COSEWIC
Assessment and Status Report

on the

Yellow Rail
Coturnicops noveboracensis

in Canada

SPECIAL CONCERN
2009

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada

COSEPAC
Comité sur la situation
des espèces en péril
au Canada

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COSEWIC
Assessment Summary

Assessment Summary – November 2009

Common name
Yellow Rail

Scientific name
Coturnicops noveboracensis

Status
Special Concern

Reason for designation
Relatively little is known about this small, secretive rail. It is primarily restricted to shallow, dense, grassy marshes and wet meadows. Most of its breeding range (about 90%) is in Canada. It is relatively uncommon in most areas; populations are most widespread and common in coastal areas of Hudson and James Bay in northern Manitoba, Ontario and Quebec. It winters in shallow marshes that occur in a narrow band extending from Texas to the Carolinas. The species is close to meeting some criteria for Threatened status because of its relatively small population size, compressed wintering range, ongoing threats to breeding and wintering wetland habitats, and evidence for local declines in several parts of its breeding range.

Occurrence
Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick

Status history
Designated Special Concern in April 1999. Status re-examined and confirmed in November 2001 and in November 2009.

COSEWIC
Executive Summary

Yellow Rail
Coturnicops noveboracensis

Species information

The Yellow Rail (*Coturnicops noveboracensis*) is a small, quail-like, yellowish brown rail most easily distinguished from other rails by its buff and black striped back and white wing patches. It is highly secretive, and most often detected by its call, a patterned *tic-tic*, *tic-tic-tic* that is repeated at night for many minutes at a time.

Distribution

Yellow Rails breed in the Hudson and James Bay lowlands from Churchill, Manitoba to northwestern Quebec, and from the eastern edge of British Columbia and southern Northwest Territories through Alberta, southern Saskatchewan, southern Manitoba, southern Ontario, southern Quebec and perhaps New Brunswick and Nova Scotia. They also breed in the northern edge of most of the border states south of Canada, with a disjunct population in southern Oregon. About 90% of the breeding range occurs in Canada. They winter in a narrow band along the coast from the Carolinas to southern Texas.

Habitat

Yellow Rails nest in wet marshy areas of short, grass-like vegetation, usually sedge (especially *Carex* spp.), that have an overlying dry mat of dead vegetation that they use to roof their nests. On migration and in winter, they use a broader range of habitats, including coastal marshes, rice fields, and wet hay fields.

Biology

The Yellow Rail is one of the most secretive and least understood North American birds. Males are apparently territorial, yet often have overlapping home ranges and may sometimes be colonial. Females lay clutches of about eight eggs. Young are partially dependent on the adults for food until about 11 days of age, and are fully independent at 35 days. Age at first breeding is 1 year for other rail species but unknown for Yellow Rails. Survival beyond hatching is also unknown; adult return rates are believed to be less than 11%, but, as is typical of rails, this low figure may reflect high dispersal rates, rather than high mortality.

Yellow Rails feed mainly on beetles and other small arthropods, as well as seeds of the grass-like vegetation that dominates their habitat. After breeding, they appear to travel to particular areas to moult, a 2-week period during which they are flightless. Migrants travel at night in small flocks, and may stage in particular areas along the way. The main predators of Yellow Rails are raptors, although they are subject to a broad range of mammalian and avian predators.

Population sizes and trends

Yellow Rails are not well sampled by standardized bird surveys such as the Breeding Bird Survey, Christmas Bird Count, or Marsh Monitoring Program. Currently, only breeding bird atlas programs and surveys specifically targeting the species offer reliable information on occurrence, population size and trends. Based on the amount of available habitat in some regions, the known number of sites in others, and the typical number of birds detected at any given site, the previous status report estimated that about 10,000 individuals nest in Canada. This estimate remains unchanged by what few data have been gathered since then. Nonetheless, anecdotal reports of local declines, together with evidence of declines from atlas data, local reports, and localized habitat loss along Hudson and James Bay, suggest the population may have declined in the past decade, albeit probably by less than 30%.

Limiting factors and threats

Habitat loss and degradation are believed to be the chief threats to this species. Threats vary regionally, and include co-opting of habitat for agriculture and development, grazing by livestock, increased levels of localized grazing by Snow Geese along Hudson and James Bay, invasive plants, hydrological changes because of climate change and drainage, and water pollution. Mortality from agricultural operations (e.g., hay and rice cropping) and collisions with tall structures such as telecommunication towers occur frequently enough to be considered as threats. The Yellow Rail winters in a narrow belt of wetlands habitat in the southeastern U.S.; this habitat is under development pressure; the wintering population is also exposed to relatively frequent catastrophic weather events (e.g., hurricanes) that occur in this region.

Special significance of the species

The Yellow Rail is particularly valued by birders because of its rarity and secretive habits. It is also one of several species that serve as indicators of the health of fens and wet prairies, which are often overlooked by conservation schemes that focus on more "typical" wetlands.

Existing protection

Yellow Rails are protected under the Canadian *Migratory Birds Convention Act, 1994* and the United States' *Migratory Bird Treaty Act, 1918*. In November 2001, COSEWIC assessed this species as Special Concern. They are currently federally listed in Canada as Special Concern under Schedule 1 of the *Species At Risk Act*, a listing which offers no additional protection, but does require drafting of a management plan for the species. They are also provincially listed as Special Concern in Ontario and listed as Threatened in Quebec. In the US, they are listed as a Migratory Nongame Bird of Special Concern.

COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

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

COSEWIC MEMBERSHIP

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

DEFINITIONS (2009)

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

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.

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SPECIES INFORMATION

Name and classification

The Yellow Rail (Râle jaune, *Coturnicops noveboracensis*) is a member of the rail family, or Rallidae, a family of small chicken-like wetland birds classified in the Order Gruiformes. The genus *Coturnicops* is characterized by relatively short bills and stockier bodies than other rails – thus the genus name "quail-like." Yellow Rails breeding in North America are considered one subspecies (*C. n. noveboracensis*; Clements 2008), although subspecies status for disjunct breeding populations in Oregon and northern California is under investigation (see **Genetic description**, below). A second subspecies (*C. n. goldmani*) bred in Mexico but is likely extinct (Howell and Webb 1995). Swinhoe's Rail (*C. exquisitus*), of Asia, has been considered to be a third subspecies (Ripley 1977), but is almost certainly a separate species (Bookhout 1995; Taylor 1999; Clements 2008).

Morphological description

At about 18 cm and 60 g, the Yellow Rail is small (about the size of a Red-winged Blackbird, *Agelaius phoeniceus*) and shaped much like a domestic fowl chick. Adult plumage is yellowish brown underneath, with alternating buff and black stripes, narrowly and sparsely barred by white, on the back. The belly has a pattern that is similar to the pattern on the back but is less distinct, and the head has a brown crown and a smudgy brown mask through the eye. The bill is yellow in males during the breeding season and olive-grey otherwise. Juveniles are similar to adults but darker, with speckles on the neck, head, and upper back and sides. The striped back, along with white wing patches seen when the bird flushes, distinguish the Yellow Rail from the much more common Sora (*Porzana carolina*), whose immature plumage is superficially similar. Yellow Rails are rarely seen without special effort; they are mostly detected by their call, a repeated pattern of two, then three clicks – *tic-tic*, *tic-tic-tic*.

Genetic description

Studies of genetic differentiation between isolated populations in California and Oregon versus birds in the rest of the range are underway, but no results are available yet (S. Haig pers. comm. 2008). There are no comparative genetic studies available to distinguish population units in Canada.

Designatable units

Studies of genetic differentiation might support recognition of two geographically and genetically distinct populations in the United States, but as far as is known, only one designatable unit occurs in Canada.

DISTRIBUTION

Global range

Yellow Rails breed from eastern British Columbia and southern Northwest Territories east to the Gaspé Peninsula and Magdalen Islands, Quebec, and south to northwest Montana, throughout North Dakota, and through northern Minnesota, Wisconsin, Michigan, Maine, and perhaps New Brunswick and Nova Scotia. About 90% of this range is in Canada (Figure 1). They are sparsely and unevenly distributed through most of this range; in particular they have scarcely been reported at all from northern Saskatchewan, northern Manitoba, and most of northern Ontario south of the Hudson Bay Lowlands. Isolated populations breed in southwestern Oregon and northern California (Stern *et al.* 1993). Individuals from these latter populations might comprise the wintering birds occasionally seen in coastal California (R. Russell, cited in WCA 2006). Otherwise, the main wintering range is along the Gulf Coast from Texas through most of Florida, then north along the Atlantic coast to North Carolina. The size of the known wintering range is no more than 7% the size of the breeding range (Alvo and Robert 1999). Migrants have been found throughout the area between the breeding and wintering grounds (Bookhout 1995).

Canadian range

The Canadian range is poorly known, because Yellow Rails inhabit relatively inaccessible habitat and call mainly at night. Broadly, in terms of terrestrial ecozones, it roughly corresponds to the distribution of the Boreal Plains, Prairies, coastal edge of the Hudson Plains, and scattered locations in the Mixedwood Plains ecozones. Specifically, it extends from extreme eastern British Columbia (Campbell *et al.* 1990; Sherrington 1994) and southern Northwest Territories south through Alberta, east through central and southern Saskatchewan and Manitoba and along the coast of southern Hudson Bay and James Bay, through central Ontario and along the St. Lawrence River to the Gaspé Peninsula, Quebec, with some sites in southern New Brunswick and a few reports from Nova Scotia (Bookhout 1995; Alvo and Robert 1999; Figure 1).

This range description is somewhat beyond that described in the previous status report (Alvo and Robert 1999) based on several new findings. In the Northwest Territories, recent records have extended the known summer range west and north of the Yellow Rail's previously known limit of Great Slave Lake, to as far as Nahanni National Park and the north and west shores of Great Slave Lake (D. Mulders pers. comm. 2008; NWT 2008). Similarly, in British Columbia, continuing summer sightings in the Peace River region near Dawson Creek and in the Kootenay region in southeastern British Columbia suggest it breeds fairly regularly in both areas (Setterington 1997; British Columbia Breeding Bird Atlas 2008; S. Kinsey pers. comm. 2008), where its status as a regular breeder was formerly uncertain (Alvo and Robert 1999).

In Alberta, the species was formerly thought to occur mainly in the centre and east of the province (Alvo and Robert 1999). A systematic search, however, found it to be more widespread, with most detections in fact in the far northwest near Hay-Zama Lake (Prescott *et al.* 2003). Northeastern Alberta was not included in this survey, but has since been searched as part of environmental site surveys related to energy developments; calling males were found at four out of 13 sites with suitable habitat (Goldrup 2008). Thus, this part of the province may be much more important for Yellow Rails than previously suspected. The known distribution in Saskatchewan and central and southern Manitoba has not changed since the previous status report (i.e., scattered locations south of the Boreal Shield, with most locations concentrated in the Boreal Plains and Aspen Parkland portion of the Prairie ecozone; R. Bazin and J. Keith pers. comm. 2008).

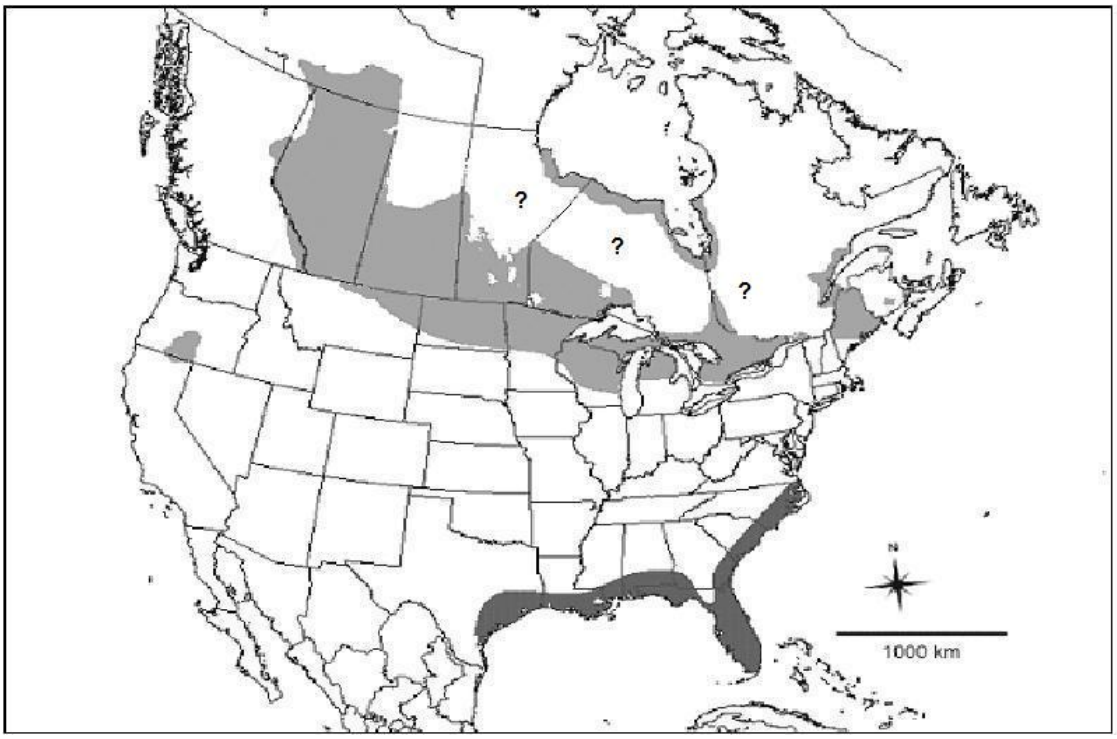

Figure 1. Approximate breeding (light grey) and wintering (dark grey) range of Yellow Rails in North America; question marks (**?**) indicate zones of uncertain breeding status in boreal regions south of the Hudson Bay Lowlands (modified from NatureServe 2008 to reflect Lundsten and Popper 2002; CWS 2004; and NWT 2008).

An important part of the species' breeding range is the coastal lowland of James Bay and, perhaps less so, neighbouring areas along the coast of Hudson Bay north to Churchill, Manitoba (Jehl 2004; Robert *et al.* 2004; Tozer 2007). Offshore in James Bay, the Yellow Rail is believed to nest on Akimiski Island, Nunavut. Because the species is difficult to survey and detect, low population densities probably occur in scattered boreal fens south of the Hudson Bay Lowlands (see Figure 1).

Farther south in Ontario the species has been found in widely scattered wetlands. Detections at most of these sites have been irregular, but include pockets of confirmed breeding sites in the Rainy River region, around Georgian Bay, and along the Trent Severn Waterway (Tozer 2007). In southern Quebec, as noted in the previous status report, the species has been found in summer at scattered sites through the interior and at one site on the Saguenay River. It is mainly known, however, from several sites along the St. Lawrence River, with confirmed breeding at Île aux Grues and Coin-du-Banc (Alvo and Robert 1999).

In the Maritimes, the only confirmed breeding was in 1881 near Milltown, New Brunswick (Erskine 1992). Yellow Rails occur regularly in summer only at Grand Lake Meadows in central New Brunswick; birds have also been found sporadically in marshes near Sackville, New Brunswick and neighbouring Amherst, Nova Scotia (Alvo and Robert 1999; Kehoe *et al*. 2000). Elsewhere in Nova Scotia, reports of persistently calling birds in summer 1998 near Glen Margaret, and in the 1920s and 1930s near North Sydney and Noel (in the latter place over several years), suggest that the species might occasionally breed there (Tufts 1986; McLaren in prep.).

Estimated Extent of Occurrence (EO) of the Yellow Rail in Canada is difficult to estimate with any certainty because of large gaps in information on occurrence in boreal and other northern areas. Nevertheless, the estimate based on a minimum convex polygon of its Canadian breeding range yields a figure of 3 million km^2. During winter, however, the entire global population of Yellow Rails is concentrated into a narrow band along the Gulf Coast and southeastern coast of the U.S.; the extent of this smaller wintering area (measured as a minimum convex polygon based on the NatureServe range map) is about 300,000 km^2.

The Area of Occupancy (AO) is also hard to estimate, because data on distribution and population densities are so scant. Nonetheless, the available information allows estimation of a minimum value. Assuming 5000 pairs breed in Canada (the lower estimate of Alvo and Robert 1999; see **Population sizes and trends** below) and the density of calling males that is most frequently reported in the literature (0.05 males/ha; see below), the biological AO would be 1000 km^2. Using the International Union for Conservation of Nature (IUCN) standard grid size of 2 x 2 km, and given that there are at least 500 sites in Canada (Alvo and Robert 1999) separated by at least 2 km from one another, then the IUCN Index of Area of Occupancy (IAO) is greater than 2000 km^2. It is equally difficult to estimate this value for the wintering grounds and, judging by the length of coast where the bird is expected / assumed to winter, IAO would likely be more than 2000 km^2 (assuming that birds are dispersed along the entire length of the coast from Texas to North Carolina).

HABITAT

Habitat requirements

Yellow Rails are found in marshy wet areas of extensive short, grass-like vegetation, usually sedge (Cyperaceae, especially *Carex* spp.), but also species of grasses and rushes (Poaceae and Juncaceae) that have the required grassy structure. The habitat must remain wet throughout the breeding season, but have no more than 15 cm standing water during that period (Bookhout 1995; Robert *et al*. 2000; Wilson 2005). Breeding habitat requires an overlying layer of dead grass-like vegetation, probably because it is required for roofing over the nest, and perhaps for hiding the bird's movements from predatory birds (Stenzel 1982; Robert and Laporte 1999; Robert *et al*. 2000; Popper and Stern 2000).

Yellow Rails are found in a variety of habitats that provide these needs. Thus, they inhabit not only sedge meadows, fens, and bogs, but also wet hay fields and grassy meadows, floodplains, wet prairie, wet montane meadows, and the upper margins of estuaries, coastal salt marshes, and, during winter, rice fields (Peabody 1922; Gibbs *et al*. 1991; Bookhout 1995; Alvo and Robert 1999; Popper and Stern 2000; Sherrington 2004). In coastal James Bay, birds have been found in summer in areas of Bog Buckbean (*Menyanthes trifoliata*), the only report of appreciable numbers outside areas dominated by graminoids, although they may have used these sites only after breeding in grassy fens and meadows elsewhere (Robert *et al*. 2004).

Home range size varies widely among studies. Although birds are found mainly in wetlands larger than 10 ha (Robert 1996; Alvo and Robert 1999), it is unclear whether they require such larger wetlands. Calling males have been found in wetlands only 0.5-4.0 ha in size (Robert 1996; Alvo and Robert 1999), and radio-tracking studies show wide variation in home ranges: 1.5-20 ha in Quebec (Robert 1996) and 6-10 ha for males, but smaller than 2 ha for females in Michigan (Bookhout and Stenzel 1987). Densities of calling males, a more indirect measure of area needs, range from 0.04 to 0.06 males/ha for most studies (Bookhout 1995; Robert and Laporte 1999; Robert *et al*. 2004; Wilson 2005; Tozer 2007), but densities of 0.08/ha and 0.18/ha were found along James Bay and in Saskatchewan, respectively (Robert *et al*. 2004; McMaster 2007). Given these variable results on home range and density, together with the fact that home ranges can overlap (Bookhout and Stenzel 1987), with coloniality suggested for some sites (Bart *et al*. 1984), it is hard to determine this species' need for a particular wetland size.

Habitat needs are similar at other times of year, although the tolerance for water levels and the presence of senescent mats of vegetation is broader. Indeed, mats of dead vegetation might be less preferred at these times, perhaps because they restrict movements related to foraging and, especially when birds are moulting, escape from predators (Robert and Laporte 1999; Robert *et al*. 2000; Wilson 2005). Habitat needs during migration are particularly poorly known, because migrants are so hard to find. High densities have been reported from dry hay fields during migration, suggesting that habitat tolerances are broader then (Mueller 2007; White 2007).

In winter, birds mainly occur in coastal salt marshes, especially those dominated by *Spartina* spp., and rice fields, as well as fields of hay, cereal and other grasses (Alvo and Robert 1999; Post 2008). Birds are most likely to be found in areas with low water levels and dense, low vegetation (Mizell 1998; Grace *et al*. 2005; Post 2008). Radio-tracking studies in Texas showed winter home ranges of 0.5 to 4 ha that often overlap (Mizell 1998; Grace *et al*. 2005). Indeed, wintering birds are often flushed in groups, suggesting that birds are more gregarious in winter than during breeding (Mizell 1998; Grace *et al*. 2005; Post 2008).

Habitat trends

Information on habitat trends, especially recent trends, is poor. Historical trends can be inferred at a gross level, but estimating more recent trends (i.e., within the last one or two decades) requires wetland inventories with a level of resolution that is not available (Milton and Hélie 2003). In the southern part of the breeding range, information on the specific habitats preferred by Yellow Rails is particularly poor, because these habitats often intergrade with grassland or agricultural land and are thus not necessarily identified as wetland. Also, Yellow Rails have such a narrow tolerance of water levels for breeding that any given location may be suitable in one year but not the next, especially in prairie regions, where the species mainly occurs in seasonal wetlands (Prescott *et al*. 2003).

Published estimates of historical wetland loss thus offer only a rough and perhaps unreliable guide to loss of these drier habitats. Figures derived in this way are likely conservative, because drier land is much more likely to be converted for uses such as agriculture (e.g., Oswald 2000). Estimates of historical wetland losses in different regions include 71% for Canadian prairies (Cox 1993), 70% for southern Manitoba (Oswald 2000), 60% for southern Ontario (Jean 2002), 80% for Quebec along the St. Lawrence River (Jean 2002), 85% for the northeast reaches of the Bay of Fundy (Reed and Smith 1972), 85% for the Upper Klamath Basin of Oregon, where the rail occurs (Stern *et al*. 1993), and 50% for the conterminous US (Dahl 2006). Coastal marshes in the heart of the wintering range in Texas cover 52% less area than they did when Europeans first settled there (Mizell 1998), and in Lousiana 23-35% of coastal wetlands were lost between 1932 and 1990 (Barras *et al*. 2003).

Turning to more recent habitat trends, since the 1970s, coastal marsh habitat in parts of the Hudson Bay Lowlands within the range of Yellow Rails where Snow Geese (*Chen caerulescens*) breed or stage has been destroyed or severely fragmented by heavy grazing by high numbers of geese (Abraham *et al*. 2005; Jefferies *et al*. 2006), including sites where Yellow Rails formerly nested at LaPerouse Bay and Wapusk National Park (Jehl 2004; Rockwell *et al*. 2007). Elsewhere, recent trends are unknown, but anecdotal reports suggest that small losses continue. In Alberta, fens are being lost to oil sands development and replaced, at best, by other wetland types (Oil Sands Working Group 2000), although whether this has directly affected Yellow Rail habitat, per se, is unknown. An occupied marsh in southern Manitoba was partly destroyed for highway development (Wilson 2005), and between the 1960s and 1980s 10-50% of township sections in that region lost wetlands (Oswald 2000). Wetlands in southern Ontario and Quebec are under heavy pressure from various forms of fragmentation and degradation. Over 50% of potential Yellow Rail habitat along the St. Lawrence and Saguenay Rivers was lost during the last decades of the previous century to filling and construction projects, such as harbour infrastructure and highways (Robert *et al*. 1995; Alvo and Robert 1999). The invasive non-native form of Common Reed, *Phragmites australis*, has infiltrated rail habitat at Île aux Grues during the last 15 years (Marineau *et al*. 2002; Dalpé-Charron 2006; Rivard 2007), and active management is needed to halt succession at Lac Saint-François National Wildlife Area (Brisson *et al*. 2006).

On the wintering grounds, coastal habitat continues to decline in Louisiana, because of increases in sea levels, storms, geological subsidence, and run-off (Barras *et al*. 2003; Shirley and Battaglia 2006). In Texas, however, the area of estuarine marsh may have stopped decreasing, and even started increasing, since the 1950s (Tremblay *et al*. 2007).

Overall, while it is impossible to determine a value for recent habitat loss, it is clear that it is still subject to threats that vary in cause and severity among different regions.

Habitat protection/ownership

Because the Yellow Rail's habitat is apt to straddle distinctions between wetlands and other habitats, such as prairie and pasture, it is less subject to protection than more typical wetland habitats. Along the coast of Hudson and James Bay, less than 20% of the range is protected, mainly within Wapusk National Park in Manitoba, Polar Bear Provincial Park, Hannah Bay Migratory Bird Sanctuary (MBS), and Moose River MBS in Ontario, and two new Biodiversity Reserve projects in Quebec that include Boatswain MBS and Cabbage Willow Bay, two important sites (Robert *et al*. 2004). In the rest of the range west of Quebec, the bird's distribution is so scattered and poorly known that only a rough guess can be made from inventories of wetland protection in general, which estimate that less than 10% of wetlands are protected there (Wiken *et al*. 2004). About half of the sites in Quebec are protected, mainly as National Wildlife Areas (Robert *et al*. 1995). In New Brunswick, the bird's distribution is too poorly known to estimate how much is protected, although the sites where the bird has been found most reliably are protected as National Wildlife Areas (Portobello Creek and Tintamarre

National Wildlife Areas) or as Class II Protected Natural Area (Grand Lake Meadows), which prohibits, for example, most commercial or industrial development.

Altogether, less than 10-20% of known Yellow Rail habitat is in protected areas. Much of the remaining habitat is partly protected by various federal, provincial, and municipal policies and regulations concerning development on wetlands (reviewed in Rubec and Hanson 2008). However, many sites may not be large enough and/or sufficiently typical of wetlands to receive such protection.

BIOLOGY

The Yellow Rail remains as one of the most secretive and least understood North American birds. Most work published since the previous status report (Alvo and Robert 1999) was summarized therein in its unpublished form, so the summary that follows is fundamentally unchanged.

Life cycle and reproduction

Yellow Rails arrive on southern Canadian breeding grounds between late April and mid-May (up to several weeks later on the Hudson and James Bay coasts), when males begin their repeated clicking call. Males are presumably territorial, because calling males are spatially separated and display, call, and approach in response to playback or imitation of their call (Stalheim 1974; Stenzel 1982).

Nesting begins in early June (Robert and Laporte 1996), and nests contain 5-10 (mean eight) eggs, which are incubated by both sexes for about 20 days (Popper and Stern 2000). Broods are fed by parents at the nest for 2 days until they start following the female as she forages and feeds them near the nest. Chicks gradually start feeding on their own about 3 days later, until they feed themselves by about 11 days (Stalheim 1974). Chicks may be brooded for up to 3 weeks, and cannot fly until about 35 days of age (Alvo and Robert 1999).

Demographic information is sparse. Most studies report high hatchability (Alvo and Robert 1999), except for one Oregon study in which 12 of the 22 nests studied were depredated or abandoned before hatching, although depredated nests may have been easier for the researchers to find (Popper and Stern 2000). Age at first breeding is presumed to be one year, judging from better studied rail species (Bookhout 1995), but in truth this is unknown, as are lifespan and survival at any stage beyond hatching. Return rates vary considerably among the few existing studies of marked birds, but are generally low, ranging from 1.5 to 11% (Bookhout 1995; Robert and Laporte 1999; Lundsten and Popper 2002). As with other rails (Remsen and Parker 1990), dispersal rates are likely so high that mortality rates cannot be inferred from these figures.

Herbivory/predation

Early studies concluded from indirect and anecdotal evidence that Yellow Rails fed principally on snails (Peabody 1922). More detailed studies of diet in Quebec, however, showed snails to constitute only 5% of the diet, which consisted mainly of arthropods such as beetles, spiders, and flies (43%, 13%, and 5% of diet, respectively) and seeds from sedge, rush, and grass (Robert *et al*. 1997). During winter, birds might rely more heavily on seeds (Robert *et al*. 1997).

Physiology

Parasitism, disease, and environmental toxins are suspected of being important limiting factors for other species of rails, at least locally (Eddleman *et al*. 1988), but no physiological studies of Yellow Rails have been conducted.

Dispersal/migration

After breeding but before fall migration, adult Yellow Rails moult all their flight feathers and many body feathers. This post-breeding moult, which is typical among rails, renders birds flightless for about 2 weeks (Stalheim 1974; Robert and Laporte 1996). The appearance of calling birds after nesting at Îles aux Grues, Quebec and Grand Lake Meadows, New Brunswick suggests that birds may travel to particular areas to moult before heading farther south to the wintering grounds (Robert and Laporte 1999; Kehoe *et al*. 2000). At Île aux Grues, some of these birds were tagged on breeding grounds hundreds of kilometres upstream along the St. Lawrence River, suggesting these movements constitute a substantial moult migration like that described for many species of waterfowl (Robert and Laporte 1999). Indeed, the stable isotope signatures of birds wintering in Texas suggest that, for at least some birds in the central and western part of the range, moult occurs somewhere between the breeding and wintering ranges (Perkins 2007)

Yellow Rails likely migrate over a broad front, rather than channeled along specific flyways (e.g., following coasts or main waterways; Bosso 1965; Seets and Boheln 1977; Bookhout 1995; Goldade *et al*. 2002). The timing of fall migration is hard to determine, because birds rarely call outside the breeding season and thus are exceptionally difficult to detect. Birds leave breeding sites along Hudson Bay before early September (Jehl 2004), however, and at least some are part way to the wintering grounds by late September, as indicated by migrants found dead after colliding with communications towers (Bosso 1965; Seets and Boheln 1977). These tower kills also show that birds migrate at night, probably in small flocks (Pullich 1962). During spring migration, birds arrive at most breeding sites between late April and mid May (Bookhout 1995), but do not arrive until the third week of June in western Hudson Bay, suggesting that they might stage for weeks somewhere along the migration route (Jehl 2004).

Most species of rail are highly dispersive, presumably as an adaptation to locally ephemeral water conditions (Remsen and Parker 1990). This is probably even truer of the Yellow Rail, which is more likely to inhabit seasonal and semi-permanent wetlands than most other rail species. Direct evidence for such movements is poor, however, and hard to distinguish from the moult-related movements mentioned above.

Interspecific interactions

The main predators of Yellow Rails appear to be raptors (Walkinshaw 1939; Grace *et al*. 2005), although they are small enough to be taken by a wide range of predators, including foxes, cats, herons, and, in Texas, Water Moccasins (*Agkistrodon piscivorus*; Alvo and Robert 1999). Eggs and nestlings are presumably subject to a similarly broad range of predators, with clear evidence only for pecking by Red-winged Blackbirds or Marsh Wrens (*Cistothorus palustris*; Popper and Stern 2000).

There is no information available on interspecific competitors (Bookhout 1995). Heavy grazing pressure from high populations of breeding and staging Snow Geese in local parts of the Hudson Bay Lowlands (Abraham *et al*. 2005; Jefferies *et al*. 2006), may destroy or disrupt Yellow Rail nesting habitat.

The species is presumably subject to a variety of both generalist and specialist parasites, as are other species of rail (Whitney *et al*. 2007), but these have not been studied.

Adaptability

Yellow Rails are presumed to be intolerant of human disturbance, but there is little direct evidence of this. Their breeding habitat needs are narrow, especially in terms of water levels and the need for senescent mats of vegetation. Specifically, while water levels may exceed 50 cm at breeding sites when birds arrive in spring, they must subside below 15 cm by the onset of nesting, and must not flood out the mats of dead vegetation. Indeed, annual variation in presence and/or abundance of Yellow Rails at several sites closely tracks annual variation in water levels (Robert and Laporte 1999; Bookhout 1995; Kehoe *et al*. 2000; Lindgren 2001; Austin 2007).

POPULATION SIZES AND TRENDS

Search effort

During the breeding season, Yellow Rails inhabit areas that are not well sampled by roadside Breeding Bird Surveys (BBS), and do most of their calling at a time of day (late evening to early morning) that mostly lies outside the early-morning BBS sampling period. The Marsh Monitoring Program, a volunteer survey scheme targeting secretive wetland birds (Bird Studies Canada 2003), does not adequately sample Yellow Rails because of time-of-day and accessibility limitations. The annual Christmas Bird Count,

which provides trend data for many common North American bird species, is unlikely to provide meaningful trend estimates for this species on its wintering grounds, at least not without special search efforts (D. Sarkozi and J. Wilson pers. comm. 2008).

The only programs that presently provide any reliable information on Yellow Rails are breeding bird atlas programs and surveys specifically targeting this species. In atlas programs, a province, state, or other similar region is typically divided into 10 x 10 km squares, for which volunteers try to confirm breeding for as many species as possible during a 5-year period. The 5-year sampling window gives volunteers a chance to thoroughly search each habitat in their square, so the often-overlooked habitats of Yellow Rails can potentially be well covered. Data on abundance are apt to be poor, however, consisting only of subjective estimates of abundance on a log scale or of point counts, which easily miss this species, as noted above. Nevertheless, atlases provide fair information on distribution and, because they tend to be repeated every 20 years, perhaps on trends in occurrence as well.

Surveys that specifically targeted Yellow Rails are available for a few regions. Targeted surveys have been conducted in northeastern Alberta as part of environmental assessments at particular sites (Goldrup 2008), across Alberta in a province-wide search (Prescott *et al*. 2003), in eastern Saskatchewan (McMaster 2007), in southern James Bay, Quebec (Robert *et al*. 2004) and along the St. Lawrence River (Robert and Laporte 1999).These surveys often use playbacks to stimulate calling at night, when the birds are most likely to call, although the birds might still be missed if not sampled at the peak of calling (Bart *et al*. 1984). Such searches usually include some measure of abundance through a count of calling males, but a good estimate requires that all males call and are spatially separated. Neither of the latter conditions can be met on a single given night, so sampling must span several nights, which is not always possible (Bart *et al*. 1984). Other targeted surveys use single-visit, nocturnal line transects with fixed-distance widths (e.g., Robert et al. 2004).

Abundance

The global population size is unknown. The most authoritative estimate, 10,000-25,000 individuals (Delany and Scott 2006), is only a best guess, based on the estimate from the previous Canadian status report of 5000-6000 pairs (Alvo and Robert 1999). The latter estimate was based largely on qualitative extrapolations from the number of known sites in each province or territory and the number of pairs expected to occur at an average site, which was set at five pairs. Specifically, available habitat within the range was judged to be sufficient to contain “a few thousand” pairs along Hudson and James Bay, 500 or more pairs elsewhere in each of the prairie provinces, 20-100 pairs in the Northwest Territories, and fewer than 50 pairs in New Brunswick and Nova Scotia. More precise numbers were available from the first atlas project and Rare Breeding Bird Program in central and southern Ontario and species-specific surveys in southern Quebec: 127-155 and 40-160 pairs, respectively (Alvo and Robert 1999).

Since then, there has been little change to the abundance data on which this reasoning was based. Increases in the known range, detailed above under **Canadian range**, suggest more habitat is occupied within the range in the Northwest Territories, Alberta, and, less so, British Columbia, than previously thought, but these gains are relatively small. New sites have been found in Alberta and Saskatchewan (Prescott *et al*. 2003; McMaster 2007; Goldrup 2008), but not enough to appreciably exceed the previous report's estimate of "hundreds" of summer locations for these provinces. The distribution in Manitoba is unchanged, though it is likely that there are still numerous currently unknown breeding sites, particularly in the southeastern part of the province (R. Bazin pers. comm. 2008).

In central Ontario, population size is unknown. Alvo and Robert (1999) estimated 115-125 pairs bred there, but 157 calling males were detected near Rainy River alone in one year during the second atlas project (Tozer 2007).

New information from a survey of eastern James Bay in Quebec yielded an estimate of "over a thousand" pairs along the southern coast (Robert *et al*. 2004), but, like the "thousands" estimated in the previous status report, this figure is a rough guess based on the extent of available habitat in the region. In summer 2009, the Royal Ontario Museum and the Ontario Ministry of Natural Resources carried out line transect surveys for Yellow Rails in Ontario along the southern part of the James Bay coast using the methods employed by Robert *et al*. (2004) in Quebec. In total, 323 Yellow Rails were tallied along 51 km of transects (M. Peck and D. Sutherland pers. comm.), which is comparable to results obtained on the Quebec side of James Bay. This verifies earlier assertions that a large population of Yellow Rails breeds along the Ontario side of the James Bay coast. However, results from the 2009 surveys are not expected to result in a revision of the current overall population estimate in Canada.

Taken together, the population size is unknown, but Alvo and Robert's (1999) previous estimate of 5,000-6,000 breeding pairs (10,000-12,000 mature individuals) remains plausible.

Fluctuations and trends

Overall, the population size is not known to fluctuate widely, but locally, numbers fluctuate dramatically at given sites, depending mainly on annual water levels (e.g., Kehoe *et al.* 2000). Also, numbers are hard to assess because birds might not breed at all sites where they are found, but instead use some for moulting. These fluctuations in local numbers make trends extremely hard to assess, even if adequate surveys are undertaken, which they certainly are not for most regions.

In both Canada and the US, the species is presumed to have declined historically, but this conclusion is mainly based on trends in habitat (see above) rather than on the number of individuals found. Nonetheless, in the US, it is clear that the species has disappeared from the former southern edge of its range, specifically southern Wisconsin (Grimm 1991), northern Illinois, and central Ohio (Alvo and Robert 1999). In southern Ontario, the species has been recorded in larger marshes from the St. Clair River to north of Toronto, albeit not "regularly" as stated in Alvo and Robert (1999), nor necessarily with evidence of breeding (Austen *et al*. 1994). Nevertheless, the latest atlas project from 2001-2005 largely failed to record it in this area, especially at Holland Marsh, where it was regularly recorded in the 1940s through the 1980s (Devitt 1939; Tozer 2007). In Alberta, a province-wide survey failed to find birds at 90% of 42 historically occupied sites (Prescott *et al*. 2003). All these observations, while somewhat anecdotal, suggest historical declines in the southern part of the range.

For more recent population trends, BirdLife International (2008) reports global trends as unquantified, but not thought to exceed the IUCN Red List criterion of declining more than 30% in 10 years or three generations. The only specific information on recent trends comes from scattered reports of declines in occupied sites. In the US, in Oregon, several sites where the species was found in 1985 have been ditched or drained (Stern *et al*. 1993). In Canada, sightings were too few to estimate trends, but the decline at Holland Marsh, noted above, appears to have continued, given that no birds have been recorded breeding there since the 1980s (Sandilands 2005; Tozer 2007). On the Hudson Bay Lowlands, both at LaPerouse Bay and Wapusk National Park, the species is now absent from several coastal sites where it was found as recently as the late 1980s (Jehl 2004; Rockwell *et al*. 2007), apparently in response to the deterioration of such locations through overgrazing by Snow Geese (Abraham *et al*. 2005; Jefferies *et al*. 2006). Nonetheless, birds found along these coasts might breed in the abundant and apparently suitable sedge fen habitats farther inland (Robert *et al*. 2004), so they might have simply shifted their activities inland (Rockwell *et al*. 2007). In southern Quebec, trends are hard to assess because sites are occupied irregularly from year to year and most sites have few birds, but there has been no consistent trend in the number of occupied sites over the past few decades (Alvo and Robert 1999).

The only systematically collected information on trend in occurrence comes from the second Ontario Breeding Bird Atlas, which did not yield enough data on this species to estimate trends overall or for any particular region. The Hudson Bay Lowlands showed a statistically significant decrease in the probability of observation (after 20 hours of survey coverage in a square) of 52% between 1981-1985 and 2001-2005, but this result is unreliable, as it was based on few squares, and the squares surveyed differed between the two atlas periods (Tozer 2007).

Taken together, data on trends in this species are sparse. Most of the range shows no sign of dramatic change from what was reported a decade ago in the previous status report (Alvo and Robert 1999). Search effort is poor, few birds are found at most sites, and new, previously unsearched sites are still being discovered, so it can only be assumed that, if there has been a decline over the last decade, it has been less than 30%.

Rescue effect

Yellow Rails, like most wetland birds, are highly dispersive, presumably as an adaptation to their locally ephemeral habitat (Remsen and Parker 1990). Many sites in the northern US are well within dispersal distance of Canadian sites. Nonetheless, Canada supports about 90% of the global population, and populations in the northern US are relatively small and appear to be declining, which makes the likelihood of a rescue effect from the U.S. modest at best.

LIMITING FACTORS AND THREATS

Collectively, habitat loss and degradation is undoubtedly the chief threat to this species, both on its breeding and wintering grounds, and especially the latter. The components of this threat vary by region and are listed separately below. The common feature is that habitat is either removed completely, for example because of development, or degraded beyond the species' tolerance limits, for example because of water extraction or flooding.

Habitat loss and degradation continues locally not only through drainage, dyking, infilling, and diversion of wetlands, but also through converting rail habitat for other uses. Specific recent examples include several historically occupied sites in Alberta that have been co-opted for grazing (Prescott *et al*. 2003), areas of Douglas Marsh in Manitoba that were proposed (albeit rejected) for highway development (Wilson 2005), and various commercial and industrial developments along the St. Lawrence River in Quebec (Dalpé-Charron 2006). Energy projects in Alberta and Northwest Territories threaten habitat both through direct habitat destruction, for mines, pipelines and hydro lines, for example, and indirectly through changes in hydrological regimes, particularly for oil sands extraction (Alvo and Robert 1999; Oil Sands Wetlands Working Group 2000; Goldrup 2008). All-terrain vehicles have also been identified as having the potential to disrupt wetland habitat and to disturb wetland birds (NBDNR 2008).

Mowing and haying (outside the nesting season) can be effective management tools for maintaining Yellow Rail habitat, but can be destructive if applied inappropriately. In particular, they can remove the senescent layer of vegetation that the birds need for nesting, as has been documented at several sites in southern Quebec (Robert *et al*. 2000). Burning is also an effective tool for arresting succession and stimulating dense growth of graminoid vegetation, but again can be destructive if it is done so infrequently as to produce destructively hot fires or so frequently that the senescent mat cannot form (Burkman 1993; Mizell 1998; Robert *et al*. 2000).

Grazing by livestock removes vegetation before it can form the dead mats needed for nesting (Robert 1997; Lundsten and Popper 2002; Grace *et al*. 2005) and grazing animals might also increase direct disturbance of the birds' normal activities (Robert 1997). If livestock are not fenced back from wet areas, they will graze the margins of wetlands, where Yellow Rails are most likely to occur (Eddleman *et al*. 1988; Bookhout 1995). Grazing might account for the abandonment of several historically occupied Yellow Rail sites in Alberta (Prescott *et al*. 2003).

As noted above under **Habitat trends**, overgrazing by large colonies of Snow Geese has severely deteriorated localized areas of habitat on the Hudson Bay coast. Their grazing particularly affects the graminoid species Yellow Rails prefer (Abraham *et al*. 2005). Even in the absence of Snow Geese, recovery of the local ecosystem will take decades (Jefferies *et al*. 2006). The extent to which this threat actually compromises large areas of Yellow Rail breeding habitat, however, is unknown.

The non-native invasive form of *Phragmites australis* threatens Yellow Rail breeding and moulting sites in some southern breeding areas, including the St. Lawrence River. At Île aux Grues, increases in the invasive form since the 1990s have necessitated control programs, which have not yet succeeded in eradicating it (Marineau *et al*. 2002; Dalpé-Charron 2006; Rivard 2007). Purple Loosestrife (*Lythrum salicaria*) is another invasive plant that could threaten Yellow Rail habitat in southern Canada, as it has in Michigan (Cohen and Kost 2007).

Global warming is predicted to increase droughts and evaporation rates, which will first affect shallow and temporary wetlands in the Prairies and Hudson Bay Lowlands (Johnson *et al*. 2005), and is expected to reduce and shift the configuration of wetlands on the Great Lakes and lower St. Lawrence River (Meyer *et al*. 2006; Mortsch *et al*. 2006). Along the Gulf Coast, sea level rises and storms related to climate change have increased the rate of wetland loss (Barras *et al*. 2003; Shirley and Battaglia 2006).

As noted elsewhere, the Yellow Rail winters in a narrow belt of coastal and freshwater wetlands habitat in the southeastern U.S. Natural habitats in this region are under intense development pressure. Moreover, because the wintering population is compressed into a relatively small area around the Gulf Coast, Florida and the coastal Carolinas, it is vulnerable to the region's frequent hurricanes that destroy coastal habitats and may directly kill unknown numbers of birds during particularly catastrophic storms.

Yellow Rails are indirectly exposed to pollution, because wetlands gather run-off. Given their occurrence in drier types of wetland habitats, they are also likely to be directly exposed to agricultural chemicals (Eddleman *et al*. 1988). No studies of pesticide effects have been done on Yellow Rails, but pesticides are known to reduce prey abundance and hatching success in other rail species (Schwarzbach *et al*. 2006). Intermittent wetlands, such as those occupied by Yellow Rails in the prairies, are also vulnerable to siltation and acidification (Cohen and Kost 2007).

A variety of accidental deaths occur frequently enough to be regarded as cumulative threats to the relatively small population. Yellow Rails are sometimes killed and frequently disturbed by mowers and harvesters; indeed, watching rice harvesters is a main technique used by birders to see the species in its wintering range (Alvo and Robert 1999; Perkins 2007). Yellow Rails are also frequently killed by colliding with tall structures during migration and with fences (Goldade *et al*. 2002). Treading on birds and their nests by overeager birders has occurred at several sites, some of which used motorized "rail buggies" to flush rails, which also sometimes killed birds and destroyed habitat (Cochrane Environmental Consultants Inc. 1998; Alvo and Robert 1999; Lindgren 2001). Accidental shooting of Yellow Rails has not been documented but might occur on occasion, given their similarity to immature Soras, which are legal game birds in most US states (Alvo and Robert 1999).

SPECIAL SIGNIFICANCE OF THE SPECIES

Yellow Rails are not targeted by hunters, nor are they of any other consumptive use. They are, however, sought after by birders because of their rarity and secretive habits. Indeed, they are among the most sought-after birds in North America, helping to support birding ecotourism at sites where they can be reliably found, for example at Douglas Marsh in Manitoba (Lindgren 2001), Iles aux Grues in Quebec (Tardif *et al*. 1999), and, especially, several sites in the Gulf States. Along with Short-eared Owl (*Asio flammeus*), Sedge Wren (*Cistothorus platensis*), Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*) and Le Conte's Sparrow (*A. leconteii*), they specialize in wet meadow, fen and wet prairie habitats. As such, they are indicators of the health of ecosystems that are often ephemeral and occur in the boundary between "classical" wetlands and drier uplands. The importance of such ecosystem boundaries are apt to be overlooked by habitat conservation and monitoring schemes.

EXISTING PROTECTION OR OTHER STATUS DESIGNATIONS

The Yellow Rail is protected under the Canadian *Migratory Birds Convention Act, 1994* and the United States' *Migratory Bird Treaty Act, 1918*. In November 2001, COSEWIC assessed this species as Special Concern. In Canada, it is presently federally listed as Special Concern under Schedule 1 of the *Species At Risk Act*, a listing which offers no additional protection, but does require drafting of a management plan for the species. The species is also provincially listed as Special Concern in Ontario and as Threatened in Quebec. Its conservation status rank is N4B in Canada, SNRB in the Northwest Territories, S1B in British Columbia, S2 in Alberta and Quebec, S3B,S2M in Saskatchewan, S3S4B in Manitoba, S4B in Ontario, and S1?B (i.e., S1B, but inexact or uncertain) in New Brunswick (NatureServe 2008). Its General Status Rank is Accidental in Nova Scotia, Undetermined in Nunavut and Alberta, Sensitive in Saskatchewan, Manitoba, and Ontario, and May Be At Risk in Northwest Territories, British Columbia, Quebec, and New Brunswick (CESCC 2006).

In the United States, the species is a Migratory Nongame Bird of Special Management Concern (USFWS 2002) federally, and is listed as Endangered, Threatened, or Special Concern in seven states (Table 1). Its Nature Conservancy Rank is N3B, N4N (NatureServe 2008). Several states have assigned it a rank of S3 or less (Table 1). The IUCN lists it as "Least Concern" (NatureServe 2008).

Table 1. Conservation status ranks and state listings for Yellow Rails in the United States (NatureServe 2008).

State	Status	State listing
Alabama	S2N	
California	S1S2	Special Concern
District of Columbia	SHN	
Georgia	S3?	
Illinois	SXB, S2N	Endangered
Louisiana	S3S4N	
Maine	not available	Special Concern
Massachusetts	S1N	
Michigan	S1S2	Threatened
Minnesota	S2B	Special Concern
Mississippi	S2N	
Montana	S1B	
North Carolina	S2N	
North Dakota	S2	Threatened
Ohio	SX	
Oregon	S1B	
Texas	S3B	
Wisconsin	S1B	Threatened

TECHNICAL SUMMARY

Coturnicops noveboracensis
Yellow Rail Râle jaune
Range of Occurrence in Canada: Northwest Territories, Nunavut, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick

Demographic Information

Generation time (average age of parents in the population)	Unknown (likely > 2 yrs)
Is there an observed, inferred, or projected continuing decline in number of mature individuals? - some evidence for localized declines, but no trend information available for northern breeding areas where most of the population occurs; see **Population sizes and trends**	Unknown
Estimated percent of continuing decline in total number of mature individuals within 5 years	Unknown
Suspected percent change in total number of mature individuals over the last 10 years. - local declines are suspected, but <30% overall; see **Population sizes and trends**).	Unknown
Suspected percent change in total number of mature individuals over the next 10 years. - see **Population sizes and trends**	Unknown
Suspected percent change in total number of mature individuals over any 10-year period, over a time period including both the past and the future. - see **Population sizes and trends**	Unknown
Are the causes of the decline clearly reversible and understood and ceased? - causes are not clearly understood	Unknown
Are there extreme fluctuations in number of mature individuals?	No

Extent and Occupancy Information

Estimated extent of occurrence - Measured as minimum convex polygons	~ 3 million km² (Canadian breeding grounds) ~ 300,000 km² (U.S. wintering grounds)
Index of area of occupancy (IAO) - Based on grid size of 2 x 2 km, and an estimate of at least 500 sites in Canada separated by at least 2 km from one another	> 2000 km²
Is the total population severely fragmented?	No
Number of “locations” - Insufficient information available to estimate number of locations in relation to threats	Unknown
Is there an inferred or projected continuing decline in extent of occurrence? - stable	No
Is there an inferred or projected continuing decline in index of area of occupancy?	Unknown
Is there an inferred continuing decline in number of populations? - there is one population	Not applicable
Is there an observed, inferred, or projected continuing decline in number of locations?	Unknown

Is there an observed, inferred, or projected continuing decline in area, extent and/or quality of habitat?	Slow decline; most severe in southern breeding grounds and on wintering grounds
Are there extreme fluctuations in number of populations?	Not applicable
Are there extreme fluctuations in number of locations?	Not applicable
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

Number of Mature Individuals (in each population)

Population	N Mature Individuals
Canada	Circa 10,000-12,000
Total	Circa 10,000-12,000

Quantitative Analysis

Probability of extinction in the wild.	Not done

Threats (actual or imminent, to populations or habitats)

Historical and ongoing loss and degradation of wetlands habitat on the breeding grounds are chief threats. Habitat degradation includes mowing and haying, grazing pressures (livestock in the prairies and Snow Geese in northern coastal areas), invasive plants, pollution from agriculture, and climate change. The species also appears vulnerable to fairly high levels of direct mortality associated with agricultural machinery (e.g., during haying operations) and to collision with tall structures during spring and fall migration. Its compressed wintering range and narrow habitat tolerances in the southeastern U.S. (especially in coastal and nearshore areas) make it vulnerable to losses and degradation in marsh habitat and to catastrophic weather events (e.g., hurricanes).

Rescue Effect (immigration from outside Canada)

Status of outside population(s)? **USA:** Small (<10% of global total) and declining	
Is immigration known or possible?	Possible
Would immigrants be adapted to survive in Canada?	Yes
Is there sufficient habitat for immigrants in Canada?	Yes
Is rescue from outside populations likely?	Unlikely, given small and declining population in the U.S. and loss of habitat there

Current Status

COSEWIC: Special Concern (November 2009)

Status and Reasons for Designation

Status:	Alpha-numeric code:
Special Concern	**Not applicable**

Reasons for designation: Relatively little is known about this small, secretive rail. It is primarily restricted to shallow, dense, grassy marshes and wet meadows. Most of its breeding range (about 90%) is in Canada. It is relatively uncommon in most areas; populations are most widespread and common in coastal areas of Hudson and James Bay in northern Manitoba, Ontario and Quebec. It winters in shallow marshes that occur in a narrow band extending from Texas to the Carolinas. The species is close to meeting some criteria for Threatened status because of its relatively small population size, compressed wintering range, ongoing threats to breeding and wintering wetland habitats, and evidence for local declines in several parts of its breeding range.

Applicability of Criteria

Criterion A (Decline in Total Number of Mature Individuals): Not applicable. While there is local and somewhat anecdotal evidence for decline in certain southern parts of its breeding range, the species is known to be sensitive to local variation in water levels, which makes its attachment to sites somewhat ephemeral and unpredictable. The bulk of the population nests in remote northern areas in the Hudson Bay Lowlands, where trend information is almost wholly lacking, human pressures are the least, and where the species is still apparently found in good numbers. While scant, the best available evidence suggests that any rangewide population decline that may have occurred is < 30% over the past 10 years or 3 generations.
Criterion B (Small Distribution Range and Decline or Fluctuation): Not applicable. EO on the breeding grounds is > 20,000 km². IAO is > 2000 km², but there is a large degree of uncertainty attached to this estimate because so little is known about the species population size and occurrence. There is no strong evidence for decline, fragmentation or extreme fluctuation in populations, habitat or range.
Criterion C (Small and Declining Number of Mature Individuals): Not applicable - population size > 10,000 mature individuals.
Criterion D (Very Small or Restricted Total Population): Not applicable – population size > 1000 mature individuals; index of area of occupancy is > 2000 km^2.
Criterion E (Quantitative Analysis): Not done.

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