

## Appendix A: Birds

### Purple Martin

*Progne subis*

Federal Listing	N/A
State Listing	SC
Global Rank	G5
State Rank	S1
Regional Status	



Photo by Pamela Hunt

#### Justification (Reason for Concern in NH)

Aerial insectivores (here including nightjars, swifts, flycatchers, and swallows) have recently received increased conservation attention due to significant declines in several species (Hunt 2009, Nebel et al. 2010). Because all species share a common prey base of flying insects, there has been much speculation on a potential common cause for many of the declines. Much current research has been directed toward swifts and swallows in North America, resulting in greater knowledge of potential threats. Swifts and swallows have several ecological characteristics in common. All are highly aerial, and feed entirely on insects captured during sustained flight – often quite high in the air column. Threats identified for the group as a whole include changes in food supply, effects of insecticides on adults or young, loss of nesting locations, climate change. It should be noted that any of these factors could be affecting birds at any point in their annual cycle, and knowledge of their winter ecology is currently largely unknown. Like many aerial insectivores, populations of Purple Martin are in strong decline, although declines vary regionally. In NH, there were over 20 colonies during the Breeding Bird Atlas in 1980-85 (Foss 1994), but this number dropped to 10 or fewer by the early 2000s when the species was the subject of targeted monitoring (Hunt 2002, unpub. data). By 2013, there were only 3-4 known colonies, all of which contained five or fewer pairs. Large colonies in Moultonborough, Freedom, and Conway appear to have disappeared between 2004 and 2012, and the other historic colony in Laconia dropped from 12 pairs as recently as 2010 to only two in 2014 (Hunt, unpubl. data). This species shows a complex mix of trends in the BBS (Sauer et al. 2014), including significant declines in BCR 14 (-7-84%/year, 1966-2013) but increases in BCR 30 (+1.13%/year). But because the species is so highly colonial, BBS may not accurately reflect trends. Where Breeding Bird Atlas have been repeated at the northern edge of its breeding range, the species has shown a decrease in occupancy of 40-60% (Cadman et al. 2007, McGowan and Corwin 2008, Renfrew 2013, Massachusetts Audubon Society 2014).

#### Distribution

Most of the population occurs in the eastern half of the United States and in adjacent southern Canada, with local populations in the southwest (including Mexico) and along the Pacific coast north to British Columbia. It winters in South America east of the Andes, primarily in Brazil. In New Hampshire, colonies have historically been almost entirely south of the White Mountains, and concentrated from the Lakes Region south (Foss 1994). There have been extremely few nesting records from the Connecticut River watershed.

#### Habitat

The Purple Martin is unique among the native birds of eastern North American in that it has come to

## Appendix A: Birds

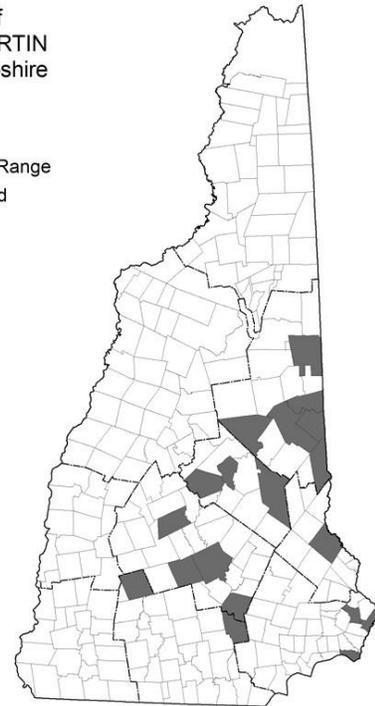
be almost entirely reliant on housing structures provided by people (Tarof and Brown 2013). The shift from loose colonies in natural cavities to concentrations in artificial ones had already begun prior to European settlement, through use of gourds by Native Americans. Colonies can occur in a wide variety of situations, although they are usually in open areas. Most New Hampshire colonies are close to water, and surrounding landscapes have included golf courses, lakeshores, farm fields, and salt marsh.

### NH Wildlife Action Plan Habitats

- Developed Habitats
- Grasslands
- Salt Marshes

Distribution of  
PURPLE MARTIN  
in New Hampshire

■ Current Range  
▨ Localized



Distribution Map

### Current Species and Habitat Condition in New Hampshire

Declining in NH, both in terms of number of colonies on number of pairs at extant colonies.

### Population Management Status

All colonies are in structures provided and maintained by people. Continued successful nesting generally requires that nesting structures are cleaned at least annually, and recommended management practices also include competitor exclusion and removal.

### Regulatory Protection (for explanations, see Appendix I)

- Migratory Bird Treaty Act (1918)

### Quality of Habitat

Of the three known colonies, only the one in Seabrook is subject to intensive management in the form of weekly nest checks, although the housing in Laconia and Wakefield is taken down and cleaned at the end of each summer.

## Appendix A: Birds

### Habitat Protection Status

Most nesting locations are probably on private property and thus not protected in the traditional sense of the term.

### Habitat Management Status

See Population Management Status and Quality of Habitat.

### Threats to this Species or Habitat in NH

*Threat rankings were calculated by groups of taxonomic or habitat experts using a multistep process (details in Chapter 4). Each threat was ranked for these factors: Spatial Extent, Severity, Immediacy, Certainty, and Reversibility (ability to address the threat). These combined scores produced one overall threat score. Only threats that received a “medium” or “high” score have accompanying text in this profile. Threats that have a low spatial extent, are unlikely to occur in the next ten years, or there is uncertainty in the data will be ranked lower due to these factors.*

#### Disturbance and mortality from spring cold snaps and intense storms (Threat Rank: Medium)

Because martins rely on flying insects, foraging success can be compromised during cold and/or wet periods when prey species are inactive, particularly in spring. Under such conditions adults may abandon nests, fail to sufficiently provision nestlings, or even starve. Major single-year drops in the number of colonies in New England occurred in 1903 (Forbush 1929), 1959 (Hebert 1959), and 1972 (Tate 1972). If such weather patterns become more frequent in the northern portion of the Purple Martin’s breeding range, as has been predicted by some climate change models, the species may experience more such die-offs or years with minimal reproductive success. Because martins concentrate in extremely high numbers during migration, they may also be vulnerable to significant storm-related mortality at this time (Butler 2000).

#### Disturbance from lack of colony management (Threat Rank: Medium)

In addition to the need for competitor management, recommended management generally includes at least weekly monitoring. This can detect infestations of parasites (e.g., blowflies) that occur under certain conditions, as well as being an opportunity to remove competitors. There is extensive evidence that provision and maintenance of suitable housing can result in population recovery over relatively short time periods (Tarof and Brown 2013).

#### Disturbance from competition with non-native cavity nesters (Threat Rank: Medium)

Both European Starlings (*Sturnus vulgaris*) and House Sparrows (*Passer domesticus*) regularly use nesting cavities also favored by martins. These non-native species nest earlier than martins and can thus exclude them from some nest sites, and are also known to destroy martin nests or kill young chicks (Tarof and Brown 2013). Although these species have been known to coexist with healthy martin colonies (P. Hunt, pers. obs.), recommended management includes exclusion, trapping, and/or removal of eggs and young.

#### Species impacts from agricultural pesticide use causing prey declines (Threat Rank: Medium)

There is increasing evidence from studies on other species of aerial insectivores that increased use of insecticides is impacting prey availability (Evans et al. 2007, Ghilain and Bélisle. 2008, Nocera et al.

## ***Appendix A: Birds***

2012, Paquette et al. 2014). Although not documented in martins, some such studies have shown that swallows breeding in more heavily agricultural landscapes may exhibit reduced nestling growth rates.

### **List of Lower Ranking Threats:**

- Mortality from pesticide use in South America
- Disturbance from agricultural pesticide use in North America
- Disturbance and conversion of non-breeding roosts from work activities
- Mortality from extreme weather that impacts migratory roosts
- Disturbance and mortality from winter drought

### **Actions to benefit this Species or Habitat in NH**

#### **Purple Martin colony management**

**Primary Threat Addressed:** Disturbance from lack of colony management

**Specific Threat (IUCN Threat Levels):** Natural system modifications

**Objective:**

Enhance local Purple Martin productivity

**General Strategy:**

Implement more intensive management at existing colonies where it is not currently occurring (Laconia and Wakefield). This could include additional/alternative housing, social attraction, and competitor management, in addition to weekly monitoring

**Political Location:**

Belknap County, Carroll County, Rockingham County, Strafford County

**Watershed Location:**

Androscoggin-Saco Watershed, Pemi-Winni Watershed, Coastal Watershed

#### **Purple Martin recruitment**

**Primary Threat Addressed:** Disturbance from lack of colony management

**Specific Threat (IUCN Threat Levels):** Natural system modifications

**Objective:**

Establish new Purple Martin colonies at recently-used locations

**General Strategy:**

At historic sites where colonies have recently disappeared, and at other high-potential sites, work with landowners and local volunteers to improve housing conditions and attempt to attract martins.

**Political Location:**

Belknap County, Carroll County, Rockingham County, Strafford County

**Watershed Location:**

Androscoggin-Saco Watershed, Pemi-Winni Watershed, Merrimack Watershed, Coastal Watershed

## References, Data Sources and Authors

### Data Sources

Trend data from BBS and Breeding Bird Atlases (citations above).

### Data Quality

When martin surveys were promoted and coordinated at the statewide level (1959 to 1960, early 1980s, and early 2000s), data on martin distribution in New Hampshire were probably very accurate. The species' colonies are highly visible and the species is easily identified. However, as the number and size of colonies continues to decline, the chances of small colonies going undetected increases. This is evidenced by two of the three current colonies only becoming "known" in 2013, and 3 of the 10 colonies active in 2002-2004 were previously undocumented. Ironically, martins' penchant for nesting in residential areas and on golf courses probably decreases the chances of colonies being sighted, because lay birders do not frequent these areas.

### 2015 Authors:

Pamela Hunt, NHA

### 2005 Authors:

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## ***Appendix A: Birds***

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