

## ANIMAL BEHAVIOURIST

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South Africa's rich biodiversity has some of the most iconic species in the world, also including some of the most threatened, like the black rhino and elephant found in national conservation areas. These conservation areas are often surrounded by local communities sometimes impacted by human and wildlife conflicts. Animal behaviourism aims to understand animal behaviour and advise on their management and interactions in biophysical and social environments.

Animal behaviourists study animal behaviour and interactions. They research a wide range of species including birds, wildlife and livestock, examining their instinctual behaviour and the psychology that shapes their interactions within biophysical environments and in relation to other animals and people. Animal behaviourists can also be involved in the planning, management and monitoring of species within specific environments, such as black rhino habitats.

Animal behaviourists primarily work outdoors in natural environments where animals can be observed. They often collaborate with other natural science researchers. They would also work from an office base and could work in a laboratory setting as well.

## Skills

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Animal behaviourists must have a strong background in zoology and animal behavioural theory. They will also benefit from:

- Understanding interactions in ecosystems and the natural environment
- Excellent research competence
- Astute skills of observation and extensive patience
- Ability to work flexibly within some form of organisational structure

## Tasks

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- Observe, collect and analyse data on the behaviour of animals
- Develop plans and processes for the management of animals and their interactions within conservation and social environments
- Advise conservation managers in decision-making processes

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Zoology at all universities

B.Sc.Agric., B.Sc.Agric. (Hons), M.Sc.Agric. in Animal Science at NWU, SU, UFH, UFS, UNISA, Univen, Unizulu and UP

## Employers

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Research institutions, zoos and aquariums.

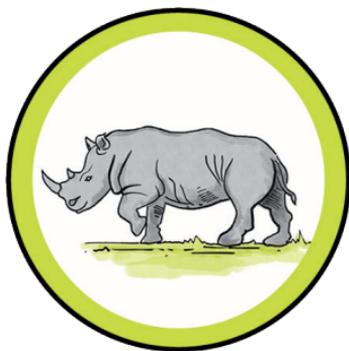
Conservation organisations, both public, private and NGOs.

Private veterinary practices.



Forestry, Fisheries and the Environment  
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## ARCHAEOLOGIST

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South Africa has nine iconic World Heritage Sites and numerous important archaeological sites that need to be preserved to ensure that our national heritage is conserved. Archaeology involves studying ancient and the recent human past through material remains to understand culture, traditions and past civilizations.

Archaeologists collect and study artefacts such as ruins, tools, pottery and cave wall art of the past to develop a picture of how people lived in earlier cultures and societies. They examine, describe and classify artifacts according to archaeological guidelines. Some archaeologists work in protecting and managing archaeological or cultural heritage sites while others can focus on the protection of historical buildings ensuring compliance with the National Heritage Resources Act.

Archaeologists often work in teams with specialised professionals like anthropologists, curators and historians. They often travel in teams to remote areas for relatively long periods of time working through excavation sites. They can work in laboratories preserving artefacts or perform desk-based research in offices, as well.

## Skills

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Archaeologists require a solid background in history and sociology and must have a sound knowledge of heritage legislation and policy. They will additionally benefit from:

- Excellent research capability
- Highly methodical in fieldwork and laboratory competence
- Project management
- Good verbal, written communication and presentation skills

## Tasks

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- Plan research projects to answer questions and test hypotheses about human activity through environmental data of the past
- Develop data collection methods
- Document and analyse data, laboratory samples and other sources of information
- Advise organisations on the cultural impact of proposed plans, policies and programs

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Archaeology at UCT and Wits

B.A., B.A. (Hons), M.A. in Archaeology at UNISA, Univen, UP and Wits

## Employers

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Research institutions.

Heritage sites and museums.



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Higher Education and Training





## BIOLOGIST

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South Africa has natural wealth beyond comparison with exceptional species richness, diversity and endemism. To ensure the integrity of our ecological systems and services for natural and human wellbeing, we need accurate biological information. Biology in conservation examines interactions between living things (natural and human) with and within ecological systems.

**Biologists study the origin, anatomy, physiology, reproduction and behaviour of living organisms and the ways in which they interact with the environment in which they live. They can advise, consult, conduct, oversee and manage biological and environmental research projects. Some biologists might also design conservation management plans for managing species and critical biodiversity areas as some examples.**

Biologists undertake extensive fieldwork and work in laboratories processing and curating samples. They might also spend some time in an office. They work with and advise other natural science professionals as well as teach and supervise students in the related research fields.

## Skills

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Biologists require a comprehensive knowledge and understanding of biological principles, processes and interactions. They will additionally benefit from:

- Strong methodological ability in the field and laboratory
- Extensive research competence
- Critical and analytical thinking ability and problem-solving skills
- Excellent written and verbal communication and presentation skills

## Tasks

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- Study the origin, structure, function and development of animal and plant life within ecological environments
- Collect and analyse biological data
- Review and provide feedback on reports related to biological projects
- Supervise projects and report and publish scientific findings

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences at all universities

## Employers

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National, provincial and local government.

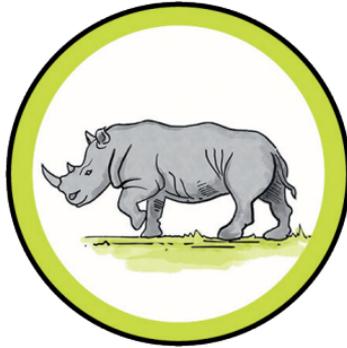
Conservation organisations, both public and private.

NGOs, research institutions, zoos and aquariums.



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## CHIEF INFORMATION OFFICER

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South Africa has an incredible richness in natural assets that provide critical ecosystem services for economic and social development and wellbeing. Conserving biodiversity and supporting the sustainable use of natural resources requires up to date, reliable and accessible information, supported through the effective management of biodiversity information and supporting systems and processes.

Chief information officers plan, organise, direct, control and coordinate information and communication technology strategies. They evaluate and manage an organisation's use and needs for information and the technology to support collecting, processing, organising and making information available to varied users. They also oversee issues of security related to these systems, formulating strategies, policies and plans for best operational use.

Chief information officers predominately work in an office environment within a fast-changing technology landscape. They often manage a team of system analysts, programmers and other computer-related professionals as well as consult with vendors around technology and information requirements.

## Skills

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Chief information officers require excellent knowledge of information systems and infrastructure and related technology and innovation, along with:

- Creative problem-solving ability
- Excellent communication and information presentation skills
- Strong understanding of business processes
- Extensive team management experience

## Tasks

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- Evaluate and make recommendations for the organisations information technology use and needs
- Direct and prepare information management policy, strategies and standards
- Manage and control budgets for information technology needs
- Supervise the security of all information technology systems

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Information Technology at NWU, UFS, UJ and UNISA

B.Sc., B.Sc. (Hons), M.Sc. in Computer Science at NMU, NWU, RU, SPU, SU, UCT, UFH, UKZN, Unizulu, UP, UWC and Wits

Diploma, Advanced Diploma, M.Tech in Information Technology at CPUT, NMU, MUT, TUT, UJ, UNISA and VUT

## Employers

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National, provincial and local government.

NGOs, community-based and development organisations.

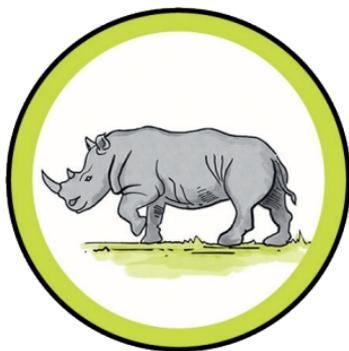
Information technology companies.

Various organisations requiring information technology services.



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## CONSERVATION SCIENTIST

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Nature and ecosystem services supports all life on earth, intrinsically and through providing for subsistence, livelihoods and natural resources for production and consumption. Biodiversity loss, the result of unprecedented development compromises ecosystems and the services through which life is sustained. Ongoing biodiversity assessments highlight potential threats and opportunities to minimise impact on biodiversity and loss of these critical ecosystem services.

Conservation scientists undertake research and develop and implement programs for the conservation and sustainable use of natural resources. They research the interactions between humans and ecosystems and decide on the systems, tools and infrastructure to be used for the management and restoration of priority conservation sites. A conservation scientist can also conduct environmental impact studies to examine the ecological effects of pollutants, diseases, human activities, nature and climate change on specific areas.

Conservation scientists collaborate with specialist professionals and site managers to supervise conservation projects. They often undertake fieldwork and could also work in a laboratory and office environment processing reports and preparing recommendations for policy and legislation.

## Skills

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Conservation scientists need a thorough and extensive knowledge of biodiversity and ecology. They could also benefit from a background in related policies and:

- Strong analytical and problem-solving ability
- Ability to carry out fieldwork and laboratory processes
- Extensive research competence
- Good verbal and written communication and presentation skills

## Tasks

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- Conduct research and perform field and laboratory analysis of samples
- Develop conservation plans and coordinate the implementation of environmental management systems
- Assess the compliance and impact of proposed projects
- Provide technical advice and conservation support services

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Environmental Science at NMU, RU, UCT, UJ, UKZN, UMP, UP, UWC and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Geography in Environmental Studies at all universities

B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences at all universities

Diploma, Advanced Diploma, M.Tech in Nature Conservation at CPUT, MUT, NMU, TUT, UMP and UNISA

## Employers

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National, provincial and local government.

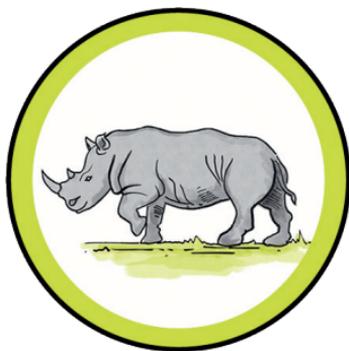
NGOs, and private consultancies.

Research institutions.



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## CURATOR

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South Africa has natural wealth almost beyond comparison with exceptional species richness, diversity and endemism. Conservation management and development planning requires sound and in-depth knowledge of the nature and scope of biodiversity to minimise impacts and secure the integrity of biodiversity and the ecosystem services it supports. Curation involves the preservation, cataloguing and study of ecological information about plants, animals and fossil species.

Curators plan and oversee the management of collections of plants, animal specimens and archaeological artefacts. They design and manage the exhibition and events around preserved species, sometimes also promoting information to the public. They can also gather samples for collections and preserve and maintain rare specimens using specialised methods. Some curators can assist in administrative processes, encouraging funders to protect and display important environmental data.

Curators can work in an office environment but also spend time organising displays or collecting specimens for exhibitions. Some can preserve artefacts in laboratory settings and can sometimes be exposed to dangerous chemicals.

## Skills

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Curators require an in-depth understanding of plant and animal species and preservation and curation processes and will additionally benefit from:

- Excellent attention to detail
- Extensive analytical and research skills
- Strong organisational and administrative ability
- Excellent scientific communication capabilities

## Tasks

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- Research the origin, distributions and use of cultural and historical artefacts
- Direct classification and cataloguing of materials and objects
- Evaluate and preserve records of museum objects
- Organise and publicise exhibitions and special displays

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Zoology or Botany at all universities

B.Sc., B.Sc. (Hons), M.Sc. in Archaeology at UCT and Wits

B.A., B.A. (Hons), M.Sc. in Anthropology at RU, SU, UFS, UJ, UL, UNISA, Unizulu, UP, UWC and Wits

## Employers

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National parks and gardens.

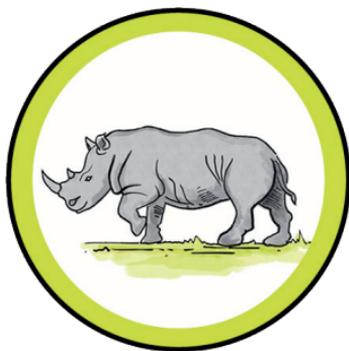
Museums and zoos.

Research institutions.



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Higher Education and Training





## EARTH AND SOIL SCIENTIST

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Soil plays a critical role in supporting biodiversity and effective ecological functioning. It similarly plays a key role in water purification and acts as a sink for atmospheric carbon dioxide. It is further vital in sustaining agriculture for food and economic security. To ensure the sustained health of soil, earth and soil science provides information about its composition and quality to manage changes to soil quality due to over-use, climate change and pollution, amongst others.

Earth and soil scientists analyse the composition, structure and other physical and chemical attributes of soil. They plan and implement soil management programmes and conduct environmental impact assessments for urban parks, agricultural enterprises and industrial sites. They can also develop plans and strategies for the reclamation and preservation of soil in areas such as wetlands, for example.

Earth and soil scientists collaborate with geologists as well as agriculture and environmental engineers to discuss strategies for soil rehabilitation and conservation. They can work between the field, laboratory and office environment, deliberating soil properties and sustainable soil practices.

## Skills

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A vast knowledge of soil properties and the physical and human interrelationships that impact its quality is needed by earth and soil scientists. They will further benefit from:

- Extensive research and laboratory analysis competence
- Meticulous attention to detail
- Logical analytical thinking skills
- Significant problem-solving skills

## Tasks

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- Conduct research and perform analysis on collected soil samples
- Develop and coordinate the implementation of soil management systems
- Conduct environmental impact audits and make recommendations
- Advise and provide support services to varied stakeholders

## Studies

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B.Sc.Agric., B.Sc.Agric. (Hons), M.Sc.Agric. in Soil Science at SU, UFH, UFS, UKZN, UL, Univen and UP

B.Sc., B.Sc. (Hons), M.Sc. in Geography specialising in Geomorphology at NMU, SU, UCT, UFH, UFS, UJ, UKZN, Univen, Unizulu, UP and Wits

## Employers

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National, provincial and local government.

Research institutions.

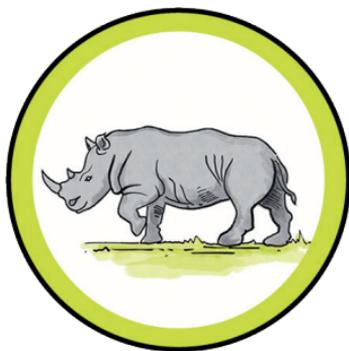
Private consultancies.

Agricultural production and fertilizer manufacturing companies.



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## ECOLOGIST

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South Africa is highly biodiverse, boasting nine biomes within its national borders. 10% of the world's plant species and 7% of its reptile, bird and mammal species make up intricate ecosystems. Understanding the interactions and interrelationships between living organisms and the physical environment, helps to identify changes in ecosystems that affects its health and ultimately the services it provides. It also informs strategies to conserve and ensure resilient ecosystems to secure all life on earth that it supports.

Ecologists study whole ecosystems, investigating the nature and distribution of living organisms, their interactions within and connection to the surrounding environment. They collect and test samples in marine, freshwater and terrestrial ecosystems. They use the data to plan and advise on environmental policies, species and habitat management, environmental restoration and conservation strategies. Some can also develop environmental education programmes to build ecological knowledge amongst key stakeholders.

Ecologists can engage with conservation and environmental scientists, policymakers and social scientists to make recommendations on the effective conservation of ecosystems. They typically work between the field, laboratory and an office environment to collect and analyse ecological data.

## Skills

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Ecologists require a comprehensive knowledge and understanding of biological and ecological principles, processes and interactions. They will further benefit from:

- Strong methodical ability in the field and laboratory
- Extensive statistical modelling ability
- Critical and analytical thinking ability and problem-solving skills
- Excellent written and verbal communication and presentation skills

## Tasks

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- Conduct field, laboratory and theoretical research
- Provide models and analysis to establish influencing factors
- Develop conservation strategies and projects
- Advise stakeholders and publish findings for sustainable ecosystem management

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Botany, Ecology and / or Zoology at all universities

B.Sc., B.Sc. (Hons), M.Sc. in Conservation Ecology at SU and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Biodiversity and Conservation Biology at UWC

## Employers

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National, provincial and local government.

Conservation organisations, both public and private.

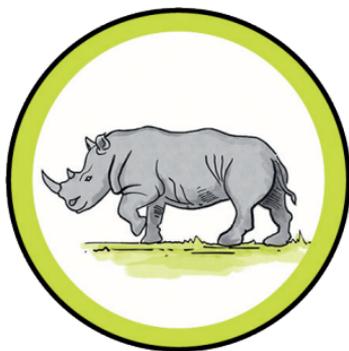
NGOs and research institutions.

Museums.



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Higher Education and Training





## ENVIRONMENTAL EDUCATION MANAGER

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South Africa's natural landscape is rich in biological and ecological diversity with over 95 000 species in nine distinct biomes to learn about. Healthy ecosystems are also critical to sustaining wellbeing and livelihoods of people, through economic and domestic activities. Education, training and learning activities play a key role in supporting understanding of and interactions in the environment and the development of actions for sustainable use and management of our natural assets.

**Environmental education managers develop, implement and evaluate environmental learning programmes and resource materials to raise awareness, share and promote knowledge and an understanding of the environment and interrelationships within it. They coordinate and facilitate presentations, workshops and can conduct guided interactive field activities. Some also train volunteers and community groups around specific environmental themes.**

Environmental education managers engage with different audiences in schools, colleges, businesses, community groups and the general public. They could work in a specific setting such as a cultural heritage site or museum or travel to sites on beaches, national parks or conservation sites to conduct educational activities.

## Skills

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A thorough understanding of the interrelated nature of the environment and experience in education, training and learning processes is required by environmental education managers, along with:

- Easily communicate complex environmental concepts and processes
- Excellent interpersonal skills
- Good planning and organisational competence
- Excellent written and communication skills

## Tasks

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- Research and develop environmental education materials
- Develop environmental education frameworks and programmes
- Coordinate the implementation of environmental programmes
- Identify, build and maintain networking structures and partnerships

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Environmental Science at NMU, RU, UCT, UJ, UKZN, UMP, UP, UWC and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Geography specialising in Environmental Studies at all universities

B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Botany, Ecology and/ or Zoology at all universities

Diploma, Advanced Diploma, M.Tech in Nature Conservation at CPUT, MUT, NMU, TUT, UMP and UNISA

Specialist post-doctoral studies in Environmental Education at NWU, RU, SU and UNISA

## Employers

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National, provincial and local government.

NGOs and community-based and development organisations.

Research institutions.

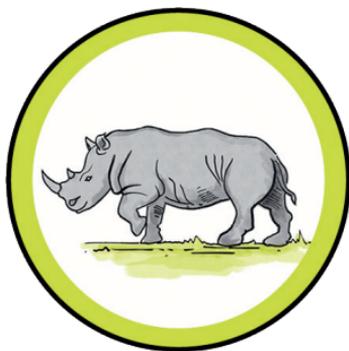
National parks and gardens.

Zoos, museums and aquariums.



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Higher Education and Training





## ENVIRONMENTAL SCIENTIST

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Boasting rich biological and ecological diversity, South Africa's natural landscape provides essential ecosystem services that supports socio-economic growth, development and livelihoods. Environmental risks, brought on by for example climate change, extreme weather events, increasing production and consumption, amongst others could significantly compromise these ecosystems and dependent human wellbeing and livelihoods. Environmental science explores environmental phenomena and people's interactions within the environment to identify opportunities for synergy and sustainable management.

**Environmental scientists study the environment and interrelationships of plants, animals and other organisms within it. They also consider external interactions and influences to understand changes within the environment. They conduct environmental impact assessments to identify potential environmental risks and develop management systems to address these challenges. Some develop environmental standards, guidelines and policies for industry to prevent further harm and to maximise protection of the environment.**

Through an interdisciplinary approach, environmental scientists collaborate with ecologists, environmental engineers and other professionals to address particular environmental challenges. They can work between an office and laboratory and travel to field sites to collect air, soil, water and other data for analysis.

## Skills

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Environmental scientists need to have an extensive understanding of environmental phenomena and interrelationships within the environment and will also benefit from:

- Strong analytical and problem-solving ability
- Ability to carry out fieldwork and laboratory processes
- Understanding of environmental legislation and policies
- Good verbal and written communication and presentation skills

## Tasks

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- Conduct environmental audits to evaluate potential impacts
- Develop and coordinate the implementation of environmental management systems
- Assess organisational compliance of environmental regulations
- Provide technical advice and support to organisations

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Environmental Science at NMU, RU, UCT, UJ, UKZN, UMP, UP, UWC and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Geography specialising in Environmental Studies at all universities

## Employers

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National, provincial and local government.

NGOs, community-based and development organisations.

Research institutions.

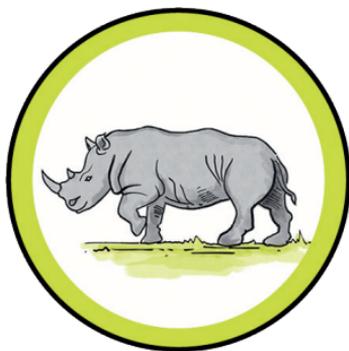
Construction and manufacturing companies.

Private environmental consultancies.



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## GENETICIST

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South Africa is home to over 95 000 plant and animal species. Due to habitat transformation, climate and general environmental change, species evolve and adapt to opportunities, threats and risks. These special adaptations in turn shape ecosystems and their functioning which support the natural, social and economic world. Understanding the genetics of plant and animal species can assist in understanding ecosystem functioning, ecosystem change and guide the planning and management of these changes for ecological and social health and wellbeing.

**Geneticists study the genes and genetic variations of living organisms. They research genetic diversity and population dynamics and conduct experiments to determine the origins, mechanisms and principles and laws of inherited traits of a species. They then develop and implement methods to improve heritability, growth, reproduction, immunity and disease resistance or tolerance or even create new variations of species. Some work with populations to understand the species evolution and change within natural populations.**

Geneticists mainly work in laboratories to examine genetic material and occasionally go into the field to make observations or collect samples for testing. They sometimes work with hazardous chemicals and substances and are required to wear safety equipment during lab analyses.

## Skills

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Geneticists need a comprehensive knowledge of plant and animal biology, chemical properties and principles and will also benefit from:

- Extensive competence in laboratory techniques
- Creative and logical analytical ability
- Complex problem-solving ability
- Strong organisational skills and attention to detail

## Tasks

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- Design, implement and monitor research experiments
- Collect, study and test cell, tissue, bacteria and living organism samples
- Analyse findings and identify practical applications and potential risks
- Record and disseminate results in reports and presentations

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Genetics at SU, UCT, UP and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Genetics at UFS, UKZN and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Biotechnology at SU, UJ, UKZN, UP and UWC

Diploma, Advanced Diploma, M.Tech in Biotechnology at CPUT, DUT, TUT, UJ and VUT

## Employers

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Agricultural and crop production companies.

Biotechnology and genetic engineering companies.

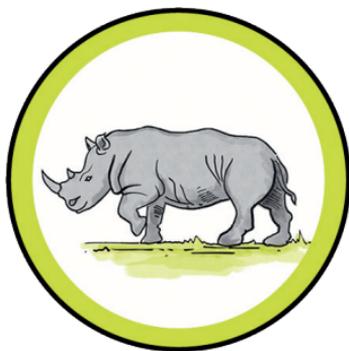
Pharmaceutical and chemical companies.

Research institutions.



Forestry, Fisheries and the Environment  
Higher Education and Training





## OUTDOOR ADVENTURE GUIDE

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With natural assets and biodiversity almost beyond compare, South Africa is world renowned for its diverse and extensive natural beauty and opportunities to explore and experience nature based and outdoor adventure activities. The tourism industry, attracting both local and international tourists contributes 3.7% to South Africa's GDP. With much to offer the outdoor adventurer, outdoor activity guiding is an increasingly expanding industry, and offers opportunities to share South Africa's natural beauty, sustainably.

Outdoor adventure guides direct, instruct and guide individuals or groups in outdoor recreational activities. They assemble the necessary equipment and demonstrate the essential skills and techniques to participants, providing individual support and instruction if needed. They enforce safety procedures, rules and regulations to ensure that activities are conducted in a manner that minimises risk to participants. They also provide information and answer questions about local interest points.

Outdoor adventure guides work with tourists, outdoor enthusiasts and other people interested in outdoor recreational activities. They spend the majority of their time in outdoor environments and can work irregular hours depending on the activity and the weather.

## Skills

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Outdoor adventure guides require extensive experience with an outdoor activity and knowledge of environment, health and safety procedures, with extensive experience in emergency procedures and first aid, coupled with:

- Excellent customer service and interpersonal skills
- Leadership competence in high-risk environments
- Strong and clear instructional ability
- Good physical stamina

## Tasks

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- Demonstrate the concept and skills used in outdoor adventure activities
- Explain and enforce safety procedures, rules and regulations
- Instruct clients in the use of relevant outdoor adventure equipment
- Evaluate and monitor clients as they participate in activities

## Studies

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Diploma and Advanced Diploma in Tourism Management at CPUT, CUT, DUT, TUT, UJ, UNISA and WSU

They can additionally benefit from a National Certificate in Tourism (Guiding) at National Qualifications Framework level 2 and 4 offered at the Wildlife and Environment Society of South Africa and the Field Guides Association of Southern Africa, accredited by the Culture, Arts, Tourism, Hospitality and Sport Sector Education and Training Authority. Training could also take place on the job with mentoring by an experienced guide.

## Employers

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Adventure tourism companies.

Holiday resorts, hotels and lodges.

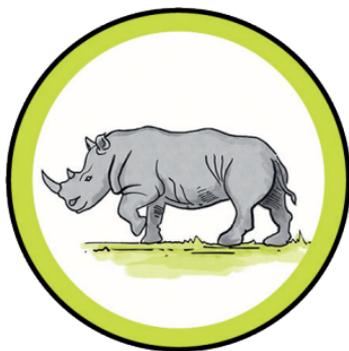
Private game reserves.

Private guiding services.



Forestry, Fisheries and the Environment  
Higher Education and Training





## PALAEONTOLOGIST

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South Africa's uniquely rich and diverse fossil record documents the earliest evidence of life in ancient humans, animal and plant species. Investigations of these past life forms help to explain the beginning of earth's existence and identify and explain how life, landscapes and climate have changed over time and how living things have adapted to those changes. Palaeontology is the scientific study of the evolution of life on earth through fossil and other records.

Palaeontologists study the fossilised remains of humans, plant, animal, fungi, bacteria and other single-cell organisms. They conduct preliminary research to determine the location and historical context of fossils and survey and excavate fossils within layers of sedimentary rock. They then analyse fossils to determine age and examine relationships between extinct species and present-day living counterparts to understand extinction events and their relation to current phenomena such as lifestyle, environmental and climate change.

Palaeontologists often work in teams with specialised professionals like anthropologists, curators and historians. They often travel to remote areas for relatively long periods of time working through excavation sites. They can also work in laboratories preserving artefacts or perform desk-based research in offices.

## Skills

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Palaeontologists require extensive knowledge of geology and biology and an understanding of heritage legislation and policy. They will additionally benefit from:

- Excellent research capability
- Highly methodical fieldwork and laboratory competence
- Critical and analytical thinking ability
- Strong attention to specific detail

## Tasks

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- Conduct field work, excavate and identify the time period and geography of fossils
- Analyse field data, laboratory samples and other data
- Prepare reports and present research findings
- Advise organisations about the potential impacts of fossil discoveries

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Palaeontology at Wits

B.Sc., B.Sc. (Hons), M.Sc. in Archaeology at UCT and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Geology at NMU, NWU, RU, SU, UCT, UFH, UFS, UJ, UKZN, UL, UP, UWC and Wits

## Employers

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Research institutions.

Heritage sites and museums.



Forestry, Fisheries and the Environment  
Higher Education and Training





## PARK MANAGER

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South Africa's 19 national parks, covering over 9 million hectares, aim to conserve rich biodiversity, landscapes and heritages sites. Various provincial and local government nature reserves complement this aim. These conservation areas generate revenue and contribute to the economy through nature-based tourism and support neighbouring communities whose livelihoods rely on the natural resources within and around these conservation areas. The efficient, effective and sustainable management of parks conserve biodiversity and associated ecosystems and ensure the sustainable use of natural resources.

**Park managers oversee the management and conservation of natural and cultural resources according to the Protected Areas Act. They establish the goals and objectives of a park to ensure recreational experiences align with conservation targets as well as supervise resource conservation programmes and research within park premises. They also oversee the procurement of required personnel, resources, equipment and materials and control budgetary expenses. Some park managers also supervise educational outreach initiatives.**

Park managers engage with park rangers, researchers, citizen groups, local communities and other stakeholders in the promotion, conservation and engagement with parks and reserves. They work between an office and the field conducting inspections of park areas.

## Skills

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Park managers require experience in natural resource management, conservation area planning and biodiversity stewardship and an understanding of relevant legislation, coupled with:

- Strong leadership, management and business acumen
- Understand ecological, cultural and socio-economic interactions
- Strong planning and organisational competence
- Excellent communication and interpersonal skills

## Tasks

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- Direct park operations according to government regulations
- Plan and oversee resource conservation services
- Manage the planning, construction and maintenance of facilities
- Manage administrative functions and cooperative relations with stakeholders

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Environmental Management at UFS, UJ, UNISA and UP

B.Sc., B.Sc. (Hons), M.Sc. in Environmental Science at NMU, RU, UCT, UJ, UKZN, UMP, UP, UWC and Wits

B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences at all universities

Diploma and Advanced Diploma in Environmental Management at CPUT

Diploma, Advanced Diploma, M.Tech in Nature Conservation at CPUT, MUT, NMU, TUT, UMP and UNISA

## Employers

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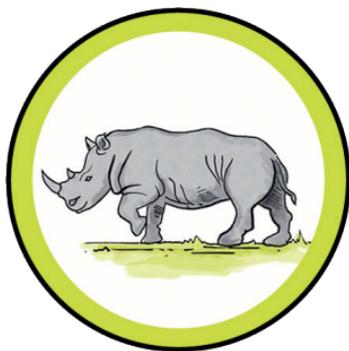
National, provincial and local government parks and reserves.

Public and private game reserves.



Forestry, Fisheries and the Environment  
Higher Education and Training





## SOCIOLOGIST

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South Africa is rich in biodiversity and natural assets. South Africa's diverse and different people, as well as foreign communities depend on these natural systems for ecosystem services, goods and services for health, wellbeing and leisure. Understanding social and natural interactions and dependencies provide insights for sustainably managing the natural environment without compromising the health, wellbeing and rights of people to these resources. Sociology studies the interconnections and dependencies between people and the natural or biophysical environment.

**Sociologists study society, social institutions and social relationships and the systematic development, structure, interaction and collective behaviour of organised human groups in relation to their environment. They design research projects that test theories around social phenomena and make recommendations for policy development based on analyses and findings. Some become lecturers, educating and supervising students around social theories.**

Sociologists can collaborate with policymakers and other specialists in investigating diverse social aspects of society. They work mainly in an office environment, and occasionally travel to interact with, interview and observe people within their communities.

## Skills

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Sociologists need a sound theoretical knowledge of society and the ability to apply social theories in varied contexts. They will further benefit from:

- Extensive research competence
- Good interpersonal skills
- Strong objective analytical skills
- Excellent verbal and written communication and presentation skills

## Tasks

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- Conduct research and prepare scholarly papers and reports
- Develop theories, models and methods to interpret and describe social phenomena
- Advise on practical applications of research findings in the formulations of economic and social policies
- Evaluate the outcome of political decisions concerning social policy

## Studies

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B.A., B.A. (Hons), M.A. in Sociology at NWU, RU, SU, UCT, UFS, UJ, UKZN, UL, UMP, UNISA, Unizulu, UWC and Wits

B.Soc.Sc., B.Soc.Sc. (Hons), M.Soc.Sc. in Sociology at UFH, UFS, UKZN and UP

## Employers

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National, provincial and local government.

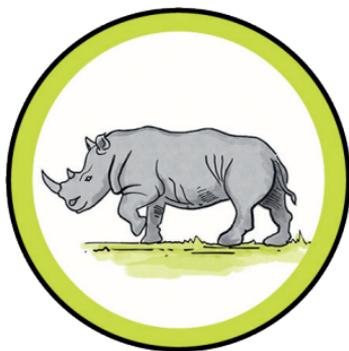
NGOs, community-based and development organisations and private consultancies.

Research institutions.



Forestry, Fisheries and the Environment  
Higher Education and Training





## TAXONOMIST

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South Africa is home to rich and diverse flora and fauna with over 95 000 plant and animal species. Classifying species can help build information about species groups, determine endangered and invasive species as well as plays a crucial role in understanding how species respond to environmental change such as climate variation. These insights and knowledge inform decision-making and conservation strategies. Taxonomy is the science of discovering, describing and classifying species based on their biological structure, origin and behaviour.

**Taxonomists collect and examine living organisms such as plants, animals, fossils, fungi and micro-organism species. They identify, name and organise specimens into classifications according to morphological, behavioural, genetic and biochemical characteristics. They also explore how species relate to other species and how they fit into their ecosystems. If a specimen does not conform to a preidentified group, they are considered new and are formally described and reported on. Taxonomists also sketch and write detailed species descriptions and report their findings in publications.**

Taxonomists spend time collecting specimens in the field or studying preserved species in herbariums or museums, returning to a laboratory or office to assess collections. They can work with curators, biologists and other specialists when classifying species.

## Skills

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Taxonomists require a comprehensive knowledge of biology and the ability to use varied classification techniques such as DNA sequencing. They will also benefit from:

- Strong observation and keen attention to detail
- Competence in research and field and laboratory processes
- Ability to organise and work with large data sets
- Good verbal and written communication and presentation skills

## Tasks

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- Study the development aspects and life processes of specimens
- Examine the internal components and external factors impacting species
- Identify, classify and record species into accessible catalogues
- Compose scientific reports and maintain informational databases

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Botany or Zoology at all universities

B.Sc., B.Sc. (Hons), M.Sc. in Marine Biology at UCT and UKZN

B.Sc., B.Sc. (Hons), M.Sc. in Microbiology at all universities

## Employers

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National, provincial and local government.

Aquariums, museums and herbariums.

Research institutions.

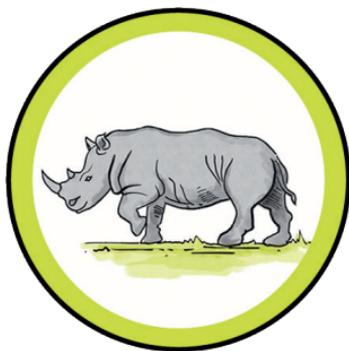
Environmental consultancies.

Private agricultural companies.



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## VETERINARIAN

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South Africa's biodiversity includes a wide range of key animal species that attracts a wide spectrum of local and foreign visitors and supports local livelihoods. Similarly its animal production sector, domestic, small scale and commercial, also make key economic, social and environmental contributions. The practice of veterinary sciences, involving the treatment and care of all types of animals is key to conservation, the agricultural production industry as well as the domestic care of household pets.

**Veterinarians diagnose, treat and prevent animal diseases, ailments and injuries. They vaccinate against diseases, medicate animals suffering from infections or illness, treat and dress wounds, set fractures, perform surgical or dental procedures and advise owners about animal feeding, behaviour and breeding. Some conduct clinical research on the spread of animal diseases or inspect livestock to advise on breeding programmes or disease treatment. They can also manage veterinary practice operations, finances and recruit appropriate staff for assistance.**

Veterinarians work closely with veterinary nurses and may consult animal behaviourists. They may need to travel to treat food producing animals or advise on a wild animal or animal population. They often work long hours and may be called at any time in emergencies.

## Skills

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Veterinarians need to have a comprehensive knowledge and practical understanding of the physiology, nutrition and behaviour of a variety of animals, coupled with:

- Ability to diagnose and address animal health problems
- Experience in performing clinical and surgical procedures
- Methodical and analytical problem-solving skills
- Ability to simply communicate diagnoses with empathy

## Tasks

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- Treat animals medically and surgically and perform autopsies
- Determine the presence and nature of abnormal conditions in animals
- Test and inoculate animals against infectious diseases
- Advise clients on health, nutrition, feeding, hygiene, breeding and care of animals

## Studies

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B.VSc. at UP

Medical registration of veterinarians is a requirement for practice.

## Employers

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Private veterinary practices and hospitals.

Government veterinary providers.

NGOs, animal shelters and zoos.

Research institutions.

Medical and pharmaceutical laboratories.

Wildlife rehabilitation centres.



Forestry, Fisheries and the Environment  
Higher Education and Training





## VETERINARY NURSE

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South Africa is home to a wide spectrum of animals found in the wild, conservation and animal production contexts. Domestically, animals play a significant role culturally across South Africa and extensively support local livelihoods and some are kept and cared for as pets. Veterinarian science, supported by veterinary nursing, plays a key role in the responsible care, health promotion and management of all animals, across these multiple contexts.

Veterinary nurses care for animals under treatment and assist in the performance of procedures and operations of ill or injured domestic, farm and wild animals. They prepare animals for surgery, administering injections as well as maintaining and sterilizing surgical equipment. They also provide support to both animals and caretakers pre- and postoperatively by monitoring for signs of infection or distress. Veterinary nurses can also provide advice about animal companion care, behaviour and breeding.

Veterinary nurses directly assist veterinarians in caring for animals and regularly interact with the carers of animals. They work long hours in examination or surgical rooms or even outdoors assisting wildlife veterinarians, for example. They can also be exposed to animals with different temperaments.

## Skills

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Veterinary nurses require technical knowledge and experience in the care and maintenance of a variety of animals. They will also benefit from:

- Strong empathy and interpersonal skills
- Excellent organisation and attention to detail
- Ability to work effectively in a team
- Good verbal and written communication skills

## Tasks

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- Conduct examinations of animals
- Prepare animals for examination or treatment
- Assist veterinarians with administering medicine, anaesthetics and oxygen
- Monitor animal care recovery following surgery or other procedures

## Studies

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B.Vet.Nurs. at UP

Medical registration of veterinary nurses is a requirement for practice.

## Employers

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Private veterinary practices and hospitals.

Government veterinary providers.

NGOs, animal shelters and zoos.

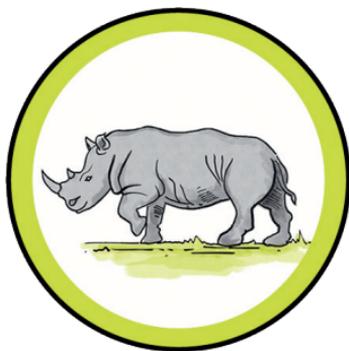
Research institutions.

Wildlife rehabilitation centres.



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## ZOOKEEPER

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South Africa is home to extensive biodiversity including a number of iconic wildlife species, most of which are found in the wild. In some instances though, animal sanctuaries such as zoos, nature reserves and aquariums, play a key role in the care and rehabilitation of injured animals that can no longer survive in the wild. They also play a key role growing and increasing population sizes of declining, threatened or endangered species. Zookeeping involves caring for animals that live in captivity.

**Zookeepers feed, provide water for and monitor the health of animals kept in sanctuaries. They prepare food and medicine and develop feeding schedules to ensure animals are properly cared for. They train animals to facilitate grooming or medical processes and provide rehabilitation support and appropriate exercise and mental stimulation. Zookeepers also clean, fix and maintain animal enclosures and provide important information to the public about animals through educational programmes and exhibits.**

Zookeepers work alongside animal curators and veterinarians when training or treating animals and occasionally interact with the public around animal education programmes. They work long hours and at varied times of the day, depending on the nature of the animal they are caring for.

## Skills

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Zookeepers require a thorough understanding of the physical needs and behaviour of a variety of animal species as well as patience while working with animals. They will additionally benefit from:

- Strong observation and a keen attention to detail
- Good organisational and record keeping ability
- Good relational competence
- Physical stamina and strength

## Tasks

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- Observe animals to detect signs of illness
- Inspect cages, grottos and pens for cleanliness and structural defects
- Supervise and coordinate activities of workers
- Conduct education programmes and provide information about animals

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Zoology at all universities

B.Sc.Agric., B.Sc.Agric. (Hons), M.Sc.Agric. in Animal Science at NWU, SU, UFH, UFS, UNISA, Univen, Unizulu and UP

B.Sc. (Hons) in Wildlife Management at UP

## Employers

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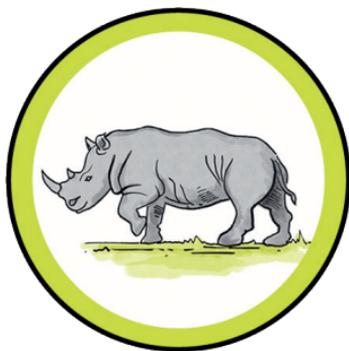
Zoos and aquariums.

Nature reserves, parks and conservation sanctuaries.



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Higher Education and Training





## ZOOLOGIST

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South Africa has unique species richness, diversity and endemism with over 20 000 plant species and 75 000 animal species that include mammals, birds, reptiles and other species. This diversity of animals is found in conservation and tourist contexts and also play a key role in supporting local livelihoods. As ecological habitats change over time, for example as a result of climate change, zoology is the science of understanding the interaction and adaptation of animals within and to their physical environment to inform the development of strategies to manage and conserve species populations.

**Zoologists study the anatomy, physiology, behaviour, characteristics and environments of animals. They investigate the origin of animal species, interactions, interrelationships, classifications, life histories, habits, life processes, diseases and genetics in relation to the environment. They further examine the growth, development and distribution of animal populations. Some assist in the development of breeding programmes, as well as conservation and eco-tourism initiatives.**

Zoologists typically work between an office environment, laboratory and the field, observing species and collecting samples for testing. They can be consulted by behaviourists, zookeepers, marine and wildlife biologists and veterinarians to understand and manage animal populations.

## Skills

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Zoologists must have a comprehensive knowledge of biological and environmental characteristics of animal species, coupled with:

- Extensive research ability
- Excellent observation and attention to detail
- Strong logical and problem-solving competence
- Good relational competence

## Tasks

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- Design and conduct research projects, analysing data and writing scientific papers
- Study animals in their natural habitat, collecting specimens for testing
- Dissect and examine specimens to carry out experimental studies
- Assist captive breeding programmes and promote conservation efforts

## Studies

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B.Sc., B.Sc. (Hons), M.Sc. in Biological Sciences specialising in Zoology at all universities

B.Sc.Agric., B.Sc.Agric. (Hons), M.Sc.Agric. in Animal Science at NWU, SU, UFH, UFS, UNISA, Univen, Unizulu and UP

## Employers

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National, provincial and local wildlife parks.

NGOs, conservation sanctuaries and private consultancies.

Museums, zoos and aquariums.

Research institutions.



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