

## NOTES ON THE FEEDING HABITS AND BEHAVIOR OF THE CALIFORNIA CLAPPER RAIL

WITH SEVEN ILLUSTRATIONS

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The highway leading from Palo Alto to the Dumbarton Bridge across San Francisco Bay passes for some distance through typical bay marshes. On the north side there is a slough which follows the road closely for a mile or so. A California Clapper Rail, *Rallus obsoletus*, was seen on the exposed mud of this estuary at about half tide on November 10, 1928. The bird was quite unsuspecting when approached with the camera, and so opportunity was taken then, and on November 16, 23, and December 8, to make the following observations.

The bird seemed to have a regular forage beat which it would follow for about 200 feet up and down on the side of the slough toward the road, sometimes near the fringing grasses, sometimes close to the stream or wading in its shallow margins. Apparently it never crossed to the other side, even when the slough was almost dry at low tide.

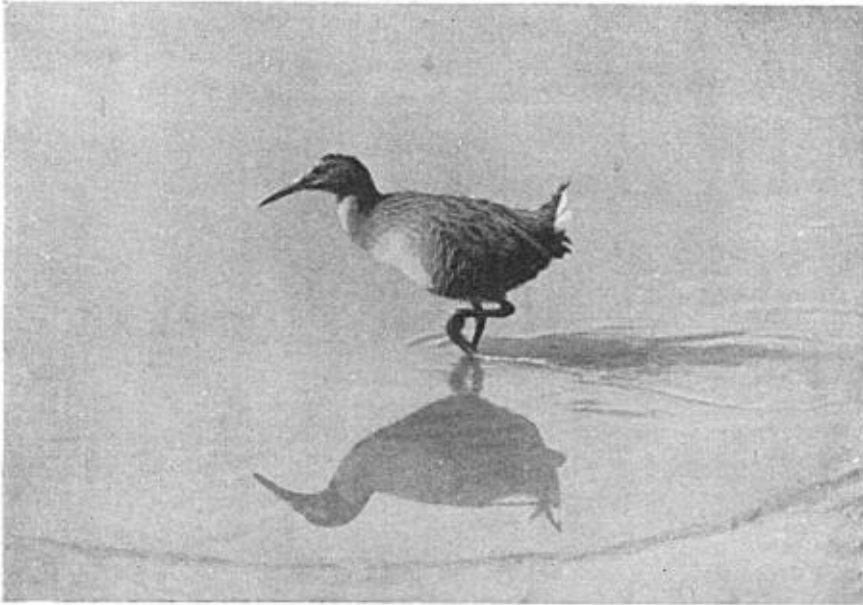


Fig. 22. CALIFORNIA CLAPPER RAIL PROSPECTING FOR FOOD.

The principal article of food proved to be a clam, *Macoma balthica* (Linnaeus), which it would procure and eat in a definite manner: This bird walked in the same general direction, pausing to make a probe here, then taking a few more steps (see fig. 22) to probe there. The bill was moved vigorously up and down in the mud during each insertion (see fig. 23). When food was detected it proceeded to dig it out by seizing bits of mud between the mandibles, bringing them out, and shaking them free. Once I counted as many as 41 loads thus removed before the prey was



Fig. 23. CALIFORNIA CLAPPER RAIL PROBING FOR FOOD. THE BILL IS INSERTED REGULARLY UP TO THE EYE. AT TIMES THE ENTIRE HEAD GOES UNDER.



Fig. 24. CALIFORNIA CLAPPER RAIL CARRYING CLAM IN BILL TO A "DABBLING" PLACE. DECEMBER 8, 1928.

reached. Sometimes pieces of thick mud might be seen between the mandibles, but often it was so fluid as to be not more than mere drops sticking to the bill. A considerable hole was thus made, the bird often inserting the bill up to the eye (see fig. 23). Once the head was thrust in well beyond this point.

After the clam was dislodged and brought forth, the bird then took a few steps either to the edge of the main water of the slough or to some hole which contained water. Sometimes it was merely a depression containing a thinner concentration of mud. Here the bird dabbled the morsel in the water to clean it (see fig. 25). It was then swallowed on the spot, or as I observed on four occasions, brought to the shelter of the grasses or of *Salicornia*, apparently to be eaten there (see fig. 26). Sometimes this was done before being cleaned. While walking with the clam in the bill, the tail was often twitched nervously.



Fig. 25. CALIFORNIA CLAPPER RAIL RINSING FOOD (CLAM) IN WATER TO CLEAN IT. NOVEMBER 16, 1928.

On December 8, two hours of observation were made between 2:35 and 4:35 P. M. The tide was very nearly low when observations started. Before I left, the slough was reduced to a streamlet not more than a foot wide. A rail was seen in the grasses at the edge of an open place between the slough and the road. It was calmly preening itself, oblivious of trucks passing noisily on the highway not more than forty feet distant. But suddenly the stuttering cry of several Killdeers, rising from the mud, startled it, and with a flick of the tail it sought deeper cover. It reappeared again soon near the top of a bunch of tangled grass and resumed preening. After several minutes it moved off again onto the mud and headed west. It then started foraging as described above, working first westward, then eastward; then duplicating the process, and I last saw it again starting east.

During this time it swallowed food sixty times, or at a rate of one morsel every two minutes. This is counting as one swallow the various nibbles at the clam broken open. (See below.)

On three occasions it dug at its food but either was "on a wrong scent" or for some other reason did not exhume food. One of these occasions was when it located the closed but empty shell of a fairly large clam, brought it forth and struck



Fig. 26. CALIFORNIA CLAPPER RAIL TAKING BRIEF RESPITE ON CLUMP OF *Salicornia*.

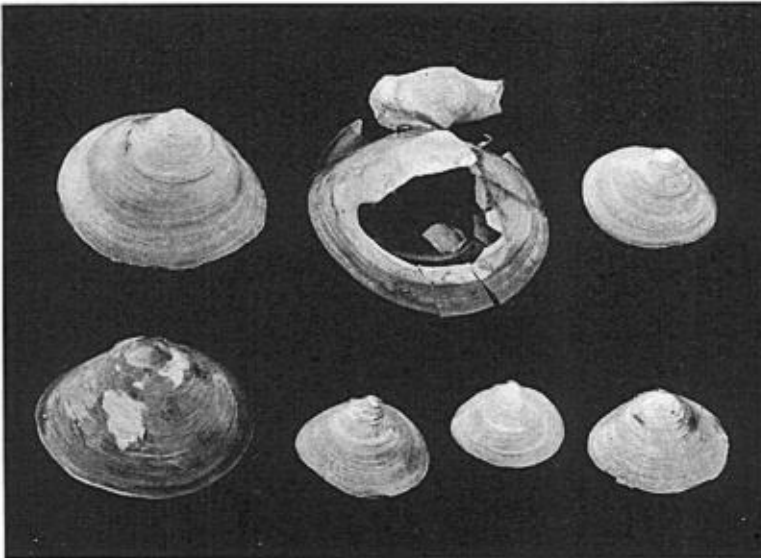


Fig. 27. Clams (*Macoma balthica*), x 1. THE SMALLER CLAMS ARE SWALLOWED ENTIRE BY THE CALIFORNIA CLAPPER RAIL. THE LARGER CLAMS ARE PECKED INTO, AS SHOWN HERE, AND THE MEAT PICKED OUT PIECEMEAL.

at it, whereupon the shell opened, revealing its emptiness. At another time, the bird brought forth twenty-one loads of mud, before, for some unknown reason, it gave up the work. Once the bird was observed to pick something right off the surface of the mud and eat it. Again, food was found merely by probing without digging.

Of the sixty times the bird was swallowing something, most of which appeared to be clams, only once did it break open the shell before eating. Several vigorous strikes on the shell of a particularly large clam (see fig. 27), broke a hole on one

side from which the edible parts were withdrawn by delicate nibbles. Near the edge of the grass I found a hinged shell, washed clean apparently by tides, which had a similar hole on one side. However, several clams with their shells entire which appeared to be only slightly smaller than these, were swallowed whole in two or three gulps.

Identification of the food eaten was obtained by driving the rail from the spot where it was digging and feeling in the mud with the hand. In this way, I obtained a clam at each of five different workings. The size of these clams is shown by figure 27. Snails, *Ilyanassa obsoleta* (Say), which were lying about on the surface of the mud, were apparently untouched by the birds.

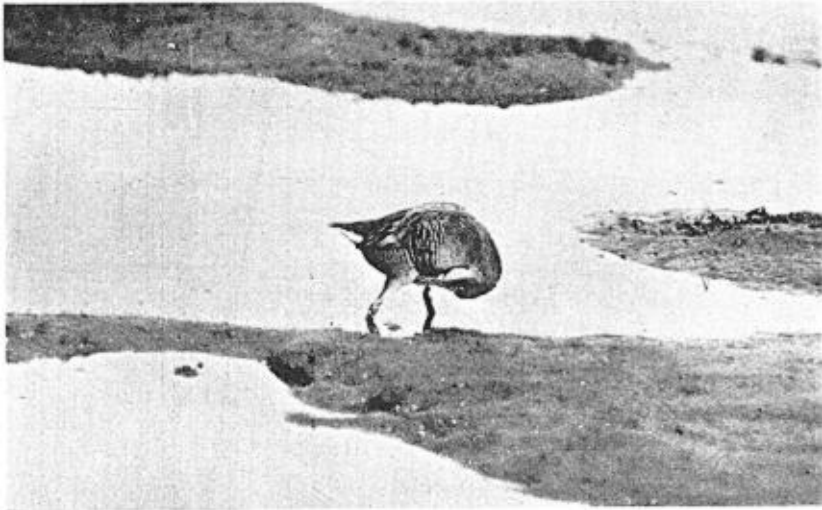


Fig. 28. CALIFORNIA CLAPPER RAIL PREENING. NOVEMBER 16, 1928.

On three occasions, a bird stood on the edge of a deep hole filled with water, and dipped in head first, immersing itself up to the back and breast, apparently trying to clean off the sticky mud which plastered its bill and face. Twice a bird was seen taking a more thorough bath. It rocked itself back and forth in the water by alternately ducking and raising the head, and at the same time raising and lowering the back. The wings appeared not to be used in the bathing process at all, except when the side of the head was rubbed on one of them, apparently to rid the ear of water.

On December 8, there was one rail which kept some distance from the bird under observation. It was most antagonistic towards a third rail from across the slough. Whenever this neighbor would approach too near, the other would rush at it, giving a loud squawk, resembling a note of the Coot. Sometimes, after the intruder had been chased back across the stream, this cry would break into the long, well-known cackling or "clapping", which was given with neck outstretched and bill wide open.

The birds were always unsuspecting and allowed the observer free movement, even when within twenty feet, provided these movements were not too brisk. And then the reaction was only to raise the head and twitch the tail slowly. Sometimes they approached within eight feet while carrying food to the grass. But the Killdeer's alarm note made them run with outstretched neck, full tilt for shelter.

*Berkeley, California, December 27, 1928.*