

NELM's satellite museums, Schreiner House in Cradock and the Eastern Star Gallery in Grahamstown, conserve and present two important aspects of the writing and publishing heritage of South Africa.

Olive Schreiner (1855-1920), author of *The Story of an African Farm*, lived at No. 6 Cross Street, a small, typically Karoo house, and one of the oldest still standing in Cradock. The exhibitions at Schreiner House explore her life and work and recognise her significance as a writer, a feminist and a champion of human rights and include some of her personal possessions as well as part of her fascinating library. The exhibitions in the Ikhamanga Hall present the local history of Cradock from the time of its earliest inhabitants to the present day – illustrated and with associated extracts from literature.

The first copy of *The Eastern Star* was printed in Grahamstown in 1871. The Eastern Star Gallery is housed in a building that dates back to the mid-19th century and was donated to NELM by the Argus Group. Exhibition highlights include a 120 year-old Wharfedale printing press and the editorial desk that belonged to John Fairbairn, co-founder in 1823 with Thomas Pringle, of the *South African Journal* and the *South African Commercial Advertiser*, and prime mover for a free press in South Africa.

NELM's education section offers programmes and environmental camps for learners and regularly presents talks to adult groups. The museum's collections are available to researchers on request.

See <http://www.nelm.org.za> for further information, or e-mail: [nelm@ru.ac.za](mailto:nelm@ru.ac.za).

## RHODES UNIVERSITY MATHEMATICS EDUCATION PROJECT (RUMEP)

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The Rhodes University Mathematics Education Project is an outreach programme of the University. RUMEP engages in the professional development of teachers, and develops curriculum resources for use in schools. It publishes reports, articles and newsletters in the field of mathematics education, and provides a centre for research in mathematics education.

RUMEP offers an accredited three year BEd course (in-service) for practicing Mathematics teachers in all phases. It also conducts short courses for the Department of Education and other NGO's.

## SOUTH AFRICAN INSTITUTE FOR AQUATIC BIODIVERSITY (SAIAB)

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### Director's Personal Assistant

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#### Research Support Officer

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#### Biodiversity Information Manager

W Coetzer, MSc (UCT)

#### Molecular Laboratory Manager

TL Bodill, MSc (Rhodes)

## RESEARCH INSTITUTES AND UNITS

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### SCIENCE SERVICES:

#### **African Coelacanth Ecosystem Programme (ACEP)**

##### **ACEP Scientist**

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##### **ACEP Human Capital Development Manager**

G van Heerden, MSc, MBA (Rhodes)

##### **ACEP Technical & Scientific Manager**

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##### **ACEP Scientific Technician**

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##### **ACEP Marine Technician**

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Dr M Lipinsky

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Dr TF Naesje

Dr AD Connell

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Dr F De Moor

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Dr A Kock

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Dr S Lamberth

Dr S Parker-Nance

Dr B Paxton

Dr S Plön

Dr W Potts

Dr M Smale

Dr J Stauffer

Dr N Strydom

Dr E Swartz

Dr J Taylor

Dr J Turpie

Mr D Tweddle

Dr F Uiblein

Dr J van der Molen

Prof B van der Waal

Prof M Villet

Dr D Woodford

### HONORARY FELLOWS:

Prof. BR Allanson

Prof. MN Bruton

### SCIENTIFIC ADVISORY COUNCIL:

Prof Warwick Sauer - HOD, Department of Ichthyology & Fisheries Sciences, Rhodes University

Prof Jay O'Keeffe - Professor and Research Associate, Rhodes University, Grahamstown

Dr Lawrence Oellermann - Oceanographic Research Unit, Durban

Dr Mmbofheni Stanley Liphadzi - Water Research Commission, Pretoria

Dr Harrison Pienaar - Council for Scientific and Industrial Research, Pretoria

Dr Michelle Hamer - South African National Biodiversity Institute, Pretoria

Prof Charles Griffiths - University of Cape Town

The South African Institute for Aquatic Biodiversity (SAIAB) is a National Facility of the National Research Foundation (NRF) and serves as a major scientific resource for knowledge and understanding of the biodiversity and functioning of Africa's aquatic ecosystems. By virtue of its unique position with regard to both marine and freshwater biogeographical boundaries in southern Africa, SAIAB ideally placed to monitor and document climate change in the region. From a marine perspective South Africa forms the southern apex of a major continental mass,

flanked by very different marine ecosystems on the east and west coasts, and projecting towards the cold Southern Ocean. The biodiversity of inland waters is equally relevant to the national interest and SAIAB's scientific leadership and expertise in freshwater aquatic biodiversity is vital when dealing with issues arising from exponentially increasing pressures of human population growth and development.

SAIAB's research scope spans the full spectrum of aquatic environments: from marine offshore to inland freshwater catchments. Scientific investigations cover conservation biology issues that link biodiversity at the molecular, organism and community levels with the environment. **Conservation Biology & Ecology** research focuses on understanding the processes underpinning aquatic biodiversity in order to inform the conservation of those resources. **Molecular Biology & Systematics** research focuses on the exploration and description of southern African aquatic biodiversity from a molecular to a faunal level. The geographical focus of projects extends from the primary focus area, South Africa, through southern Africa to the African continent.

Scientists are involved in numerous collaborative research programmes concerned with aquatic biodiversity and serve on several national advisory committees. They are also involved in teaching undergraduate and postgraduate courses, supervising Honours, MSc and PhD projects particularly through the Rhodes Department of Ichthyology and Fisheries Science, as well as through other universities, both nationally and internationally.

SAIAB has an internationally recognised profile in ichthyological research and has a dynamic and active research staff and post graduate student school. With respect to platform provision within the National System of Innovation (NSI), as a National Facility SAIAB is required to provide platforms which are generally not available in other institutions, to the research community.

SAIAB defines a Platform as a unique set of skills and/or infrastructure which is made available to the broader research community within the NSI. Despite its remote situation in the rural Eastern Cape, SAIAB provides four primary research platforms to the broader national and regional aquatic biodiversity

research community:

**Marine Research Platforms: The African Coelacanth Ecosystem Programme (ACEP) and Acoustic Tracking Array Platform (ATAP)** which offer among other support, technical expertise, ships' time, coastal craft, specialised equipment, monitoring networks and dive units. ACEP is the largest inter-institutional, multi-disciplinary, marine programme in South Africa. ACEP is a flagship programme of the Department of Science and Technology and is managed as a Marine Science platform of the NRF by the SAIAB. ACEP promotes competitive, multidisciplinary, multi institutional east coast marine research with an emphasis on building capacity and transforming marine science, providing competitive access to funding, research platforms and marine research infrastructure within the National System of Innovation (NSI). ACEP provides a 13m catamaran research vessel, *uKwabelana* and a Remote Observation Vehicle (ROV) capable of diving to 300m depth, for use by the South African marine research community. Through ACEP, SAIAB plays the key interface role between researchers and other South African research platforms. Partnerships developed by ACEP with international projects and various South African Government departments have allowed competitive scientific access to the R/V *Algoa* and other ships.

ACEP has developed an excellent track record of training the next generation of marine scientists, technicians and innovators. A profound paradigm shift resulted in SAIAB initiating the *Phuhlisa* Programme through ACEP in 2012 to ensure black South African postgraduates are trained in the marine sector and that marine science is more deeply entrenched at historically black universities. A significant highlight of recent years has been SAIAB's growing relationship with the Universities of Fort Hare and Walter Sisulu in the Eastern Cape through the ACEP *Phuhlisa* Programme. One-third of ACEP's funding is now dedicated to the *Phuhlisa* Programme, which focuses on capacity building and generating interest in and enthusiasm for marine sciences at the two universities. Currently, ACEP reaches a minimum of 80 postgraduate students. This is in addition to over 100 supported in the previous phases. The *Phuhlisa* programme provides a winning model to develop high quality graduates in marine science by inspiring talent at historically

black universities in South Africa and 2016 will see *Phuhlisa* expand to the University of Zululand and the University of the Western Cape.

The **ATAP** team at SAIAB manages an expanded network of automated data-logging acoustic telemetry receivers that are moored to the ocean's floor around the South African coastline. ATAP is a collaborative programme which provides a service to the greater marine science community. The ATAP network includes over 100 marine and estuarine receiver stations from Hout Bay on the cool temperate Atlantic coastline, to Mozambique on the sub-tropical east coast. Since the inception of ATAP more than 400 animals have been tagged with transmitters. Data uploaded from the receivers which are serviced by SAIAB and its local collaborating partners is stored on a national database.

SAIAB also offers a range of specialised and customised equipment for working in the aquatic environment in and around South Africa. These include a Baited Remote Underwater stereo-Video system (Stereo-BRUVs), specialised trailers, electro-fishers, inflatable and fixed hull boats, nets and environmental monitoring instruments.

**The Collections and Associated Specialised Laboratories Platform** includes a molecular preparation laboratory, an X-ray laboratory with a digital X-Ray inspection system and, in association with the Rhodes Department of Ichthyology and Fisheries Sciences (DIFS), a brand new ecological modelling laboratory. SAIAB is the recognised leader in wet collection management and curation in South Africa. The JLB Smith Collection Management Centre provides a collection-sorting laboratory, accommodation for collection staff and for visiting scientists and students. The Wet Collections Storage Facility provides storage for the National Fish Collection, African Amphibian Collection, a new and developing Cephalopod Collection and Aquatic Biodiversity Tissue Bank. Back-up support includes a separate ultra-cold storage tissue biobank and preparation room; a bulk inflammable liquid storage chamber with automated preservative mixing and delivery; specialised specimen preservation laboratories and glass storage; and an isolated dermestarium for the preparation of vertebrate skeletal specimens. SAIAB also manages the National Diatom Collection which is housed at

the University of the North-West. These are dynamic research platforms for molecular, systematic and conservation orientated studies.

**The Biodiversity Information Platform** includes the **Biodiversity Informatics Unit** and the **Margaret Smith Library**. The Biodiversity Informatics Unit supports collections management and is available to anyone with a need for management and analysis of aquatic biodiversity and ecological information. SAIAB offers a hosting platform to various museums and is pioneering new techniques in biodiversity data-mining. The Margaret Smith Library is a shared resource with Rhodes University and houses one of the largest document collections and resource centres for African aquatic biodiversity research in Africa. The Library was established in the 1940s with a small collection of books and scientific papers belonging to Professor JLB Smith. The early indexing system and card catalogue were developed by Professor Margaret Smith. The collection was first stored in a small room in Artillery Road, which was then part of the Rhodes University Ichthyology Department. The library moved to the present premises in Somerset Street in 1975. The refurbishment of the Library in 2010 allowed for a number of firsts: a dedicated computer lab; new library processes and procedures; creation of social media and Open Access initiatives; additional partners and new collections. The Library holdings include about 5000 books and 2000 serial titles, a large reprint collection dating back to the 1800s and 206 titles in the rare book collection. As an academic library, the Margaret Smith Library shares resources and library services with Rhodes University Library to support research and teaching and main users are staff and students of the Department of Ichthyology and Fisheries Sciences (DIFS). The Library contributes to the Rhodes University online catalogue and Open Access institutional repositories at Rhodes and the NRF. The Margaret Smith Library is also partnered with the Biodiversity Heritage Library - Africa.

SAIAB also works in close partnership with the Coastal (Elwandle) Node of the **South African Environmental Observation Network (SAEON)**. This partnership with SAEON involves projects in the Sundays River catchment area and SAEON Algoa Bay Sentinel Site. The synergies with the SAEON Elwandle Node are highly significant and

position the SAIAB as an international and regional centre for South Western Indian Ocean (SWIO) marine research.

SAIAB's **Science Advancement** is closely aligned with SAIAB's research structures. SAIAB uses the NRF PhD Pipeline Project as driver for project-driven Science Advancement in the facility. Through targeted outreach to HEIs, and the ACEP *Phuhlisa* Programme, SAIAB is establishing a student network from undergraduate to postgraduate level to grow human resource capacity in the biodiversity sector. Research staff also provide development training programmes for aquatic scientists and fisheries personnel from many African countries.

One of SAIAB's core activities is the dissemination of knowledge, and amongst other publication avenues, this is done through its own publications to which SAIAB staff and associates contribute. The Institute has published a number of books on the freshwater fishes of southern Africa, fishes of the Southern Ocean, the biology and ecology of southern African estuarine fishes and coastal fishes of southern Africa as well as the *Smithiana* monograph and Special Publications series. Popular guides to estuaries and coastal fisheries resources have also been published and SAIAB's research and conservation efforts are increasingly present in the media.

## SOUTHERN OCEAN GROUP

### **Director**

PW Froneman, PhD(Rhodes)

### **Senior Research Officer**

CD McQuaid, PhD(UCT)

The Southern Ocean Group was established in the Department of Zoology and Entomology in 1981 under the directorship of Professor Brian Allanson. The group was the first unit in South Africa involved in the study of biological oceanography in the Southern Ocean, Antarctica and in the vicinity of the Prince Edward Islands. This programme forms part of the oceanographic component of the South African National Antarctic Research Programme (SANAP) and is concerned with the spatial variability in Southern Ocean ecosystems and its response to global climate change. Present projects concern the spatial and temporal patterns in the plankton community structure and food web dynamics in the Southern Ocean. This research provides opportunities for research towards Honours, Master's and Doctoral degrees, and postgraduates form a very active part of the group. The group has close collaborative links with research institutes in South Africa and other countries and is funded by the Department of Science and Technology.