

# Management Plan for the Yellow Rail (*Coturnicops noveboracensis*) in Canada

## Yellow Rail



2013

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## PREFACE

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996) agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of management plans for listed Special Concern species and are required to report on progress within five years.

The Minister of the Environment and the Minister responsible for the Parks Canada Agency are the competent ministers for the management of the Yellow Rail and have prepared this plan, as per section 65 of SARA. The plan has been prepared in cooperation with the provinces of New Brunswick, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia as well as the Northwest Territories, the Tlicho Government and the Wek'èezhìi Renewable Resources Board of the Northwest Territories.

Success in the management of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this plan and will not be achieved by Environment Canada, the Parks Canada Agency, or any other jurisdiction alone. All Canadians are invited to join in supporting and implementing this management plan for the benefit of the Yellow Rail and Canadian society as a whole.

Implementation of this management plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

## ACKNOWLEDGMENTS

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## EXECUTIVE SUMMARY

The Yellow Rail (*Coturnicops noveboracensis*) is a small, secretive bird that nests from eastern British Columbia and southern Northwest Territories to New Brunswick, south to the northern United States. It winters in coastal states from North Carolina to Texas. About 90% of the species' breeding range occurs in Canada. It has been estimated that there are approximately 10,000 mature individuals in the Canadian population, though this estimate may be highly imprecise. The Yellow Rail was first assessed as a species of Special Concern by COSEWIC in 1999 and was listed on Schedule 1 of the *Species at Risk Act* in 2005.

Yellow Rails nest mainly in wetlands where fine-stemmed sedges, rushes, or grasses occur over shallow (< 15cm) water or wet soil which are overlain by dead canopies of previous growth. After nesting, they may use different wetlands, which may be nearby or hundreds of kilometers away, where they moult and/or feed before migration. Many key aspects of the species' basic biology, including distribution, population size, lifespan and reproductive output, remain largely unknown.

Loss and degradation of wetlands, primarily through agricultural, commercial, industrial and infrastructure development, but also from ranching activities and hydrological alterations, are the major threats to this species. Other threats include changes to wetland habitat from alien invasive plant species, accidental mortality from infrastructure hazards and agricultural operations and overgrazing of vegetation by geese along Hudson and James Bays. Agricultural and industrial pollution, disturbance from recreational activities, and climate change have also been identified as additional potential threats.

The objective of this management plan is to stabilize the quantity, quality and distribution of Yellow Rail breeding, moulting and migratory stopover habitat across Canada and to promote the conservation and management of suitable habitat on the wintering grounds. This management plan outlines a number of recommended measures addressing monitoring and assessment, habitat conservation, management, research, and outreach and communication. All management measures described in this plan will conserve Yellow Rails and their wetland habitats without compromising overall wetland function and biodiversity.

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## 1. COSEWIC\* SPECIES ASSESSMENT INFORMATION

**Date of Assessment:** November 2009

**Common Name (population):** Yellow Rail

**Scientific Name:** *Coturnicops noveboracensis*

**COSEWIC 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.

**Canadian Occurrence:** Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick

**COSEWIC Status History:** Designated Special Concern in April 1999. Status re-examined and confirmed in November 2001 and 2009.

\*COSEWIC – Committee on the Status of Endangered Wildlife in Canada

## 2. SPECIES STATUS INFORMATION

About ninety percent (90%) of the Yellow Rail breeding range occurs in Canada (Alvo and Robert 1999). The Yellow Rail is listed as Special Concern under Schedule 1 of the *Species at Risk Act* (SARA). It is also listed as Special Concern under Ontario's *Endangered Species Act, 2007* and as Threatened under Québec's *Loi sur les espèces menacées ou vulnérables*. The remaining five provinces and one territory in which the species occurs have not designated a legal listing for the Yellow Rail (Table 1). The Yellow Rail has a global and Canadian NatureServe rank of apparently secure (G4 and N4B) which is defined as uncommon but not rare with some cause for long-term concern due to declines or other factors (NatureServe 2010). Its conservation status by province or territory is outlined in Table 1.

**Table 1. NatureServe conservation status as of April, 2011, Canada General Status of Species (2005) and Territorial/Provincial listings for the Yellow Rail in Canada.**

Province	Conservation Status*	Canada General Status of Species	Territorial/Provincial legal listing
Alberta	S2	Undetermined	
British Columbia	S2B	May be at Risk	<i>Wildlife Act</i> – not listed
Manitoba	S3S4B	Sensitive	
New Brunswick	S1?B	May be at Risk	
Northwest Territories	SNR	May be at Risk	
Ontario	S4B	Sensitive	<i>Endangered Species Act, 2007</i> - Special Concern
Québec	S2B	May be at Risk	<i>Loi sur les espèces menacées ou vulnérables</i> , - Threatened
Saskatchewan	S3B, S2M	Sensitive	

\*Subnational (S) rank: 1 = critically imperiled; 2 = imperiled; 3 = vulnerable; 4 = apparently secure; B = breeding; N = non-breeding; M = migrant; NR = unranked; ? = inexact or uncertain. Conservation status ranks are from NatureServe (2010) and the British Columbia Conservation Data Centre (2011).

In the United States, the Yellow Rail has a NatureServe Rank of vulnerable (breeding range) and apparently secure (non-breeding range; N3B, N4N, NatureServe 2010). Its conservation status by state is outlined in Table 2. The species is not listed under the federal *Endangered Species Act*, but is listed as a Migratory Nongame Bird of Special Management Concern (United States Fish and Wildlife Service 2002), and is listed as Endangered, Threatened, or Special Concern in seven States. An additional eleven States in which the species occurs have not designated a listing for the Yellow Rail (Table 2).

**Table 2. NatureServe conservation status for Yellow Rails in the United States as of April, 2011.**

State	Conservation Status*	State listing
Alabama	S2N	
California	S1S2	Special Concern
District of Columbia	SHN	
Georgia	S3?	
Illinois	SXB, S2N	Endangered
Louisiana	S3S4N	
Maine		Special Concern
Massachusetts	S1N	
Michigan	S1S2	Threatened
Minnesota	S3B	Special Concern
Mississippi	S2N	
Montana	S1B	
North Carolina	S2N	
North Dakota	S2	Threatened
Ohio	SX	
Oregon	S1B	
Texas	S3N	
Wisconsin	S1B	Threatened

\*Subnational (S) rank: 1 = critically imperiled; 2 = imperiled; 3 = vulnerable; 4 = apparently secure; X = extirpated; H = historical; B = breeding; N = non-breeding; ? = inexact or uncertain. Note: States in which the Yellow Rail is unranked (NR) are not shown here.

### 3. SPECIES INFORMATION

#### 3.1 Species Description

The Yellow Rail is a small, quail-like inhabitant of shallow wetlands and other wet areas with grass-like vegetation, especially sedge meadows. Like other rails, it is rarely seen, preferring to run or hide instead of flying when disturbed. Adults are yellowish brown, with upperparts streaked with deep brown and wide dark black stripes crossed by white transverse bars. They have a brown crown, and a broad brown band through the eye. Juveniles are darker and more spotted. The bird's stubby bill is usually dull olive-grey, except in breeding males, in which it is bright yellow or (more rarely) orange. A white wing patch, exposed when the bird flies, distinguishes the species from all other rails, including the larger and more common Sora (*Porzana carolina*). Yellow Rails are most often detected by the males' song, a patterned "click-click-click-click", that sounds like two stones being tapped together and is usually heard during the night (Bookhout 1995).

#### 3.2 Population and Distribution

In Canada and the United States, the Yellow Rail consists of one subspecies, *Coturnicops noveboracensis noveboracensis*. A disjunct population in Mexico, usually considered a separate subspecies (*C. n. goldmani*), is probably extinct (Howell and Webb 1995).

The breeding range extends from Maine, New Brunswick, the Gulf of St. Lawrence (Gaspé Peninsula, Magdalen Islands) and the lower St. Lawrence River, west through the upper Great Lakes, the southern Prairie provinces and northern Prairie states (Alberta, Manitoba, Minnesota, Montana, North Dakota, Saskatchewan, and South Dakota), and north to northeastern British Columbia and southern Northwest Territories (Fig. 1). Continuing summer sightings in the Peace River region near Dawson Creek in northeastern British Columbia and in the Kootenay region in southeastern British Columbia suggest it breeds fairly regularly in both areas (Settingington 1997; S. Kinsey pers. comm. 2008; British Columbia Breeding Bird Atlas 2011), where its status as a regular breeder was formerly uncertain (Alvo and Robert 1999). Within much of this area its distribution is discontinuous or localized. There is also an apparently disjunct but significant breeding population along the coast of James Bay in Ontario and Québec, and along the Hudson Bay coast in Ontario and Manitoba. The species' presence remains largely undocumented due to problems of accessibility in some areas (Fig. 1).

Yellow Rails winter in a narrow band situated along the eastern and southern coast of North America from North Carolina (rarely) south throughout Florida, then west in a band along the coast to southern Texas (Fig 1; Bookhout 1995; Alvo and Robert 1999). A disjunct population breeds in southwestern Oregon (Stern et al. 1993), and might winter in California, judging from scattered reports there (R. Russell, cited in Waterbird Conservation for the Americas [WCA] 2006). On migration, the birds have been recorded at numerous locations between the breeding and wintering grounds, although exact migratory routes are unknown (Bookhout 1995).



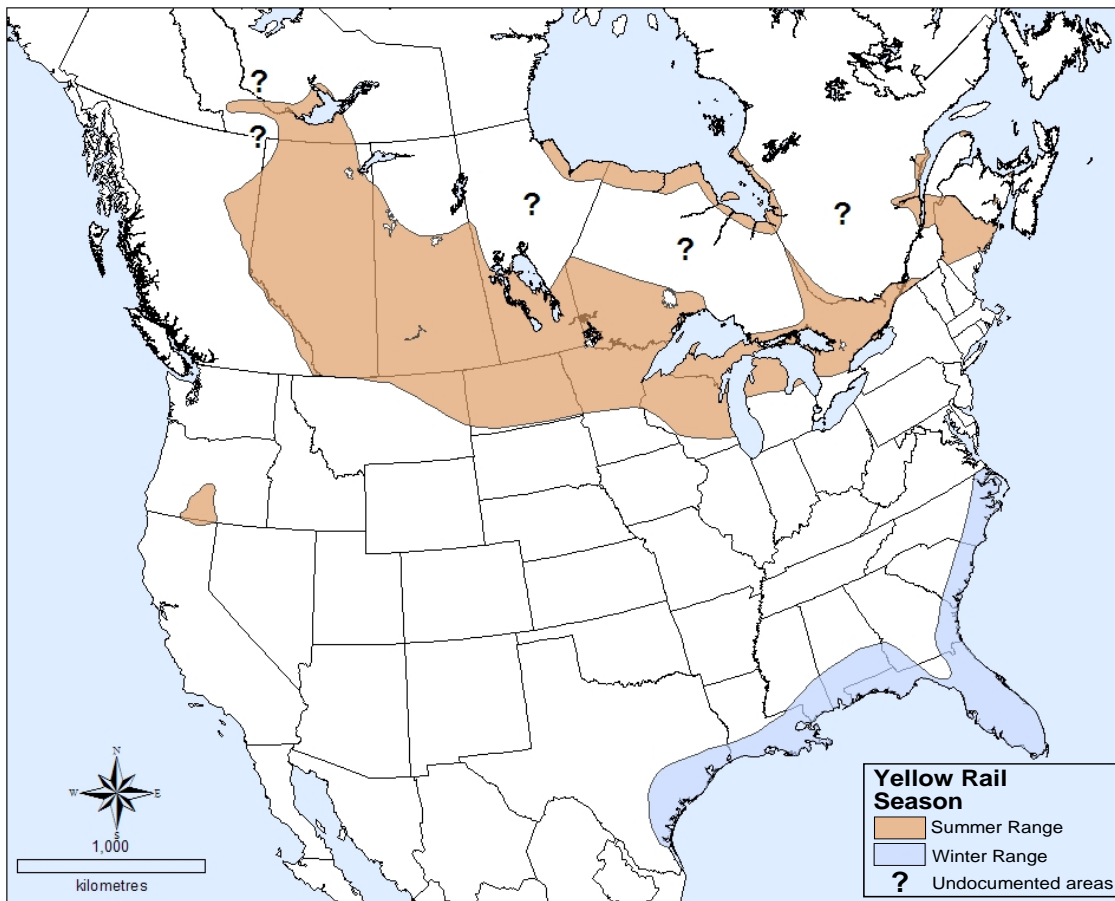


Figure 1. Approximate breeding and wintering range of Yellow Rails in North America (adapted from COSEWIC 2009).

Occasionally birds are detected outside the range just described, for example in northern Nova Scotia (Tufts 1986; Erskine 1992). As with most rails (Remsen and Parker 1990), these individuals probably represent strays or occasional breeding events outside the main range. Nonetheless, such reports might indicate that the range is larger than currently thought, including for example California (R. Russell, cited in WCA 2006). Recent records have extended the known summer range west and north of the previously known limit of Great Slave Lake, to as far as Nahanni National Park Reserve (C. Machtans, cited in WCA 2006).

Yellow Rails are challenging to detect and survey by conventional survey techniques due to their secretive behaviour and propensity for calling during the middle of the night (Bart et al. 1984; Prescott et al. 2002; Bazin and Baldwin 2007); therefore population size and trend estimates are poorly known. Both the Breeding Bird Survey and the Standardized North American Marsh Monitoring Program (Conway 2011) may not detect Yellow Rails even if they are present because of the time-of-day these surveys are carried out (Bazin and Baldwin 2007). Even species targeted surveys can fail to miss individuals since at least three visits are required to determine if species is present at a site (with a 90% confidence interval) (Bazin and Baldwin 2007). Research is thus needed to refine, improve, and standardize such survey techniques for the Yellow Rail.

Alvo and Robert (1999), using rough estimates of the number of known and/or potential summer locations in Canada, and assuming a mean of 5 pairs per location plus “a few thousand” additional pairs for the Hudson Bay/James Bay lowlands region, suggested a Canadian population estimate of about 5,000 pairs (10,000 mature individuals). While admitting that the population size is unknown, COSEWIC (2009) judged the estimate of about 5,000 pairs to be plausible. Nevertheless, it would be best not to use this estimate for population trend or management purposes, given its high level of uncertainty.

In Canada, population trends should be indirectly inferred from local habitat trends. Briefly, these trends suggest historical declines, especially a northward retraction of the southern limit of the breeding range. More recently (i.e., past 10-30 years), particular breeding sites have been lost in Alberta, Quebec, and Ontario to agriculture or industry, as well as in localized areas along the Hudson and James Bay coasts because of overgrazing by geese. Habitat loss and degradation also continue in the winter range through intense land development pressure, losses to agriculture and hurricane impacts on coastal habitat.

### **3.3 Needs of the Yellow Rail**

#### **3.3.1 Habitat and biological needs**

Yellow Rails inhabit shallow wetlands and other wet areas with grass-like vegetation. They breed in wetlands such as damp hay fields or meadows, floodplains, bogs, upper levels of estuaries, salt marshes (Bookhout 1995, Alvo and Robert 1999, COSEWIC 2009), shallow prairie wetlands, and wet montane meadows (Peabody 1922, Sherrington 1994, Popper and Stern 2000). These wetlands are generally dominated by short, fine-stemmed herbaceous vegetation, especially sedges (*Carex* spp.), as well as other graminoid vegetation of the families Cyperaceae, Poaceae, and Juncaceae. Vegetation structure (e.g. short, grass-like, and dense) is likely more important than its taxon (Robert et al. 2000). Breeding habitats may have up to 50 cm of standing water, but typically nesting sites are less than 15 cm deep (Bookhout 1995, Robert et al. 2000, Wilson 2005). The species' narrow tolerance for shallow water levels likely explains why its abundance at any given site can vary dramatically from year to year (Bookhout 1995, Robert and Laporte 1999, Kehoe et al. 2000, Lindgren 2001).

Breeding habitat must also be partly overlain by mats of dead vegetation (Robert et al. 2000, Popper and Stern 2000), which likely shelter nests and perhaps the birds themselves from predators (Stenzel 1982, Robert and Laporte 1999). After the nesting period, this canopy of dead vegetation may be less critical and could impede movements or limit prey availability to some extent with possible negative consequences for foraging (Robert and Laporte 1999, Robert et al. 2000, Wilson 2005).

The size of wetlands required by Yellow Rails is unknown. Yellow Rails occur mainly in wetlands large enough to support several pairs, i.e. larger than 10 ha, but males will call in wetlands as small as 0.5-4.0 ha (Robert 1996, Alvo and Robert 1999). Based on limited studies, home range varies from 1.6-19.8 ha for males and is smaller than 2.0 ha for females (Bookhout and Stenzel 1987, Robert 1996). Males are territorial (Stalheim 1974, Stenzel 1982), but the borders of their territories can overlap (Bookhout and Stenzel 1987). Densities of calling males in large areas of apparently suitable habitat vary from 0.01/ha to 0.18/ha, with a median range of 0.04 and 0.06/ha (Bookhout 1995, Robert and Laporte 1999, Robert et al. 2004, Wilson 2005, Tozer 2007).

Spring arrival in the southern part of the breeding range is from late April to mid May (Bookhout 1995), but not until the third week of June in the vicinity of Churchill, Manitoba, along western Hudson Bay, suggesting that birds may stage for weeks partway along their migration route (Jehl 2004). Egg-laying usually begins in late May in the northern states and early June in southern Canada (Bookhout 1995, Robert and Laporte 1996). Mean clutch size is 8 eggs (range 5-10).

The diet of the Yellow Rail has never been thoroughly studied across its entire range, though one thorough study was conducted in Quebec. In that study, the diet consisted of 68% invertebrates and 32% seeds (Robert et al. 1997). Other, less systematic reports of diet have been qualitatively similar to these results, though seed content may be higher in winter, as with other rails (Robert et al. 1997).

Autumn departure is hard to determine precisely. Birds may leave northernmost sites by early September (Jehl 2004) and more southerly areas by late September (Bosso 1965, Seets and Bohlen 1977). Several authors have suggested that large scale movements, in some cases up to hundreds of kilometers, may occur after breeding but before fall migration, (Robert and Laporte 1999, Kehoe et al. 2000, Perkins 2007). Unfortunately very little is known of the prevalence or importance of a moult migration and potential moulting sites for Yellow Rails (Robert and Laporte 1999). In addition, the characteristics of moulting habitat are probably similar to breeding habitat although the tolerance for water levels is likely broader and the presence of senescent mats of vegetation may be less important.

Habitat used during migration is similar to breeding habitat, but includes a broader range of open, grassy areas (Mueller 2007). Migration stopover sites are particularly poorly known. Those that are known can attract high densities of birds (e.g., White 2007). Migration occurs at night, occasionally in flocks (Pulich 1962), and across a geographically wide area, rather than concentrated along narrow flyways (Bosso 1965, Seets and Bohlen 1977, Bookhout 1995, Goldade et al. 2002).

Winter habitat is more variable than breeding habitat, and includes fields of rice and other grains, hay fields, wet meadows, both inland and coastal marshes (especially those dominated by *Spartina spp.*), and coastal prairie (Bookhout 1995). Beyond these generalizations, the details of the bird's specific winter habitat needs are poorly understood. Wintering home ranges of radio-tracked birds in Texas studies ranged from 0.50 to 3.86 ha with some individuals clumped in small groups (Mizell 1998, Grace et al. 2005). Historical records of birds collected in South Carolina and the Chesapeake Bay area along the Atlantic coast also suggest that males and females may overwinter at different latitudes or use different habitats (Post 2008).

### 3.3.2 Limiting factors

The chief factor known to limit Yellow Rail populations is the species' reliance on a specific wetland habitat type that can easily become unsuitable if water levels shift outside the species' favoured range; local abundance can vary greatly in relation to water level (Bookhout 1995, Kehoe et al. 2000). Additionally, winter habitat may be particularly limiting, given the small size of the wintering range, which is only 7% of the size of the breeding range (COSEWIC 2009).

Apart from the species' narrow habitat needs, limiting factors are poorly understood. While predators, such as raptors, are known to prey on Yellow Rails and their clutches, the population

impacts of predation have not been elucidated (COSEWIC 2009). Basic demographic information is lacking, including lifespan, age at first breeding (perhaps one year), juvenile survival, and dispersal (Bookhout 1995). No information exists on parasitism or disease, which may also be important limiting factors, as found for other rail species (Eddleman et al. 1988).

## 4. THREATS

### 4.1 Threat Assessment

**Table 3. Threat Assessment Table.**

Threat	Level of Concern <sup>1</sup>	Extent	Occurrence	Frequency	Severity <sup>2</sup>	Causal Certainty <sup>3</sup>
<b>Habitat Loss or Degradation</b>						
Development	High	Widespread	Historic and Current	Continuous	High-Local Unknown- Rangewide	High-Local Unknown- Rangewide
Ranching activities	Medium	Widespread	Current	Seasonal	Medium- Local Unknown- Rangewide	Medium- Local Unknown- Rangewide
Altered hydrology	Medium	Local	Current	Continuous	Medium- Local Unknown- Rangewide	High-local Unknown- Rangewide
<b>Exotic, Invasive or Introduced Species</b>						
Invasion by plant species	Medium	Local	Current and Anticipated	Continuous	Medium-local Low- Rangewide	Medium/ High-local Low- Rangewide
<b>Accidental Mortality</b>						
Infrastructure hazards	Medium	Widespread	Current	Seasonal	Unknown	Medium- Local Unknown- Rangewide
Agricultural operations	Medium / Low	Widespread	Current	Seasonal	Unknown	Medium- Local Unknown- Rangewide
<b>Changes in Ecological Dynamics or Natural Processes</b>						
Overgrazing of vegetation by geese	Medium/ Low	Local	Current	Seasonal	Medium- Local	High-Local
<b>Pollution</b>						
Agricultural and industrial pollution	Low	Local	Unknown	Recurrent	Low	Low
<b>Disturbance or Harm</b>						
Recreational activities	Low	Local	Current	Recurrent	Low	Low
<b>Climate and Natural Disasters</b>						
Climate Change	Low	Widespread	Current and Anticipated	Continuous	Low	Low

<sup>1</sup> Level of Concern: signifies that managing the threat is of (high, medium or low) concern for the recovery of the species, consistent with the population and distribution objectives. This criterion considers the assessment of all the information in the table.

<sup>2</sup> Severity: reflects the population-level effect (High: very large population-level effect, Moderate, Low, Unknown).

<sup>3</sup> *Causal certainty: reflects the degree of evidence that is known for the threat (High: available evidence strongly links the threat to stresses on population viability; Medium: there is a correlation between the threat and population viability e.g. expert opinion; Low: the threat is assumed or plausible).*

## 4.2 Description of Threats

Threats are listed in order of decreasing level of concern. Threats ranked as “low level of concern” in Table 3 are not described in this section.

### ***Development***

The main threat to Yellow Rail populations is habitat loss from agricultural, commercial, industrial and infrastructure development (COSEWIC 2009). Historical declines in wetland habitats in parts of both summer and winter ranges are well documented (Eddleman et al. 1988).

Breeding and moulting habitat in the southern Canadian range has declined mostly through ditching, diking, draining, diversion, and filling to convert wet areas into arable land, but also through direct cultivation of Yellow Rail habitat, because it is drier and easier to access compared to habitat of other wetland species. Even though wetland conservation efforts have improved in regions where historical wetland losses were most intense, specifically within the Prairies, lower Great Lakes, and St. Lawrence Lowlands, small scale destruction still continues, adding cumulatively to the historical declines (Wiken et al. 2004). Historically, an apparently large population in Holland Marsh, Ontario started declining when draining for agriculture began (Devitt 1939); this population had disappeared by the 1980's (Tozer 2007). Prescott et al. (2002) noted that several historical breeding sites in Alberta were impacted by agriculture, and suggested that similar wetlands throughout the Prairies may continue to be affected by drainage and other agricultural development activities. Similarly, in Oregon, 85% of wetlands have been lost in one area favoured by Yellow Rails (Upper Klamath Basin), and several summering sites have been lost to ditching and draining since 1985 due to agriculture expansion (Stern et al. 1993).

Commercial, industrial, and highway developments have also displaced the species' habitat locally in Manitoba and Quebec (Wilson 2005, Robert et al. 1995, Dalpé-Charron 2006). Large-scale projects are anticipated to affect wetland habitat in the northern part of the range, specifically oil sands development in Alberta and pipeline construction in the Mackenzie Valley region (Alvo and Robert 1999, Oil Sands Wetlands Working Group 2000, Goldrup 2008). Peat farming is an emerging local threat in Alberta (Alvo and Robert 1999). The short rotation forest biomass, which is increasingly becoming promoted in Quebec, has been identified as a potential threat. Some land owners at Île aux Grues are interested in developing this activity in open areas (e.g. high marshes) (H. Pelletier pers. comm. 2013). Plantation of short rotation forest species (e.g. Pussy Willow [*Salix discolor*]) in Yellow Rail habitat would be detrimental to the species.

The narrow belt of wintering habitat, including coastal salt marshes and flooded agricultural fields in the southeastern United States, is under intense development pressure (Alvo and Robert 1999). Because the wintering area is small relative to the size of the breeding range (see Section 3.3.2), loss of winter habitat may have a disproportionately large effect on the species' recovery (Alvo and Robert 1999). Seasonally-flooded agricultural sites in Texas and Louisiana such as

rice fields that provide winter habitat for Yellow Rails are being converted to other crops and uses, such as sugar cane, as well as for cattle grazing and development, that do not provide wintering habitat (Alvo and Robert 1999). Oil and gas and groundwater extraction in coastal wetland areas may be contributing to the loss and degradation of wetlands on a highly localized basis (Boesch et al. 1994, White and Tremblay 1995). Alvo and Robert (1999) indicated that rates of habitat loss specifically associated with wintering Yellow Rails are difficult to estimate since so little is known about which specific habitats they use.

### ***Ranching Activities***

Mowing, haying and burning of wetland emergent vegetation are activities sometimes associated with ranching in various parts of the breeding and wintering ranges of Yellow Rails. Periodically mowing, haying, or burning wetland vegetation at appropriate times can help maintain Yellow Rail habitat by arresting succession, but if done too frequently, these actions can also temporarily remove the dead vegetation canopy required for nesting (Robert et al. 2000). Burning too infrequently can result in very hot fires that destroy root systems (Burkman 1993, Mizell 1998). Historically, a decrease in fire frequency, compounded by grazing of the vegetation that fuelled them, transformed Texas coastal prairies to unsuitably dry shrubby habitat (Grace et al. 2005). Grazing by livestock is also a frequently noted local threat to wetland habitats (Eddleman et al. 1988, Bookhout 1995). Livestock typically graze the margins of wetlands, where Yellow Rails are most likely to occur (Eddleman et al. 1988, Bookhout 1995). Grazing presumably increases disturbance (Robert 1997), but more importantly it reduces the height and cover of wetland vegetation (Robert 1997, Lundsten and Popper 2002, Grace et al. 2005). Either grazing or mowing might have led to abandonment of breeding areas in North Dakota (Peabody 1922). In Alberta, several historically occupied sites were found to be dry and being grazed when visited in 2000 (Prescott et al. 2002).

### ***Altered Hydrology***

Alterations to hydrology, including activities such as damming, draining wetlands, dredging, channelizing, and creation of impoundments, can threaten habitat at all stages of the life cycle, even when they occur away from Yellow Rail sites. In addition, wetland conservation projects that alter natural hydrological conditions often lack the range of habitat conditions needed by rails (Eddleman et al. 1988).

On the wintering grounds, the dredging of canals and the creation of levees and dams along the Mississippi River and other rivers have altered hydrological and sediment dynamics in coastal wetland areas, resulting in the loss and degradation of coastal wetlands (Boesch et al. 1994, White and Tremblay 1995, Day et al. 2000).

### ***Invasion by Plant Species***

Along the St. Lawrence River, European Common Reed (*Phragmites australis. ssp. australis*) has invaded Yellow Rail habitat locally, creating tall reedbeds that the species avoids (Marineau et al. 2002). For example, European Common Reed has increased in Yellow Rail habitat at Île aux Grues over the past 15 years, leading to recent efforts to eradicate it (Marineau et al. 2002,

Dalpe-Charron 2006). Wetlands in the region are well known to be besieged by various invasive plant species like European Common Reed or Reed Canary Grass (*Phalaris arundinacea*) that have been shown to invade Yellow Rail habitat or degrade the habitat more indirectly, through their effects on wetland ecology (Lavoie et al. 2003). In addition, wet sedge meadows in the Lac St. Francois National Wildlife Area, a site known to be used by Yellow Rails, have been invaded by Speckled Alder (*Alnus incana* spp. *rugosa*) (Brisson et al. 2006).

At the same time, however, some invasive species might be tolerated. For example, Île aux Grues, Quebec, has also been invaded by Purple Loosestrife (*Lythrum salicaria*), but Yellow Rails have been observed breeding in areas dominated by this and other invasive plants (Robert et al. 2000). The ongoing threat of invasive species to Yellow Rail habitat at Ile aux Grues remains limited to the high marsh areas (see map in Dalpe-Charron 2006, pg. 45). Thus the effects of invasive plant species on Yellow Rails can be severe, but locally variable and dependent on the species of invasive plant.

### **Infrastructure Hazards**

Mortality caused by collisions with towers, power lines, and fences are hard to document systematically, but the numerous records of accidental collisions throughout the range suggest that this may be a widespread threat (Bosso 1965, Seets and Bohlen 1977, Goldade et al. 2002).

### **Agricultural Operations**

Haying and harvesting crops can disturb or kill adult Yellow Rails, destroy nests, or expose nests to depredation (Alvo and Robert 1999). In the southern United States, adult Yellow Rails are commonly attracted to rice fields by the apparently suitable habitat; however, they can experience high mortality rates from harvest operations in these fields. Certainly the birds are flushed routinely, causing disturbance and exposure to predators (e.g., Perkins 2007).

### **Overgrazing of Vegetation by Geese**

Coastal wetlands along the western shores of Hudson Bay and James Bay have been severely degraded locally over the last two decades because of overgrazing of vegetation by increasing populations of Snow Geese (*Chen caerulescens*) (Abraham et al. 2005, Jefferies et al. 2006). Yellow Rails have disappeared from several sites at La Perouse Bay since 1989 (Jehl 2004) and from grazed portions of Wapusk National Park, where the rails may have moved to ungrazed sedge fen meadows farther inland (Rockwell et al. 2007). This overgrazing may have contributed to the 52% decline in Yellow Rail reports from the coast of Hudson Bay in Ontario over the last two decades, although changes in survey coverage (Tozer 2007) or other factors (e.g., mortality of wintering birds, range retraction) are equally-plausible explanations.



## 5. ACTIONS ALREADY COMPLETED OR UNDERWAY

### ***Monitoring and Assessment***

- Surveys and tracking of Yellow Rail movements completed in southern Quebec in 1997 (Robert and Laporte 1999)
- Survey completed in southeastern James Bay (Robert et al. 2004), Alberta (Prescott et al. 2002), southeast and Interlake regions of Manitoba (R. Bazin, Environment Canada-CWS, unpubl. data.), and portions of east central Saskatchewan (McMaster 2007).
- Breeding bird atlases completed in Ontario (2000-2005) and Alberta (2001-2005), and underway in the Maritimes, Manitoba, British Columbia and Quebec.
- Numerous Yellow Rail sites in southern Quebec visited yearly by volunteers through the Suivi de l'occupation des stations de nidification des populations d'oiseaux en péril au Quebec Program (SOS-POP).
- Various Yellow Rail surveys completed in Douglas Marsh Important Bird Area (IBA) in Manitoba (Cochrane Environmental Consultants Inc. 1998, Wilson 2005) and IBAs from the Gaspé Peninsula in Quebec (Nature Conservancy Canada 2006). Survey completed within and around Wood Buffalo National Park, Elk Island National Park, and Wapusk National Park (Rockwell et al. 2007).
- Marsh bird surveys completed along some sections of the Trent Severn Waterway National Historic Site from 2006 to 2008.
- Draft standardized Yellow Rail survey protocol completed (Bazin and Baldwin 2007).
- Thirteen environmental assessment reports completed for oil sands projects (e.g., Goldrup 2008).
- Marsh Bird Monitoring programs have been developed and implemented on an ongoing basis in Ontario, the St. Lawrence Valley of Quebec and in the prairie ecozone of Alberta, Saskatchewan and Manitoba by Bird Studies Canada.
- Surveys of breeding Yellow Rails were conducted at various points on the south and southwest James Bay coast in Ontario between Hanna Bay and Attawapiskat (Baker and Peck 2010).
- A survey focused on Yellow Rail was conducted in Elk Island National Park in 2011 but no individuals were detected during the survey (R. Chapman, pers. comm. 2011).

### ***Conservation and Management***

- Stewardship program, initiated by Ducks Unlimited Canada (DUC) and continued by Nature Conservancy Canada (NCC), is underway in Quebec with local farmers who harvest hay in Île aux Grues (Marineau et al. 2002, Rivard 2007). A three-hectare property was acquired by CNC-Québec region in June 2012 (H. Pelletier pers. comm. 2013).
- NCC has protected several private properties in the Gaspé region that contain Yellow Rail habitat, including 48 hectares in Barachois-de-Malbaie and 39 hectares in the estuary of the Dartmouth River (H. Pelletier pers. comm. 2013).
- Several marshes important to Yellow Rail have been designated as IBAs including Douglas Marsh in Manitoba and Île aux Grues, Gaspé Bay, and Barachois-de-Malbaie in Quebec (Tardif et al. 1999, Lindgren 2001, Wilson 2005).

- An environmental assessment of the effects of the Fishing Lake Conveyance Channel, Saskatchewan on wetland habitat quality for yellow rails and other wetland birds is underway.
- In Alberta, the Ecological Planning Committee for the Lower Athabasca has included the Yellow Rail among species to be monitored as part of efforts to support biodiversity management in the Lower Athabasca Planning Region where there is a great deal of concern about the effects of oil sands development on the environment.

### **Research**

- Research and monitoring completed along the St. Lawrence corridor in the 1990s and at Île aux Grues in 2007, providing data on Yellow Rail breeding habitat, food, distribution, abundance, and movements (see all references by M. Robert cited herein, including Alvo and Robert 1999 and Rivard 2007).
- Research on methods for arresting succession of Yellow Rail habitat to alders at Lac Saint-François National Wildlife Area completed (Brisson et al. 2006).

### **Outreach and Communications**

- Signage and information pamphlets completed and posted at Douglas Marsh IBA in Manitoba and along the Trans-Canada Highway near Douglas to inform visitors about Yellow Rails and the IBA network.
- Interpretive panels completed and erected at Île aux Grues IBA in Québec to inform visitors of the large Yellow Rail population found there (Tardif et al. 1999).
- In 2005, an ornithological information center was established by NCC and local partners in the village of Barachois, Quebec; it has since been moved to Coin-du-Banc, closer to Yellow Rail habitat (H. Pelletier pers. comm. 2013). This centre, as well as the production of interpretive signage (2009) and a pamphlet (2011), has helped raise public awareness on the presence of the species and the fragility of its habitat in Gaspé Peninsula.
- Species at Risk information booklets have been released to help identify the Yellow Rail and all other species considered to be at risk, their typical habitat and potential threats, and their ranges in the Northwest Territories.

## **6. MANAGEMENT OBJECTIVE**

The objective of this management plan is to stabilize the quantity, quality and distribution of Yellow Rail breeding, moulting and migratory stopover habitat across Canada and to promote the conservation and management of suitable habitat on the wintering grounds. Achieving this objective should ensure the conservation of the Yellow Rail in Canada.

## **7. BROAD STRATEGIES AND CONSERVATION MEASURES**

Yellow Rail presence and abundance at any given site can vary dramatically from year to year, as a result of the species' preference for shallow, ephemeral wetlands that can disappear and reappear under various hydrological conditions. Nonetheless, there are certain key breeding, moulting and migratory stopover sites where Yellow Rails are present and abundant year after year, likely as a result of more stable or regular hydrological conditions within those wetlands.

Taken together, these suggest that both a site-specific and a landscape-level approach may be required for Yellow Rail conservation. With this in mind, progress towards the objective for this management plan will be achieved from 2011 until 2016 through the following broad strategies and conservation measures:

1. Identify key Yellow Rail breeding, moulting and migratory stopover sites and regularly assess habitat availability and condition at these sites in Canada. Key sites are those that are threatened, are used regularly over a period of years by Yellow Rails or used by a relatively large numbers of rails.
2. Conserve habitat at key breeding, moulting and migratory stopover sites in Canada.
3. Develop management practices for Yellow Rail habitat and promote their incorporation into existing and future wetland conservation and management initiatives.
4. Fill important knowledge gaps, particularly those related to main threats and effective management and conservation practices.
5. Develop and implement communication tools to increase public and private sector awareness and involvement in Yellow Rail conservation.

## **7.1 Implementation**

Specific measures needed to implement this management plan will likely vary across the species' range, depending on such factors as the frequency and pervasiveness of threats, land tenure, socio-economics and other considerations. Details of approaches may also vary; for example, specific measures needed to maintain habitat in boreal sedge fens in the west may differ from those needed in riverine marshes in the east. The measures listed in this management plan are written so as to be applicable across the species' range. Jurisdictions and stakeholders responsible for the protection and recovery of Yellow Rails in Canada should further refine these implementation measures wherever possible to accommodate regional differences and opportunities. As well, as knowledge of this species, its habitats, and management practices increases, additional detailed measures will need to be considered. The recommended measures to be undertaken between 2011 and 2016 correspond to the five broad strategies and conservation measures mentioned in Section 7 and fall into the following categories: Monitoring and Assessment; Habitat Conservation; Management; Research; and Outreach and Communication. Conservation measures are summarized in Table 4.

### ***Monitoring and Assessment***

Monitoring and assessment are required to identify and maintain key breeding, moulting and migratory stopover sites. They are also necessary for ensuring the long-term availability of a sufficiently broad distribution of suitable wetland habitats across large landscapes to account for temporary regional habitat loss from natural and anthropogenic hydrological changes and permanent cumulative wetland loss. The main activities required are described in Table 4. Notably, Yellow Rail monitoring was included in the 2011 workplan for the Lower Athabasca Planning Region in order to develop an understanding of the potential effects of oil sands mining on this species.

***Habitat Conservation***

Approximately 10% of wetlands in Canada are in protected areas. Thus, the majority of wetlands are on publicly and privately owned land where they could be exposed to a variety of threats related to land use. Measures described in Table 4 will improve the protection of key Yellow Rail breeding, moulting and migration wetland sites in Canada.

***Management***

Implementation of management measures should be promoted at specific wetland sites as well as across broad landscapes within the whole species range to ensure a large suite of available high quality habitat across the species' range in any given year. This should be accomplished in ways that maintain or increase the overall biodiversity at these sites while maintaining or improving habitat for Yellow Rails. Specific management measures that will benefit the Yellow Rail are described in Table 4.

***Research***

As a result of their secretive nature and nocturnal habits, much basic information on the biology of Yellow Rails that is crucial for their conservation remains unknown. The measures listed in Table 4 will focus on addressing priority information gaps related to the conservation of the species in Canada and the United States.

***Outreach and Communication***

The Yellow Rail is not a well-known species and its shallow wetland habitat tends to be neglected. Raising the profile of this bird and its habitat requirements by measures described in Table 4 will aid conservation efforts.

**Table 4. Implementation Schedule**

Measure	Priority	Threats Addressed	Timeline
<b>Broad Strategy: Identify Key Yellow Rail Sites and Assess Habitat</b>			
1. Develop and maintain national database of key breeding, moulting and migratory stopover sites and protection/ownership status.	High	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Agricultural and Industrial Pollution, Recreational Activities	2018
2. Develop national standardized survey protocol for monitoring habitat and populations that is suitable to diverse situations and landscapes.	High	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Agricultural and Industrial Pollution, Recreational Activities	2014
3. Conduct regular surveys throughout and beyond the species range within suitable habitat to find additional key sites.	High	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Agricultural and Industrial Pollution, Recreational Activities	Ongoing
<b>Broad Strategy: Habitat Conservation of Key Sites</b>			
4. Address Yellow Rail requirements in any new (or updated) management plans for public lands in Canada (protected areas, parks, etc.) that support important populations.	High	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Overgrazing of Vegetation by Geese, Agricultural and Industrial Pollution, Recreational Activities	Ongoing
5. Consider Yellow Rail habitat requirements in federal and provincial environmental assessments and project planning activities prior to development.	High	Development, Altered Hydrology, Infrastructure hazards, Agricultural and Industrial Pollution	Ongoing
6. Improve or restore habitat at sites that have been degraded by human activities or by invasive species, where feasible.	Medium	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Agricultural and Industrial Pollution	Ongoing
7. Establish conservation and stewardship agreements with land managers and property owners at important Yellow Rail sites.	Medium	Development, Altered Hydrology, Infrastructure hazards, Invasion of Plant Species, Agricultural and Industrial Pollution	Ongoing
<b>Broad Strategy: Develop Management Practices and Promote Their Use</b>			
8. Develop beneficial management practices for Yellow Rails and their habitats.	High	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Agricultural and Industrial Pollution, Recreational Activities	2018
9. Consider Yellow Rail habitat needs in wetland management plans and activities through ongoing wetland conservation initiatives.	Medium	Altered Hydrology, Invasion of Plant Species	Ongoing
10. Collaborate with US agencies on matters regarding the conservation and management of wintering habitat.	High	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species	Ongoing

<b>Broad Strategy: Fill Important Knowledge Gaps</b>			
11. Initiate, collaborate and encourage research on threats and habitat management and conservation practices in Canada and the US.	Medium	Development, Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Overgrazing of Vegetation by Geese, Agricultural and Industrial Pollution, Recreational Activities	Ongoing
12. Determine setback distances and species tolerance for disturbance related to industrial and other relevant human activities.	Medium	Development, Ranching Activities, Infrastructure hazards, Agricultural Operations	2018
<b>Broad Strategy: Develop and Implement Communication Tools</b>			
13. Develop educational materials for various target audiences, including key First Nations, to promote conservation of Yellow Rails and their habitats.	Low	Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Agricultural and Industrial Pollution, Recreational Activities	2018
14. Develop and host a webpage to disseminate information on Yellow Rails and allow reporting of sightings.	Low	Ranching Activities, Altered Hydrology, Invasion of Plant Species, Infrastructure Hazards, Agricultural Operations, Agricultural and Industrial Pollution, Recreational Activities	2018

## 8. MEASURING PROGRESS

Every five years, success of this management plan implementation will be measured against the following performance indicator:

- By 2018, the quantity, quality and distribution of Yellow Rail breeding, moulting and migration habitat across Canada have been stabilized.
- By 2018, Canada has promoted the conservation of Yellow Rail wintering habitat in the United States.

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## **10. PERSONAL COMMUNICATIONS**

**Charlwood, V.** – Environment Canada, Prairie and Northern Region, Yellowknife

**Haig, S.** – Oregon State University, Corvallis

**Kinsey, S.** – Prince George Naturalist's Club, Prince George

**Pelletier, H.** – Conservation de la nature, Région du Québec, Québec

**Robert, M.** – Environment Canada, Quebec Region, Quebec City

**Stewart, J.** – Environment Canada, Atlantic Region, Sackville

**Chapman, R.** – Parks Canada Agency, Elk Island National Park, Fort Saskatchewan

## APPENDIX A: EFFECTS ON THE ENVIRONMENT AND OTHER SPECIES

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that implementation of management plans may inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the management plan itself, but are also summarized below in this statement.

Overall, this management plan should have a positive effect on other wetland species because it discourages conversion of wetlands to habitats of low biodiversity, such as intensive agriculture. The Yellow Rail's need for shallow wetlands with dense low vegetation conflicts somewhat with the need of many wetland species for deeper water hemi-marsh wetlands, such as the needs of many waterfowl and of Least Bitterns (*Ixobrychus exilis*). However, this management plan encourages maintenance of a diversity of wetland habitats, which has a beneficial effect on overall wetland function and biodiversity, and aids species such as King Rail (*Rallus elegans*) whose habitats are also compromised by conservation measures that focus more strictly on maintaining hemi-marsh conditions. Several species that are of conservation concern locally or regionally share similar habitat needs to Yellow Rails and thus will directly benefit from the measures in this plan. These species include Short-eared Owl (*Asio otus*), Sedge Wren (*Cistothorus platensis*), Nelson's Sparrow (*Ammodramus nelsoni*), LeConte's Sparrow (*Ammodramus leconteii*), Eastern Prairie White-fringed Orchid (*Platanthera leucophaea*) and Bogbean Buckmoth (*Hemileuca* sp.). Conservation measures for Yellow Rails are not known to have any specific adverse effects on any other species.