

on their migrations is the extensive marshy areas lying along both sides of Delaware Bay at Fortescue, New Jersey, and the Bombay Hook National Wildlife Refuge in Delaware. Data recorded at the Bombay Hook Refuge show that weather conditions are primarily responsible for the times of appearance and duration of stay in this area. The geese have been noted to arrive as early as September and as late as November. They remain until the marsh freezes, which may occur from November to January. Spring data include arrival dates in February and March, with the geese usually remaining until April.

Through the courtesy of Colonel Donald B. Diehl, Commanding Officer of the 4146 Base Unit, AMC, USAAF, located at the Dover Air Base in Delaware, both the fall and spring flights were photographed from the air. The area containing the geese was first flown over and the geese herded into a flock. Then the flock was chased out into the bay to provide a dark background for the photographs. A series of pictures of each flock was taken at an altitude of about 500 feet and the best photograph enlarged to 20 by 24 inches so that *each goose* could be counted. The fall flock contained 2,659 individuals, and 13,494 were in the spring flock.

Plate 4 is the photograph taken of the spring flock on March 29, 1945. It points out the usefulness of aerial photography as an aid in censusing the various forms of wildlife, particularly waterfowl.

Another interesting fact which was brought out by the photograph was the wide divergence of opinions expressed as to the total number of birds contained in the flock. Shortly after the photograph was "counted," several visitors to the Bombay Hook Refuge were shown the photograph and asked to estimate the total number of birds. The results were so at variance that an effort was made to gather further data to determine how much reliance could be placed on estimates made of large flocks of waterfowl. Through the courtesy of Colonel Diehl, several large photographs were made available to interested organizations. In addition, all visitors to the Refuge and Army personnel at the Air Base were asked to make estimates. The averages and ranges of the estimates varied directly with the experience of the observer. Estimates of 91 laymen varied from 1,000 to 1,000,000, and the average was out of all proportion to the actual figure. The estimates of 52 ornithologists varied from 3,000 to 28,000 with an average of 9,000.

Another interesting point was brought out by two of the photographs of the fall flock. The first photograph was taken as the flock rose from the feeding grounds on the refuge and flew in a long line toward the bay. The second was taken as the flock settled on the bay in a compact group. Invariably, observers overestimated the number in the first photograph and underestimated on the second.

Mr. Charles L. Slaughter, maintenance man at the Refuge, assisted materially in the counting work. Master Sergeant Robert Livingston was the photographer on all flights. William Burchard and Clifford Hagerman of the Photographic Laboratory of the 4146 Base Unit assisted in technical details.—GEORGE P. SPINNER, *Bombay Hook National Wildlife Refuge, Smyrna, Delaware.*

Notes on the sexual behavior of the baldpate.—On May 28, 1948, at 7:45 a. m. in Ashbridges Bay in Toronto a male baldpate, *Mareca americana*, dropped into a group of two females and one other male on the water and started to chase one of the females. Both flew up, the male behind. He caught her tail feathers with his beak and held them. They dropped to the water, the male on top and still holding the tail feathers. The female sank into the water until only her head showed. They copulated. As far as I know, this behavior has not been previously recorded on the

part of the baldpate.—JESSIE HAMBLETON, 182 Eglinton Avenue East, Toronto, Canada.

The American pintail in the Province of Quebec.—In June, 1945, the writer flushed an unknown female duck at Point St. Denis. Judging by her strange behavior she must have been brooding. Some time after, as I waited in the woods, she came back. I managed to see where she landed and found a nest with six or eight ducklings, one of which was captured and sent to Mr. W. E. Godfrey of the National Museum of Ottawa. It was identified as the pintail duck, *Anas acuta*. I think this is the second authentic record of breeding of the species in the Province of Quebec.—ABBÉ A. TANGUAY, *St. Ann de la Pocatiere, Province of Quebec, Canada*.

European teal in coastal South Carolina.—On November 28, 1947, while conducting the Audubon Wildlife Tour to Bull's Island, South Carolina, the writer with a group of eight observers, saw a well-plumaged male *Anas crecca* in House Pond. The bird was about 50 yards distant, in excellent light, and in company with four or five drakes of *Anas carolinense*. Even the observers unfamiliar with ducks could readily see the differences between this bird and the accompanying teal. The lack of the white bar in front of the wings and the presence of the horizontal white stripe on the scapulars was perfectly apparent and commented on by all of them.

The occurrence of *A. crecca* in South Carolina is, of course, purely accidental. One specimen was secured (February 13, 1930), at the Santee Gun Club, Charleston County, by Richard Bishop. This was recorded by Stone (*Auk*, 51: 227, 1934) and constituted the first record for this region. In December, 1946, the writer saw one of these teal on Bull's Island practically in the same place as recorded above. There have been, therefore, three records for this accidental wanderer in South Carolina, two of them sight records by this writer. The Bull's Island bird was still present on December 5, but in another pond (Moccasin).—ALEXANDER SPRUNT, JR., *The Crescent, Charleston 50, South Carolina*.

Breeding of the shoveler in New Brunswick.—During the course of the summer of 1948, I was able to follow the activities of a pair of shovelers, *Spatula clypeata*, which nested on the Midgic Marsh, in Westmorland County, New Brunswick, near the Nova Scotia boundary.

I first saw this pair on May 4 and continued to observe them during visits in May and the first half of June. On June 20, I flushed the female from her nest which was built on the bank of a small drainage ditch. The poorly concealed nest was located about three feet from the edge of a small, shallow pond and about six inches above the level of the water. It contained eight eggs and, judging by the behavior of the female, I would say that incubation was well under way.

On July 12, I visited the marsh after an absence of about two weeks. The nest was empty and there was not a sign of either of the shovelers. Previously, I had always observed both birds within 500 yards of the nest site.

It was not until August 7 that I again saw any sign of the shovelers. In the early evening I was observing a group of waterfowl from concealment in the cattails surrounding a pond of about five acres. This pond was approximately one mile from the nest described above. I saw a female shoveler duck with a brood of nine swimming towards me. They approached to within about six feet and, stepping out of my hiding place, I managed to retrieve four of the ducklings from the bottom of the pond where they had sought concealment. They were only a few days old and, although they bore no pinfeathers, their bills had begun to take on the shape