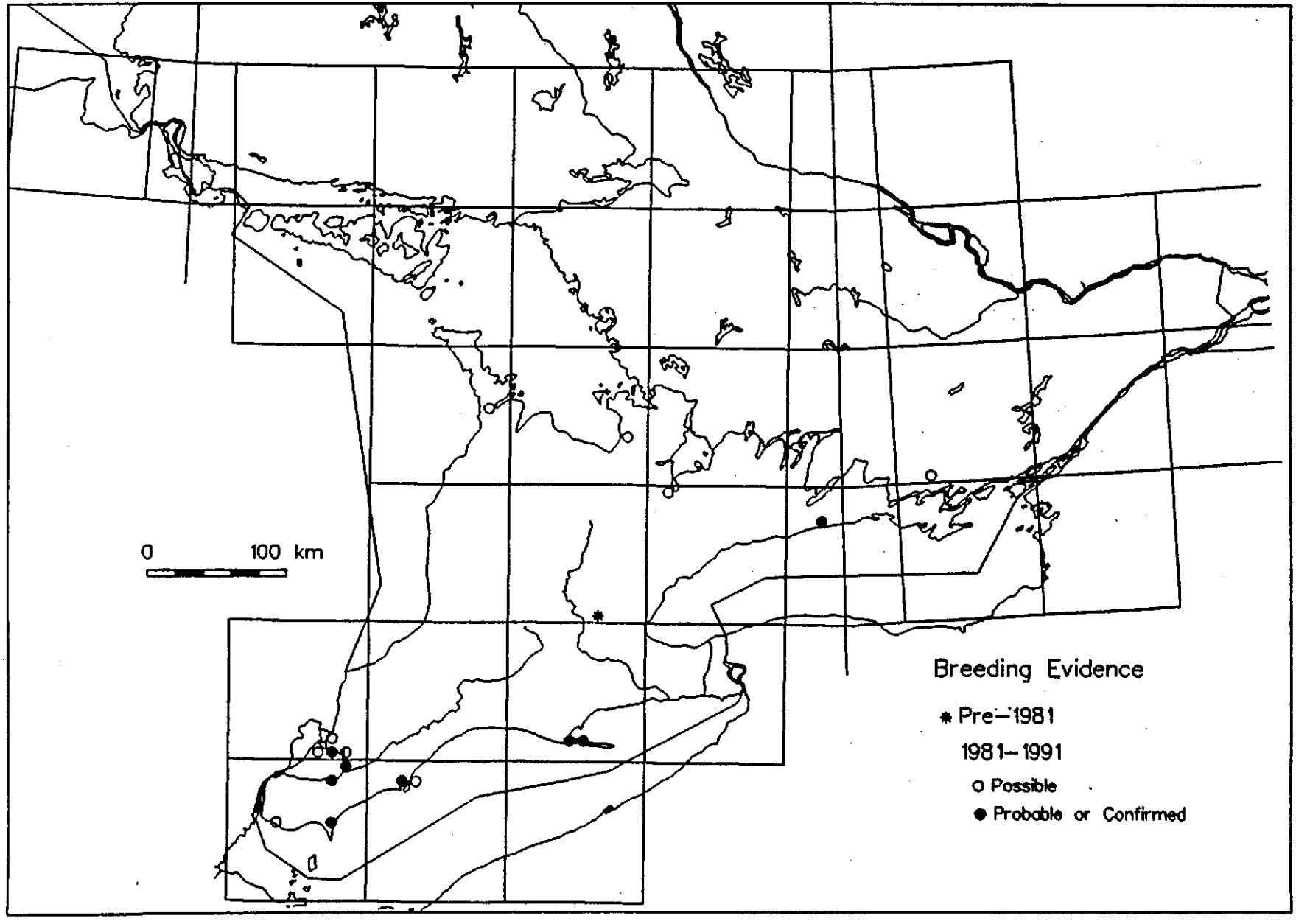

Figure 1. Symbols denote 10-km squares (within 100-km blocks) in which the King Rail was reported to the Breeding Bird Atlas and the Ontario Rare Breeding Bird Program in Ontario.

The species is casual or accidental in Manitoba (Long Lake, 26 October 1921), Quebec (Sabrevois, October 1899; Contrecoeur, 3-4 June 1972; Ile-Verte, 29 May 1973), New Brunswick (Point Lepreau, 21 September 1952), Prince Edward Island (Mount Stewart, 21 December 1957), and Newfoundland (near St. John's, 20 October 1935) (Godfrey 1986).

C. POPULATION SIZE AND TREND

Globally, the King Rail is considered to be widespread, abundant, and apparently secure, with many occurrences, but is of long-term concern (Nature Conservancy). It was placed on American Bird's Blue List from 1976 through 1982, indicating that knowledgeable birdwatchers thought it to be declining in a significant portion of its North American range. While on the Blue List, the King Rail had widespread support from both the Northeast and the Midwest. Loss of freshwater marsh habitat was the major factor cited for the King Rail's decline, but because the species is so shy and elusive, there is little comparative data available, and contributors felt that "a more accurate picture is desirable" (Tate 1981). In 1986 the species was taken off the Blue List and placed on the "Special Concern" list because its populations were "stable or up where reported" (Tate 1986). No further details were given.

The King Rail was not reported on Breeding Bird Survey (BBS) routes in Canada or Ontario from 1967 through 1988. Continental and United States BBS data from 1966 through 1988 indicate that the species underwent a nonsignificant increase in numbers, while Eastern North American BBS data from the same period suggest that populations in the east have declined significantly, at a rate of 3.1% per year. The species was reported on only 56 routes throughout the continent, and 37 routes in the eastern United States, suggesting that the King Rail is rare in roadside habitat throughout North America. However, the BBS is poorly suited to surveying the King Rail, because it is very shy and secretive, and inhabits extensive marshes which are not usually accessible by road. The data may not represent accurately the size of the population, but trends demonstrated by BBS data are likely to be representative of population changes in roadside habitats. Special surveys designed specifically for the species are needed to determine actual numbers of breeding birds.

C.1. United States

State Nature Conservancy Ranks and official status designations (Table 2) indicate that the King Rail is rare and imperiled throughout the northeastern and northcentral United States, and that it has become more so in the past few years. It is listed as endangered in all northeastern Great Lakes states (with

Table 1. Available State Nature Conservancy Ranks and Official Status Designations for the Northeastern and Northcentral United States.*

State	Rank	Designation
Connecticut	S1	Special Concern-proposed
Delaware	S2 (1990); S4 (1993)	
Iowa	S1	
Illinois	S2	Not Listed
Indiana	S1S2 (1990); S1 (1993)	Endangered
Kentucky	S1S2	Endangered
Massachusetts	S1	Threatened
Maryland	S5	Not Listed
Maine	S1 (1990); SN (1993)	Not Listed
Michigan	S3 (1990); S1 (1993)	Endangered
Minnesota	S3	Special Concern
New Hampshire	S3 (1990); SH (1993)	Not Listed
New Jersey	S3	Undetermined
New York	S1	Not Listed
Ohio	S1	Endangered
Pennsylvania	S1	Endangered
Rhode Island	S1	
Virginia	S2	Not Listed
Vermont		Not Listed
Wisconsin	S2	Not Listed
West Virginia	S2 (1990); S1 (1993)	Not Listed

* Ranks as of 1993 (except where specified); designations as of 1990.

S1 = Critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in state (21 to 100 occurrences).

S4 = Widespread, abundant, and apparently secure in state, with many occurrences, but it is of long-term concern.

S5 = Demonstrably widespread, abundant, and secure in the state, and essentially ineradicable under present conditions.

SN = Regularly occurring, usually migratory and typically nonbreeding species for which no significant or effective habitat conservation measures can be taken in the state.

SH = Occurred historically in the state (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 years, and suspected to be still extant.

the exception of New York), and in Indiana and Kentucky. It is threatened in Massachusetts, while in Minnesota it is a species of special concern, and is proposed for this status in Connecticut. The only exceptions are in Delaware where the Nature Conservancy rank was recently changed from S2 (imperiled) to S4 (widespread, abundant, and apparently secure), and in Maryland where the species is ranked S5 (demonstrably widespread, abundant and secure). In Delaware and Maryland, coastal marshes have been found to retain healthy populations. The largest populations occur in association with major wintering areas: the Gulf and Atlantic coasts, lower Mississippi Valley, and Florida (Meanley 1969).

State breeding bird atlas results (Table 3) confirm that the King Rail is a rare breeder throughout the northeastern and northcentral United States. Breeding was "confirmed" in 11 of the 16 states listed in Table 3, but was confined to very few blocks in all 11. In only three states (Delaware, Maryland and Rhode Island) was the species reported in greater than 1% of all blocks surveyed, and even in these states the number did not exceed 10%. Although some birds may have been missed due to the species' elusive nature, the atlas results probably accurately represent the status of the species throughout the northeastern and northcentral portions of its range.

The King Rail is officially endangered in all states bordering southern Ontario except for New York (Table 2). In Michigan, historic data indicate that the species was once concentrated in several southeastern counties and around Saginaw Bay (Barrows 1912), but now it is restricted to a few localities in the southern Lower Peninsula (Rabe 1991). In 1986, extensive searches with taped calls found only 26 King Rails at 4 different sites along the Great Lakes shoreline in Michigan (Rabe 1986 in Rabe 1991), indicating that populations in the state have declined to critically low levels (Rabe 1991). Rabe (1991) states that "the potential for local or perhaps even statewide extinction is all too real". The species is described as an uncommon transient and summer resident in Michigan (Kelley 1978; Payne 1983), and has been officially endangered since 1987 (Rabe 1991).

Once a common and widespread breeder in Ohio, the King Rail began declining in the 1930s (a trend which accelerated after 1940), such that it is now one of Ohio's rarest breeding birds (Thompson 1983; Peterjohn and Rice 1991). In the 1930s, the species was reported from 42 counties (Hicks 1935 in Peterjohn and Rice 1991), but during the atlas period (1982-1987), breeding evidence was discovered only in the marshes bordering western Lake Erie and Sandusky Bay in Lucas Co. (a small population of 10-25 breeding pairs), and the Big Island Wildlife area in Marion Co. (one "probable" breeding record). One of the most dramatic declines occurred in the Buckeye Lake area, where numbers dropped from more than 50 pairs nesting annually between 1922 and 1930, to only 2 to 3 pairs by 1959 (Meanley 1969). The King Rail is officially endangered in Ohio.

Table 2. State Breeding Bird Atlas Data Summaries for the Northeastern and Northcentral United States.

State	Years of Survey	# of blocks surveyed	# and % of blocks with breeding records				
			poss.	prob.	conf.	total	(%)
Conn.	1982-86	597	2	1	1	4	0.7
Del.*	1983-87	222	9	7	2	18	8.1
Ill.	1986-90	1011	4	1	3	8	0.8
Ky.**	1985-91	727	1	0	0	1	0.1
Me.	1978-83	706	0	0	0	0	0
Md.	1983-87	1256	28	39	7	74	5.9
Mass.	1974-78	1116	2	6	1	9	0.8
Mich.***	1983-88	1896	4	6	1	11	0.6
N.H.	1981-86	178	0	0	0	0	0
N.Y.+	1980-85	5323	3	2	0	5	0.1
Ohio	1982-87	969	0	4	4	8	0.8
Ohio++	1982-87	764	0	2	2	4	0.5
Penn.	1983-89	4928	2	1	2	5	0.1
R.I.	1982-88	165	1	0	1	2	1.2
Vt.	1976-81	179	0	0	0	0	0
W. Va.	1984-89	502	0	0	3	3	0.6

* = under-reported
** = nested in state recently but not during atlas
*** = based on townships
\+ = historical
++ = priority blocks

Historically, the King Rail has been a rare and local breeding species in New York, being most abundant in large marshes of the central and western portions of the state (Eaton 1910; Bull 1974; Carroll 1988). Only five records, none "confirmed", were reported to New York's Breeding Bird Atlas (1980-1985) (Carroll 1988).

C.2. Canada

The King Rail is currently listed as "Vulnerable" in Canada by the Committee on the Status of Endangered Wildlife in Canada, and as "Rare" in Ontario by the Ministry of Natural Resources. The Nature Conservancy considers the species to be imperiled in Canada and Ontario because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation throughout Canada and Ontario.

In Canada, King Rails breed only in scattered localities in extreme southern Ontario (Peck and James 1983; Godfrey 1986). The only areas in the province which likely have regular breeding populations are the large marshes in Lakes St. Clair and Erie (Baillie and Harrington 1936; Peck and James 1983). Although at one time considered to be a common breeder in some of the marshes on Lakes St. Clair and Erie (Morden and Saunders 1882; McIlwraith 1886), as well as marshes in Prince Edward Co. on eastern Lake Ontario (Snyder et al. 1941), the species is now a rare summer resident in the south along Lakes Erie and St. Clair, and does not appear to breed any longer in Prince Edward Co. (McCracken and Sutherland 1987; Weir 1989; James 1991).

In the late 1800s, the King Rail was a common breeder in the marshes on the St. Clair Flats and along the St. Clair River (Morden and Saunders 1882; McIlwraith 1886; Macoun and Macoun 1909; MacClement 1915). Nash (1908) claimed that the species was regular and common in the marshes on the western end of Lake Erie in summer, but Baillie and Harrington (1936) stated that the St. Clair Flats was the only location in the province where the species was common. Taverner and Swales (1907) believed that the King Rail may have been a common breeder at Point Pelee during the late 1800s and early 1900s, based on numerous observations made by hunters of "big Virginia Rails", and the fact that King Rails were common breeders at the Lake St. Clair marshes. However, confirmed breeding has not been reported at Point Pelee, and in the 1970s the species was described as a rare and irregular summer resident there (Stirrett 1973). The species was not found at Point Pelee during the Breeding Bird Atlas (1981-1985), and there are no recent summer records from there (A. Wormington, pers. comm. 1993). However, the marsh at Point Pelee is very large and not properly surveyed by anyone, and Alan Wormington (pers. comm. 1993) states that undoubtedly the odd pair breeds there on occasion.

During Ontario's Breeding Bird Atlas, "probable" breeding evidence was reported from Tremblay Beach Conservation Area just north of Point Pelee, and one "possible" record was reported from Holiday Beach Conservation Area, west of Point Pelee. No birds were reported from either of these sites during the ORBBP's field seasons (1989-1991). At Hillman Marsh, just north of Point Pelee National Park, the King Rail is recorded during most springs, and it is an erratic summer resident there, with two to three pairs occasionally staying throughout the summer (A. Wormington, pers. comm. 1993). In 1992, however, Alan Wormington reported that at least seven birds summered at Hillman Marsh (Henshaw and Kerr 1992). In the years prior to 1992, Hillman Marsh was greatly modified by Ducks Unlimited, which may account for the large number of King Rails reported there in 1992 (M. Cadman, pers. comm. 1993). This suggests that the King Rail could be helped with management practices. However, Alan Wormington (pers. comm. 1993) believes that the population trend at Hillman Marsh has not changed significantly over the years, and that it is probably dependent on water levels.

There is only one documented historical breeding report from Pelee Island (Jones in Baillie 1940), and Baillie (1940) felt that it was inconclusive.

In 1894, a nest with eggs was found at a swamp which has since been drained at Point Abino in Canada's Niagara Frontier region (Sheppard 1970; Speirs 1985). The species was not seen again in this area until January 1945, and only one other breeding record (from the Welland River) is known for the region (Beardslee and Mitchell 1965; Sheppard 1970). No breeding evidence for Niagara R.M. was reported during either the Breeding Bird Atlas or the ORBBP.

The first King Rail to be reported from eastern Ontario was one taken at the Cataraqui marshes, Frontenac Co., in December 1899 (Young 1900 in Quilliam 1973), and in early spring 1917 one was collected from the Prince Edward Co. Marshes (Snyder et al. 1941). Snyder et al. (1941) reported that the Prince Edward Co. marshes harboured the largest population of King Rails they had ever encountered in the province, but this was based solely on auditory evidence. Between 1956 and 1984, there were seven breeding season records (from May, June, July or August) of individual birds seen in Prince Edward and Frontenac Cos., but the species has not been reported breeding there since (Sprague and Weir 1984). Field work conducted for the Breeding Bird Atlas and the ORBBP did not detect any King Rails in eastern Ontario. The species' status has been changed from an uncommon regular summer resident to a very rare and irregular spring and summer visitor throughout the Kingston region, including Prince Edward Co. (Sprague and Weir 1984; Weir 1989).

The King Rail is an occasional summer resident at Presqu'ile Provincial Park, Northumberland Co., west of the Kingston area (S. LaForest, pers. comm. 1992). A group of five birds, thought to be a family group, was observed there on August 20, 1959. The species was not reported at Presqu'ile again until May 3, 1982, when Fred Helleiner and Doug McRae heard birds which they "strongly suspected were King Rails." Several birds were heard in the marsh on August 17, 1986, and in August 1987, a young bird was seen at the same location. Because of this sighting, the species is assumed to be breeding at the park (S. LaForest, pers. comm. 1992). Between 1986 and 1989, a few singing males were reported from Presqu'ile, but no more confirmed breeding records were discovered. There are inaccessible areas in the Presqu'ile marshes where the species could be breeding, and the species may even be regular in the park, but no specific surveys for the King Rail have ever been conducted (Steve LaForest, pers. comm. 1992).

From 1940 to the present, the species has bred regularly or somewhat regularly at only three places, possibly four or five places, in the province, and at only one place (Walpole Island Indian Reserve) is the current population likely to be more than two or three pairs at best. At the other locations (Hillman Marsh

near Point Pelee, Long Point, and possibly Rondeau and Presqu'ile Provincial Parks), populations fluctuate randomly and in some years there may be no breeding pairs. There is little numerical data on the St. Clair populations to determine either historical or current breeding densities. One bird was observed by J. Haggeman at the St. Clair National Wildlife Area on June 23, 1980 (Gow 1980). It is unlikely that any detailed bird surveys of this area have been conducted since 1984, but the species may be present there in very low numbers (J. Haggeman, pers. comm. 1992). King Rails have been observed at the nearby St. Lukes Hunt Club marsh, and it is possible that they are present in other adjacent marshes (J. Haggeman, pers. comm. 1992). During the Breeding Bird Atlas, "possible" breeding was recorded in three squares, and "probable" breeding was recorded in two squares in the Lake St. Clair marshes (Cadman et al. 1987). Two to 10 pairs were estimated in one square containing part of the Walpole Island marsh. In 1986 and 1987, several families of King Rails were seen on Walpole Island, but Y.R. Tymstra and S.A. Connop (in Weir 1986) reported an unusually low number on Squirrel Island in 1986 (Weir 1986, 1987; ORBBP files). During the ORBBP field seasons, five singing males were reported at the south Walpole Island Marsh on June 8, 1989. In 1991, two males were heard calling in different areas of the Walpole Island marsh during a survey of colonial marshbirds (ORBBP files), but these were just casual records, as the survey was not attempting to find King Rails. In 1993, a total of four King Rails (one observed and three heard) were recorded at two nearby stations on Walpole Island during the Wetland Bird Monitoring Program (A. Bernier, pers. comm. 1993). P.A. Woodliffe (pers. comm. 1992) states that the species is heard throughout the Walpole Island marshes on a regular basis each year, and speculates that "several dozen" pairs breed annually there. He also states that King Rails are reported annually from the rest of the St. Clair marshes, but can't estimate how many pairs there may be. Scott Connop (pers. comm. 1993) stated that the King Rail has definitely declined in some traditional Walpole Island breeding areas in recent years, probably because of increased dredging and building of roads in the dike marshes (especially the south marshes). He estimated that during the Breeding Bird Atlas, perhaps 100 pairs bred throughout the Walpole marshes, but in the last couple of years, he has only been able to locate a few pairs annually, and he believes that no more that 30 to 50 pairs presently breed at Walpole. This indicates a significant decline in King Rail numbers at Walpole Island over the last 10 years. Although it is likely that some birds are overlooked in these extensive marshes, the King Rail is unlikely to be a common breeding species in the Walpole marshes any longer. It is almost certainly less abundant now than in presettlement due to draining of upper sections of the Walpole Island marshes, building roads, and other habitat alterations. Still, the Walpole Island marshes remain the primary King Rail breeding location, and the only area of continuing significant population size, in Ontario.

There is only one "confirmed" breeding report (1978) from Rondeau Provincial Park, but P.A. Woodliffe (pers. comm. 1992) states that the species is recorded there in mid to late spring each year. As nests are difficult to find, and much of the marsh is inaccessible, it is possible that the King Rail does breed there fairly regularly. No King Rails were recorded at Rondeau during the 1993 Wetland Bird Monitoring Program.

In 1907, the species was first sighted in Haldimand-Norfolk R.M. (at Long Point) (McCracken et al. 1981), and in 1921, young were seen by C.K. Rogers at Port Rowan, indicating that the species bred there that year (Baillie and Harrington 1936). The species may nest sporadically at Turkey Point and in the Grand River Marshes, but Long Point is the only area in Haldimand-Norfolk R.M. where the species has been known to nest with any regularity (McCracken 1987). The first nest was not discovered at Long Point until 1968 (McCracken et al. 1981), and between 1967 and 1976, five breeding records, including two nests, were reported from there. During the Atlas, two "probable" breeding records, one from near Courtright Ridge and the other from the marshes at the base of the Long Point tip, were reported (Cadman et al. 1987; McCracken 1987). "Probable" breeding was again noted at Long Point in 1986 (Weir 1986; McCracken 1987), and in 1991, one bird was reported from each of two areas at Long Point (ORBBP files). During the 1993 Wetland Bird Monitoring Program, one male was heard calling in Turkey Point Marsh on April 23 (D. Agro); Long Point Crown Marsh on July 5 (D. Sutherland); and Big Creek Marsh on July 12 (D. Sutherland) (J. McCracken, pers. comm. 1993). An average of two pairs per year are estimated to breed at Long Point, but this number fluctuates from about zero to five, depending largely on water levels (J. McCracken, pers. comm. 1992). The King Rail is considered rare and irregular at Long Point (McCracken et al. 1981).

The King Rail was initially recorded in the Oshawa area in April 1923, but the first breeding record was not until 1962, at the Cranberry Marsh in Whitby (Tozer and Richards 1974). A King Rail summered at Cranberry Marsh again in 1963, but no breeding evidence was recorded. Two young were seen in the marsh in 1970, and in 1971, a nest with eggs (and later, fledged young) was reported (Tozer and Richards 1974). The species may have bred at the Oshawa Second Marsh outlet in 1963, but there have been no further reports from there (Tozer and Richards 1974). In the mid-1970s, Tozer and Richards (1974) thought that the King Rail may have been nesting regularly in the larger marshes in the region, especially at Cranberry Marsh, and classed it as a very rare summer resident in the area. However, there have been no records of the species in the Oshawa area since 1974 (R. Tozer and M. Bain, pers. comm. 1993). In 1986, a bird was apparently heard in Cranberry Marsh in late June, and was reported to American Birds (Weir 1986), but this record was later discounted (M. Bain, pers. comm. 1993).

Scattered breeding season records also exist for Coldstream, Middlesex Co. (Saunders and Dale 1933); Elgin Co. (Brooman 1954); Black Creek Swamp, Oxford Co. (Weir 1989b and 1990); the Burlington Golf Course, Hamilton-Wentworth R.M. (Baillie 1940); a marsh which is no longer present in Flamborough, Hamilton-Wentworth R.M. (R. Dobos pers. comm. 1991); the Rankin Wildfowl Management Area, Bruce Co. (Cadman et al. 1987); Crane Lake, Bruce Co. (Baker 1932 in Speirs 1985); Shallow Lake, Grey Co. (a confirmed record) (Weir 1987); Tiny Marsh Provincial Park and Holland Marsh, Simcoe Co. (Cadman et al. 1987); Humber River Marshes, Toronto (Baillie 1940); Carr's Marsh, Durham Co. (Cadman et al. 1987); and Terra Cotta, Halton Co. (Godfrey 1986). In 1991, one male was observed and heard throughout the summer in a small (less than 20 acres) swamp approximately 15 kilometres west of London, Middlesex Co., but no female or any other evidence of breeding was observed (Pete Read, pers. comm. 1993). The swamp was once referred to as "King Rail Swamp" because of historical records from the area (perhaps one or two pairs present per year), but it had not been checked for 10 to 15 years prior to 1991. The area was surveyed again in 1992, but no King Rails were found.

Based on Atlas results, 20 to 52 pairs were estimated to be breeding annually in the province, but Cosens (1985) estimated that wetlands in the province could maintain at least 306 pairs. The latter number assumed a constant breeding density throughout the province. Because of the species' secretive nature, the number of breeding pairs may have been somewhat higher than the Atlas estimate, but was undoubtedly far below 306. Only 12 nests have been reported to the Ontario Nest Records Scheme (Peck and James 1983). Table 3 shows current breeding status in the province, and indicates that only 35 to 47 pairs are believed to be breeding in Ontario.

Table 3. Estimates of current breeding locations and densities of the King Rail in Canada.

Location	Number of pairs	Source
Walpole Island	20-30	S.A. Connop
Hillman Marsh	2-3	A. Wormington
Long Point	2	J.D. McCracken
Rondeau P.P.	<10 ?	A. Woodliffe
Presqu'ile P.P.	1-2	S. LaForest
Total	35-47	

D. HABITAT

D.1. Habitat preference

The King Rail appears to prefer lake sedge and cattail marshes throughout the Great Lakes region (Meanley 1969). In Ontario, the species nests exclusively in freshwater marshes in the extreme south, preferring large expanses of shallow-water marshes that merge with scrubby swales (McCracken and Sutherland 1987).

There appears to be a correlation between wild (particularly southern) rice and King Rail distribution in the eastern United States, and it is possible that this may also be the case in Ontario (Cosens 1985). Wild rice is found at all established breeding locations in southern Ontario, and it used to be abundant at Point Pelee (a historical breeding location) but has now largely been replaced by cattail and perennial reeds (Cosens 1985).

D.2. Trend in quality and quantity of critical habitat

Wetlands throughout the King Rail's breeding range have become depleted and fragmented, and habitat quality has deteriorated (Carroll 1988; Peterjohn and Rice 1991; Rabe 1991). It is estimated that over one million ha (or 70%) of pre-settlement wetland area in southern Ontario had been drained by 1970 (Snell 1982). The greatest losses have occurred in southwestern Ontario, where over 90% of the original wetlands have been converted to other uses (Snell 1987). Areas in the Niagara Peninsula, along western Lake Ontario, and in eastern Ontario (including the Kawartha Lakes marshland) have less than 20% of the original wetland area (Environment Canada 1983; Snell 1987). Reid et al. (1980 in Cosens 1985) stated that in southern Ontario, agricultural, urban and recreational development has reduced wetlands from 2.25 million ha (5.7 million acres) to 273,000 ha (683,000 acres), and that urban development resulted in a loss of 1400 ha (3500 acres) between 1966 and 1971.

In all areas supporting breeding King Rails, wetlands have decreased a minimum of 52% (in Prince Edward Co.) to a maximum of 95% (in Essex Co.) (Snell 1982). The largest expanse of wetland used by King Rails is in Lambton Co., but here wetlands cover only 10% of the total land area in the county compared to a former 50%. The Lake St. Clair marshes (including Walpole Island and Tremblay) in Lambton Co. declined from 17,303 ha in 1915 to 6,684 ha in the mid-1970s (Rutherford 1979 in Environment Canada 1983). However, since much drainage activity occurred in the late 1800s, the total area lost at the St. Clair Marshes is probably an underestimate. It is thought that only 10% of the original presettlement marshes exist today (Rutherford 1979 in Environment Canada 1983). Between 1965 and 1978, a total of 882 ha of privately owned wetlands on

Lake St. Clair, from the Thames River to Walpole Island, were converted to alternate uses, representing 25% of the area present in 1965. Drainage for agriculture accounted for 91% of the loss and recreational marina/cottage development accounted for the remainder. On Walpole Island Indian Reserve, 508 ha of wetland were drained for agriculture from 1963-1978; this represents a 4.5% loss from the 11,368 ha present in 1963 (McCullough 1981). The St. Clair marshes experienced a 79% decline in spring use between 1968 and 1982 by true marsh-dwelling species of birds (Dennis and North 1984).

The area of Point Pelee marsh (including National Park lands and Hillman Marsh) declined by 71% (3,878 ha to 1,126 ha) between 1880 and the mid-1970s, and there have been no major reclamation projects within the park's boundaries since 1918. In the late 1800s, 50% of Pelee Island was drained for agricultural purposes (Rutherford 1979 in Environment Canada 1983).

The rate at which wetlands have been lost on both breeding and wintering grounds has been rapid in the United States and Ontario (Cosens 1985). Loss of wetlands inland and along the North Atlantic coast have been locally severe, and can be expected to continue (Bateman 1977). Thus, further declines in breeding King Rail numbers in Ontario and other inland areas can be expected, but recent Wetland Policy in Ontario should help ameliorate the loss of Class I, II, and III wetlands where most King Rails occur.

Another possible factor affecting King Rail declines is habitat quality, which has deteriorated in part due to agricultural and industrial activities (Cosens 1985). In particular, the King Rail on both the breeding and wintering grounds may be adversely affected by pesticides and other toxic chemicals (Ripley 1977 in Rabe 1991; Cosens 1985). In some areas of the United States, population declines coincided with extensive use of pesticides in agricultural areas during the 1950s (Cosens 1985). King Rails often probe in mud for food (primarily invertebrates), so they are vulnerable to environmental contamination from both the sediments and food items (Meanley 1969). Long term effects of toxic chemicals on King Rails and their prey is unknown, and further studies are needed (Cosens 1985).

E. STATUS EVALUATION

The King Rail's breeding range extends throughout much of eastern North America, from the Great Plains east to the Atlantic coast, and from the Gulf of Mexico north to southern Ontario (McCracken and Sutherland 1987). It is most common in freshwater and brackish coastal marshes from the Delaware Valley south to Florida, and west through the Gulf Coast marshes and the rice belts of Louisiana, Arkansas and Texas (Meanley 1969). In Ontario, the species breeds in localized wetlands primarily along the shores of

Lakes St. Clair and Erie, but also as far east as Presqu'ile Provincial Park, and formerly Oshawa and Prince Edward Co. marshes on Lake Ontario. The majority of Ontario's breeding birds are found in the Lake St. Clair marshes, with a few remaining scattered birds possible at Hillman marsh near Point Pelee, Long Point, and Rondeau and Presqu'ile Provincial Parks.

The Global Nature Conservancy Rank indicates that the species is "apparently secure" throughout its range. However, available data do not support this. Populations have declined alarmingly in many parts of its range over the past several decades (Ripley 1977 in Eddleman et al. 1988; Peterjohn and Rice 1991; Rabe 1991), and Eddleman et al. (1988) feel that threatened status is warranted throughout its range, with the exception of Louisiana and Florida. The species was Blue Listed from 1976 through 1982, and BBS data indicate that in eastern North America, the species underwent a significant decrease in numbers, at a rate of 3.1% per year, between 1966 and 1988.

The only two interior continental areas which have been known to support high densities of King Rails are the Lake Erie marshes in Ohio, and the St. Clair Flats opposite Detroit, Michigan (Meanley 1969). The latter presumably includes Ontario's Lake St. Clair marshes, indicating their importance to the species. Drastic reductions in numbers have been noted in both the Lake Erie and the Lake St. Clair marshes, such that the species is now officially endangered in Ohio and Michigan. It also has endangered status in Kentucky, Indiana, and all other Great Lakes states bordering southern Ontario with the exception of New York, where the species has always been rare (Carroll 1988) but is not currently designated as Rare, Threatened, or Endangered.

Habitat destruction is cited as the primary cause of the overall decline in King Rail numbers throughout its range (Arbib 1975, 1977, 1979; McCracken and Sutherland 1987; Carroll 1988; Eddleman et al. 1988; Rabe 1991; Peterjohn and Rice 1991), and is the greatest continental threat to all rail populations (Eddleman et al. 1988). The greatest wetland losses in Ontario have occurred in southwestern Ontario, which contains the largest amount of suitable King Rail breeding habitat amd virtually the entire breeding population in the province. Human activities such as draining, filling and dredging continue to threaten remaining wetlands (Rabe 1991). Another significant limiting factor is deterioration in the quality of available habitat, largely as a result of agricultural and industrial practices (Cosens 1985; Ripley 1977 in Rabe 1991). King Rails may be susceptible to pesticides and other toxic chemicals, but no specific studies have been conducted. Hunting does not seem to be a limiting factor. Although at one time the species was hunted in large numbers (Bent 1926), rails in general are not popular game birds at present, and King Rails make up a very small percentage of the total rail harvest. Mink and muskrat trapping does appear to be a major source of mortality on King Rail wintering grounds (Cosens 1985).

The King Rail is a difficult species to census. Its habitat is largely inaccessible, it is very secretive during the breeding season, and its nests are extremely difficult to find. The best way to survey for the species is by using tape-recorded calls (Cosens 1985). Consequently, population densities and trends are not well known for much of its range, including Ontario, where no recent specific surveys using tape-recorded calls have been conducted. However, an intensive survey of this type was conducted along the Great Lakes shoreline in Michigan in 1986, and showed drastic declines in King Rail numbers (Rabe 1986 in Rabe 1991). It is likely that throughout its' breeding range in Ontario, similar declines in population numbers have occurred. There are indications that the species was formerly much more common in some areas of its range in Ontario (the Lake St. Clair marshes, and possibly Point Pelee and the Prince Edward Co. marshes).

The King Rail is imperiled throughout much of its range, and its' habitat is susceptible to further loss and deterioration in quality. The estimated population size in the province (40-51 pairs) is very small, and is much lower than the minimum estimated number of pairs (306) that remaining wetlands in the province can support. Furthermore, the species' very restricted Ontario range includes a significant inland continental breeding area (the St. Clair Flats). For these reasons, it is recommended that the King Rail be designated as "Endangered" in Canada.

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