THE SUMMER SCHEDULE OF THE EASTERN WILLET IN GEORGIA

BY IVAN R. TOMKINS

THE Eastern Willet (*Catoptrophorus s. semipalmatus*) comes to the coast of Georgia in spring, breeds, and is gone again by midsummer. Its close relative, the Western Willet (*C. s. inornatus*), appears as a migrant in August and September, and again in February, and a few individuals may be seen at nearly any time of the year.

This paper deals mainly with the Eastern Willets which breed on the coast of Georgia and South Carolina. This population may exist as one distinct from other willet populations of the Atlantic coast. There are many questions concerning these willets which, to my mind, remain unanswered. Where they spend the winter, in what locality the molt takes place, and their appearance in winter plumage are some of these.

I have accumulated notes on this species for more than 30 years, giving enough time for checking various conclusions, and tending to reduce some errors of brief acquaintance. Most of my field work has been done in Chatham County, the most northerly of the coastal counties of Georgia, although it has reached out at times 100 miles northward into South Carolina and an equal distance southward.

Gilbert R. Rossignol has allowed me to use his egg records, covering collections made from 1907 until about 1937. I am indebted to him for this and other considerations.

The summer residence of the willets in our locality appears to be divided into: (*a*) courtship, about three to four weeks; (*b*) egg-laying and incubation, about four weeks; (*c*) care of young, not more than four weeks, or a residence of about three months.

The calendar of our local population may be summarized in this fashion: (*a*) spring arrival, March 7 through March 30; (*b*) establishment of territory, egg-laying and incubation, April 7 through July 7; (*c*) care of young, April 30 until about mid-July. This schedule is general only, based on the normal year. From the data assembled, there seems to be but one nesting each year, and I have made no observations that would indicate re-nesting if a clutch of eggs is destroyed.

ARRIVAL

The first willets arrive about March 7, and there is a full population by the end of March, although it is quite likely a few may arrive still later. I think they arrive at night, for I have heard their ringing courtship notes

in darkness prior to the observed arrival of the first individuals. I have seen no evidence of transient flocks bound elsewhere. The birds arrive in well-worn, speckled plumage and courtship is begun (or resumed) at once. For some weeks the willets flock along the shell-banks and reefs of the salt marshes, and on the sand-mud flats, but they are not found on the higher grassy areas where the nests will be abundant later. Flocks of 30 or more are common. In Glynn County, Georgia, on March 24, 1938, I counted 138 birds on a sand-mud flat, some of them feeding, others engaged in courtship activities. On April 6, 1938, in the same place I counted 80 willets.

Though a few nests are found in early April, there seems to be a mass movement onto the nesting grounds about April 20. E. Burnham Chamberlain and I drove through several miles of willet nesting habitat on April 22, 1950, and saw very few birds. The next morning we drove the same route and found willets nearly everywhere, walking across the road and among the short grasses of the road berms. In stating this belief that the courting-grounds are separate from the nesting territory, I have considered those cases where the courting-grounds are close to the nesting territory, as well as the fact that high spring tides will often drive the birds onto the territory for an hour or so. I have covered the marshes at all stages of tide and at all times of day to discount any daily or tidal rhythm in the birds' activities.

Nesting

About six days are required for the laying of the four eggs of the normal clutch, and the incubation period is 23 to 24 days (Tomkins, 1932), although Sprunt and Chamberlain (1949:232) state that the incubation in the Eastern Willet takes from 21 to 23 days. My own determination of 23 to 24 days was based on marked eggs in a number of nests, and a review of the data in my notebooks confirms that conclusion.

When Gilbert Rossignol collected a set of eggs, he listed them in his egg

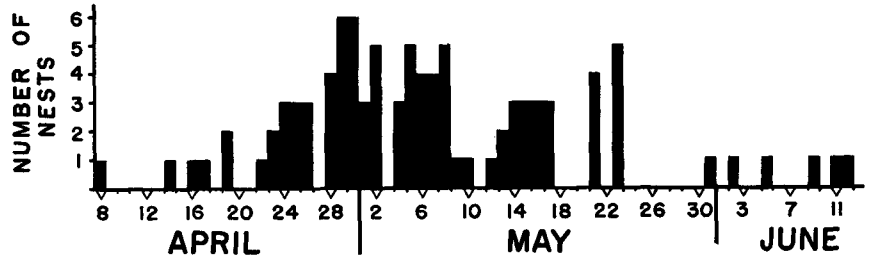

Fig. 1. Seasonal distribution of Eastern Willet clutches, corrected to the beginning of incubation.

record very carefully as "fresh," "slight" or "advanced," referring to the stage of incubation. His egg records from 1907 to 1937 were tabulated as of the date incubation began, and I have added to those the sets covered in my notes which could be corrected to date when incubation started with reasonable accuracy. All other egg records were discarded. The data are presented in Figure 1. The idea was to give a better view of the incubation season than the usual scatter-gun method of listing all dates when eggs were found. It represents nearly 50 years of nesting records (Rossignol's and mine) in the same locality.

The Post-hatching Period

After the eggs are hatched, the nest is deserted very soon, often on the same day, and it appears that the nesting territory has no special value as a home for the family. I have watched nests almost to the hatching point, then a day later found the locality deserted.

Wayne (1910:54) tells of a pair of willets carrying their young away from the nest and across the creek, one by one, until the whole brood was moved. Bent quotes several accounts of other species of shore birds carrying young as follows: European Woodcock, *Scolopax rusticola*, (1927:57); American Woodcock, *Philohela minor*, (1927:68); Spotted Sandpiper, *Actitis macularia*, (1929:90), and there are other accounts of such behavior scattered through the literature. Certainly this behavior might have survival value in marshes subject to tidal overflow, and it may account for the disappearance of the brood from the nesting territory.

The adults are active over the wetter portions of the salt marsh shortly after the eggs are hatched, and show little interest in the nesting territory. It is very difficult to find the young ones then, as the marsh grasses are high enough at that season to provide effective cover. It is also hard to separate the activities of family groups from then on, as one shrieking willet attracts others from far and near, but if one watches from a distance it appears that there is a loose gathering into groups of several families very soon after hatching. Probably as the sexual activity wanes, there is a return of the normal gregariousness characteristic of the greater part of the year, which has to some degree been held in abeyance by the territorial behavior.

On June 29, 1953, Herbert L. Stoddard collected a male willet here that was going through the usual noisy defense of the young presumably hidden in the marsh. This bird had testes about the size one would expect in a winter bird. We thought then that the gonadal regression of the post-breeding season was proceeding rapidly. Both parents share in the incubation duties and both appear to assist in the defense of the young.

FIG. 2. Incubating Eastern Willet, photographed at Oysterbed Island, Georgia, by Frank N. Irving. Note wear of dorsal plumage.

Fall Migration and Molt

Most of the willets simply disappear from the Georgia coast during late June and July. In an earlier account (Tomkins, 1932), I stated that young and old gather on the beaches for a time prior to southward migration. That statement I now believe to be in error. The flocking which some species exhibit prior to their departure is not conspicuous in this willet population.

There is no time in the brief summer stay of *C. s. semipalmatus* for any extensive molt, either prenuptial or postnuptial. This statement appears to be in contradiction to that of Bent (1929:32) who wrote: "Adults have a nearly complete prenuptial molt in March, April, and May, involving everything but the flight feathers of the wings, which are apparently molted later in the fall or early in the winter. I have not actually seen these feathers molting." Bent was writing of the race in its entirety, and I do not know what the molting birds that he mentions were. Our birds arrive in worn plumage, and continue so during their stay here. The Charleston Museum has no specimen showing what *C. s. semipalmatus* looks like in fresh plumage. Perhaps sometime I shall find a delayed migrant here after the postnuptial molt. The plumage of our breeding birds is well illustrated by the photograph (Fig. 2) which was made by Frank N. Irving over thirty years ago, on Oysterbed Island, Georgia. I am grateful to Mr. Irving for permitting its inclusion here.

The Western Willet

It is desirable to discuss briefly the position of *C. s. inornatus* in this locality. There is a fall migration of this race along the sandbars and outer beaches in late August and September, but the spring migration in February is not so marked, and may easily be missed. Some specimens taken on February 22, 1954, from a flock asleep on the beach in the forenoon had empty stomachs, and were most certainly migrants. A few individuals may be seen at any time of year. Some places will have a few summering birds, or some that stay all winter. The Western Willet occupies a more restricted niche than the Eastern, for it does not frequent the muddy creek banks as commonly, preferring beaches and oysterbeds. The stomach of one specimen of *inornatus* contained many small bivalves and some shrimps of the genus *Palaemonetes*, while three specimens of *C. s. semipalmatus* contained only the remnants of small crabs of the genera *Uca* and *Sesarma*. In summer the foraging range of *semipalmatus* reaches into that preferred by *inornatus*, and it is not unusual to find a shrieking pair of Eastern Willets walking among small groups of the Western form.

Field identification of the two forms is possible with a high degree of accuracy. The Western Willet is fully a head taller and is a gray bird lacking

the heavy streaking of *semipalmatus*. The grayer bird stands out in flight in a good light. When specimens are in hand, it is clear that the lightly-barred breast feathers of *inornatus* could never wear into the heavily speckled ones of *semipalmatus* as we see it here.

Summary

The Eastern Willet (*Catoptrophorus s. semipalmatus*) spends about three months on the coast of Georgia and South Carolina in spring and early summer. This time is divided about equally among courtship, nesting and care of the young. Courtship takes place on exposed reefs in salt marshes and on tidal mud flats, whereas the nesting territories are located in grassy upland areas. I have found no evidence that molting occurs during the willet's summer stay on this coast.

The Western Willet, (*C. s. inornatus*) passes through in fall and in late winter, and a few remain at other times of the year. This subspecies occupies a more restricted niche than the Eastern Willet, and may be distinguished readily from it in the field.

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