

CONFIDENTIAL

Scientific Advisory Committee
c/- SAC Executive Officer.
Martin O'Brien
Executive Officer, Scientific Advisory Committee
Department of Sustainability and Environment
2/8 Nicholson St. East Melbourne 3002
martin.o'brien@dse.vic.gov.au

NOMINATION NUMBER 809

Dear Person,

I believe that any Fishing Regulation that does not require the return of berried females and does not require Fishermen to be able to distinguish between different species is a **potentially threatening** process for those species that are protected. Potentially = possible as opposed to actual.

Overfishing has been proven to be an actual threatening process. This is why we have decreasing catch limits or increased catch sizes. My argument is that increasing the daily take of shrimp by 20 times with no scientific data to show sustainability is a mechanism for overfishing or an actual threatening process.

Without scientific data it is difficult to show whether a species population is in decline. The only information that we get is that they are widespread. I will argue that if lakes, dams, creeks and ponds have dried up which then results in decreased habitat then a **loss of habitat results in a population decline** of the species that occupy that habitat. Therefore due to the prolonged drought, shrimp populations have been on the decline. I find the following statement puzzling "However no case was clearly made in the nomination that showed how overfishing of native shrimp either poses or has the potential to pose a significant threat to the survival of two or more Victorian species....." Overfishing is an established threatening process which results in the decline of a species. Many fish are now endangered by overfishing. Reducing a food source will result in a decline in population of species that require that food source.

Fisheries Victoria increased the daily take of shrimp by Recreational Fishers by approximately 20 times with no Scientific Data to justify the increase. How about the following wording "*However no case was clearly made in the nomination that showed how increasing the daily take limit of shrimp by 20 times constitutes overfishing of native shrimp either poses or has the potential to pose a significant threat to the survival of two or more Victorian species*"

I believe that all I need to show is that increasing the daily take of shrimp by 20 times with no scientific data to show sustainability is a potentially threatening process that will impact on species that rely on shrimp for a food source and on two species of shrimp one of which is protected in Victoria, namely Riffle Shrimp (*Australatya striolata*) and the other which is not listed being Glass Shrimp (*Paratya australiensis*).

The drought has left many areas dry so I can comfortably say that shrimp populations have been on the decline. Fisheries Victoria has not provided scientific data to show current population densities before the increase.

Clarifying the statement "The concern was based on the premise that harvesting large numbers of shrimp will impact on the survival of the species and that this could lead to a dramatic reduction in shrimp populations, especially during recent dry periods and climate change". To increase a fishing limit by 20 times with no scientific data to support the increase is a potentially threatening process that will impact on the survival of a least two Victorian shrimp species and native fauna that feed on shrimp.

Fisheries Victoria changed the limit from 100 shrimp to 0.5 litres of shrimp to simplify the regulation. There was no scientific data which examines the impact that this might have on the ecology. If there is no scientific data available to show the impacts increasing the limit may have, I feel it appropriate that mathematical calculations can be used to show a potentially threatening process.

WHY INCREASE THE DAILY TAKE OF SHRIMP BY RECREATIONAL FISHERS BY 2000%+ WITH NO SCIENTIFIC DATA TO SUPPORT THE INCREASE?

Calculations based on practical test.

A practical test showed that there was over 400 glass shrimp occupying a volume of 100 ml.

Under the Fisheries (Shrimp) Notice No. 11/2009 Recreational Fishermen are entitled to a daily take of 0.5 litres (500 ml) per person per day.

This is $400 \times 5 = 2000$ per person per day. An increase of 20 times the old limit of 100 per person per day.

If we consider a reasonable density of 100 shrimp occupying an area of 1 m^2 .

Then 2000 shrimp would occupy 20 m^2 .

If 1% of recreational fishermen caught their shrimp entitlement 1 day per month they would strip approximately $1,730,400 \text{ m}^2$ of waterways and ponds of shrimp per year.

721,000 Recreational Fishermen in Victoria.

$1\% = 7210$.

$7210 \text{ RF} \times 12 \text{ Days} \times 20 \text{ m}^2 = 1,730,400 \text{ m}^2$ of area.

These calculations are only presented to highlight the need for accurate Scientific Data which should be provided as compulsory when any fishing limit is increased.

Is there a requirement to return berried females?

If 10% of the shrimp were berried would this impact on population numbers.

Is there a requirement to be able to distinguish between shrimp species taking note that some are protected.

Recreational Fishers are permitted to take all Shrimp species with no requirement to be able to distinguish between species. The shrimp species coloured red is of concern.

Scientific Name Common Name FFG EPBC

Advisory List of Threatened Invertebrate Fauna In Victoria - 2009

Phylum Arthropoda–Subphylum Crustacea (crustaceans)

Extinct

Crenoicus mixtus phreatoicid isopod

Critically Endangered

Engaeus sternalis Warragul Burrowing Cray L

Engaeus urostrictus Dandenong Burrowing Cray L

Gramastacus insolitus Western Swamp Cray L

Endangered

Austrogammarus australis Dandenong Freshwater Amphipod L

Engaeus curvisuturus Curve-tail Burrowing Cray L

Engaeus hemircirratulus Gippsland Burrowing Cray

Scientific Name Common Name FFG EPBC

9

Subphylum Crustacea (crustaceans) (cont.)

Endangered (cont.)

Engaeus karnanga South Gippsland Burrowing Cray

Engaeus merosetosus Western Burrowing Cray

Engaeus phyllocercus Narracan Burrowing Cray L

Engaeus rostrogaleatus Strzelecki Burrowing Cray L

Engaeus tuberculatus Tubercle Burrowing Cray

Engaeus victoriensis Foothill Burrowing Cray

Euastacus bispinosus Glenelg River Spiny Cray L

Euastacus crassus Alpine Spiny Cray L

Euastacus diversus Orbost Spiny Cray L

Euastacus neodiversus South Gippsland Spiny Cray L

Geocharax falcata Western Cray

Geocharax gracilis Otways Cray

Vulnerable

Athanopsis australis Southern Hooded Shrimp L

Australatya striolata Eastern Freshwater Shrimp L

Austrogammarus haasei Sherbrooke Amphipod L

Calamoecia australica calanoid copepod

Calamoecia expansa centropagid copepod

Canthocamptus dedeckeri harpactacoid copepod

Colubotelson joyneri phreatoicid isopod

Colubotelson searli phreatoicid isopod

Engaeus australis Lilly Pilly Burrowing Cray I

Engaeus fultoni Otway Burrowing Cray

Engaeus mallacoota Mallacoota Burrowing Cray L

Engaeus sericatus Hairy Burrowing Cray

Engaeus strictifrons Portland Burrowing Cray

Euastacus bidawalus East Gippsland Spiny Cray

Euastacus claytoni Clayton's Spiny Cray

Euastacus yanga Variable Spiny Cray

Eucalliax tooradin ghost shrimp L

Gariwerdeus beehivensis phreatoicid isopod

Gariwerdeus ingletonensis phreatoicid isopod

Gariwerdeus turretensis phreatoicid isopod

Michelea microphylla ghost shrimp L

Naiopegia xiphagrostis phreatoicid isopod

Phreatoicopsis raffae phreatoicid isopod

Phreatoicopsis terricola phreatoicid isopod

Synamphisopus ambiguus phreatoicid isopod

Synamphisopus doegi phreatoicid isopod

Near Threatened

Euastacus armatus Murray River Spiny Cray

Subphylum Crustacea (crustaceans) (cont.)

Data Deficient

Boekella nyoraensis calanoid copepod
Canthocamptus longipes harpactacoid copepod
Canthocamptus mammillifurca harpactacoid copepod
Canthocamptus sublaevis harpactacoid copepod
Cherax destructor albidus Common Yabby subspecies
Fibulacamptus gracilior harpactacoid copepod
Miralona victoriensis cladoceran

THE FOLLOWING IS A SECONDARY LIST FOR INTEREST.

Flora and Fauna Guarantee Act 1988 – Threatened List – May 2010

Invertebrates

Annelids

Megascolides australis Giant Gippsland Earthworm

Crustaceans

Athanopsis australis Southern Hooded Shrimp
Australatya striolata Eastern Freshwater Shrimp
Austrogammarus australis Dandenong Freshwater Amphipod
Austrogammarus haasei Sherbrooke Amphipod
Engaeus curvisuturus Curve-tail Burrowing Crayfish
Engaeus mallacoota Mallacoota Burrowing Crayfish
Engaeus phyllocercus Narracan Burrowing Crayfish
Engaeus rostrogaleatus Strzelecki Burrowing Crayfish
Engaeus sternalis Warragul Burrowing Crayfish
Engaeus urostrictus..... Dandenong Burrowing Crayfish
Euastacus armatus Murray Spiny Cray
Euastacus bispinosus Glenelg Spiny Cray
Euastacus crassus Alpine Spiny Cray
Euastacus diversus..... Orbost Spiny Cray (listed as Orbost Spiny Freshwater Crayfish)
Euastacus neodiversus South Gippsland Spiny Cray

Flora and Fauna Guarantee Act 1988 – Threatened List – May 2010

Page 6

Eucalliax tooradin.....ghost shrimp species
Gramastacus insolitusWestern Swamp Cray
Michelea microphyllaghost shrimp species

SUMMARY

There is no requirement to return berried females.

There is no requirement to be able to distinguish between shrimp species.

A loss of habitat due to the drought has caused a decline in shrimp populations.

There was no scientific data to show sustainability with the increased take limit.

The increase in the daily shrimp take was to simplify a regulation.

Increasing a limit by 20 times with no scientific data to justify the increase will result in a potentially threatening process affecting more than 2 species.

In my opinion,

SAC comments *“However no case was clearly made in the nomination that showed how “Overfishing of native shrimp either poses or has the potential to pose a significant threat to the survival of two or more Victorian species or any community as required under the Flora and Fauna Guarantee Regulations 2001 was not provided” is not justified,*

and I therefore do **not** support SAC’s Preliminary Recommendation to reject the nomination.

Yours Sincerely

CONFIDENTIAL

Full Name:

Complete Contact Address:

Email Address:

Signed:

Bait on

AN AUSTRALIAN tourism campaign advertisement that ran in the US some years ago featured comedian Paul Hogan putting "another shrimp in the barbie."

Shrimp on the barbie was about matching the local language, as the shrimp were actually prawns, it's just that some countries such as the US refer to both creatures as shrimp.

To be fair, the differences are anatomical and most of us simply couldn't be bothered defining them.

Depending on your point of view, shrimp are either bait or food for the table.

It is about perceptions: most Australians would probably shy away from eating "shrimp" but be prepared to gorge themselves on prawns.

Having sorted out the differences, let's deal with the bait version that is shrimp.

Some things in fishing that are universal, crossing the barrier between salt and fresh water, and the humble shrimp is a creature with universal application.

In tropical climates, shrimp or prawns are the universal estuary bait used to catch barramundi, mangrove jack and just about anything else that swims.

Southern anglers fishing freshwater use them as bait for species that includes Murray cod, redfin, trout and yellowbelly.

In salt water, the shrimp is popular bait for estuary fish such as beam, whiting, mullet and trevally.

In northern Australia, anglers set pots to catch cherabin, which they call a freshwater prawn.

Avid fishing magazine readers could be forgiven for thinking everyone fishing for barramundi in the Northern Territory uses lures.

In fact, there are a great many anglers who prefer bait and cherabin is a favourite.

It is no different down south, where fish such as Murray cod and yellowbelly are as keenly sought on shrimp as on lures.

In lowland rivers, such as the Aire and Gellibrand, flowing from the Otway Ranges, shrimp is popular bait for both trout and dream.

To gather shrimp, a fine mesh net is employed, and this is swept through the watercress along the riverbank.

Most of the shrimp in these water are about 20-25mm.



Steve Cooper

On the line



Cherabin: A freshwater prawn or shrimp is a popular bait for barramundi.

To fish them, thread about half a dozen on to a No. 4 hook.

The shrimp are usually too small to thread longitudinally, so the hook passes through the middle of the shrimp at right angles to their bodies.

This is a standard method of hooking shrimp, one I was first shown when fishing for bream in the Toorloo Arm of Lake Tyers in Gippsland.

A method I came across in western Queensland is to attach the crustaceans with a drop of super glue.

The anglers, fishing for yellowbelly in coffee coloured waterholes, claimed a better hook up rate.

Shrimp come in all sizes, from monster 10cm beauties at Lake Mulwala to the smaller, five to a hook, varieties in southern rivers and estuaries.

In between, there are slightly larger variations around piers, boat ramps and more northern rivers like the Murray.

There are other ways to catch shrimp. Near piers, use a hoop net with a piece of meat tied to the middle. This is lowered into the water and left there for an hour or so, depending on how

another barbie



Shrimp catch: Leave a shrimp trap in the water for a couple of hours and a handful of shrimp is the reward. Large shrimp (left) used as bait is an enticing offering for a Murray cod or yellowbelly.

At Mulwala, some anglers take a leafy branch off a gum tree and place it in an old drum near a weed area.

Shrimp will use it as shelter and grip to the gum. When you remove the gum, you have your bait.

In some Gippsland estuaries, anglers will do a similar thing with tea tree, although most simply lie the tea tree branch in the water then lift it out later on and give it a shake and gather the shrimp as they fall out.

An alternative method is to use a shrimp trap.

These are cone shaped, with a join in the middle and a hole at each end to allow the shrimp to enter.

Take a chop or piece of meat; place it inside the trap and then set the trap alongside some reeds or submerged timber.

The longer you leave the trap in the water, the more shrimp you are likely to catch.

When camping, it is a good system to leave the trap in the water most of the time, taking just enough shrimp out for bait as you require them.

many shrimp are about.

When you think the time is right, it is a simple matter to raise the net and collect the shrimp.

If you put the net on the bottom it will also attract crabs, so

if it is just shrimp you are after, keep it off the bottom and close to the pilings if you are working from a pier.

The second method is to use a shrimp net. Shrimp shelter under vegetation along river banks

and estuaries.

The weed growth that gathers near boat ramps is often a productive area.

You simply push the net through the water, into the weed, and then lift it out.

Version No. 002
Flora and Fauna Guarantee Regulations 2001
S.R. No. 147/2001

Version as at 22 February 2008

Flora and Fauna Guarantee Regulations 2001

S.R. No. 147/2001 **Sch. 2**

11 In the case of any potentially threatening process

- (1) A statement identifying the potentially threatening process.
- (2) The statement must—
 - (a) specify the potentially threatening process in accordance with a relevant text or reference; or
 - (b) describe the potentially threatening process in such a way that it is distinguishable from all other potentially threatening processes.
- (3) The potentially threatening process must be described as a process and not as a cause or a symptom of a process.

12 In the case of a potentially threatening process nominated for addition to the Processes List

- (1) Evidence showing that primary criterion 5.1 or 5.2 in Schedule 1 is satisfied by the potentially threatening process.
- (2) The evidence must indicate—
 - (a) the range of flora or fauna affected or potentially affected; and
 - (b) the significance of the threat which the potentially threatening process poses or has the potential to pose.

Taxa or communities affected	<i>List individual taxa, functional groups of taxa or communities affected by this potentially threatening process.</i>
<p>Glass Shrimp (<i>Paratya australiensis</i>) Riffle Shrimp (<i>Australatya striolata</i>) Platypus, Birds and Fish.</p>	
Significance of the threat	<i>Indicate the significance of the threat, in terms of its scale and/or severity. Indicate how the potentially threatening process is operating now and/or is expected to operate in the future.</i>
<p>The significance of the threat is a dramatic reduction in shrimp populations especially during this extended dry period and climate change. Shrimp are a food source for other species which will also be affected.</p> <p>A practical test showed that there is approximately 2000 shrimp that will occupy 0.5 litres. That is an increase of 20 times in the allowable daily take by recreational fishermen. Some calculations to show a simple scenario since there is little scientific data available. If we consider 100 shrimp to occupy an area of 1 m² then 2000 would occupy 20 m². If 1% of recreational fishermen caught their shrimp entitlement 1 day per month they would strip approximately 1,730,400 m² of waterways and ponds of</p>	
Eligibility criteria	<i>Indicate which of the primary criteria and sub-criteria stated in the Regulations the potentially threatening process satisfies, on what evidence the case is based and cite the sources of this evidence. The evidence may have been presented in full in the preceding sections, but, in this section, a summary of the logic of the case should be provided. Unsupported statements which need to be verified delay the SAC's consideration of the nomination.</i>
<p>5.1 <i>the potentially threatening process poses or has the potential to pose a significant threat to the survival of a range of flora and fauna.</i> Allowing recreational fishermen to take a huge increase in the daily take of swimmer shrimp without providing supporting scientific data as to the sustainability of the increase in regards to the removal of a food source for native fauna has the potential to deplete their numbers and have broader ecosystem impacts especially during a drought period.</p> <p>5.1.1 <i>the potentially threatening process poses or has the potential to pose a significant threat to the survival of two or more taxa;</i> Since there was no scientific data attached to the increase of the daily take of swimmer shrimp by Recreational Fishermen. A simple mathematical calculation as above can show the potential impact the increased daily take can have on this resource.</p> <p>5.1.2 <i>the potentially threatening process poses or has the potential to pose a significant threat to the survival of a community of flora and fauna.</i> Shrimp are a food source for many other species of fauna. Unmonitored fishing of large numbers will impact on the survival of these species. Shrimp also exist to play an important part in the ecology of a water system where other species co-exist.</p> <p>5.2 <i>the potentially threatening process poses or has the potential to pose a significant threat to the evolutionary development of a range of flora and fauna.</i> Where there is an action there is a reaction. Remove or reduce a food source will result in the reduction in numbers or the average size of a species that rely on that food source. If one food source is removed or reduced then an alternative is sought. This can cause a change in habit or method of searching for food. For example switching focus from a free floating food source to a surface or burrowing food source. This could cause an increase in the damage to vegetation, soil erosion and water quality.</p> <p>5.2.1 <i>the potentially threatening process poses or has the potential to pose a significant threat to the evolutionary development of two or more taxa;</i></p> <p>5.2.2 <i>the potentially threatening process poses or has the potential to pose a significant threat to the evolutionary development of a community of flora and fauna.</i> There is a significant threat to the evolutionary development to a community of fauna and flora. Reducing a specific food source will result in fauna searching for an alternative which can result in a change to a species range. This can then impact on other species. Less shrimp results in less fish that eat shrimp which results in less birds that eat fish etc.</p>	



**FLORA & FAUNA
GUARANTEE**

NOMINATION NO. **809**
PTP

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE
PRELIMINARY RECOMMENDATION ON A NOMINATION FOR LISTING

**Overfishing of native shrimp (*Paratya australiensis*)
under Fisheries (Shrimp) Notice No. 11/2009
(Potentially Threatening Process)**

Date of consideration: 11 February, 27 April, 19 July 2010 **File No.:** FF/54/3190

Validity: The nomination is for a valid item

Prescribed Information: The prescribed information was provided.

Name of the Nominator is adequately provided.

Name and Description of the process:

In the opinion of the SAC the process is adequately defined and described.

The nominated process is defined as the 'Overfishing of native shrimp (*Paratya australiensis*) under Fisheries (Shrimp) Notice No. 11/2009'.

The Atyidae are an ancient family of decapod freshwater shrimps with a wide distribution on all continents except Antarctica. Australian atyid shrimps are all small in size, being less than 35 mm in length (except *Australatya striolata* which reaches 60 mm). Most atyid shrimps feed by scraping food particles of rocks and plants using the brush-like setae on the claw-tips and their front legs (ABRS 2010). These setae are a feature of the group. Atyids are often very abundant in freshwater systems and are thought to play a key ecological role in food webs as large sources of production, important consumers of algae and fine particulate matter and an important food source for predators. Their presence or absence can affect the environment of an entire system by mediating the overall level of biomass and the amount of vegetation.

Paratya australiensis is the most common atyid shrimp in south-eastern Australia with its mainland distribution extending from South Australia to southern Queensland (Williams 1977). It is also found in Tasmania (Walsh & Mitchell 1995). The species inhabits a wide variety of permanent inland waters such as coastal streams, rivers, lakes, farm dams and ponds (Williams 1977) but is also common in estuaries of western Victoria (Walsh & Mitchell 1995) where adults are most abundant in low salinities among submerged, leafy macrophytes (seagrass meadows). Walsh and Mitchell (1995) suggested that given the extensive coastal distribution of *P. australiensis*, that many Australian estuaries would support abundant populations of the species during at least part of the year.

Known as 'Glass' or 'Swimmer Shrimp' amongst fisherman *P. australiensis* are an important food source for many fish and other animals. They are prolific breeders, growing quickly and producing many thousands of young under suitable conditions.

Harvesting of all shrimp species (including Bass Yabbies Callinassidae species) by recreational fisherman for bait is managed under the Victorian *Fisheries Act 1995* and associated Fisheries Regulations 2009. In 2009 the regulations covering harvesting of shrimp for bait were amended (Fisheries (Shrimp) Notice No. 11/2009). This meant the allowable daily take of Glass Shrimps was altered from 100 per person per day to 0.5 litres per person per day (Fisheries Regulations 2009). The daily bag limit for burrowing shrimp (all species including Bass Yabbies) remains at 100 per person. These changes were introduced by Fisheries Notice and remain in force until November 2010 (DPI 2010).

The nomination was concerned about allowing recreational fishermen to increase their daily take of glass shrimp without providing supporting scientific data as to the sustainability of this change and its impacts on aquatic environments. The concern was based on the premise that harvesting large numbers of shrimp will impact on the survival of the species and that this could lead to a dramatic reduction in shrimp populations, especially during recent dry periods and climate change.

Additional Information

- The ghost shrimps *Trypaea australiensis* and *Biffarius arenosus* are distributed widely along the south and east coasts of Australia where they dominate benthic, soft sediment marine habitats (Poore and Griffin 1979). In Victoria these shrimps occur in Western Port (Butler *et al.* 2009) amongst other locations in the state.
 - In Australian subtropical marine environments harvesting of ghost shrimp for bait by recreational and commercial fishers is known to cause significant but localised impacts on a limited range of benthic fauna in unvegetated sediments (Skilleter *et al.* 2005). These authors showed, however, that ghost shrimp populations were resilient to harvesting over extended periods of time.
-

Decision of the Scientific Advisory Committee

The Scientific Advisory Committee (SAC) has assessed the information provided with the nomination, the literature references and additional expert advice and has drawn the following conclusions.

The SAC noted that there appears to be little or no monitoring of the harvest of any shrimp for bait in Victoria and that no additional evidence was presented that indicates population decline of this widespread species. The nomination identified Glass Shrimp, Riffle Shrimp (*Australatya striolata*), Platypus (*Ornithorhynchus anatinus*), unidentified birds and unidentified fish as species threatened by the process of overfishing of native shrimp. However, no case was clearly made in the nomination that showed how overfishing of native shrimp either poses or has the potential to pose a significant threat to the survival of two or more Victorian species or any community as required under the Flora and Fauna Guarantee Regulations 2001. The relevant information prescribed in Schedule 2 of the Flora and Fauna Guarantee Regulations 2001 was not provided.

The SAC has therefore made a Preliminary Recommendation to reject the nomination under Section 13(3)(c) of the Act.

Selected references:

- DPI (2010) Changes to the current Victorian Recreational Fishing Guide. Version 1, 4 February 2010. Fisheries Management, Department of Primary Industries. (Internet document at - <http://www.dpi.vic.gov.au>)
- Fisheries Regulations (2009) Part 7 - Fish other than Abalone, Rock Lobster, Giant Crab and Scallop. (internet document at - <http://www.dpi.vic.gov.au>)
- Page, T.J. (2006) An evolutionary history of the freshwater shrimp family Atyidae in Australia. PhD thesis Griffith University Queensland.
- Walsh, C.J. & Mitchell, B.D. (1995) The freshwater shrimp *Paratya australiensis* (Kemp, 1917)(Decapoda: Atyidae) in estuaries of south-western Victoria, Australia. *Australian J. Marine & Freshwater Research* **46**: 959-65.
- Williams, W.D. (1977) Some aspects of the ecology *Paratya australiensis* (Crustacea: Decapoda: Atyidae). *Australian J. Marine & Freshwater Research* **28**: 403-415.

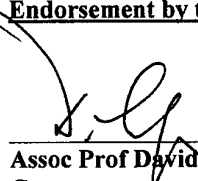
References on Callianassidae

- Butler, S.N., Reid, M. & Bird, F.L. (2009) Population biology of the ghost shrimps, *Trypaea australiensis* and *Biffarius arenosus* (Decapoda: Thalassinidea), in Western Port, Victoria. *Memoirs of the Museum of Victoria* **66**: 43-59.
- Coleman, N. & Poore, G.C. (1980) The distribution of *Callianassa* species (Crustacea, Decapoda) in Western Port, Victoria. *Proceedings of the Royal Society of Victoria* **91**: 73-78.
- Contessa, L. & Bird, F.L. (2004) The impact of bait-pumping on populations of the ghost shrimp *Trypaea australiensis* Dana (Decapoda: Callianassidae) and the sediment environment. *J. Experimental Marine Biology & Ecology* **304**: 75-97.
- Jones, D. S. & Morgan, G. J. (1994) *A Field Guide to Crustaceans of Australian Waters*. Reed: Sydney.
- Poore, G. C. B. & Griffin, D. J. B. (1979) The Thalassinidea (Crustacea: Decapoda) of Australia. *Records of the Australian Museum* **32** (6): 217-321.
- Skilleter, G.A., Zharikov, Y., Cameron, B. & McPhee, D.P. (2005) Effects of harvesting callianassid (ghost) shrimps on subtropical benthic communities. *J. Experimental Marine Biology & Ecology* **320**: 133-158.
- Wynberg, R.P. & Branch, G.M. (1997) Trampling associated with bait-collection for sandprawns *Callianassa kraussi* Stebbing: effects on the biota of an intertidal sandflat. *Environmental Conservation* **24**(2): 139-148.

Relevant websites:

- Australian Biological Resources Study (ABRS)(family Atyidae):
<http://www.environment.gov.au/biodiversity//abrs/online-resources/fauna/afd/taxa/ATYIDAE>
- Fisheries (Shrimp) Notice No. 11/2009 - <http://www.gazette.vic.gov.au/gazette/Gazettes2009/GG2009G044.pdf>

Endorsement by the Convenor of the Scientific Advisory Committee**Date**


Assoc Prof David Morgan
Convenor

26.7.10