

# Introduction to Honours at the School of Biological Sciences (BSc Honours Environmental Sciences)

*August 2022*

# Welcome

- Welcoming
- Brief information session
- Honours program leader:
  - Prof. J Bezuidenhout (current);
  - Dr C Cook (2023 onwards)
- Please note that the terms SBS (School of Biological Sciences) and UESM (Unit for Environmental Sciences and Management) may be used interchangeably.
- Also, some researchers may be involved in more than one program.



# Program coordinators

**Ecological Interactions and  
Ecosystem Resilience**



Prof J Berner

**Biodiversity and  
Conservation Ecology**



Prof L du Preez

**OneHealth  
(From 2023)**



Prof V Wepener  
(Also refer to OneHealth PDF)

# Program coordinators

## Aquatic Ecosystem Health



Prof JJ Bezuidenhout  
(current)



Dr. K Malherbe  
(2023 onwards)

## Integrated Pest Management



Prof J van den Berg

# Members – Ecological Interactions and Ecosystem Resilience



Prof S Cilliers



Prof S Claassens



Prof K Kellner



Prof J Berner



# Members – Ecological Interactions and Ecosystem Resilience



Prof F Siebert



Prof S Siebert



Prof M Maboeta



Prof R Adeleke

# Members – Ecological Interactions and Ecosystem Resilience



Dr K Lekota



Miss P Mokgokong

# Members – Ecological Interactions and Ecosystem Resilience

- Prof Sarel Cilliers
  - Urban ecology, Green Infrastructure Planning; Socio-ecological studies; Urban forestry
- Prof Sarina Claassens
  - Soil microbiology; microbial ecology; Microbial ecotoxicology
- Prof Klaus Kellner
  - Sustainable land management; Impact of climate, soil and animals on ecosystems; Social and economic impacts in rural areas; Rangeland degradation models; Restoration of degraded lands
- Prof Jacques Berner
  - Plant Ecophysiology; Weed Physiology; Stress Physiology; New Crop Development



# Members – Ecological Interactions and Ecosystem Resilience

- Prof S Siebert
  - Conservation of rare and endemic species and communities; Biomonitoring of rural and urban agro-ecosystems; Systematics of edaphic specialists
- Prof Frances Siebert
  - Community ecology; Vegetation dynamics; Forb Ecology
- Prof Mark Maboeta
  - Ecotoxicology; Organic waste management; Earthworms as bioindicators; Soil toxicological benchmarks
- Prof Rasheed Adeleke
  - Microbial ecology; Soil microbiology; Agricultural Biotechnology; Renewable energy; Beneficial epiphytic microorganisms; Bioinformatics

# Members – Ecological Interactions and Ecosystem Resilience

- Dr K Lekota
  - Zoonotic bacterial pathogens in livestock and animals; Microbial genomics; Bioinformatics; Medicinal plants as source of potential antimicrobial compounds
- Miss P Mokgogong
  - Microbial genomics, Conservation genetics

# Current/Future Projects

- Prof J Berner
  - Responses of palmer amaranth to herbicides
  - Quantifying cyclic electron transport in ivy plants
  - Growth responses of tomatoes to varying light quality
- Prof S Siebert
  - Screening for phytoextractors in the Vredefort Dome.
  - Investigating the relation between morphological features in plants and chemical composition in serpentine soils.
  - Nursing potential of plants grown in mine tailings.
  - Intraspecific variation in nickel tolerance and hyperaccumulation of plants among serpentine and post mining sites

# Current/Future Projects

- Prof S Cilliers
  - Indigenous knowledge systems
  - Perceptions of different stakeholders about ecosystem services provided by gardens
  - Co-production of knowledge – role of THP's (traditional health practitioners)
- Prof M Maboeta
  - Utilising earthworms to assess the ecotoxicity of selected contaminated soils e.g. metals, pesticides and biopesticides (2 students).

# Members – Biodiversity and Conservation Ecology



Prof S Barnard



Prof S Siebert



Prof F Siebert



Prof C Weldon



# Members – Biodiversity and Conservation Ecology



Prof L du Preez



Prof H Bouwman



Dr C Cook



Dr M Struwig

# Members – Biodiversity and Conservation Ecology



Prof O Thekiso

# Members – Biodiversity and Conservation Ecology

- Prof S Barnard
  - Phylogenetic relationships; Meta-barcoding; Molecular ecology
- Prof S Siebert
  - Conservation of rare and endemic species and communities; Biomonitoring of rural and urban agro-ecosystems; Systematics of edaphic specialists.
- Prof F Siebert
  - Community ecology; Vegetation dynamics; Forb Ecology
- Prof C Weldon
  - Geographic information systems; Herpetology; Coral reefs

# Members – Biodiversity and Conservation Ecology

- Prof L du Preez
  - Amphibian conservation and systematics; Bullfrog behaviour; Chemical compounds in amphibian skin secretions; Amphibian parasite diversity; Global threat posed by invasive parasites of amphibians and freshwater turtles; Amphibian chytrid fungus
- Prof H Bouwman
  - Bird ecology; Bird feather parameters; Reptile and avian eggshell parameters; Impacts of disturbances on biodiversity patterns; Associations of biodiversity with plastics; Marine biology
- Dr C Cook
  - Blood parasites (Apicomplexan and Haemoflagellate) of reptiles and freshwater and marine fishes; Morphology and molecular phylogeny in descriptions of unknown and known species to determine taxonomy, modes of transmission and phylogenetic relationships of these organisms
  - Ecology (life cycle elucidation, host preference and distribution of blood parasite species)

# Members – Biodiversity and Conservation Ecology

- Dr M Struwig
  - Plant taxonomy; Plant systematics; Curator of the North-West University Herbarium
- Prof O Thekisoie
  - Ecto- and endoparasites of zoonotic importance; Population genetics; Bioinformatics; Drug efficacy and resistance studies



# Members – Aquatic Ecosystem Health



Prof S Janse van  
Vuuren



Prof S Barnard



Prof J Taylor



Dr A Levanets



Prof R Pieters

# Members – Aquatic Ecosystem Health



Prof C Bezuidenhout



Dr L Molale-Tom



Dr C Mienie



Prof J Bezuidenhout

# Members – Aquatic Ecosystem Health



Dr W Malherbe



Dr K Malherbe



Prof V Wepener



Prof N Smit

# Members – Aquatic Ecosystem Health

- Prof S Janse van Vuuren
  - Freshwater algae ecologist and taxonomist; Ecology of phytoplankton populations
- Prof S Barnard
  - Phylogenetic relationships; Meta-barcoding; Molecular ecology
- Prof J Taylor
  - Freshwater diatom ecology and biomonitoring; Diatom taxonomy and study of museum specimens; Diatoms from extreme environments; Marine and near-shore diatoms
- Dr A Levanets
  - Biogeography of freshwater and soil algae; Ecology of freshwater and soil algae; Desmid taxonomy and diversity



# Members – Aquatic Ecosystem Health

- Prof C Wolmarans
  - Quality of surface waters in South African rivers; Diversity of macroinvertebrates; Physico-chemical factors in water and sediment as well as sediment minerals and metals; Study the process of phytoremediation by making use of an artificial wetland
- Prof H Bouwman
  - Persistent organic pollutants; Metal pollution; Plastics and microplastics; Pharmaceuticals; Birds, crocodiles, fish, sediments, algae; Corals, turtles, fish, zooplankton, dolphins, snails; Oceanic coral reef island
- Prof R Pieters
  - Endocrine disruption; Bio-assays to identify mechanisms of actions of chemical pollutants; Tissue cultures: reporter gene luminescence assays; viability assays; real-time growth curves; Chemical extraction and clean-up of environmental matrices; Instrumental quantification of selected organic compounds



# Members – Aquatic Ecosystem Health

- Prof C Bezuidenhout
  - Antibiotic and metal resistance; Ground and drinking water studies; Microbial water quality; Diversity and properties of indicator bacteria
- Prof J Bezuidenhout
  - Antimicrobial and resistance to antimicrobials; Data processing and modelling
- Dr C Mienie
  - Microbial molecular diversity; Whole genome sequencing; Bioinformatics
- Dr L Molale-Tom
  - Water; Sanitation and health; Molecular biology

# Members – Aquatic Ecosystem Health

- Dr W Malherbe
  - Riverine and wetland ecology; Aquatic invertebrates and fish; Ecological assessments and biomonitoring
- Dr K Malherbe
  - Marine parasitology; Parasitic crustacean biodiversity; Parasitic isopod taxonomy; Morphological and molecular characterisation
- Prof V Wepener
  - Nano-ecotoxicology; Estuarine and marine ecotoxicology; Socio-ecological assessments of multiple stressors; Ecological risk assessment
- Prof N Smit
  - Aquatic Ecology; Wildlife Parasitology

# Members – Integrated Pest Management



Prof J van den Berg



Prof H du Plessis



Prof D Fourie



Prof O Thekiso

# Members – Integrated Pest Management

- Prof Driekie Fourie
  - Nematologist that specializes in nematode ecology and management, host plant resistance and evaluation of eco-friendly strategies to combat plant-parasitic nematodes
- Prof Oriel Thekisoë
  - Ecto- and endoparasites of veterinary importance; Molecular diagnostics; Bioinformatics; Drug efficacy and resistance studies
- Prof Hannalene du Plessis
  - Entomologist; Integrated pest management; Insecticide resistance
- Prof Johnnie van den Berg
  - Entomologist; Integrated pest management; Terrestrial ecology; Biodiversity and genetically modified crops