Grant is an aquatic ecologist and ecotoxicologist. His research examines the response of groundwater ecosystems, invertebrate and microbial communities to environmental change, and develops tools for assessing change in ecosystem health and condition. Hose and his team undertake field surveys and laboratory manipulative experiments, to identify correlative and causal links to community change. His team has expertise in groundwater invertebrate taxonomy and using environmental DNA (eDNA) to characterise the composition and function of groundwater ecosystems, and through this work has established an international reputation in groundwater ecology research. His current research focuses on the ecology of groundwater ecosystems and assessment of ecosystem health, ecological risk assessments and ecotoxicology for groundwater biota and the roles of stygofauna in providing ecosystem services.

Research outputs

**Correlations between microbial taxonomies and wastewater quality parameters in a full-scale petroleum refinery wastewater treatment plant**

**Groundwater is a hidden global keystone ecosystem**

**Anthropogenic petroleum signatures and biodegradation in subantarctic Macquarie Island soils**

**Assessing groundwater ecosystem health, status, and services**

**Can eDNA be an indicator of tree groundwater use? A perspective**

**Comparison of an extracellular v. total DNA extraction approach for environmental DNA-based monitoring of sediment biota**

**Legal frameworks for the conservation and sustainable management of groundwater ecosystems**
Recent concepts and approaches for conserving groundwater biodiversity

Role of invertebrates in groundwater ecosystem processes and services

Stygofaunal diversity and ecological sustainability of coastal groundwater ecosystems in a changing climate: the Australian paradigm

Bacterial communities in peat swamps reflect changes associated with catchment urbanisation

Invertebrate traits, diversity and the vulnerability of groundwater ecosystems

Bacteria-plant interactions synergistically enhance biodegradation of diesel fuel hydrocarbons

Spatial and temporal variation in macrophyte litter decomposition in a rare chain-of-ponds, an intermittent stream and wetland system

Dynamics of microbiotic patterns reveal surface water groundwater interactions in intermittent and perennial streams

Agricultural practices linked to shifts in groundwater microbial structure and denitrifying bacteria

Enhancing rhizoremediation of petroleum hydrocarbons through bioaugmentation with a plant growth-promoting bacterial consortium

Characterizing the spatial distributions of soil biota at a legacy base metal mine using environmental DNA

Groundwater dependent aquatic and terrestrial ecosystems

Knowledge gaps, obstacles, and research frontiers in groundwater microbial ecology
Section introduction: groundwater sciences in limnology

Space use and daily movement patterns in an arid zone agamid lizard

Sublethal pesticide exposure influences behaviour, but not condition in a widespread Australian lizard

Impact assessment of ephemeral discharge of contamination downstream of two legacy base metal mines using environmental DNA

Saline mine-water alters the structure and function of prokaryote communities in shallow groundwater below a tropical stream

Application of environmental DNA for assessment of contamination downstream of a legacy base metal mine

Diversity and metagenome analysis of a hydrocarbon-degrading bacterial consortium from asphalt lakes located in Wietze, Germany

A weight-of-evidence approach for identifying potential sources of untreated sewage inputs into a complex urbanized catchment

Assessment of legacy mine metal contamination using ants as indicators of contamination

History of environmental contamination at Sunny Corner Ag-Pb-Zn mine, eastern Australia: a meta-analysis approach

A method for topical dosing of invertebrates with pesticide for use in feeding experiments

Dose-response analysis of diesel fuel phytotoxicity on selected plant species

Extent and effect of the 2019-20 Australian bushfires on upland peat swamps in the Blue Mountains, NSW
Observations on populations of a small insectivorous bird, *Malurus leucopterus leuconotus* Dumont, after an application of two ultra-low-volume (ULV) insecticides, fenitrothion and fipronil, in arid Australia

Assessing the effect of diesel fuel on the seed viability and germination of *medicago sativa* using the event-time model

Salinity and temperature increase impact groundwater crustaceans

The hydrological function of a large chain-of-ponds: a wetland system with intermittent surface flows

Assessment of different contaminants in freshwater: origin, fate and ecological impact

Ecotoxicological effects of anthropogenic stressors in subterranean organisms: a review

Lessons from 10 years of experience with Australia’s risk-based guidelines for managed aquifer recharge

Microbial communities of upland peat swamps were no different 1 year after a hazard reduction burn

Surviving drought: a framework for understanding animal responses to small rain events in the arid zone

Highly diverse fungal communities in carbon-rich aquifers of two contrasting lakes in Northeast Germany

Recommendations for ecotoxicity testing with stygobiotic species in the framework of groundwater environmental risk assessment

3D conservation planning: including aquifer protection in freshwater plans refines priorities without much additional effort

Microbial communities are sensitive indicators for freshwater sediment copper contamination

Sediment size influences habitat selection and use by groundwater macrofauna and meiofauna
The impact of urbanisation on community structure, gene abundance and transcription rates of microbes in upland swamps of Eastern Australia

Groundwater ecosystems and their services: current status and potential risks

Urban impacts across realms: making the case for inter-realm monitoring and management

Water sources of upland swamps in Eastern Australia: implications for system integrity with aquifer interference and a changing climate

Architects of the underworld: bioturbation by groundwater invertebrates influences aquifer hydraulic properties

The potential of Medicago sativa for microbial-enhanced phytoremediation of diesel fuel contaminated sites

Understanding the spatial distribution and physical attributes of upland swamps in the Sydney Basin as a template for their conservation and management

Microfluidic qPCR enables high throughput quantification of microbial functional genes but requires strict curation of primers

Diverse fungal lineages in subtropical ponds are altered by sediment-bound copper

The hydrological function of upland swamps in eastern Australia: the role of geomorphic condition in regulating water storage and discharge

Effects of red earthworms (Eisenia fetida) on leachability of lead minerals in soil

Insights from the genomes of microbes thriving in uranium-enriched sediments

The influence of vegetation and soil properties on springtail communities in a diesel-contaminated soil

Ecosystem effects and the management of petroleum-contaminated soils on subantarctic islands
Groundwater amphipods alter aquifer sediment structure

Effects of uranium concentration on microbial community structure and functional potential

Different depths, different fauna: habitat influences on the distribution of groundwater invertebrates

Blueprint for living cities: policy to practice

The weighted groundwater health index: Improving the monitoring and management of groundwater resources

Short and long-term impacts of ultra-low-volume pesticide and biopesticide applications for locust control on non-target arid zone arthropods

Wells provide a distorted view of life in the aquifer: implications for sampling, monitoring and assessment of groundwater ecosystems

Applications of fipronil (Adonis 3UL) and Metarhizium acridum for use against locusts have minimal effect on litter decomposition and microbial functional diversity in Australian arid grassland

Urban ecology: theory, policy and practice in New South Wales, Australia

Identifying key sedimentary indicators of geomorphic structure and function of upland swamps in the Blue Mountains for use in condition assessment and monitoring

Comparative effects of pesticides, fenitrothion and fipronil, applied as ultra-low volume formulations for locust control, on non-target invertebrate assemblages in Mitchell grass plains of south-west Queensland, Australia

Giardiasis in NSW: Identification of Giardia duodenalis assemblages contributing to human and cattle cases, and an epidemiological assessment of sporadic human giardiasis

The unicellular fungal tool RhoTox for risk assessments in groundwater systems
The toxicity of arsenic(III), chromium(VI) and zinc to groundwater copepods

A framework and toolbox for monitoring and assessing the swamp condition and ecosystem health

The spatial distribution and physical characteristics of Temperate Highland Peat Swamps on Sandstone (THPSS)

Effects of two locust control methods on wood-eating termites in arid Australia

Intrinsic and extrinsic controls on the geomorphic condition of upland swamps in Eastern NSW

A toolbox of sedimentary indicators for assessing the geomorphic structure, function and condition of endangered Temperate Highland Peat Swamps on Sandstone (THPSS), Blue Mountains, NSW

Emergent technologies and analytical approaches for understanding the effects of multiple stressors in aquatic environments

Influence of rock-pool characteristics on the distribution and abundance of inter-tidal fishes

Parasitic nematode communities of the red kangaroo, Macropus rufus: richness and structuring in captive systems

Prevalence and molecular identification of nematode and dipteran parasites in an Australian alpine grasshopper (Kosciuscola tristis)

Habitat, water quality, seasonality, or site? Identifying environmental correlates of the distribution of groundwater biota

Genetics and infection dynamics of Paratrichosoma sp in farmed saltwater crocodiles (Crocodylus porosus)

Current insecticide treatments used in locust control have less of a short-term impact on Australian arid-zone reptile communities than does temporal variation

Direct and indirect effects of copper-contaminated sediments on the functions of model freshwater ecosystems
Down under down under: Austral groundwater life

Systematic conservation planning for groundwater ecosystems using phylogenetic diversity

Development of a groundwater fungal strain as a tool for toxicity assessment

Invertebrate community responses to a particulate- and dissolved-copper exposure in model freshwater ecosystems

Groundwater depth and topography correlate with vegetation structure of an upland peat swamp, Budderoo Plateau, NSW, Australia

Towards the molecular characterisation of parasitic nematode assemblages: an evaluation of terminal-restriction fragment length polymorphism (T-RFLP) analysis

Sublethal toxicity of untreated and treated stormwater Zn concentrations on the foraging behaviour of Paratya australiensis (Decapoda: Atyidae)

The geomorphic character and hydrological function of an upland swamp, Budderoo Plateau, Southern Highlands, NSW, Australia

Long-term copper partitioning of metal-spiked sediments used in outdoor mesocosms

River-aquifer interactions and their relationship to stygofauna assemblages: a case study of the Gwydir River alluvial aquifer (New South Wales, Australia)

Fine-scale genetics of subterranean syncarids

Developing a model of upland swamp structure, function and evolution for biodiversity conservation and rehabilitation: the case of threatened Temperate Highland Peat Swamps on Sandstone (THPSS)

DNA Metabarcoding Meets Experimental Ecotoxicology: advancing Knowledge on the Ecological Effects of Copper in Freshwater Ecosystems

Petroleum biodegradation in subantarctic Macquarie Island soils
The effects of aged diesel fuel on subantarctic invertebrate and microbial communities

Comparative growth and development of spiders reared on live and dead prey

The impact of water table drawdown and drying on subterranean aquatic fauna in in-vitro experiments

Changes in Prokaryote and Eukaryote Assemblages Along a Gradient of Hydrocarbon Contamination In Groundwater

Assessing the chronic toxicity of atrazine, permethrin, and chlorothalonil to the cladoceran Ceriodaphnia cf. dubia in laboratory and natural river water

Groundwater ecosystems vary with land use across a mixed agricultural landscape

Effect of catchment urbanization on ant diversity in remnant riparian corridors

The ecological effects of a herbicide-insecticide mixture on an experimental freshwater ecosystem

An inter-catchment comparison of groundwater biota in the cotton-growing region of north-western New South Wales

Hydrochemical processes in the alluvial aquifer of the Gwydir River (northern New South Wales, Australia)

Proteomic analysis of Sydney Rock oysters (Saccostrea glomerata) exposed to metal contamination in the field

Nematode community structure in the brush-tailed rock-wallaby, Petrogale penicillata: Implications of captive breeding and the translocation of wildlife

Fungal Diversity of Shallow Aquifers in Southeastern Australia

The first set of microsatellite markers developed for the ancient Parabathynellidae (Syncarida, Malacostraca) and their utility for other groundwater fauna
Environmental and landscape factors influencing ant and plant diversity in suburban riparian corridors

A comparison of mixture toxicity assessment: Examining the chronic toxicity of atrazine, permethrin and chlorothalonil in mixtures to Caridaphnia cf. Dubia

Developmental toxicity of two common corn pesticides to the endangered southern bell frog (Litoria raniformis)

Incorporating traits in aquatic biomonitoring to enhance causal diagnosis and prediction

Toxicity of the insecticide terbufos, its oxidation metabolites, and the herbicide atrazine in binary mixtures to Ceriodaphnia cf dubia

The influence of riparian corridor width on ant and plant assemblages in northern Sydney, Australia

A tiered framework for assessing groundwater ecosystem health

The geomorphic character and hydrological function of an upland swamp, Budderoo Plateau, Southern Highlands, NSW, Australia

A low concentration of atrazine does not influence the acute toxicity of the insecticide terbufos or its breakdown products to Chironomus tepperi

Dimethoate, fenvalerate and their mixture affects Hylyphantes graminicola (Araneae: Linyphiidae) adults and their unexposed offspring

River water and sediment reduce the toxicity of deltamethrin to paratya Australiensis

Is cotton-strip tensile strength a surrogate for microbial activity in groundwater?

What do qualitative rapid assessment collections of macroinvertebrates represent? A comparison with extensive quantitative sampling
Effects of river water and salinity on the toxicity of deltamethrin to freshwater shrimp, cladoceran, and fish

Comparison of the fate and toxicity of chlorpyrifos-Laboratory versus a coastal mesocosm system

Bioavailable DDT residues in sediments: Laboratory assessment of ageing effects using semi-permeable membrane devices

Cave invertebrate assemblages differ between native and exotic leaf litter

Effects of chlorpyrifos on macroinvertebrate communities in coastal stream mesocosms

Short-term colonisation by macroinvertebrates of cobbles in main channel and inundated stream bank habitats

Introduction history and invasion success in exotic vines introduced to Australia


Relating pine-litter intrusion to plant-community structure in native eucalypt woodland adjacent to Pinus radiata (Pinaceae) plantations

A meta-analysis comparing the toxicity of sediments in the laboratory and in situ

Spider webs as indicators of heavy metal pollution in air

A functional methodology for determining the groundwater regime needed to maintain the health of groundwater-dependent vegetation

Valuation of groundwater-dependent ecosystems: A functional methodology incorporating ecosystem services

Vegetation responses to Pinus radiata (D. Don) invasion: A multivariate analysis using principal response curves

Depauperate macroinvertebrates in a mine affected stream: Clean water may be the key to recovery
Toxicity of endosulfan to Paratya australiensis kemp (Decapoda: Atyidae) and Jappa kutera harker (Ephemeroptera: Leptophlebiidae) in field-based tests

Assessing the need for groundwater quality guidelines for pesticides using the species sensitivity distribution approach

Life-history correlates of plant invasiveness at regional and continental scales

Life-history and ecological correlates of decline and extinction in the endemic Australian frog fauna

A meta-analysis of the interspecific relationship between seed size and plant abundance within local communities

The interspecific range size-body size relationship in Australian frogs

Hyporheic macroinvertebrates in riffle and pool areas of temporary streams in south eastern Australia

Ecosystem services: An ecophysiological examination

Spatial and rainfall related patterns of bacterial contamination in Sydney Harbour estuary

Confirming the species-sensitivity distribution concept for endosulfan using laboratory, mesocosm, and field data

Water quality guidelines to protect groundwater-dependent ecosystems

Reproducibility of AUSRIVAS rapid bioassessments using macroinvertebrates

Toxicity of endosulfan to Atalophlebia spp. (ephemeroptera) in the laboratory, mesocosm, and field

Short-term exposure to aqueous endosulfan affects macroinvertebrate assemblages

Groundwater-dependent ecosystems in Australia: It's more than just water for rivers
Spider webs as environmental indicators

A pulse of endosulfan-contaminated sediment affects macroinvertebrates in artificial streams