

RBM NEWSLETTER

The Official Newsletter of RBM Aquaculture, Mid West Yabby & Fish Traders and Robert McCormack

Issue 1
September 2005

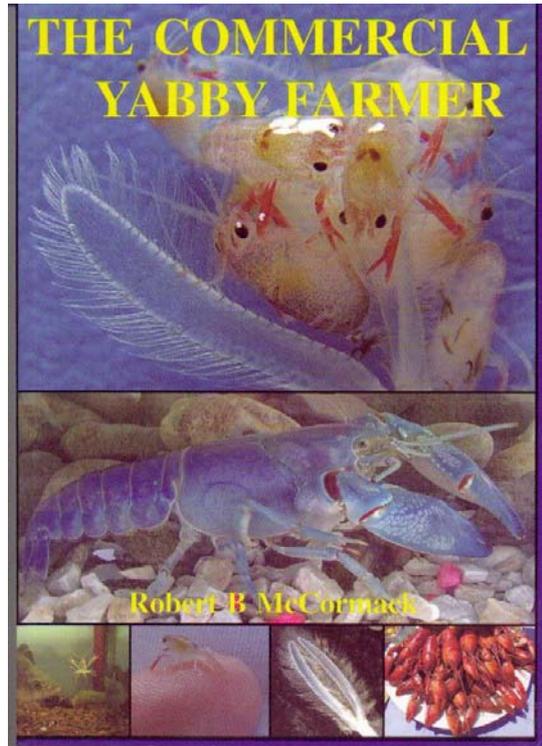
www.rbmaqua.com.au

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The Commercial Yabby Farmer

The latest book on commercial yabby farming hits the bookstands in September 2005. Published by RBM Aquaculture and distributed by Tower Books, this is the fourth book by Robert McCormack on yabbies and yabby farming. This is the most complete and comprehensive book ever written on yabbies and yabby farming. Compiling all you need to know on the latest research and commercial farming methods, this book is a complete A-Z of how to commercially, semi intensively farm yabbies. An absolute must for everyone in the industry or anybody contemplating entering. Indepth coverage of constructing a yabby hatchery, constructing yabby ponds, pond and water quality management, feeding, harvesting, hybrids, genetic selection, predators, diseases, production returns, purging, packaging and marketing, etc.



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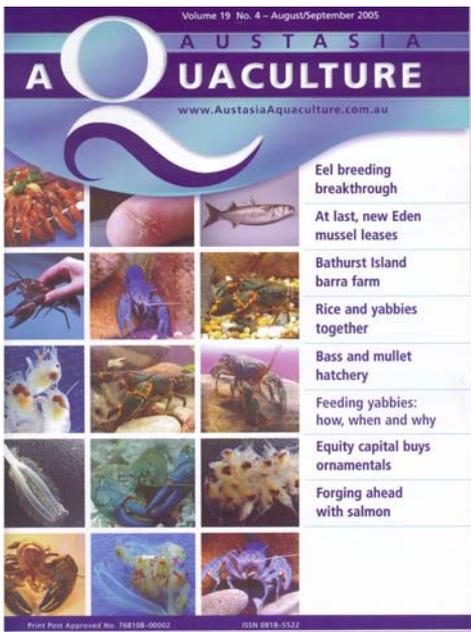
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Australia's leading publication on Aquaculture, Austasia Aquaculture Magazine in their August September issue has featured a full front cover spread of photos supplied by Rob McCormack. Austasia Aquaculture Magazine is published by Turtle Press Pty Ltd in Tasmania and consists of 6 issues per year plus a Trade Directory every year. It covers all aspects of Aquaculture both fresh and salt and is a must for anyone in the Industry. It's a national magazine and the largest of its type in Australia. The magazine for many years in the early 2000s had the same cover every year that featured a yabby at the centre. Nowadays every cover is an individual and for this issue a full spread of some 15 photos supplied from Rob McCormack's photo library have been published. Anyone interested in subscribing check out the web site: www.AustasiaAquaculture.com.au

New species of crayfish found in NSW, Australia

Across Australia there are a vast number of freshwater crayfish and many of these are unidentified and undescribed. Robert McCormack is currently undertaking a survey of all freshwater crayfish in Australia and another new unidentified species is currently under investigation. Robert originally discovered these crayfish some 30 years ago and has over the years done some minor investigations on them but never ever found any information on them. Whilst filming with Darrell Aberheart (Daz) on a TV series called Yabby Dreaming he gave Daz a sample of these crayfish. Daz was in contact with David Royal of Crayfish World who thought that these crayfish were a *Geocherax* species and for quite some time this was what we were referring to them as. Robert sent samples of this species to Chris Austin at Deakin University at Warrnambool for positive identification and DNA testing. Chris is a crayfish guru and has a vast wealth of information on all things to do with freshwater crayfish and was assisting Robert with the identification of crayfish for Roberts "Field Guide of The Freshwater Crayfish of Australia". Chris thought that these crayfish were a *Gramastacus* species and suggested that Pierre Howitz of Edith Cowan University in Western Australia was the best person to contact. Pierre was investigating a similar species from the Wyong area of NSW but had not seen or heard of the Port Stephens animals. Robert has sent him samples and he is comparing the two and will advise if they are the same species or two new species of *Gramastacus* Crayfish. I will give you an update in the next newsletter.



Gramastacus sp. Crayfish

These crayfish are a new species never before identified as occurring in NSW. These are now the smallest species of freshwater crayfish found in Australia only averaging 55 mm long (head to tail) when fully grown. So far they have been identified from two separate isolated locations in NSW. Firstly, from the Myall Lakes National Park in the Port Stephens area and then again in the Wyong area. I have only done an in-depth study on the Myall species, this one lives in the ephemeral swamps surrounding the lakes. They are found throughout the 10,000 hectare region of lakes and swamps that make up this National Park. They are a highly prolific species that lives in high density populations in suitable habitat. They will only survive in the shallow intermittent swamps that dry up. Any permanent water has eels which will rapidly devour the total population of these crayfish. In the shallow ephemeral water eels do not survive, so these crayfish thrive. They do require water to breed and are spring/summer breeders with multiple broods per year of 70 to 100 young per brood. They can start breeding early in August if a mild winter and continue late till March if the conditions are right with plenty of water. No rain, no breeding. They are very small and quite pretty with dark navy blue claws and a tan coloured body, though there is a considerable amount of colour variation between individuals from different swamps.

I have not done much with the Wyong *Gramastacus* species. They look similar but different so they may be the same species or two separate new species. DNA testing will confirm and I will give you an update in the next newsletter after Pierre Howitz at Edith Cowan University advises me. He has samples of both and is working on their identification and description. It may well turn out that these are not even a *Gramastacus* species but something different again. I will give you a photo of both next newsletter and you can make your own decision.



Revision to Giant Spiny Crayfish Knowledge

I need to print a correction to the information I previously have given to the breeding size of the Giant Spiny Crayfish *Euastacus spinifer*. *Spinifer* is the most common species of Giant Spiny Crayfish found in eastern NSW. I have kept them as pets for over 40 years and grown them commercially for 20 years. I have found them to be a fantastic species to culture but an enigma. They occur naturally in NSW from about 10 metres above sea level to over 800 metres in the high country. Lower down close to the coast where the water is warm they can grow to 20 gram in a year but high up over 600 metres it may take 2 years to reach 2 gram. As a species in a river system



they will breed only once per year and 100% of the adult female population breeds within the whole river system from the high country to the low, all at the one time within a 4 week period (possible only 2 weeks or less). I have attempted over the years to try and gauge this event and determine the specific key for the breeding process to commence but only hints at this stage.



However, I have previously stated that the adult female *spinifer* crayfish need to be over 220 gram in size to be capable of breeding and I have always found this to be true over the last 40 years with thousands of crayfish captured. Imagine my surprise when in July 2005 I captured a berried female that only weighed 120 gram. That's not only a small spiny on the scheme of things but half the size of any small berried female I have previously come across. So please revise your notes, I have updated my information on *spinifer* in the Field Guide to minimum breeding size to 120 gram.

New Book goes to Printer.

The newest book on pet yabbies is currently at the printers. Its just a 56 page book which is a complete A-Z on how to keep your pet yabbies healthy and happy in an aquarium or pond. Yabbies make fantastic pets and this book will tell you all you need to get the best out of them, feeding, breeding and growing. Everything from setting up your fish tank to making yabby homes and yabby etiquette. It is centred around the Yabby *Cherax destructor* but also includes some information on other species for the enthusiast.

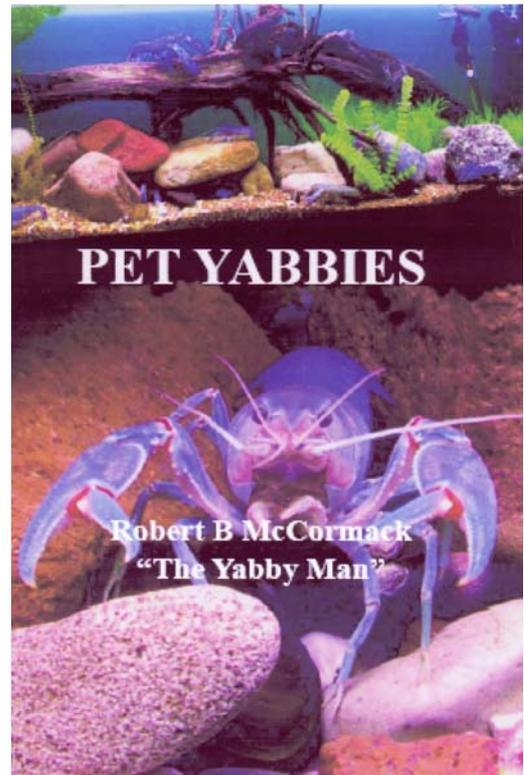
The Redclaw Crayfish *Cherax quadricarinatus*.

Dropped in on Bruce Wells from Crayville Farm at Dondingalong near Kempsey the other week. Picked up some redclaw from him for a photo shoot I was doing. They are an absolutely fantastic crayfish the redclaw. I have kept them as pets and they really do thrive in an aquarium. I



am always

impressed with the feelers on redclaw, they are exceptionally long and they wave them around effortlessly. Just like to take this opportunity to thank Bruce, he grows the best redclaw in the state.



Good Yabby season for NSW

After last years drought that devastated NSW yabby stocks, most people predict a good season this year with farm dams across the state at reasonable water levels for a change. I did a trip out to the family farms at Dubbo catching a few yabbies at the end of August and found the yabby fishing to be good even though it was still cold and early morning heavy frosts were the norm. In NSW there is an old bushie saying that any month with an "R" in it is good for yabbies. Well at the end of August it was real good so September should be fantastic.



Gossip.

Chris Austin one of Australia's leading crayfish experts is leaving Deakin University at Warrnambool and heading to the Northern Territory and Charles Darwin University later this year. From what I hear on the grape vine Charles Darwin Uni has offered him a position as a Professor and pay that Deakin cannot match. Add the warm weather and sunshine plus the progressive nature of the NT Government I expect would all be attractive to Chris. No more cold horizontal Warrnambool rain for him. I wish him the best of luck and good fortune in his new position and location. PS. Heard from Chris, that they have a new \$200,000 DNA sequencer at the Uni so he can keep doing DNA identification of crayfish, also he hopes to get up to New Guinea for some crayfish sampling.

David Royal from Crayfish World dropped in the other day. David has a real passion for crayfish and shares many of my concerns for the future of many of the more unusual species of crayfish. He is a very knowledgeable crayfish enthusiast who impressed me with his wealth of knowledge. I will chase him up in the new year when I start on identifying Victorian crayfish species, he will be invaluable for locating and identifying all the Victorian crayfish species for my field guide. His web site is the best crayfish site on the net so check it out www.crayfishworld.com.

Nick Rayns the Director of NSW Fisheries is leaving his position around mid September. Don't know as yet who will replace him as Director but will give you an update next newsletter. Also the deputy director Richard Sheldrake is moving positions, so a lot happening with our Fisheries Department at the moment. Lets hope it works out for the best.

There was a meeting of the Interim Committee of the NSW Aquaculture Council in August. It was held at Taree council chambers and I was there as a committee member. Still nothing much to tell, progress on the formation of a whole of Aquaculture Peak Industry Body for NSW will go forward a little further. Support to date has been mixed with only one species association the Silver Perch Growers Association, not throwing their full support behind the push. They are not opposing the creation of this body, so that's good and hopefully if it can get up and running with a few runs on the board they may be more supportive of it. Next meeting is in October so will keep you informed.

New Trout farm for NSW. The Watagan Trout Farm is a fully enclosed recirculation system farm located at Brunkerville near Cessnock NSW. This farm is located in the Hunter Valley Tourist region and will supply trout for its onsite restaurant, its fish out pond and local markets. It's early days yet with the plans just being drawn up ready for submission to Council for approval. RBM Aquaculture Consultants are running the aquaculture project so will keep you informed.

Aqua Blue Seafood at Pindimar NSW after a 2 year battle with Great Lakes Council finally got approval for their marine and freshwater. RBM Aquaculture are the consultants designing the farm and arranging approvals. Its been a massive fight for the last 2 years as marine aquaculture is an area that Council had great difficulty with. Also add in to the equation that between the time of submitting the application and receiving the approval they changed that area into a wildlife corridor. Add the endangered species of plant tetraheca juncea occurring on the site that we needed to construct ponds on, all added up to major hassles. However, that battles over and won and pond construction has begun. If NSW Fisheries can renew my broodstock collection permit Neil and I will start breeding Australian bass in September.

Just a note on aerators. I needed a new aerator for my crayfish shed, it runs 26 only 4 inch air stones and I needed a new aerator to replace the existing sakuragowa 150 watt pump I was using but not fully utilising as I was venting the excess air. I had a look around for pumps and ended up purchasing an ACO 818 from Aquasonic Pty Ltd at Wauchope NSW. Cost me \$210 odd dollars and it works like a champ. If you are looking for a cheapish pump that pumps a good load of air

then these seem good so far. Don't know how long it will last, give you an update hopefully many years from now. Check out Aquasonic Pty Ltd www.aquasonic.com.au

I purchased some Prawn Crates from Victorian Mariculture Developments P/L at Allestree in Victoria. Saw an advert for these prawn crates in Austasia Aquaculture magazine only \$3.30 each so I bought 50 of them. Cost me \$70 to get them delivered here but still worked out cheap. I use them to hold crayfish and mussels in my tanks and they work fine for that purpose. Those of you that have asked me if they are any good well the answer is yes.

Yabby Farm for sale at Girvan NSW. Robert Patane (0414-848-364) has his yabby farm on the market. For many of you, you will know it as the old Skelly Place. Anybody interested give him a call or email robertpatane@optusnet.com.au

Rumour has it that John Larkeys Yabby farm is going on the market. John does not live there its just a farm in the bush. He had a robbery I hear and lost everything, his tractors, pumps equipment, etc. so he is now selling the farm.

Had a chat with Bryan Royce of Royce's Crayfish the other day, for those of you who don't know, Sasha is no longer running the farm, he has taken a fulltime position in Sydney. Bryan is now running the farm by himself. Bryan also mentioned that Gordon Stepto's Farm up the road has finally been sold as well.

The Federal Fisheries Minister Senator Ian McDonald has launched the new 2005 to 2010 Aquaplan for Australia. This is a plan designed to protect Australian fish and crayfish from disease threats. I have been very critical of these plans as they do not offer any compensation or insurance to the aquaculture farmers just regulations. Aquaculture farms have aquatic stock in high densities and they send that stock all around the country and or overseas. A disease outbreak on a farm can lead to major problems for both farmed animals and the wild stocks. Australia is the only country crayfish plague free so we need to keep it that way. 10 out of 10 for AQIS for their efforts todate, but we all need to be vigilant and report any foreign crayfish you may see in an aquarium or for sale. All our crayfish both wild and farmed are susceptible to plague and if we have an outbreak all our crayfish are history. All that said the Aquaplan in principle is a great idea. However I have been very critical of the plan as unrealistic. With no insurance or compensation as yet there is no incentive for any aquaculturalist in this country to report a disease outbreak. It is in the farmers interest to go it alone and try and remedy the situation himself to the detriment of the environment but his benefit. If he reports it, his farm is quarantined, so he can not sell anything, all his stock is destroyed and all his water is sterilized, he is out of business and bankrupted as there are no rich crayfish or fish aquaculturalists in NSW they are all doing it hard. Personally I don't think anyone with a disease outbreak is going to alert the authorities, they will only become involved after it's hit the fan big time and the farmer has nothing to loose. I brought this issue up at the last NSW DPI/Industry consultative meeting, but it was not well received by DPI, its just common sense to me, what would you do? Report it right away and lose everything or try and fix it on the QT. Check it out www.daff.gov.au/aquaplan.



The Plough Inn at Bulahdelah had their first Yabbiefest on the 10th September. Steve and Christina Barker from "Yabby Growers and Traders" supplied the yabbies for the whole festival. I dropped in for a look see and it seems a massive success. Congratulations to the plough Inn and Steve and Christina, its certainly raised the profile of yabbies through out the district with all the papers and radio stations there as well as all the locals for a beer and yabby feed.

CSIRO Super Yabbies

Back in 1998 the CSIRO Livestock Industries at Chiswick near Armidale NSW self funded a research project aimed at increasing the productivity of farms through genetic improvement of yabby stocks. They had to self fund this research themselves, as despite full aquaculture industry support they were unable to find research funding.

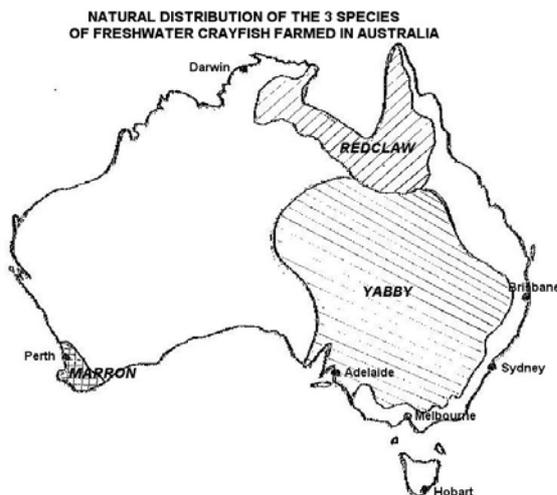
Historically the CSIRO at Armidale started as a sheep research facility in the 1950's. However, due to the decrease in wool and other commodity products that occurred in the mid 1990's the CSIRO was looking for something sheep farmers could diversify into and identified yabbies/aquaculture as the option with the most potential. In mixed farming situations, risk spreading strategies such as diversification outside the traditional commodity mixes, can enhance economic stability and yabbies seemed ideal.

At the time the initial research was instigated, the CSIRO had the success of the West Australian model of farm dam harvesting of yabbies to look at, plus the forthcoming changes to regulations in NSW and Victoria which would allow farm dam harvesting of yabbies to occur in these states, were encouraging. NSW alone has approximately 150,000 hectares of suitable water for extensive aquaculture of yabbies in the western zone. This creates massive potential to increase production of yabbies. Even at low yield rates of 300 kgs/ha/year that is still 45 million kilograms of potential yabbies.

The CSIRO started research in 1998 with four main aims:

- To produce a yabby more suitable for commercial yabby ponds.
- To produce a yabby more profitable to grow commercially.
- To produce a consistent marketable product.
- To explore diversification options (Silver Perch/Murray Cod).

They started with an extensive search for naturally fast growing strains of yabbies. They selected 5 basic strains of yabbies from very diverse environments. From western Queensland, north western NSW, western NSW, the NSW Snowy Mountains and western Victoria yabbies were collected and sent to the CSIRO animal laboratories at Chiswick NSW. They started with these different strains of yabbies but found very early on that 2 of the strains grew exceptionally faster,



compared to the others. Different stains of yabbies from different populations have a remarkable variety of different genetic traits, some of these are advantageous and some are not so attractive. The main trait that the CSIRO was interested in was growth, they did trials between the different strains and selected the two fastest growers which showed the most promise. Now you can speculate on the reason for this but coincidentally both of the faster growing strains were from the upper reach tributaries of the Murray Darling Drainage Basin.

Yabbies are native to the Murray Darling drainage basin of Australia and thrive throughout the whole basin. The Murray Darling Basin covers one seventh of the Australian continent, over one million square kilometres, it includes 20 major rivers including the 3 longest, the Darling 2740 kilometres, the Murray 2530 kilometres, and the Murrumbidgee 1690 kilometres. The two strains selected came from the Warrego River in south west Queensland which is at the headwaters of the Murray River and the Tumut River which is at the headwaters of the Murrumbidgee river.

Yabbies have the annoying habit of migrating up stream, all yabby farmers are familiar with this, if you have ever left a hose running across the grass and into a yabby pond you will be familiar

with yabbies climbing out of the pond following up the water flow back to the hose. In the wild whole river populations migrate upstream in high flow conditions and the stories of massive yabby populations building up below weirs and causeways during the day and then migrating over them at night are all too common in rural NSW. Perhaps the fastest growing strongest yabbies are the ones that live in the headwaters? Are these the strongest, fastest growing best of the best?

The research identified that there are significant differences in growth rates amongst wild populations of yabbies. In fact the two fastest growing populations they evaluated grew up to 42% faster than the slowest one (which by the way is *C. albidus destructor* from the Wimmera region in Victoria). The Victorian yabbies, however, had longer tails than all the other strains. For commercial purposes tail meal is a major consideration as those that savour the flavour of yabbies want bigger tails to get more meat. However, for the CSIRO initial trials they were only selecting for growth.

They selected the 2 fastest growing strains of yabbies (*Cherax destructor*) and in 2000 started a selective breeding program with these 2 varieties. They started with 28 families of yabbies plus controls (over 300 yabbies initially). The controls were grown with the selected families to ensure accurate results, but tagged to identify them. The idea was to use these selected strains as the genetic base for a selective breeding program to further improve growth rates and to use the controls to monitor the progress. The process was quite simple with single sire mating occurring in glass aquariums. This allowed full control of the breeding process and ensured that inbreeding was not a problem. Juvenile yabbies were then raised in the CSIRO hatchery till they were between 0.4 and 1 gram. The juveniles were then tagged with an elastomer insert and transferred to the outside ponds for the growth trials.



The CSIRO has constructed 6 earthen ponds each 0.1 ha in size. The ponds are fenced and netted and are designed to replicate commercial yabby ponds, so results obtained will be the same as those received by industry.

The first F1 generation of yabbies at an average weight of 0.59 gram were stocked into the earthen ponds and grown for 78 days. Overall 62% of yabbies stocked survived and the mean weight of

the crayfish harvested was 30.7 gram. There was a vast difference in individual size with for the males the largest was 52.6 gram and the smallest 16.5 gram. However, the bottom line is that the selected yabbies grew 14% bigger than the controls. The individuals both male and females with the best growth were then selected as broodstock for the next generation.



In 2001, the Rural Industries Research and Development Corporation

(RIRDC) who are supportive of rural industries and had a bit of vision, agreed to fund the CSIRO for an ongoing 3 year research project. This was the same year the first generation of animals were evaluated and selected for growth and progeny. With a bit of support from the RIRDC and lots of

interest and enthusiasm from industry and the community the CSIRO started on the second generation.

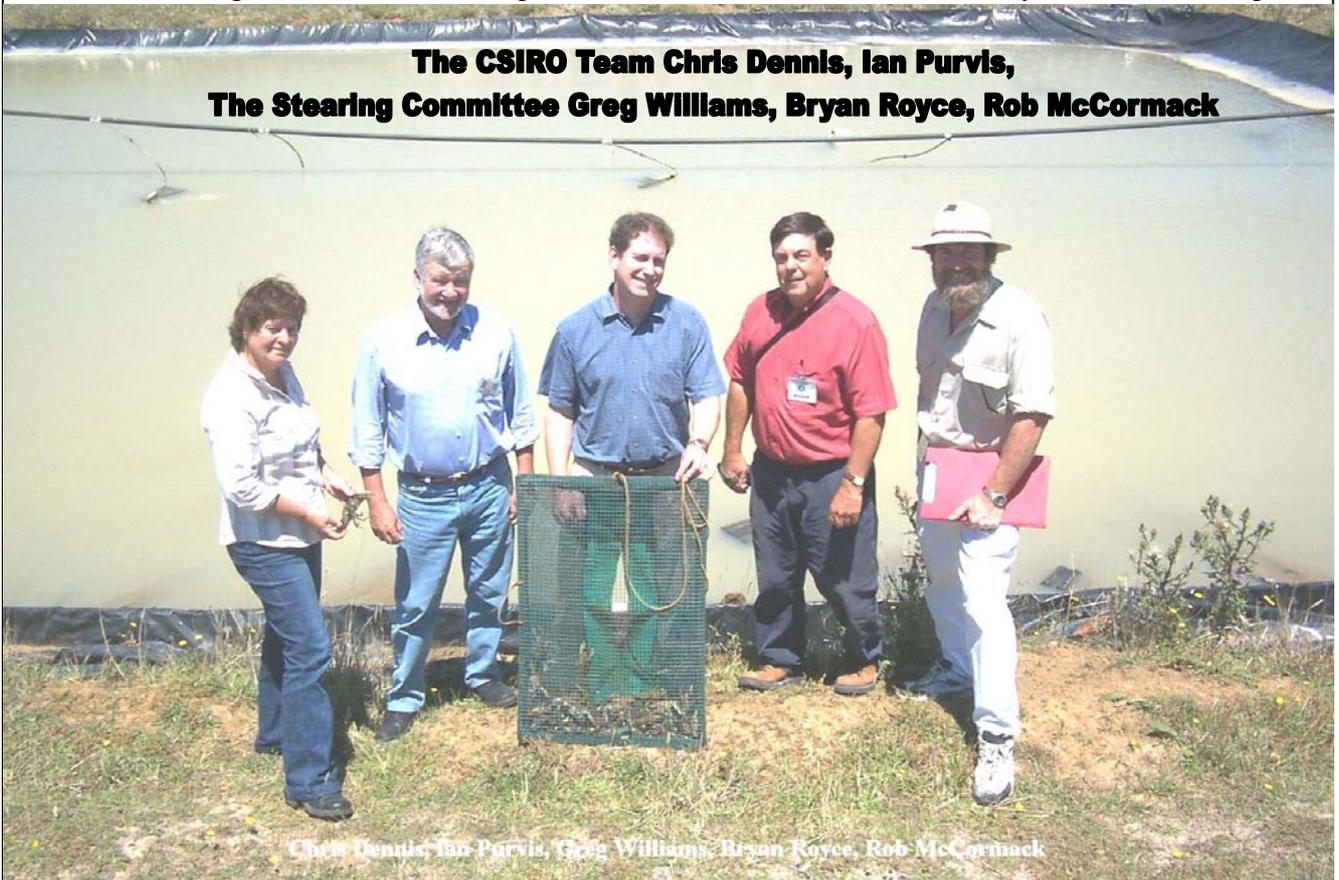
F2 yabbies were hatched in the glass aquariums, grown to an average weight of 0.43 gram, elastomer tagged and released into the ponds in the first week of January 2002. They were allowed to grow for 205 days this time till mid July which is the heart of winter. Survival this time was only 55% all up but a longer grow out time and two months of winter, plus the drought all took a toll. Mean crayfish weight this time was 70.1 gram with the smallest being 43.8 gram and the largest 133 gram. In 2002 this second generation of animals when harvested from the CSIRO earthen ponds and measured for 11 different characteristics. Weight, carapace length, tail length, tail width and claw size, etc. The results are remarkable, in a nutshell the selected yabbies grew much faster than the standard control. As expected female yabbies grew slower than the males but still averaged a 10% increase in growth rate per generation. The big improvement, however, was in the males. Male yabbies in the first generation grew 14% faster than the standard controls. Male yabbies in this second generation grew 14% faster than the controls again. So, in just 2 generations they had a 28% increase in growth rates, imagine what this will be like in 10 generations time.



The best of the animals harvested in July were over wintered in an internal recirculation system and then bred to produce the third generation F3 which went into the ponds at 0.5 gram in mid December. They need to be 0.5 gram to allow tagging for identification to occur. Yabbies were grown in the ponds for 163 days and survival again was 55%. Average mean weight was 64.8 gram and ranged from 55.7 to 105.2 gram.

The F4 generation was also grown but the results are not in as yet. The funding so

**The CSIRO Team Chris Dennis, Ian Purvis,
The Stearing Committee Greg Williams, Bryan Royce, Rob McCormack**



Chris Dennis, Ian Purvis, Greg Williams, Bryan Royce, Rob McCormack

generously supplied by RIRDC has finished so the project is currently being wound up. The last harvest of the F4 generation is proving hard to interpret as initial indications that this generation only had a 10% increase of growth instead of the 14% expected. The problem is that in the pond

this time is a far greater number of yabbies than expected. Uncontrolled in pond breeding is a major problem that plagues the industry. It may be that with these improved strains that because they are growing so much faster, they are now also maturing faster, so breeding earlier and as they are bigger having more young when they breed and those young are growing incredibly fast, so the pond biomass just explodes which strains the available food sources, limiting growth of the pond population as a whole except, for the more aggressive dominant males that still get more than their fare share. This may account for the vast differentiation in size with the F4 generation which varied from 40 gram to 180 gram. Additional variations include a mild winter, drought over summer which was also mild and an earlier initial stocking. I'm only speculating, once all the information is compiled the CSIRO will write a final report and disseminate that information to industry that is anxiously awaiting the information.

This research was spectacular and an eye opener for many yabby farmers. Unfortunately the yabby industry as a whole has not been genetically improving their stock in a consistent manner. Yabbies are in tremendous demand and as a rule every yabby farmer in NSW just never has enough yabbies to meet the overwhelming demand. Most farmers catch their yabbies in yabby traps, these traps tend to capture the larger yabbies. There is a certain amount of yabby etiquette in yabby ponds and it is just common courtesy in a yabby pond to allow the larger yabbies to have a feed first. Now yabbies by character are sneaky, so if a smaller yabby can pinch a bit of food whilst the big boys are not looking they will do so. It is the big boys that feed first as the males are the ones that grow the fastest. When you drop a trap into the pond you capture the largest fastest growing yabbies first and generally it's large ones you need, so these yabbies tend to get sent off to market. Unfortunately this leaves the smaller slower growing yabbies to breed so you are actually selecting for smaller slower growing yabbies. This is a common problem on most farms that do not have specific broodstock ponds.

Now that the CSIRO has finished this research project they not only want to release the research results to industry but they have excess yabbies that they would like to release to the NSW yabby industry. This would be fantastic as these F3 and F4 generation yabbies are like getting a stud bull or ram. You can use these to breed up a whole new generation of improved yabbies. Just one good male can look after dozens of females, so a dozen improved yabbies to every farmer could go a long way to improving the industry as a whole. Unfortunately for some strange reason NSW Fisheries will not allow these yabbies to be released to industry. As President of the NSW Aquaculture Association I am chasing this issue up with NSW DPI Fisheries. 2 letters have been sent to Barry Buffier the Director of DPI and the issue was raised at the last Industry/Fisheries consultative meeting. Negotiations are continuing and hopefully commonsense will prevail in the near future. The situation has been explained to NSW Fisheries and it seems that all the confusion has been eliminated and that the excess yabbies available from the CSIRO will be allowed to be released to industry in the near future. All those of you waiting, keep your fingers crossed.

Though this project has finalised, the CSIRO will not distribute all the yabbies, they will keep some for ongoing research. The current proposed project is to work on cage culture of fish in farm dams with yabbies free ranging in the dam to recycle the fish wastes and any uneaten food. This should allow some further development of their super yabbies, as ultimately the F10 generation is the holy grail. This is expected to be a yabby that will grow from 1 gram to 200 gram in 5 months consistently with a larger tail than the standard yabby. Industry awaits the final CSIRO report and hopefully yabby farmers in NSW will be allowed some improved stock. My thanks to the CSIRO for all their efforts they have put into improving the profitability of yabby farming, we all appreciate their efforts and look forward to the future projects they will conduct. I will give you all another update in the next newsletter.

PS. The DPI has finally responded to my correspondence on release of the CSIRO yabby stock to industry. A copy of the letter is attached. I will have a chat to the CSIRO and DPI and give you an update next issue,



New South Wales

DEPARTMENT OF PRIMARY INDUSTRIES

DF05/465
FM05/1140

5 SEP 2005

Mr Robert McCormack
NSW Aquaculture Association Inc.
PO BOX 3
KARUAH NSW 2324

Dear Mr McCormack

Thank you for your letter of 25 May 2005 and follow up letter dated 11 July 2005 concerning CSIRO selectively bred yabbies being available for use in NSW aquaculture facilities.

The NSW Department of Primary Industries (NSW DPI) has investigated this matter and considers that there is a potential for environmental damage if large numbers of fast growing yabbies were to escape into the environment. They could significantly impact on indigenous stocks of the three genera of freshwater crayfish (*Cherax*, *Euastacus* and *Engaeas*) found in NSW.

NSW DPI has no information on the genetics of the CSIRO selectively bred yabbies.

NSW DPI understands that the current CSIRO offer of selectively bred yabbies is a one-off provision of stock. Therefore, in consideration of the low numbers of stock available from CSIRO in this instance, DPI considers that the translocation of these animals to aquaculture facilities may occur providing:

- A Review of Environmental Factors (REF) is prepared by the possible recipients of the selectively bred yabbies, as directed by NSW DPI (this is not as detailed or costly as an EIS), and
- The outcome of the REF is implemented by the applicants.

If however, CSIRO enters into a partnership with NSW aquaculturalists to further develop or provide more stock than is currently being offered, then further information will be required by NSW DPI to determine the level of environmental assessment required.

If you have any further enquiries please do not hesitate to contact Mr Ian Lyall, Manager Aquaculture on (02) 4916 3856.

Yours sincerely

B D BUFFIER
DIRECTOR-GENERAL