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CRAYFISH

by

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The crayfish or "crawdada" is a member of a class of animals called Crustacea because of the hard shell or "exoskeleton" on the outside of the body. Familiar examples of crustaceans are lobsters, crabs, shrimps, pillbugs, barnacles and tiny water fleas. Members of this group of animals inhabit fresh and salt water, in all regions of North America and the world except the Antarctic. They are most abundant in the tropics. The majority of the crustaceans are ocean forms occurring near the shore and on the bottom of the sea, and floating and swimming on the surface. Several species of crustacea are parasitic on fish. The common gill louse sometimes found on brook trout is an example.

Crayfishes belong to the family Astacidae. There are eight species native to Michigan, all belonging to the genus Cambarus. Four of these species are common enough to be used for bait.

The crayfish breathes by means of gills, like a fish, although it is not related to the fishes. The gills of a crayfish are found along the sides of the trunk, protected by the hard shell. The shell enclosing the body of the crayfish is composed largely of chitin (a horny organic substance), and calcium carbonate. Increase in size cannot take place until the old shell is molted. When sufficient internal pressure is

exerted due to growth, the old shell splits along the upper surface and the crayfish crawls through the opening. The new shell is soft for a few days until hardening takes place. Young crayfish grow more rapidly and therefore molt oftener than old individuals.

The breeding season varies according to the species. Some breed in early spring and others in the fall. Mating occurs in late summer or fall in most species of crayfish, while certain others have no definite breeding season. The eggs are fertilized as they pass from the two openings of the oviducts of the female to the underside of the tail and abdomen where they are fastened by a sticky substance to the "swimmerets," small leg-like appendages on the abdomen. Once fastened in place, the eggs are aerated and kept free of silt by motion of the swimmerets. The number of eggs produced depends upon the size and probably the age of the female, but usually varies from 50 to 260. The eggs are carried about by the female until hatching, which usually takes place about three weeks after deposition. The young remain attached to the egg shells and swimmerets for approximately another three weeks, when they are able to take care of themselves. As the young crayfish grow they molt (approximately six molts occur during the first two months after hatching) in order to take care of the increase in size. Growth usually ceases during the winter. Some species of crayfish are believed to live as long as four years.

Crayfish are able swimmers, always swimming backwards. They easily escape detection by hiding in holes and under logs, rocks, and in dense vegetation. They possess the interesting ability to regenerate or re-grow lost feelers (antennae), eyes, claws, walking legs and other parts of the body if these are lost.

Most crayfish are night feeders. They are omnivorous, eating anything of an organic nature that is at hand, whether animal or vegetable. They have been observed to catch worms, insect larvae, crayfish and injured

fishes. They will also eat dead fish, garbage, plant seeds, and both land and aquatic plants.

Crayfish are of great economic importance. Certain species are regarded by some people as a table delicacy. Some of them are important items in the diet of our fresh water fishes, snakes, turtles, birds, racoons and other animals. The smallmouth bass is extremely fond of these crustaceans. Fishermen use live crayfish and portions of the white meat of the tail as bait. Crayfish are scavengers, devouring great quantities of dead and decaying plant and animal matter. The burrowing species may do damage by burrowing through dams and levees. Certain others cause considerable destruction of crops.

The life history has never been completely worked out for any of our Michigan species. As far as we know, no one has attempted to propagate crayfish for bait, although they are collected by dealers from natural waters and usually find a ready sale. Great numbers are produced in certain of our state fish hatcheries as secondary crops incidental to pond fish culture. In many cases crayfish are considered undesirable in fish ponds because they eliminate plant growth and cause the water to be muddy. In bass ponds they are eaten to some extent by bass. The operation of ponds for the culture of crayfish involves little labor and expense.

On the basis of habits, crayfish may be divided into two groups: the burrowing and the non-burrowing species. The non-burrowers live under stones, logs or in small holes or shallow depressions. The burrowers live part of the time in holes that vary in depth from one to three feet. The pincers or claws are used in digging and the material removed is brought to the surface, where it is piled up around the mouth in regular or irregular piles known as "mud chimneys." Burrows may be single or branched and usually have one or more enlargements in the various places where the crayfish lives.

The various species of crayfish are not easily distinguished by the layman although the habits and requirements may be quite different. Michigan species are listed below with a few notes on their distribution and habitat preference.

1. Cambarus virilis. Abundant over the entire state. Found in rivers, streams and lakes. Prefers bottoms with stones under which it hides. The breeding season starts in the fall. Color, dusky brown.
2. Cambarus immunis. Not found north of Otsego County. Abundant in stagnant ponds, slow streams and lakes. Has a preference for muddy bottoms. This species will hide in temporary burrows if vegetation or other suitable cover is lacking. Breeding takes place in November. The color is olive-green mixed with brown, and sometimes blue. The pincers are red tipped.
3. Cambarus propinquus. This is the commonest of Michigan crayfish, being found in all major river systems in the state. It also inhabits lakes. A stony bottom is preferred. It is brown with orange-tipped pincers. The breeding season is late fall and early spring.

Ponds may be stocked with breeders at any season of the year. The species chosen for rearing depends upon the character of the pond. If the pond has a soft, muddy bottom, obtain the stock of breeders from a pond or lake having the same type of bottom. If a small stream is to be used, obtain the breeders from a stream.

Breeders may be collected with seines or with traps baited with dead fish or meat scraps. Meat scraps or dead fish scattered over the bottom of the area to be seined often attract crayfish. Seining at night is usually most productive, as crayfish are more or less nocturnal in habits.

No special type of pond is needed for crayfish culture; any shallow, weedy pond or ditch will suffice. If a burrowing species is used, it

would be well to build dikes projecting above the water level in the pond. This will increase the amount of shoreline and make possible the construction of a greater number of burrows in a limited amount of pond space, and will result in a greater production of crayfish. Plenty of shade should be provided because crayfish do better when the direct rays of the sun do not strike the water.

If the pond is heavily stocked, artificial feeding should be resorted to. Fish, meat scraps, plants of any kind, potatoes and table scraps may be used.

It may be desirable to hold a supply for bait purposes. They can be kept alive in tanks, troughs or live boxes provided with running water. If kept for a considerable time, they should be fed small pieces of fresh meat. The containers should not be overcrowded, and should be cleaned every day or so and the dead crayfish removed.

It has been estimated that one ton of crayfish per acre of pond space can be raised successfully. During the past few years over a ton and a half (approximately 600,000) of crayfish have been removed yearly from a four acre bass rearing pond at the Comstock Park State Hatchery near Grand Rapids.

Crayfish make up a large portion of the diet of certain game species of fish, especially the smallmouthed bass. Many fishermen report excellent catches using this bait, particularly during early fall.

Fishermen prefer the "soft shells" or "peelers." These are crayfish that have recently shed their hard shells. If crayfish are raised in a pond, considerable numbers of the "soft shells" can be sorted out quite readily. The shells can be kept soft for a period of a week or two by placing the crayfish in barrels containing rainwater, or in refrigerators.