Radial dispersal of Wood Ducks after the nesting season and before fall migration

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In earlier papers (Stewart, 1972; 1977a, b, c) on studies of banded Wood Ducks *(Aix sponsa)*, I showed northward movements of these birds after the nesting season. Movements were recognized as being made in all compass directions, but movements to the southward before fall migration were not well separated from cases of fall migration. Also, the data were analyzed chiefly to show only relatively long-distance movements. I am, in the present paper, making a more detailed analysis of the dispersal movements of Wood Ducks, separating dispersal from migratory movements and better showing short-distance dispersal movements. My chief purpose in writing this paper is to show how, among Wood Ducks, radial dispersal is a movement made before and independently of fall migration.

Methods and materials

In an effort to make reasonably sensitive evaluations of dispersal movements of Wood Ducks, banding and recovery sites were spotted to degrees of latitude and longitude. To obtain large samples of recoveries from specific sites, data were chosen from sites yielding reasonably large numbers of recoveries. This resulted in use of data from three banding sites, one each in Louisiana, New York, and Iowa. Part of the latitude-longitude block in which birds in New York were banded was in Ontario, and the New York banding location is thus referred to as the New York-Ontario area. Similarly, the latitude-longitude block in which the birds were banded in Iowa extended into Minnesota and Wisconsin, and the banding site is therefore referred to as the Iowa-Minnesota-Wisconsin area.

Data were selected to use only birds shot by hunters and only with records precise as to the time of recovery. The birds were assumed to be on their breeding grounds during the period April through August, and recoveries were selected of birds banded in this period. Recovery records made in September through October were selected of birds banded in the two northern areas. Few recovery records of birds banded in Louisiana were available from the period September through October, and examination of data from the period September through December showed a pattern of dispersal similar to that for the two northern areas during the period September through October. Accordingly, it was assumed that birds in the southern area mostly had not returned southward after their dispersal movements, and recoveries made in the period September through December were used of birds banded in Louisiana.

Results and discussion

This study made use of 164 recoveries, with 63 from birds banded in New York, 35 from birds banded in Louisiana, and 66 from birds banded in Iowa. Relatively large numbers were recovered in the same latitude-longitude blocks where banded, with 27 (42.9 percent) in the New York-Ontario block, 17 (48.6 percent) in the Louisiana block, and 52 (78.9 percent) in the Iowa-Minnesota-Wisconsin block (Figs. 1-3). Also, of the birds leaving the latitude-longitude blocks where they were banded, 23 went only to adjacent blocks from the New York banding site, with 7 going from the Louisiana site, and 5 from the Iowa-Minnesota-Wisconsin site.

Of the 164 Wood Ducks recovered, 33 (20.1 percent) traveled farther than to a latitude-longitude block adjacent to the one where the banding was done, and 22 (13.4 percent) traveled farther than 300 km. One bird traveled more than 760 km from the Iowa-Minnesota-Wisconsin area to another site in Minnesota, and one traveled 1,200 km from Louisiana to Wisconsin. It is evident that the length of the dispersal flights varied widely in individual birds, with most birds either not traveling or traveling only a short distance and only a very small part of the population making flights of more than 700 km.

The flights were made in various directions, indicating that they were basically radial. Particular-

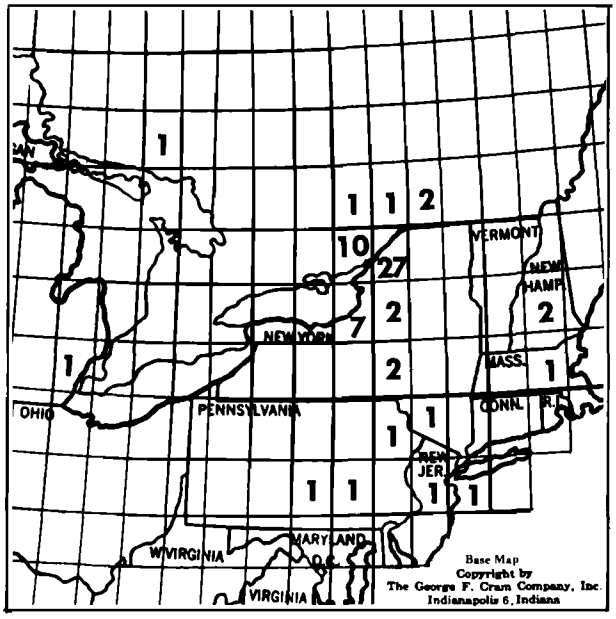

Figure 1. Distribution of Wood Ducks recovered after banding on their nesting grounds in the latitude-longitude block of New York-Ontario indicated by the largest number of recoveries (27).

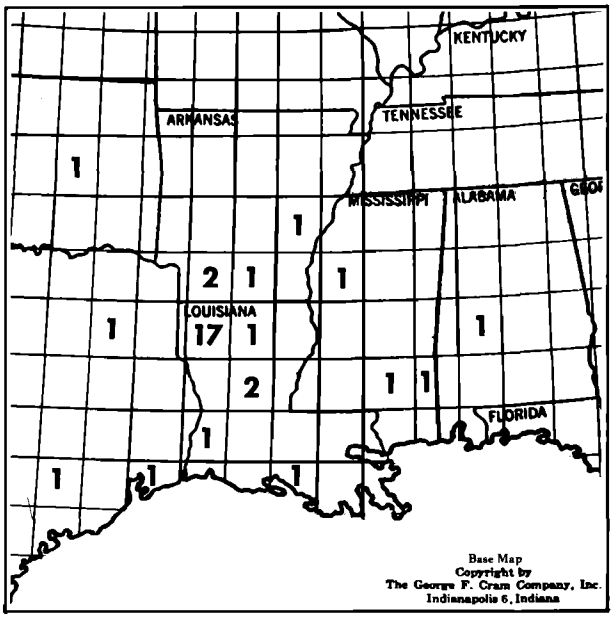

Figure 2. Distribution of Wood Ducks recovered after banding on their nesting grounds in the latitude-longitude block in Louisiana indicated by the largest number of recoveries (17).

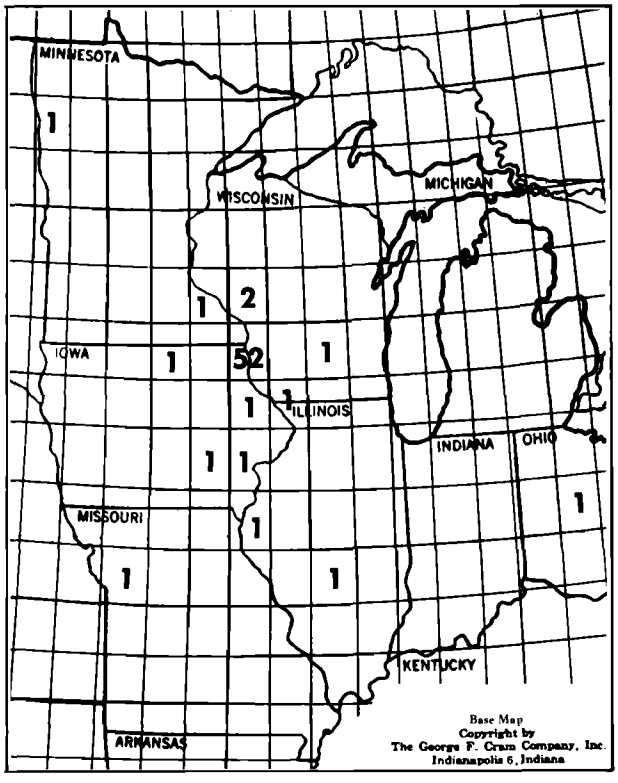

Figure 3. Distribution of Wood Ducks recovered after banding on their nesting grounds in the latitude-longitude block of Iowa-Minnesota-Wisconsin indicated by the largest number of recoveries (52).

ly with the New York sample, the indicated northward movement was restricted by the lack of suitable habitat or the relative scarcity of hunters to kill the birds traveling northward. Also, a few birds may have started their southward migrations before the end of October, making the separation of the dispersal and migratory flights less than perfect. I earlier found that fall migration of Wood Ducks started in Ohio during the last few days of October (Stewart, 1958).

Essentially the same general pattern of dispersal was shown by Wood Ducks in both the northern and southern areas, with the dispersal movements being the only movements made by birds in the southern area. The dispersal movement in Wood Ducks is thus indicated to be a movement performed independently of the regular southward migration and involving Wood Ducks throughout their breeding range.

The limited data available indicated that the longer dispersal flights were made independently of age and sex. Thus, the bird traveling 760 km from the Iowa-Minnesota-Wisconsin site to Ohio was banded as a hatching-year male; the bird traveling 925 km from the Iowa-Minnesota-Wisconsin site to a site in Minnesota was banded as a local female; and the bird traveling 1,200 km from Louisiana to Wisconsin was banded as an after-hatching-year male.

Information which I reported earlier (Stewart, 1977b) on recoveries of banded Wood Ducks showed the dispersal movement of these birds to be made quickly, perhaps non-stop, one bird being recovered in Florida on 2 September 1972 after being banded in New York on 30 August 1972. I also showed (Stewart, 1977a) that southward migration of Wood Ducks banded in Vermont proceeded leisurely, with movement continuing until at least mid-December after starting in late October or early November. Rapid movement may be a characteristic of the dispersal flight and leisurely movement a characteristic of the migratory flight.

Summary

Recoveries of banded Wood Ducks showed that these birds make radial movements after the nesting season and before fall migration. Most birds made only short flights, but some traveled more than 700 km with a maximum flight of 1,200 km. Dispersal movements were made in both the northern and the southern parts of the Wood Duck's breeding range. Rapid, perhaps non-stop, flight may be a characteristic of the dispersal flight and leisurely flight may be characteristic of the southward migratory flight. The limited data available indicated that dispersal movements were made independently of age and sex.

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