

FLORA & FAUNA
GUARANTEE

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:

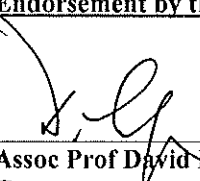
Australian Biological Resources Study (ABRS)(family Atyidae):

<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