

Spring 1987

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Recommended Citation

Jass, J.P. 1987. Range extension for burrowing crayfish *Procambarus (girardiella) gracilis* (Bundy). *Field Station Bulletin* 20(1): 1-2

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**RANGE EXTENSION FOR BURROWING CRAYFISH
PROCAMBARUS (GIRARDIELLA) GRACILIS (BUNDY)**

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The range of *Procambarus (Girardiella) gracilis* (Bundy) runs in a fairly narrow band southwest of Wisconsin through Illinois, Iowa, Missouri and Arkansas to the eastern edges of Nebraska, Kansas, Oklahoma and Texas. It extends into Wisconsin only in the southeastern corner of the state, having been previously reported only as far north as Milwaukee County. Within this range Hobbs and Rewolinski (1985) have described its habitat to be regions that were originally prairies.

On 12 June 1978 a female crayfish (10 mm carapace length) was collected from the stream just south of the Field Station laboratory building. Although certain morphological features suggested *P. gracilis*, a definitive identification required a more mature specimen. Keys usually use features of sexually mature individuals, preferably males, to separate species. The collecting site was not inconsistent with the possibility of a *P. gracilis* because burrowing crayfishes may come to open water to release their young, while spending most of the rest of their lives below ground. Other small, immature specimens of this species in the Milwaukee Public Museum collection were all procured from open water habitats during July. I visited the Field Station on 16 July 1985 and tried unsuccessfully to net immatures from the creek.

To obtain burrowing crayfish specimens when they are not in open water is a difficult task. Hobbs, et al. (1976) recommended digging a hole adjacent to the burrow and down to the waterline, and then cutting away the adjoining side of the burrow. To obtain a specimen of *P. gracilis*, one must usually reach a lower chamber of the burrow where the crayfish is hidden. I attempted this unsuccessfully along the path south of the creek on 16 July 1985.

On 27 August I retrieved a male second form (not in breeding condition) *Procambarus gracilis* by digging near the spot where I had the previous month (T11N R21E Sec. 30 SE 1/4). The width of the burrow was about 25 mm and it went down 70-80 cm through black muck before entering a zone of lighter-colored clay. At the time it was collected, the specimen was in its burrow above this clay zone.

Because of the paucity of information about burrowing species such as *P. gracilis*, it is difficult to evaluate the information gained by discoveries such as mine. Hobbs and Rewolinski (1985) stated that the presence of this species at the previous northeasternmost known point of its range, mid-Milwaukee County, was

established by dispersing northward from Illinois along continuous drainages. This discovery raises the known crayfish fauna of Ozaukee County to five species, the others being Cambarus diogenes (also a primary burrower), Orconectes immunis, O. propinquus and O. virilis.

This also is the first record of a second form male of this species being collected in August in Wisconsin, the closest other dates being the second week in July and the third week in October. These life history data are so tantalizingly meager that I have now begun to explore techniques which would allow me to accumulate additional data on this northeasternmost population of Procambarus gracilis. Many fascinating subjects, such as how they manage to survive such oxygen-poor conditions and how their basic social interactions are coordinated, continue to intrigue crayfish biologists who have thus far been frustrated in their search for ways to gather answers to these basic questions about the biology of burrowing crayfish.

LITERATURE CITED

Hobbs, H. H., III and S. A. Rewolinski. 1985. Notes on the burrowing crayfish Procambarus (Girardiella) gracilis (Bundy) (Decapoda: Cambaridae) from south-eastern Wisconsin, U.S.A. *Crustaceana*, 48(1): 26-33.

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