Species Status Assessment

Common Name: Northern harrier **Date Updated:** March 16, 2025

Scientific Name: *Circus hudsonius* **Updated By:** Heidi Kennedy, Amy Mahar

Class: Aves

Family: Accipitridae

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

The Northern Harrier occurs across the entire United States, breeding in the northernmost regions and into Canada northward to Alaska. It is listed as Threatened in New York due to declining grassland habitat and small populations. They are not listed in VT, but they are endangered in NH, NJ, RI, and CT, and threatened in MA. Northern Harriers breed and winter in New York, occupying open grasslands, shrublands, marshes, and bogs. They also use a variety of open habitats for foraging, including row crops. Breeding Bird Atlas data from 1980-85 to 2000-05 shows no change in the percent of occupied blocks in the state, but shifts in occupancy are apparent; Northern Harrier is a nomadic species that responds to changes in prey availability. Though Breeding Bird Survey (BBS) data from New York and other individual northeastern states are too sparse to show significant trends for Northern Harrier, for the group of north-eastern states (CT, RI, MA, NY, NJ, DE, and MD) between 2000 and 2022 there was a significant decline of 4.07% per year. In addition, BBS data for the Lower Great Lakes/St. Lawrence Plain BCR during this period show a significant decline of 2.92% per year. Survey-wide, the trend for 2000-2022 is declining significantly at 1.3% per year, with a long-term significantly declining trend (1966-2022) of 0.97% per year. As of 2019, Christmas Bird Count data show a non-significant increasing trend since 1970 for NY of 1.96% per year, 95%CI (-1.36, 2.47). However, for the last approximately 10 years (2010-2019), populations have been stable at best with a non-significant declining trend of -1.11% per year, 95% CI (-3.47, 1.31). Changes in wintering populations for this species are likely at least in part due to changes in prey populations and snow and ice cover.

I. Status

a. Current legal protected Status

i. **Federal:** Not Listed **Candidate:** No

ii. **New York:** Threatened

b. Natural Heritage Program

i. **Global:** G5 - Secure

ii. **New York:** S3B, S3N **Tracked by NYNHP?:** Yes

Other Ranks:

-NYS 2025 SGCN Status: Species of Greatest Conservation Need

-IUCN Red List: Least Concern

-Northeast Regional SGCN: Not listed

-COSEWIC: Not at risk

Status Discussion:

The Northern Harrier is a widespread but uncommon breeder. It is a fairly common to common fall migrant, very common spring migrant, and uncommon to rare in winter. Areas of concentration include the Appalachian Plateau, St. Lawrence and Champlain Valleys, as well as the Mohawk Valley. Unlike other declining grassland species, Northern Harriers also nest in freshwater marshes and bogs and hence, are also present in the Adirondacks.

Northern Harrier is ranked as Apparently Secure only in Ontario; in all other states and provinces adjacent to New York, is it ranked as Vulnerable (New York, Vermont, and Pennsylvania), Imperiled (Massachusetts), or Critically Imperiled (New Jersey, New Hampshire, Rhode Island, and Connecticut).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Declining	Unknown	BBS: 1966-2022 significant annual decline of 0.97%, 2012-2022 significant annual decline of 1.18%		No
Northeastern US	Yes	Declining	Unknown	BBS: 2000-2022 significant annual decline of 4.07%		No
New York	Yes	Declining	Stable	BBS: 2000-2022 near-significant declining trend of 2.39% per year with 90% CI BBA: 1980-85 to 2000-05 - stable	Threatened, S3B, S3N	Yes
Connecticut	Yes	Unknown	Unknown	uncommon	Endangered, S1B	Yes
Massachusetts	Yes	Unknown	Increasing	BBS – non significant BBA:	Threatened, S2B, S4N	Yes

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
				1974-79 to 2007-11		
New Jersey	Yes	Unknown	Stable	1980s to 2015	Endangered, S1B, S3N	Yes
Pennsylvania	Yes	Declining	Declining	BBS: 2000-2022 - significant declining trend of 3.77% per year (using 90% CI) BBA: 1984-89 to 2004-08	Threatened, S2B, S3M	Yes
Vermont	Yes	Unknown	Increasing	BBA: 1976-81 to 2003-07	S3B	Yes
Ontario	Yes	Unknown	Stable	BBS- Non-significant trends. BBA: 1981-85 to 2001-05	S5B, S4N	Choose an item.
Quebec	Yes	Stable	Increasing	BBS: 1966-2022 trend near 0 BBA: 1984-89 to 2010-2014	S3S4B	Choose an item.

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York *(specify any monitoring activities or regular surveys that are conducted in New York):*

The NYSDEC has been conducting winter raptor surveys since the winter of 2009-2010 to monitor the long-term status of the wintering population of Northern Harrier and other winter raptors in New York. Between 2012 and 2019, the number of harriers observed per survey hour decreased slightly, but not significantly.

From 2013 through 2021 NYSDEC conducted breeding point counts within managed grassland habitat primarily at Wildlife Management Areas and NYS Grassland Landowner Incentive Program sites. The goals of these surveys were to determine which species were using managed lands, assess the success of management activities, and develop grassland bird Best Management Practices. Starting in 2022, the focus of the NYSDEC point counts has shifted to a more diverse

set of sites, including more private land sites, in an effort to update the Natural Heritage Database. Prior to this, in 2005, Audubon NY conducted grassland bird surveys within the NYS Grassland Bird Focus Areas to help identify target species for each focus area. As a follow up to these surveys, in 2006 NYSDEC did targeted surveys for species that were not well represented in the 2005 survey. Northern Harrier is one of the primary species targeted during all of these survey efforts.

Between 2013 – 2020, the breeding surveys across the state, primarily at LIP and WMA sites, (NYSDEC regions 4-9) ranged from a low of 16 sites, 162 points, and 3043 acres in 2020, to a high of 58 sites, 578 points and 9,331 acres in 2014. Despite the large amount of high-quality habit that was surveyed, the number of harriers observed per year ranged from a high count of only 2– 13 birds (high count over three replicas).

Trends Discussion *(insert map of North American/regional distribution and status):*

Northern Harriers can be fairly visible on the landscape because they are large raptors that forage over wide expanses of open habitat. However, this visibility can lead to a mistaken belief that they are common, when in fact, their populations are steadily declining. Survey-wide during the period 1966-2022 there has been a significant decline 0.97% per year, 95% CI (-1.37, -0.63). During the period 2000-2022, the decline survey-wide has been –1.3% per year, 95% CI (-1.82, -0.76). Within the northeastern states there has been a significant decline of 4.07% per year, 95% CI (-8.47, -0.05).

The northern harrier was considered a common breeder throughout the state until the 1950s. Populations declined severely after that time, partly in response to widespread use of pesticides. Long term decline since the 1950s can also be attributed to changing farming practices. Like all nesting grassland birds, northern harrier populations have seen a long-term decline in reproductive success due to changing farming practices since the 1960s. Earlier harvest date of grassland and hay fields, as well as mechanized ability to harvest not once a season, but three or four times has resulted in widespread decline of nearly all ground nesting grassland species. Breeding Bird Atlas data from 1980-85 shows confirmed breeding in 11% of survey blocks but widespread occupancy (17% of all survey blocks) in appropriate habitat across the state. During the second Breeding Bird Atlas survey (2000-05), the number of blocks occupied remained at 17%, but areas of loss and gain are clear (McGowan and Corwin 2008), illustrating the nomadic nature of this hawk.

Northern harrier spring migration numbers at four New York hawk watch sites (Derby Hill, Braddock Bay, Hamburg and Ripley) have all shown declines in the recent past (2009 – 2019), with Braddock Bay Hawk Watch showing a significant decline of -4.97 % per year CI (-9.34, -0.40). Over longer periods, significant declines are evident at Hamburg, Derby Hill, and Ripley. For instance, from 2003 to 2019, Hamburg Hawk Watch had a -7.87% decline in northern harriers per year, CI (-11.93, -3.54). During the last 10 years, spring migration numbers for northern harrier at Niagara Peninsula Hawk watch in Ontario also had a significant decline of -6.11 % per year CI (-8.15, -4.02), as did Allegany Front Hawk watch in Pennsylvania (-5.82 % per year CI (-10.51 to -1.19).

Most fall hawk watches in the Northeast had significant declines in northern harrier numbers during the period 2009-2019. This includes Hawk Mountain Sanctuary in Pennsylvania which had a significant decline of -4.69% per year CI (-7.81,-1.49). In NY, Mount Peter had a decline of -7.41% per year, CI (-10.33, -4.5) and Fire Island had a decrease of -6.95% per year, CI (-10.77, -2.9).

Migration trends and graphs were obtained from the Raptor Population Index Project (http://rpi-project.org/) (Brandes et al., 2016, Crew et al., 2016)

Christmas Bird Count data show a non-significant increasing trend since 1970 for NY (1.96% per year 95% CI (-1.36, 2.47), but for the last 10 years populations have been stable at best with a non-significant declining trend of -1.11% per year, 95% CI (-3.47 to 1.31).

However, severity of winter weather, including snow depth and snow/ice crust can affect prey availability and thus impact abundance and distribution of harriers in winter months. Additionally, sweeping land use change in the last 15 years such as conversion of fallow fields to corn, for biofuel production, or installation of energy alternatives such as industrial solar or wind projects has changed formerly large open grasslands suitable for breeding or wintering harriers into unsuitable or less ideal habitat.

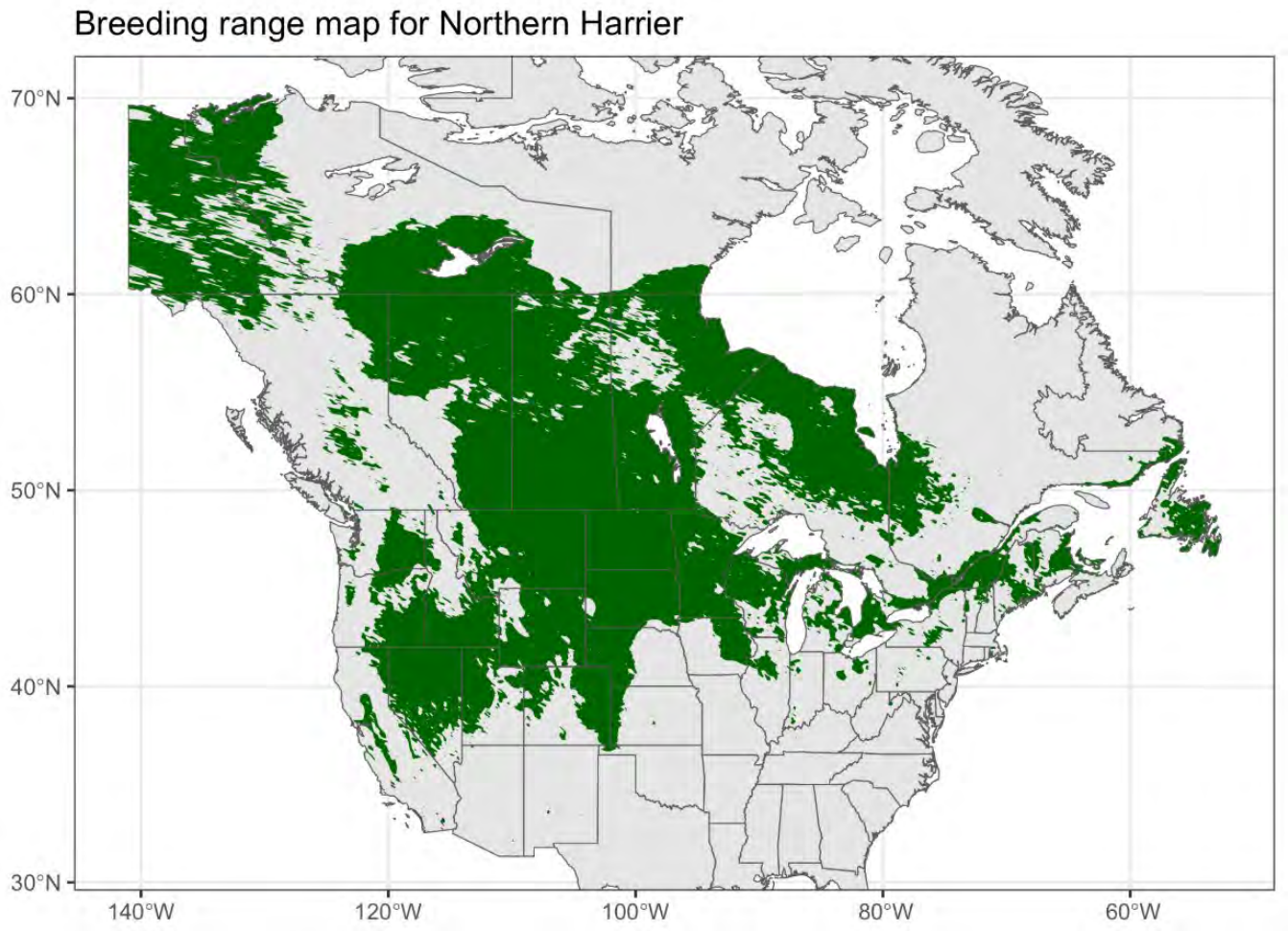

Figure 1. Breeding range map for northern harrier (eBird)

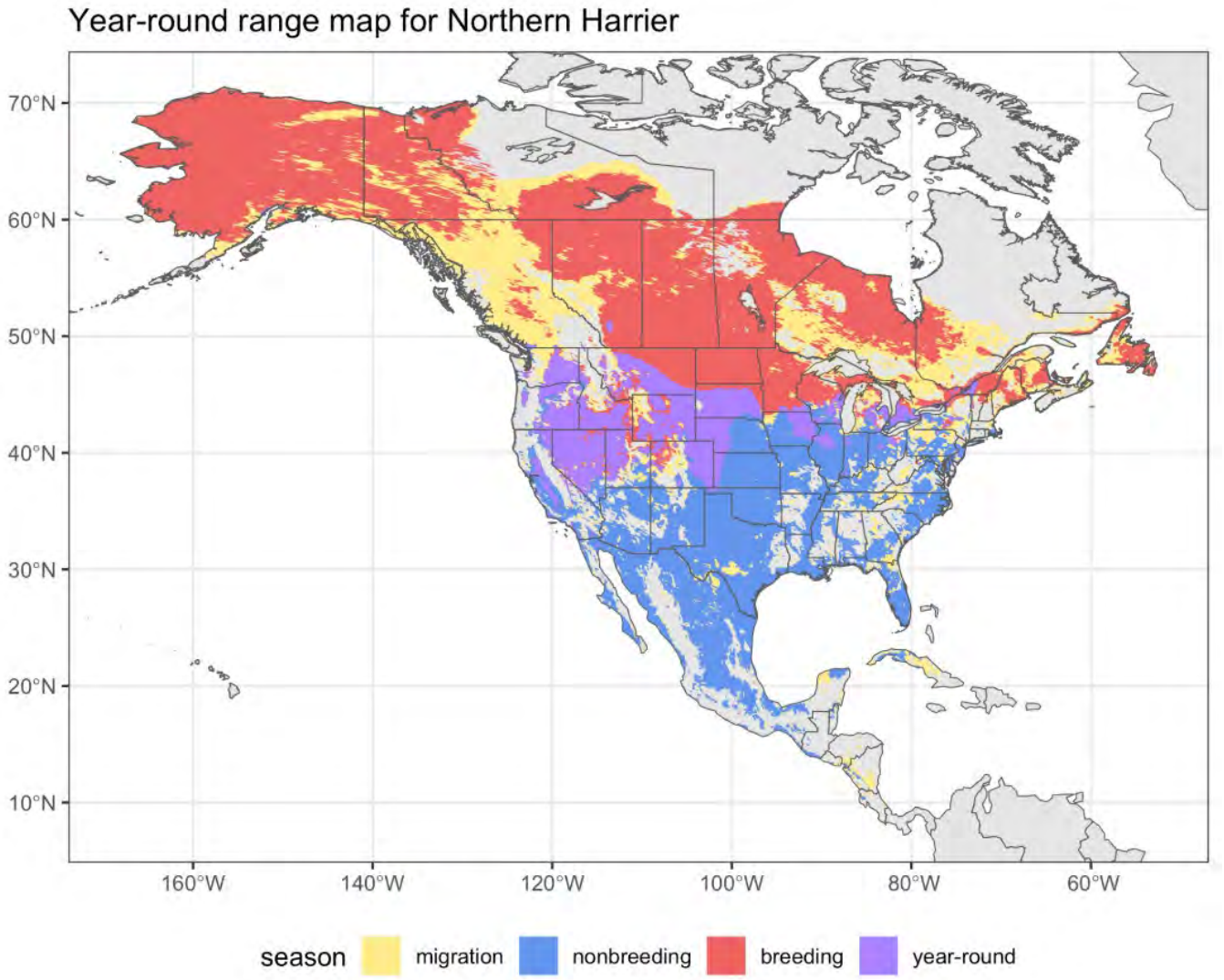

Figure 2. Year-round map for northern harrier (eBird)

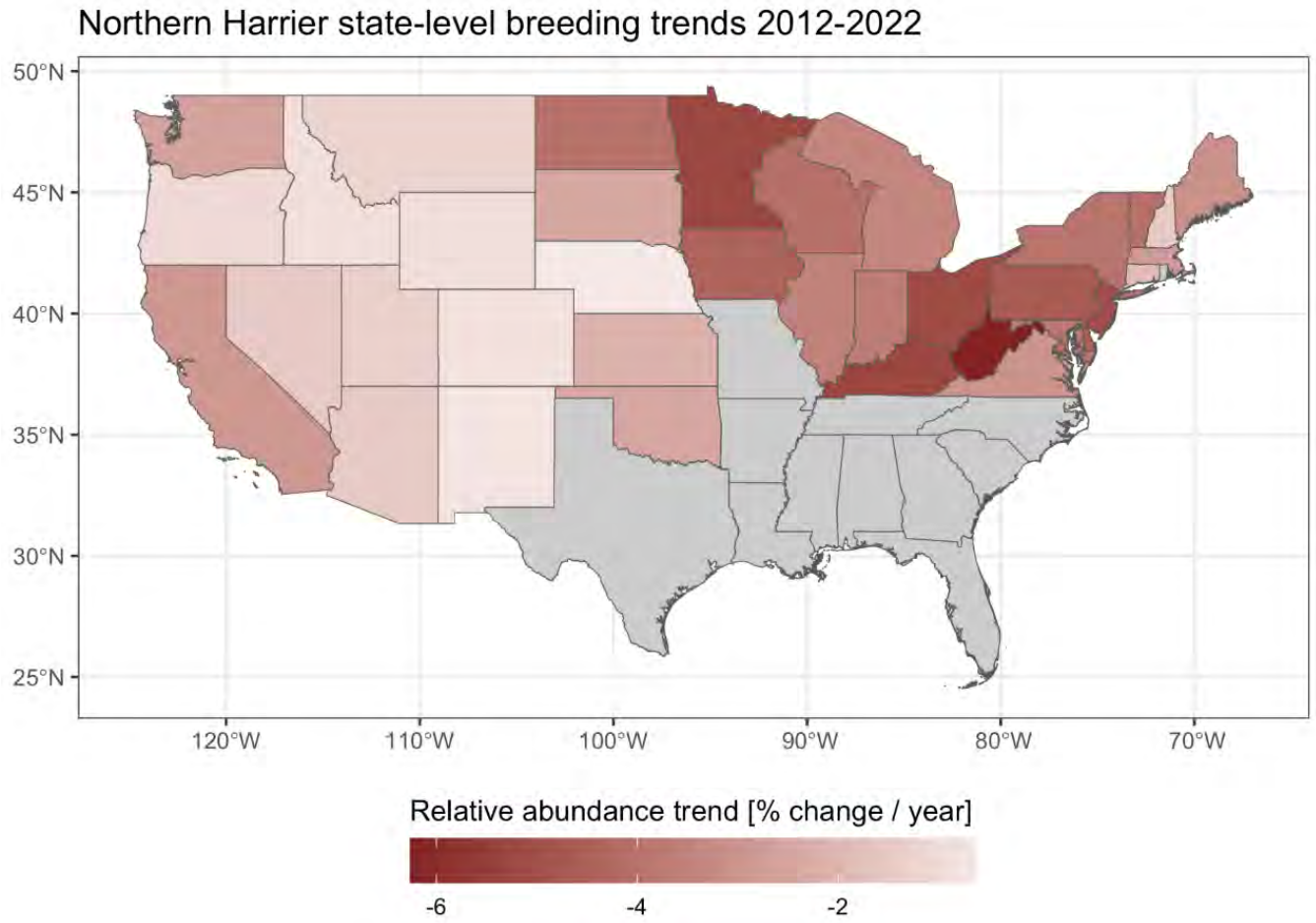

Figure 3. Trends, by state, for northern harrier (eBird)
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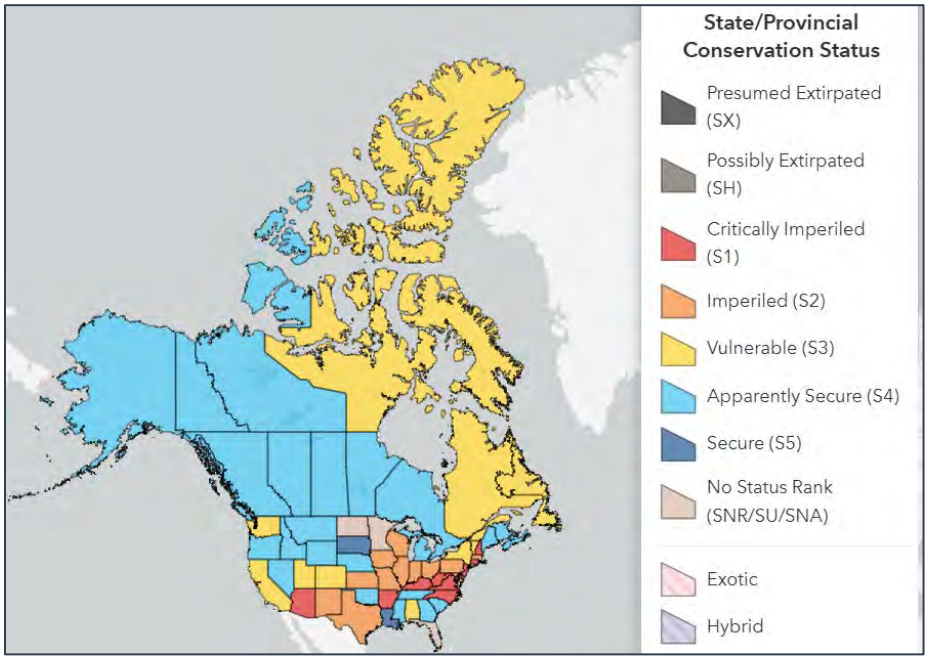

Figure 4. Conservation status of northern harrier in North America (NatureServe 2024)

III. New York Rarity *(provide map, numbers, and percent of state occupied)*

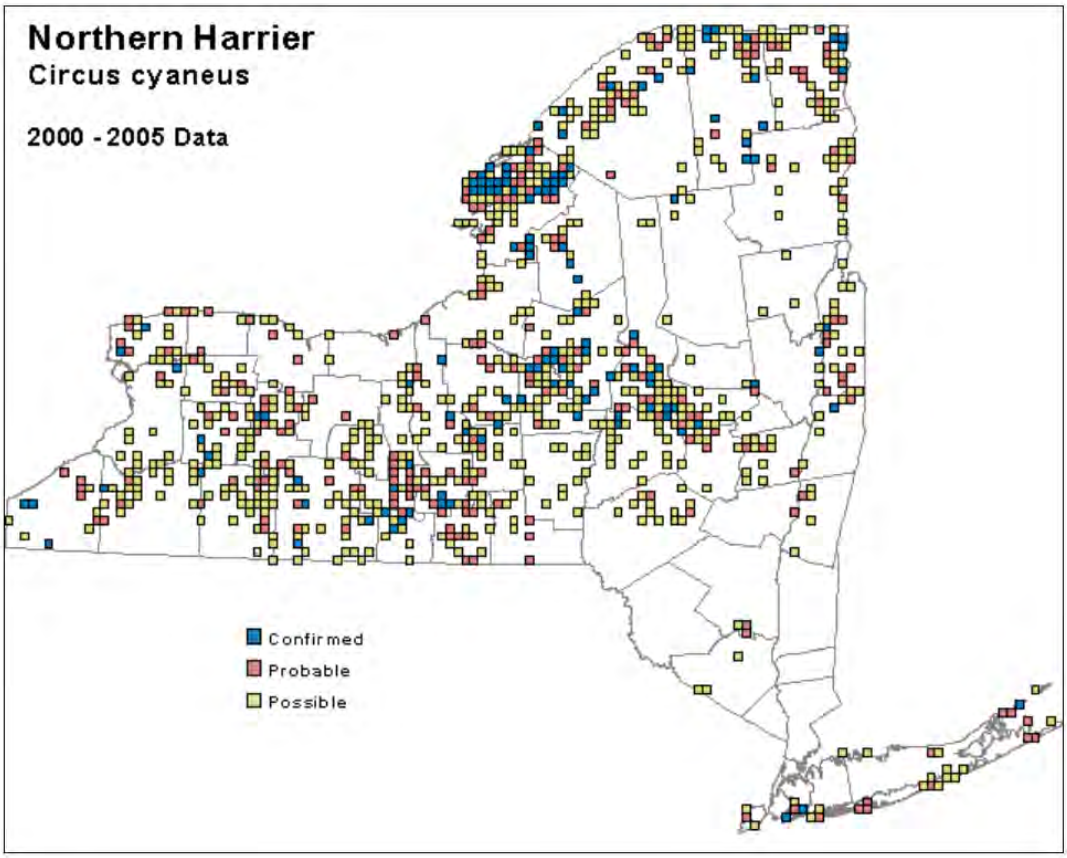

Figure 5. Northern harrier occurrence in New York State during the second Breeding Bird Atlas (McGowan and Corwin 2008)

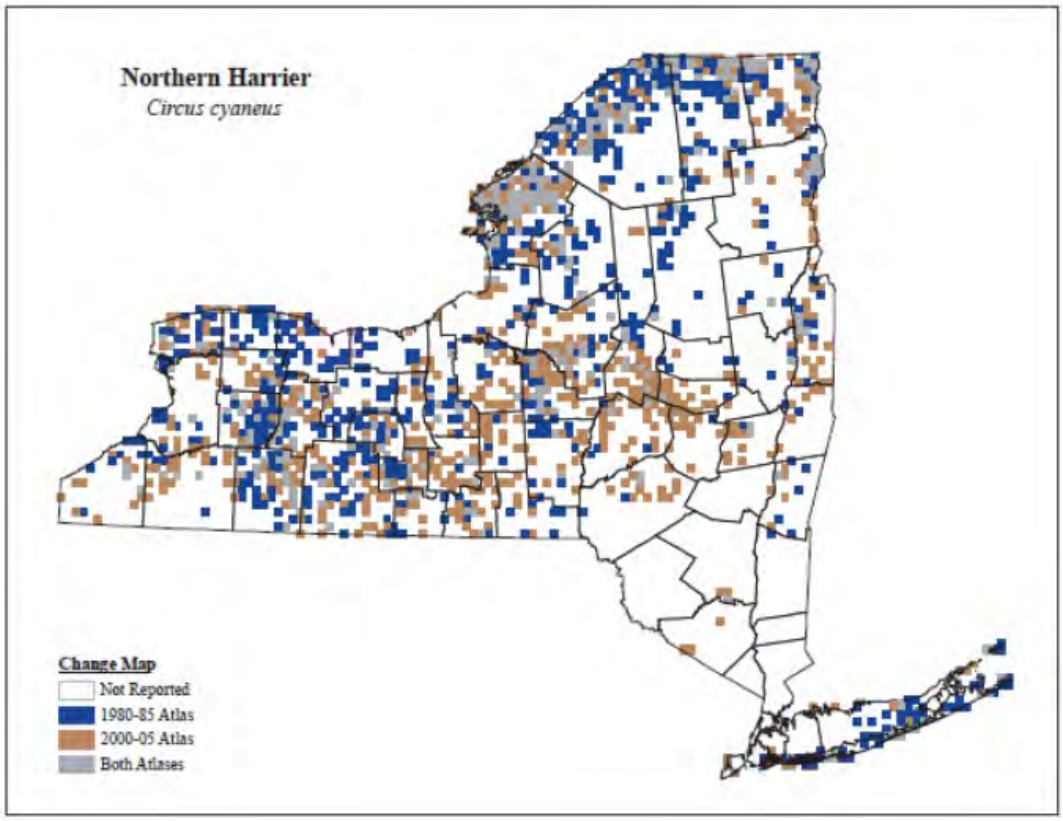

Figure 6. Change in northern harrier occurrence in New York State between the first Breeding Bird Atlas and the second Breeding Bird Atlas (McGowan and Corwin 2008)

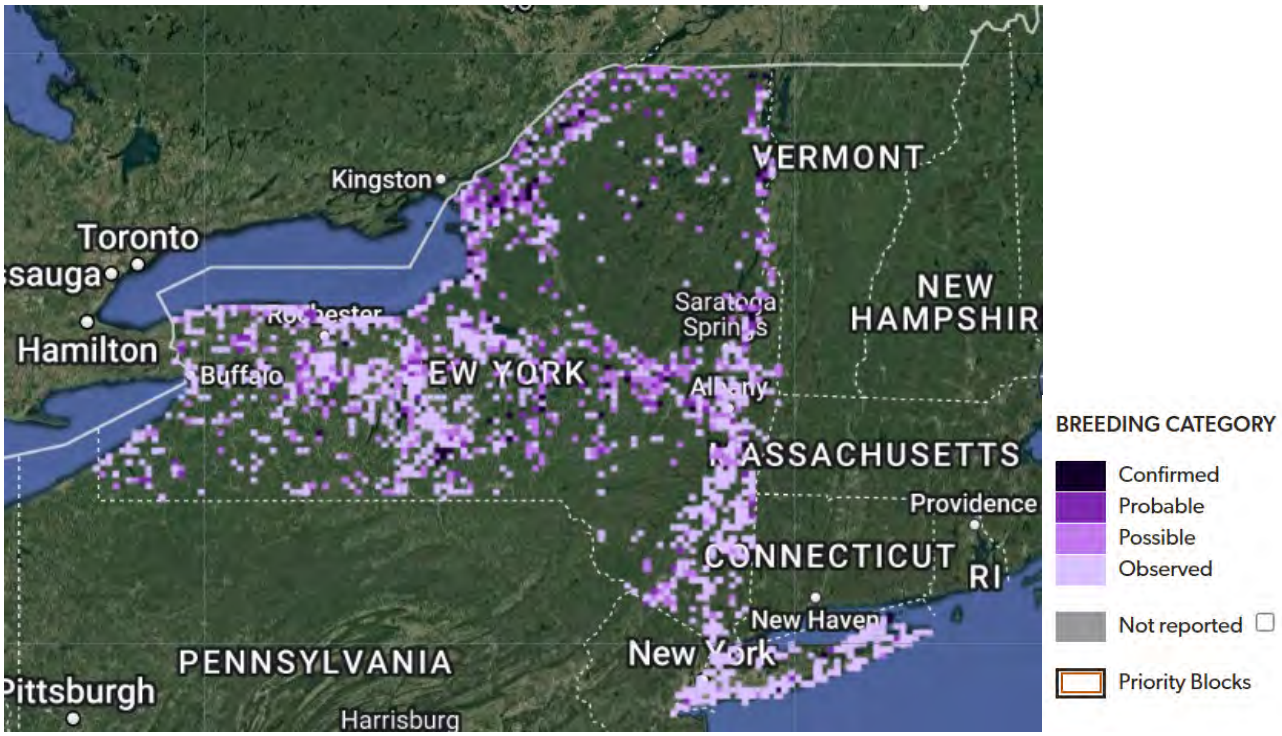

Figure 7. Breeding Bird Atlas 3 records of northern harrier in New York (BBA- eBird)

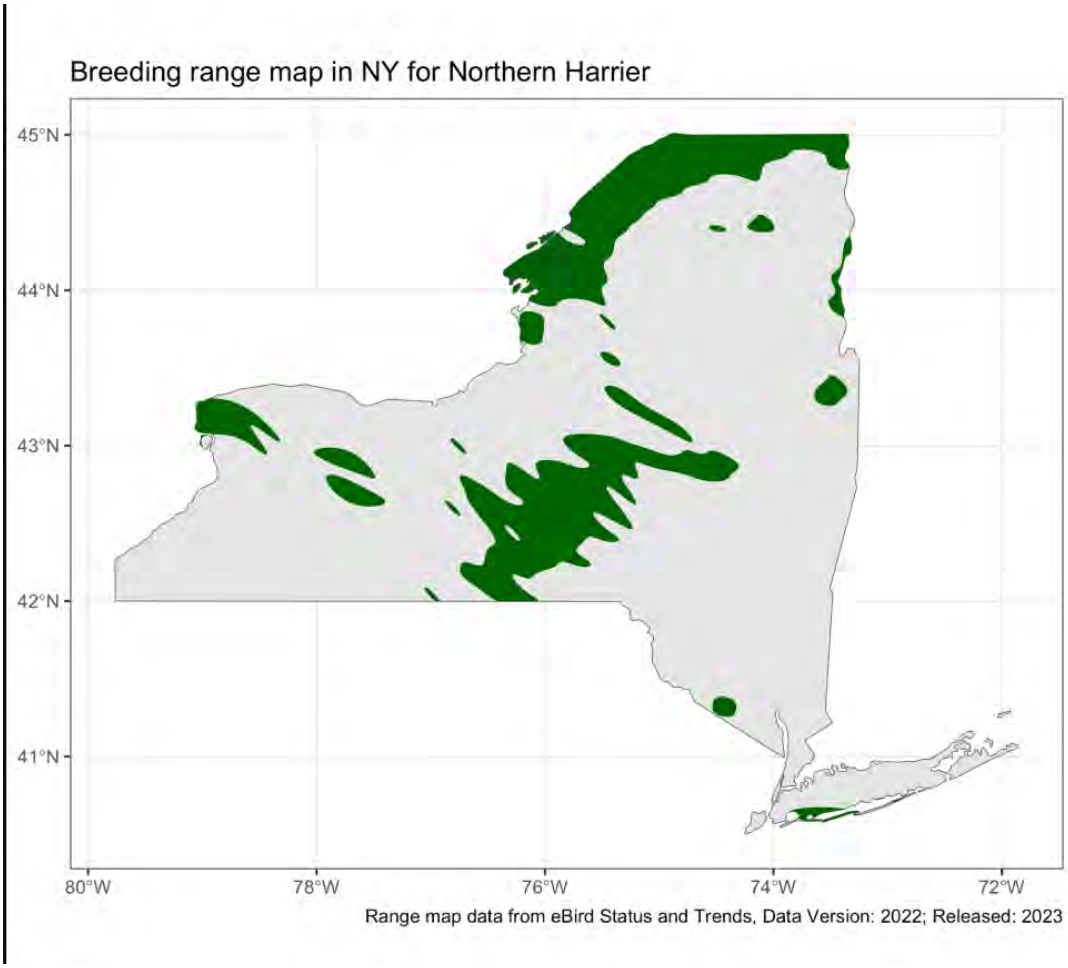

Figure 8. Breeding range map for northern harrier in New York (eBird)

Details of historic and current occurrence:

The first Breeding Bird Atlas (BBA) (1980-85) documented occupancy in 930 blocks, 17.4% of the survey blocks statewide (Andrle and Carroll 1988). The second BBA (2000-05) documented occupancy in 917 blocks, 17.2% of the survey blocks statewide (McGowan and Corwin 2008). A patchy pattern of increases and decreases was notable between the two atlases. Increases were apparent across the Appalachian Plateau and Mohawk Valley while decreases were apparent on Long Island, the Adirondacks, the St. Lawrence Plains, and the western portion of the Erie-Ontario Plain.

The third BBA (2020-25) is currently underway and utilizes a different number and layout of survey blocks across New York, making direct comparison with the first two Atlases difficult. There were 5,333 blocks in the first and second BBAs, and there are 5,710 blocks in the current BBA, of which 1,815 are considered priority blocks. To date, northern harrier has been documented in 507 priority blocks, 13.3% of all priority blocks statewide during the third BBA (NY BBA III Overview, 2024).

New York's Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

1. Pasture/Hay
2. Old Field Managed Grasslands
3. Freshwater Marsh
4. Great Lakes Freshwater Estuary Marsh
5. Wet Meadow/Shrub Swamp
6. Open Acidic Peatlands
7. Native Barrens and Savanna
8. Maritime Dunes
9. Great Lakes Dune and Swale
10. Estuarine, Brackish Intertidal, Tidal Wetland, High Marsh

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/Increase
No	Yes	Declining	Current ongoing significant decline in open habitats

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

In New York, the Northern Harrier breeds and winters in open wetlands, marshy meadows, wet, lightly grazed pastures, old fields, freshwater and brackish marshes, upland prairies, mesic grasslands, drained marshlands, croplands, cold desert shrub-steppe, and riparian woodland. Wet grasslands and marshes appear to support the highest breeding densities. Harriers generally avoid urban areas, but foraging does occur along roadsides (Hager 2009).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	Yes	No	Yes	Yes	Choose an item.

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

Northern Harriers will breed in their first year, but most breed in their second year. Males are more likely to breed during their first year if voles are abundant. Breeding is presumed to occur annually. Annual reproductive success (mean number of offspring fledged/pair) of all nests and of successful nests averaged 1.8 and 3.1, respectively. In New Brunswick, reproductive success was most strongly predicted by male food-provisioning rate and laying date, and to a lesser extent by clutch size (Simmons et al. 1986, Barnard et al. 1987). Reproductive success was moderately, but not significantly, correlated with vole abundance in August (Simmons et al. 1986, see also Burke 1979, Hamerstrom et al. 1985).

Among 114 banded birds, the mean age at death was 16.6 months (Keran 1981). The longest lifespan reported was 16 years, 5 months (Bildstein 1988), and the greatest reported known age of a (female) breeding bird in North America is 8 years. Pre-1950s mortality rates were estimated at 59% in first year and 30% among adults (Bildstein 1988). There are few data on causes of mortality. The mortality rate is <5% among fledglings (Sutherland 1987, MacWhirter 1994).

VI. Threats *(from NY 2015 SWAP or newly described):*

Some of the primary threats to the Northern Harrier are habitat loss resulting from hayfield abandonment, succession, wetland drainage, harvest practices, urban/suburban development, and direct and indirect impacts due to renewable energy projects. The early mowing of hayfields, frequency of hay harvest, and heavy grazing rotations in pastures—especially wet pastures—and increases in ground predators (harriers are ground-nesters) have resulted in a drastic reduction in harrier nesting success. Continued widespread destruction of freshwater and estuarine wetlands in U.S. poses a threat to breeding and wintering populations. Conversion of native grassland prairies for monotypic farming has contributed to local population declines, and remains a major threat to populations (e.g., Duebbert and Lokemoen 1977, Toland 1985). In upland areas, mechanized agriculture and early mowing have increased the threat of nest destruction. Overgrazing of pastures, and the advent of larger crop fields and fewer fencerows, together with the widespread use of insecticides and rodenticides, have reduced prey availability and thus the amount of appropriate habitat for the species (Duebbert and Lokemoen 1977, Hamerstrom 1986).

Northern Harriers are sensitive to human disturbance, and the potential for direct negative impacts related to renewable energy projects (wind and solar) have increased significantly as the number and acreage of new and proposed solar and wind projects has gone up substantially. These projects are primarily impacting large areas of open habitats such as agricultural areas and grasslands, most of which have never been surveyed for grassland breeding birds or winter raptors. Some large solar and wind projects are thousands of acres in size.

Not all energy projects have the potential to impact Northern Harriers, but over the past several years, numerous projects in NY state have been identified as having Northern Harrier wintering and/or breeding habitat within the project areas. In particular, very large-scale projects are impacting existing habitat in areas of the Erie-Ontario Lake Plains and east of Lake Ontario, especially in Jefferson County.

Construction of a wind farm in Wisconsin significantly reduced sightings of harriers in summer (Garvin et al. 2011). Harriers typically avoid wind turbines and are at low risk for collision (Garvin et al. 2011); the overall raptor abundance was on average 47% lower post-construction.

DeVault et al. (2014) demonstrated that solar photovoltaic facilities could potentially alter bird communities: in 5 locations across the U.S., species diversity was lower at photovoltaic array sites

than in adjacent grasslands (37 vs. 46 species, respectively). In contrast, bird densities at the same photovoltaic array sites were more than twice those of adjacent grasslands. Observations during the study suggested that shade and the provision of perches increased bird use of the photovoltaic array sites. However, the results were species specific, with some small songbird species (e.g., American Robin [*Turdus migratorius*]) more abundant at photovoltaic facilities compared with adjacent grasslands used for habitat comparisons, but corvids and raptors less abundant. Similarly, raptor abundance was higher preconstruction compared with postconstruction at a utility-scale solar energy facility in south-central California, suggesting avoidance of the facility. In comparison, ravens and icterids increased in abundance during construction, possibly as a result of increased foraging opportunities at disturbed sites (Smith and Dwyer 2016)

Due to the habitat of salvaging dead or dying birds and mammals, harriers are susceptible to secondary poisoning and death from a variety of herbicides, pesticides, and avicides (Mineau et al. 1999, Kostecke et al. 2007).

A study led by a Canadian toxicologist identified acutely toxic pesticides as the most likely leading cause of the widespread decline in grassland bird numbers in the United States. The 23-year assessment, which looked at five other causes of grassland bird decline besides lethal pesticide risk, including change in cropped pasture such as hay or alfalfa production, farming intensity or the proportion of agricultural land that is actively cropped, herbicide use, overall insecticide use, and change in permanent pasture and rangeland, concluded that lethal pesticides were nearly four times more likely to be associated with population declines than the next most likely contributor, changes in cropped pasture (Mineau and Whiteside 2013).

Compounding the above-mentioned threats is the ongoing and worsening threat of global climate change. In their 2014 Climate Report, the National Audubon Society (NAS) listed 314 North American bird species that will be seriously threatened or endangered by climate change before the end of this century. The Northern Harrier is included in the Audubon's "climate endangered" group, which is at risk of losing more than 50% of it's habitat by 2050. Climate-related threats such as sea-level rise, lake-level change, increasing urbanization, cropland expansion, drought, extreme spring heat, and extreme weather events will likely add to and accelerate the threats harriers already face (NAS 2015). In the North American Bird Conservation Initiative's (NABCI) 2019 State of the Birds report, they found that 57% of North American bird species are in decline, with a 29% loss in abundance since 1970. Grassland birds exhibit the steepest declines, losing 700 million individuals across 31 species, a proportional loss of 53%. They estimate that 74% of grassland bird species are in decline (Rosenburg et al. 2019).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent*	Severity*	Immediacy*	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	1.1.2 Low-density housing areas	Small	Serious	Near-term	Intensifying	Choose an item.
2. Agriculture & Aquaculture	2.1 Annual & Perennial Non-Timber Crops	2.1.1 Annual cropping systems (field crops)	Large	Moderate	Near-term	Stable and ongoing	Choose an item.
1. Residential and Commercial	1.2 Commercial & Industrial Areas	1.2.1 Commercial & industrial areas	Small	Serious	Near-term	Intensifying	Choose an item.
3. Energy Production & Mining	3.3 Renewable Energy	3.3.4 Solar farms	Restricted	Serious	Long-term	Intensifying	Choose an item.
4. Transportation & Service Corridors	4.1 Roads & Railroads	4.1.1 Roads	Restricted	Serious	Immediate	Stable and ongoing	Choose an item.
7. Natural System Modifications	7.3 Other Ecosystem Modifications	7.3.2 Vegetation succession	Large	Moderate	Near-term	Stable and ongoing	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	8.2.8 Interspecific competition with a favored species	Restricted	Moderate	Immediate	Stable and ongoing	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	8.4.2 Viral pathogens	Small	Slight	Immediate	Unknown	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.3 Herbicides & pesticides	Pervasive	Moderate	Near-term	Stable and ongoing	Choose an item.
7. Natural System Modifications	7.2 Dams & Water Management/Use	7.2.4 Drainage in agricultural environments	Restricted	Moderate	Near-term	Stable and ongoing	Choose an item.
3. Energy Production & Mining	3.3 Renewable Energy	3.3.2 Wind farms	Small	Moderate	Near-term	Intensifying	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.2 Terrestrial plants	Large	Moderate	Long-term	Intensifying	Choose an item.

Table 1. Threats to northern harrier.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: X **No: _____** **Unknown: _____**

If yes, describe mechanism and whether adequate to protect species/habitat:

The Northern Harrier is listed as a threatened species in New York and is protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182). A permit is required for any proposed project that may result in a take of a species listed as Threatened or Endangered, including, but not limited to, actions that may kill or harm individual animals or result in the adverse modification, degradation or destruction of habitat occupied by the listed species.

Northern Harrier is protected under the Migratory Bird Treaty Act of 1918. The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres (7.4 acres starting 2028) in size under Article 24 of the NYS Conservation Law. There is no legal protection for their grassland habitats (unless it is mapped as occupied habitat); this is a serious issue because the majority of suitable grassland habitat is on private land, most of which has never been surveyed for grassland birds. This is an increasing concern due to the development of solar and wind projects, which are often proposed in large open habitats, on privately held land, with landowners often eager to sign contracts that bring them considerable amount of income per acre. Large scale energy projects do, however, usually conduct some level of surveys prior to permitting.

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

The NYSDEC's Best Management Practices (BMPs) for grassland birds should be used to guide habitat management on grassland habitat or habitat to be converted into grassland. The management goal of these BMPs is to maintain the open, grassy conditions necessary for successful breeding and wintering by grassland birds and to avoid disturbance to nesting and wintering birds. Techniques may include seeding, mowing, removal of trees and shrubs, and invasive species control. Typically, land should be managed for a minimum of 5 years to begin showing benefits for grassland birds. These BMPs formed the basis for specific 5-year Site Management Plans for landowners that were selected to receive technical and financial assistance through LIP (NYSDEC 2013). The LIP program is no longer active, but BMPs are also used to manage grasslands on NYSDEC Wildlife Management Areas.

The publication, A Plan for Conserving Grassland Birds in New York (Morgan and Burger 2008), identifies focus areas for coordinating grassland bird conservation efforts. Because grassland birds are sensitive to landscape-level factors and funding for conservation activities is limited, the best opportunity for achieving success is to concentrate efforts within regions of the state that support key residual populations of grassland birds. Suitable landcover classification datasets are needed to incorporate habitat availability into the delineation process.

Because the vast majority of remaining grassland habitat is privately owned, private lands incentive programs and educational programs should be a major component of the conservation effort. Protection of existing habitat for threatened and endangered species through enforcement of regulations pertaining to the taking of habitat (Morgan and Burger 2008) and development of quality habitat as a part of mitigation projects ensuring a net conservation benefit is also a critical component of the conservation effort for these.

The NYSDEC Strategy for Grassland Bird Habitat Management and Conservation 2022-2027 outlines methods for implementing priority actions for creating, managing, and maintaining grassland bird habitat within New York State. This includes the designation of Grassland bird Concentration areas. The goal of grassland bird concentration centers across the state is to increase the amount of grassland habitat (particularly the amount of grassland managed using best management practices for grassland birds) within more focused areas that have existing populations of rare species. Expansion of habitat in these areas should include work both on public and private land and involve multiple partner agencies and groups.

Morgan and Burger (2008) recommend that further research is needed:

1. Methods and data for modeling distributions and abundance of grassland landcover across the landscape.

2. Impacts of management on productivity of grassland birds, to amplify existing information on grassland bird abundances associated with management.

3. Potential benefits of native grass species as grassland habitat in contrast with demonstrated benefit of non-native cool season grasses.

Other potential research that is also needed is as follows:

1. An analysis of the use of different habitats (wetlands, grasslands, different agricultural lands etc.) as nesting and wintering habitat.

2. Use and potential avoidance of wind and solar energy sites by this species.

3. The success of mitigation efforts should also be addressed.

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct habitat management	Site/Area management for grassland species
A.1 Direct Habitat Management	A.1.1.0.0 Manage plants, animals, fungi, or bacteria	-Invasive/Problematic species control -Manage, maintain and/or expand suitable grassland habitat through plantings, mowing, controlled burns
B.3 Outreach	B.3.1.3 Targeted communication	Communication with landowners about habitat protection and best management strategies
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness & Communications
B.5 Economic and Other Incentives	B.5.4.3 Reward the value of ecological services	Reward the value of ecological services through work with grassland habitat landowners and managers

Action Category	Action	Description
B.5 Economic and Other Incentives	B.5.4. Economic incentives and disincentives	-Secure funding for a landowner incentive stewardship program -Promote and implement landowner incentive programs to benefit grassland habitat
C.6 Design and Plan Conservation	C.6.2 Conserve specific land or seascapes	Protection through acquisition or easement
C.6 Design and Plan Conservation	C.6.3 Complementary or alternative conservation measures	Protection registry and/or working with local, state, and federal government on issues relating to zoning and development
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	-Site/Area protection -Resource/Habitat Protection
C.6 Design and Plan Conservation	C.6.5.1.3 Develop and Implement a conservation, management, or restoration plan for protected private lands	Habitat/Natural process restoration
C.7 Legislative and Regulatory Framework or Tools	C.7.1.0.0 Create, amend, or influence legislation, regulation, or codes	Policies and Regulations
C.8 Research and Monitoring	C.8.1 Basic research and status monitoring	Monitor wintering population to identify critical habitat and detect trends

Table 2. Recommended conservation actions for northern harrier

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for grassland birds, which includes northern harrier.

Easement acquisition:

____ Identify ownership of grasslands in core focus areas, and focus Landowner Incentive Program (LIP) funding for use in conserving the most important privately-owned grasslands in the state, and distribute $400,000 per year from LIP to conserve priority grasslands.

Note - LIP funding is no longer available, but managing grassland habitat on private land remains a key/necessary strategy for conservation of grassland birds in NY State.

Habitat management:

____ Develop habitat management guidelines and action plans for priority focus grassland bird species.

Habitat research:

____ Evaluate the effects of specific farming and management practices, such as: timing of mowing, intensity of grazing, frequency of mowing, mowing versus haying versus prescribed fire, and width of buffer strips on productivity of grassland birds.

Other acquisition:

____ Incorporate priority grassland focus areas into the NYS Open Space Plan.

Other action:

____ Work with public land managers, including NRCS, USFWS, DEC and others, to better direct funding and other resources to the highest priority areas and projects for grassland habitat management. The ability to focus funding sources in core priority grasslands will be key. If the funding sources from National Resource Conservation Service (NRCS) cannot be adequately focused in priority areas, then this will cripple the ability to conserve the most critical grassland areas and will result in continued declines in grassland birds even within these focus areas.

____ Develop an outreach program to educate the public and land managers on the need for, and wildlife benefits, of grasslands. Also provide technical guidance on what and how to benefit grassland species such as the best management practices. Outreach to private landowners will be a key first step to educate the public about the importance of their lands to grassland birds. So much of this habitat exists on private lands that their cooperation will be the ultimate deciding factor on whether species declines can be halted. Their cooperation at the level needed for meaningful change will probably hinge on some form of subsidies.

Population monitoring:

____ Develop and implement supplemental monitoring programs for grassland bird species that are not adequately sampled by BBS to determine precise population trends and evaluate effectiveness of conservation efforts. Use long term trend data to determine effectiveness of grassland conservation efforts.

____ Complete inventory of potential grassland habitat for species present, distribution, and relative abundance of priority species.

Statewide management plan:

____ Complete a comprehensive Grassland Bird Conservation Plan that coordinates research, management, and conservation efforts to more effectively conserve NY's grassland birds. Identify priority species and delineate priority focus areas for conservation and management.

Note – The Grassland Bird Habitat Plan needs to be approved and implemented.

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