

The 2001 Report

1. Waterfowl Breeding Pair Counts:

Waterfowl breeding pair counts were conducted from May 6 to 11 on three routes in 2001. The results collected provided too small a sample of observations to draw conclusions about the abundance of the nesting species. The usual species noted on the routes were mallards, black ducks, wood ducks, American goldeneye, hooded merganser, and blue-wing teal. Total pairs observed are as follows:

| | |
|------------------|----------|
| Mallards | 10 pairs |
| Black Ducks | 2 pairs |
| Wood Ducks | 8 pairs |
| Blue-wing Teal | 2 pairs |
| Common Goldeneye | 9 pairs |
| Hooded Merganser | 1 pair |
| Unknown | 2 pairs |

Total counted 34 pairs

It is recommended to start the counts in the last week of April into the first week of May to better sample breeding waterfowl pairs near peak activity levels. Additionally, the refuge needs to secure the assistance of more volunteers to put more observers on the refuge during the count period to more effectively survey the impoundments, and marshes around the refuge.

2. Waterfowl Brood Counts:

Volunteers and refuge staff assisted with waterfowl brood counts during the two week period from June 17th through July 1, 2001. A total of 9 survey sites or routes were covered. The following table summarizes the results of these observations.

Summary of Brood Counts for 2001

| Species | # Broods | # Ducklings |
|-------------------|----------|-------------|
| Mallard | 15 | 97 |
| Black Duck | 1 | 7 |
| Wood Duck | 19 | 125 |
| Am. Goldeneye | 7 | 52 |
| Green-winged Teal | 1 | 6 |
| Hooded Merganser | 1 | 7 |
| unknown | 2 | 13 |

| | | |
|---------------|----|-----|
| Totals | 46 | 307 |
|---------------|----|-----|

Avg brood size in 2001 was 6.7 young per brood.

Avg brood size in 2000 was 4.8 young per brood.

In 2000 there were 47 broods counted from about 10 observation points or routes.

In 2001 there were 46 broods counted from 9 points or routes.

Without coming out with an actual estimate of refuge waterfowl production, the observation of the survey volunteers and general observations during the nesting season indicate a more productive nesting season on the refuge for waterfowl in 2001.

3. **Waterfowl Nest Box Survey:**

Waterfowl nest boxes were inspected, repaired, replaced or removed during the winter from December 2000 through March 2001. The data was entered into the nest box database. A report and discussion based on this data follows:

Box Use & Success Report
Full Annual Dataset
Wood Duck Box Program Information

Number of Boxes Selected: 145

| Species | Boxes Used Number | Hatched Young |
|---|----------------------|------------------|
| Wood Duck | 46 | 27 |
| Wood Duck C. Goldeneye | 19 | 10 |
| Wood Duck H. Merganser | 3 | 3 |
| Wood Duck C. Goldeneye H. Merganser | 3 | 0 |
| C. Goldeneye | 15 | 4 |
| C. Goldeneye H. Merganser | 5 | 0 |
| H.. Merganser | 4 | 3 |
| Unused | 50 | |
| Totals | 95 used | 47 |

Productivity from the Refuge nesting boxes was down considerably from the previous year and most other years. While predation and disturbance from raccoons, fisher, and squirrels are the most likely reason for the reduced production, it may be possible that egg membranes are not being accurately recorded due to consumption by mice, voles or other rodent species. The refuge has initiated improved nest box predator guard protection and has also removed some boxes from trees and placed them on predator guarded posts. In addition we will initiate a sampling of boxes earlier in the year (July) to document use and the number of egg membranes present. The number of young hatched is likely the lowest productivity from our nest box program since it was initiated decades ago. Wood duck and American goldeneye broods observed however were not significantly different from those observed in our 2000 surveys.

4. **Waterfowl Banding:**

Preseason waterfowl banding was started in late July with swim-in traps. Trap sites were located at Martindale Point, Long Marsh Bay, and two sites on the former Clark property near Charcoal Creek. The only trap sites that were successful were the two on the former Clark property. The most successful of these sites was located at the end of gut from Charcoal Creek north of route 78. This site was sufficiently remote from predator access that raccoons did not become a problem. However, an incident of high mortality occurred when ducks were in the trap too long and became hypothermic. Baiting and site visits were adjusted to ensure that mortality was eliminated for the rest of the banding season. If the site is used again, we will look for a slightly higher site without compromising predator access. All other sites eventually attracted raccoons and were removed. In late August, we began using the cannon net site located at the Cranberry Pool dike. This site was moderately successful this year. Successful captures were made on three of six attempts. A total of 107 Ducks were banded in the swim-in traps and 228 ducks were banded with the cannon net. Banding results by species follows.

Preseason Waterfowl Banding 2001

| Species | New Birds | Recaptures |
|-------------------|------------|------------|
| Black Duck | 3 | 0 |
| Green-winged Teal | 2 | 0 |
| Mallard | 60 | 1 |
| <u>Wood Duck</u> | <u>270</u> | <u>21</u> |
| Total | 335 | 22 |

5. Osprey:

Osprey nesting was monitored on a weekly basis. There were a total of 18 nesting attempts. Four of these failed and the remaining nests fledged a total of at least 21 young. There was one nest in a live tree that was not visible enough to determine the number of fledglings. The following table was excerpted from the final report of the 2001 osprey monitoring by intern, Porter Ginn.

Reproductive success of ospreys on the MNWR and MWMA in 2001

| Nest # | Nest Location | Nest Type | Breeding Results |
|---------------|------------------------|---------------------------|-------------------------|
| 1 | First Creek (MWMA) | Pole Platform | Failed |
| 2 | Charcoal Creek South | Tree Platform | 2 fledglings |
| 3 | Charcoal Creek North | Tree (live) | 1 fledgling |
| 4 | Cranberry Pool | Waterfowl Survey Platform | Failed |
| 5 | Cranberry Pool | Pole Platform | 1 fledgling |
| 6 | Dead Creek | Snag | 3 fledglings |
| 7 | Big Marsh Slough | Tree (live) | 1 fledgling |
| 8 | Goose Bay Dike | Pole Platform | 2 fledglings |
| 9 | Long Marsh North | Tree (live) | 1 fledgling |
| 10 | Long Marsh Center | Snag | Failed |
| 11 | Long Marsh Center/East | Tree (live) | 2 fledglings |
| 12 | Long Marsh West | Tree (live) | Unknown |
| 13 | Long Marsh South/East | Pole Platform | 2 fledglings |
| 14 | Long Marsh South | Tree (live) | 2 fledglings |
| 15 | Saxes Creek | Tree (live) | Failed |
| 16 | Metcalfe Island | Pole Platform | 1 fledgling |
| 17 | Patrick Marsh | Pole Platform | 1 fledgling |
| 18 | Burton's Pothole | Pole Platform | 2 fledglings |

The nest failures at Long Marsh and Cranberry Pool were attributed to predation while the nest failures at Saxes Creek and First Creek were attributed to human disturbance. One additional tripod nesting structure was erected at the end of First Creek in July. It is hoped that this structure will be farther from potential human disturbance than the one at the mouth of the creek, thereby increasing the potential for nesting/fledgling success. The existing pole and platform at the end of First Creek will be removed this winter to encourage osprey nesting at the new tripod structure.

6. Grassland Study:

The Missisquoi NWR is participating, along with several other refuges in the Northeast, in a three year study of management practices for grassland dependent birds. This was the first year of this study which includes monitoring grassland songbirds and vegetation on two study plots.

Pairs of obligate grassland species in each study field:

- Field 10- Bobolink-- est. 30 pair including those birds observed outside study point
Savannah Sparrow-- est. 10 pair including those birds observed outside study point
Eastern Meadowlark - est. 2 pair including those birds observed outside study point
Grasshopper Sparrow - 1 pair
- Field 11- Bobolink- est. 25 pair including those birds observed outside study point
Savannah Sparrow - est. 10 pair including those birds observed outside study point
Eastern Meadowlark - est. 1 pair including those birds observed outside study point
Grasshopper Sparrow - no individuals observed

The grassland point count routes over the fields along route 78 and the entire length of the Tabor Road fields were not done in 2001, but will resume again in 2002. As the data from this study show, the Refuge has one of the higher populations of bobolinks in the Northeast. In addition to the continued monitoring that is part of the grassland management study, the entire hayed field areas will be monitored in 2002.

7. Marsh Bird Surveys:

Marsh bird point counts were carried out again in 2001. The four routes were: Cranberry Pool, Dead Creek, Goose Bay, and Long Marsh. A summary of species counted on surveys done in June are tabulated below for marsh obligate species.

| Species | Cranberry Pool (6/20/01) | Dead Creek (6/22/01) | Goose Bay (6/22/01) | Long Marsh (6/02/01) |
|-------------------|--------------------------------|-------------------------|------------------------|-------------------------|
| Black Tern | 7 | 8 | | 12 |
| Pied-billed Grebe | 6 | 1 | 4 | 1 |
| Common Moorhen | 5 | | 1 | 6 |
| Am. Bittern | 2 | | | |
| Least Bittern | | | 1 | |
| Virginia Rail | | 1 | 5 | 5 |

| Species | Cranberry Pool (6/20/01) | Dead Creek (6/22/01) | Goose Bay (6/22/01) | Long Marsh (6/02/01) |
|----------------|---|---------------------------------|--------------------------------|---------------------------------|
| Sora Rail | | | | 2 |

8. Black Terns:

The majority of black tern nesting in Vermont during 2001 occurred in Refuge wetlands and those wetlands associated with the Missisquoi Delta.. A total of 45 pair were counted within the Missisquoi National Wildlife Refuge by Nat Shambaugh. The only other black terns populations were 2 pair on the Maquam Wildlife Management Area and 8 pair at the Mud Creek Wildlife Management Area. This information was gathered by Nat Shambaugh, who has been monitoring black tern populations Statewide for over 10 years.

9. Great Blue Herons and Double-crested Cormorants:

The Great Blue Herons returned to the rookery in April but the rookery was completely abandoned by mid June. A summary of observations by Zoe Richards is pending. Initially, the Great Blue Herons arrived in April and began nesting on both the western side of Shad Island and along the Eel Creek part of Metcalfe Island. The Shad Island part of the colony began abandoning nests and birds were renesting on Metcalfe Island. The birds eventually abandoned Metcalfe Island. A few birds started nests on the north side of Long Marsh Bay but did not follow through.

A number of reasons for the rookery failure have been touted over the last few months. Human disturbance, while possible is not likely due to the long term success of the rookery in a very active portion of Lake Champlain. Boat traffic, fishing, and similar human activities have not had an apparent impact on the rookery in the past, and there is no documented evidence that there was a significant change or increase in this type of activity this year. Lack of food has also been offered as a possible cause of the nesting failure, but again the rich forage base associated with the shallow wetlands adjacent to and nearby the rookery make this potential cause difficult to accept. The majority, nearly 75%, of the Valcour island great blue heron rookery adults flew to Lake Champlain wetlands in Vermont to find food for their young. With 2.9 young per nest produced at Valcour, food did not seem to be a problem. Predation seems to be the most likely cause but the exact circumstances or responsible culprits are still a matter of conjecture. One possibility is the presence of bald eagles and the potential for disturbance of the heron colony by these large predators. An eagle attack on the rookery while possible is not probable at the Missisquoi NWR. Bald eagles are usually not present on the refuge except as occasional visitors. The gradual abandonment of the colony is also not consistent with an attack by large avian predators, which usually results in rapid movement of herons out of an area. Eagles that are present in large numbers for extended periods of time are known to impact great blue heron colonies, but that does not seem to fit the situation at Missisquoi. Another viable predator, and most likely candidate, are raccoons. While great blue herons and raccoons

have co-existed at this rookery for decades, the movement of double-crested cormorants into the heron rookery may be drawing raccoons into the colony. Cormorants are unable to defend their nest site the way great blue herons can, consequently the presence of the cormorants and the interspersing of their nests with the herons, create a situation where raccoons, trying to access the more easily predated cormorant nests are creating excessive disturbance for great blue herons. The amount of time and energy expended by the herons defending their nest site causes the gradual abandonment of the colony. If the colony were comprised of just great blue herons, raccoons might not bother because they would reap little reward. Research from the Great Lakes region suggest that when cormorants set up colonies, they key into the presence of certain species. First of all, they key into nesting ring-billed gulls and second, into nesting great blue herons. The expanding population of cormorants in the Lake Champlain watershed will likely insure their presence at the Refuge into the near future.

It is very possible that to at least some extent, failures in rookeries may just happen naturally. These failures are well documented at other locations in the U.S. without any apparent cause. We hope that even if we have no reproduction for a while that a productive rookery will return to the refuge soon. We will continue to try to refine our observations and surveillance of the rookery to sort out the possible causes of the rookery abandonment.

10. Amphibian Surveys:

The refuge participated in a survey of wood frog egg masses in vernal ponds. There were three ponds that produced egg masses this year. Other potential sites were completely inundated by the rising lake level that the egg masses were not detectable when the survey was done in April. The greatest number of egg masses was found in the pond on the Young Marsh tract. A total of 96 egg masses were counted there on April 27, 2001.

The amphibian call count route on the Cranberry Pool dike was monitored this year. Three counts were done on May 7th, June 10th, and July 6th. Peak activity occurred in June with American toad, gray tree frogs, American bull frogs, and green frogs active.

11. Monitoring Avian Productivity and Survival (MAPS) Program

In cooperation with Audubon Vermont the Missisquoi NWR initiated a MAPS banding station on the Refuge near Tabor Rd. The station was operated by Audubon Vermont using an experienced MAPS bander who coordinated the effort for Audubon and the refuge. A number of locations were visited prior to initiating the banding effort, and the site at Tabor Rd. was found to have the habitat type(s) and access necessary to make a site successful. Banding was initiated in June and finished in August. A number of "mist" nets were employed to capture breeding passerine species. Capture and banding were generally conducted once per week in the morning only. Once the banding site was operating smoothly volunteers and the public were offered the opportunity to participate in the effort. Many people accepted the offer to observe and participate in this effort. A list follows which records the productivity of the first MAPS banding effort at the Missisquoi

National Wildlife Refuge. The species and the total number banded is recorded below:

| | | |
|-----|------------------------------|----|
| 1. | Gray Catbird..... | 25 |
| 2. | Yellow Warbler..... | 22 |
| 3. | Swamp Sparrow | 20 |
| 4. | Song Sparrow..... | 18 |
| 5. | American Goldfinch..... | 17 |
| 6. | Cedar Waxwing..... | 14 |
| 7. | Black Cap Chickadee..... | 13 |
| 8. | Common Yellowthroat..... | 12 |
| 9. | Veery..... | 10 |
| 10. | Trail's Flycatcher..... | 7 |
| 11. | American Robin..... | 6 |
| 12. | White throated Sparrow | 4 |
| 13. | Red-breasted Nuthatch | 3 |
| 14. | Brown-headed Cowbird | 3 |
| 15. | Rose-breasted Grosbeak | 3 |
| 16. | Yellow Shafted Flicker..... | 3 |
| 17. | Downy Woodpecker..... | 3 |
| 18. | Black and White Warbler..... | 2 |
| 19. | Myrtle Warbler..... | 2 |
| 20. | Red Wing Blackbird | 2 |
| 21. | House Wren..... | 1 |
| 22. | Eastern Phoebe..... | 1 |
| 23. | Tree Swallow..... | 1 |
| 24. | Black billed Cuckoo..... | 1 |
| 25. | Common Crackle..... | 1 |
| 26. | Wood Thrush..... | 1 |
| 27. | Northern Cardinal..... | 1 |
| 28. | Baltimore Oriole..... | 1 |

A MAPS demonstration was provided in October for the public to observe and participate in a fall passerine banding effort, the species and numbers banded are recorded below. This effort occurred after the breeding season and captured many resident species.

| | | |
|----|------------------------------|----|
| 1. | White-breasted Nuthatch..... | 1 |
| 2. | Hermit Thrush..... | 3 |
| 3. | Song Sparrow..... | 1 |
| 4. | Eastern Tufted Titmouse..... | 2 |
| 5. | White Throated Sparrow..... | 14 |
| 6. | Gray Catbird..... | 1 |
| 7. | Black Cap Chickadee..... | 6 |
| 8. | Brown Creeper..... | 1 |
| 9. | American Robin..... | 1 |