

## Appendix A: Birds

### Cliff Swallow

*Petrochelidon pyrrhonota*

Federal Listing	N/A
State Listing	SC
Global Rank	G5
State Rank	S3
Regional Status	



Photo by Jason Lambert

#### 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, and 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 Cliff Swallow are in strong decline, although declines are most prominent in the north and east (see also Nebel et al. 2010). Based on BBS (Sauer et al. 2014) data the species has declined at 9.04% annually since 1966 in NH (-8.97% from 2003-2013), -5.03% in BCR 14, and -7.12% in BCR 30 (latter not significant, and a non-significant increase in this BCR 2003-2013). Most repeated Breeding Bird Atlases have documented declines in occupancy of roughly 50% (Cadman et al. 2007, Renfrew 2013, Massachusetts Audubon Society 2014), although the decline in NY was only 12% (McGowan and Corwin 2008).

#### Distribution

Breeds from Alaska to southern Mexico in the west, and east across southern Canada and the Great Plains to Nova Scotia, New England, and the Appalachians (Brown and Brown 1995). Winters primarily from southern Brazil to central Argentina, and almost entirely east of the Andes. Although rare in the Northeast prior to European settlement, the species increased during the early 19th century and was eventually found statewide in NH (Foss 1994). Over the last 20 years, the number and size of colonies in NH has declined considerably, and the species is now found primarily in Coos County and the Lakes Region, with scattered colonies near the Seacoast (NHBR, NH eBird).

#### Habitat

Historically, Cliff Swallows bred on rocky cliffs and outcrops in the mountains and foothills of western North America, but spread east beginning in the early 19th century as bridges and buildings provided alternate nesting substrate (Brown and Brown 1995). In the northeastern U.S., including NH, all colonies are located on man-made structures, and generally near open habitats (often fields) for foraging.

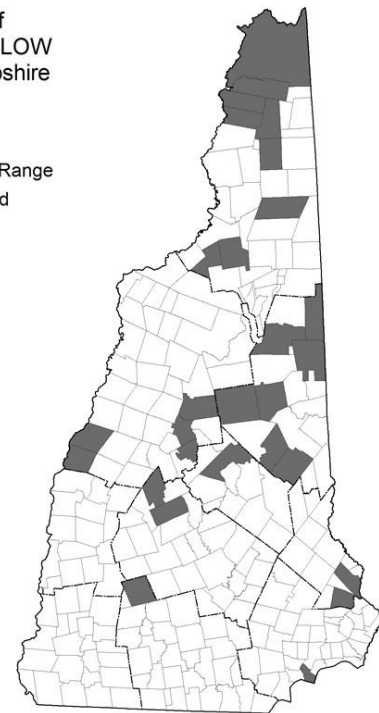
## Appendix A: Birds

### NH Wildlife Action Plan Habitats

- Developed Habitats

Distribution of  
CLIFF SWALLOW  
in New Hampshire

■ Current Range  
▨ Localized



**Distribution Map**

### Current Species and Habitat Condition in New Hampshire

Significant regional population declines and some range retraction (see Justification).

### Population Management Status

Management is not currently in place for this species.

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

- Migratory Bird Treaty Act (1918)

### Quality of Habitat

Highly variable, depending on local site management.

### Habitat Protection Status

Highly variable.

### Habitat Management Status

Habitat management has not been implemented for this species. There is limited interest by homeowners where colonies occur in implementing actions to maintain or relocate existing colonies

## Appendix A: Birds

that “conflict” with building maintenance.

### 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 related to nest destruction and access restriction (Threat Rank: High)

Because a Cliff Swallow colony can be somewhat messy (e.g., droppings) or viewed as unsightly, some building owners are known to remove nests, a practice that can result in colony relocation or abandonment. Similarly, bridge construction can disturb colonies with similar effects. If a colony is in the interior of a building and access is blocked (intentionally or not), birds will become trapped and/or excluded and again the colony will fail at least for that year. At least three of the known NH colonies have been impacted to some degree by purposeful or construction-related disturbance of this sort.

#### Disturbance and mortality from winter drought (Threat Rank: Medium)

Considerable research in both Europe and North America has linked annual survival in several swallow species (but not Cliff) to long-term climate cycles such as El Niño and the North Atlantic Oscillation. In such cases, lower survival generally follows periods in these climate cycles where the winter grounds experience drought (Szép 1995, Robinson et al. 2008, Garcia-Pérez et al. 2014), and if drought increases as a result of climate change then one would expect such periods of low survival to become more frequent. There also appear to be carry-over effects in which productivity is higher in the breeding season following winters with more favorable conditions (Saino et al. 2003).

#### Disturbance from agricultural pesticides used in North America (Threat Rank: Medium)

Research in Canada has documented a variety of negative effects on Tree Swallows using heavily agricultural areas, including lower adult mass, lower clutch size, poor nestling condition and survival, and reduced annual return rates (Ghilain and Bélisle 2008, Paquette et al. 2014). Because Cliff Swallows are concentrated in agricultural areas, there is good reason to assume that they could experience similar effects. There is also concern about the use of insecticides on these species on their winter grounds in South America, where some chemicals are known to have direct toxic effects on migratory birds (Goldstein et al. 1999). A recent analysis of pesticide import data suggests that aerial insectivores showing the strongest declines tend to winter in Latin American countries with higher than average imports (and thus presumably use, J. Nocera pers. comm.).

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

There is increased evidence from studies on other species of swallows that increased use of insecticides is impacting prey availability (Evans et al. 2007). Research in Canada has documented a variety of negative effects on Tree Swallows using heavily agricultural areas, including lower adult mass, lower clutch size, poor nestling condition and survival, and reduced annual return rates (Ghilain and Bélisle 2008, Paquette et al. 2014).

## *Appendix A: Birds*

### List of Lower Ranking Threats:

Mortality from pesticide use in South America  
Species impacts from competition (with non-native cavity nesters)  
Disturbance and mortality from spring cold snaps and intense storms

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

#### Cliff Swallow colony management

**Primary Threat Addressed:** Disturbance related to nest destruction and access restriction

**Specific Threat (IUCN Threat Levels):** Human intrusions & disturbance

**Objective:**

Enhance local Cliff Swallow productivity

**General Strategy:**

At sites with good habitat where presence of nesting Cliff Swallows is tolerated, use relatively simple, tested management techniques to encourage breeding success. Work with homeowners to minimize “damage” done by active colonies, or to relocate these colonies to more tolerable locations (if this is even possible, see Silver 2012). This action could also include management of competing House Sparrows.

**Political Location:**

Statewide

**Watershed Location:**

Statewide

#### Cliff Swallow colony host outreach

**Primary Threat Addressed:** Disturbance related to nest destruction and access restriction

**Specific Threat (IUCN Threat Levels):** Human intrusions & disturbance

**Objective:**

Increase public awareness about Cliff Swallow declines and discourage homeowners from destroying colonies. This could be extended to highway departments and bridges as well.

**General Strategy:**

Create materials on the decline of Cliff Swallows and the importance of maintaining the declining number of colonies in the state. Make these materials available to the general public and specifically target sites of significant colonies where the threat of intentional destruction is considered high.

## *Appendix A: Birds*

**Political Location:**

Statewide

**Watershed Location:**

Statewide

### **Cliff Swallow colony surveys**

**Objective:**

Obtain a better assessment of the current size and distribution of Cliff Swallow colonies in NH.

**General Strategy:**

There is still incomplete information on the locations and sizes of Cliff Swallow colonies in New Hampshire. Successful prioritization and implementation of colony management requires knowledge of where significant colonies are located. Encourage birders to keep their eyes out for active colonies and report their locations

**Political Location:**

Statewide

**Watershed Location:**

Statewide

### **Migratory connectivity research**

**Objective:**

Determine migration routes and wintering locations for Cliff Swallows breeding in NH and elsewhere in the Northeast.

**General Strategy:**

Given that declines in this species are not as uniform across the continent as for many other aerial insectivores, there is value in collecting data on migratory connectivity. If wintering areas for declining populations are different from those that are stable or increasing, it may be possible to better identify threats during the non-breeding season. Employ light-level geolocators in an attempt to collect these sorts of data.

**Political Location:**

Northeast, Statewide

**Watershed Location:**

Statewide

## **References, Data Sources and Authors**

**Data Sources**

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

**Data Quality**

The highly colonial nature of this species potentially confounds BBS data because colonies can move in space between years. However, the declines indicated by BSS are corroborated by the systematic data collected by Atlases, as well as more specific data for New Hampshire.

## Appendix A: Birds

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Pamela Hunt, NHA

### 2005 Authors:

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

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