

The Occurrence of the Channel Darter (*Perciformes:percidae*) in the East Cache Creek System of Southwest Oklahoma

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The channel darter (*Percina copelandi*) has a wide, disjunct distribution throughout much of the eastern United States west of the Appalachian Mountains, ranging as far west as portions of Oklahoma and Kansas (1). Miller and Robison (2) report the range of this species in Oklahoma to extend only as far west as the upper Blue River drainage of Johnson County in the south and Salt Creek in Osage County in the north (Fig. 1). Here we report the recent discovery of the channel darter in East Cache Creek and at least one of its tributaries in southwest Oklahoma.

On August 25, 1984, a Chattanooga Oklahoma High School biology class, under the instruction of Alvie Claborn, collected two channel darters from East Cache Creek on Fort Sill Military Reservation in Comanche County, Oklahoma, near Hoyle Bridge, 1 river-km below its confluence with Medicine Creek. The darters measured 37 and 42 mm standard length respectively, and were collected in the only run that occurred in approximately 75 m of the stream sampled. Maximum depth in the run was 50 cm, and the substrate consisted of small to medium gravel, whereas the remainder of the stream sampled was composed of shallow pools with sand and silt on a gravel substrate.

On July 22, 1986, Thomas Heger and Jan Hoover of the University of Oklahoma collected one channel darter from Medicine Creek on Fort Sill, about 15 river-km above its confluence with East Cache Creek. This specimen was taken in 20 cm of water over a sandy substrate near the edge of a pool that was 12 m wide. The water temperature was approximately 26 °C and there was no current. This site was separated from the 1984 collection site by a permanent rock dam midway between the two sites. Identification of the first three specimens was confirmed by Dr. Robert C. Cashner of the University of New Orleans. The two darters collected in 1984 were deposited in the University of Oklahoma Stovall Museum (OKMNH 49518), but the whereabouts of the 1986 specimen is unknown.

On August 20, 1996, Larry Cofer and Richard Milan of the Oklahoma Department of Wildlife Conservation collected a single darter from the edge of a pool in Medicine Creek, 200 m upstream from its confluence with East Cache Creek. This individual was positively identified by Drs. William and Edie Matthews of the University of Oklahoma Stovall Museum and placed in that collection (OKMNH 49516). On October 26, 1996, Michael Brown of Cameron University and Larry Cofer sampled two sites on East Cache Creek. At the first site, near Hoyle Bridge, about 1 river-km downstream from the Medicine Creek confluence, six darters were collected approximately 1.20 m downstream from the bridge, near the edge of a pool in 30 cm of water over a gravel substrate. The second site was 2 river-km downstream at Pig Farm Crossing, where four darters were taken 100 m downstream from the crossing, in water 20 cm deep over a gravel substrate. The water temperature at the time was approximately 20 °C. The specimens collected near Hoyle Bridge were cataloged and deposited in the Cameron University Museum of Zoology (CUMZ-F41) as were the four from Pig Farm Crossing (CUMZ-F43).

Larry Cofer and Jack Tyler of Cameron University collected one channel darter on July 10, 1997, from East Cache Creek near Hoyle Bridge and placed it in the Cameron University Museum of Zoology (CUMZ-F43). The stream was sampled for 120 m downstream from the bridge, and the capture was made at approximately the same location as the October 26, 1996, collection.

The channel darter occupies clear creek channels and pool edges with a sand or gravel substrate (3, 4). It prefers slower stream flow than most upland darters, but has not been reported from sluggish, turbid prairie streams. The collections recorded herein extend the range of the channel darter approximately 160 km west in Oklahoma (Fig. 2). This extension bridges an area consisting of

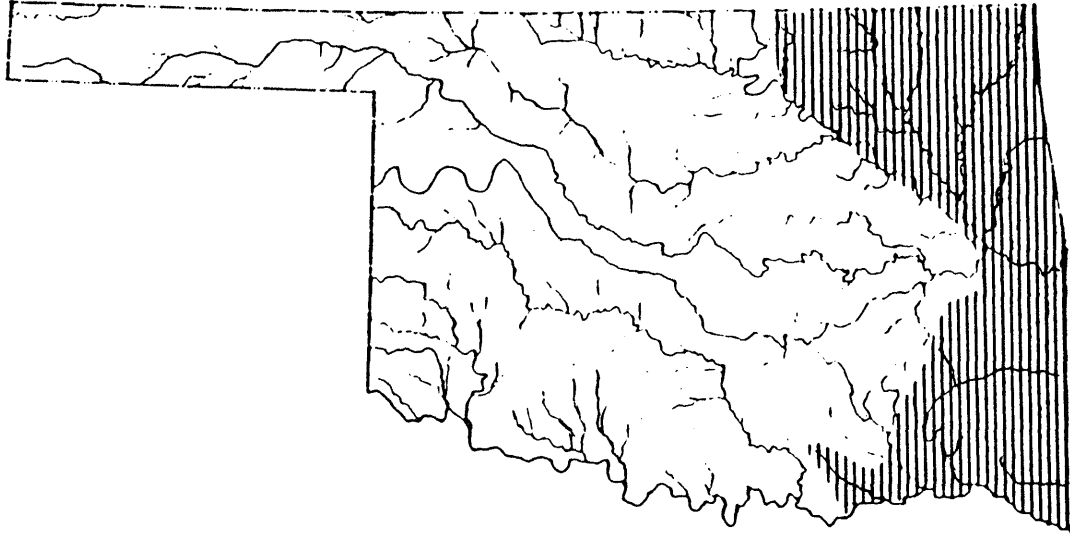


Figure 1. Range of *Percina copelandi* in Oklahoma, according to Miller and Robinson (2).

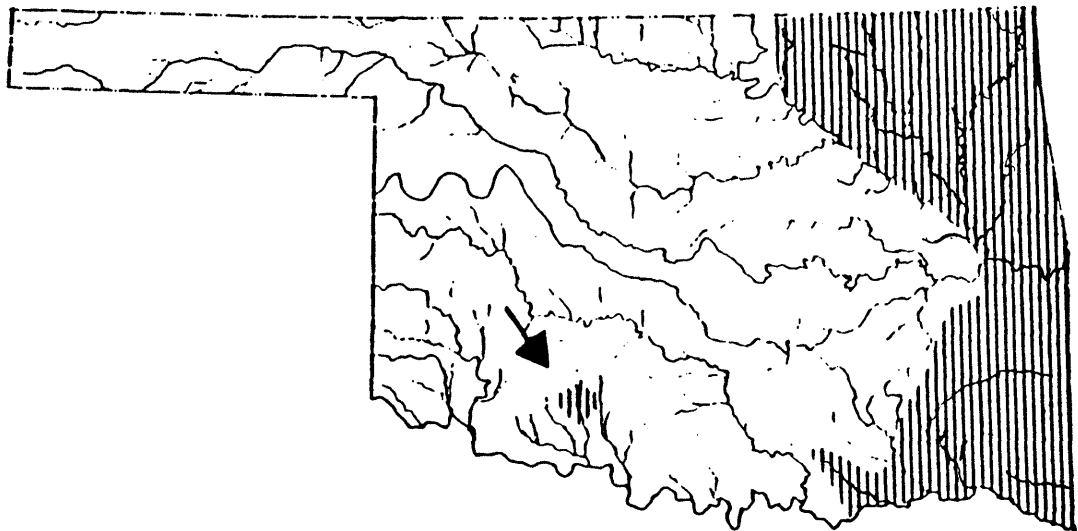


Figure 2. Range of *Percina copelandi* in Oklahoma, adding East Cache & Medicine Creeks collections.

lowland streams unsuitable for the species in the region between the Wichita Mountains and the upper Blue River in southcentral Oklahoma. In 1926 and 1927, C.L. Hubbs and A.I. Ortenburger sampled four sites on West Cache Creek and two of its tributaries, but did not encounter the species (5,6). Our discovery of the channel darter in East Cache and Medicine Creeks, and Hubbs and Ortenburgers failure to collect the species in West Cache Creek, may be due to any one or more of three possibilities: the intermittent, seasonal flow of West Cache Creek prevents the survival of the channel darter while the permanent flow of East Cache and Medicine Creeks below Lakes Ellsworth and Lawtonka provides suitable habitat; the species has either extended its range or has been introduced into the drainage in the last 50 years; or, the channel darter was simply missed in earlier collections, which is not uncommon. It should be noted that there are 11 other fish species which occur as isolated populations in the Wichita Mountains of southwest Oklahoma, including the stoneroller (*Campostoma anomalum*), golden shiner (*Notemigonus chrysoleucas*), bigeye shiner (*Notropis boops*), redbelly dace (*Phoxinus erythrogaster*), fathead minnow (*Pimephales promelas*), smallmouth buffalo (*Ictiobus bubalus*), black redhorse (*Moxostoma duquesnei*), golden redhorse (*Moxostoma erythrurum*), brook silverside (*Labidesthes sicculus*), logperch (*Percina caprodes*) (3), and the spotted sucker (*Minytrema melanops*) (8). Mayden (9) proposed that a pre-glacial Ouachita River system had transversed the present Red River tributaries west to at least the Blue River in southcentral Oklahoma. This pre-glacial river could have provided a cool, clearwater route for the westward expansion of upland species, and as the river system receded the fishes would have been confined to those areas which were still capable of supporting them, resulting in isolated populations such as those of the Wichita Mountains. Future study of the channel darter will include a more thorough survey of East Cache Creek and its tributaries above and below Lakes Ellsworth and Lawtonka, to determine the species abundance and distribution, and a possible DNA analysis comparing this population to that in eastern Oklahoma.

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