
An Isolated Population of the Plains Killifish,
Fundulus kansae, Within the Ozark Uplift,
Mayes County, Oklahoma¹

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On November 26, 1955, it was learned from Mr. L. E. Nicholes of Salina, Mayes County, Oklahoma that a population of the plains killifish, *Fundulus kansae* Garman, existed in the Salt Branch of Saline Creek, one mile south of Salina. Mr. Nicholes, a resident of the Salina area, attested that the presence of the "zebra fish" was common knowledge to the local folk and that the fish "had been in Salt Branch for at least thirty years."

Salt Branch (about two miles long) flows southwesterly from its origin to its confluence with Saline Creek shortly before Saline Creek joins Grand River. This small, narrow stream, with shallow pools, flows from a one-to two-acre, spring-fed pond situated immediately east of State Highway 82, one mile south of Salina. The pond is bordered by a series of small salt flats.

The presence of a population of plains killifish in the Boone Chert formations of the Ozark Uplift becomes more significant after considering some of the following factors.

The Grand (Neosho) River with a north-south gradient has long been recognized as a sharp ecological dividing line in northeastern Oklahoma. The river separates the western edges of the Boston Ozark Mountains from the Grassland-Oak Forest of northcentral Oklahoma. Hall (1953) noted that there were differences in the waters which drained

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from the eastern and western watersheds of Grand River. He further noted a marked difference in the fishes present in these waters. The fishes of the eastern streams were characteristic of the fish fauna occurring in the cool, clear, rocky, spring-fed streams, with numerous shallow pools and gravel riffles found in northeastern Oklahoma, whereas those fishes of the western tributaries were more characteristic of the slow moving, silt-laden plains streams of central and western Oklahoma.

Fundulus kansae, a typical central and western Oklahoma fish, does not invade the western tributaries of Grand River. At the present time this fish apparently does not occur in the Verdigris River drainage (Jenkins and Finnell, 1957). However, Dr. W. F. Blair of Texas University reported collecting *F. kansae* in 1936 from Delaware Creek, five miles west of Turley in Osage County. Delaware Creek is in the Verdigris drainage. Hubbs and Ortenburger (1929) found this form widely scattered throughout western Oklahoma, but no farther east than the South Canadian River below Norman in Cleveland County.

A check of the published literature, and records of *Fundulus kansae* in the O.A.M. Museum of Zoology, together with unpublished notes of Dr. G. A. Moore failed to reveal the recorded occurrence of this fish farther east than the Arkansas River eight miles west of Sand Springs. *F. kansae* probably occurs farther east, especially in the Arkansas and Canadian rivers. However, the Ozark Uplift is not to be considered part of its normal range.

Three collections from Salt Branch of Saline Creek were made with small-mesh seines. On November 16, 1955, the writer seined many *Fundulus kansae* and a few *Gambusia affinis* (Baird and Girard) from Salt Branch beneath the Kansas, Oklahoma and Gulf Railroad trestle adjacent to State Highway 82, one mile south of Salina. No fish were preserved. An ichthyology class from Oklahoma State University collected eighteen *F. kansae* and one *G. affinis* from the same location on May 12, 1956. On March 16, 1957, additional seining by the writer from this location indicated that a population of plains killifish still existed. No *G. affinis* were seen on this date and no fish were preserved.

An interesting question is how this cyprinodont came to exist in Mayes County. There are several possible considerations. First, it would not be unreasonable to assume that a fish with a distribution similar to that previously known for *F. kansae* could descend the Arkansas River, then ascend Grand River to Saline Creek and find its way into Salt Branch. However, *F. kansae* is a fish more commonly found in small streams with quiet waters, not normally inhabiting large swift waters like Grand River. It seems strange that the entire Verdigris River system, which appears to afford better habitat for *F. kansae* than the Grand River drainage, would not have been inhabited. *F. kansae* could have been introduced into Salt Branch as bait. This seems unlikely, particularly with such a bountiful supply of bait species in adjacent Ozark streams. A third explanation is that this Mayes County population of *F. kansae* represents the relict of a once greater distribution for this species. Possibly the waters connecting Salt Branch with other waters now containing *F. kansae* have undergone sufficient environmental and ecological changes to exclude the fish, leaving an isolated population. Dr. Blair's 1936 record of *F. kansae* in Delaware Creek, a tributary of Bird Creek in Verdigris River drainage, would support this theory, since a survey of the Verdigris system in 1956 failed to yield *F. kansae*.

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