Nanda Country Bush Blitz

Stygofauna

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Remko Leijs

Nomenclature and taxonomy used in this report is consistent with:
Australian Faunal Directory (AFD)

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List of contributors

List of contributors to this report.			
Name	**Institution/affiliation**	**Qualifications/area of expertise**	**Level/form of contribution**
Remko Leijs	***Ecosystem and Biological Services***		***Principal author. Field collection, specimen sorting, identifications***

Abstract

No stygofauna species were found during the survey, because spring sites were unsuitable for sampling stygofauna. However, at one site a new species of epigean amphipod was found that is a relative to stygofauna species occurring in the Murchison drainage basin further inland.

1. Introduction

The Kallbarri-Eurardy area has not been surveyed for stygofauna before. Most survey efforts in the Murchison drainage area further inland were focused on calcrete aquifers. However, springs in other geological settings potentially may contain stygofauna. Pre-survey expectations of finding stygofauna were low because sampling in springs is never straightforward and depends on the local conditions which can only be assessed on-site and may require specialized equipment and multiple visits.

2. Methods

2.1 Site selection

In general site selection for stygofauna involves finding access to the groundwater, such as springs, pastoral wells, mineral exploration bores, monitoring bores or water extraction bores. Relevant to this Bush Blitz survey were only springs. Two springs are known from maps of the Kalbarri National Park, Emu Spring (-27.8663, 114.5170) and Wittecarra Spring (-27.7800, 114.1811), and three springs from Eurardy Conservation area, Bungabandi Spring (-27.4915, 114.5744), Emu Spring (-27.5047, 114.5887) and Warranjababba Spring (-27.5569, 114.6364).

2.2 Survey techniques

Sampling techniques for springs vary according to the local geology of the spring. Springs associated with a gravel or coarse sand bed can be sampled for stygofauna by inserting a perforated steel rod in the gravel bed and pumping and filtering water from as deep as possible, or by digging a hole in the gravel/sand bed and scooping water through a plankton net. Springs where water is oozing out of rock fissures can be sampled using a turkey baster by sucking and filtering water from as deep in the fissure as possible. Springs situated at sites with fine sediment such as clays and organic materials on the surface (also called soakes) are difficult to sample and require probing for the exact location of where water oozes out of the bedrock. Often in such situations precise locations are hard to find and may dispersed over a larger area.

2.2.1 Methods used at standard survey sites

Standard survey sites were not close to suitable stygofauna sampling sites.

2.3 Identifying the collections

Initial identifications were made in the laboratory during sorting of the samples and did not require guidebooks.

3. Results and Discussion

All spring sites mentioned in the 2.1 Site selection were visited, apart from Emu Spring in Kalbarri NP, which is likely a mapping error because no spring features were found on aerial

imagery. The remaining sites were all in the category spring/soak and were impossible to sample for stygofauna in the timeframe available.

However, one of the TO's, Greg Dingo found a spring halfway in the gorge below the Ross Graham Lookout (-27.8111, 114.4743) that we were able to sample. The spring was of the 'rock fissure' type, overlayed with coarse sand, mud and vegetation. We sampled it by extracting water from as deep as possible in the fissures using a turkey baster. Unfortunately, no stygofauna were found, only the common epigean freshwater groups, such as Oligochaeta, Ostracoda, Copepoda and dytiscid waterbeetles, as well as a single specimen of amphipod. This amphipod was identified as a member of the family Chiltoniidae. Although not a stygofauna species, the significance of this finding is that amphipod genera in this group are restricted to different drainages and epigean species in this group have not been found in the Murchison drainage before. However, the Murchison River drainage further inland harbours a suit of stygofauna Chiltoniid species each associated with a different calcrete aquifer. These species are thought to have evolved from an epigean ancestor in the Murchison River. The new finding could well be an epigean relative of the stygofauna species, and would be very useful, through genetic research, to get a better understanding of the evolution in this group.

Appendix 1 lists all stygofauna recorded during the Bush Blitz. Collections made during this Bush Blitz will result in one specimen being added to public collections and one record being added to publicly accessible databases.

3.1 Un-named or not formalised taxa

Table 1. Putatively un-named or not formalised taxa	
Taxon	**Comment**
n/a	

3.2 Species new to science

In this report, 'species new to science' means species that were not recognised by Western science before this Bush Blitz.

Table 2. Species new to science	
Species	**Comment**
Chiltoniidae (Amphipoda)	New genus, new species

3.3 Threatened species

Stygofauna as a group is currently not listed under the Environment Protection and Biodiversity Conservation Act 1999 (Cwth) and/or State or Territory legislation, neither are individual stygofauna species. However, because of the short range endemicity of the species, they are extremely vulnerable to water extracting of aquifers.

3.4 Range extensions

Stygofauna are restricted to individual aquifers and cannot disperse; therefore it is highly unlikely to find range extensions for stygofauna species.

3.5 Genetic information

No genetic sampling was undertaken, but DNA barcoding may be applied in the future to find out the phylogenetic relationship with other (un)described taxa.

4. Conclusions

No stygofauna species were found during the survey, because spring sites were unsuitable for sampling stygofauna. However, at one site a new species of epigean amphipod was found that is relative to stygofauna species occurring in the Murchison drainage basin further inland.

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