

Update to the Checklist of Oklahoma Crayfishes

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The crayfish fauna of Oklahoma was recently summarized by a checklist that included new state records. These state records were based on recent surveys and on museum records. In this paper, the 2004 checklist is updated by adding one species (*Procambarus dupratzi*), subtracting another (*Cambarus setosus*), and listing earlier records of *Orconectes deanae* and *O. macrus* that were not considered in the 2004 checklist. The known crayfish fauna of Oklahoma remains at 28 species. © 2005 *Proceedings of the Oklahoma Academy of Science*

INTRODUCTION

Crayfish occupy a wide range of habitats, including streams and rivers, lakes and ponds, and sloughs and ditches. Unpigmented, generally blind species occur in caves and some species burrow in intermittent water bodies, constructing mud chimneys that often mark the entrance of burrows. Ecologically, crayfish function as predators, grazers, detritivores, and prey. They form important links in food webs among the benthos, fish, birds, and mammals. As such, they significantly influence the community structure of the aquatic ecosystems they inhabit.

Although many species of crayfish are widespread and common, others are rare or have very limited distributions. Thirty-three percent of the crayfish species in the United States are classified as imperiled over their range as a whole (Wilcove and Master 2005), and additional species are imperiled in some portion of their range. Detailed information on current and historical species distributions is necessary for developing conservation strategies for these imperiled crayfishes.

Crayfish surveys and the identification of recently collected material have been used to better describe the abundance and range of the crayfishes in Oklahoma. This information is needed to assess the conservation status of Oklahoma crayfishes and to identify watersheds of conservation importance for imperiled species or species with limited ranges. Although recent records are of the most interest, older literature was also reviewed to compare historical and current distributions and to identify potential survey sites.

Several lists of Oklahoma crayfish have been published (Creaser and Ortenburger 1933, Reimer 1969, Taylor et al 2004), and the most recent list includes 28 species. Here, recent changes to the state list and supporting literature citations for some of the changes in the Taylor et al (2004) list are presented.

METHODS

Field surveys were conducted by using a variety of techniques: seining, searching and hand netting, and using baited or unbaited minnow traps. Most captured crayfish were released; however, voucher specimens for identification were preserved in 70% ethanol and retained in the crayfish collection

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at the Oklahoma Biological Survey or have been deposited with the Illinois Natural History Survey. Locality information included both township-range-section and Global Positioning System-based latitude and longitude, which enabled mapping of capture locations. Habitat descriptions, local land use, and water pH and conductivity were noted.

RESULTS AND DISCUSSION

Procambarus dupratzi Penn: A new state record

Procambarus dupratzi was first found in Oklahoma on 24 Jan 2004, in White Oak Creek (T6S R21E Sec. 15) and Stevens Creek (T6S R21E Sec. 3) in McCurtain County. This species was subsequently found in Martin Creek (T6S R22E Sec. 29) on 11 May 2004. White Oak, Stevens, and Martin Creeks are in the Little River drainage in the Gulf Coastal Plain and drain unimproved pasture in the area of the collection sites. No reproductive Form I males were found. Additional trips to the sites over the spring and early summer also failed in obtaining a Form I male. Because stream crayfish breed in the cooler months, collection was discontinued until fall. On 12 November 2004, a Form II (a mature, non-breeding form) was collected, taken to the University of Oklahoma, and maintained for 4 months until he molted into a Form I and species identification was confirmed. This specimen was deposited at the Illinois Natural History Survey (INHS 9900).

Procambarus dupratzi is known from Arkansas (Bouchard and Robison 1980), Louisiana (Penn 1956), and Texas (Penn and Hobbs 1958). The species is designated as G5 (= globally secure) by NatureServe (2005) and Currently Stable in a 1996 status assessment (Taylor et al 1996). The sites in Oklahoma are small streams in the Little River drainage, which flow into the Red River in Arkansas. Searches in other creeks in the region did not produce additional specimens of this species (Fig. 1).

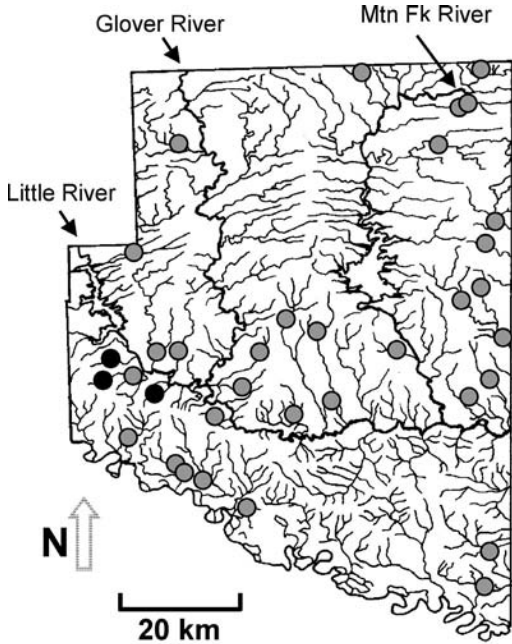


Figure 1. Map of crayfish sampling locations in McCurtain County (OK), including sites sampled by the authors since 2002 and between 1993 and 1998 by the late Jimmie Pigg. Black circles indicate sites with *Procambarus dupratzi*; gray circles are sites with crayfish but no *P. dupratzi*.

Specimens were collected in submerged grasses along the banks or under rocks. The sand pools and gravel riffles of White Oak, Stevens, and Martin Creeks are consistent with the sandy stream habitat described for this species in Louisiana (Penn 1956) and Texas (Penn and Hobbs 1958).

Procambarus dupratzi is easily distinguished in life from other known Oklahoma crayfishes by large black markings laterally on each abdominal segment and distally on the uropods and telson. Such striking markings are characteristic of the subgenus *Pennides*. *Procambarus dupratzi* is the only known member of this subgenus in Oklahoma, but other *Pennides* species, such as *P. natchitochae* Penn, have been collected near Oklahoma and may occur in the state. Further surveys in southeast Oklahoma are warranted.

***Cambarus setosus* Faxon: Removal from the Oklahoma list**

The bristly cave crayfish, *Cambarus setosus*, is a colorless, blind species found in subterranean habitats of the Ozark Plateau in Missouri (Pflieger 1996) and Arkansas (Graening et al 2005), and has been included in recent checklists of Oklahoma crayfish (Reimer 1969, Taylor et al 2004). However, re-examination of records and specimens has not provided support for its occurrence in Oklahoma and all previous state "records" were either unsubstantiated or have been assigned to other species: *C. tartarus* Hobbs and Cooper or *C. subterraneous* Hobbs (Graening et al 2005). Although *C. setosus* should not be included in the checklist of Oklahoma crayfish at this time, the proximity of its range in Missouri and Arkansas indicates that as additional habitats are surveyed, the species may be found in Oklahoma.

***Orconectes deanae* Reimer and Jester: Early Oklahoma records**

Orconectes deanae was described by Reimer and Jester (1975) from Conchas Lake in San Miguel County, New Mexico. However, this species was collected over 20 y earlier by Paul Dunlap, Jr., from Canton Reservoir in Blaine County, Oklahoma, and was described as *O. burrisi* in his masters thesis (Dunlap 1951). This description is invalid because it was not widely published (cf. ICZN 1999).

Orconectes deanae was not listed as an Oklahoma species in North American checklists (Hobbs 1989, Taylor et al 1996) until it was added to the Oklahoma checklist in 2004 (Taylor et al 2004). In addition to the previous record as *O. burrisi*, the species was reported from Oklahoma in 1975 (Hayes and Reimer 1975a), the same year it was described from New Mexico. Interestingly, this latter report was published not because it was a new state record but because of an atypically blue-colored individual.

***Orconectes macrus* Williams: Earlier state record**

Orconectes macrus was added to the checklist of Oklahoma crayfishes by Taylor et al (2004) based primarily on collections by Mr. Jimmie Pigg between 1993 and 1998 from Delaware and Ottawa counties. Additional literature searches revealed that *O. macrus* was found in these two counties in the early 1970s (Hayes 1973).

***Cambarellus puer* Hobbs: Citation for state record and population update**

Cambarellus puer was added to the checklist of Oklahoma crayfishes by Taylor et al (2004) based on National Museum of Natural History (Smithsonian Institution) specimens from 1974 and 1979. The earlier 1974 specimen was cited as a new state record by Hayes and Reimer (1975b), who included no mention of the deposition of the specimen. In a recent collection in June 2002 at the same location, we found only *P. clarkii* Girard. Additional surveys are needed to assess the current status of this *C. puer* population in Oklahoma. No other populations of *C. puer* are known in Oklahoma.

CONCLUSIONS

With these changes and additional citation records, the total number of crayfishes known from Oklahoma remains at 28 species. Additional surveys are expected to increase this count. The diversity of crayfish shows an east-west gradient across the state, with the highest diversity in the east. The same trend occurs with the crayfish faunas of neighboring states. Based on checklists (Fetzner 2004), the Oklahoma fauna is intermediate between the 63 species/subspecies known from Arkansas and the six species known from New Mexico.

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