

To Bill Tollett with thanks for journal

Carl

ROB (in Mexico)

Laura

MEMOIRS

OF THE

California Academy of Sciences

Volume VII

Hydrographic History and Relict Fishes of the North-Central Great Basin

BY

CARL L. HUBBS, ROBERT RUSH MILLER, AND LAURA C. HUBBS

SAN FRANCISCO

PUBLISHED BY THE ACADEMY

FEBRUARY 8, 1974

tion rates and an 8-inch increase in precipitation." (See also p. 9.)

REMNANT WATERS.

White Lake, the shallow sump of the northern part of the Lake Spring basin, ordinarily holds some water, as it did in 1938, when Bert Robison and other informed residents told us that it had gone completely dry in the great drought of 1934, for the first time in many years. We were further told that in 1934 the valley became so dry that cattle had to be shipped out. Several of the trout creeks in the Schell Creek Range went dry. Even the largest one, Cleve Creek, failed in August to reach Cleveland Ranch in the valley. Only a few of the deepest of the many spring pools on the west side of the northern half of the valley retained water.

A considerable number of trout streams, incorrectly shown as wholly intermittent on the Ely and Lund 1:250,000 maps, flow to or toward the bed of Spring Valley from the Schell Creek and Snake ranges. Spring Valley Creek, coursing down the narrow northern arm of the valley, maintains a slight flow in the dry season and did not completely disappear in 1934. Other streams, on the arid alluvial slopes around both northern and southern ends of the valley, are intermittent.

In normal years, many spring pools, ponds, sloughs, marshes, and meadows exist on the west side of the northern half of the valley, and a spring is mapped on the west margin of Baking Powder Flat, to the south. The only extensive springs on the east valley edge are those on the Shoshone, originally Swallow, Ranch, near the base of the Snake Range south of Wheeler Peak. Here, in 1938, innumerable springs rose in an arc about 5 km. long. These and a few other springs feed many ditches and sloughs to form "The Seep" on Baking Powder Flat. Other ranches on the east side of the valley were said to rely almost entirely on mountain-stream water. Worthington Spring, near the north end of the southern expansion of the valley, on the east side, had already been piped in 1938.

FISH LIFE.

In our earlier report (Hubbs and Miller, 1948b, pp. 56-57) we mentioned taking in Spring Valley two native fishes, "a new sucker, with characters that line it up best with a Bonneville, or possibly a Colorado species," and the dace we have named *Relictus solitarius*. These we had taken only in a spring pool in the course of Spring Valley Creek, beside the Stone House (at the road junction west of center of T. 22 N., R. 66 E.), on the old Overland Mail Route, later the Lincoln Highway. We have since come to regard both species as having been introduced into the valley, probably at this old ranch. The evidence is presented in the species accounts for *Catostomus (Pantosteus) platyrhynchus* on p. 229 and for *Relictus solitarius* on p. 233. Another cyprinid, the Utah chub, *Gila atraria*, which we found to be well established in Shoshone Springs, we also regard as having been introduced, on the basis of testimony that it was brought in by Mormon settlers (p. 231). The cutthroat trout, *Salmo clarkii*, undescribed subspecies, that occurs in the mountain streams has also been indicated to have been introduced (p. 237, and Miller and Alcorn, 1946, pp. 177-178). Other species, unquestionably exotic, have been introduced.

PLUVIAL LAKES REGARDED AS HAVING BEEN TRIBUTARY TO COLORADO RIVER SYSTEM

We (Hubbs and Miller, 1948b, pp. 55, 96-100, 154, 164-165, figs. 25-29) have already regarded several basins, each with a pluvial lake, as disrupted parts of the pluvial White and Carpenter river divisions of the Colorado River system. Along with lakes Coal, Bristol, Delamar, and Carpenter, we should have included Lake Jake (pp. 57-58, 151, 159), but not the "lake in Long Valley" (p. 57), namely Lake Hubbs, which we now know to have been less disrupted from the basin of Lake Newark of the Lahontan complex (pp. 26-29). Among these various ancient waters, regardable as disconnected parts