

Recent Increases in Number of Skipjack Herring, *Alosa chrysochloris* (Rafinesque), in the Arkansas River, Oklahoma

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The skipjack herring (*Alosa chrysochloris*) is a highly migratory freshwater species common to the Mississippi River and its larger tributaries north to Minnesota and South Dakota (1). The species has never been collected in large number in Oklahoma. The first skipjack herring from Oklahoma waters was collected in 1935 from the Grand River in Mayes County (2). In 1946 small numbers of young skipjacks were collected from five sites on the Illinois River between Flint Creek and the mouth of the Illinois River near Gore (3). Miller and Robison reported that this species occurred in the clear upland streams (Illinois and Grand rivers) along the eastern edge of Oklahoma and in the Red River and its tributaries west to Lake Texoma (4).

The skipjack herring also has been collected in the tailwaters of the Red River below Lake Texoma (5). In both the Red and Arkansas rivers this species appears to migrate upstream and accumulate below dams during the spring spawning runs. In 1974 numerous young-of-year skipjack herring were collected from the Arkansas River below W. D. Mayo Lock and Dam near Fort Smith, Arkansas at the Oklahoma state line (6). Cross and Huggins noted that this species could not tolerate turbidity and siltation (7). The skipjack was not collected during our intensive sampling in the Poteau and Verdigris rivers from 1976 to 1990.

This species was not found in the pre-impoundment surveys conducted by Oklahoma Department of Wildlife Conservation (ODWC) of the Arkansas and Cimarron rivers in the area of the proposed Lake Keystone in 1961 (8). No skipjacks have been collected since 1976 by ODWC (Don Hicks, personal comm.) or by Oklahoma State Department of Health (OSDH) in Keystone and Kaw Lakes, and none in 1973 by H. Lindsay and students during an intensive fish survey of the Arkansas River from Lake Keystone to Muskogee (9). It appears that skipjack were rare in the Arkansas River before the 1970's. The range extension upstream appears to have been prevented by Keystone Dam.

Annual fish collections by ODWC (10, 11) using gill netting, electrofishing, and seining have produced the following numbers of skipjack from mainstream reservoirs of the Arkansas River: from Robert S. Kerr Lake, 1 in 1979, 28 in 1980, none in 1981, 9 in 1982, 12 in 1983, 31 in 1984, 3 in 1985, 8 in 1986, 45 in 1988 (in this year OSDH collected 12 specimens), and 18 in 1990. From Webbers Falls Lake, ODWC obtained 15 in 1981, 2 in 1982, 7 in 1983, 1 in 1985, and 27 in 1988, and from W. D. Mayo Lake, 29 in 1987 and 7 in 1988.

All skipjack collections in the Arkansas River mainstream were by OSDH: in 1983, 79 young-of-year from the tailwaters below the Robert S. Kerr Lock and Dam south of Sallisaw; in 1986, 7 at Webbers Falls; in 1987, 1 at Bixby, 1 at Haskell, and 1 at Webbers Falls; in 1988, 3 at Muskogee and 4 at Webbers Falls; and in 1989, 1 at Muskogee. In years, and some of the ten sites used (not mentioned) collections were made but no skipjacks taken. We (OSDH) have not collected this species in the section of the Arkansas River between Keystone Dam and the 23rd Street Bridge in Tulsa (Zink Lake) since 1976, but Mark Ambler of ODWC (personal communication) has observed the skipjack herring in the tailwaters of the Arkansas River below the Keystone Dam each year since 1985 during the annual ODWC fish survey. In 1986 we (OSDH) found six dead skipjacks mixed with dead shad discarded from a bait bucket by a fisherman at Webbers Falls.

The skipjack herring appears to be more abundant today than before impoundment of the Arkansas River in the 1970's. The upstream distribution is now limited to the Arkansas River below the Keystone Dam. Too few early collections (pre-1970's) are available to clearly assess the extent of changes in the distribution of the species in the Arkansas River. Since 1980 the skipjack has been collected with a greater frequency of ODWC and OSDH. It appears that the lakes of the Arkansas navigational system have provided a desirable habitat and may account for the recent increases in the skipjack.

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