DIFFERENTIAL SEX MIGRATION OF MALLARDS IN NEW MEXICO

By ALDO LEOPOLD

TWENTY years ago, in hunting ducks on the bottom lands of the Mississippi in Iowa and Illinois, I was taught by my father to "pick" Mallard drakes. It was our custom to measure a day's sport, not merely by the number of ducks bagged, but by the proportion of greenheads to hens. A high percentage of drakes in the day's bag was regarded not only as a special feat of skill, but as proof that the bag had not been attained by "flock-shooting", which was discountenanced as productive of cripples. We shot small-bore guns, used small shot, frowned upon long range shooting, and in general operated on the principle of "pick your drake and kill him dead."

As a consequence, I have grown up with what might be called a special "eye" for Mallard drakes. Two years ago I started shooting on the Rio Grande in the vicinity of Albuquerque, and naturally tried to adhere to the old custom of shooting the male birds. It soon became apparent, however, that special conditions obtained here with respect to the relative abundance of the two sexes. The following table, based on my hunting journal, gives the percentage of Mallard drakes to hens killed during weekly hunts over the same territory during 1917 and 1918.

Date	Percentage of drakes killed 1917	1918	Average based on weighted curve
October 16	——	25	10
October 23	——	50	15
November 1	0	50	40
November 8	42	——	45
November15	——	65	55
November 23	50	90	65
December 1	——	80	62
December 8	50	——	60
December 15	——	——	——
December 23	——	——	——
January 1	——	——	——
January 8	——	——	——
January 15	70	——	——
January 23	——	50	60
January 31	——	——	——
Total number of birds	29	48	77

The short period of time and the small number of birds killed necessarily renders the foregoing table inconclusive. As supplemented by careful observation, however, I am ready to offer it as evidence in support of the following statement covering the last two years:

1. When the season opened in October, there was a notable preponderance of hen Mallards in the Rio Grande Valley near Albuquerque.
2. By the first week in November this preponderance of hens disappeared, and until the main flight was over, about December 1, there was a preponderance of drakes.
3. Among the Mallards wintering here, after the main flight was over, the proportion of drakes to hens was normal.

These conclusions could easily be offered on the basis of ocular observations alone. During October one may see whole flocks of Mallards without a drake. During November I have seen many flocks without a hen, and have brought in bags of 7 drakes and 1 hen, 9 drakes and 4 hens, etc. Duck hunters will readily appreciate that, inasmuch as the bag is almost always derived largely from single birds and pairs, regardless of any effort to pick the greenheads the above figures indicate a preponderance of drakes. In fact the artificial selection of drakes may simply be regarded as a constant factor which does not affect the conclusions here drawn.

It may, of course, be suggested that the observed preponderance of hens in October is not reliable because of the obscure coloration of the birds early in the season. In this locality, however, the drakes on October 16 have the chestnut breast patch, white ring around the neck, and green head well developed. There are still spots on the under parts and rusty feather-tips on the head, but the general effect is unmistakable.

Two other questions might be raised as bearing on the significance of these conclusions. First, were the birds observed migrants or local? They must be migrants. Since the stoppage of spring shooting a few Mallards have nested here; but the movement of ducks begins in August, and by October 16 there are many more ducks of more species, more widely distributed, than could be accounted for as local birds. Second, may this not have been an accidental phenomenon peculiar to 1917 and 1918? As to this point I have nothing to offer except an intended continuance of my observations. The testimony of hunters who do not keep written notes is valueless on questions of this kind, no matter how extended their experience.

To sum up the foregoing discussion, the writer has concluded that there is a differential sex migration of Mallards in the Rio Grande Valley, the females arriving first and the males afterward. A normal proportion of sexes is not reached until the main flight is over and only the wintering ducks remain. How may this differential migration be accounted for?

I have no answer to this question. A few tagged ducks so far reported indicate that in general this part of the Southwest is on the same migration route as Great Salt Lake. Is there possibly a difference between the sexes in the time of completion of the plumage after the flightless period? Is there possibly a differential routing of sexes? Does the migratory impulse seize the females first? Has the phenomenon of differential sex migration been observed elsewhere, in this or other species? Any evidence on these questions might throw light on this very interesting problem.

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