

▾ [Birds of North America \(/Species-Account/bna/home\)](#)

☰
[Menu](#)

◀ [Mississippi Kite \(/Species-Account/bna/species/miskit/distribution/\)](#)

[Sharp-shinned Hawk \(/Species-Account/bna/species/shshaw/distribution/\)](#) ▶

Northern Harrier

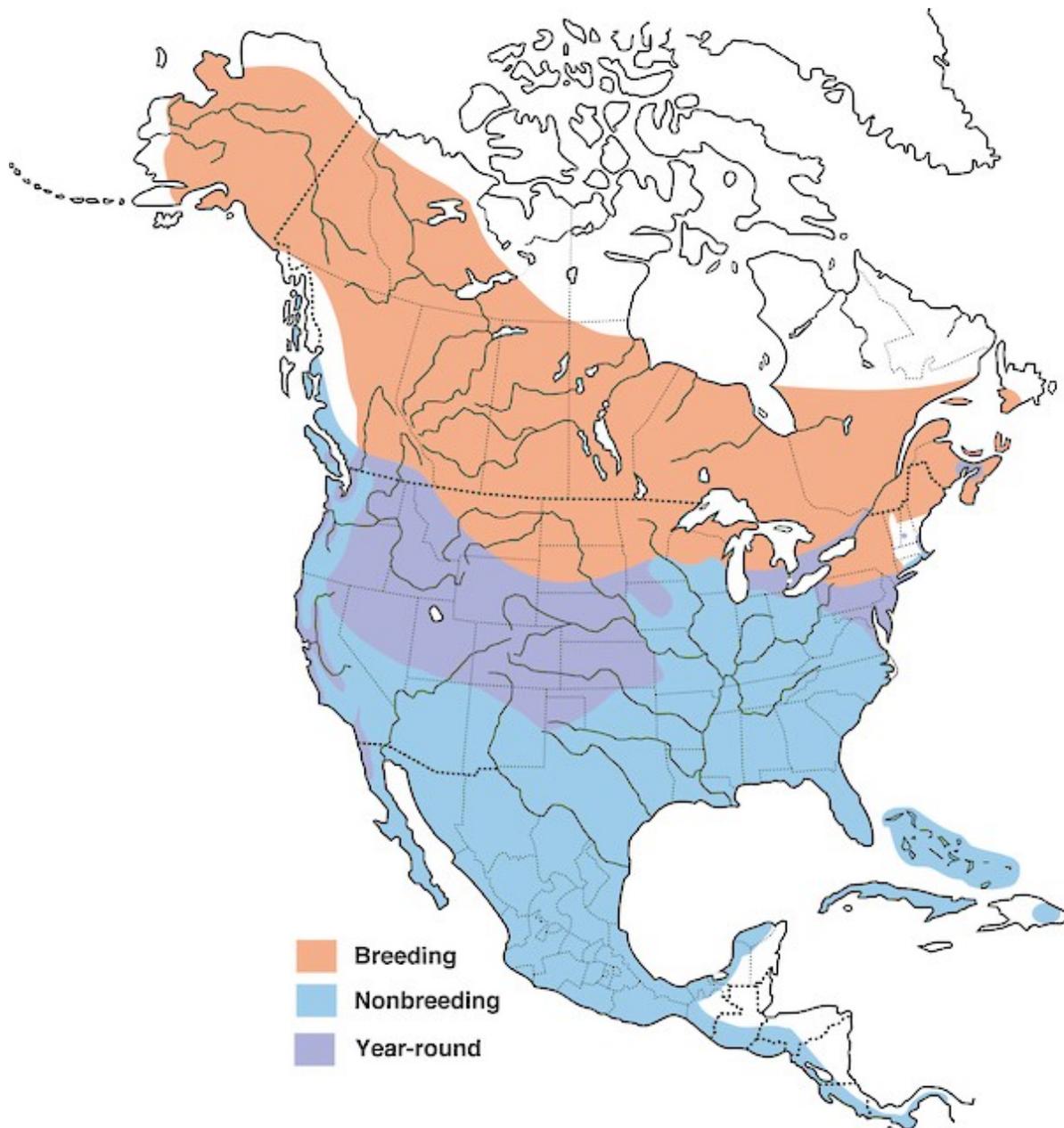
Circus cyaneus

Order: ACCIPITRIFORMES

Family: ACCIPITRIDAE

[Sections](#)

Distribution, Migration and Habitat



(<https://download.ams.birds.cornell.edu/api/v1/asset/31722201>)

Figure 1. Distribution of the Northern Harrier in North and Middle America.

[+Enlarge \(https://download.ams.birds.cornell.edu/api/v1/asset/31722201\)](https://download.ams.birds.cornell.edu/api/v1/asset/31722201)

Distribution of the Northern Harrier in North and Middle America, and the Caribbean. This species breeds locally south to the dotted line and also in the eastern and western Palearctic; see Distribution for details.



[+ Enlarge \(https://ebird.org/ebird/embedmap/norhar?](https://ebird.org/ebird/embedmap/norhar?table=true&env.minX=-99.47021484375&env.minY=10&env.maxX=-78.37646484375&env.maxY=65&mapType=roadmap)

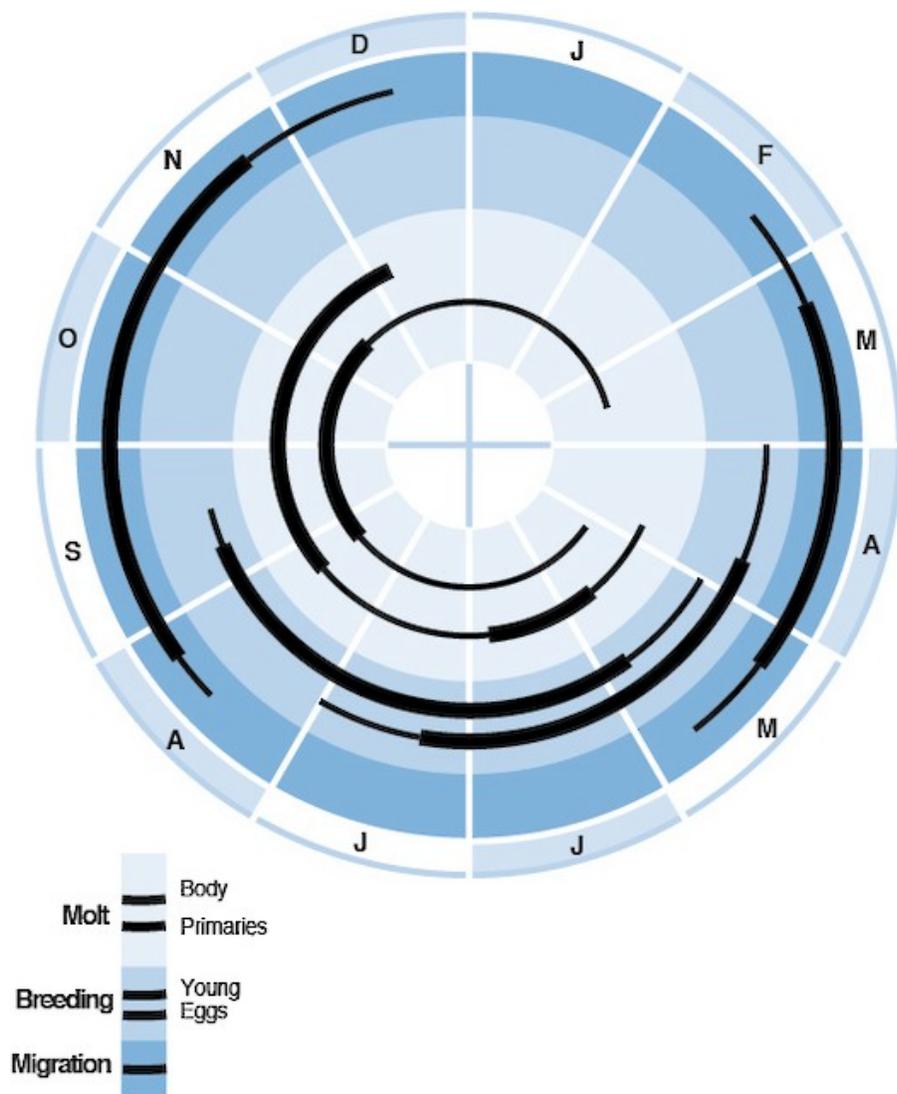
[table=true&env.minX=-99.47021484375&env.minY=10&env.maxX=-78.37646484375&env.maxY=65&mapType=roadmap\)](https://ebird.org/ebird/embedmap/norhar?table=true&env.minX=-99.47021484375&env.minY=10&env.maxX=-78.37646484375&env.maxY=65&mapType=roadmap)

eBird range map for Northern Harrier

Generated from eBird observations (Year-Round, 1900-2017)

[🔗 Explore more on eBird \(https://ebird.org/ebird/map/norhar?](https://ebird.org/ebird/map/norhar?scrollwheel=true&draggable=true&mapType=roadmap)

[scrollwheel=true&draggable=true&mapType=roadmap\)](https://ebird.org/ebird/map/norhar?scrollwheel=true&draggable=true&mapType=roadmap)



(<https://download.ams.birds.cornell.edu/api/v1/asset/25001761>)

Figure 4. Annual cycle of molt, breeding, and migration in the Northern Harrier.

[+ Enlarge \(https://download.ams.birds.cornell.edu/api/v1/asset/25001761\)](https://download.ams.birds.cornell.edu/api/v1/asset/25001761)

See text for details of timing at specific locales. Thick lines indicate peak activity, thin lines off-peak.



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<https://download.ams.birds.cornell.edu/api/v1/asset/24923211>)

**Northern Harrier nesting
habitat, Ziebach Co., SD,
September.**

[+ Enlarge \(https://download.ams.birds.cornell.edu/api/v1/asset/24923211\)](https://download.ams.birds.cornell.edu/api/v1/asset/24923211)

Northern Harriers nest in grasslands, wet meadows, and marshes across North America.



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<https://download.ams.birds.cornell.edu/api/v1/asset/24957031>)

[+ Enlarge \(https://download.ams.birds.cornell.edu/api/v1/asset/24957031\)](https://download.ams.birds.cornell.edu/api/v1/asset/24957031)

Juvenile Northern Harrier foraging over fallow field, Moss Landing, CA, 2 October.

Northern Harriers hunt all day long, but they are especially active at dawn and dusk. They have excellent hearing, and a well-formed 'facial disk' that helps funnel the sounds of prey items into the ears, much like owls. During migration and winter Harriers can be seen over any open area, but they prefer grassy fields, marshes (formerly called Marsh Hawk), and agricultural areas. Visit this photographer's website [here \(http://www.briansullivanphotography.com/\)](http://www.briansullivanphotography.com/).



(<https://download.ams.birds.cornell.edu/api/v1/asset/24955561>)

Adult female Northern Harrier [+ Enlarge \(https://download.ams.birds.cornell.edu/api/v1/asset/24955561\)](https://download.ams.birds.cornell.edu/api/v1/asset/24955561)
foraging over marshland,
Farmington Bay, UT, 8 February.

Harriers forage low over marshes, open fields, and grasslands. Their characteristic slow-flapping flight is broken by intermittent glides, when they teeter from side-to-side showing their broad white rump. Visit this photographer's website [here \(http://www.briansullivanphotography.com/\)](http://www.briansullivanphotography.com/).

Distribution in the Americas

Breeding Range

[Figure 1 \(https://download.ams.birds.cornell.edu/api/v1/asset/25015211\)](https://download.ams.birds.cornell.edu/api/v1/asset/25015211). Widely but locally distributed in North America, breeding from n. Alaska (<http://arctic.fws.gov/birdlist.htm> (<http://arctic.fws.gov/birdlist.htm>)) and Canada (primarily south of tundra), including Yukon (esp. southwest and north, north to 69°N; Sinclair et al. 2003) and central Quebec (also Magdalen Is.; Henderson 1996), Maritime Provinces (<http://www.mba-aom.ca/jsp/map.jsp?lang=en> (<http://www.mba-aom.ca/jsp/map.jsp?lang=en>)) and s. Newfoundland south to n. Baja Peninsula, Mexico (Howell and Webb 1995 (</Species-Account/bna/species/norhar/references#REF62109>)), and east to s. Nevada (Floyd et al. 2007) and n. Arizona (Mikesic and Duncan 2000), s. Utah ([Walters and Sorenson 1983 \(/Species-Account/bna/species/norhar/references#REF6422\)](/Species-Account/bna/species/norhar/references#REF6422)), Behle 1985), n. New Mexico ([Hubbard 1978c \(/Species-Account/bna/species/norhar/references#REF28607\)](Hubbard 1978c (/Species-Account/bna/species/norhar/references#REF28607)), Williams 2007), n. Texas (Littlefield 2009; <http://txtbba.tamu.edu/accounts/noha/nohaacc.html> (<http://txtbba.tamu.edu/accounts/noha/nohaacc.html>)), sw. Oklahoma (Regosin et al. 1991), s. Kansas (Busby and Zimmerman 2001), central Iowa (Iowa Breeding Bird Atlas unpubl. data), Wisconsin (throughout: <http://www.uwgb.edu/birds/wbba/species/maps/NOHA.htm> (<http://www.uwgb.edu/birds/wbba/species/maps/NOHA.htm>)), s. Michigan ([Brewer et al. 1991 \(/Species-Account/bna/species/norhar/references#REF45271\)](Brewer et al. 1991 (/Species-Account/bna/species/norhar/references#REF45271)), n. Ohio ([Peterjohn 1989b \(/Species-Account/bna/species/norhar/references#REF56491\)](Peterjohn 1989b (/Species-Account/bna/species/norhar/references#REF56491)), s. Pennsylvania ([Brauning 1992a \(/Species-Account/bna/species/norhar/references#REF3615\)](Brauning 1992a (/Species-Account/bna/species/norhar/references#REF3615)), se. coastal Virginia (including barrier islands; [Hands et al. 1989g \(/Species-Account/bna/species/norhar/references#REF56897\)](Hands et al. 1989g (/Species-Account/bna/species/norhar/references#REF56897)), [Bildstein 1988 \(/Species-Account/bna/species/norhar/references#REF46344\)](Bildstein 1988 (/Species-Account/bna/species/norhar/references#REF46344)), [Serrentino 1992 \(/Species-Account/bna/species/norhar/references#REF16063\)](Serrentino 1992 (/Species-Account/bna/species/norhar/references#REF16063)), Watts and Rottenborn 2001), and coastal North Carolina (Dinsmore and Williams 1997).

Rare and erratic breeder or summer resident south of this area. Absent or rare breeder in many states of the conterminous U.S. ([Figure 1 \(https://download.ams.birds.cornell.edu/api/v1/asset/25015211\)](https://download.ams.birds.cornell.edu/api/v1/asset/25015211)), including portions of the Northeast (e.g., ne. Connecticut and Rhode Island north through e. Vermont and s.

Maine; [Laughlin and Kibbe 1985 \(/Species-Account/bna/species/norhar/references#REF47441\)](#), [Adamus 1987 \(/Species-Account/bna/species/norhar/references#REF34246\)](#), [Veit and Petersen 1993 \(/Species-Account/bna/species/norhar/references#REF17580\)](#), [Bevier 1994d \(/Species-Account/bna/species/norhar/references#REF58967\)](#)) and Labrador (Chubbs et al. 2000), n. Tennessee (Giocomo et al. 2002), and in mountainous or desert regions of the west coast (e.g., much of California, [Small 1994 \(/Species-Account/bna/species/norhar/references#REF7103\)](#)); w. Oregon, [Gilligan et al. 1994 \(/Species-Account/bna/species/norhar/references#REF56692\)](#); w. Washington (Smith et al. 1997); coast range of British Columbia, [Campbell et al. 1990a \(/Species-Account/bna/species/norhar/references#REF15960\)](#)), and on Middleton I. in the Gulf of Alaska (Nus 2006). Appears absent over much of interior w. Ontario <http://www.birdsontario.org/atlas/maps.jsp?lang=en> (<http://www.birdsontario.org/atlas/maps.jsp?lang=en>), likely owing to heavy forest.

See also Demography and Populations: population status and Systematics: subspecies.

Winter Range

Winters primarily from s. Canada south through the conterminous U.S., Central America, and Caribbean islands ([Figure 1](#) (<https://download.ams.birds.cornell.edu/api/v1/asset/25015211>); [Root 1988b \(/Species-Account/bna/species/norhar/references#REF44041\)](#), [Bildstein 1988 \(/Species-Account/bna/species/norhar/references#REF46344\)](#)). Usual southern limit is Panama, rarely Andes Mtns. of Colombia and Venezuela (Hilty and Brown 1986, Hilty 2003). Most birds occupy w. and s. U.S., also Mexico; fewer through Central America. Christmas Bird Count data suggest particularly high densities in parts of w. Texas, Oklahoma, New Mexico, California, and n. Utah ([Root 1988b \(/Species-Account/bna/species/norhar/references#REF44041\)](#)). Absent from higher elevations of the Appalachian, Ozark, and Rocky mountains. Absent or rare in Wyoming, the Dakotas, w. Minnesota, and w. Iowa. In Mexico, widespread common winter resident, occasionally

to islands south of Baja (Wehtje et al. 1993), but not in southeastern two-thirds of the Yucatán Peninsula and e. Chiapas, where species is a transient migrant ([Howell and Webb 1995 \(/Species-Account/bna/species/norhar/references#REF62109\)](#)).

Ebird data (Fig. 7), January vs. June, show how the species withdraws from northern latitudes in winter.

In Central America, absent or very rare in Belize, n. Guatemala, and e. Honduras (Howell and Webb 1995). Farther south, a rare transient and winter resident, most numerous on Pacific slope of Nicaragua, Costa Rica, and Panama ([Stiles and Skutch 1989 \(/Species-Account/bna/species/norhar/references#REF24711\)](#), [Ridgely and Gwynne 1989 \(/Species-Account/bna/species/norhar/references#REF42705\)](#)). In Caribbean, winters regularly in Cuba ([Garrido and Kirkconnell 1993a \(/Species-Account/bna/species/norhar/references#REF7618\)](#)), Bahamas (not all islands; [Brudenell-Bruce 1975 \(/Species-Account/bna/species/norhar/references#REF58563\)](#)), uncommon in Cayman I., irregular and rare winter visitor to e. Dominican Republic (Latta et al. 2006), rare in Puerto Rico and Virgin I. ([Raffaele 1989 \(/Species-Account/bna/species/norhar/references#REF7180\)](#)), accidental in Jamaica, vagrant throughout the Lesser Antilles ([Evans 1990a \(/Species-Account/bna/species/norhar/references#REF7145\)](#)), one sight record from Curacoa (Prins et al. 2009).

Vagrant in Hawaiian islands (Pyle 2002).

Distribution Outside the Americas

Occurs throughout Europe and Asia (*Circus cyaneus cyaneus*); breeds in Eurasia from Portugal to Lapland, east to n. China, Russia, Siberia, and Kamchatka Peninsula. In winter, south to n. Africa and tropical Asia ([Cramp and Simmons 1980a \(/Species-Account/bna/species/norhar/references#REF10605\)](#), [Del Hoyo et al. 1994 \(/Species-](#)

[Account/bna/species/norhar/references#REF42407](#)). Reports of North American individuals in Europe are rare and dubious ([Thorpe 1988 \(/Species-Account/bna/species/norhar/references#REF38054\)](#)).

Nature of Migration

Partial, but often long-distance (> 1,500 km, especially in northern portions of range), migrant; known to undertake flights of > 125 km over water ([Kerlinger 1989a \(/Species-Account/bna/species/norhar/references#REF8570\)](#)). Most individuals migrate alone during the day ([Beske 1982 \(/Species-Account/bna/species/norhar/references#REF34438\)](#), [Kerlinger 1989a \(/Species-Account/bna/species/norhar/references#REF8570\)](#)), but nocturnal migration has been reported (Russell 1991). Occasionally soars on migration, but usually engages in active flapping flight. Movement is associated (although less so than in other raptors; [Allen et al. 1996 \(/Species-Account/bna/species/norhar/references#REF58621\)](#)) with low atmospheric pressure and approach of a cold front, which induces rising air and southerly winds. Flies in front of an atmospheric low in spring, behind in fall ([Haugh and Cade 1966 \(/Species-Account/bna/species/norhar/references#REF16044\)](#)). Beske ([Beske 1982 \(/Species-Account/bna/species/norhar/references#REF34438\)](#)) reported daily movements by migrating juveniles of 14-106 km. Hunts on migration (McIntyre and Ambrose 1999).

Timing and Routes of Migration

Fall

Timing of departure from breeding grounds not well quantified. Observations from hawk-watch sites along migration routes in the Great Lakes region and e. Pennsylvania indicate an exceptionally protracted (about 3 mo) fall passage, between mid-Aug and late Nov (see [Figure 4 \(https://download.ams.birds.cornell.edu/api/v1/asset/25001761\)](#)).

Timing of fall migration at sites in, Alaska, Rocky Mtns., and Great Basin is slightly earlier, and duration of passage apparently shorter, than at sites in e. U.S. and coastal California

([Haugh 1972a \(/Species-Account/bna/species/norhar/references#REF32954\)](#), [Binford 1979 \(/Species-Account/bna/species/norhar/references#REF46346\)](#), [Bildstein et al. 1984 \(/Species-Account/bna/species/norhar/references#REF16031\)](#), [Duncan 1986a \(/Species-Account/bna/species/norhar/references#REF46350\)](#), [Hoffman et al. 1992b \(/Species-Account/bna/species/norhar/references#REF21596\)](#), McIntyre and Ambrose 1999). Migrates through Florida Keys from late Sep to early Nov (Lott 2006). Numbers variable from year to year at hawk-watch sites in the w. U.S. (Hoffman and Smith 2003).

At a trapping station in Wisconsin, hatch-year birds arrived significantly earlier than adults, with no difference between the sexes for young birds; adult females tended to arrive before adult males ($P=0.08$); and adult birds were harder to trap than first-year birds (Mueller et al. 2000). These results are in general agreement with studies summarized in Bildstein et al. (1984).

Earliest and latest dates of migration at Hawk Mtn., PA, are 7 Aug and 26 Dec, respectively. Mean dates (\pm SD) of passage for 25, 50, and 75% of the annual flight are 24 Sep \pm 5.7 d, 13 Oct \pm 6.2 d, and 28 Oct \pm 5.3 d, respectively. Rate of passage peaks at 0.51 individuals/h in the last half of Oct, when the chance of seeing at least 1 individual/d is 86% at Hawk Mountain Sanctuary ([Bednarz et al. 1990b \(/Species-Account/bna/species/norhar/references#REF58059\)](#), [Allen et al. 1996 \(/Species-Account/bna/species/norhar/references#REF58621\)](#), Hawk Mountain Sanctuary unpubl. data). First migrants appear in nw. Texas in late July, peak in the month of October, and are gone by 1 Dec (Littlefield and Johnson 2005). Earliest date on South Farallon I., CA, is 27 July, latest date is 20 Oct, maximum seen in one day was 6 (Richardson et al 2003).

Migrants appear on Caribbean islands (e.g., Cuba, Puerto Rico) in October and in s. Central America in mid-October. Adult females precede adult males, and juvenile males precede juvenile females, although there is considerable overlap within and among sites ([Haugh 1972a \(/Species-Account/bna/species/norhar/references#REF32954\)](#), [Bildstein et al. 1984 \(/Species-Account/bna/species/norhar/references#REF16031\)](#), [Duncan 1986a \(/Species-Account/bna/species/norhar/references#REF46350\)](#)). Juveniles precede adults by about 30 d ([Bildstein et al. 1984 \(/Species-](#)

[Account/bna/species/norhar/references#REF16031](#)). Based on stable isotope analyses, juveniles migrating through the Florida Keys are coming from the same northern regions each fall (Wittenberg and Smith 2009).

Appears to follow leading lines (e.g., shoreline) less than other migrant falconiforms, and relative occurrence at traditional hawk-watch sites is often low. In mid-western and e. North America, migrating Northern Harriers have been a small (<4%) but relatively consistent component of both coastal and inland hawk-watch sites in fall. Fall numbers are disproportionately higher on the Atlantic Coast (e.g., at Cape May, NJ, about 1,700/yr) compared with inland observation sites (about 265-730/yr; [Titus and Fuller 1990c \(/Species-Account/bna/species/norhar/references#REF15169\)](#)). At most migration-observation sites in w. North America, Northern Harriers make up 1-2% of total raptors recorded ([Binford 1979 \(/Species-Account/bna/species/norhar/references#REF46346\)](#), [Hoffman et al. 1992b \(/Species-Account/bna/species/norhar/references#REF21596\)](#)), although the species is the most commonly observed raptor in e. Alaska (McIntyre and Ambrose 1999). Commonly observed during fall migration along the Mesoamerican Land Corridor in Mexico and Central America (Bildstein 2006).

Band recoveries and radiotelemetry data suggest that birds banded in the mid-western U.S. migrate south and southeast, with those moving through s. Ontario moving south-southwest and those through n. Great Plains moving south-southeast, south, and southwest ([Mueller and Berger 1969 \(/Species-Account/bna/species/norhar/references#REF16054\)](#), [Duncan 1986a \(/Species-Account/bna/species/norhar/references#REF46350\)](#)). Thus, most migrants from the Great Lakes region apparently winter east of the Mississippi River ([Hussell and Brown 1992 \(/Species-Account/bna/species/norhar/references#REF16047\)](#)). Banding data also suggest that harriers are a leap-frog migrant, with individuals from northern populations wintering further south than southern populations (Bildstein 2006).

About 4% of the fall migrants counted on the Florida Keys were headed north (reverse migration) rather than south (Lott 2006). At least one male was known to have wandered north after breeding (Pavelka et al. 1992); no evidence juveniles do so after fledging (P. H. Bloom, pers. comm.; contra Pavelka et al. 1992).

Spring

Spring migration not as well studied. In Central America and Mexico, most spring migrants observed in Mar. In U.S., winter territories are abandoned and communal roosts disbanded in late Feb and early Mar. Like fall migrants, spring migrants exhibit a protracted migration period, without a well-defined temporal peak (see [Figure 4 \(https://download.ams.birds.cornell.edu/api/v1/asset/25001761\)](https://download.ams.birds.cornell.edu/api/v1/asset/25001761)). At the Sandia Mtns., NM, 95% of migrant harriers were observed between 22 Feb and 4 May (median 8 Apr; Hoffman et al. 1992b (</Species-Account/bna/species/norhar/references#REF21596>)). In nw. Texas, first migrants appear in February, with peak during March; gone by 20 Apr (Littlefield and Johnson 2005). At Derby Hill, NY, annual mean date of passage 25 Feb-25 May, with most birds observed mid-Mar to late Apr ([Smith and Muir 1978 \(/Species-Account/bna/species/norhar/references#REF46368\)](/Species-Account/bna/species/norhar/references#REF46368)). At Grimsby, ON, most migrants observed between 21 Mar and 15 May ([Hussell and Brown 1992 \(/Species-Account/bna/species/norhar/references#REF16047\)](/Species-Account/bna/species/norhar/references#REF16047)).

In New Brunswick and Manitoba, birds arrive on breeding grounds from late Mar through Apr ([Haugh 1972a \(/Species-Account/bna/species/norhar/references#REF32954\)](/Species-Account/bna/species/norhar/references#REF32954), RBM). At Delta Marsh in Manitoba, mean arrival date from 1939 to 2001 was 21 Mar (2.1 d SE) and early arrival dates are significantly correlated with increasing spring temperatures (Murphy-Klassen et al. 2005). In s. Alaska, most migrants are observed between late Apr and early May ([Swem 1985 \(/Species-Account/bna/species/norhar/references#REF19204\)](/Species-Account/bna/species/norhar/references#REF19204)). In spring migration, adults precede juveniles, and males precede females ([Hamerstrom 1969 \(/Species-Account/bna/species/norhar/references#REF16042\)](/Species-Account/bna/species/norhar/references#REF16042), [Haugh 1972a \(/Species-Account/bna/species/norhar/references#REF32954\)](/Species-Account/bna/species/norhar/references#REF32954), [Bildstein and Hamerstrom 1980](#)

([/Species-Account/bna/species/norhar/references#REF34441](#)). In Wisconsin, adult males and females migrated significantly earlier than juveniles (Mueller et al. 2003). See also Bildstein 1988 ([/Species-Account/bna/species/norhar/references#REF46344](#)).

In central New Mexico and at 4 sites in the ne. U.S., Northern Harriers made up about 2% of all raptors observed in spring ([Smith and Muir 1978](#) ([/Species-Account/bna/species/norhar/references#REF46368](#)), [Titus and Fuller 1990c](#) ([/Species-Account/bna/species/norhar/references#REF15169](#)), [Hoffman et al. 1992b](#) ([/Species-Account/bna/species/norhar/references#REF21596](#))). In n. British Columbia, s. Yukon Territory, and Alaska, this was the most abundant raptor observed (40% of 314 [[Mindell and Mindell 1984](#) ([/Species-Account/bna/species/norhar/references#REF16053](#))] and 61% of 1,391 [[Swem 1985](#) ([/Species-Account/bna/species/norhar/references#REF19204](#))]). Spring migration counts generally highest in the Northeast and lowest in the Southwest (Farmer and Smith 2010).

Migratory Behavior

From [Kerlinger 1989a](#) ([/Species-Account/bna/species/norhar/references#REF8570](#)), except where noted. In New York and New Jersey, migrates at low altitudes (primarily 500-900 m) on days when soaring conditions are good, descending to lower altitudes with westerly winds. During ridge-gliding flight in Pennsylvania and New Jersey, most flights solely gliding or glide-and-flapping. Mean air speed 12.9 ± 0.8 (SE) m/s; mean ground speed 10.8 ± 1.5 (SE) m/s. During fall in central New York, where leading lines are lacking, migrates via thermal soaring and interthermal gliding. Mean interthermal air speed 18.7 ± 1.2 (SE) m/s; mean ground speed 19.4 ± 2.5 (SE) m/s. Soaring in thermals is the most common means of gaining altitude during migration. Mean rate of climb using thermal soaring 3.0 ± 1.1 (SE) m/s.

At most hawk-watch sites, migrating Northern Harriers are most frequent between 0800 and 1200 h, with numbers declining throughout the remainder of the day ([Swem 1985](#) ([/Species-Account/bna/species/norhar/references#REF19204](#)), [Hoffman et al. 1992b](#)

([/Species-Account/bna/species/norhar/references#REF21596](#)), but see [Haugh and Cade 1966](#) ([/Species-Account/bna/species/norhar/references#REF16044](#)). Unlike most raptors, migrating Northern Harriers fly in light rain and snow ([Haugh and Cade 1966](#) ([/Species-Account/bna/species/norhar/references#REF16044](#)), KLB).

In Wisconsin, fledglings left natal area alone, not with siblings or parents. Occasionally soared with 1-2 conspecifics for brief periods. Migration was slow, with movements interrupted by the establishment of temporary (2- to 3-wk) home ranges. Did not migrate at night. Hunting on migration concentrated after sunrise and before sunset ([Beske 1982](#) ([/Species-Account/bna/species/norhar/references#REF34438](#))).

Control and Physiology of Migration

Less affected by the passage of cold fronts than other raptors migrating past Hawk Mountain Sanctuary, PA ([Allen et al. 1996](#) ([/Species-Account/bna/species/norhar/references#REF58621](#))). Physiological data needed.

Habitat in Breeding Range

Open wetlands, including marshy meadows; wet, lightly grazed pastures; old fields; freshwater and brackish marshes, and tundra; also dry uplands, including upland prairies, mesic grasslands, drained marshlands, croplands, cold desert shrub-steppe, and riparian woodland.

Populations in mid-w. U.S. and ne. North America breed predominantly in seasonal or semi-permanent wetland habitats (Kantrud and Stewart 1984); in w. U.S., proportionately more in upland (dry) habitats ([Apfelbaum and Seelbach 1983](#) ([/Species-Account/bna/species/norhar/references#REF16024](#)), [Simmons and Smith 1985](#) ([/Species-Account/bna/species/norhar/references#REF46367](#))). In both wetland and upland areas, densest populations typically associated with large tracts of undisturbed habitats dominated by thick vegetation growth ([Apfelbaum and Seelbach 1983](#) ([/Species-](#)

[Account/bna/species/norhar/references#REF16024](#)), [Toland 1986a \(/Species-Account/bna/species/norhar/references#REF16073\)](#), [Kantrud and Higgins 1992 \(/Species-Account/bna/species/norhar/references#REF58788\)](#)).

In Missouri, occurrence is indicative of wet prairies (Thogmartin et al. 2009). Nests on reclaimed surface mines in Pennsylvania and Kentucky (Rohrbaugh and Yahner 1996, Vukovich and Ritchison 2006). Occurs on Conservation Reserve Program fields primarily planted in non-native grasses in northern Great Plains, where it is generally associated with large tracts of land >100 ha (Johnson and Igl 2001). Minimum of 55 ha needed to breed in se. Illinois (Walk and Warner 1999).

In the Yukon (Sinclair et al. 2003), breeders frequents two different habitats, likely nesting in both: alpine tundra -- and marshes, open meadows, and wetlands at lower elevations. In Québec (Henderson 1996), northern (boreal forest) pairs inhabit muskeg and other open wetlands, clearcuts, and burns; farther south: pastures, hayfields, wet meadows, peatlands, and fresh-and saltwater marshes.

Disappears as a breeder if woody cover exceeds 30% in northern Great Plains grasslands (Winter et al. 2006). In s. Illinois, preferred idle fields to grasslands that had been managed within 12 mo of nesting, used both native and non-native vegetation, and did not appear to be area-sensitive (Herkert et al. 1999). Will nest in switchgrass (*Panicum virgotum*) fields if they are not harvested during fall and winter (Evrard and Bacon 1998, Murray and Best 2003).

On Nantucket I., MA, nests in dense upland shrublands away from developed land and roads; foraging males and females avoid mowed fields there (Massey et al. 2009).

Breeds up to (rarely) >2,400 m.

See also Breeding: nest site and Food Habits: microhabitat for foraging.

Habitat in Migration

Few data. Fledglings migrating southeast from central Wisconsin regularly established temporary home ranges in freshwater marshes ([Beske 1982 \(/Species-Account/bna/species/norhar/references#REF34438\)](#)). Seen in both open wetlands and uplands during migration. Uses marshes and open fields in fall migration on Cape May, suggesting that fall habitat selection is similar to summer and winter habitats (Niles et al. 1996). In nw. Texas, foraged in spring wheat when it grew tall enough to attract small mammals and birds; foraged in cotton fields in fall as long as plants had leaves (Littlefield and Johnson 2005).

Habitat in the Winter Range

A variety of open habitats dominated by herbaceous cover, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, upland and lowland grasslands, old fields, estuaries, open-habitat flood plains, and salt- and freshwater marshes ([Temeles 1986 \(/Species-Account/bna/species/norhar/references#REF16069\)](#), [Bildstein 1987a \(/Species-Account/bna/species/norhar/references#REF34440\)](#), [Collopy and Bildstein 1987 \(/Species-Account/bna/species/norhar/references#REF16036\)](#)). Forages on reclaimed surface mines in Kentucky (Vokuvich and Rictchison 2008). Communal roosts in Illinois were only in undisturbed cool-season grasses which averaged about 25 cm tall (Walk 1998). In nw. Texas, avoided most agricultural fields and foraged primarily in CRP fields, vegetated playa basins and shortgrass prairies (Littlefield and Johnson 2005). Most concentrated populations are restricted to areas with low vegetation, especially the semiarid scrub and shrub-steppe (cold desert) habitats of the Great Basin and grasslands of s. Great Plains (Igl and Ballard 1999). West of 100th meridian, northern limit of early winter distribution is coincident with areas where temperature drops below -15°C ([Root 1988b \(/Species-Account/bna/species/norhar/references#REF44041\)](#)). In e. U.S., limits of range coincide with dense deciduous and coniferous forest, which it does not occupy. Avoids higher elevations of Appalachian and Ozark mountains.

Historical Changes to the Distribution

In 1800s, numbers likely increased in response to clearing of eastern forests for timber and agriculture. In twentieth century, no recent broad-scale changes in distribution, although extensive local population declines have occurred throughout the breeding range due to regrowth of forests (esp. in the Northeast) and losses of wetlands, undisturbed grasslands, and native prairies. See Demography and Populations: population status, below.

Fossil History

In ne. Mexico, fossils detected in samples from 11,000 to 27,000 years before present (ybp) and in samples in n. Mexico from 40,000 ybp ([Steadman et al. 1994 \(/Species-Account/bna/species/norhar/references#REF7329\)](#), Steadman and Mead 2010). Recorded as fossil from Plio-Pleistocene in Florida (Emslie 1998) and from Pleistocene of Oregon and California ([Brodkorb 1964a \(/Species-Account/bna/species/norhar/references#REF22648\)](#)). Subfossil from a late prehistoric site (ca. A.D. 1300) associated with human settlement in se. New Mexico ([Emslie et al. 1992a \(/Species-Account/bna/species/norhar/references#REF33201\)](#)). In Middle Missouri Valley, SD, subfossils abundant and widespread among 51 archaeological sites; most associated with the period A.D. 900–1700, fewer after that time ([Parmalee 1977 \(/Species-Account/bna/species/norhar/references#REF33766\)](#)). Subfossils recorded from sites in California, Utah, and Arizona ([Brodkorb 1964a \(/Species-Account/bna/species/norhar/references#REF22648\)](#)).

A diminutive harrier, *Circus drossenus*, occurred in the Hawaiian Islands, possibly derived from *C. cyaneus* (Olsen and James 1991).

◀ [Systematics \(/Species-Account/bna/species/norhar/systematics\)](#)

[Diet and Foraging \(/Species-Account/bna/species/norhar/foodhabits\)](#) ▶

[Introduction \(/Species-Account/bna/species/norhar/introduction\)](/Species-Account/bna/species/norhar/introduction)

[Appearance \(/Species-Account/bna/species/norhar/appearance\)](/Species-Account/bna/species/norhar/appearance)

[Systematics \(/Species-Account/bna/species/norhar/systematics\)](/Species-Account/bna/species/norhar/systematics)

[Distribution, Migration and Habitat \(/Species-Account/bna/species/norhar/distribution\)](/Species-Account/bna/species/norhar/distribution)

[Distribution in the Americas \(/Species-Account/bna/species/norhar/distribution#inwh\)](/Species-Account/bna/species/norhar/distribution#inwh)

[Distribution Outside the Americas \(/Species-Account/bna/species/norhar/distribution#nonwh\)](/Species-Account/bna/species/norhar/distribution#nonwh)

[Nature of Migration \(/Species-Account/bna/species/norhar/distribution#mignat\)](/Species-Account/bna/species/norhar/distribution#mignat)

[Timing and Routes of Migration \(/Species-Account/bna/species/norhar/distribution#migroute\)](/Species-Account/bna/species/norhar/distribution#migroute)

[Migratory Behavior \(/Species-Account/bna/species/norhar/distribution#migbehav\)](/Species-Account/bna/species/norhar/distribution#migbehav)

[Control and Physiology of Migration \(/Species-Account/bna/species/norhar/distribution#migphys\)](/Species-Account/bna/species/norhar/distribution#migphys)

[Habitat in Breeding Range \(/Species-Account/bna/species/norhar/distribution#breedhab\)](/Species-Account/bna/species/norhar/distribution#breedhab)

[Habitat in Migration \(/Species-Account/bna/species/norhar/distribution#mighab\)](/Species-Account/bna/species/norhar/distribution#mighab)

[Habitat in the Winter Range \(/Species-Account/bna/species/norhar/distribution#winhab\)](/Species-Account/bna/species/norhar/distribution#winhab)

[Historical Changes to the Distribution \(/Species-Account/bna/species/norhar/distribution#hist\)](/Species-Account/bna/species/norhar/distribution#hist)

[Fossil History \(/Species-Account/bna/species/norhar/distribution#fossil\)](/Species-Account/bna/species/norhar/distribution#fossil)

[Diet and Foraging \(/Species-Account/bna/species/norhar/foodhabits\)](/Species-Account/bna/species/norhar/foodhabits)

[Sounds and Vocal Behavior \(/Species-Account/bna/species/norhar/sounds\)](/Species-Account/bna/species/norhar/sounds)

[Behavior \(/Species-Account/bna/species/norhar/behavior\)](/Species-Account/bna/species/norhar/behavior)

[Breeding \(/Species-Account/bna/species/norhar/breeding\)](/Species-Account/bna/species/norhar/breeding)

[Demography and Populations \(/Species-Account/bna/species/norhar/demography\)](/Species-Account/bna/species/norhar/demography)

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[Acknowledgments \(/Species-Account/bna/species/norhar/acknowledgments\)](/Species-Account/bna/species/norhar/acknowledgments)

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[Tables and Appendices \(/Species-Account/bna/species/norhar/appendices\)](/Species-Account/bna/species/norhar/appendices)

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