

WATER WORLD

Water World @ Scifest offers you an amazing opportunity to find out more about water, its physical and chemical properties, as well as about many of the organisms that live in water!!

This year, Water World is at the main Scifest Venue and is hosted by the South African Institute for Aquatic Biodiversity (NRF-SAIAB) and the Centre for Biological Control (CBC), Rhodes University.

www.saiab.ac.za, www.ru.ac.za/centreforbiologicalcontrol

OPENING HOURS AND VISITOR INFORMATION:

All welcome and entrance to the facility is free.

6 - 12 March: 09h00 - 17h00

EXHIBITIONS

DEPARTMENT OF FRESHWATER
INVERTEBRATES, ALBANY MUSEUM AND THE
INSTITUTE FOR WATER RESEARCH

ELEMENTS OF FRESHWATER - UNDERSTANDING FRESHWATER INSECTS AND WATER FLOW IN FRESHWATER ECOSYSTEMS

Freshwater macroinvertebrates include aquatic insects such as mayflies, caddisflies, dragonflies, water bugs, beetles and true flies. There are many different kinds of each, and they are widely used for monitoring the water quality of streams and rivers as they have varying sensitiveness to environmental change. It is important to know which kinds occur in a particular river or section of river in order to use their presence or absence to guide us to interpret ecosystem health.

Their life cycles and roles in freshwater ecology are discussed. Living examples will be displayed to provide a hands-on experience of these amazing little creatures. Apart from the living organisms in water, water is also used for many purposes, one of which is irrigation. The amount of water in the system e.g. in a river can be determined so that one can calculate how much water can be taken out of the system for developmental purposes. The science of hydrology is dedicated to calculating water flow.

Ms Khaya Mgaba is a Senior technical officer within the Institute for Water Research. She specialises in water quality monitoring and aquatic biomonitoring of rivers.

Dr Sukhmani Mantel is a Senior Research Officer within the Institute for Water Research. She is a GIS specialist. She has undertaken research in a number of disciplines including aquatic ecology, hydrology and remote sensing.

Dr Nelson Odume is a Senior Research Officer and Director of the Unilever Centre for Environmental Water Quality within the Institute. He specialises in water quality, aquatic ecology and water governance research.

Ms Notiswa Libala, specialises in grassland ecology, and social-ecological system research, linking decision making to biophysical processes in landscapes.

Dr Chika Nnadozie is a microbiologist specialising in computational microbiology and metagenomics.

Dr Helen Barber-James is a freshwater biologist and Senior Curator of the National Collection of Freshwater Invertebrates at the Albany Museum, Grahamstown. Her research focuses on the systematics, biodiversity and biogeography of mayflies.

Mr Musa Mlambo is an aquatic biologist in the Department of Freshwater Invertebrates at the Albany Museum. His research focus is on the ecology of creatures inhabiting temporary water bodies.

Ms Nonkazimulo Mdidimba is working towards her MSc in Zoology at University, with Albany Museum supervisors.

Mr Ben Kirkaldy is an Entomology MSc student at Rhodes University, working with Albany Museum supervisors.

Assisted by students, post docs and interns at Rhodes University and Albany Museum.

www.am.org.za / www.ru.ac.za/iwr



RHODES UNIVERSITY



DEPARTMENT OF ICHTHYOLOGY AND FISHERIES SCIENCE

EAR BONES IN FISH AND THEIR SECRETS

Did you know that you can tell how old a fish is by looking at tiny ear bones in its head and that scientists can look at these ear bones to tell what species it is? Experts at the Department of Ichthyology and Fisheries Science will show you an amazing variety of fish ear bones and they will explain some of their other uses in science. You will be amazed how much you can detect from these little bones. It is almost like looking back in time through a microscope.

www.ru.ac.za/ichthyology



CENTRE FOR BIOLOGICAL CONTROL (DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY)

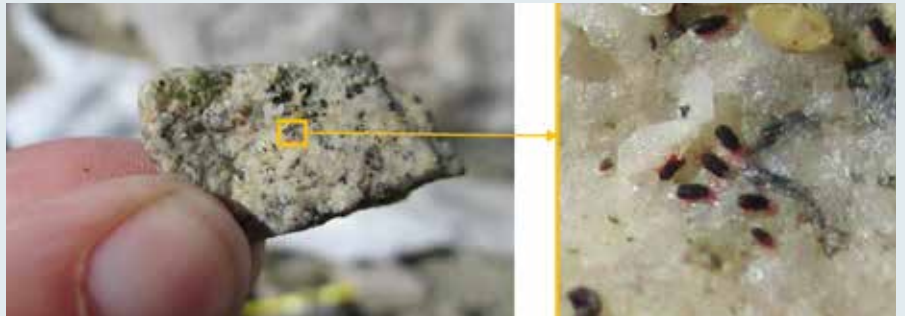
ELEMENTS IN SA'S WATER EFFECTS THE QUALITY AND THIS ALLOWS ALIENS TO INVADE!

Our water systems are polluted with all sorts of bad elements and this generally creates an environment for invasive alien plants to make new homes. Invasive species are threats to our landscape as well as our agricultural crops. Come find out more about invasive species and how they are being controlled. Discover how biological control and proper management techniques are keeping the invasions under control and how science can help save our environment. Learn how YOU can be an environmental steward.

www.ru.ac.za/centreforbiologicalcontrol

DID YOU KNOW

Each year, 8 million tons of plastics enter our oceans. Plastics in the ocean do not biodegrade, but instead they break into smaller and smaller pieces. The majority of plastics in the ocean are less than 5mm in size. Microplastics and the chemicals that attach to them in the water can contaminate the food chain, including seafood eaten by people.



"Little Critters on a rock in Antarctica"

MARINE NATURAL PRODUCTS RESEARCH CONSORTIUM (DEPARTMENT OF BIOCHEMISTRY AND MICROBIOLOGY)

THE UNSEEN MAJORITY: A WINDOW ON THE MARINE MICROBIAL WORLD

Most of the organisms alive on our planet earth are so small they can't be seen with the naked eye. Even though they are small, these microorganisms are essential for healthy ecosystems. In the Southern Oceans for example, microorganisms (microscopic algae, bacteria, microzooplankton) form the basis of marine foodwebs. Without them, the bigger sea creatures (like the blue whales) would be very hungry indeed. In our laboratories, we use microbiology, biochemistry, virology, chemistry and botany to study these small creatures. We all work to put our pieces of knowledge together, like a jigsaw puzzle, to understand global processes. Our research on Sub-Antarctic environments allows us to understand the consequences of climate change.

www.ru.ac.za/bm/people/academicstaff/dorrington/researchprogrammes/
 Instagram: https://www.instagram.com/dorrington_research_group/
 Twitter: @DorringtonResGr



SAEON ELWANDLE NODE

ENVIRONMENTAL MONITORING

The South African Environmental Observation Network (SAEON) is a National Research Facility of the National Research Foundation. SAEON initiates and maintains a network of observations to execute the long-term monitoring of ecosystems and in this way detect, predict and react to environmental change. SAEON's science engagement programme provides and supports hands-on awareness programmes, school-based monitoring projects, extra-curricular activities, and educator workshops. The facility is changing lives, and inspiring learner to pursue a career in science, through opportunities to engage in environmental monitoring in an in-depth way.

www.saeon.ac.za



WESSA GRAHAMSTOWN BRANCH

THE NATURE OF "STUFF"

What is our natural world made of?

Meet the elements and understand what elements make up the physical and biological parts of our natural world. What's in the air, the soil, the water? What are animals and plants made of? What about plastics? What are they made from and why are they such a problem? Choose the topic you want to learn about and enjoy discovering the elemental nature or everything.

www.wessa.org.za

DID YOU KNOW

This year, SAIAB celebrates a major milestone: it is 50 years since the establishment of the Institute back in 1968. It was first known as the JLB Smith Institute of Ichthyology before it became a Research Facility of the National Research Foundation in 1999 and renamed the South African Institute for Aquatic Biodiversity (SAIAB) in 2001. SAIAB has become a modern research and training institute which focusses on the full spectrum of aquatic environments from marine offshore to continental freshwater catchments.



FIELD TRIP

SAEON

HOW PERIODIC ELEMENTS AFFECT BIODIVERSITY IN ESTUARIES



DATE:	6-8 March
TIME:	08h15-14h00
VENUE:	Meet at Monument, Front Entrance
AUDIENCE:	Gr 10 Life Science Educators
CAPACITY:	20
PRICE:	Free, Booking Essential

Take a trip to the coast to learn about the various elements affecting the biodiversity of an estuary.

Please note: The bus will leave promptly at 08h30 and this is a half-day excursion. Participants should bring comfortable shoes, a hat and sunscreen.

SOUTH AFRICAN INSTITUTE FOR AQUATIC BIODIVERSITY (SAIAB)

CHEMICALS AND FIXATIVES; SPECIMENS AND JARS...



The time has come," the walrus said,
 "To talk of other things.
 Of shoes and ships and sealing wax
 Of cabbages and kings
 Of chemicals and fixatives
 Of specimens and jars
 Of frogs and crabs and fish's fins
 And many stranger things!"

Adapted from Alice in Wonderland – Lewis Carroll

Come and find out how specimens are preserved by fixing their tissues so they do not rot and start to smell! Learn about the different chemicals used for preserving aquatic specimens for future generations. Also get to meet an eel, a pufferfish, an electric ray, a baby shark!

www.saiab.ac.za

DID YOU KNOW

Poison dart frogs don't make their own poison. They get it from eating alkaloid-rich mites and ants.



LIFE ON THE SEA FLOOR



Exploring the sea floor from the shallow habitats to the cold and dark expanses of the deep sea reveals a wealth of biodiversity and helps to inform and support the conservation and management of South Africa's marine environment.

This exhibition will introduce you to the animals that inhabit the sea floor and to the technologies that allow us to observe them in the natural habitat. We look at how to obtain critical molecular data to better understand individual, population and community dynamics using special sampling techniques.

We will highlight the ecological and monetary value of the animal and mineral resources and their vulnerability to unsustainable exploitation. We will also provide an overview of South Africa's marine protected area (MPA) network and its importance to safe guard our biological heritage.

www.saiab.ac.za/marine-remote-imagery-platform.htm

TRACKING FISH



Fish are incredibly diverse and are found in every place imaginable. Each place has its own unique chemical signature which a fish can incorporate into its body, particularly the ear bones which are called otoliths. Visit the Acoustic Tracking Array Platform (ATAP) exhibition to find out more about how scientists unravel the riddle of fish movements and migrations using various techniques including acoustic telemetry and otolith microchemistry.

www.saiab.ac.za/atap.htm

WATER! WHAT IS IT?



Water is life! If there was no water, there would be no life on Earth! But what is water, where does it come from, why is it so important?

Water is a chemical compound made up of two hydrogen atoms and one oxygen atom: H₂O. The name "water" refers to the liquid state, but it can also be solid (ice) or gas (steam)...Come and learn more about the properties of water at Water World!

www.saiab.ac.za

WHY DOES WATER GO GREEN AND SLIMY?



Nitrogen compounds like ammonia, nitrates and nitrites are important parts of freshwater aquatic ecosystem food webs, providing nutrients for bacteria, algae and plants. We find different concentrations of these compounds in aquatic ecosystems, where they are produced by aquatic animals and decomposition, and introduced by terrestrial animals like birds. Human activities can pollute aquatic ecosystems with higher-than-normal concentrations of nitrogen compounds, which can change the ecosystem (e.g. stimulate plant and algae growth, making water slimy and green) making it toxic to species like fish, frogs and invertebrates living in the polluted system.

www.saiab.ac.za