

# NELSON MANDELA UNIVERSITY



## Science Faculty

Derek du Preez

School of Environmental Sciences



# School of Environmental Sciences





Why study Environmental Sciences?

# Environmental Sciences

Agriculture & Game Ranching

Botany

Geosciences = Geology &

Geography

Oceanography – postgraduate  
degree

Zoology



# Agricultural Management Diploma Port Elizabeth/George



Livestock  
Crops

Commercial  
Subsistence



**Agricultural  
Management's stall  
at Open Day**

# Game Ranch Management

Diploma

Port Elizabeth



# Geosciences

Degree

Geography

Geology



Human population studies

Remote sensing

Climatology

Integrated Environmental Management

Resource conservation



Geography students on a field trip



## Geology of the Cape Fold Belt range

# Botany

## Degree



Algae  
Plants  
Physiology  
Ecology  
Conservation  
Integrated Environmental Management



**Botany students getting  
their feet wet**



# Zoology

Degree



Elephants and Whales  
to  
Insects and Crabs .....

.... and much, much more!!!!



## Zoology Dept at National Marine Week

# Some Careers

Teacher

Marine biologist

Game farm

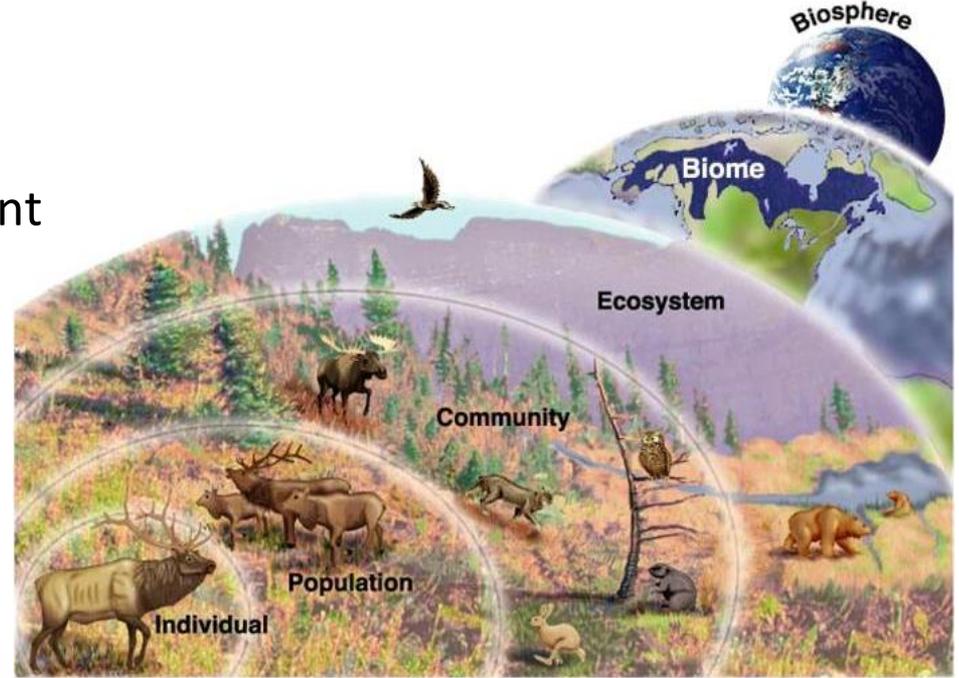
Ecotourism

Integrated Environmental Management

Fisheries

Conservation

Nature Reserve Ranger



# Study Marine Biology

The marine environment offers a variety of career options almost as diverse as the organisms that inhabit these fascinating habitats. From the mysterious wonders of the ocean deep to the delights of tidal pools, interesting study opportunities abound for those who study marine biology.

Marine life is a vast resource that contributes to the functioning of the Earth. Our ability to detect and forecast changes within our oceans and along our coastlines will contribute to our survival. If we want to use our marine resources, we must do so in a way that ensures their survival.

So why not consider a career in which you can make a difference?

“*From birth, man carries the weight of gravity on his shoulders. He is bolted to earth. But man has only to sink beneath the surface and he is free.*”

- Jacques-Yves Cousteau, Time Magazine (28 March 1960)



## Careers

A career in marine biology means you could work in:

- ▶ Conservation
- ▶ Fisheries
- ▶ Mariculture
- ▶ Leisure and tourism
- ▶ Pharmaceutical Industry
- ▶ Research
- ▶ Education
- ▶ Museums
- ▶ Environmental management
- ▶ Coastal zone management
- ▶ Water management



## Who does what?

**Marine taxonomists** discover and describe new species, **marine zoologists** study animals, and **marine botanists** study plants and algae in the marine environment. **Marine ecologists** study the interactions between organisms and **marine physiologists** explain how these living organisms function in the varied conditions found in the ocean.

## What it takes

To be a marine biologist you need to be:

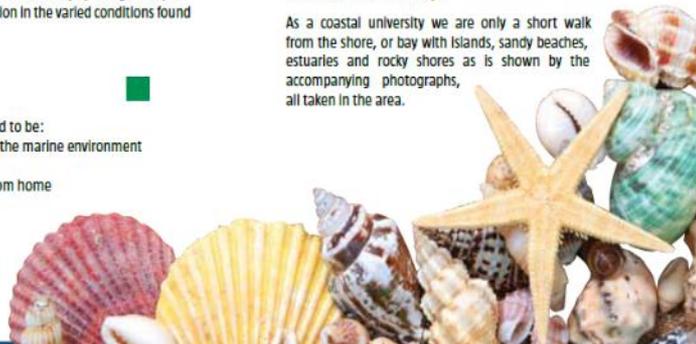
- ▶ Passionate and curious about the marine environment
- ▶ Physically fit
- ▶ Willing to spend time away from home
- ▶ Accurate

You will need more than a BSc to be a marine biologist. Some post-graduate qualification will be required.

## On our doorstep

One of the joys of studying marine biology at Nelson Mandela Metropolitan University is that your laboratory – the place where you will discover the detailed wonders of our watery world – is on our doorstep.

As a coastal university we are only a short walk from the shore, or bay with Islands, sandy beaches, estuaries and rocky shores as is shown by the accompanying photographs, all taken in the area.



Change the World

# Study Environmental Management

With the problems facing Earth today (loss of biodiversity, increased atmospheric CO<sub>2</sub>, global warming, the hole in the ozone layer), well-trained and equipped environmental managers are key in ensuring that decisions are made to protect our resources.

Today the environment and its management are on a par with economic and social priorities.

Environmental managers work in a variety of careers. These include managing the process of applications for permission to develop in sensitive or important areas. In this context, you would serve as a go-between for the authorities that control development and the developer. In controlling the process you would manage specialists that investigate the potential impacts of the proposed development on the economic, social, and biophysical environment.

As an environmental assessment practitioner your work could be lucrative as well as strategic, because you would contribute to protecting the environment and managing our natural resources in a sustainable way.

Several companies or organisations employ environmental managers who are responsible for managing their environmental profile. Engineering, construction, chemical, energy and mining companies often employ a dedicated environmental manager for this purpose. Such a career would include contributing to the reduction of the company's impact on the environment.

Environmental managers may also specialise in pollution prevention or control and with the global focus on increased atmospheric CO<sub>2</sub> they may also specialise in developing solutions that are energy and carbon efficient.

Our ability to sustainably manage our economic, social and natural resources will ultimately ensure our own survival.

So why not consider a career in which you can make a difference?

“*Today's best-run companies are achieving economic, social and environmental success.*”

- Andrew Savitz & Karl Weber



## Careers

A career in environmental management means you could work in:

- › Mining
- › Industry
- › Teaching
- › Government
- › National parks
- › Conservation planning
- › Coastal Zone management
- › Marine protected areas
- › Urban and rural planning
- › Research
- › Environmental management systems for industry
- › Geographic information systems
- › Environmental education

## Who does what?

Environmental managers find ways to utilise resources in a sustainable way, so the economic benefit is mirrored in a social benefit while conserving the nature and status of Earth's biodiversity. This is achieved through integrated environmental management tools of:

- › Strategic environmental assessment
- › Environmental and social impact assessment
- › Environmental management plans
- › Environmental management systems and auditing
- › Environmental contracts
- › Environmental accreditation
- › Adaptive management



## What it takes?

To be an environmental manager you need to:

- › Be well organised
- › Work well with people
- › Be resourceful
- › Be tactful
- › Be creative

## Opportunities

Nelson Mandela Metropolitan University offers an opportunity to study environmental management from a biophysical, economic or social perspective. Opportunities exist to work with industry, experienced consultants, local government officials as well as non-governmental organisations.

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# Study conservation biology

Conservation biologists work in a variety of careers almost as diverse as the animals, plants and ecosystems they conserve. They are custodians of marine protected areas and oceanic islands, megaherbivores and carnivores, endangered animals and plants, nature reserves, rare habitats and the Earth: our home. They study the large and small, and design global scale or plot-size conservation plans.

With the problems facing the Earth today (loss of biodiversity, increased atmospheric CO<sub>2</sub>, global warming, the hole in the ozone layer), conservation biologists are key in providing information on which management decisions can be based. Our ability to monitor, predict and plan for sustainable utilisation of our natural resources will ultimately ensure our own survival.

So why not consider a career in which you can make a difference?

## Careers

A career in conservation biology means you could work in:

- ▶ National parks
- ▶ Game ranches
- ▶ Conservation planning
- ▶ Coastal zone management
- ▶ Marine protected areas
- ▶ Island biodiversity
- ▶ Urban and rural planning
- ▶ Wildlife
- ▶ Research
- ▶ Herbaria
- ▶ Zoological gardens
- ▶ Geographic information systems
- ▶ Museums
- ▶ Environmental education
- ▶ Leisure and tourism



“Only after the last tree has been cut down. Only after the last river has been poisoned. Only after the last fish has been caught. Only then will you find that money cannot be eaten.”

- Cree Prophecy



## Who does what?

Conservation biologists study the nature and status of the Earth's biodiversity with the aim of protecting species, their habitats and ecosystems from extinction. In this “discipline with a deadline” (Millennium Ecosystem Assessment, 2005), conservation biologists research or manage populations and habitats, conservation zoologists investigate animals, conservation botanists study plants and algae. Marine conservation biologists focus on organisms in the marine environment while terrestrial conservation biologists are custodians of all things on land.

## What it takes

To be a conservation biologist you need to be:

- ▶ Passionate and curious about nature
- ▶ Physically fit and willing to spend time in the wild

Or, if you prefer a less “wild” lifestyle and are interested in conservation planning – you could work on computer-based prediction and design.

## On our doorstep

As a declared nature reserve, Nelson Mandela Metropolitan University offers an opportunity to study conservation biology in the real world. Opportunities exist to work in private game/nature reserves (eg. Shamwari), municipal nature reserves (like Cape Recife across the road from the campus) and national game reserves (eg. the Greater Addo National Park). As a coastal university, we are a short walk from the shore and an hour boat-ride from Islands.



“Nature is the greatest source of excitement; the greatest source of visual beauty; the greatest source of intellectual interest, the greatest source of so much in life that makes life worth living.”

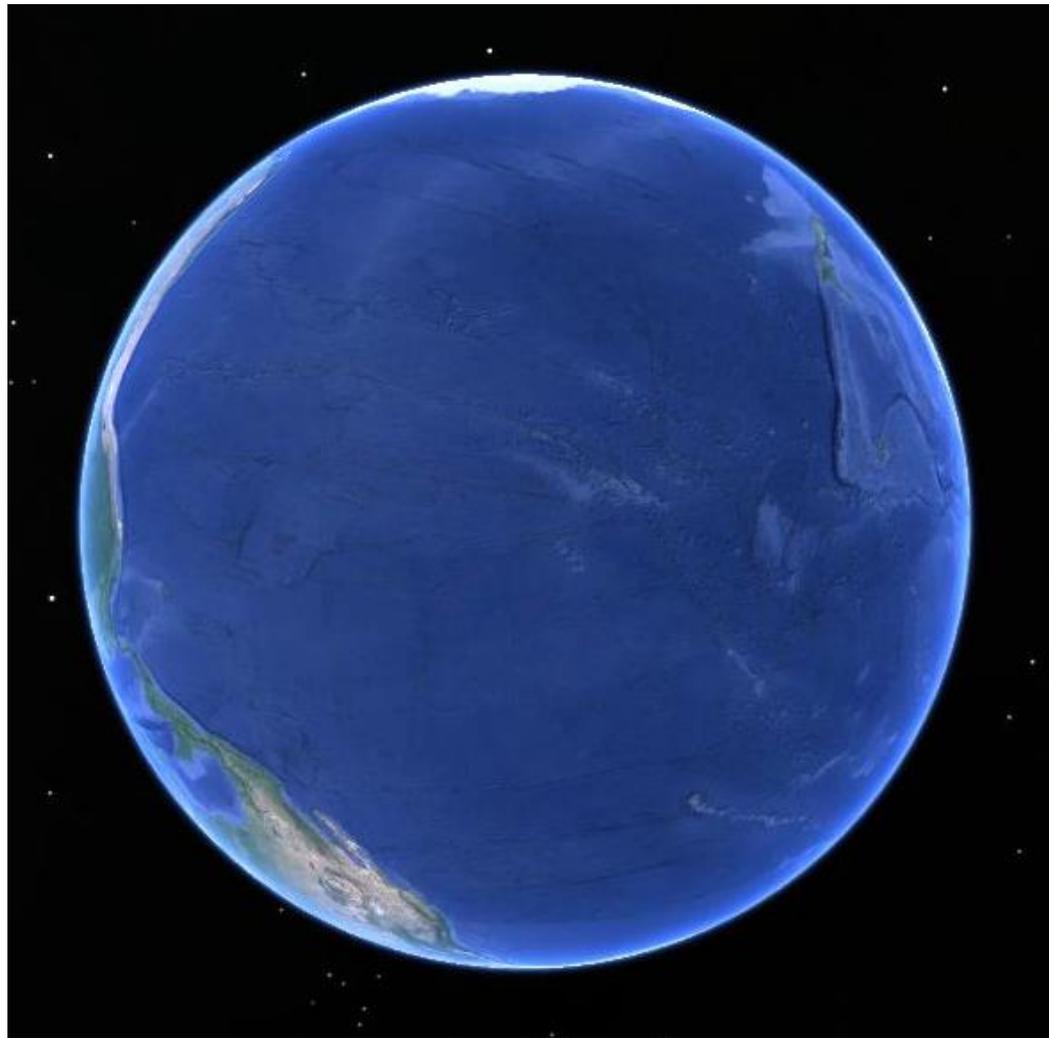
- Sir David Attenborough (NMMU honorary doctorate 2010)

NMMU participates in world-leading conservation projects including:

- CAPE – Cape Action for People and the Environment
- STEP – Subtropical Thicket Ecosystem Plan
- GANP – Greater Addo National Park
- BCA – Baviaanskloof Conservation Area
- WWF – Working for Water
- MOSS – Metropolitan Open Space System
- LOICZ – Land-Ocean Interactions In the Coastal Zone
- SAIAB – South African Institute for Aquatic Biodiversity
- NSBA – National Spatial Biodiversity Assessment
- ASCLME – Agulhas Somali Currents Large Marine Ecosystem Project
- ACEP – African Coelacanth Ecosystem Programme
- SAEON – South Africa Environmental Observation Network

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# Oceanography





# NMU diver

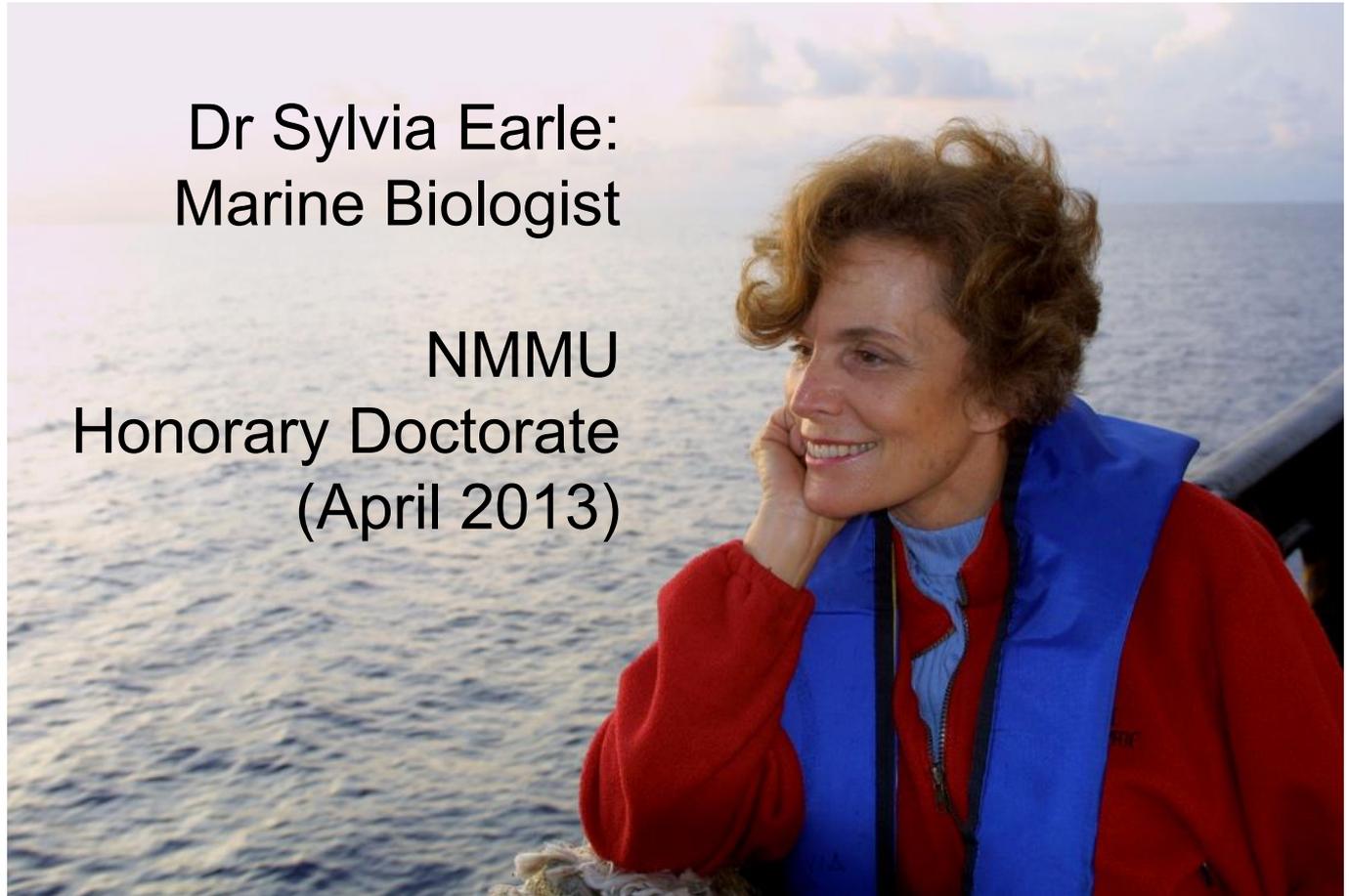
Change the World

# Why study at NMU?

- Excellent quality education
- Reasonable cost
- The ocean!
- Reputation of the Faculty (and institution)
- Friendly and helpful staff
- Student centred
- Safety
- The ocean!
- Great environment for study

Dr Sylvia Earle:  
Marine Biologist

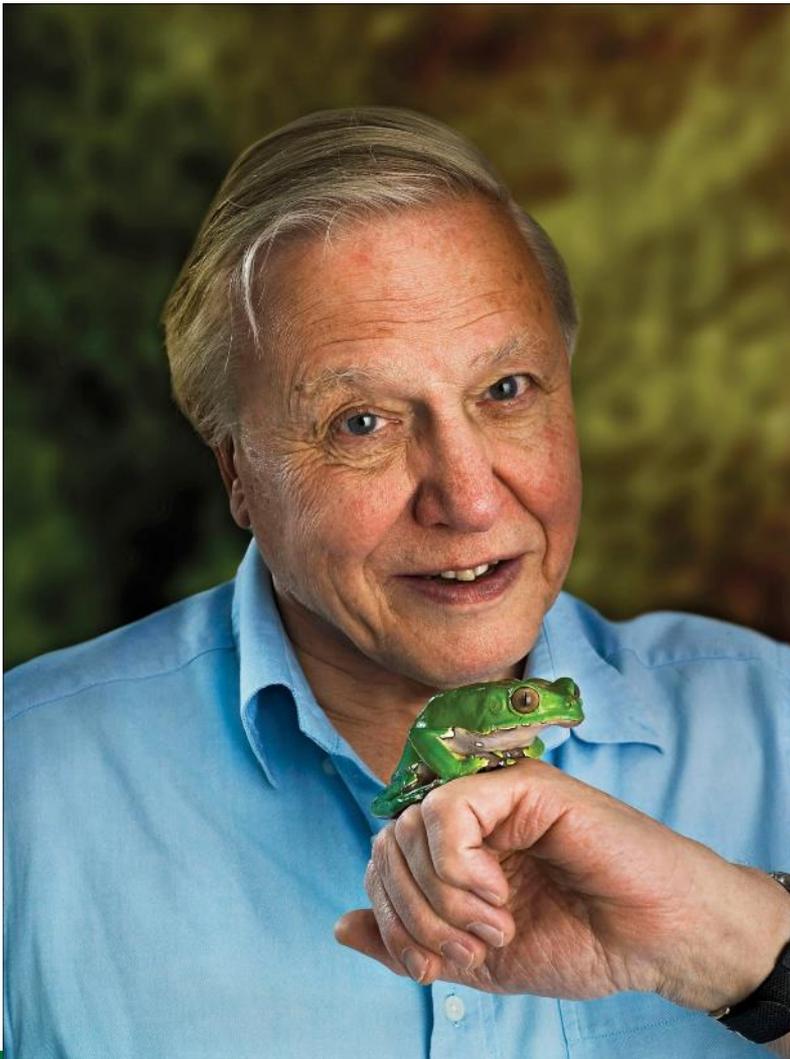
NMMU  
Honorary Doctorate  
(April 2013)



Prof Phillip Tobias

NMMU Honorary  
Doctorate (April 2012)





Sir David Attenborough

NMMU Honorary  
Doctorate (April 2011)

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**Change the World**

[mandela.ac.za](http://mandela.ac.za)