

## 1996 WOOD DUCK NEST BOX SURVEY NARRATIVE

Refuge volunteers Marc Hines and Dan Thornton surveyed the refuge's wood duck (*Aix sponsa*) nest boxes on 19 April, 29 June, 01 July, and 10 Aug. The accompanying table presents the information collected. However, there were inconsistencies in the data collected which were labelled as follows:

- a. Missing data. For several nests the numbers of eggs in the clutch were not reported because the female was sitting on the eggs and they could not be counted. In other cases data were not given for a particular nest for unknown reasons.
- b. Contradictory data. Some data were submitted in two different forms and conflicts were found between the separate submissions. Here the more conservative number was used.
- c. Data submitted with a question mark (?). In this case the information was used.

Eighteen of the 29 nest boxes maintained by the refuge housed wood duck nests. Two hundred and twenty-three eggs were known to have been laid, of which 47 (21%) were known to have hatched, 121 (54%) did not hatch, and 55 (25%) were unaccounted for.

This is a very low hatch rate for wood ducks. Normally, a hatch rate above 90% would be expected. Even if the missing 55 eggs did hatch, the hatch rate would still be unusually low.

Predation may account for some missing eggs. The raccoon (*Procyon lotor*) commonly preys on wood duck broods as do black rat snakes (*Elaphe obsoleta obsoleta*). Rat snakes were found in or around nest boxes several times and raccoons are abundant on the refuge as are numerous other predators.

Also observed during the surveys was a form of nest parasitism called dump nesting. This refers to one female wood duck laying her eggs in the nest of another. Dump nesting is rarely associated with established populations in natural settings, but has become common where populations have flourished around predator-proof nest boxes placed near each other. The reduction in predation allows a higher percentage of chicks to fledge than would otherwise, and the high density of nest boxes increases the chance of nesting females coming in contact with other nesting females. A nest is generally believed to be a dump nest when greater than 15 eggs are present. Three of the boxes had nests containing more than 15 eggs.

Of the 18 boxes which housed wood duck eggs, four housed two separate brood attempts (22%). Wood ducks are the only North American species of waterfowl known to raise more than one brood per nesting season. It is not known if the second nests were the result of females raising second broods or if they were late broods common to yearling females and in areas of high nest densities. In the southern U.S. usually only 10% of the nesting females raise more than one brood, so at least some were likely to have been late nesting attempts.

Wood ducks have been found to exhibit a strong homing instinct to return both to their natal habitat and to sites of successful nesting efforts. An increase in females would suggest that they had hatched here in previous nesting seasons or that the females here this season have been successful in raising chicks here in the past. This, too, gives encouragement that the wood duck population on the refuge is increasing.

There were no indicators to suggest a decrease in the number of breeding ducks on the refuge. In fact, weekly waterfowl surveys of refuge impoundments during the last several years also suggest an expanding wood duck population on the refuge.

Two nest boxes housed screech owl nests although no data were collected.

## CONCLUSIONS:

Weekly waterfowl surveys have only been conducted since 1992, and this is the first year the data for the breeding season have been reviewed, so drawing definitive conclusions would be premature. However, the results of the 1996 nest box surveys and the weekly impoundment surveys suggest that the wood duck population on the refuge is increasing.

The evidence of dump nesting and the possibility of late nesting suggests increased competition for existing nest resources, and the low hatch rate leaves open the possibility of an increasing number of young females in the population. Collectively, these factors point to a greater number of wood ducks breeding on the refuge.

Why the hatch rate was so low is unknown.

If the wood duck population on the refuge continues to increase, competition for nest sites would be expected to intensify. More nest boxes would allow more ducks to nest during peak nesting season. However, the dump nests noted in the survey show that any new boxes erected should be less densely located than those already in place.

# 1996 WOOD DUCK NEST BOX SURVEY

| Box # | Brood # | # Eggs          | # Eggs Hatched   | # Eggs Not Hatched | Dump Nest | Not Used | Species     |
|-------|---------|-----------------|------------------|--------------------|-----------|----------|-------------|
| 1     | 1       | <sup>a</sup>    | 8                | 2                  |           |          | wood duck   |
|       | 2       | 13              | 0                | 13                 |           |          | wood duck   |
| 4     |         | 25              | 0                | <sup>a</sup>       | X         |          | wood duck   |
| 5     |         | <sup>a,b</sup>  | 6 <sup>b</sup>   | <sup>a,b</sup>     |           |          | wood duck   |
| 6     | 1       | <sup>a</sup>    | 0                | <sup>a</sup>       |           |          | wood duck   |
|       | 2       | 17              | 13               | 4                  |           |          | wood duck   |
| 7     |         | 10              | <sup>a</sup>     | <sup>a</sup>       |           |          | wood duck   |
| 8     |         | 13 <sup>a</sup> | 0                | 13                 | X         |          | wood duck   |
| 10    |         | 3 <sup>c</sup>  | <sup>a</sup>     | <sup>a</sup>       |           |          | wood duck   |
| 11    | 1       | <sup>a</sup>    | <sup>a</sup>     | <sup>a</sup>       |           |          | screech owl |
|       | 2       | 3               | 0                | 3                  |           |          | wood duck   |
| 12    |         |                 |                  |                    |           | X        |             |
| 14    | 1       | 14              | 9                | 5                  |           |          | wood duck   |
|       | 2       | 15              | 0                | 15                 | X         |          | wood duck   |
| 15    |         |                 |                  |                    |           | X        |             |
| 16    | 1       | <sup>a</sup>    | <sup>a</sup>     | <sup>a</sup>       |           |          | wood duck   |
|       | 2       | 12              | 5 <sup>a,b</sup> | <sup>a</sup>       |           |          | wood duck   |
| 17    |         | 21              | 0                | 21                 | X         |          | wood duck   |
| 18    | 1       | <sup>a</sup>    | <sup>a</sup>     | <sup>a</sup>       |           |          | screech owl |
|       | 2       | <sup>a</sup>    | 6                | 4                  |           |          | wood duck   |
| 19    |         |                 |                  |                    |           | X        |             |
| 20    |         | <sup>a</sup>    | <sup>b</sup>     | 9                  |           |          | wood duck   |
| 21    |         | 16              | 0                | 16                 |           |          | wood duck   |
| 22    |         |                 |                  |                    |           | X        |             |
| 23    | 1       | <sup>a</sup>    | <sup>a</sup>     | <sup>a</sup>       |           |          | wood duck   |

| Box #     | Brood # | # Eggs          | # Eggs Hatched | # Eggs Not Hatched       | Dump Nest | Not Used | Species   |
|-----------|---------|-----------------|----------------|--------------------------|-----------|----------|-----------|
| 23        | 2       | 10              | a              | a                        |           |          | wood duck |
| 24        |         | a               | a              | a                        |           |          | wood duck |
| 25        |         | 15 <sup>b</sup> | 0              | 16 <sup>b</sup> (15, 16) | X         |          | wood duck |
| 26        |         |                 |                |                          |           | X        |           |
| 27        |         |                 |                |                          |           | X        |           |
| 28        |         |                 |                |                          |           | X        |           |
| 29        |         |                 |                |                          |           | X        |           |
| 30        |         |                 |                |                          |           | X        |           |
| 31        |         |                 |                |                          |           | X        |           |
| 32        |         |                 |                |                          |           | X        |           |
| ? 34 (16) |         | 1 <sup>b</sup>  | a              | a                        |           |          | wood duck |
| Totals    | 25      | 188*            | 47             | 121                      | 5         | 11       |           |

\*Although the total for the #eggs column is 188, at least 223 eggs must have been laid as there were four nests whose #eggs column was blank yet there were entries for #eggs hatched and #eggs not hatched.

1200 in  
"Wood Duck Box" 186 "