

DESCRIPTION OF A NEW SPECIES OF KILLIFISH, LUCANIA
BROWNI, FROM A HOT SPRING IN LOWER CALI-
FORNIA.

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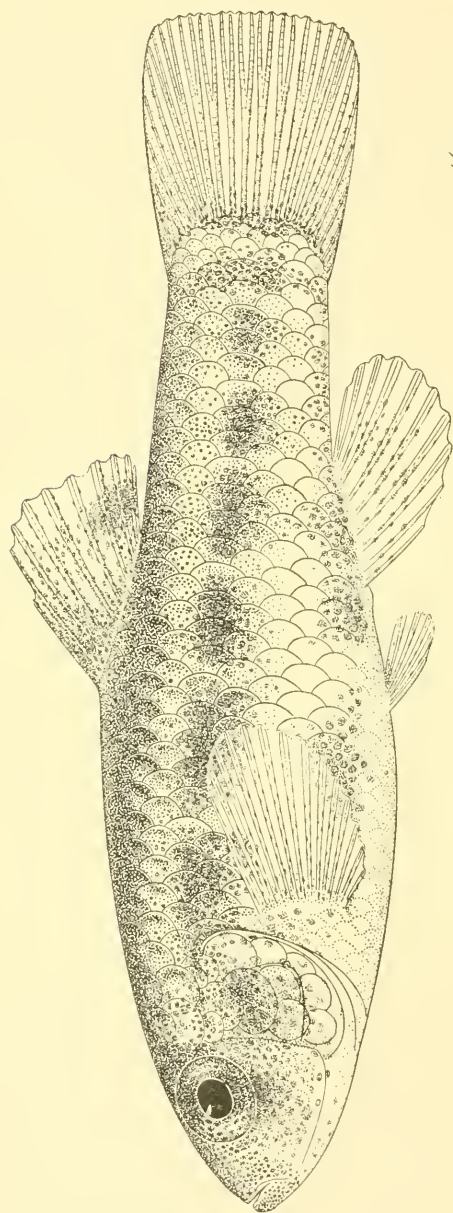
We have recently received from Mr. Herbert Brown, of Tucson, Arizona, 6 specimens of a small killifish of the genus *Lucania*, taken by Mr. Brown from a hot-water spring in northeastern Lower California. Being unable to identify these with any hitherto described species, we here describe them as new, and propose for them the name of *Lucania browni*.

LUCANIA BROWNI, new species.

Head 3.3 in length without caudal; depth 3.3 (3.5 in males); D. 10, A. 10, scales 28 (25); depth of caudal peduncle 1.9 in head; breadth of head 1.6; eye 3; interorbital space equal to eye; nose 4 in head; mouth very small and quite oblique; maxillary equals pupil, the tip of the upper lip slightly below upper rim of pupil; teeth sharp, pointed, equal, in a single row on each jaw; gill membranes connected for a short distance, the gill openings not restricted above; intestine not longer than body; dorsal inserted slightly behind ventrals, a little nearer base of caudal than end of snout; anal fin not modified into an intromittent organ in males, its length when depressed, in female 1.3 in head, in male equal to head; pectoral 1.4 in head; ventrals very small, 2.75 in head.

Color of fresh specimens in formalin: Females olivaceous, each side of body with about 8 large blotches of darker color, forming a broken lateral band in adults; the blotches continued downward on belly as cross bands in half-grown specimens; 3 diffuse clusters of punctulations on the belly just in front of and above anal fin; dorsal punctulated with dusky in both membranes and rays, with a conspicuous dark blotch behind, between the sixth and tenth rays; caudal pale, with two crescentic cross bands across its base, the interspace between them pale; ventrals and anal pale; pectorals obscurely

punctulate in the rays. Males darker in color, with the side blotches less distinct and with the fins more dusky, and with both the dorsal and the anal tipped heavily with dusky behind.



1/4 in

LUCANIA BROWNII.

Described from 6 specimens, 0.50 to 0.84 inch long, taken at a point 20 feet below the outbreak of a hot spring on the eastern margin of the salt lake that lies between the Coast and Cocopah ranges, in northeastern Lower California. The salt lake is said by Mr. Brown, who collected the specimens, to lie about 40 miles south of the international line, and is stated by him to be undoubtedly below sea level. The species is oviparous. The two largest specimens are gravid females, the largest eggs being 1 mm. in diameter. Three examples are well developed females, 0.66 to 0.78 inch in length, two of them apparently approaching nuptial coloration. A sixth specimen is half-grown.

These specimens appear to differ from other described species of *Lucania* in their shorter ventral fins and in details of coloration. The type is

Cat. No. 57838, U.S.N.M. Cotypes are in the collection of Stanford University, No. 20171. Named for Mr. Herbert Brown, of Tucson, Arizona.

The water from which these specimens were taken is thus described by Mr. Brown:

The surface of the water—or, rather, much of it—was covered with a tough thick growth of green and sulphur colored algae. The temperature was taken in water from which the algae had been removed. The register was 128°.

The temperature was taken by Mr. Godfrey Sykes, an engineer well known through this section of country, in the presence of myself and Dr. D.T. MacDougal, director of the Carnegie Botanical Laboratory at this place. It was with a laboratory instrument that the temperature was taken. With the exception of an open strip of water about 2 or 3 feet wide, the surface of the flow from the spring was covered with a thick growth of algae. A portion of the algae was removed, and the temperature taken in the hole so made. The temperature was undoubtedly hotter there than it was on the open edge of the water, but the fish darted in and out under the algae and because of doing so were not easily caught. The water certainly was as hot under the unbroken algae as it was where the thermometer was placed. At this particular place the flow was about 10 or 12 feet wide, and was about 20 feet from the point where the water broke out of the ground. Lower down the escaping water widened out and ran thinner over the surface. A bottle of the water was brought away and an analysis was made of it by Prof. R. E. Forbes, chemist at Territorial University. It contained 2½ per cent of soluble salts, of which salts 2 per cent were common salt and ½ per cent calcium chloride. It also contained a trace of lithium. I would like to add here that the water teemed with insect life. A second spring, of about an equal volume of water and not more than 20 feet away and running parallel with the first, contained no fish. The fish were captured and placed in a can with a closed top about 10 a. m. We were then on the move and my formaldehyde was in a large tank, and as I did not care to put the little fellows in it I carried them for nearly two days in the can in which they were first placed. It was in February and the night was cold, but when I examined them the next morning they appeared to be as lively as ever. The following afternoon they were still living, but were not so lively as in the morning. I then placed them in formaldehyde. They had lived in about a quart of water from their native spring.