

Range Expansion of Golden Crayfish, *Orconectes luteus*, in the Mississippi River

ABSTRACT

Golden crayfish (*Orconectes luteus*) specimens were collected in the Mississippi River at Grand Tower, Jackson County, Illinois in September and October 1999. This locality is the most eastern on record for the species and the most southern in Illinois. The high stream order habitat from which these crayfish were collected is generally not consistent habitat compared with preferred smaller order stream habitats used in other parts of the species' range. Previous collections of *O. placidus* from the Mississippi River may in fact be *O. luteus*.

Historically the golden crayfish, *Orconectes luteus* (Creaser, 1933), was documented in Missouri waters draining the Ozarks to the north and the Fabius River drainage southward to the Current River drainage (Creaser 1933, Pflieger 1996) and in parts of Kansas and Arkansas (Ghedotti 1998, Williams 1954). The species was not reported from Illinois as of 1985 but was considered possible as waifs in Illinois waters in close proximity to existing Missouri *O. luteus* populations (Page 1985). A disjunct population was recorded recently from Apple Creek in the Illinois River drainage, Greene County, Illinois (Illinois Natural History Survey records: INHS 2389, 2390, 5181).

The *O. luteus* specimens (one collected on 6 September 1999, four collected on 7 October 1999 [INHS 7255, 1 form I male, 1 female], and five collected on 31 October 1999 [INHS 7256, 1 form I male, 1 female]) were found at a single sampling site. They were collected by hand from the Mississippi River (Illinois) at Devils Backbone Park (Grand Tower) from underneath remnants of a deteriorating concrete boat ramp situated on a large sand bank along the channel border. All specimens were collected in water ranging in depth from 10 to 30 cm and were found under large rocks and concrete slabs. The specimens consisted of four form I males (7 and 31 October 1999; carapace length (CL)/total length (TL) = 19.6/41.0, 17.7/36.4, 23.8/48.8, 18.5/38.9 mm); one form II/juvenile male (7 October 1999; 18.4/37.6 mm), four adult females (7 and 31 October 1999; 22.9/48.7, 21.7/46.1, 21.1/43.8, 18.9/40.2 mm), and one juvenile female (6 September 1999, 23.8/49.3 mm). One more adult female *O. luteus* and three individuals of unknown sex were observed at the same location 13 October 1999. At the same location, seines and minnow fyke nets occasionally retained *Orconectes immunis* (Hagen, 1870), *O. virilis* (Hagen, 1870) and *Procambarus acutus* (Girard, 1852) but never *Orconectes luteus*.

Orconectes luteus may be expanding its range into the Mississippi River and adjacent portions of Illinois. Historically, *Orconectes placidus* (Hagen, 1870) has been recorded in the same type of habitat and location, but according to Page (1985), those specimens were atypical for *O. placidus*. The records of atypical *O. placidus* from the Mississippi River

might be based on misidentified *O. luteus*. The artificial key used for Illinois crayfishes does not distinguish between *O. luteus* and *O. placidus* because *O. luteus* was not included in the key. Based on the key in Page (1985), *O. luteus* we collected in Illinois would be classified as *O. placidus*, even though coloration in life differs considerably between the two species. The *O. luteus* we collected at Grand Tower differed in overall color intensity from *O. luteus* found in Big River (Missouri); they had an overall blanched appearance. However, four specimens held in captivity for several months have developed more intense coloration after progressing into another instar; therefore, environmental factors seem to have an effect on pigment levels. Our specimens were most similar in color to the specimen of *O. luteus* from Cedar Creek (Missouri) shown in Pflieger (1996). Additional sampling for *O. luteus* may reveal that it is more common in Illinois than known previously. Further sampling and examination of museum specimens are underway to investigate the taxonomy of *O. luteus* and *O. placidus* in Illinois.

ACKNOWLEDGEMENTS

The authors thank Andrea Miller, Eve Poynter, Fumiko Kanekawa, and Joe Rush for assistance in the field. Chris Taylor (INHS) provided collection information regarding *O. luteus* in Illinois, and C. Taylor and Christine Mayer (INHS) supplied catalog numbers for our specimens. We thank two anonymous reviewers for their comments.

LITERATURE CITED

- Creaser, E.P. 1933. Descriptions of some new and poorly known species of North American crayfishes. Occ. Pap. Mus. Zool. Univ. Mich. 275:1-21, 2 pls.
- Ghedotti, M.J. 1998. An annotated list of the crayfishes of Kansas with first records of *Orconectes macrus* and *Procambarus acutus* in Kansas. Trans. Kansas Acad. Sci. 101:54-57.
- Page, L.M. 1985. The crayfishes and shrimps (Decapoda) of Illinois. Illinois Nat. Hist. Surv. Bull. 33(4):335-448.
- Pflieger, W.L. 1996. The Crayfishes of Missouri. Missouri Dept. Conserv., Jefferson City, MO. 152 pp.
- Williams, A.B. 1954. Speciation and distribution of the crayfishes of the Ozark Plateaus and Ouachita Provinces. Univ. Kansas Sci. Bull. 36:803-918.

James E. Wetzel

Fisheries and Illinois Aquaculture Center
Southern Illinois University at Carbondale
Carbondale, IL 62901 USA

and

William J. Poly

Department of Zoology
Southern Illinois University at Carbondale
Carbondale, IL 62901 USA