

**Botulism in the Carson Sink, Nevada.**—The Carson Sink is a large, relatively flat playa, about 28 miles long and 18 miles wide located in Churchill County, Nevada. In dry seasons it has little or no water on its surface; however, in recent years water from the Carson and Humboldt rivers has covered a portion of the area with shallow water from one to three inches in depth. Only in a few limited areas does the water exceed a foot in depth. The conditions of warm, shallow, stagnant water have apparently led to periodic development of botulism. Judging from reports of livestock men and hunters, thousands of birds died in the summer and fall of 1921. Since that time the extent of botulism poisoning of waterfowl has varied greatly with few or no birds affected in most years.

In 1943, reports by livestock men indicated that birds were dying in the area. Accompanied by Mr. Vernon L. Mills, numerous trips were made to various parts of the sink to determine the extent of the epidemic. In one area of about 30 acres at the mouth of the Carson River we counted 119 sick and 425 dead waterfowl in September. After examination of other areas in September, October, November, and December, we judged that the epidemic covered an area extending about three miles in length and two miles in width. No dead or sick birds were seen in other parts of the sink.

Identification of a few of the dead birds seen revealed that 19 species were affected. Of these the Pintail, Shoveller and Green-winged Teal were most abundant. A complete list of those counted is as follows: White Pelican (*Pelecanus erythrorhynchos*), 5; Snow Goose (*Chen hyperborea*), 25; Mallard (*Anas platyrhynchos*), 4; Gadwall (*Chaulelasmus streperus*), 3; Baldpate (*Mareca americana*), 9; Pintail (*Dafila acuta*), 249; Green-winged Teal (*Nettion carolinense*), 76; Cinnamon Teal (*Querquedula cyanoptera*), 2; Shoveller (*Spatula clypeata*), 125; Redhead (*Nyroca americana*), 1; Ruddy Duck (*Erismatura jamaicensis*), 1; Coot (*Fulica americana*), 10; Killdeer (*Oxyechus vociferus*), 4; Greater Yellow-legs (*Totanus melanoleucus*), 1; Least Sandpiper (*Pisobia minutilla*), 1; Long-billed Dowitcher (*Limnodromus griseus scolopaceus*), 1; Western Sandpiper (*Ereunetes mauri*), 8; Marbled Godwit (*Limosa fedoa*), 1; and Avocet (*Recurvirostra americana*), 15.

Close examination of the sick birds revealed that they showed various symptoms, some of which were watery discharge of the eyes, greenish diarrhea, limberness of the neck, drooping of the wings and muscular weakness. Some birds, unable to fly, made progress by flapping along on the surface of the water. Because of these symptoms we judged the epidemic to be due to botulism poisoning.

Tracks indicated that coyotes were feeding on the sick and dead birds in all months in which observations were made. Hundreds of Ravens (*Corvus corax*) were seen in the area on each trip. Six of these were shot in December and their stomachs were examined in the field. Four contained meat and duck feathers, one contained duck feathers and two catkins from a cottonwood tree, and the sixth contained unidentified hair.

The epidemic apparently reached its peak in August and September. However, we believe that many waterfowl were stricken after colder weather had frozen over some of the area. We estimate that tens of thousands of birds died in this area from August to December in 1943.—J. R. ALCORN, *United States Fish and Wildlife Service, Fallon, Nevada, May 31, 1944.*