A Code of Practice for the

Farming and Handling of Yabbies

Yabby Producers Association
of Western Australia (Inc.)

FISHERIES
RESEARCH &
DEVELOPMENT
CORPORATION

The Yabby Producers Association of Western Australia (Inc.)
Suite 6, 41 Walters Drive, Osborne Park
Western Australia 6017
Tel: (08) 9244 2933 Fax (08) 9244 2934

Design and typesetting:
Glen Whisson
Aqua Research & Marketing Services
29 Pine Terrace, Darlington
Western Australia 6070
Tel: (08) 9299 7306

Printed by Scott Four Colour Print
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Preface

The yabby industry in Western Australia became established in the mid-1980s.

Western Australia is currently the major producer of farmed yabbies in Australia, exporting more than seventy percent of production. The growth in yabby farming has been one of the main reasons for developing this Code of Practice.

The Yabby Producers Association of Western Australia (YPAWA) in its Development Plan of 1994 identified the need for a Code of Practice to address a number of issues that would enable the successful development of a sustainable industry.

A major reason for the Code is to ensure that quality of product is maintained throughout the industry, particularly with new entrants. With the appointment of a full-time extension officer to the industry and an increased profile of the Fisheries extension branch at field days and agricultural shows, the number of people taking up yabby farming in farm dams is expected to increase. These people are being encouraged to use the existing processors to sell their product and not try to take on the role of marketing. The Code outlines the dos and don'ts of growing yabbies. It does not discuss the more technical aspects of processing. The Code is not just about quality, but also addresses some of the fundamental factors that affect production and how these relate to quality.

The Code provides a step-by-step approach to successful yabby farming by adopting the best practices.

Format of the Code

The Code is in a format that industry and Government authorities believed would be acceptable. It is designed so that pages can easily be replaced or added as a result of any changes. A register of recipients will be kept at the offices of YPAWA so that changes to the Code can be sent to them when necessary.

A video based on the written procedures is an integral part of the Code. It illustrates the do's and don'ts of harvesting and handling product. The video will also be updated when appropriate.

Production of the Code

The Code is an initiative of YPAWA, produced in conjunction with the Fisheries Research and Development Corporation. It has been developed in close consultation with industry and with the assistance of Fisheries Western Australia. The Aquaculture Council of WA (ACWA) was asked by the YPAWA to act as the administrator of the project and to use its expertise to facilitate the production of the Code.

The industry is developing promotional plans to ensure that future production is properly marketed. Farmers are encouraged to join the YPAWA to ensure the above objectives are achieved and to optimise returns from their dams.

If you have trouble understanding any of the terminology in the Code, please refer to the glossary on page 44.

Acknowledgements

The Yabby Producers Association of Western Australia supports and represents the industry which provided the direction for the production of this Code of Practice.

The industry is grateful to the Fisheries Research and Development Corporation for its support of the programme and its commitment to the future development of the yabby industry in Australia. Appreciation is also extended to the Aquaculture Council of Western Australia for its contribution to the successful development of the Code.

Thanks to Fisheries Western Australia for providing assistance, and to the various freshwater crayfish producers around Australia who supported the concept and provided comment.

1.0 Starting up

To get started, all farmers need is access to farm dams with reasonable turbidity, enough yabbies to stock the dam and some food such as old straw, hay or grain to kick-start the biology within the dam. Farmers should carefully choose the yabbies they intend to use for stocking.

Stocking

Farmers can choose either young (juvenile) yabbies or adult breeders for the initial stocking.

Juvenile yabbies usually weigh less than 30g and take approximately six months to reach a marketable size. If stocking with adult breeders, it will take at least twelve months to produce a marketable crop. This allows enough time for the adults to breed and the young to reach a marketable size of 30 to 50g.

Farmer's effort

On average, the farmer needs to spend ten to twenty hours per dam per year, including time for feeding and harvesting. As can be seen from the photograph overleaf, all that is required are traps, a grader, storage sock and feeding equipment.

Yields

Dams on average can produce 30 to 100kg per annum from every 1,000 square metres of dam surface area.

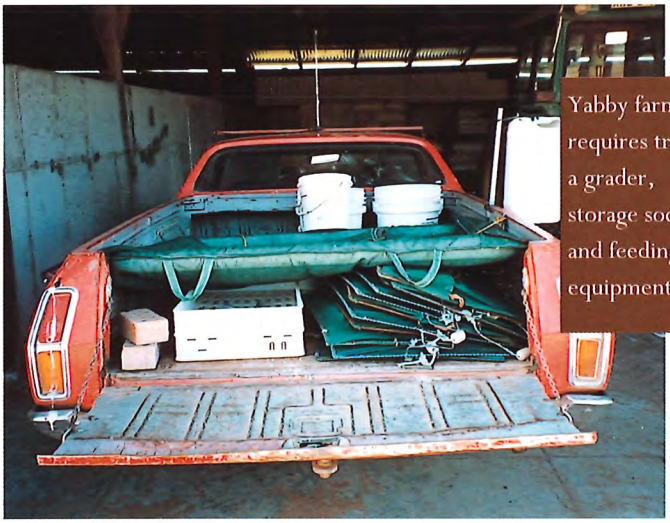
Marketable sizes

Prices for yabbies vary depending on the size range and quality (Table 1).

TABLE 1
Accepted size ranges for marketing yabbies

SIZE (g)	31-40	41-50	51-70	71-90	91+
AGE (months)	6-9	9-12	12-15	15-18	18-24

Yabbies with soft shells, uneven or missing claws, tannin stains or external growth from algae or *Epistylis*, do not obtain premium prices in the market place. Yabbies that present well can be supplied to a wide range of markets, whilst others as described above more often than not have a limited use as tail meat.



Yabby farming requires traps, a grader, storage sock and feeding equipment.

2.0 Choosing suitable dams

Most farm dams and soaks can grow yabbies, but experience has shown some are better than others.

Features to look for

- Lower banks allow more wind movement across the dam, providing greater aeration of water.
- Dams with roaded catchments and contour banks provide a more reliable water supply.

a typical farm dam

Catchment

It is important to make sure the dam has a reliable supply of water. The catchment must provide enough run-off to allow the dam to hold water during dry seasons.

Features to avoid

Try to avoid dams or soaks with clear or tannin stained water. Yabbies grow best when the acidity of the water does not fall below a pH of 6.0 and the salinity does not go higher than 6,000 ppm.

It is important to avoid dams which contain turtles and fish as they are likely to eat the yabbies.

Dam size

The size of the dam does not really matter. Yabbies usually occupy the first 2 to 3 metres of water depth. Deeper dams are not productive in the centre. Yabbies can be grown in contour channels for those months of the year that they contain sufficient water.

an average size farm dam

Turbid (muddy) water is most suitable because it helps to control:

- water temperature,
- the growth of algae and
- bird predation.

It also provides a better environment for yabbies to feed all day.

3.0 Stocking your dam

Yabbies can be stocked in dams at any time as long as there is enough water. If dams are being stocked for the first time then it is advisable to use males only in order to obtain better production. Females sacrifice growth to put effort into reproduction resulting in lower production from the dams than males.

Obtaining stock

Stock can be translocated from existing dams or purchased from one of the licensed yabby processors or farmers.

It is important to maintain the genetic diversity of your stock by selectively mixing stock from dam to dam on your farm or bringing some in from your neighbour's property. Only stock with strong healthy yabbies.

Purchasing stock

The cost of purchasing stock varies depending upon availability and distance to transport. Take care when handling juveniles and berried females as they are very fragile. When transporting yabbies, make sure they are packed lightly and kept moist and cool (see Packaging in Section 6.0). Yabbies must be kept away from drying winds and sunlight. Do not leave the yabbies sitting in a box for extended periods; they need to be replaced in water as soon as possible.

Yabbies should be free of external organisms such as *Temnocephala* and *Epistylis* (see Section 9.0 Practices For Healthy Yabbies). If some level of infestation is observed, Fisheries Western Australia recommends bathing yabbies in a 3% rocksalt solution for 3 to 4 minutes to kill the adult parasites.

Remember that no yabbies are to be imported into Western Australia unless permission is obtained from Fisheries Western Australia. Stock from interstate must be certified disease free and approved by Fisheries WA.

Dam stocking strategy

The density of yabbies stocked in a dam is very important. If the numbers in the dam are too high then the average growth will be lower.

It is a good production strategy to grow yabbies of the one sex (preferably males) in dams that dry up each year. Females become berried (eggs under her tail) in spring and summer. A berried female can produce from 100 to 400 juveniles.

The stocking densities in Table 2 are considered by industry to be the maximum that should be used initially. Smaller quantities could be stocked if preferred.

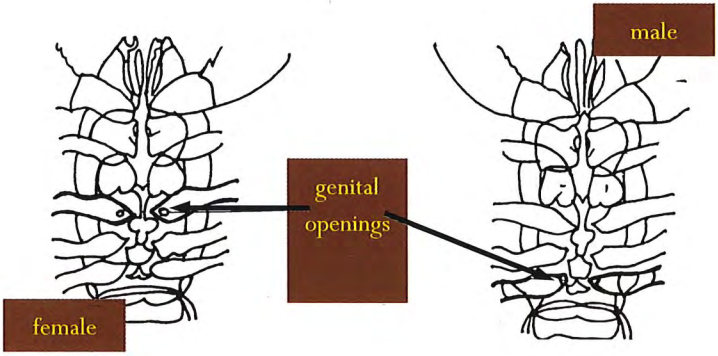
It is important to keep records of your stocking activities. An example of a record keeping sheet is provided in Appendix 5. It is advisable to draw up a similar sheet and use it whenever activities concerning your yabby farming are completed. It is important to record sex, size, weight or numbers that are placed in the dam or harvested.

Table 2
Recommended Stocking Densities

Water surface area	1000m^2	2000m^2	3000m^2
Mixed sex production dam (under 30g)	300	600	900
Single sex male dam (under 30g)	2000	4000	6000
Single sex female dam (under 30g)	2000	4000	6000
Mixed sex breeders dam (5 female/male of similar size)	20/4	40/8	60/12
Berried female	20	40	60

How to sex a yabby

The sex of yabbies can be identified by the external position of the reproductive openings. Males have protrusions on the last pair of walking legs (4th) and the female has round discs at the base of the second pair of walking legs



The difference between male and female reproductive organs.

Sorting out male and female yabbies alongside a dam

4.0 Feeding

Like any farm stock, yabbies need nutrition. They will eat a wide variety of feeds from decaying animal and vegetative matter, to a range of aquatic plants, algae and animals (zooplankton).

Each year the winter rains provide food for yabbies in the next growing season. Run-off carries crop stubble, pasture debris and animal manure into the dams. Eventually it sinks and is gradually decomposed by the bacteria to form a protein rich feed for yabbies. Dams with silt traps need additional nutrition for best growth.

Organic matter is also produced in dams usually as a result of blooms of suspended green algae. Various small animals (including zooplankton) feed on the algae providing a natural food chain for yabbies. In these natural systems, some farmers have reported a farm dam maintaining a total yabby biomass (living weight) of up to 1,500 kg per hectare of water surface. Most dams average only 300-400 kg per hectare without any additional feeding.

Correct feeds and feeding techniques will greatly enhance dam production and product quality, as well as improving financial return. Feed grown on the farm is currently the most economical.

Correct feeding techniques and monitoring are essential in order to be both cost effective and to maintain water quality and yabby health. Farmers are encouraged to keep feeding records by using a worksheet similar to that in Appendix 5.

The Government is conducting research into feeds and feeding techniques with the assistance of funding from the FRDC. The results of this research will be included in Code updates.

How much to feed

A common mistake is to over-feed. Over-feeding will invariably build up waste and cause problems such as ammonia build up, oxygen depletion, a greater incidence of disease and the growth of external organisms such as *Epistylis* and *Temnocephala.*

Although current research is still determining the most suitable feed and rate of application, the general industry consensus is that sweet lupins are the most desirable feed for yabbies because they:

- sink when thrown on water
- are readily obtainable
- are relatively inexpensive
- are easily stored
- are a high protein feed and are relatively free from toxins
- break down slowly.

No one feeding rate (see Table 3) is specific to all conditions and, as such, feeding is dependent upon many variables including:

- the time of the year (cooler or warmer)
- water temperature
- oxygen levels
- density of yabbies (biomass)
- frequency of harvesting
- amount of existing food in the dam.

Some farmers keep a 200L drum of feed next to the dam so that they can feed the dam when they are in the area. This is seen to improve efficiency and economics in production. Some farmers have also developed backpacks to use in feeding.

Table 3

Feeding rates for yabby dams

Dam Surface Area	FEED RATE* Recently Stocked Dam	Fully Stocked Dam
1000m^2	5 Litres	10 Litres
2000m^2	8 Litres	15 Litres
3000m^2	10 Litres	20 Litres

*Feeding method assumes use of a 10 or 20 litre bucket

Feeding a farm dam using a backpack

When to feed

Yabbies will eat all year round but less in winter due to the cooler water temperatures. A useful practice is to feed little but often. For maximum production from dams, feeding should take place at least every two weeks in summer. Infrequent but large feed inputs will rot in dams. This will cause the water quality to deteriorate very quickly, especially in summer.

Lupins not consumed after about 3 to 4 days will often float to the surface, indicating that the feeding rate is too high. On the other hand, if no lupins are seen to float, slightly increase the rate of application.

Straw should be distributed in two or three applications per year. The straw breaks down gradually becoming available as feed and also provides refuge for juveniles. Use **small rectangular bales** or equivalent so they do not clutter the watering edge for stock. Old rotting straw is preferable to recently baled hay.

Feeding raw meat such as animal carcasses is not recommended as it can seriously pollute the water. Meat is unsuitable, as it goes off very quickly and spoils the water and can change the yabby's flavour.

DO NOT FEED MEAT

Where to feed

A normal farm dam has only 50% habitable floor space. Feed should be evenly cast in the shallow water around the entire dam perimeter (usually 1 to 3 metres from the dam bank) as yabbies live on the batter of the dam.

Feeding yabbies in a farm dam

Avoid

When feeding, it is important to avoid:

- feed contaminated with chemicals, especially pesticides
- overfeeding low stocked dams or dams with low water levels
- feeding after a runoff of debris from the paddock
- feeding meat such as sheep, kangaroo or rabbit.

Record keeping

Try and keep records of what you are feeding - the quantity, when and where you feed. An example of record sheets which can be used is provided in Appendix 5.

BE SAFE BE SAFE

When feeding, be careful on the bank of the dam, particularly if carrying buckets of feed

5.0 Seasonal influences

The seasons influence the production of yabbies from dams, and farmers must become familiar with the changes in quality in regard to these seasonal variations.

TABLE 4

Seasonal influences on yabby production and quality

Season	Spring	Summer	Autumn	Winter
Water Temp. (°C)	15-18	21-26	16-20	10-15
Yabby Growth	medium-rapid	rapid	rapid-medium	slow
Feeding	1-2 weeks	1-2 weeks	2-4 weeks	4-6 weeks
Male Condition for Market	good	good	good	average
Female Condition for Market	good	poor	poor	average
Harvesting Frequency	4-6 weeks	4-6 weeks	4-6 weeks	8-12 weeks

Restocking

Dams can be restocked at any time of the year.

Soft-shelled yabbies

Soft-shelled yabbies should be returned to the dam immediately as they are usually too weak to survive handling.

Record keeping

It is important for farmers to keep records of each farm dam. Recording details on stocking, feeding, harvesting, water quality and the condition of the yabbies helps to maximise dam production. Examples of record keeping sheets are provided in Appendices 4 and 5. It is advisable to keep similar sheets in your farm vehicle so that you can record all activities.

6.0 Harvesting & handling

Harvesting

Harvesting yabbies should be done every four to six weeks in the growing season; that is, from October to May. Capturing and handling yabbies is an important process. If done incorrectly, deaths can occur. Such deaths start appearing in holding facilities several days after harvesting. The damage is not usually seen by the farmer. In order to minimise these deaths, the following important factors must be addressed.

Setting traps

Traps are preferred to drag nets. Drag nets can physically damage yabbies, particularly those that have recently moulted (soft-shelled) and juveniles. The nets also destroy the dam floor environment by stirring up the mud and creating a bad chemical environment, which can kill the yabbies.

Two of the most commonly used yabby traps

Traps selectively catch the most marketable product in the dam. They have been found to be very effective in capturing up to 80% of yabbies. They do not damage the animals and have little effect on the dam floor. Farmers must remember that undamaged whole yabbies command greater market value.

The number of traps set in a dam is dependent on the size and amount of water in the dam. A general rule is to set traps 10 to 12 metres apart for maximum coverage. The traps should be left for at least 3 hours in summer, and a maximum of up to 3 days in winter.

Traps should be set close to the shoreline because yabbies prefer the shallow, warm water, which is well oxygenated. The deeper water of dams is colder and contains less oxygen especially during summer.

Leaving traps overnight is a good practice. Pulling traps up in the cool of morning minimises the effects of heat stress and reduces dehydration.

Traps should be pulled up and sorted one at a time. Handle yabbies carefully. Out of water they are very fragile. Yabbies need to be in good condition to survive some of the long distances to market.

Setting traps around a dam at 10-12 metre intervals

Gill washing and rinsing

When the trap is hauled, the black, oxygen deficient mud on the floor of the dam is usually disturbed. As the yabbies are pulled out of the water, they close their gill chambers trapping bacteria-laden water and mud.

If these yabbies are kept out of the water for any length of time, they can become infected very quickly by bacteria and will die before or after you deliver them.

Gill washing and rinsing is an essential practice.

PLACE THE YABBIES IN CLEAN DAM WATER FOR ONE MINUTE, IMMEDIATELY AFTER THE TRAP IS HAULED.

The yabbies then open their gill chambers, flushing clean water over their gills, discarding the bacterially laden mud and water. A tub can be filled from a bucket of clean dam water for the washing and rinsing.

Gill washing yabbies at the edge of a dam

Grading

Graders are constructed to separate the marketable yabbies (30g+) from those that are to be returned to the dam or used for restocking elsewhere. They are available from most processors. Most farmers use just one grader to remove the juveniles. The number of juveniles that go through the grader can be used as a rough guide to the density of small yabbies in the dam.

It is very important to check the yabbies that remain on the grader for any that may be soft-shelled or berried.

Grading should be carried out on the banks of the dam, preferably in the shade and away from wind.

Holding yabbies in a dam

Socks, trays and cages can either float or be submerged at the edge of the dam. They are used to hold yabbies in captivity between deliveries to the depot or processor.

A floating cage used for holding yabbies

A floating container used for holding yabbies in a dam

A sock is a flat bag of shade cloth that is laid on the dam floor or kept afloat by a rectangular frame of PVC pipe with the yabbies held inside. Floating trays are usually smaller and more manageable. There are many designs available to suit specific needs. Don't re-invent the wheel. Ask a processor, an experienced yabby farmer or the local Fisheries Development Officer.

A cage for holding yabbies in dams or tanks

A sock used for holding yabbies in a dam

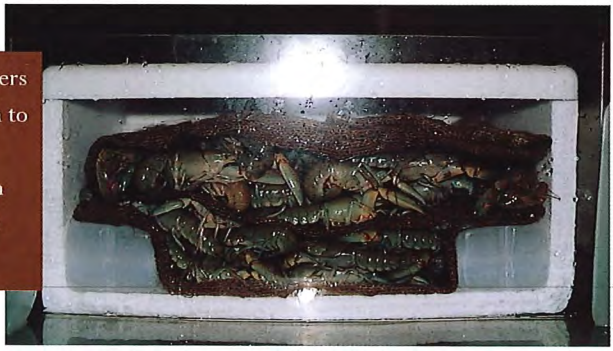
Packaging

Foam boxes play an important part in the handling of yabbies. They are used for keeping yabbies cool and moist, and preventing them from being crushed during transport. Foam boxes are reasonably cheap, easily available and easy to stack.

Sheets of soft foam are ideal for separating yabbies in foam boxes

Ice bottles or ice packs are often used to keep the yabbies cool and moist. Farmers place one or two in each box.

Sheets of foam measuring approximately 375mm wide, 500mm long and 20mm thick are used to separate yabbies when packed in foam boxes. The foam absorbs all excretion and when moist keeps the yabbies comfortable during transport. The foam can be re-used and is relatively inexpensive. Care must be taken to ensure packaging material is clean. If it is being re-used it must be thoroughly washed. Some farmers use hessian instead of foam sheets. Processors will advise of their preference.



Using layers of hessian to separate yabbies in transport boxes

NEVER STORE YABBIES IN A BUCKET OF WATER. THEY WILL DROWN THROUGH OXYGEN STARVATION.

Do not allow the gills to dry out, otherwise yabbies will die. Drive carefully and slowly to prevent excessive bouncing. A smooth ride will minimise stress and damage.

Processors are always keen to demonstrate 'best practice' packaging and handling techniques to farmers

Sanitation

Keep all traps and containers used for harvesting and storage in a clean, dry area. If packaging is to be recycled then make sure it is clean.

KEEP YABBIES OUT OF THE SUN AND OUT OF THE WIND. KEEP MOIST AND COOL WHILE HANDLING.

7.0 Quality assurance

Chemical residue testing

The yabby industry works very hard at maintaining its reputation as a leading international supplier of quality freshwater crayfish, in order to receive the best price for its product.

In late 1994, the European Union indicated that Australian yabby exporters would be required to provide assurance that product met various standards in regard to chemical residues. These residues mainly concern heavy metals, pesticides and herbicides. Historically, these concerns were addressed by the exporting country carrying out surveys to assess any problems and introduce a process which made sure exporters complied.

Survey of product in the yabby industry began in 1996 to ensure yabbies met the standards specified in the Australian Food Standards Code. Should any of the samples fail to comply, the Australian Quarantine and Inspection Service (AQIS) is then faced with the problem of isolating that product and ensuring it does not enter the export system.

If AQIS is unable to exclude ineligible product from the export system, overseas import authorities will deny all imports of that species from that producing country. It does not matter how badly the foreign buyer wants the product, if it is deemed unsuitable by the importing authorities, it will be denied entry to that country.

AQIS inspectors taking yabby samples for residue testing

The process of isolation and exclusion from the export system cannot be achieved without an accurate traceback system to the point of production. Such a system depends upon identification of the product at all stages in the production and marketing processes. If a failed sample is traced back to one farm or a collection of farms, then product from those properties is not eligible to be included in export consignments. These quality standards will soon be imposed on domestic sales as well as export.

AQIS must be able to demonstrate to overseas authorities that we can identify and exclude non-complying product from the export system.

In practice this means that an AQIS officer can enter the distribution system at any point between the farm and the final purchaser of the yabbies and be able to trace that product back to a farm or group of farms simply by the markings on the foam box. It is critical that the yabby industry has a credible traceback system that withstands overseas scrutiny.

FARMERS MUST BE AWARE OF THE NEED FOR PROCESSORS AND EXPORTERS TO BE ABLE TO TRACE PRODUCT BACK TO THEIR PLACE OF ORIGIN

This quality assurance process is an excellent marketing tool. Producers can now assure their customers of a high quality product.

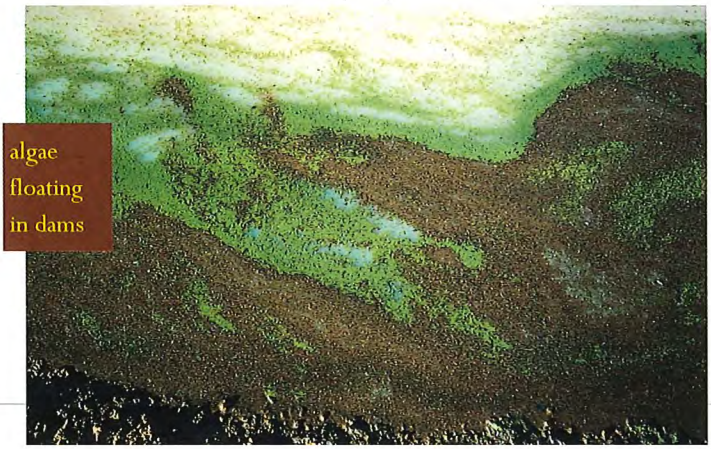
Keeping yabbies free from bacterial contamination

In recent times, high bacteria levels have been found in some holding facilities where yabbies are kept by the farmer before selling to a processor. These high levels of bacteria can affect human health. Farmers and processors have a responsibility to make sure their yabbies are fit for human consumption. Holding facilities must be periodically cleaned.

Algae toxins

Occasionally farmers will notice a bright green algae on the surface of their dam that has been blown to the water's edge by the wind. The type of algae which causes the most concern is the blue green variety, as it can produce a toxic chemical. This chemical can affect yabbies and humans if ingested in sufficient quantities. It is advisable not to harvest yabbies from dams that are suffering from such algal blooms. Care must also be taken to avoid contaminating other dams with the algae.

The algae itself usually floats on the surface as a fine sludge and can often develop an odour.



algae floating in dams

CHEMICALS – BEWARE

Do Not:

- put yabbies in the back of a ute where there have been chemical spills;
- have chemical containers and yabbies in the back of the ute at the same time;
- put chemical dumps above dams;
- spray around dams. Stay wide to avoid drift;
- mix chemicals in the catchment to a dam;
- allow recently drenched sheep immediate access to yabby dams.

Don't put chemical containers and yabbies in the back of the ute at the same time

There are currently no chemicals registered for use to control algae in farm dams that are to be used for yabby production.

BE SAFE BE SAFE

Do not use pesticides or herbicides in dams containing yabbies which are to be marketed

8.0 Water management

It takes at least six months to get farm dams up and running properly. When the dams dry out this process has to be repeated.

Yabby farmers are being encouraged to install roaded catchments on many of their dams in order to avoid them drying out in times of drought.

This also allows farmers to have a continuous supply of yabbies.

Run-off

Paddock run-off (debris) provides a good food source. If excessive debris and manure collects in the dam from paddock run-off, then it is advisable to construct a silt trap in front of the dam.

A silt trap viewed from inside the dam

A silt trap viewed from outside the dam

Dams and roaded catchments

A good roaded catchment will run 30 to 40 percent of the rainfall into the dam. Roaded catchments are easy to install. When deciding on which dams to construct roaded catchments, farmers should take into consideration the following factors:

- The dam should have a minimum size of 2,000 cubic metres. Evaporation rates in most areas of the wheatbelt will result in smaller dams having insufficient water.
- The size of the roaded catchment is dependent upon the annual average rainfall for the area. A common district recommendation is around a one hectare catchment for a 2,000 cubic metre dam.
- The best soil for catchment needs to contain at least ten percent clay within half a metre of the surface.
- The catchment area needs to be as close to the dam as possible.

The construction of a roaded catchment for your dam is a worthwhile investment. Not only will it provide water for livestock during times of drought but it will provide a continuous supply of yabbies to the market.

A roaded catchment for a typical farm dam.

9.0 Practices for healthy yabbies

Keeping your yabbies healthy

Farmers must be aware that yabbies that are harvested from livestock dams may contain relatively high bacterial levels in their bodies. This is not a health risk to the farmer but it can cause problems in the market place when the animal is sold to the chef or processor. The bacteria can actually cause a public health problem. It can also reduce the survival of yabbies in transport. It is therefore necessary to gill wash the yabbies as soon as they are brought to the surface.

This is one of the reasons why yabbies are sent to a processor to be purged. Purging actually refers to the animal emptying its gut and in effect cleaning itself out. The yabbies are obviously not fed and need to be confined in containers off the bottom so they can't feed on faeces and contaminated organic material.

External fouling organisms

Some yabbies are found with very small external organisms on their shells. There are several types that look quite different. None of these present a serious problem unless they reach very large numbers. The two major fouling organisms are:

- a tiny flat worm called *Temnocephala*. The adults can move about on the shell. They lay eggs, on the shell surface, particularly on the underside of the yabby. The eggs from the *Temnocephala* are very hard to remove and if the yabbies are badly infested they should be returned to the dam so that they can moult (produce a new shell).

Temnocephala eggs on a yabby

- a fungal-like growth over the shell of the yabby called *Epistylis*. This appears as a woolly-like growth on the shell, is grey in colour and usually is found on yabbies living in nutrient rich water.

Epistylis growing on a yabby

These organisms appear unsightly when the yabby is cooked and should be removed if possible by bathing the yabbies in a 3% solution of rocksalt for 3 to 4 minutes to kill the adults. Care should be taken that the bath water is clean and well oxygenated. If unsure of the procedure, consult a processor or aquaculture development officer.

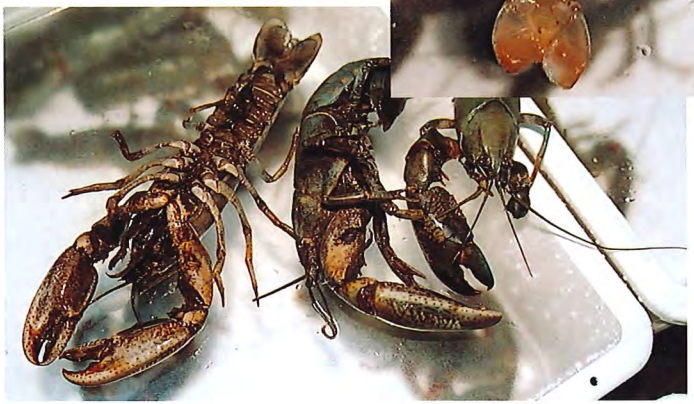
Bacterial infections

Yabbies are easily stressed when harvested and handled during high temperatures. This makes them vulnerable to bacterial infections such as *Vibrio*. This bacteria cannot be seen. The only symptom obvious to the farmer is that the yabbies become very weak and usually die after several days. It is important that farmers or processors do not sell any limp looking yabbies. Gill washing and rinsing is an essential practice, which helps overcome this. It involves immersing the yabbies in clean water as soon as they are brought to the surface so they can flush any bacteria out of their gills. This should be done for at least one to two minutes.

Other health problems

It is important that yabbies leave the farm in good condition. Farmers are encouraged to return yabbies in poor condition to the dam where they can be properly managed for harvesting at a later date. Examples of yabbies that should be returned to the dam include those that:

- are missing claws or legs (below)
- are badly stained (below)
- have tail blister (right).



Health certification

All health certification for yabbies involving interstate or international movement must be performed by a recognised government pathology laboratory. This can be done by the Fisheries Western Australia pathology section, which is located at the Agriculture Department in South Perth.

10.0 Safety

The following safety points are considered important for farmers and members of their family.

- Avoid facing your vehicle into the dam when you stop. Always park parallel to the dam.
- Do not use pesticides or herbicides in dams containing yabbies that are to be marketed.
- Advise others of your movements and plans when going to dams to feed or harvest yabbies.
- When pulling or setting traps always maintain balanced footing.
- When lifting any containers or materials always follow these principles:

- **Do not lift with your back.**
- **Bend your knees to get down to the load then power upwards with your legs.**
- **Hug the load as close as possible to your body.**
- **Never trust your spine when you are carrying a load. Keep your feet, knees and body pointed in the same direction while you lift.**
- **Wherever possible ask someone to help with carrying loads.**

- Carry a second set of warm clothes in the vehicle.
- When walking around the dam use the flat top wherever possible.
- When family members are helping always ensure children are accompanied.
- Life jackets on children and those who have difficulty swimming are a wise precaution.
- When working alone at night it is wise to wear a slim fitting life jacket.
- Anyone with open wounds must ensure they are covered.

11.0 Problems and solutions

The following is a list of common problems and solutions with regard to the condition of yabbies upon arrival at the processing facility.

Problem 1

Yabbies limp or dead in trap.

Solution

Traps may have been thrown too deep into the dam. The water should just cover the trap. The trap should be placed up to three metres out from the shoreline.

Problem 2

Yabbies limp and warm after transport to storage sock.

Solutions

Foam should be placed in the bottom of the box to absorb water draining off the yabbies. Do not use plastic buckets etc., only foam boxes.

Always use ice bottles or ice packs to keep the yabbies cool.

Problem 3

Yabbies dying in sock.

Solutions

The yabbies must be gill washed immediately after being removed from the dam. You should not wait until the yabbies are put into the sock.

Make sure that the sock is not placed too deep in the water.

Don't overload socks.

Make sure the sock is secured to the edge of the dam.

Problem 4

Yabbies arriving at the Processing Facility limp and warm. Some are dead, and more die while at the processing facility.

Solutions

Foam is required in the bottom of the box to absorb excess water.

Ice bottles or ice packs are vital during transport. This helps to keep the yabbies cool and moist, and stops them fighting (which causes limb damage and reduces the yabbies' value).

Foam is required on top of the box and the lid should be taped down.

When yabbies continue to die, it often means that they were not gill washed properly at the dam and not kept cool and moist at all times.

Appendix 1

Objectives of the Code

- To improve the professionalism of the industry.
- To improve the industry's competitive edge in domestic and export markets.
- To increase productivity through better feeding, water quality, management, handling and packaging.
- To provide a training mechanism for the various operators (farmers, harvesters, depot managers), so that a minimum level of standards is maintained.
- To improve profitability through quality assurance (uniform grades, product handling).
- To improve communication within the industry.
- To increase the participation by farmers as a result of the adoption of standardised practices (i.e. shortened learning curve).
- To encourage information to be tailored to the various industry sectors.
- To provide a mechanism of compliance to national and State certification programmes (e.g. National Residue Survey, Health certification, National Food Authority, Chemical Registration Authority). The Code broadly addresses use/non-use and avoidance of chemicals.
- To provide a process by which industry can adopt occupational health and safety requirements of the Department of Occupational Health and Safety of WA (DOHSWA) where it is required.
- Provide consumers with quality assurance (security in the knowledge that producers are complying to a Code).

Appendix 2

Protecting your industry

The yabby in Western Australia is known as *Cherax albidus*. It has very good growing and marketing aspects.

To protect Western Australian yabbies from disease, do not import stock from other areas of Australia into your farm dam.

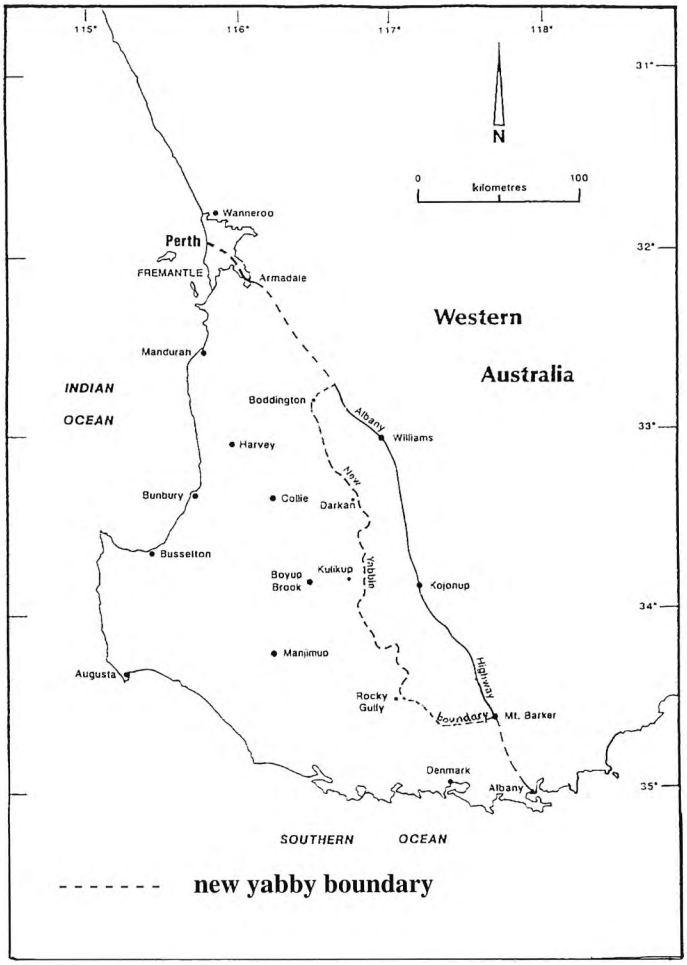
"It is an offence under the 1995 Fisheries Act, to import yabbies into the State without authorisation from Fisheries Western Australia."

Importation of live freshwater crayfish

No yabbies or other freshwater crayfish species are allowed by law to be brought in to Western Australia for stocking purposes unless permission is obtained from the Fisheries Department. Such activity is discouraged by the industry. This precaution is to prevent the introduction of diseases that do not occur in Western Australia. Yabbies can be purchased from a processor or farmers within the State.

BE SAFE BE SAFE

Advise others of your movements and plans when going to dams to feed or harvest yabbies.



NO YABBIES ARE ALLOWED TO BE FARMED WEST OF THE NEW YABBY BOUNDARY

Appendix 3

Salinity chart

The following table shows the approximate upper limits of salinity for yabbies and other farm animals. Note that yabby growth begins to slow above 400 grains per gallon.

	mS/cm	ppm	grains/gal
	1	550	38
human consumption →	2	1100	77
	3	1650	115
	4	2200	154
poultry →	5	2750	192
	6	3300	231
	7	3850	269
pigs →	8	4400	308
	9	4950	246
	10	5500	385
horses →			
yabby growth slows →	11	6050	423
	12	6600	462
	13	7150	500
	14	7700	539
	15	8250	577
beef cattle →	16	8800	616
	17	9350	654
	18	9900	693
	19	10450	731
adult sheep →	20	11000	770

NOTE: These figures are to be used as a guide only.

DAM IDENTITY	JUL 1 2 3 4	AUG 1 2 3 4	SEP 1 2 3 4	OCT 1 2 3 4	NOV 1 2 3 4	DEC 1 2 3 4	JAN 1 2 3 4	FEB 1 2 3 4	MAR 1 2 3 4	APR 1 2 3 4	MAY 1 2 3 4	JUN 1 2 3 4
EXAMPLE:												
Top North 1	(20) △5			△4 ▽3	[5]		[5]		[5]		[5]	

INTRODUCE HAY/STRAW: (15)
Numbers indicate kilograms added.

STOCKING: ▽10
Numbers indicate kilograms stocked

PROBLEM:

FEED GRAIN/LUPIN: [4]
Numbers indicate kilograms of grain added.

HARVESTING: △12
Numbers indicate kilograms harvested.

DATE	DAM NO.	NAME OF PADDOCK/ DAM	NO. TRAPS SET	NO. TRAPS PULLED	KG HARVEST-ED	KG STOCKED	LITRES OF GRAIN FED	NO. OF SQUARE BALES OF STRAW	COMMENTS
EXAMPLE:									
10/9/97		Top North 1	12	12	16	4	10 litres lupins	1 small bale: a quarter in each corner	Overstocked Mostly juveniles. Very clear

Appendix 6

For further information you can contact:

The Secretariat
Yabby Producers Association of Western Australia
P O Box 55, Mt Hawthorn, Western Australia 6016

Ph: (08) 9244 2933 fax: (08) 9244 2934

Fisheries WA Aquaculture Development Officers:

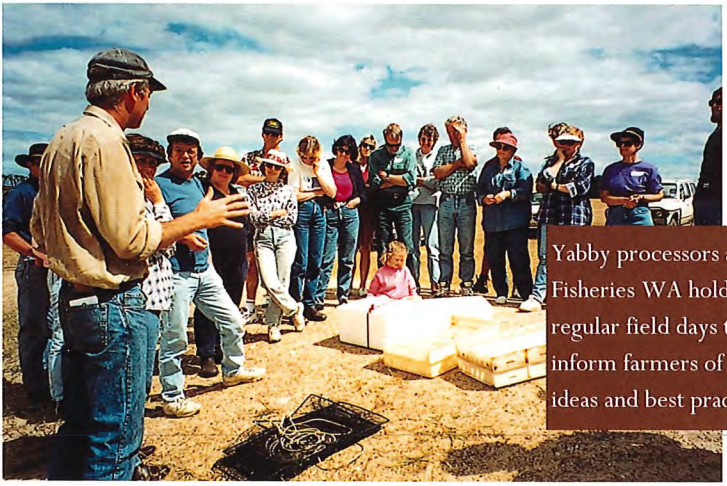
Narrogin	ph (0898) 810222 fax (0898) 811950
Geraldton	ph (0899) 211956 fax (0898) 213617
Albany	ph (0898) 417766 fax (0898) 421112
Perth	ph (089) 4827333

WA Marine Research Laboratories:

ph (089) 2468444
fax (089) 4473062

Fish Health Laboratories:

ph (089) 3683351
fax (089) 6741881



Yabby processors and Fisheries WA hold regular field days to inform farmers of new ideas and best practices.

Glossary

ACWA	The Aquaculture Council of Western Australia (Inc.)
Berried female	a female yabby carrying eggs under her tail
FRDC	The Fisheries Research and Development Corporation (Inc.)
pH	a measure of how acidic or alkaline water or soil is
Sock	a flat bag of shade cloth that is laid on the dam floor or kept afloat by a rectangular frame of PVC pipe with the yabbies held inside
Stocking density	the number of yabbies in a given area; for example; if a 1,000m^2 dam had 2,000 yabbies in it, it's stocking density would be 2 per square metre
Translocated	moved from one waterbody to another; often refers to bringing species into an area where they are not found naturally
Turbidity	a measure of how clear or muddy/milky a dam is
Yabby biomass	the total weight of yabbies in a dam
YPAWA	Yabby Producers Association of Western Australia (Inc.)
Zooplankton	tiny animals that occur naturally in farm dams

Notes

The Code of Practice package includes a manual plus a 30 minute video.

To order another package, please send a cheque for $30 payable to ACWA.

Simply complete the details below and return this form to:

Aquaculture Council of WA
PO Box 55, Mt Hawthorn WA 6016

I require ..... copies of A Code of Practice for the Farming and Handling of Yabbies manual and video @ $30 per package. Please find enclosed a cheque for $..... made payable to ACWA.

Please send to:

Name.....

Address.....

.....Postcode.....

Please print clearly