

they pulled up from the mud beneath water that was as much as one and one-half feet in depth. At one spot almost all the rushes over an area of approximately one hundred and fifty square feet had been uprooted.

The proventriculi and gizzards from the two specimens collected on December 24 were kindly analyzed by Mr. Howard Leach of the Department of Fish and Game Food Habits Laboratory as follows: (1) 20 *Scirpus robustus* (tuber and rhizome fragments), 25.0 cc.; forb (leafage), trace. (2) 5 *Scirpus robustus* (tuber and rhizome fragments), 9.0 cc.; insects (fragments), trace.

All four specimens were males, three adult and one immature. The three adults weighed 6 lbs. 14 ozs., 6 lbs. 8 ozs., and 5 lbs. 8 ozs. None possessed any reserves of fat. Two of the skins were placed in the Museum of Vertebrate Zoology, Berkeley, and one each in the teaching collections of the Departments of Zoology of the University of California at Berkeley and Davis.

I wish to express appreciation to Dr. Alden H. Miller for identification of these specimens.—
WILLIAM M. LONGHURST, *Hopland Field Station, University of California, Hopland, California, April 1, 1955.*

Influence of Winter High Tides on Two Populations of Salt Marsh Song Sparrows.—

In a recent paper Sibley (Condor, 57, 1955:241-242) gave observations on occurrence and behavior of birds and mammals of the salt marshes near Alviso, Santa Clara County, California, during the diurnal high tides that occur there annually from November to January. Concerning Song Sparrows (*Melospiza melodia*) his data are of critical interest to students of population dynamics and evolution. He relates that in walking into the marsh on a levee he met a flock of about 100 small land birds concentrated on it. Approximately 75 per cent of this flock was Song Sparrows; this is about 75 individuals, the number that could be drawn from about 35 to 40 acres of salt marsh in the breeding season (Johnston, Audubon Field Notes, 6, 1952:316-317). Apparently these birds had moved out of their winter territories to congregate on high ground and escape the tidewater.

My observations of color-banded Song Sparrows on the San Pablo salt marsh, Richmond, Contra Costa County, California, during similar high tides are different. I was in the field five days in 1950 and 1951 when tides of 6.9 to 7.4 feet inundated the marsh. San Pablo salt marsh is relatively undisturbed and there are no major man-made ecologic features extant, such as levees, dikes, and drainage cuts. But, during the winter high tides much floating debris is brought onto the marsh by the tidewater; some of this is substantial planks and timbers. It is on such debris and in the emergent vegetation (mainly *Grindelia cuneifolia*) that Song Sparrows of San Pablo marsh move to escape high tidewater. Such movement is almost always accomplished within the winter territory, or domicile. I recorded one instance of a banded Song Sparrow out of its winter territory by some 150 yards. As I watched this bird another Song Sparrow flew at it aggressively and there ensued a typical melospizine squabble that ended with the banded individual returning approximately to his domicile. This was the only bird I saw that had moved more than 10 to 20 yards during a high tide.

Adult Song Sparrows on San Pablo marsh remain for life in or extremely near the territory they take up in the fall of their first year of life (Johnston, MS); presumably the Song Sparrows of the southern San Francisco Bay marshes are likewise restricted in movement, although there is no evidence of this beyond the fact of a fairly high degree of differentiation from other populations of Song Sparrows in the uplands surrounding the bay marshes. Therefore, the concentrations mentioned by Sibley imply movements that are probably departures from the usual behavior of Song Sparrows, influenced in large part by the existence of the man-made levee.

There are two possible effects of large-scale movements caused by the high tides that occur ten or twelve times each winter. First, the movement made by the birds necessary to reach high ground at the levee may influence the typically sedentary nature of Song Sparrows on the Alviso marshes. Thus, population structure may be affected by accelerated exchange of individuals from remote parts of the population. Panmixia would be favored and the small, intrapopulation breeding aggregates (Miller, Evolution, 1, 1947:186-190) would tend to disappear. Second, there is little doubt that the age structure of the population is changed by increased losses to predators during the high tides. Along the same levee that contained the high number of Song Sparrows, in a distance of two miles, Sibley counted ten Short-eared Owls (*Asio flammeus*) hunting the rich prey source. There is no evidence of a differential survival due to age in the Song Sparrows, but such a hunting pressure on a concentrated

fraction of the salt marsh population would change the mortality relationships under which the population had evolved, at the same time changing the distribution of age classes within it.—RICHARD F. JOHNSTON, *Museum of Vertebrate Zoology, Berkeley, California, July 31, 1955.*

Cedar Waxwings Occupy Old Nest of Western Tanager.—Bent (U. S. Nat. Mus. Bull. 197, 1950:83) quotes Ford in respect to the habit of the Cedar Waxwing (*Bombycilla cedrorum*) of taking material from active nests of other species of birds for use in its own nest. No mention is made of utilization of nests, old or new, of other birds for its nest site.



Fig. 1. Male and female Cedar Waxwing with nestlings in Douglas fir, July 27, 1954, at Libby, Montana. This is not the rebuilt nest described in the text but another nest likewise composed chiefly of "deer moss," together with grass blades and a few twigs. Nest lowered 3 feet from original site which was 6 feet above ground. Photograph by J. L. Blackford.

On June 23, 1945, I watched Cedar Waxwings rebuilding a year-old nest of the Western Tanager (*Piranga ludoviciana*) in which a pair of the latter species had reared a brood the preceding season. From subsequent observations, the weathered tanager nest, which now appeared to be composed largely of coarse, interwoven foundation twigs, was employed chiefly as a platform on which a typical waxwing structure was erected. The location was among green branchlets fairly well out toward the end of a slanting bough 35 feet up in a Douglas fir. The tree stood in a small opening in mixed broad-leaf and conifer forest 2 miles north of Libby, Montana. A conspicuous feature of the completed nest was the plentiful use of the black "deer moss" (*Alectoria*). On July 21, 1945, I recorded the waxwing pair as having large young in the rebuilt nest.—JOHN L. BLACKFORD, *Libby, Montana, February 24, 1955.*