

CODE OF PRACTICE

for

THE GROWING OF

FRESHWATER CRAYFISH
(YABBIES *Cherax destructor* AND
MARRON *Cherax tenuimanus*)

IN SOUTH AUSTRALIA

1 January 1997

Australian Freshwater Crayfish Growers Association, South Australian Branch
Aquaculture Group of Primary Industries and Resources South Australia
Environment Protection Authority

Preface

This Code of Practice has been developed for the South Australian freshwater crayfish growing industry by the Australian Freshwater Crayfish Growers Association, South Australian Branch (AFCGA-SA), in consultation with the Aquaculture Group of Primary Industries South Australia (PISA) and the Environment Protection Authority (EPA). These bodies form the Freshwater Crayfish Farming Code of Practice Management Committee, reporting to the Minister of Primary Industries.

The code has been prepared to allow for the orderly development of an economically viable, sustainable and environmentally friendly South Australian freshwater crayfish farming industry. It complements the legislative requirements of the State and reflects the requirements of government bodies responsible for administering the industry operations.

The code is not intended to be a rigid document dictating all future industry practice. Indeed, it largely considers environmental impact and, as such, must be considered as a precursor to a more detailed code which will incorporate best management and post-harvest criteria, and public health issues. Therefore the precise structure of the code must remain flexible and be subject to regular review and amendment, initially at intervals of no more than 12 months. All future amendments are to be approved by all members of the Freshwater Crayfish Farming Code of Practice Management Committee.

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1 General

1.1 Rationale

In South Australia there are already over 500 operations registered to farm freshwater crayfish. With the industry continuing to expand rapidly, measures must be taken to ensure that all industry participants operate in a fashion acceptable to the industry, the consumer and to the environment. Increasing public concern with environmental issues and chemical residues means that it is vital for the freshwater crayfish farming industry to maintain and actively promote a 'clean, green, environmentally friendly' status. Such a status will greatly aid industry support, assistance and development opportunities, as well as local and international consumer acceptance.

The adoption of a suitable Code of Practice is considered to be the best way of assuring that the industry develops in accordance with these objectives. Particular attention has been made to issues relating to the prevention of any contamination and the release of exotic species into waterways in South Australia. Such a code should allow the industry to become largely self-regulating and should reduce the need for government monitoring and intervention.

It is recommended that in order to implement best practice principles all growers should prepare a management plan of their operations. This code will form a good basis to develop such a plan.

1.2 Relevant Authorities

The Code of Practice is intended to operate alongside the following:

Licence or Legislative Requirement	Jurisdiction	Agency
Application for Development Approval/Change Land Use— <i>Development Act 1993</i>	Local and State	Appropriate Council or Development Assessment Commission, after referral to Primary Industries South Australia and Environment Protection Authority
Authority to Export a Prescribed Class of Specimens	Commonwealth	Australian Nature Conservation Agency
Registration as an Australian Company	Commonwealth	Australian Securities Commission
Registration as a Group Employer	Commonwealth	Australian Taxation Office
Registration for Sales Tax	Commonwealth	Australian Taxation Office
Reportable Payments Declaration	Commonwealth	Australian Taxation Office
Superannuation Guarantee Scheme	Commonwealth	Australian Taxation Office
Tax File Number	Commonwealth	Australian Taxation Office
Registration of Trade Mark	Commonwealth	Australian Industrial Property Organisation
Environment Protection Act—Multiple Licence	State	Environment Protection Authority
Exemption to Carry on a Prescribed Activity	State	Environment Protection Authority
Dam Permit	State	Department of Environment & Natural Resources—refer to Water Resources Group for advise as to relevant regulatory authority
Licence to Take Water	State	Department of Environment & Natural Resources
Well Construction Permit	State	Department of Environment & Natural Resources
Fish Processor Registration	State	Primary Industries South Australia Fisheries
Licence for Fish Farming— <i>Fisheries Act 1982</i>	State	Primary Industries South Australia Fisheries
Registration as Fish Farmer— <i>Fisheries Act 1982</i>	State	Primary Industries South Australia Fisheries
Registration of Business Name	State	State Business & Corporate Affairs Office
Petroleum Products Annual Licence	State	State Taxation Office
Registration of Rental Duty	State	State Taxation Office
SA Diesel Fuel Certificate	State	State Taxation Office
Registration of Employers	State	Workers Rehabilitation & Compensation Corp

1.3 Compliance with the Code of Practice

Compliance with the Code of Practice will largely be enforced by the industry itself through the AFCGA-SA. However, if an operation refuses to respond to industry demands and is outside associated relevant statutory obligations, the appropriate government enforcement authority can take action. In order to hold membership with the AFCGA-SA, or any affiliated South Australian association, all new growers must comply with the code. Registered crayfish farms in operation prior to the implementation of the code will not be immediately subject its specifications. However, all such growers are to undertake a course of appropriate action so as to conform as closely as possible with this Code of Practice by 31 December 2001.

New operations will have to demonstrate that they will comply with PISA licensing conditions, as reflected in the code, in order to achieve the necessary formal registration from PISA (Fisheries).

Any operation may be subject to inspection by PISA or Environment Protection Authority. Routine inspections will be carried out by appointment where possible. Where environmental harm or breaches of the Environment Protection Act or Fisheries Act is suspected then any operation may be inspected as required.

1.4 Freshwater Crayfish Farming Categories

The freshwater crayfish farming industry in South Australia is very diverse but can be divided broadly into five categories. The categories are differentiated in terms of management practices and the source of water utilised. It is also useful to describe the level of grower effort and control (ie the 'intensity' of each category of operation).

NOTE: Unsealed ponds or channels (from any category), that intercept and exchange with any underground water resource will not ordinarily be approved for registration (see 2.1.4).

Category 1: Swamps, Rivers and Farm Dams

NOTE: Category 1 operations may be exempted from pond construction specifications (see 2.1.2) and from water discharge specifications (see 2.2.3).

~~**Swamps** (Yabbies only): Some growers are able to obtain large, but periodic, catches of yabbies from low-lying swampy depressions after periods of flooding. This system is based upon trap-harvesting and is an opportunistic utilisation of a natural resource. (Very Extensive)~~

~~**Rivers** (Kangaroo Island only; Marron): Under existing fisheries policy Kangaroo Island landholders have the right to harvest wild marron (under an aquaculture permit) from any body of water flowing through their property. Harvesting is primarily achieved with the use of baited traps. This Code of Practice, or the issue of an aquaculture permit, does not sanction any form of modification to natural river or stream systems, including the placement of embankments across watercourses to pond water or the artificial feeding of crayfish in watercourses. (Extensive)~~

Farm Dams (Primarily Yabbies): Farm dams, including stock dams and irrigation dams, represent another case where an existing resource (the dam) can be utilised for crayfish production. Harvesting is achieved primarily through the use of baited traps. Production can be greatly enhanced through regular feeding, appropriate catchment management practices and through the maintenance of good water quality and sediment conditions. However, in order to be considered as a 'farm dam operation' (Category 1), water levels are not to be controlled for the specific purpose of crayfish farming. (Extensive)

Category 2: Purpose-built ponds or channels relying upon seepage from the watertable (Yabbies and Marron)

As these ponds represent a capital investment they tend to be more intensively managed than most farm dams although they also tend to rely largely upon trap-harvesting. Most receive some supplementary feeding and some are constructed to allow for occasional drain harvesting. (Extensive/Semi-Intensive)

Category 3: Purpose-built ponds that rely upon underground water (primarily Yabbies)

These ponds are built to facilitate drain harvesting. A trapping program is generally still incorporated, though the ability to drain ponds is an important management tool that allows for total harvest. Feeding can be achieved by planting and subsequently flooding a fodder crop, by supplementary feeding or by a combination of both these methods. (Semi-Intensive)

Category 4: Purpose-built ponds that rely directly upon water catchment, usually a large catchment dam (Yabbies and Marron)

This system is managed in a similar fashion to Category 3 and is used by growers without access to sufficient underground water. These ponds must be managed more intensively as pond and catchment construction represents a large capital investment. (Semi-Intensive)

Category 5: Tank or raceway systems (Yabbies and Marron)

Attempts are being made at growing crayfish at high densities under controlled tank conditions. (Semi-Intensive/Intensive)

2 Code of Practice

NOTE: The word 'pond' is used below to include all Category 2,3,4 and 5 crayfish holding or production facilities.

2.1 Site Selection and Pond Construction

The selection of a suitable site and appropriate pond construction are vital factors in determining a crayfish farming operation's likelihood of success. These two factors are also crucial in determining the sustainability of a venture and the impact that the operation may have upon the environment. Suitable planning, care and precautions must be exercised before embarking upon a crayfish farming project.

- 2.1.1** Site and construction specifications must comply with local council development and land use requirements.
- 2.1.2** Category 1 operations are extensive projects that use either a pre-existing water resource or a water resource primarily used for another purpose. In the absence of significant structural modification for the purpose of aquaculture, when such sites are used for yabbie (not marron) farming, the operation need not comply with all pond construction specifications.
- 2.1.3** Ponds must be of sound structural integrity and constructed so as not to present a hazard to downstream activities. Ponds must incorporate an adequate combination of the following control systems: freeboard, flood diversion and overflow/spillway outlets. Such systems have to be capable of coping with extreme rainfall events (eg 1:10 year flood).
- 2.1.4** Ponds must be constructed so as to prevent pond leakage from entering into any underground water resource. Where there is the potential for exchange with an underground water resource, ponds should be adequately sealed and incorporate a minimum buffer of one metre between the bottom of the pond and the highest watertable level. (Under some circumstances an exemption to this clause may be granted if a case outlining the grounds for exemption can be demonstrated to the satisfaction of the appropriate authorities) Ponds that are spring fed are not considered to exchange with the spring's source unless the spring periodically exerts a negative pressure and draws upon the pond water. Ponds should also be regularly maintained to prevent animals burrowing into the lining and to prevent cracking of any pond or dam wall.

NOTE: Being able to completely isolate a pond from any uncontrolled interaction with the watertable allows for a greater degree of control or management and is considered to be best practice for all Category 3, 4 and 5 operations.

- 2.1.5** Adequate measures must be taken to ensure that excessive levels of silt or sediment do not enter natural waterways during pond construction or at any subsequent phase of operation.
- 2.1.6** Crayfish farmers must install and maintain adequate security arrangements to prevent the escape or accidental release of exotic species, such as marron, into any South Australian waters.
- 2.1.6a** Kangaroo Island marron growers are exempt from such precautions while neighbouring water ways contain feral marron populations*.

***NOTE:** Should government policy stipulate that marron, an introduced species to South Australia, are to be eradicated from waterways then all growers of this species will be required to install and maintain adequate security arrangements.

Crayfish farmers should also:

- use off-stream water storage wherever possible
- identify and consider all existing (as well as future) downstream water users and neighbouring developments.

2.2 Water Usage and Discharge

South Australian freshwater crayfish farmers use water resources efficiently for the following reasons:

- Water is an essential resource that all primary producers are reluctant to squander.
- Crayfish farmers usually have a limited amount of water at their disposal.
- Good quality pond water generally requires a period of conditioning to suit crayfish aquaculture.
- If water is accessed by pumping operational costs increase with the rate of water turnover.

Consequently most farmers go to great lengths to ensure that their ponds seal properly and when ponds are drained the water tends to be recycled into the pond system or used for irrigation.

When compared with some other agricultural industries the discharge water from crayfish farms is of relatively high quality and, with basic management protocols, is unlikely to detract from other possible water uses, or to cause significant environmental impact.

- 2.2.1** The use of all water resources must conform with any relevant water management plan, which may be prepared by the Local Government, Catchment Board or Water Resources Planning Committee. Activities within prescribed (formerly called proclaimed) watercourse or well areas must also conform with regional water allocation policy.
- 2.2.2** Category 1 operations are extensive projects that utilise either a pre-existing water resource, or a water resource primarily used for another purpose. Because these operations are run at such a low level of intensity the crayfish have a minimal impact upon water quality. Therefore, when Category 1 sites are used for crayfish farming, they need not comply with the following discharge disposal specifications.
- 2.2.2a** In the absence of a water management plan (see 2.2.1), no more than 50% of the average annual runoff expected from a property may be diverted to holding, or storage dams.
- 2.2.2b** The utilisation of water entering the property from upstream sources must conform with appropriate water utilisation policies and not impact upon downstream users.
- 2.2.3** Disposal of discharge water (pond overflow, wastewater and harvest discharge water) must conform with either 2.2.3a or 2.2.3b.

2.2.3a A closed loop water system is to be maintained so that no water is directly discharged from the property (ie water must be entirely recycled into other ponds or used for irrigation or stock watering purposes). Irrigation practices must be appropriate in terms of water volume, salinity and nutrient loadings.

2.2.3b In some circumstances it may be impractical to maintain a closed water system. Some discharge is therefore permitted, providing that appropriate precautions and quality standards are adhered to. The discharge practices deemed appropriate differ according to the discharge category.

Discharge Category A: to rivers, lakes and streams

- Pond design and management must incorporate a sufficient level of on-site water storage to ensure that no water is discharged into a stream or river until the volume of flow of the river is at least twice that of the discharge water. This may be achieved by the provision of additional freeboard (in-pond holding), the construction of out-of-pond storage dams, or by a combination of these methods.
- The discharged water must constitute only winter overflow water and not harvest discharge.
- The discharged water must meet with all of the requirements specified in the Protection of Aquatic Ecosystems (PAE) section of the ANZECC Australian Water Quality Guidelines for Fresh and Marine Waters, or if one or more parameters exceed the PAE specifications, then any such parameter may not then exceed the background level by more than 10%.

Discharge Category B: to underground water

- Where overflow water will directly enter underground water, pond design and management must incorporate a sufficient level of on-site water storage to accommodate 25% of the total, average rainfall for the months of June, July and August, before being allowed to overflow. (*For example, at a location with an average rainfall of 76 mm in June, 87 mm in July, and 73 mm in August, 25% of 236 mm total is 59 mm.*) This level of rainfall buffering will ensure that ponds do not overflow until the land is sufficiently saturated to ensure that discharge waters are thoroughly diluted before entering underground water. The acceptable level of buffering may be achieved by the provision of additional freeboard (in-pond holding), the construction of out-of-pond storage dams, or by a combination of both. The rainfall buffering system must be activated (capable of containing the appropriate amount of rain) by the first of May each year.
- The discharged water must constitute only winter overflow water and not harvest discharge, and meet PAE specifications as for discharge to rivers, lakes and streams (Category A).

Discharge Category C: not directly entering a public domain water resource

- Where discharge water from ponds does not directly contact any surface water or underground water resources, no retention is required. This includes areas where impermeable clay isolates the discharge water and results in the water ponding on the landowners property.

It is *strongly* recommended that dates and details of all discharge events are recorded in a log book.

Sump ponds may prove useful for holding large volumes of water prior to recycling it into aquaculture or irrigation systems.

Settlement ponds, filter zones or on-site wetlands are recommended to reduce the amount of nutrients and suspended solids contained in discharge water.

2.3 Disposal of Solid Wastes

Crayfish farms do not produce large quantities of solid wastes. However, it is advisable to periodically remove some sediment from pond bottoms.

- 2.3.1** Sediment removed from crayfish ponds is not permitted to enter (directly or when suspended in water) any off-site water sources.

Spread sediment on crops or pasture, or incorporate it into further earthworks.

2.4 Use of Chemicals and Medicants

The freshwater crayfish farming industry is fortunate in that the use of chemicals and medicants has been minimal. It is important to ensure that this continues to be the case and that safe farming practices are carried out in the vicinity of the ponds and their water catchments. It should be stressed that freshwater crayfish are very susceptible to many agricultural chemicals, including all insecticides. For this reason alone it is imperative for the grower to incorporate a stringent degree of site management.

- 2.4.1** Growers must ensure that the use of chemicals is minimised.
- 2.4.2** The use of chemicals must meet with the requirements of the National Registration Authority, as well as local and State regulatory agencies.
- 2.4.3** The use of chemicals must not detract from the harvest quality of the product or result in the product exceeding maximum permissible concentrations for chemical residues.
- 2.4.4** Chemicals used directly in the ponds or in the immediate vicinity of the ponds must be recorded in a log book. This record should be available for inspection if required by the regulatory authorities.

2.5 Risk of Escape, Spread of Disease or Colonisation of Exotic Species

The loss of stock provides a strong economic incentive for growers to prevent cultivated crayfish from escaping from the culture ponds.

- 2.5.1** Growers must comply with section 50 of the *Fisheries Act 1982*, which states that growers must prevent escapement of farmed fish (crayfish).

When farming exotic species of crayfish (ie marron) additional security measures must be implemented to prevent escape or accidental release (see 2.1.6).

- 2.5.2** If a serious disease outbreak or epizootic is detected or suspected then PISA Fisheries must be notified immediately.

3 Post-harvest, Occupational Health and Safety, and Marketing Requirements

Post-harvest, occupational health and safety, and marketing components will be written into the Code of Practice after the Western Australian Yabbie Farming Code of Practice is released. The WA code is intended to serve as a template for a National Freshwater Crayfish Farming Code of Practice.

4 Accreditation, Standards and Certification

Compliance with the Code of Practice will permit the freshwater crayfish farming industry to become recognised as a responsible industry that is dedicated to maintaining environmental standards and reducing environmental impacts. The industry can then be promoted as an environmentally sound one, responsive to the concerns of the community and the EPA.

In constructing this document reference has been made to the following standards:

- The International Standards Organisation (ISO) 14000, Environmental Management.
- The British Standards (BS) 7750, Environmental Management Systems.

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