SPECIES PROFILE

Purple Martin

Progne subis

Federal Listing: Not listed
State Listing: Endangered
Global Rank: G5
State Rank: S1
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Element 1: Distribution and Habitat

1.1 Habitat Description

In New Hampshire, purple martin (hereafter called martins) colonies are located in open areas with a relatively unobstructed view of the horizon. Such areas include golf courses, lakeshore residential areas, open fields, and low-density residential areas. Many colonies are near water (lakes or rivers), although a water feature does not appear to be critical to the species. Martins prefer nest poles that are not vegetated at the base and that are within 100 feet of human habitation (presumably to avoid predation) (Purple Martin Conservation Association, Hill 1990).

1.2 Justification

Martins have been declining over most of their range in New England for at least 2 decades (Laughlin and Kibbe 1985, Zeranski and Baptist 1990, Veit and Petersen 1993, Hunt 2003). Breeding Bird Survey data indicate a range wide decline of 0.6% per year, with the decline concentrated in eastern North America (0.9% per year, Sauer et al. 2004). In the East, declines appear most dramatic in the northern United States and along the Gulf Coast.

Martin distribution within New Hampshire has contracted significantly over the last 50 years (figure 1). Whereas the Lakes Region and other areas of east-central New Hampshire have apparently always contained several colonies, other regions such as the Contoocook Valley and Western Highlands appear to have completely lost their colonies since broad surveys were first conducted in the late 1950s. Small colonies on the Seacoast (Great Bay and in Rye) barely survive, and were unoccupied in 2004 despite regular management and monitoring activity at both sites.

1.3 Protection and Regulatory Status

This species is protected at the federal level by the Migratory Bird Treaty Act, which prevents the killing of most non-game birds and collection of their nests or eggs. In New Hampshire, it is protected by the New Hampshire Endangered Species Conservation Act (RSA 212).

1.4 Population and Habitat Distribution

Martins were recorded in New Hampshire in the late 1700s and sporadic records exist for the 1800s, but it was not until roughly the 1880s that consistent records were kept. In the early 1900s, martins were locally common over most of the lowlands in southern and central New Hampshire, with scattered populations in the Connecticut River Valley as far north as Colebrook and Lancaster (Allen 1903, Wright 1911).

Forbush (1929) reported a significant die-off due to cold weather in June 1903, with a smaller die-off in the summer of 1914. In the aftermath of these die-offs, the first statewide colony survey in 1920-21 found only 17 colonies in 10 towns, with half of the colonies in southeastern New Hampshire (Hebert 1960, see Hunt 2003).

A second major decline occurred in June 1959, when cold wet weather in mid-June caused martins to desert many colonies, and even resulted in some adult mortality (Hebert 1959). A statewide survey was repeated in 1959-60 and found only five of the

previous colonies still active; none of the southeastern colonies from 1920-21 were still active. However, several new colonies were located, resulting in a net increase to 22 colonies in 18 towns (Hebert 1960). Additional colonies reported during in the three years prior to this survey bring the total for the late 1950s up to at least 30 (Figure 1a).

The next statewide martin survey was the Breeding Bird Atlas surveys (1980-85). Martins were confirmed breeding in 17 atlas blocks and recorded as "probable" in five more. These blocks were distributed across 21 towns, primarily in Carroll, Belknap, and Merrimack counties (Figure 1b). In addition, NHBR data from this period show five additional colonies apparently not reported to the Atlas.

A dramatic decline beginning in the mid-1980s (figure 2) may be at least partially attributable to the cessation of intensive surveys, although other data seem to indicate a real decline. Data from the Breeding Bird Survey (BBS) indicate a drop in martin numbers over most of the eastern United States in 1983 (Sauer et al. 2003). Martins disappeared from the Hopkinton BBS route after 1985.

Starting in the late 1980s, almost all the available data on purple martin distribution in the state come from NHBR. There are consistent records for only 7 sites, and single-year records for 2-4 more. Three additional historic sites were reported as active to the Purple Martin Conservation Association (PMCA), but none more recently than 1987. Martins were also reported to the PMCA at 4 additional locations, but none of these was confirmed.

1.5 Town Distribution Map

See Figure 1.

1.6 Habitat Map

N/A

1.7 Sources of Information

Information on purple martin colony locations was obtained from New Hampshire Bird Records, Foss (1994), the PMCA, and local bird publications. Regional information was collected from state bird publications and the Breeding Bird Survey.

1.8 Extent and Quality of Data

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, the local nature of most colonies makes them less likely to be discovered between surveys. For example, 3 of the 10 colonies active between 2002 and 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.

1.9 Distribution Research

Much is known about the distribution of the purple martin in New Hampshire. Where historic town records exist, however, the exact habitat should be identified for future restoration projects.

Element 2: Species Condition

2.1 Scale

Each colony is treated as a conservation-planning unit, even though all colonies inhabit similar artificial housing. Because maintenance and housing conditions vary from place to place, this distinction between colonies is intuitive. Nevertheless, the transient nature of artificial habitat means that historic comparisons must be discarded.

2.2 Relative Health of Populations

In the column "Current Size" in table 1, the current size (2002-2004 average) of the colony is given in number of pairs. The column "Historic Size" reflects the general status of the colony during the 1980s. In general, these data indicate that most colonies are smaller than during the 1980s, which corroborates the statewide population decline discussed in section 1.2.

2.3 Population Management Status

In table 1, colony management is rated as one of the following:

- Poor: the nest boxes are not known to be cleaned annually, and competitors are not discouraged or excluded.
- Fair: the nest boxes are sometimes cleaned (or cleaning has been less frequent in recent years)
- Good: the nest boxes are regularly cleaned and monitored, though competitors are not usually controlled
- Excellent: the nest boxes are regularly cleaned and competitors regularly discouraged. It should be noted that the 2 "excellent" only achieved this rating in 2004, when martins did not use either site. Assuming management continues in the absence of martins, these colonies would retain this rank even if no birds were present.

2.4 Relative Quality of Habitat Patches

Given that colonies are effectively the same as habitat patches for this species, see column "Colony Management" in table 1. The column "Housing Availability" can supplement this, which is the current number of compartments in the available martin housing at a given colony. Data on colony size, potential colony size, and management status have been combined into the final column, "Colony Potential." Colony Potential reflects the possibility of growth in a given colony given existing conditions and historic occupancy levels, as follows:

- Low Growth: small or recently abandoned colony that may reestablish itself, given that management of "good" or better is in place.
- Stability: larger colonies that have maintained a constant population for several years. There is potential for increase if management is elevated to "excellent."
- Uncertain: colonies with limited data, or where declines appear to have occurred in recent years. Declines may be reversed with improved management.

2.5 Habitat Patch Protection Status

All recently active martin colonies are under private ownership.

2.6 Habitat Management Status

See section 2.3.

2.7 Sources of Information

Information on management and condition of active or recently active colonies was obtained through a combination of site visits and discussions with colony owners. Trends in colony size were obtained from NHBR and current site monitoring activity.

2.8 Extent and Quality of Data

The assessment of colony potential described above is necessarily brief. Although much is known about trends in colony size and distribution in the state, little is known about causal factors (see element 3). And although it is known that management can result in colony growth (Brown 1981, Hill 1990), it is not clear how effective these techniques may be in New Hampshire, where there is a limited source of new recruits into the population.

2.9 Condition Assessment Research

Much research has already been conducted to determine the best conditions for purple martin reproduction (Brown 1981; Hill 1990, 1991, 1999; Kostka 1998, 2000), so there is little need for a research program in New Hampshire.

Element 5: References

5.1 Literature

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Zeranski, J.D., and T.R. Baptist. 1990. Connecticut Birds. University Press of New England, Hanover, New Hampshire, USA.

5.2 Data Sources:

NHBR. New Hampshire Bird Records. New Hampshire Audubon, Concord, NH.
PMCA. Purple Martin Conservation Association – Colony Registration Program, Edinboro, PA.

Element 6: List of Figures

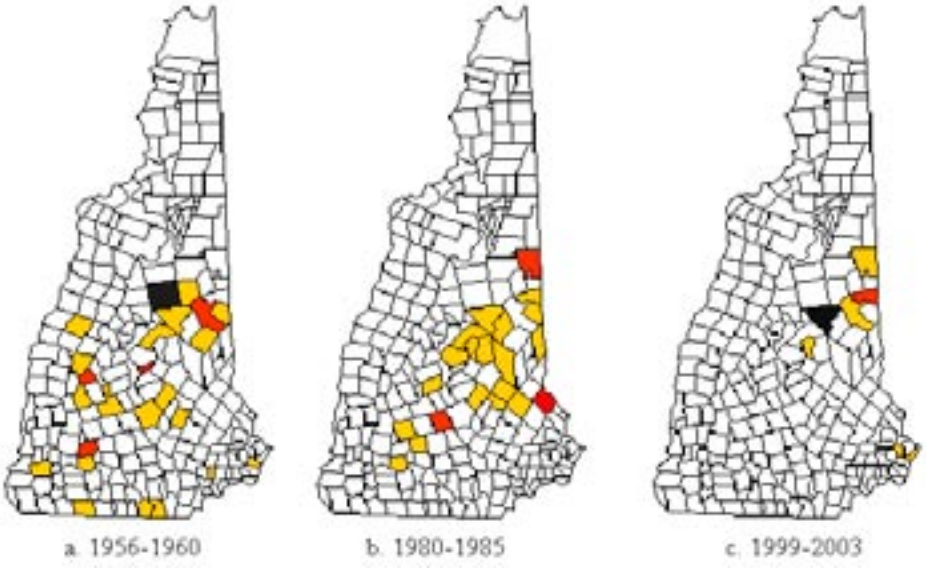
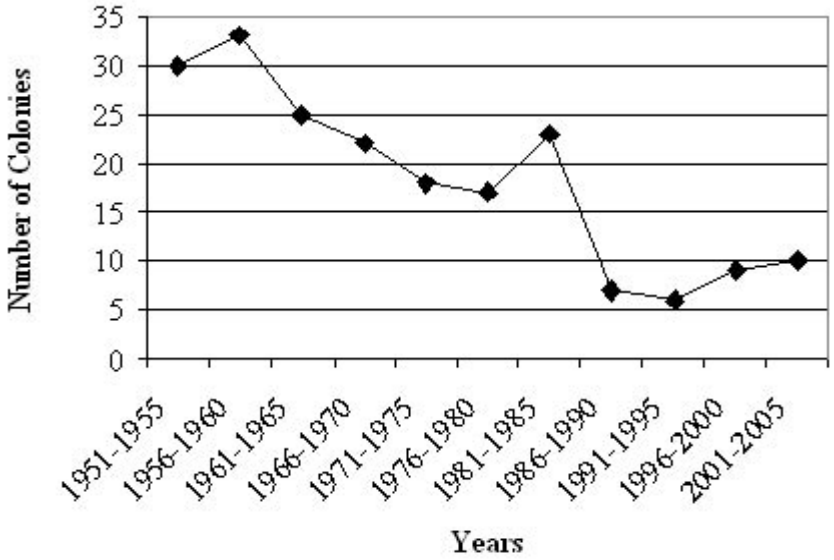


Figure 1. Distribution of Purple martin colonies in New Hampshire for three five-year periods: a. late 1950s (statewide Audubon surveys), b. early 1980s (Breeding Bird Atlas), and c. early 2000s (current monitoring program). Towns shaded to indicate number of colonies: yellow = one, red = two, black = three.

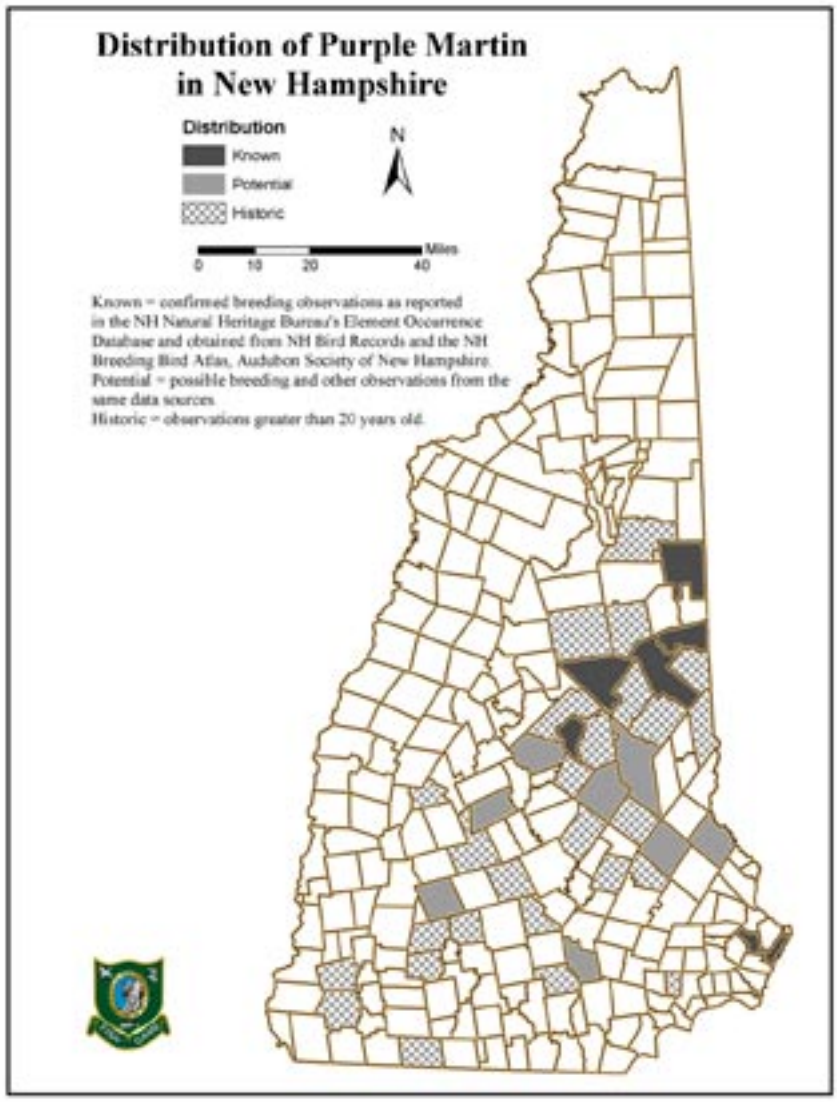
Figure 2. Number of Purple martin colonies in New Hampshire, 1951-2003. Each point represents the total number of colonies reported during the five year period.



Unit #	Unit Name	Current Size	Historic Size	Colony Management	Housing Availability	Colony Potential
1	Fun Spot	23	10+	Good	82	Stability
2	Conway	22	40	Fair	96	Stability
3	Windward Harbor	9	10	Good	12	Low Growth
4	Lees Mill	8	10	Poor	23	Uncertain
5	Indian Mound	3	Not known	Unknown	24	Uncertain
6	Hodge Farm	3	30+	Good	36	Low growth
7	Totem Pole	2	10+	Fair	48	Uncertain
8	Portsmouth Country Club	2	3	Excellent	30	Low growth
9	Hemlock Point	1	Not known	Good	27	Low growth
10	Wentworth Golf Course	1	Not known	Excellent	12	Low growth

Table 1. Overview of purple martin colonies in New Hampshire, 2000 to present. Current size, historic size, and housing availability are expressed in number of pairs. Terms used to describe colony management are defined in section 2.3. Colony potential is based on a combination of population trend and management status for a given colony (see section 2.4).

Distribution of Purple Martin in New Hampshire



Known = confirmed breeding observations as reported in the NH Natural Heritage Bureau's Element Occurrence Database and obtained from NH Bird Records and the NH Breeding Bird Atlas, Audubon Society of New Hampshire.
Potential = possible breeding and other observations from the same data sources.
Historic = observations greater than 20 years old.