



Hides and habitats for freshwater crayfish

The advantages of providing crayfish habitats and the relative merits of different forms of habitat are issues that have great relevance to all freshwater crayfish farmers. Consequently, this topic has prompted a considerable amount of discussion over recent years. The use of some form of habitat is becoming widely recommended by both the Western Australia Fisheries and Queensland Department of Primary Industries advocating the provision of habitats at all phases of production and growout for both marron and redclaw respectively.

When considering the merits of various materials as potential crayfish habitats, it is important to be aware of the fundamental philosophy in providing habitats. A point that must be stressed is that, although one important function of a habitat is to provide a refuge or a “hide” for the crayfish, it is even more important that the habitat is a three dimensional structure that provides a large amount of surface and extends into the water column.

An appropriately constructed form of habitat will, therefore, increase the surface area directly available to the crayfish. This will effectively decrease the relative stocking density (by surface area rather than by volume), whilst increasing the area available for colonisation by beneficial bacteria and naturally occurring food organisms (biofilms). A habitat should be of a rough, or fibrous texture, to better facilitate the growth of biofilms and to provide adequate traction for crayfish movement. Appropriately constructed habitats will provide the additional benefit of permitting crayfish to inhabit and utilise the water column rather than remaining confined to the pond bottom. Through having access to the water column, the crayfish can more effectively utilise the pond’s resources and be able to select for appropriate temperature, light, dissolved oxygen and nutrient conditions.

As yabbies are capable of burrowing, it is often assumed that they do not require any additional habitat. However, the benefits described above are likely to be just as applicable to yabbie production as to marron or redclaw.

Over the past six or seven years, the redclaw farmers of Queensland have used crayfish habitats extensively. Many redclaw farms consistently achieve yields of 1 to 2.5 t/ha/yr and all of them use some sort of habitat. Tyres are by far the most widely used form of habitat. There are certain problems associated with tyres but they are plentiful and easily accessed. In Queensland there is a \$2.50 dumping fee on each car tyre and, as a result, tyre companies will often truck tyres to crayfish farms free of charge and, in some circumstances, even cut holes in the top and bottom of each tyre and place them in the ponds. There is no doubt that, if correctly stacked, tyres provide an effective form of habitat. However, on the negative side, they can impede water circulation, are heavy, cumbersome, unattractive and are a potential source of pollutants and contaminants. (It is important to note that no detectable build up of chemical residues in crayfish tissues has been directly attributed to the use of tyres as habitat).

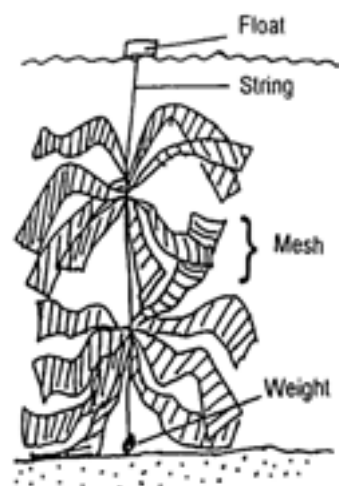
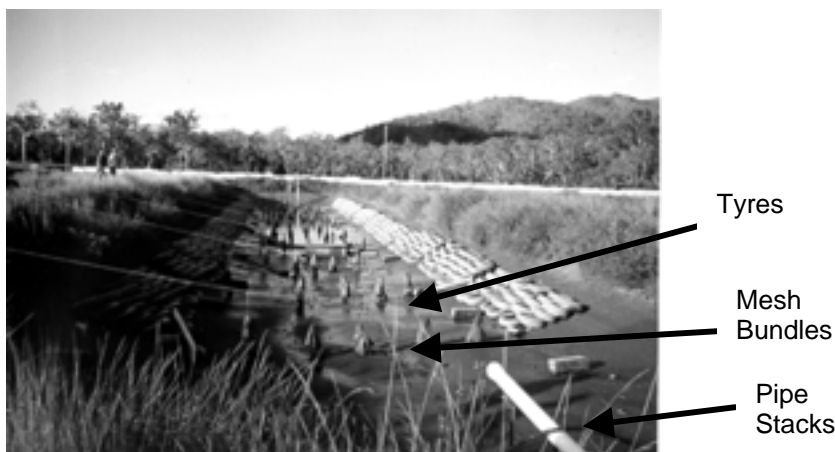
Bundles of suspended onion bags have also proven extremely successful for enhancing juvenile survival and production. Unfortunately, onion bags will eventually fray and entangle larger crayfish.

Other forms of shelters include pipe stacks constructed of PVC pipes, sheets of galvanised iron and even bundles of bushes or tree branches. Care must be taken with the latter as if too many branches are added this may cause oxygen depletion in the pond.

For many years the crayfish farming industry has been looking for an alternative form of habitat that is suitable for adult stock, whilst being long lasting, cost effective and more easily handled than tyres. Recent research, conducted by QLD Dept. of Primary Industries at Walkamin, conclusively shows that a “mesh bundle” (constructed from a fray resistant form of onion bag type material) can be used very effectively to increase production of redclaw in the size range of 15 to 30 grams (Jones & Ruscoe, 1996). In this trial the experimental yield using mesh bundles was 4.3 times that of the no habitat control treatment and was 1.3 times greater than the experimental treatment using tyres.

Such research results are very convincing, but it can not be automatically assumed that these findings can be directly applied to all industry situations. For instance, it is yet to be determined exactly how the habitats used by Jones and Ruscoe would affect the production of a species other than redclaw and whether mesh bundles are equally effective for crayfish at sizes significantly greater than 30 grams. It is, however, encouraging to note that the Fisheries Department of WA advocates the use of a similar form of habitat for marron farming (Morrissy, 1994).

Having now established that under certain circumstances significant increases in production can be directly linked to the provision of habitat, it is now up to the industry and researchers to determine the most effective forms of habitat in terms of economics, species and size class. Ultimately, individual growers will have to run their own small scale trials in order to fine tune a habitat to their own specific requirements and location. It is therefore hoped that the issues discussed above will provide some assistance when considering the vast range of materials and structures that could be utilised in a habitat.



Redclaw pond in QLD showing extensive use of a number of forms of habitat.

Diagrammatic view of a mesh bundle shelter.

References

Jones, C.M. and Ruscoe, I. 1996. Production Technology for Redclaw Crayfish (*Cherax quadricarinatus*). Final Report FRDC Project 92/119. Fisheries Research and Development Corporation, Canberra.

Morrissy, N.M. 1994. "AQUAINFO", Information on Aquaculture from the Fisheries Department of Western Australia, ISSN: 1039-3579, Number: 6.

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Author:

Aquaculture SA.

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