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Yellow Rail

Minnesota Conservation Summary

Audubon Minnesota
Spring 2014



The *Blueprint for Minnesota Bird Conservation* is a project of Audubon Minnesota written by Lee A. Pfannmuller (leepfann@msn.com) and funded by the Environment and Natural Resources Trust Fund. For further information please contact Mark Martell at mmartell@audubon.org (651-739-9332).

Yellow Rail

Priority for Minnesota's Bird Conservation Plan:

- Prairie Parkland: Highest Level Priority
- Boreal Hardwood Transition: Highest Level Priority
- Aspen Parklands: Highest Level Priority

Other Status Classifications:

- Officially classified as Special Concern in Minnesota
- Minnesota Species of Greatest Conservation Need
- Minnesota Audubon Action List
- Red Watch Species on National Audubon's 2007 List
- Listed as a sensitive species on both the Chippewa and Superior National Forests (2006)
- USFWS Bird of Management Concern in Region 3
- USFWS 2005 Focal Species
- USFWS Bird of Conservation Concern in BCR11, 12, 23, Region 3, Nationally (2008)
- Focal Species for the Upper Mississippi Valley/Great Lakes Joint Venture
- Focal Species for the USFWS Plains and Prairie Potholes Landscape Conservation Cooperative
- United States Waterbird Conservation Plan: High Concern; apparent population decline (PT = 4)
- Northern Prairie and Parkland Waterbird Region: High Concern
- Upper Mississippi River and Great Lakes Waterbird Region: High Priority in BCR12; TBD Priority in BCR22; and High Priority in BCR23; Focal Species for Region-wide monitoring because it is a Conservation Priority species in the UMVGL Region
- Listed as Special Concern in Canada (Committee on the Status of Endangered Wildlife in Canada, 2010)

Population Information:

- North American population estimate: <6,000 pairs (UMVGL Waterbird Conservation Plan)
- U.S. Population estimate: 600-750 pairs; mainstay of U.S. population is in Minnesota (UMVGL WCP)
- Long-term declining trend across southern portion of North American range. Likely extirpated in Illinois and Ohio. Declined greatly across southern Ontario range, nearly extirpated, but remaining small number (<100 pairs) may now be stable. Has declined and continues to decline in U.S.
- Population goal in the UMVGL JV region is 13,000; the current estimate is 8,700; the projected deficit is 4,300.
- Population estimate in Minnesota portion of BCR12 is 300 birds; Minnesota portion of BCR23 is 40 birds; Minnesota portion of BCR22: Extirpated (UMVGL JV Plan)
- No estimate available for species population in Minnesota BCR11

Minnesota BBS Data:

- Not detected by the Breeding Bird Survey
- Minnesota has 2.47% of the species North American breeding range

Minnesota Residency: Breeds NW & NC; rare migrant throughout

Habitat Requirements: Marsh

Seasonal wetlands & wet meadows; breeds in in wet sedge meadows dominated by *Carex lasiocarpa*, with moist substrate to standing water; quality of breeding habitat diminished by invasion of woody species such as willows and dwarf swamp birch (from Birds of North America)

Large, dense, wet meadows, characterized by fairly low herbaceous vegetation with little or no standing water (generally 0-12cm). Density of breeding males recorded in coastal marshes in SE James Bay, Quebec, varied by plant community, and ranged from .008 to 0.134/ha; in Michigan, density at Seney NWR .01/ha; in Oregon at Klamath Marsh NWR, density .04/ha. *Carex* sedges common but many other graminoid species may also dominate habitat. Senescent vegetation – consisting of dry litter from previous year – used to build and conceal nest. Nest substrate remains saturated throughout summer. Unlikely to nest in cattails; habitat quality decreases with invasion of woody species. Forages in shallow water (3-4 cm). (UMVGL WCP).

From USGS Effects of Management Practices on Wetland Birds: Yellow Rail:

- The presence of Yellow Rails in a wetland usually is related to water depth; they nest in areas with standing water or saturated ground; water depths at nest sites ranged from 0 to 20cm
- Often inhabit areas where water depth fluctuates throughout the breeding season. An area used by rails may have 20-30cm of standing water in the spring and no standing water by July or September.
- In a northwestern Minnesota wetland, vegetation where Yellow Rails were observed was composed of 90% sedges and 10% softstem bulrush (*Schoenoplectus tabernaemontani*) and hardstem bulrush (*S. acutus*) (Huber 1960). At the same site, several years later, vegetation where Yellow Rails were observed was identified as cattail, reedgrass (*Calamagrostis* sp.), reed (*Phragmites* sp.), bulrush, sedge, and Lasiocarpes (author's term that probably referred to woolyfruit sedge [*Carex lasiocarpa*]) (Stalheim 1974).
- In northern Minnesota, mean vegetation measurements from 100 sampling points within 10 Yellow Rail territories were 122.4 cm vegetation height, 16% ground cover (coverage of live vegetation with a total height of ≤ 10 cm), 12.6 cm water depth, 77.3 cm phanerophyte height, 357.5 graminoid stems/m², 6.1 forb stems/m², and 7.2 phanerophyte stems/m² (Hanowski and Niemi 1988). Phanerophytes were defined as shrubs, forbs, or graminoids >40 cm high and present each year. Forb species within Yellow Rail territories were arrowhead (*Sagittaria* spp.), wild calla (*Calla palustris*), marsh marigold (*Caltha palustris*), mints (Lamiaceae), parsley (Apiaceae), tufted loosestrife (*Lysimachia thyrsoiflora*), bedstraw (*Galium* spp.), and goldenrod (*Solidago* spp.). Phanerophyte species were willow, and cattails (*Typha latifolia*) (Niemi and Hanowski 1983).
- In Minnesota, 16 wetlands used by Yellow Rails for nesting ranged from 24 to 1000 ha and averaged 231.9 ha (Hanowski and Niemi 1986).

Migration: Temperate

Climate Change Vulnerability: Low (1)

Threats (from UMGVL WCP):

- Destruction and modification of habitat (conversion of sedge meadow to deep-water marsh)
- Lack of fire in sedge meadows and resultant brush invasion
- Untimely manipulation of water levels
- Collisions with towers, tall buildings

From NPP WCP:

- Sites regularly occupied by breeding birds are poorly known
- Drainage of wet (sedge) meadows, temporary, and seasonal wetlands in Drift Prairie
- Agricultural runoff, particularly pesticides may affect wet meadow communities

OVERALL MINNESOTA GOAL: Develop a more efficient and accurate monitoring system

BEST MANAGEMENT PRACTICES:

From UMVGL WCP:

- Pursue open, wet sedge meadow habitat-shallow water (3-4 cm)
- Fire and mowing can be beneficial if timed correctly to prevent vegetative succession and perpetuate optimal habitat; these practices, however, also temporarily reduce potential nesting habitat by destroying senescent vegetation; accordingly, burned areas may not be useable until the first or second spring after a fire.
- Do not convert wet meadow to deep-water marsh

From UMVGL JV Waterbird Plan:

- The frequency of Yellow Rails occupying restored wetlands has not been well documented and special management and monitoring may be required. Restored wetlands often do not contain appropriate vegetation and structure for Yellow Rails. Wetland restoration or creation project must 1) assure basin topography that achieves appropriate water levels for foraging; 2) be designed to establish persistent stands of sedge and fine-stemmed grasses, and/or 3) be planted with preferred plant species.

From NPP WCP:

- Manage to reverse encroachment of woody vegetation in to wet meadows
- Consider placement of towers, wires, or other structures away from wetlands used by rails

From Birds of North America:

- Naturally fluctuating water levels are best, allowing for burning in dry years and suitable breeding habitat in wet years.
- At Seney NWR, maintenance of suitable habitat appears dependent on maintaining suitable growing conditions for *Carex lasiocarpa*.
- Burning to allow invading woody vegetation such as willows and dwarf swamp birch is a positive management practices for breeding areas.
- Manipulation of water levels on refuges to benefit breeding waterfowl could adversely affect Yellow Rails if management objective is to provide hemi-marshes or deep-water marshes.
- Management recommendations for King Rails in midcontinent are probably beneficial to migrating Yellow Rails: maintenance of hummocky topography and natural swales; maintenance of beds of perennial vegetation where water depths are moist to 22 cm; and on intensively managed refuges, maintenance of a complex of wetland units, including marsh habitats that naturally dry during summer.
- Retention of wet sedge meadows, as a component of marsh habitat, is essential

From USGS Effects of Management Practices on Wetland Birds: Yellow Rail

- Keys to management include: Protecting existing wetlands; controlling encroachment of woody vegetation in wet meadows; maintaining standing water in wet meadows, quaking bogs, and fens; and maintaining a dense layer of residual vegetation.
- Burning aids in preventing the encroachment of woody vegetation into wet meadows and in removing mats of dead vegetation that become too thick for nesting. Dead vegetation can fill in a wetland and act like a wick to increase evaporation. The removal of excess residual vegetation may benefit Yellow Rails during periods of low water by increasing the water level in the wetland.
- In Michigan they avoided burned areas immediately post-burn but favored burned areas over unburned areas after one growing season.

- No studies have evaluated the effects of mowing on Yellow Rails or grazing
- Efforts to maintain standing water in wetland areas and/or to reverse long-term dry conditions should be beneficial to Yellow Rails.
- The enforcement of the 1985 “Swampbuster” Farm Act would protect a maximum acreage of wetlands from further drainage
- It is unknown if Yellow Rails will use restored wetlands but restored wetlands that are very isolated from natural wetlands may not contain the plant seeds necessary for revegetation. Galatowitsch and van der Valk (1994) present a detailed explanation of restoration methods and provide specific recommendations for establishing vegetation in restored wetlands.
- Rather than relying on *Carex* species as the only indicator of suitable habitat, attention must be given to maintaining plant structure, maximum water levels and the presence of a senescent canopy.

MONITORING NEEDS

From UMVGL WCP

- The Yellow Rail is a focal species for monitoring (conservation priority). It should be included in marsh bird monitoring efforts. Special efforts to monitor regularly and to assess population status and trends should be undertaken in important breeding areas, especially in MI, MN, and identify and target high priority landscapes and habitat for conservation action.

From UMVGL JV Plan

- Special night surveys can be successful at documenting occurrence and perhaps estimating densities.
- Local monitoring programs may be needed to evaluate management actions with targeted surveys in known and suspected breeding areas. Eliminating the current population deficit requires a 100% population increase or an average of 5% annually over a 15 year period.

Recommendation from UMVGL JV Plan:

- Information about the location, size, productivity and long-term viability of inland (away from Great Lakes shoreline) colonies is needed. Surveys of known and new nesting colonies conducted on a more regular basis (e.g. annually or every 3-5 years) would assist assessment of management efforts.

CONSERVATION ACTIONS

- Identify and target high priority landscapes and habitats for conservation action (NPP WCP).
- **Action:** Identify Important Bird Areas that are a priority for this species in Minnesota
- Use National Marsh Bird Workshop objectives as guidelines to increase breeding populations towards pre-1970 levels to prevent range contraction.
- Pursue opportunities to increase habitat
- Employ strategies and prioritize management practices to maintain appropriate habitat in important breeding areas.
- Identify stopover sites and stopover habitat requirements
- **Upper Mississippi Valley/Great Lakes Joint Venture Region:** Adopt habitat objectives for the Yellow Rail established by the UMGLJV Waterbird Habitat Conservation Strategy (Soulliere et al. 2007) to maintain and/or benefit this species (UMVGL WCP).

Wet Meadow with Open Water Goals for the Yellow Rail in Minnesota

BCR	Maintenance & Protection	Restoration & Enhancement
11	No goal established by PPJV (see next targeted conservation action)	No goal established by PPJV (see next targeted conservation action)
12	5,320 acres	5,320 acres
23	240 acres	240 acres

Action: Work with UMVGL JV conservation partners on Minnesota IBAs that support significant populations of Yellow Rails in the UMVGL region to achieve established habitat goals.

- **Prairie Pothole Joint Venture Region:** Adopt the Minnesota Prairie Landscape Conservation Plan (2010) habitat and restoration goals that target wet meadow wetlands that benefit Yellow Rails

Wetland Goals for the Prairie Pothole Region of Minnesota (BCR11)

Conservation Action	Prairie Landscape Conservation Areas	Specific Conservation Action	Habitat	
			Wetlands (all types)	Wetlands & Grasslands
Protection	Core Areas	Acquisition	62,621 acres	
		Voluntary management or conservation contracts		154,277 acres
	Corridor Areas (complexes & general corridors)	Acquisition	13,295 acres	13,150 acres
		Voluntary management or conservation contracts		131,825 acres
	Matrix Landscape	Acquisition		177,074 acres
		Voluntary management or conservation contracts		1,243,927 acres
Protection Total			75,916 acres	1,720,253 acres
Restoration	Core Areas		82,161 acres	
	Corridor Areas (complexes & general corridors)		20,731 acres	26,428 acres
	Matrix Landscape			250,880 acres
Restoration Total			102,892	277,308

Action: Use the Minnesota Prairie Landscape Conservation Plan (2010) to guide wetland habitat protection and restoration goals by conservation partners within Minnesota's Prairie Pothole Landscape and by Minnesota Audubon and conservation partners within Important Bird Areas located within the Prairie Pothole Landscape.

RESEARCH NEEDS

From NPP WCP Plan:

- Development of effort-efficient survey techniques
- Develop better understanding of habitat selection and population size as they relate to wetland size, wetland characteristics and wetland vegetation
- Identify factors influencing site fidelity and breeding success
- Identify key sites with large populations and establish population monitoring at selected sites
- Determine influence of water level fluctuation, wetland restoration and management practices such as burning, mowing and grazing.

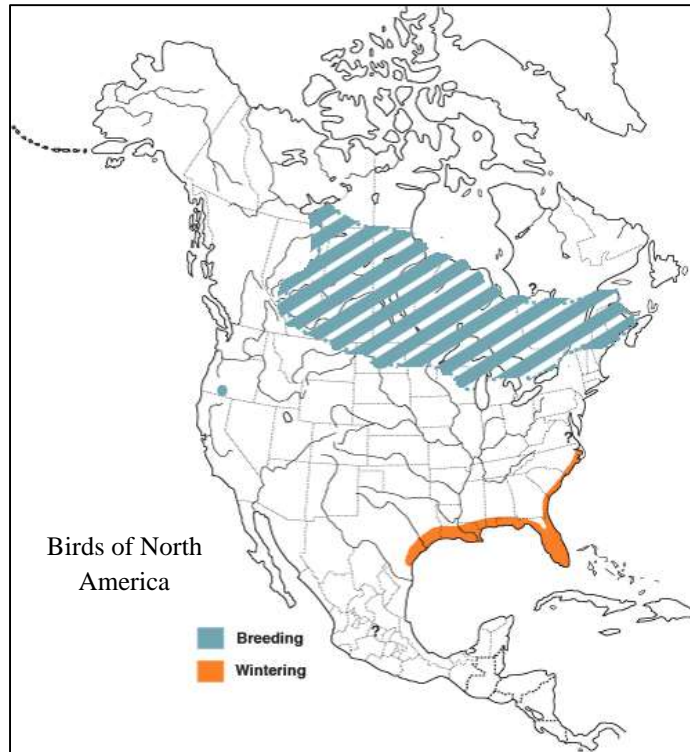
From UMVGL JV Plan:

- Identification of breeding areas, density estimates, breeding success and limiting factors in known breeding areas; identification of migration habitat and needs; compatibility of other wildlife management practices with Yellow Rail breeding habitat; population-level effects of communication tower strikes during migration.

From USGS Effects of Practices on Wetland Species: Yellow Rail

- More research on the effects of waterfowl management practices on yellow rails is needed
- Rails apparently prefer to forage at the interface of moist soil and marsh habitats. Gradual dewatering of topographically diverse wetlands which provide the maximum amount of this habitat is preferred.
- Dense vegetation in a wet meadow that is not burned periodically may cause a fire to burn too hot; a hot fire will remove the root layer, thus requiring a longer time period for regrowth. A large wetland should be burned in rotations so that unburned portions will be available for rails.
- During periods of low water removal of excessive residual vegetation may increase water levels and improve nesting habitat.

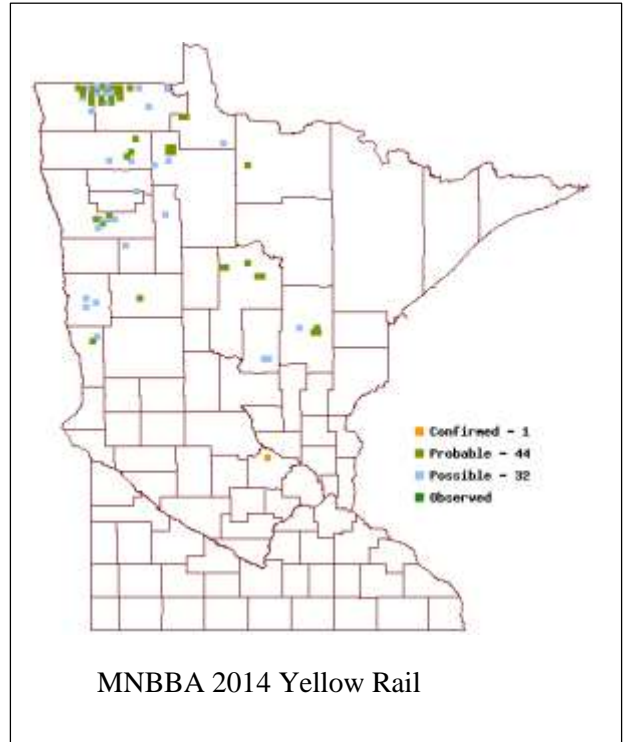
Yellow Rail Distribution Maps



Birds of North America <http://bna.birds.cornell.edu/bna/>



MN DNR http://www.dnr.state.mn.us/eco/mcbs/bird_map_list.html



MN Breeding Bird Atlas <http://www.mnbba.org/>