



Redclaw crayfish aquaculture

The redclaw (*Cherax quadricarinatus*) is a species of freshwater crayfish native to tropical Queensland and the Northern Territory.

Redclaw have a host of biological characteristics that make them a suitable species for aquaculture. They grow quickly, breed naturally in ponds and have a simple life cycle.

In Queensland, the industry is well developed and redclaw are relatively economical to produce. Production technology is simple and redclaw can be sold as live, cooked or frozen product. Queensland redclaw is recognised both domestically and internationally as a safe and healthy product.

This guide provides an overview of redclaw crayfish aquaculture in Queensland.

Culture environment for redclaw

The natural habitat of the redclaw, the turbid billabong that is flushed during the wet season, does not provide the best environment for farming. Commercial production only occurs in purpose-built facilities rather than farm dams.

Although redclaw are able to tolerate environmental extremes, commercial growth rates can only be sustained where water quality is high.

Water temperature

One of the most important site selection parameters is temperature, and the site should maximise the period where temperatures are above 23°C.

In Queensland, redclaw grow well over a broad temperature range. Optimal growth occurs between 26°C and 29°C. Lethal limits are around 9-10°C and 34-35°C.

Water quality

Salinity levels in ponds should not regularly exceed 2 parts per thousand or growth and behaviour may be affected.

The ideal pH range for redclaw is 7-8.5. Levels below 7 may cause moulting and shell hardening problems. Low calcium levels - hardness less than 50 parts per million (ppm) - will have the same effect.

Redclaw will tolerate very low oxygen levels, which can result in poorly managed aquaculture ponds. If dissolved oxygen in the pond water drops below 1ppm, redclaw will move to the edge of

the pond where oxygen levels are generally higher. In extreme cases of low oxygen, redclaw will migrate from the pond over land.

While redclaw will survive under conditions that would normally kill other species, it is desirable to have a dissolved oxygen level above 5ppm. For maximum growth and good economic returns, it is important that ponds are managed in accordance with best-practice protocols, including good water quality management.

Also consider...

- Find out how to get started in aquaculture [<https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/aquaculture/site-selection-production/getting-started>].
- You will need to discuss technical and licensing aspects of any proposed aquaculture venture with staff from Fisheries Queensland [<https://www.daf.qld.gov.au/contact/customer-service-centre>] and the Department of Environment and Science [<https://www.des.qld.gov.au/>] before proceeding with site selection, design and, where applicable, land purchase.
- Contact the Queensland Crayfish Farmers Association [<http://www.queenslandredclaw.org/>] for information about redclaw aquaculture in Queensland.
- Find out how to prevent, identify and manage disease in aquaculture farms [<https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/aquaculture/managing-disease>].
- Download the latest report to farmers [<https://www.daf.qld.gov.au/business-priorities/fisheries/aquaculture/investment/industry-performance-annual-reports>] for aquaculture industry statistics and production data.

Redclaw breeding

Breeding activity for redclaw depends on water temperature and day length, and normally occurs between September and April within their natural range. Farmers can protract breeding by providing a controlled environment in which temperature is manipulated to simulate the onset of the breeding season.

Techniques for breeding and juvenile production vary considerably between farms and regions. Generally, selected broodstock (some redclaw strains are clearly superior for cultivation over others) are placed in specially designed ponds or tanks where mating naturally occurs.

The female broods the eggs for 6–10 weeks, depending on temperature. The larger the female, the more eggs she can produce. Most females produce 300–800 eggs per brood. Redclaw may produce 3–5 broods during the breeding season.

Hatchlings resemble the adult form and remain attached to the underside of the female for several weeks before progressively becoming independent of the mother.

Advanced juveniles are normally harvested at 5–10g (3–4 months old) and sorted for size and sometimes sex.

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Growing and harvesting redclaw

Growout

Commercial growout is normally undertaken in earthen ponds, which usually range from 1000m² to 1200m² with sloping bottoms (1.3–1.8m deep) to facilitate drain harvesting. Similar sized juveniles are stocked in prepared ponds at 5–15 animals per square metre. The stock and pond water is carefully managed to maximise growth and animal health.

The total growout time is about 6-9 months (plus the 3–4 months spent in the juvenile production pond). Stock is often harvested progressively due to differential growth rates. Several market size grades exist from 35g to over 100g.

Shelter

Like all crustaceans, redclaw moult or shed their shell as they grow. Immediately after moulting, redclaw have soft shells and are vulnerable to predation by other crayfish in their pond.

Providing shelter increases the survival and growth potential of farmed redclaw. The best forms of shelter are mesh materials, such as onion bags or shade cloth, and short lengths of pipe.

Feeding

Feeding is normally undertaken 3 times a week just before dusk to coincide with the animal's peak foraging behaviour. Some form of aeration is normally installed (usually airlift pumps) to increase the carrying capacity of the ponds.

Feeding of formulated pellets is often supplemented by a mixture of grains to provide a basic food base for the animal, although much of the nutritional requirements can be obtained from natural pond production (e.g. plankton, bacteria, protozoans). This natural production can be enhanced by organic and inorganic fertilisation, as long as ammonia (<0.05mg/L) and oxygen levels (>5.0mg/L) remain within the acceptable range.

Harvesting

Redclaw farmers use several harvesting techniques, either independently or together. These include bait trapping, drain harvesting and flow trapping. Flow trapping is the most successful technique and utilises the animal's natural behaviour. A current of water is directed into the pond through a ramp. This solicits a response from the crayfish and they move into the current, up the ramp and into a harvest box.

In order to effectively manage the pond environment and the stock of redclaw within the pond, it is essential to drain and dry every pond at least once each year. After harvesting the best crayfish are selected as broodstock, with the majority of the production being sold. Broodstock selection ensures that individuals displaying desirable characteristics, such as fast growth rate, are able to contribute their genes to the successive generations.

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