

**L2 (*Management Practices
for Crustaceans and
Mollusks*)**

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The culture of crustaceans and mollusks is not at the level of finfish

In the United States, most crustacean culturing is crawfish or crayfish culturing



The pond culture of crawfish is based primarily on the simulation of the natural **hydrological** (water) cycle to which the crawfish life cycle is adjusted in natural habitats

The crawfish farmer should establish, maintain, and manage a self-sustaining population of crawfish in the pond

This requires initial stocking, proper control of water and vegetation, and reasonable harvesting that will ensure adequate stock for the next season

Sources of Species

Two species, the red swamp crawfish (*Procambarus clarkii*) and the white river crawfish (*Procambarus zonangulus*) are cultured in the United States

Habitat

Crawfish are found in temperate freshwater throughout the world. Their natural habitats include swamps and marshes. Crawfish are low on the food chain, recycling decaying plant material

Seed Stock and Breeding

Stocking of seed crawfish is necessary the first year, after which the population, if properly managed, should be self-sustaining

Ponds are usually stocked with adult crawfish from late April to mid-May. The ponds should be flooded for at least two weeks before stocking and have some vegetation or other form of cover for the crawfish

Freshly caught crawfish should be used for stocking purposes. Pond-spawned crawfish are preferable because they are fairly accustomed to pond systems and are less likely to migrate from the pond after stocking.

To reduce predation on newly stocked crawfish, the stock should be released in densely vegetated areas or in the deepest water far from the pond edge if little cover is present

Culture Method

An important management procedure in crawfish culture is the manipulation of water level and quality. This involves the draining and flooding of the ponds at the right time to ensure reproduction by mature crawfish and production of young crawfish, respectively.

Every year, in late spring or early summer, ponds should be drained to simulate the summer drought of the hydrological cycle in the natural habitats of the crawfish, during which time the crawfish burrow and reproduce

Although crawfish may be able to reproduce even when there is water year round,

draining accomplishes three functions

1- First Function

Draining forces all the crawfish to burrow close to the same time period, ensuring simultaneous reproduction and producing heavy recruitment of young crawfish during the flooding time

2- Second Function

Draining and the subsequent drying out of the pond allow annual grasses and semiaquatic plants such as alligator weed, smartweed, and water primrose to grow and become established in the pond

This ensures enough vegetation for food and cover for the young crawfish after the pond is flooded

3- Third Function

Draining helps control unwanted vegetation and predators and allows work on pond or dike repair, if needed

Draining Plan

Water should be drained gradually in late June or early July. A quick method to determine when to start draining is to look for the burrows of early-burrowing females. If burrows can be seen, usually along the banks or under logs or heavy debris in the pond, draining begins

Slow draining allows young crawfish to seek hiding places for the summer and lets the adults have time to find suitable burrowing areas

Fast draining will strand some crawfish that are not ready to burrow and expose them to predators. Draining rate should proceed to lasted 2 to 3 day

After a period of drying, during which time the crawfish reproduce in the burrows, ponds are flooded. This ensures that the newly hatched crawfish will have ample water

Flooding softens the burrow plugs and allows the female and the young crawfish to escape from the burrow and start feeding and growing. Flooding should take place when the water is still warm enough to promote rapid growth and cool enough to hold more oxygen and to slow vegetative decay

Water Quality

Pond-water quality is a key factor to good crawfish production. Under certain conditions, oxygen depletion may occur. This usually happens during the warm fall and spring months when vegetation is decomposing rapidly

Good water circulation prevents this problem. The cheapest and easiest way to improve circulation is to exchange the pond water with good oxygenated water. This flushes out the deoxygenated water.

Another way is to recirculate the water by pumping. In large ponds where water exchange may be a problem, mechanical aerators may be used

Pond Vegetation

Pond vegetation serves as food and cover for the crawfish as well as providing access to the water surface when dissolved oxygen levels are low. The crawfish will eat a variety of plants. The more tender plants are generally the most desirable, especially for young crawfish

Any animal matter that pond crawfish eat is the result of natural production and their own foraging. The crawfish farmers encourage the growth of suitable food plants and discourages undesirable vegetation. Plants used as crawfish food and cover should be capable of surviving and growing during the dry period and when the pond is re-flooded.

Stocking Rate

Stocking rates vary with existing conditions of the pond. In ponds where crawfish are already present, 20 to 25 lbs per acre may be stocked

In a densely vegetated pond with no existing crawfish population, a stocking rate of 40 to 50 lbs per acre is recommended

Densely wooded ponds and open ponds with sparse vegetation should be stocked at 45 to 60 lbs per acre

Ponds with no or very little natural vegetative cover require a higher stocking rate because of higher predation losses. Up to 100 lbs per acre may be stocked in these ponds, depending on price and availability

Stocking rates are based on medium to large crawfish. Sexually mature crawfish in a ratio of at least one female to one male should be used for stocking

A ratio of one male to three or four females will ensure heavier reproduction. In properly managed ponds, further stocking is generally not necessary. Enough adult crawfish present after harvest ensure adequate stock for the next season

Feeding

A primary advantage of crawfish culture over traditional fish culture is that crawfish derive their nutrition from natural production of plants and organisms associated with decaying matter

If a good cover crop of desirable vegetation is present in the pond, no supplemental feeding is required

Studies indicate that the addition of pelleted and extruded commercial fish feeds in experimental ponds can produce significant increase in crawfish production

High cost and low feed conversions of the artificial feeds make them uneconomical as yet in commercial crawfish operations

Agricultural forages and by-products such as hay, sweet potato vines and trimmings, rice bran and stubble, and cottonseed cake, among others, serve as excellent sources of supplemental food and may be added to ponds

These products may be used as supplemental food in ponds with poor vegetation or as starter diets during the first few weeks of crawfish production in newly built ponds without properly established vegetation

Supplemental feed in crawfish ponds, particularly during warm periods, may cause water-quality problems. The farmer should watch for signs of low oxygen levels and be ready to circulate or exchange water and/or remove some of the feed

Diseases

Few diseases cause problems in crawfish. Management of oxygen and temperature is critical for growing healthy crawfish. Cold water temperatures stress crawfish, predisposing them to disease

Currently, diseases and parasites are not a major concern to crawfish production. But as culture becomes more intensive, diseases and parasites could become a serious consideration, as water quality declines

When extreme environmental conditions are prolonged or intolerable, cultured crawfish can more easily become diseased. A bacterial infection known as shell disease could become a problem in intensive culture

Knowledge of crawfish disease lags behind that of finfish

Nutritional diseases also occur when crawfish do not receive the proper diet or enough feed

Harvesting and Yields

For maximum yield, a crawfish pond must be harvested intensively throughout the production season

Enough reproductively active crawfish are left to serve as broodstock for the next season

Harvesting ponds is quite tedious because it is generally done manually with the use of baited wire traps that should be run daily

Crawfish traps vary in size, shape, type, and construction, depending on the preference of the crawfish culturist. The traps are cylinders of wire fencing or similar material that have funnel-shaped openings through which crawfish can enter. The mesh size depends on the size of crawfish to be caught.



Grading and Marketing

Grading involves sorting crawfish for uniform size and quality. Damaged, dead, diseased, or off-color crawfish are removed

Crawfish are grouped by weight. Mechanical graders are sometimes used. Hand sorting is labor intensive and requires a lot of time

Crawfish growers may sell their catch on farm, to retail markets, to processors, to wholesalers, or to recreational stores

Sometimes, incidental catches of small crawfish, less than 3 in. long, may also be sold as bait, which is another lucrative market