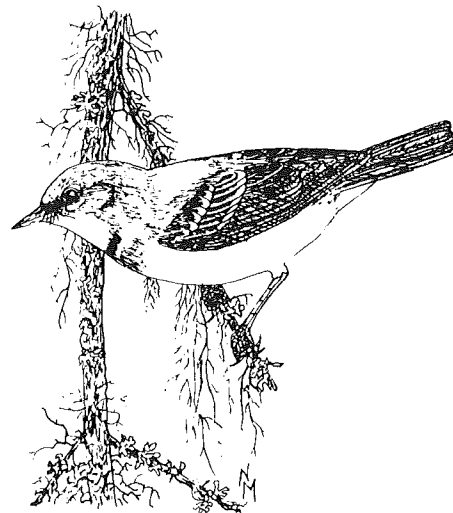


Northern Parula

Parula americana

The diminutive Northern Parula, the smallest warbler in North America, regularly migrates to central Mexico and Nicaragua to winter and returns in the first week of May to its Vermont breeding grounds. The parula is well known for its fondness for "old-man's-beard" (*Usnea*) lichens, in which, in late May and early June, the parula hollows out a pendulous, well-concealed nest. This penchant for lichens has markedly reduced the parula's range and abundance in the Northeast, where it was formerly widespread. Lichens are particularly sensitive to air pollution and have been drastically reduced, especially near the metropolitan portions of the mid-Atlantic coast. Although not possessing metropolitan areas, Vermont is not immune to the insidious effects of acid rain, ozone, and other air pollutants generated by midwestern industrial developments, according to recent evidence. The long-term effects of polluted precipitation remain to be seen, but a continued decline in Northern Parulas is probably among them. In the absence of lichens the parula occasionally utilizes clumps of twigs, dead leaves, or adventitious roots as a nesting substrate (Petrides 1942). In the South it nests in the epiphytic Spanish moss that festoons swamp forests.

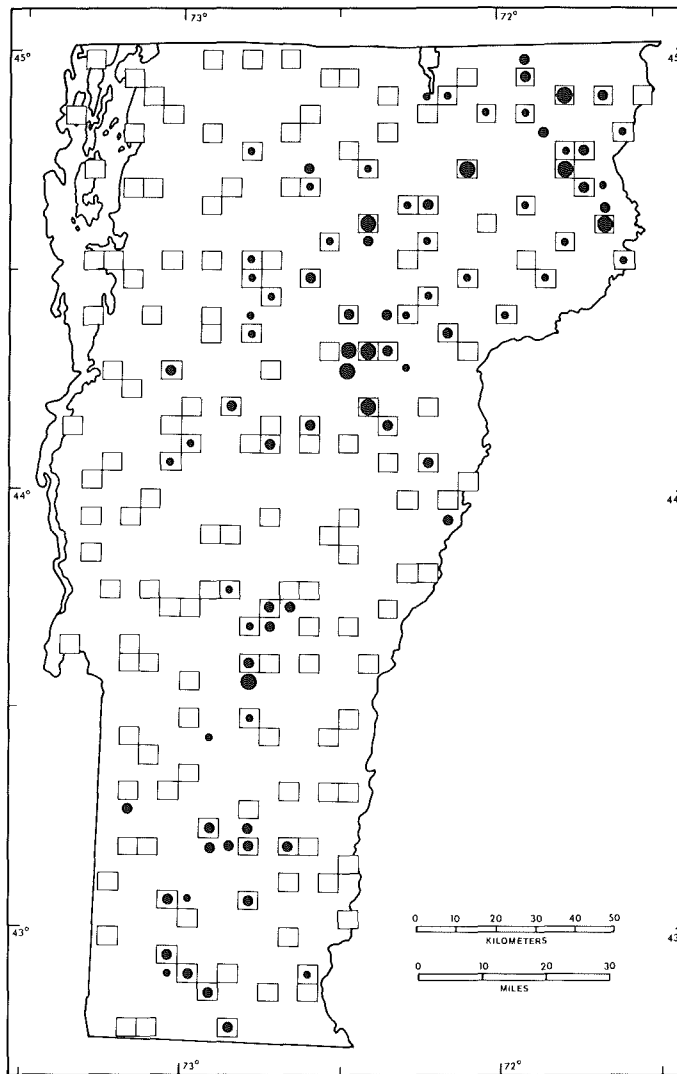
The current distribution of Northern Parulas in Vermont is defined by the Northeast Highlands, North Central region, and Green Mountains, where it was found in 88%, 79% and 46% of the Atlas Project priority blocks, respectively. Eighty-three percent of all sightings came from these three regions. Although local populations as high as 18 pairs per 40.5 ha (18 per 100 a) in coniferous forest have been recorded (Metcalf 1977), densities throughout most of the parula's current breeding range in Vermont are probably much lower. Low density and concealed nests probably contributed to the difficulty most observers had in confirming this species. Confirmed in only 11% of the Atlas Project priority blocks,



the Northern Parula had a very low rate of confirmation.

Although it occurs in a variety of forest habitats during migration, the parula is most frequently found breeding in moist spruce and balsam forests where *Usnea* lichens proliferate. Despite its penchant for coniferous forests in the Northeast, the Northern Parula is apparently a relative newcomer (evolutionarily speaking) to the North (Mengel 1964). In the Southeast, where the parula is most abundant, the species prefers moist, bottomland hardwoods. It is interesting, therefore, that its primary nesting habitat in Vermont is coniferous forest, since this habitat type is cohabited by a large variety of potentially competitive species. The parula is subordinate to the majority of its cohabitants (e.g., Yellow-rumped and Black-throated Green warblers), but apparently reduces competition by foraging on the tips of conifer foliage, using deciduous growth later in the breeding season, and exhibiting considerable plasticity in its general habitat requirements (Morse 1967, 1971).

Parulas prefer to establish territory around openings in or at the edge of coniferous stands (Morse 1967) where competition with "sprucewoods warblers" is reduced and lichen growth is more prolific. Margins of bogs, ponds, and streams provide excellent habitats for observation. The male's persistent buzzy trill may be heard well into



No. of priority blocks in which recorded

TOTAL 62 (35%)
 Possible breeding: 29 (47% of total)
 Probable breeding: 26 (42% of total)
 Confirmed breeding: 7 (11% of total)

Physiographic regions in which recorded

	no. of priority blocks	% of region's priority blocks	% of species' total priority blocks
Champlain Lowlands	1	3	2
Green Mountains	25	46	40
North Central	15	79	24
Northeast Highlands	14	88	22
East Central	6	31	10
Taconic Mountains	0	0	0
Eastern Foothills	1	4	2

July as he patrols his domain. The female incubates her clutch of 4 to 5 (maximum 7) brown-speckled, creamy white eggs in the sparsely lined nest for 12 to 14 days. Age to fledging is at least 10 days (Graber and Graber 1951). Insufficient information is available to ascertain Vermont nestling dates. Bull (1974) gave nestling dates for New York from June 5 to July 24; curiously, he also cited August 26 as a late date for a "fledgling." Far harder than its tiny stature suggests, the Northern Parula may linger in Vermont until the first week of October. A parula originally banded in Marshfield, Vermont, was recaptured there at an age of 4 years, 3 months (Kennard 1975). This lon-

gevity record was subsequently exceeded by 8 months by a banded parula recaptured in Maryland (Klimkiewicz et al. 1983).

The future of the Northern Parula in Vermont is difficult to predict. Maturing forests within the state will offer good habitat provided air pollution does not further degrade nesting substrates.

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