

NOTES ON A SALT MARSH VIRGINIA RAIL POPULATION

WILLIAM POST AND FRANK ENDERS

During 1968, in a salt marsh bordering Great South Bay at Oak Beach, Suffolk County, New York, we found a number of breeding Virginia Rails (*Rallus limicola*). Several references speak of Virginia Rails nesting in brackish or salt marshes; e.g. Bull (1964), Cruickshank (1942), Stone (1937), but no localities are listed. Since in our experience the Virginia Rail is absent from most New York salt marshes, the following notes on salt marsh breeding are of interest.

STUDY AREA AND METHODS

The Oak Beach marsh has a salinity of 26–30 parts per thousand. The only source of fresh water is run-off from a highway 75 m south. This marsh has not been ditched. Maps dated 1954 show the area as “mud” (U.S. Dept. of the Interior, Geol. Surv., 1954). Carleton, who did field work in the area up to the early 1950's, described the study area as being comprised of mudflats, known to ornithologists for their shorebird concentrations (G. Carleton, personal communication). These flats are now covered with cordgrass (*Spartina alterniflora*).

The standing vegetation of the marsh, excluding the *Phragmites* edge, is entirely *S. alterniflora*. This grass grows up to 160 cm along the bay, but over most of the marsh it averages 50–100 cm, denser and taller patches being interspersed with sparser and shorter. There are numerous shallow pools that empty at low tide, and deeper pools with a rich growth of widgeon grass (*Ruppia maritima*). The marsh vegetation, areas of mud, and water form a complex mosaic. The marsh varies from 125 to 200 m in width. On the south side, it is bordered by a dense stand of *Phragmites communis*. Within some open areas on the landward side of the *Phragmites* there is a little *Spartina patens*.

The water level in the marsh is fairly constant. In the inner marsh, where the Virginia Rails were nesting, the water level normally fluctuates no more than 10 cm. However, during spring tides the water may rise more than 20 cm.

We captured rails with two Seth Low shorebird traps, modified to capture rails (Low, 1935; Adams and Quay, 1958). Leads 25 m long and

Paper number 3101 of the Journal Series of the North Carolina State University Agricultural Experiment Station, Raleigh, North Carolina.

1 m high were run from either side of each trap. One trap plus leads was made from chicken wire, the other from half-inch hardware cloth. The traps were placed in the dense edge of *Phragmites* that bordered the marsh. One of the leads of one trap extended 15 m into the marsh from the *Phragmites*. Several rails were captured in mist nets placed for sparrows.

In our 10 ha study area, we made extensive searches for all bird nests. Nest localities and positions of calling rails were mapped. The study area was divided into 1/16 ha plots by markers placed every 25 m.

RESULTS AND DISCUSSION

POPULATION DENSITY — Based on maps of birds calling and of nests used, we estimated that 11 pairs of Virginia Rails were breeding in the study area. Omitting the area of a large *Ruppia* pool (1 ha), the density was 1.2 pairs per ha or 48.4 pairs per 100 acres. The pairs were well spaced, and the closest occupied nests were 150 m apart. In contrast, in Iowa fresh-water marshes, breeding density was 0.83 nests per ha of cover (33.3 pairs per 100 acres) in a 10.5 ha marsh (Tanner and Hendrickson, 1954).

NESTING HABITAT — Nesting and feeding occurred in *S. alterniflora*, but several pairs used *Phragmites* for cover. Although the marsh was 125–200 m wide, the Virginia Rail territories were oriented along the edge of the marsh: nests were located only as far as 75 m from the *Phragmites*. In spite of intensive search, no nests were found in *Phragmites*, and in every case a bird calling from the *Phragmites* could be associated with a nest in the *S. alterniflora*. The rails were often seen scurrying from their nests to the *Phragmites* for shelter.

The nesting area used by the Virginia Rails was medium height (50–75 cm) *S. alterniflora* with a patchy growth form, and a persistence of last year's stems and leaves (Figure 1).

Clapper Rails (*Rallus longirostris*) nested farther out in the marsh, in taller *S. alterniflora* closer to the bay. The three Clapper Rail nests found were 50–100 m from the bay, while all Virginia Rail nests were more than 130 m from the bay.

SPRING ARRIVAL — During the winter, despite intensive work, we found no signs of Virginia Rails in the marsh. The first evidence of a Virginia Rail was one calling on the evening of 27 March 1968.

Transient rails were probably moving through Oak Beach during the first two weeks of April. Our rail traps were not put into operation until 20 April. The earliest recorded arrival of a resident bird was on 26 April (a bird captured on that date was recaptured 5 June).

BREEDING — We found eight nests with eggs or young. The first eggs

and young were found on 29 May (4 eggs plus 4 young in the same nest); therefore, copulation for that pair began at least by 5–9 May. The last nest found was one containing 7 eggs on 15 July. Four nests with supposed full clutches contained 6, 7, 8, and 9 eggs.

The nests were platforms, almost flat, 11.5–12 cm thick, with rims no higher than 2 cm. All nests were suspended from *S. alterniflora*, and six of the nests had a loose canopy over them, formed from the green leaves of adjacent plants. Nests were made from dead stems of *S. alterniflora*, and had loosely formed ramps of the same material (Figure 2). Pospichal and Marshall (1954) also noted canopies and ramps on nests in Minnesota.

The eggs in three nests were 12.8, 16.6, 21.1 cm above the mud. These heights are low for a bird nesting in a tidal area, and a number of nests were flooded by extreme tides. On 29–30 May, heavy rains caused abnormally high water. We found a nest with 4 dead young and 4 pipped eggs, clearly destroyed by the water. In contrast, a Clapper Rail nest even nearer the bay had its eggs 13 cm above the highest water. Of 8 Virginia Rail nests found, 6 were flooded during May and June.

BANDING AND WEIGHTS—Twenty-four birds were banded, and a total of 37 captures was made. Five birds were recaptured once, one bird twice, and one bird four times. We found that the most effective time to trap rails was at night or on foggy days.

The mean weight of 15 adult Virginia Rails captured in May and June was 87.0 gm, standard deviation 9.64. Because we sometimes left a trap open all night, and could not check it until the next morning, the variation in weights may be abnormal. Trapped rails seemed to move about constantly in the trap. One bird that was trapped by accident may have been in the trap 2 days, and it weighed 59.7 gm on release. Nine days later it was recaptured, and the weight was 72.2 gm, a gain of 21 per cent (for this bird, only the higher weight was used in calculating the mean weight given above). One 1-day old bird weighed 6.3 gm; one juvenile bird weighed 73.8 gm.

BEHAVIOR—Black Rails (*Laterallus jamaicensis*) were found in the same part of the marsh as Virginia Rails, and they were even trapped together (Post and Enders, 1969). Clapper Rails occupied a different zone of the marsh.

The most common Virginia Rail call heard was the “kik-kik-kik-kik-queeah,” fully described by Reynard and Harty (1968). This vocalization is also discussed by Callin (1968), and Keith (1967). It is the call on the Kellogg-Peterson record (1959) described as a Yellow Rail call. It was usually given late at night, but was also heard after dawn. Eight to nine calls were given per minute, as determined from tape recordings.

Using this song, recorded from the Kellogg-Peterson record (“Yellow Rail” call), we were able to lure calling birds to within 2 m at night.

Each call from the tape recorder would elicit a response from the territorial bird. Reynard and Harty (1968) used a tape recorder to play back a bird's own song, and the singing rail responded "with great excitement." The latest date on which they heard this call was 27 May, while we heard it as late as 5 June.

Since this call is reported with such regularity, and is so readily answered by nesting birds, it is probably one of the main breeding calls.

VIRGINIA RAILS IN SALT MARSHES — Virginia Rails today are absent from most salt marshes in New York. Almost all salt marshes in New York are now ditched for mosquito control purposes. Our unexpected discovery of Virginia Rails breeding in an unditched salt marsh suggests that the occurrence of this species in coastal marshes may have been more common in the past, when unditched salt marshes were still plentiful.

The following factors probably determine the coastal distribution of Virginia Rails: (1) Availability of food: the Oak Beach marsh is unditched, and compared to neighboring marshes ditched for mosquito control, there is a much richer fauna. Other studies have shown similar reduction in animal life concomitant with ditching (Bourn and Cottam, 1950; Bradbury, 1938). (2) Cover may be an important factor in Virginia Rail distribution. From our observations at Oak Beach, Virginia Rails need medium height *S. alterniflora* for nesting, and none were found nesting in *S. patens*. Ditched marshes have an extensive thick growth of *Spartina patens* along the *Phragmites* edge, but normal *S. alterniflora* is confined to the immediate edge of the bay. (3) If Virginia Rails did nest in ditched marshes, they would be forced to occupy a narrow zone along the ditches. However, Clapper Rails occupy the entire *S. alterniflora* area in ditched marshes (Enders, 1966 and 1967), and the larger species may exclude the smaller. (4) All salt marshes may represent a marginal habitat for Virginia Rails because of the destruction of their nests by extreme high tides.

Summary

A salt marsh breeding population of Virginia Rails was studied. A population estimate was made by spot-mapping birds and nests. Population density was 1.2 pairs per hectare. Twenty-four birds were banded. Nesting was in *Spartina alterniflora*. Nests were suspended above the mud, but were not immune to flooding. A territorial call is discussed, Virginia Rails may have been more common in salt marshes in the past, before the advent of mosquito control ditching.

ACKNOWLEDGEMENTS — We would like to thank Dr. Joshua A. Lee for his critical reading of the manuscript.

Department of Zoology, North Carolina State University,
Raleigh, North Carolina

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Figure 1. Virginia Rail breeding habitat in *Spartina alterniflora*. Stake is 1.5 m high. The edge of the study area is the dense stand of *Phragmites communis* in the background.

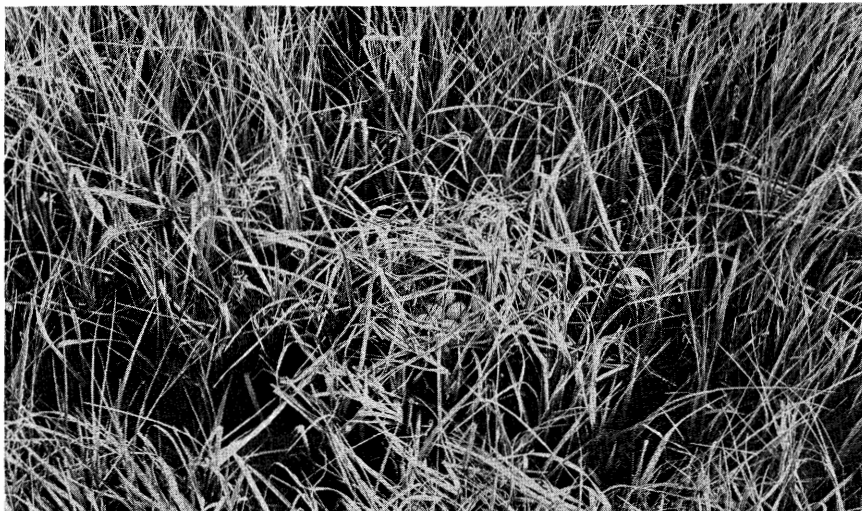


Figure 2. Virginia Rail nest in *Spartina alterniflora*. The nest was suspended, so that the 9 eggs were 17 cm above the mud. Note the canopy over the nest.

REPORT ON ELDORADO BEACH PROJECT

One of the more important conservation projects in western New York is the purchase of Eldorado Beach on the eastern end of Lake Ontario south of Watertown. Under the sponsorship of The Nature Conservancy about \$40,000 has been raised toward the \$56,000 (now \$58,000 because of legal fees, etc.) purchase price.

With such a fine beginning it is hoped that this project can be brought to a speedy conclusion, and Federation members are urged to make new or additional contributions to this fine cause. The Chairman of the project is Professor Frank L. Eldridge, Box 175, Ithaca, N.Y. 14850.

THE KINGBIRD for May, 1969, contains an article by F. G. Scheider giving a complete account of this unique area, its geography and its bird life.