

tive scales with pre-defined written criteria. For *Empidonax* and *Contopus* flycatchers, we also measured bill length from nares to tip and tail length to aid in identification. With the aid of Pyle (1997) and Sibley (2000) we used plumage, wing chord, and molt limit criteria to determine sex and age classes of birds whenever possible. After examination and measurements were completed, birds were released. An average of 12 people helped run the station each day, totaling more than 40 participants during the May study period.

We compared our capture rates and species composition with a variety of other spring migrant bird data sets (Table 1, Appendix A). Five of these are data sets from other banding stations in eastern and midwestern North America. These include the Atlantic Bird Observatory (ABO) in Nova Scotia; Braddock Bay Bird Observatory (BBBO) in Rochester, New York; Black Swamp Bird Observatory (BSBO) in western Ohio; Powdermill Nature Reserve (PNR) near Pittsburgh, Pennsylvania; and Manomet Bird Observatory (MBO), on Cape Cod, Massachusetts. The data represented in Table 1 and Appendix A for these banding stations are as follows: ABO all of May 2002; BBBO all of May 2002; BSBO 3-23 May 2002 for the Navarre field station; PNR 6-22 May 2002; MBO 3-23 May 2002. We also obtained data from the Field Museum of Natural History on collections of window-killed birds at McCormick Place in Chicago. The data presented in Table 1 and Appendix A represent cumulative window-killed birds collected during the month of May for the years 1999-2001. These collections are made every weekday.

For all species recorded in at least one of the data sets we examined, we used estimating equations (Sauer et al. 2001) to analyze population trends for the period 1966-2000, from the eastern and midwestern North America regions from the Breeding Bird Survey (BBS). Significant BBS population trends for all species are presented in Appendix A.

Results and Discussion

In 13 days of bird banding we totaled 987 captures of 884 individual birds in 744 net hours (1.33 captures/net hour, 1.19 new birds/net hour). These data represent an extremely high capture rate, and suggest that SWAMP is located in a major concentration zone for spring migrating woodland birds. Of the five banding stations with which we compared our results, only the Navarre station of the Black Swamp Bird Observatory, which is known to have the highest capture rates of spring migrant birds anywhere in North America (M. Shieldcastle pers. comm.), had a capture rate higher than ours. This station is located on the south shore of Lake Erie in western Ohio, where the lake has a concentrating effect on northbound migrating birds. The capture rate at



Male Canada (left) and Mourning (right) Warblers: two of the species captured in high numbers at Shaw Woods Avian Monitoring Project banding station in Lake Forest, relative to other spring migrant banding stations in North America during May 2002. Photo by Blaire Skinner.

SWAMP was much higher than that of any station aside from Navarre. These other stations include at least one (Powdermill Nature Reserve) that is not located in a high migrant concentration zone (R. Mulvihill, pers. comm.), but several of the others are located in migration "hotspots." In particular, we note that the rate of capture at SWAMP was more than double the rate of the station with the next highest capture rate, Braddock Bay Bird Observatory, which is considered one of North America's richest spring migration banding stations, located on the south shore of Lake Ontario.

Several caveats must be considered when comparing overall capture rates across these stations. First, the capture rate of Powdermill Nature Reserve is artificially augmented by the use of feeders to attract birds to the nets. This practice also affects the composition of captures (eg. many goldfinches at Powdermill). Second, the capture rates of Braddock Bay and Manomet Bird Observatories are depressed relative to those of the other stations because they keep the nets open all day long. Stations such as SWAMP that net only during the morning may obtain higher capture rates because nets are only open when bird activity is highest. For example, 10 May 2002 at Manomet Bird Observatory, 259 net hours before 1030 am yielded 11 captures of new birds (0.042 birds/net hour), while an additional 317 net hours the rest of the day yielded only 5 new birds (0.016 birds/net hour). Nonetheless, this effect probably only accounts for about a 20-30% depression relative to SWAMP, because on many days during the peak of spring migration, birds continue to be captured at high rates all day long. For example, on 7 May and 20 May 2002 at Manomet Bird Observatory, 0.28 and 0.11 birds, respectively, were captured per net hour up to 1030 am, while capture rates after 1030 am on those days were 0.17 and 0.07 birds per net hour, respectively (T. Lloyd-Evans, pers. comm.).

After factoring out these minor differences in sampling design among banding stations, the capture rates at