Eastward Range Extension of the Tadpole Shrimp, *Triops longicaudatus* (Leconte), in Oklahoma

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Little information exists on the distribution of notostracans in Oklahoma. The known range of *Triops longicaudatus* (Leconte), commonly called tadpole shrimp, is west of Meridian 99 (1). Linder (2) gave specific collection sites for most of the specimens he examined from the western United States, but did not list sites for Oklahoma specimens. Mackin (3) collected *T. longicaudatus*, formerly named *Apus aequalis* Packard, from Woods County, Oklahoma.

On 26 October 1986, we collected numerous specimens of *T. longicaudatus* on the Cimarron River floodplain in Payne County, 8 km north of Cushing, near state highway 18 (section 10, T18N R5E). This is an eastward range extension of approximately 180 km. Collections were made in two flooded pastures using a 1.8 x 4.6-m seine with a 4.8-mm mesh. Only two specimens were preserved as the main purpose of this trip was collecting fish. On 31 October 1986, 32 additional specimens were collected by using a fine-mesh dipnet and the seine. Twenty specimens were placed in 10% formalin and later transferred to 70% ethanol for storage in the Oklahoma State University museum. The remainder were kept alive for observation in the laboratory. The water temperature on 31 October was 17.0 °C, dissolved oxygen was 6.3 mg/L, pH was 6.4, conductivity was 595 μmho/cm, and alkalinity was 108 mg/L.

The characteristic habitat of notostracans consists of muddy, alkaline pools which dry completely in the warm months. This type of intermittent habitat is usually found in arid or steppe regions (1,4). The unusual flooding that occurred in September and October of 1986, with the river cresting at 8.15 m (3.28 m above bank full stage) at Perkins, Oklahoma, formed temporary pools of the nature described above on the Cimarron River floodplain in Payne County. Tadpole shrimp are not often abundant in water harboring carnivorous insects and rarely occur with predaceous fish. In fact, stomach contents of a black bullhead (*Ictaluris melas*) captured in the first sample contained six tadpole shrimp. The majority of the individuals collected were found in silt and gravel on a submerged asphalt section road running between two flooded pastures. Thick grass in the pasture prevented the lead line of the seine from contacting the substrate. Since these animals are known for their powerful digging activities while foraging for food in the soil (5), it is not surprising that higher numbers were captured on the road, where the seine could directly contact the substrate. This species is omnivorous and feeds mainly on algae, bacteria, protozoans, rotifers, and detritus. Laboratory observation confirmed the consumption of their own dead.

How these animals extended their range into eastern Oklahoma is uncertain. Longhurst (4) suggested that the drought-resistant eggs are the only possible means of dispersal since the vernal ponds and pools where the animals are found are rarely part of a stream system along which dispersal of adults could occur. Because these organisms were found on a floodplain, and since the magnitude of the flood causing these temporary pools was so great, it is possible that adults and/or eggs may have been washed out of normally isolated depressions in northwestern Oklahoma and deposited at these floodwater pools. In addition, the eggs may be dispersed by other animals or by wind currents since they are small and light weight (4). Some populations may be parthenogenetic (1) or hermaphroditic (6), which would be advantageous in that both sexes do not need to be present for successfully colonizing an area. Finally, this population might have

been present in this region for some time with the resting eggs having been dormant since floodwaters last covered the site. Other inundated areas along the Cimarron River were not sampled. This site as well as adjacent ones should be sampled in the future.

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