

Keeping the Dwarf Crayfish, *Cambarellus shufeldtii*

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by  
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Dwarf crayfish (*Cambarellus shufeldtii*) are small crayfish from the lower Mississippi drainage that adapt well to most aquariums. They are seldom cannibalistic, do not nip fins, and do not uproot plants or rearrange the bottom with a lot of excavating. They are relatively outgoing and visible in the aquarium, while their hatchlings are excellent fish food—small enough even for *Heterandria formosa* to feed on. They're easy to breed and raise in small containers.

## General Description

*Size and color.* Male dwarf crayfish attain an adult size of approximately 3 cm, measured from the tip of the rostrum to the tip of the tail. Females generally attain four cm in length. There are two basic color patterns: The predominant color pattern is green to brownish-green to an almost reddish-brown. A darker horizontal stripe passes along each shoulder, across the body to the end of the tail, while a narrower stripe travels more or less parallel to and just below the first stripe. The second color pattern is a mottled green-gray-brown with a less distinguished pair of stripes down each side of the body. On both sexes, the tail has a distinct dark coloration that appears as though one is looking at a pair of rather large eyes.

*Sexual differentiation.* Male dwarf crayfish have a comparatively narrow body with relatively slender and long pinchers. Females, on the other hand, have a more robust body with a noticeably wider tail than the male

—handy for incubating eggs. The female pinchers are shorter and thicker. Females tend to favor more of the brown-green color, while males are often more reddish-brown to green. Natural-caught specimens are generally smaller, tending towards mottled color patterns. Wild males appear to have more yellow and orange on the tips of their pinchers. In addition to the large major pincher, both sexes have four sets of walking legs with small pinchers on the front two legs on each side. These small pinchers aid in picking up and holding food.

*Longevity.* Dwarf crayfish live 12-24 months. They grow by molting their exoskeleton, the frequency of which is determined by water temperature, food and water quality. They grow their entire lives.

## Habitat Requirements

*Water quality.* Dwarf crayfish seem to prefer slightly alkaline water with a pH of 7.2 to 7.6. Both general and carbonate hardness should be within the 12-18 degree range. They can live under reduced oxygen conditions, but it doesn't take them long to become stressed. They will climb towards the water surface where there is greater oxygen absorption. I've seen them climb on top of floating logs to get more oxygen.

*Temperature and lighting.* Although dwarf crayfish can tolerate temperatures from near freezing (but not for long) to the 30s (Centigrade), the best temperature for good growth and breeding is 26-27 degrees. Bright light doesn't seem to bother them.

*Habitat structure.* Rocks, shells, sunken wood, floating wood, and other objects of "structure" are important to raising dwarf crayfish. Because of territoriality, especially by the males, lesser males need structure to escape dominant males, while females need it to protect themselves while they incubate their eggs on their tails. Both sexes need structure to escape the bottom after molting their exoskeleton. Dwarf crayfish have an affinity for swimming "up" after they molt. With insufficient structure, they'll try to cling to the glass sides of an aquarium.

I've found that rocks and wood provide better habitat when bored with numerous holes ranging from 5 mm to 1 cm. Natural, worm-eaten wood makes a popular apartment complex for the crayfish, as the honeycombing of the wood creates many channels and holes for hiding and traveling.

*Plants.* Plants are important, too, and not just for their structure. Plants are secondary sources of food, and help create the suitable environment for the zooplankton and detritus that hatchlings feed upon. The plants that have worked best for me are *Elodea canadensis* or *Anacharis*, and *Cabomba caroliniana*. *Anacharis* is hardy, does a fair job of giving protective cover for juveniles, provides structure for molting crayfish, and satisfies their craving for veggies.

### **Food and Growth**

*Food preferences.* Based on my experience, dwarf crayfish prefer chopped earthworms to all other kinds of food. Other preferred foods are blackworms, bloodworms, glass worms, frozen sunfish or carp roe, frozen mosquito larvae, fish parts, crushed grasshoppers, crickets and snails. Fish flake food works well with hatchlings. Well-fed crayfish breed more frequently and produce more eggs. I try to feed my crayfish daily, but they have survived quite well when I've been gone on two-week (and longer) vacations. This is due largely to the abundance of both rooted and floating *Anacharis*.

*Growth and molting.* Hatchlings are approximately 3 mm (1/8") long and nearly translucent. They grow to adulthood in four to six months, depending upon water temperature, food availability, and the presence of protective structure during and after the molt. Hatchlings display little tendency towards cannibalism, even

when I've had densities of over 140 individuals on one 10-gallon aquarium. Crayfish are most vulnerable during the molt. This is when most complications occur, such as pulled-off appendages and malformed body parts. Dwarf crayfish can molt quickly, reducing their chances of falling prey to predation or cannibalism. In addition, females must molt before they breed.

### **Breeding**

Dwarf crayfish become sexually mature between 4-6 months of age and at 2-3 cm in length. A male must be large enough to grasp a female's pinchers with his and subdue her for the mating embrace. One-pinchered males have a difficult time holding the embrace and, therefore, seldom breed. The largest males pretty much get the run of the aquarium. The same goes for females. While males are outgoing and fairly easy to see, gravid females tend to hide and generally only emerge for food.

Mating occurs within 24 hours after the female has molted and before her exoskeleton is fully hardened. Evidently, the female produces a pheromone after the molt that attracts males. The male catches the female and holds her facing him in a mating grasp. Many times the female curls her tail to inhibit breeding. The male must force the tail section open so that he can lock gonopods with the female to deposit his spermatophore.

Usually within 24 hours after the mating, the female will set her eggs on her swimmerets. The average clutch size is 45-55 eggs. Although young females may only have 18-24 eggs, robust females may have upwards of 75 eggs. Incubation takes 21-28 days, depending upon temperature and water quality. The hatchlings will leave the female's tail one or two molts after hatching, often returning to it at any time during that period. I've had female dwarf crayfish produce a new batch of hatchlings once a month just like clockwork, although the normal cycle tends to be less regular.

### **Conclusions**

Dwarf crayfish are an adaptable, hardy species that would coexist with many fish species in an aquarium when given structure for protective cover. They do not have bad habits, and their diminutive size make them excellent fare for larger fishes that require live food.