

Project: 100016 The Orbost Spiny Crayfish *Euastacus diversus* (Riek 1969)

This is a small freshwater crayfish from the East Gippsland region of Victoria. It is one of Australia's most threatened crayfish species and the subject of much confusion and conjecture in that region.

History

Back in 1959 one of Australia's foremost expert on freshwater crayfish at that time, Edgar Riek, discovered this small freshwater crayfish species in the east Gippsland region of Victoria. Then in 1969 he described the species and named it *Euastacus diversus*. Since that day this crayfish has remained a rare and elusive species.

In 1986, the then current expert on the genus *Euastacus*, Gary Morgan, searched for this species but was unable to find it in the wild. As a consequence he redescribed the handful of original specimens collected by Riek in 1959 that are held at the Australian Museum. Gary Morgan's detailed description, published in the Memoirs of the Museum of Victoria 30th May 1986, is the latest scientific publication on this species and forms the basis of all current information and opinions on it.

In 2005, the Australian Crayfish Project (ACP) was started, involving one of the largest projects researching freshwater crayfish ever seen in Australia. Between 2005 and 2009 a considerable number of *E. diversus* specimens have been found in the wild. The project has been very successful in finding this and other crayfish species, and large areas of southern NSW and eastern Victoria have been systematically biologically surveyed specifically for freshwater crayfish.

The ACP Survey

We are delighted to report that specimens of *Euastacus diversus* have been located in the wild, from the original site locality collected by Riek in 1959 and also from other sites in eastern Victoria and possibly NSW. Importantly, the specimens collected by the ACP teams represent a significant increase in the knowledge base. The specimens are greater in both size and number than the original collection, and also indicate greater morphological variation than previously described for the species. Additionally, the new collection includes several mature adult specimens, unlike the type material that contains mostly small, juvenile or adolescent specimens. Because species of *Euastacus* develop their spination with age, these new adult specimens provide much new information on the external morphology of this species. A thorough re-description of *Euastacus diversus* is now possible.

Additionally, biological surveys of the surrounding area, extending throughout the whole of East Gippsland and southern New South Wales, has identified new populations of *Euastacus diversus* and other similar species.

Euastacus diversus and *Euastacus bidawalus* are broadly similar species, and there is much confusion in the identification of the two species. The ACP team has identified morphological variation in both species that renders any current keys outdated. Specimens of *Euastacus* from

the catchments of the Genoa River, Cann River, Bemm River, Brodribb River, Snowy River, Queensborough and Delegate Rivers in both southern NSW and eastern Victoria all need identification and description.

In summary, the ACP has a mass of new information that needs to be sorted, compiled, examined and published in the scientific literature.

Proposal

We propose to combine morphological and molecular techniques to clarify the species in this group. At this stage, having completed a preliminary assessment of the specimens collected, we propose to:

- re-describe *Euastacus diversus* and map the full distribution of the species
- map the distribution of *Euastacus bidawalus*, a species that has a greater distribution than currently recorded
- describe any new species (at this early stage, it appears that a new species may have been discovered during the surveys, and if detailed analyses confirm this, we will also describe this species and map its distribution)
- provide an updated key to assist field workers distinguish between all species of *Euastacus* found in eastern Victoria.

This research will be conducted by three highly experienced freshwater crayfish experts:

- Robert B McCormack – Research Director, Australian Aquatic Biological P/L. 25 years as aquaculturalist and teacher. Author of numerous books on freshwater crayfish including his 7th book “The Freshwater Crayfish of NSW Australia”. ISBN 978-0-9805144-1-4. President of the NSW Aquaculture Association. Serves on various statutory advisory committees. Research Associate with the Carnegie Museum. Experienced in crayfish taxonomy, including the preparation of formal taxonomic descriptions for publication.

- Dr Jason Coughran – Senior Ecologist, Australian Aquatic Biological P/L. Casual Academic, Southern Cross University, PhD in freshwater crayfish biology, ecology, conservation and taxonomy. >10 years research experience in freshwater biology. Experience in freshwater crayfish taxonomy, author of several peer reviewed articles on Australian crayfishes, including the formal description of several new species.

- Dr. James W. Fetzner Jr. Assistant Curator of Crustacea, Section of Invertebrate Zoology, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA. Areas of research include 20 years of experience working on the biology, conservation, population genetics, systematics and taxonomy of freshwater crayfishes at a global level. An additional 12 years of experience in bioinformatics and the dissemination of crayfish related taxonomic information via the internet. Professional crayfish-related activities include: Secretary for the International Association of Astacology, Editor of the *Crayfish News* newsletter, co-editor of the journal *Freshwater Crayfish*.

Funding

To date, the ACP survey effort and preliminary examinations of the above-mentioned species from eastern Victoria and southern NSW has been undertaken entirely at the proponents' expense. In order to complete this work and bring it to fruition in the scientific literature, we are now seeking support from sponsors.

We are seeking funds to cover the cost of detailed morphological examinations of all material, DNA analysis, a small amount of further collection to fill information gaps, and the writing and publication of a peer reviewed scientific paper re-describing *Euastacus diversus*.

The anticipated cost of the remaining work is \$24,000.00, and it is this amount that we are seeking. We are searching for external partners that would like to provide partial sponsorship towards the final research. As research sponsors you will receive a full 100% tax deduction for your sponsorship. Sponsors will be acknowledged on all papers and reports produced, and mentioned in press releases, etc.

So far, we have committed sponsorship from our private, corporate and environmental group sponsors of \$7,500 towards this important project. We are seeking your help to increase the knowledge base on one of Australia's most endangered crayfish species. A sponsorship of \$500, \$5000 or more would be much appreciated and contribute much towards the future conservation of Australia's most endangered crayfish species. It is only through this scientific process that correct identification and distribution of the species can be attained, ensuring that it is adequately protected into the future.

This work will directly enable the conservation of the species into the future by allowing all management agencies the science needed to draft appropriate conservation and management strategies. This will not only apply to this species but also the surrounding native vegetation and forests in which it lives. This scientific paper on *Euastacus diversus* will be the defining paper on the species and replace the 23 year old paper of Gary Morgan on which all management agencies currently base their policies on. This new paper will be the most important project towards the preservation and conservation of this species for the last 23 years and will last for the next 23 years. Please support this project and become a sponsor.

For Further Information
Refer Project No.:100016
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