

PhD Topic: Toxicity of petroleum hydrocarbons to invertebrate communities in sub Antarctic soils during remediation of contaminated sites.

Based at: UNE, Armidale, Macquarie Island and Australian Antarctic Division, Hobart.

Supervisors: Dr Jane Wasley (AAD), Dr Catherine King (AAD), and Dr Nigel Andrew (UNE)

Starting: Semester 2, 2008

Background

This project will investigate the responses of invertebrates in sub Antarctic soils to petroleum hydrocarbon contaminants resulting from fuel spills. The responses will be studied at the community and whole organism level, with abundance, diversity and species richness used as ecological endpoints, and a variety of endpoints including growth, respiration, behaviour and mortality used in ecotoxicological and ecophysiological studies to determine the acute and chronic toxicity of petroleum hydrocarbons to invertebrates. Field work will focus on fuel spill sites on Macquarie Island that are to be characterized and remediated over the next 5- 10 years. This project will therefore run alongside studies being conducted to delineate the extent of the contamination plume at spill sites, and will complement studies investigating the impacts of hydrocarbon contaminants on microbial processes in soils, and the degradation of fuel components in soils. Invertebrate community structure will be investigated at contaminated sites around the station in addition to several control areas, free from all sources of contamination and human impacts, to provide baseline ecological data for the island. Community structure at the various sites will be compared to the distribution and extent of contamination. Key species (indigenous and introduced) will be identified from ecological surveys and their response to exposure to contaminants assessed in ecotoxicological tests. The experimental physiological responses of organisms obtained in these laboratory and field toxicity tests will be compared with community based responses in the field. This research will use a weight of evidence approach to assess the impact of contaminated soils, and will aid in the development of soil quality guidelines for fuel contamination in polar regions.

All logistical fieldwork support will be provided by AAD. Candidates will be able to apply for a UNE postgraduate scholarship once they have enrolled.

Requirements:

We are looking for a candidate who:

- Demonstrate a background in arthropod/soil ecology, entomology, zoology or biodiversity
- Are able and willing to conduct extended fieldwork trips in remote and isolated locations (Macquarie Island)
- Are willing to work as part of a collaborative team.

For further details please contact **Dr. Nigel Andrew** email: nigel.andrew@une.edu.au

Applications:

Applicants should submit a letter (maximum of 2 pages) outlining their suitability for the position, accompanied by a Curriculum Vitae, including contact details of two referees, and a copy of their academic transcripts.

Please submit applications electronically by 15th June 2008 to:

Dr Nigel Andrew

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