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DECAPODS OF IOWA (Part I)

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Introduction

Decapods are a fascinating group of animals which inhabit most aquatic environments in Iowa. As they are secretive, their habits are not well known. However, they play an important role in Iowa's aquatic communities and are worthy of more attention by biology teachers and their students.

Decapods are members of the class Crustacea, a group of arthropods with gills and heavy, crust-like exoskeletons. Crustaceans include such diverse forms as the microscopic water fleas and copepods, the larger sowbugs and amphipods and the more familiar decapods such as crayfish and river shrimp. All decapods have ten walking legs. In Iowa, decapods are represented by seven species in the crayfish family (Cambaridae) and one species in the river shrimp family (Palaemonidae).

Decapods occupy almost every conceivable aquatic habitat from streams, rivers and lakes to springs, marshes and temporary ponds. Most species are stream dwellers which are usually most active at night, hiding under cover during the day waiting to seize any food that happens by. Because of their gills, which must be kept moist to function properly (Crocker and Barr, 1968), none are permanently terrestrial. Crayfish may venture on shorelines at night and some can travel for considerable distances over land if the grass is moist with dew or rain.

Some decapods make their own aquatic habitat by digging burrows or tunnels below the water table. These burrows are usually located along stream banks or near ponds, but if the water table is not too low, they may be found in fields far from any body of water. Different species dig burrows of different design (Crocker and Barr, 1968). Some tunnels are simple and unbranched while others are equipped with side branches and enlarged chambers. When digging a tunnel, crayfish bring mud to the surface and deposit it around the opening of the burrow forming a "chimney" that may be several inches high.

Predators, Prey and Parasites

One of the reasons that decapods are so successful is that they are omnivorous and can subsist on almost any type of food. A crayfish's

natural diet includes insect larvae, worms, small crustaceans, snails, small fish, tadpoles and dead animal material (Pennak, 1953). Burrowing species often eat large amounts of young plant stems and roots. Adults usually feed at night, but immatures may frequently forage by day.

Another reason for their success is their ability to propagate rapidly. Due to their abundance, crayfish consume large quantities of dead plant and animal material and as a result represent an efficient means of maintaining energy flow within aquatic communities. Conversion of detritus to food for vertebrate animals is completed with less loss of energy and substance than a more complex pathway would entail.

Despite their formidable appearance, nocturnal habits and other protective devices, decapods lead precarious lives as they are preyed upon by a host of animals. Their greatest enemies are probably fish, but they are also eaten by frogs, turtles, water snakes and raccoons. Birds such as kingfishers and herons also take their toll. Crayfish occasionally eat each other; in such instances, recently molted individuals are usually the victims. Due to their abundance, decapods form an important component in the food webs of aquatic communities.

Crayfish also serve as intermediate hosts of parasitic worms such as *Paragonimus*. *Entocythere combaria*, an ostracod, is parasitic on the gills of crayfish. Aquatic oligochaetes of the family Discodrilidae are often found as parasites or symbionts on crayfish. Symbiotic relationships have also been recorded between crayfish and the waterbug *Ramphocorixa balanodis* (Crocker and Barr, 1968).

Iowa Decapods

As previously mentioned, there are eight species of decapods in Iowa. The eight species and notes on their distribution and collection are as follows:

Family: Cambaridae

Cambarus diogenes diogenes Girard is a strong burrower and is seldom collected far from its burrow. *C. d. diogenes* prefers areas near marshes, mud-bottomed ponds and slow, muddy streams. In Iowa, *C. d. diogenes* is found statewide but is difficult to collect. In the spring, individuals may be taken by seining pools of open water in marshy areas. At other times of the year they are usually taken during excavation of the burrow.

Orconectes immunis (Hagen) prefers mud-bottomed ponds, roadside ditches and slow moving streams with abundant vegetation. In

late summer, this species may burrow. *O. immunis* is widely distributed in Iowa, except in the extreme northeastern portion of the state. The most effective means of collection is by seining.

Orconectes iowaensis Fitzpatrick is found only in cold-water streams and is restricted in distribution to northeast Iowa. *O. iowaensis* is abundant in riffle areas and is easily collected by hand, dip net or seine.

Orconectes rusticus (Girard) prefers running water and is found in streams and rivers throughout north central, central, and southeastern Iowa. This species occurs in large numbers in riffle areas of streams where it can easily be collected by hand, dip net or seine.

Orconectes virilis (Hagen) occurs statewide, occupying a wide range of habitats including streams, rivers, lakes and permanent ponds. While preferring rocky areas, *O. virilis* may be found in mud or sand-bottomed areas where there is sufficient vegetation or debris for cover. The best method for capturing this species is by seining except in rocky areas where dip netting is most effective.

Procambarus acutus acutus (Girard) is restricted to ponds and back waters along the Mississippi and Wapsipinicon Rivers. *P.a. acutus* prefers heavily vegetated, mud-bottomed ponds. In late summer this species will burrow. Seining is the best method of capture.

Procambarus gracilis (Bundy) is an extremely strong burrower and occurs over the southern and eastern third of the state. Exceptionally difficult to capture, this species spends most of its life in deep burrows, frequently far from standing water. Specimens may be collected from ponds in early spring by seining. Occasionally specimens may leave their burrows after heavy rains.

Family: Palaemonidae

Palaemonetes kadikadensis Rathbun, the river shrimp, is Iowa's only decapod that is not a crayfish. Restricted in distribution to the Mississippi River, this species occurs in large numbers in the heavily vegetated back water areas above navigational dams. The best method for capturing river shrimp is by seining.

Iowa Studies

Although no survey has been completed for the state of Iowa, a number of publications list species collected in Iowa and suggest distribution patterns for species within the state. These works include the taxonomic monograph of Faxon (1885) and the ecological catalogue of Harris (1903) as well as surveys by Creaser (1932) for Wisconsin, William and Leonard (1952) for Kansas and Crocker and

Barr (1968) for Ontario. Taxonomic work dealing with Iowa crayfish was completed by Fitzpatrick (1968) with the description of a new species *Orconectes iowaensis*. Natural history studies of *Orconectes virilis* and *Orconectes immunis* have been conducted by Caldwell and Bovbjerg (1968) at Lakeside Laboratory. Bovbjerg (1970) also studied the ecological isolation and competitive exclusion of *O. virilis* and *O. immunis*.

Decapods play an important role in Iowa's aquatic communities. Much needs to be learned about their biology and natural history so that aquatic environments can be properly managed. In this paper, the eight species found in Iowa have been listed (with notes on their ecology and collection) in hopes that teachers and students will focus more attention on these important animals. This article will be followed by articles on identification and classroom care.

Literature Cited

- Bovbjerg, R.V. 1970. Ecological isolation and competitive exclusion in two crayfish (*Orconectes virilis* and *Orconectes immunis*). *Ecology* 51(2):225-236.
- Caldwell, M.J. and R.V. Bovbjerg. 1969. Natural history of two crayfish of northwestern Iowa, *Orconectes virilis* and *Orconectes immunis*. *Proc. Iowa Acad. Sci.* 76:463-472.
- Creaser, E.P. 1932. The decapod crustacea of Wisconsin. *Trans. Wis. Acad. Sci., Arts, Lett.* 27:321-38.
- Crocker, D.W. and D.W. Barr. 1968. *Handbook of the Crayfishes of Ontario*, University of Toronto Press, Toronto.
- Faxon, W. 1885. A list of the Astacidae in the U.S. National Museum. *Proc. U.S. Nat. Mus.* 8(23):356-61.
- Fitzpatrick, J.F. Jr. 1968. A new crawfish of the genus *Orconectes* from Iowa. *Amer. Midl. Nat.* 79(2):507-512.
- Harris, J.A. 1903. An ecological catalogue of the crayfishes belonging to the genus *Cambarus*. *Kans. Univ. Sci. Bull.* 2:51-187.
- Hobbs, H.H. Jr. 1972. *Crayfishes (Astacidae) of North and Middle America*, Environmental Protection Agency Biota of Freshwater Ecosystem Identification Manual No. 9:1-173.
- Pennak, R.W. 1953. *Fresh-water Invertebrates of the United States*, The Ronald Press Co., New York.
- Williams, A.B. and A.B. Leonard. 1952. The crayfishes of Kansas. *Kans. Univ. Sci. Bull.* 34, Part 2 (15):960-1012.

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Mice

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