

# Northeast Nightjar Survey: 2008 Summary



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## 2008 Survey Results

The Northeast Nightjar Survey has now been conducted for six years in New Hampshire, and continues to expand in other states. As shown in the table below, we increased the number of surveys slightly in 2008, with the largest growth in Wisconsin (from 22 to 74 routes!). Collectively, observers also detected 200 more birds than in 2007, largely a result of increased efforts in North Carolina, New Jersey, and Wisconsin. Note that the average numbers of birds per route were very similar in the two years.

As in previous years, Whip-poor-will densities are highest in the mid-Atlantic coastal plain from Massachusetts to Maryland, with slightly lower numbers in Wisconsin, western North Carolina, and northern New York. With the exception of eastern Massachusetts, numbers in New England are generally low, although the species can still be locally common. Top honors this year go to a route in New Jersey that recorded an unfathomable 70 birds in late May (almost half the state total).

As for other nightjars, Maryland and North Carolina cornered the market on Chuck-will's-widows, with 72 and 14 birds each. Singles were detected in New Jersey, New York (Long Island), and Massachusetts (Martha's Vineyard). Common Nighthawks occurred in most states with the exception of New England. A total of 26 were found on 20 routes, down from 31 in 2007.

## Analysis of 2007 Data

Thanks to Jason Riddle at North Carolina State University, we were able to look more closely at the 2007 data to assess Whip-poor-will detectability. Detectability is essentially a measure of how likely you are to hear a bird if there is actually one at a point. To measure this we had observers track individual birds and record whether they heard each one during six one-minute intervals. Simply put, the pattern of presences and absences allows you to extrapolate to an observer's overall chance of hearing a given bird to begin with.

Jason's analysis found that Whip-poor-wills fell into two distinct calling types. Roughly half of all birds are "frequent callers," which essentially called throughout the six-minutes. On average there was a 74% chance of detecting this type, and once detected, there was a 96% chance of hearing it again. The other half of the birds were "infrequent callers," with only an 18% chance of initial detection and a 35% chance of subsequent detection. These birds might only be heard once or twice during a count, and not always in consecutive minutes.

Calling behavior can vary as a result of numerous factors, including weather conditions, time of year, bird density, and mating status. We already know that Whip-poor-wills call more reliably when the moon is at least half full, which is why we have restricted survey dates for several years. Observers were strongly discouraged from conducting surveys during cloudy and windy conditions, and perhaps as a result these variables had no effect on detections in this analysis.

An earlier comparison of surveys conducted in both June and July found that significantly fewer birds were detected along the same routes later in the season. When May and June surveys were compared in the 2007 data, we did not see a similar decline, suggesting that surveys can be conducted in either month with no loss of data.

So why might there be the two calling types? One possibility is related to Whip-poor-density: if there are more birds, each male may have to call more often to defend his territory from neighbors. But this wasn't the case either, since detectability was not related to the number of birds at a point. Put all these results together, and we're unable to relate calling behavior to anything we've measured in this project thus far. Speculation now centers on mating status or stage of breeding cycle, but more data are needed. Hopefully we'll be able to collect some of this data during the field research proposed for 2009.

Summary of Whip-poor-will (WPW) results from surveys in nine states in 2008					
State	# Routes Surveyed	# Routes w/WPW	Max WPW	WPW/Route	*WPW/Rt w/WPW
CT	20	6	14	0.70	2.33
MA	7	7	62	8.86	8.86
MD	10	5	74	7.40	14.80
ME	No surveys conducted in 2008				
NC	30	25	173	5.77	6.92
NH	13	9	24	1.85	2.67
NJ	13	9	188	14.46	20.89
NY	26	15	81	3.12	5.40
VT	23	7	16	0.70	2.29
WI	74	24	174	2.25	7.35
<b>Total 2008</b>	<b>216</b>	<b>107</b>	<b>806</b>	<b>3.75</b>	<b>7.53</b>
<b>Total 2007</b>	<b>179</b>	<b>85</b>	<b>607</b>	<b>3.39</b>	<b>7.14</b>
<b>New England 2008</b>	<b>63</b>	<b>29</b>	<b>116</b>	<b>1.84</b>	<b>4.00</b>

\* = total number of WPW divided by the number of routes on which WPW were detected.

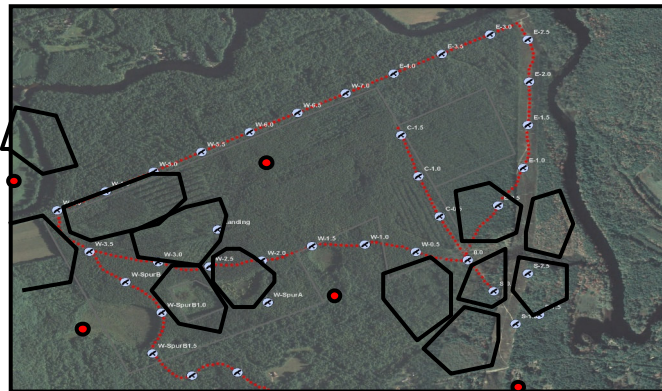
## Whip-poor-will Territory Mapping

In addition to the ongoing work on the monitoring project, NH Audubon began more intensive study of two sites in 2008. Both of these were in what we call “hot spots:” areas with relatively high Whip-poor-will densities. There are relatively few of these in New Hampshire, with the largest by far being the Ossipee Pine Barrens. Others include areas of the upper Merrimack River watershed from Hooksett to Canterbury and the North Branch of the Piscataquog River in Dunbarton and Weare. The sites chosen were an unfinished airstrip in Freedom (within the Ossipee hot spot) and Mast Yard State Forest in Hopkinton and Concord, with the majority of work in the latter.

At each of these sites we employed a technique we’re calling “triangulation mapping.” This involves two or more observers simultaneously listening for Whip-poor-wills from pre-established points. Each observer takes a compass bearing on all the birds they hear and records the time. The theory is that if two people detect the same Whip-poor-will, their compass bearings will intersect roughly where the bird was located. Given that we can’t see in the dark and also don’t want to excessively disturb our subjects, this approach was the best option short of more expensive radio tracking (which would still require the tricky prospect of actually catching a Whip-poor-will!).

If you do this enough times, you build up a map of Whip-poor-will locations that can be converted into a territory map. At this stage it is critical to separate individual birds, which is best resolved by looking at cases where adjacent birds were both detected at the same time. Mast Yard was visited 20 times between mid-May and late July, while there were only five June-July trips to the Freedom airstrip.

Both sites detected lots of Whip-poor-wills. With relatively few visits to Freedom, the map for that area is harder to interpret, but there were an estimated 20-25 birds along the 1.5 mile airstrip. We have a much better idea of the territory distribution at Mast Yard, where there were at least 12 birds as shown on the map below. Note that most of the territories are associated with openings, such as fields or cut areas in the west and a powerline in the east. The red dots represent areas with only 1-2 detections, and thus not considered territories for the purposes of this study.



Hopefully, we can use maps like this to get a better feel for the specific habitat needs of Whip-poor-wills, and use this information to inform future habitat management that results in increasing populations in NH and elsewhere in the Northeast.

## Next Steps

On the monitoring front, we plan to repeat the detectability analysis on the 2008 data to see if the same general patterns hold. If so, it is likely that the many partners involved in nightjar monitoring will actively try to implement a regional survey network, complete with fixed routes, a good data management system, and efficient coordination. The latter will require merging the Northeast program with one covering the rest of the U.S. administered by the Center for Conservation Biology and the College of William and Mary. At the same time, NH Audubon is acquiring funding to continue ecological studies at hot spots like Ossipee and Mast Yard. We hope to begin a radio telemetry study to complement triangulation mapping, as well as start looking for nests to monitor reproductive success.



Whip-poor-will in Hooksett, NH. Photo by Brenden Clifford

## Acknowledgements

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For more information on the Northeast Nightjar Survey or NH Audubon’s ongoing Whip-poor-will research, contact:

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