

AFRICAN COELACANTH ECOSYSTEM PROGRAMME

SSM Phase 3 2022–2026



Moving marine science from discovery
into national decision-making



science, technology
& innovation

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA



SAIAB
South African Institute
for Aquatic Biodiversity

VISION 2030

Aquatic Biodiversity Science and Research that works for Society.

MISSION 2030

To improve the quality of life of all South Africans through advancing aquatic research, science, technology and innovation.

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The South African Institute for Aquatic Biodiversity (NRF-SAIAB) is a National Facility of the National Research Foundation, established in terms of Act 23 of 1998.

NRF-SAIAB is a Schedule 3A Public Entity of Government responsible for conducting research and promoting technological advances and innovation in both freshwater and marine environments in southern Africa.

This report reflects progress in the activities of the NRF-SAIAB African Coelacanth Ecosystem Programme and closes out Phase 3 of the Strategic Science Missions (SSM) funding agreement (DSICON C2700/2022) between the DSTI and the NRF, running from September 2022 to September 2026. The information contained in the report may not be quoted or cited elsewhere without the permission of the authors or the Managing Director of the Institute.

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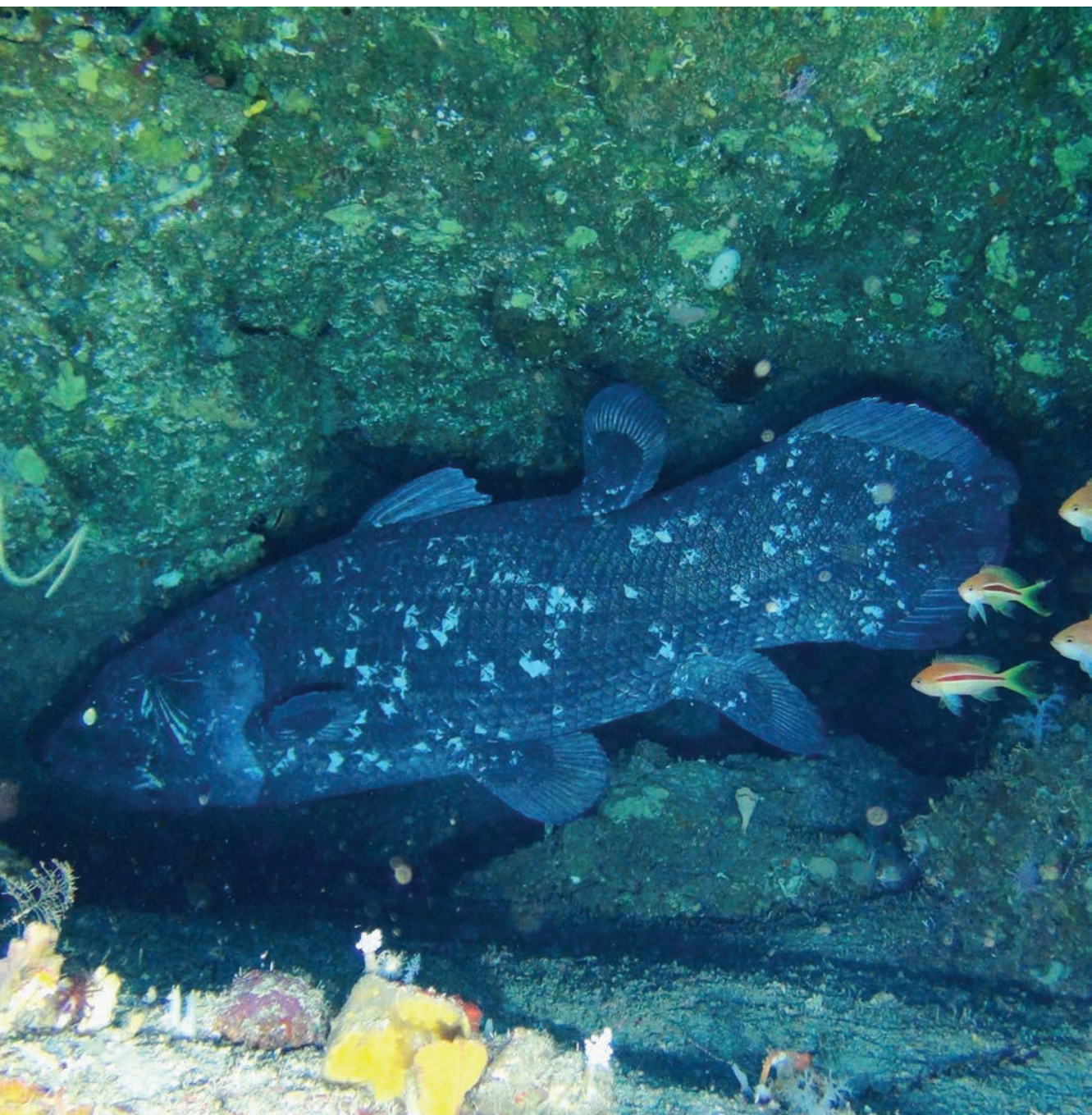
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ABOUT ACEP



The unexpected discovery of living coelacanths off Sodwana in KwaZulu-Natal in 2000 was a catalyst that changed the focus of underwater marine exploration and resulted in the establishment of the flagship African Coelacanth Ecosystem Programme (ACEP), the development of platform thinking and advanced research platforms and technological capabilities to explore and conserve South Africa's aquatic biodiversity. eDNA coelacanth distribution assessment is part of the ACEP Deep Connections Project. This coelacanth was photographed at Mzumbe (south-eastern coast of South Africa) by the ACEP Deep Connections Project team.

Driving sustainable development in South Africa’s Blue Economy for the benefit of all South Africans

Historical context

The African Coelacanth Ecosystem Programme (ACEP) is a flagship programme of the Department of Science, Technology and Innovation (DSTI) and the National Research Foundation (NRF), managed by the South African Institute for Aquatic Biodiversity (NRF-SAIAB) as a NRF National Facility. Initiated following the discovery of coelacanths off Sodwana Bay in 2000, ACEP undertook its first research expeditions in 2002 and has since grown into one of the first multidisciplinary, multi-national ecosystem-based research programmes in the Southwest Indian Ocean. It is a key instrument in the implementation of South Africa’s Marine and Antarctic Research Strategy (MARS), and is aligned with the Science, Technology and Innovation Decadal Plan and the UN Decade of Ocean Science for Sustainable Development.

ACEP delivers on this mandate through four integrated components: a nationally competitive Open Call, providing researchers with funded access to ACEP’s marine research infrastructure; the ACEP Marine Platforms — Coastal Craft, Acoustic Tracking Array Platform (ATAP), Marine Remote Imagery Platform (MaRIP), and Geophysics and Mapping Platform (GeMaP) — that supply the vessels, tracking arrays,

imaging systems and mapping equipment described in the sections that follow; the Phuhliisa Programme, that advances transformation at Historically Disadvantaged Institutions (HDIs); and the Joint Marine Laboratories established at four HDI campuses.

This report closes out Phase 3 of the Strategic Science Missions (SSM) funding agreement (DSICON C2700/2022) between the DSTI and the NRF, running from September 2022 to September 2026 following a first addendum to the agreement. Against this contract, ACEP was set three objectives: to contribute to the scientific understanding of marine resources, with a focus on the coelacanth ecosystem; to strengthen skills and the human resource base in marine science, particularly among students and researchers from previously disadvantaged backgrounds; and to promote public engagement and awareness of marine science. In practice, this engagement work placed particular emphasis on students and communities at HDIs, alongside broader public science communication, and consistently met or exceeded its annual targets. The sections that follow report on ACEP’s performance against each of these objectives over the contract period.

THREE CORE OBJECTIVES OF ACEP



Contribute to the scientific understanding of marine resources.

Strengthen skills and human resource base in marine science particularly among students and researchers from previously disadvantaged backgrounds.

Promote public engagement and awareness of marine science.

Strategic context

ACEP's cooperation with SMCRI and SAPRI

ACEP operates under the DSTI/NRF Strategic Science Missions (SSM) contract, which provides the great majority of its operating and equipment funding. Two further DSTI programmes under the South African Research Infrastructure Roadmap (SARIR) — the Shallow Marine and Coastal Research Infrastructure (SMCRI) and the South African Polar Research Infrastructure (SAPRI) — provide supplementary, targeted support that extends the operational and technical capacity of the ACEP Marine Platforms beyond what the SSM contract alone could sustain. ACEP's relationship with SMCRI has been in place since the programme's launch in 2017, while its relationship with SAPRI has grown alongside the current SSM contract, since around 2022. In both cases, the ACEP Marine Platforms host, operate and staff the shared infrastructure, and the added capacity this unlocks flows back into the wider South African marine science community through the ACEP Open Call, Phuhlisla Programme, JMLs and the SARIR programmes.

SMCRI

SMCRI contributes to all four ACEP Marine Platforms — the Coastal Craft fleet, ATAP, MaRIP and GeMaP — co-funding capital equipment and running costs alongside ACEP's own investment, and supporting shared technical staff, reflecting nearly a decade of joint operation since the programme's launch in 2017. Over the four years of the current SSM contract, this partnership has underpinned more than 430 Coastal Craft sea days, close to 1600 MaRIP stereo-BRUV, lander and drop-camera deployments, and over 370 ROV dives, while in the past two years alone multibeam echo-sounder surveys by GeMaP have mapped close to 1400 km² of seabed. NRF-SAIAB has maintained a network of more than 90 acoustic receiver stations around the South African coast throughout the period, contributing to

the greater 300+ receivers currently deployed through ATAP and collecting more than 19 million data points on fish movement during the reporting period. MaRIP alone supported over 100 platform users a year from 18 countries in the most recent reporting years, including some 35 postgraduate students. This cooperative model works on two fronts: SMCRI's investment keeps the ACEP Marine Platforms' infrastructure and equipment current to meet the research community's needs, while ACEP's technical staff, vessels and operational know-how allow SMCRI to deliver on its own DSTI reporting and performance commitments.

SAPRI

SAPRI's support is narrower but strategically valuable, funding a dedicated deep-sea infrastructure component that has extended MaRIP's reach into abyssal and Southern Ocean-relevant research since 2022. Work during this reporting period focused on the development and procurement of infrastructure as well as capacity building to support both SAPRI's and ACEP's objectives. These investments have now enabled multiple deep-sea stereo-BRUV lander expeditions, including surveys of the Aliwal Shoal Marine Protected Area (MPA) and the Comoros at depths of 300–900 m generating some of the first visual records of the deep seafloor within these regions. SAPRI has also funded development of a 3500 m-rated Abyssal lander, tested to 2350 m off KuGompo City (previously known as East London) during an international stereo-BRUV lander workshop that brought together researchers from South Africa, Trinidad and Tobago, Seychelles and Cape Verde — building Global South deep-sea research capacity alongside an emerging collaboration with Sea Technology Services to extend South Africa's deep-sea survey capability into the Western Indian Ocean.



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STRATEGIC SCIENCE
MISSIONS CONTRACT

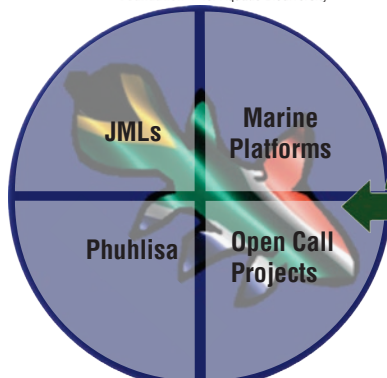
SOUTH AFRICAN RESEARCH
INFRASTRUCTURE ROADMAP



SAIAB
South African Institute
for Aquatic Biodiversity



SAEON
South African Environmental
Observation Network

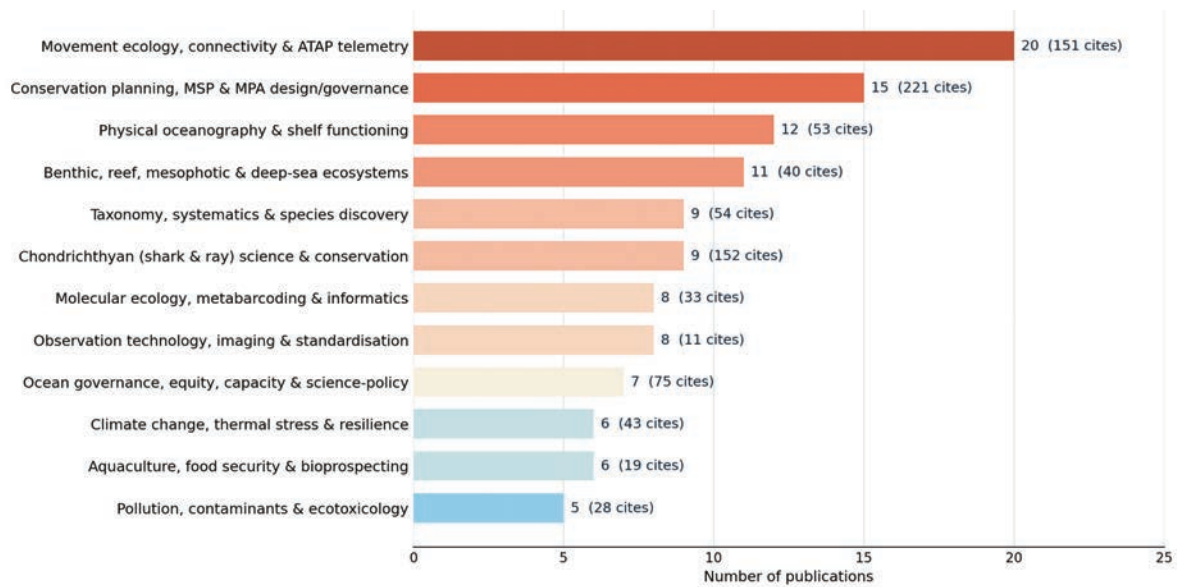


Supporting the South African
Marine Scientist Community
Driving national research, policy
and reporting outcomes

ACEP RESEARCH OUTPUTS

ACEP research themes, 2022–2026

116 papers classified by primary theme (citation totals in parentheses)

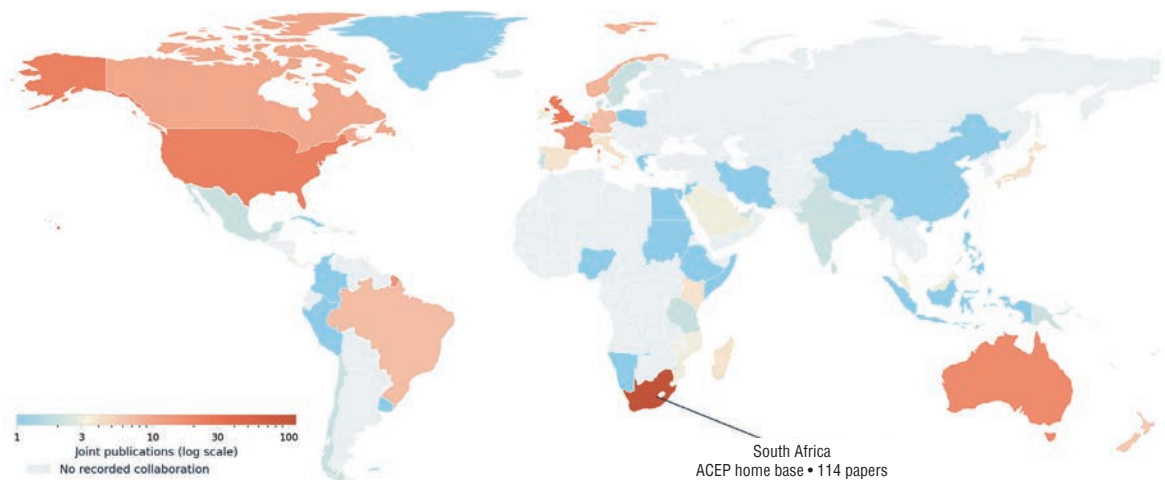


Distribution of ACEP's 116 publications (2022–2026) across 12 research themes. Bars show the number of publications per theme, with total citations in parentheses.

Over the four-year contract, ACEP-affiliated research produced 116 peer-reviewed publications that have already attracted 880 citations, with output peaking in 2023 and a collaborative reach spanning 70 countries and more than 300 institutions worldwide. Aligned with the priorities of South Africa's Marine and Antarctic Research Strategy (MARS), this body of work advanced marine science across 12 themes and placed South African research in the world's leading journals, from the regional *African Journal of Marine Science* to international *Science* and *Nature*.

ACEP global collaboration reach

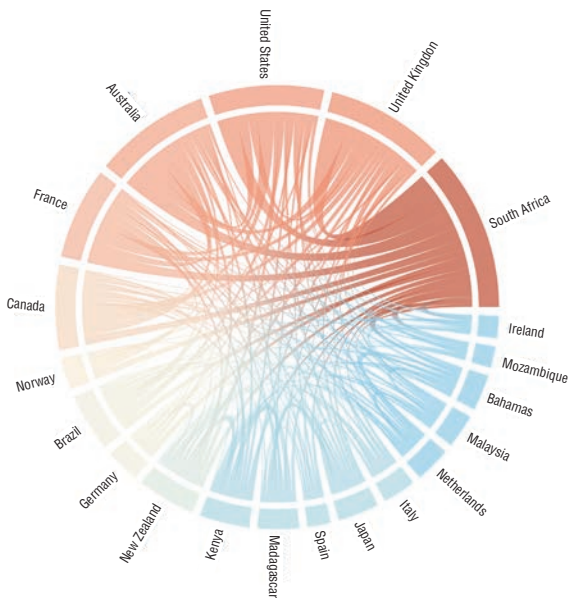
Number of joint publications by country • 116 papers • 70 countries



Heatmap showing the global extent of science collaboration support by the ACEP between 2022 and 2026 during Phase 3 of the DSTI-NRF Science Mission Contract.

ACEP inter-country collaboration

Ribbon thickness = joint publications between countries • top 20 partner countries



ACEP’s international reach, shown as bilateral co-authorship among its top 20 partner countries. Ribbon thickness reflects the number of jointly authored publications, illustrating South Africa’s central role in a densely connected global research network.

ACEP RESEARCH OUTPUTS

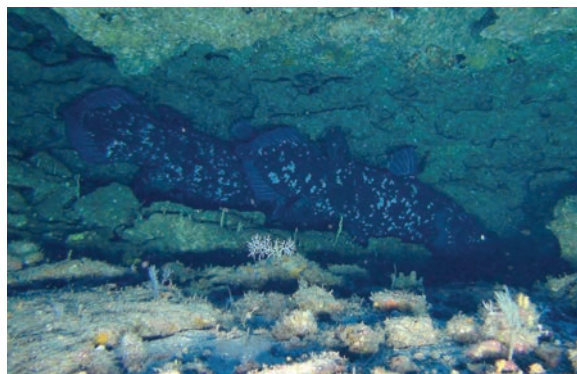
Advancing knowledge: ACEP-affiliated researchers co-authored landmark global assessments, including a *Science* paper documenting widespread (60–73%) declines in reef sharks and rays — the corpus’s most-cited output — and a *Nature Ecology & Evolution* study showing that the conservation benefit of MPAs nearly doubles when paired with effective fisheries management.

Discovering marine biodiversity: The programme expanded the known inventory of marine life, describing numerous species new to science (spanning sponges, corals, squat lobsters and parasitic copepods, including 11 sponges from the Walters Shoal seamount and a major systematic revision of the coralline algae) and building Western Indian Ocean DNA reference libraries that revealed the southward dispersal of tropical species through the Mozambique Channel. In the poorly known deep and mesophotic realm, remotely operated vehicle and drop-camera surveys revealed a 35-km mesophotic kelp forest inside the iSimangaliso Wetland Park and characterised previously undescribed reef communities, while a coelacanth-specific eDNA assay now enables non-invasive monitoring of the iconic African coelacanth (*Latimeria chalumnae*). ACEP also produced the first standardised ecosystem-services framework for the deep sea, a tool applicable to deep-sea governance worldwide.

Understanding ocean dynamics and connectivity: Sustained oceanographic research characterised the productivity, cold-ridge upwelling and Agulhas Current dynamics that structure South African shelf ecosystems and fisheries, with long-term in situ monitoring now resolving warming trends and canyon-driven upwelling within key MPAs. In parallel, telemetry data from the Acoustic Tracking Array Platform (ATAP) resolved the movements and connectivity of key species — from nationwide coastal migrations of endemic and Critically Endangered rays to persistent movements of threatened sharks across the South Africa–Mozambique border — making the scientific case for cooperative regional management. This work also underpinned a global synthesis defining connectivity within marine seascapes, positioning ATAP within international tracking networks.

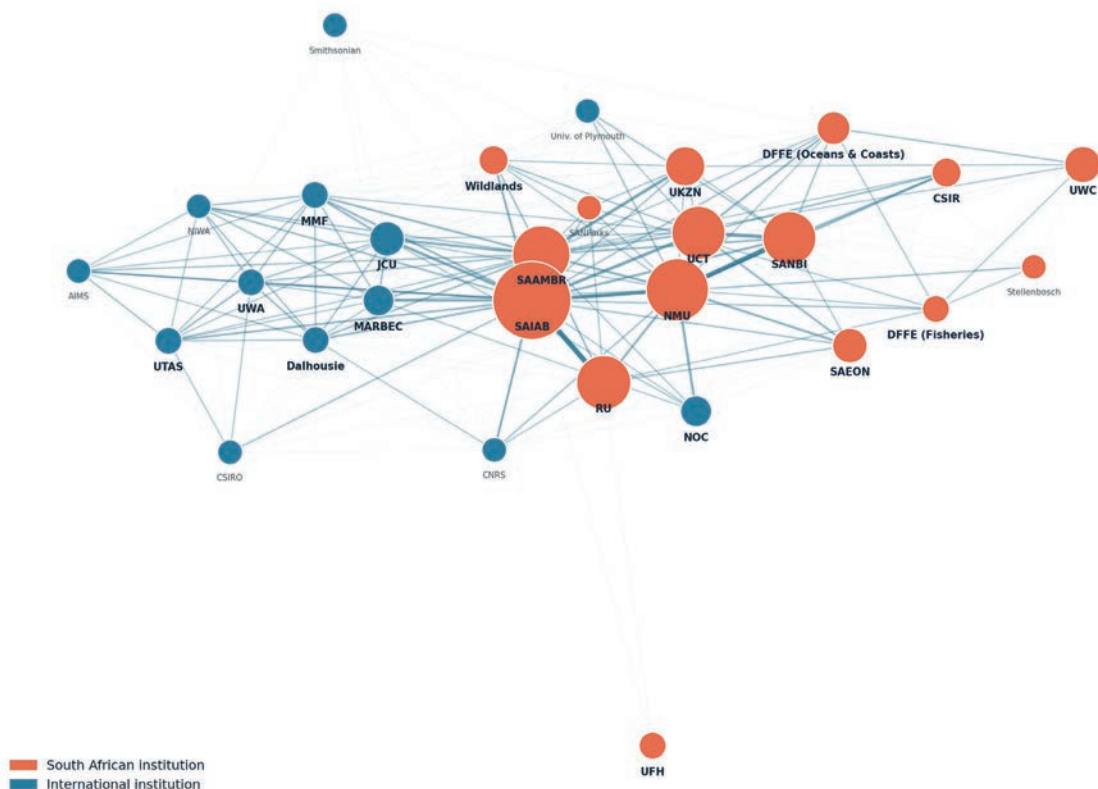
Informing protection and the Blue Economy: ACEP evidence has directly supported South Africa’s ten-fold expansion of its MPA estate — 20 new MPAs representing 87% of marine ecosystem types — and continues to underpin the Marine Spatial Planning Act, the national marine ecosystem map (163 ecosystem types) and biodiversity assessment. Systematic conservation planning showed that protecting a further 5% of the exclusive economic zone would safeguard over 30% of the ranges of 64 threatened and endemic sharks and rays and demonstrated how competing sectors can be aligned in contested space such as Algoa Bay. A regional assessment found that only ~1% of the Western Indian Ocean’s Important Shark and Ray Areas are fully protected, while fisheries, aquaculture and bioprospecting research supports the sustainable growth of the Blue Economy under Operation Phakisa: Oceans Economy. Alongside this, a growing body of pollution and ecotoxicology research — from microplastics in mangrove estuaries and heavy metals in Algoa Bay sediments to plastic-governance policy — is strengthening the evidence base for environmental-quality management.

Anticipating environmental change: A *Nature Climate Change* study linked mass mortality across 81 species to intensifying cold-upwelling events in the Agulhas Current, warning of rising cold-mortality risk as warming pushes subtropical species poleward. Complementary physiological research is defining the thermal limits of South African species and indicates that heavily exploited populations may be less resilient to extreme cold-spells than unexploited ones, strengthening the evidence base for climate-ready, ecosystem-based management.



ACEP co-authorship network

Institutions on ≥ 4 papers (28 shown) • links = shared publications • node size = paper count



The institutional collaboration web underpinning ACEP’s research output. Each node is a partner institution (sized by number of publications; coral = South African, blue = international) and each link a co-authored publication, revealing a tightly connected core of South African institutions embedded in a broad international network.

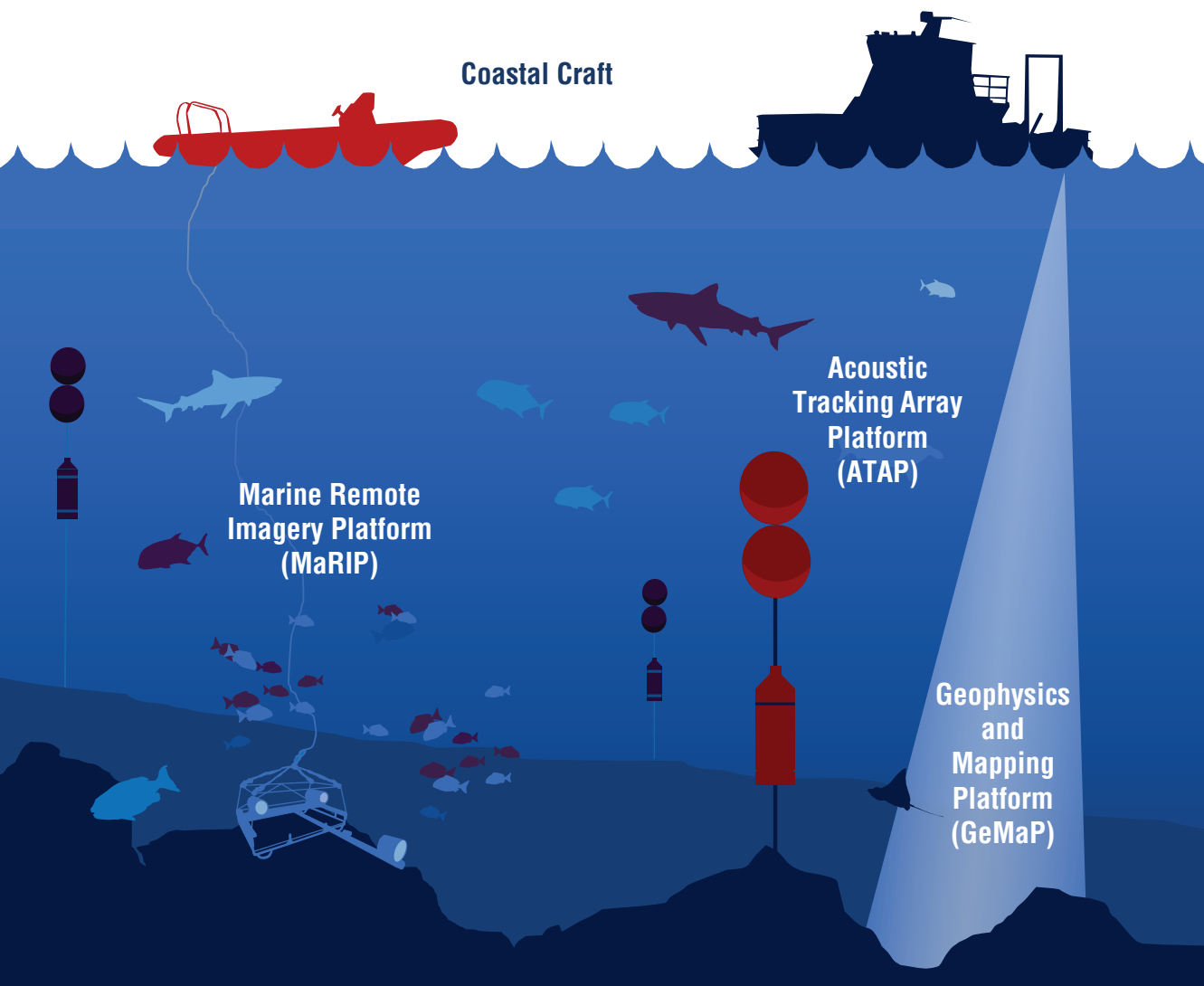
Collectively, this body of work advanced the priorities of MARS and the DSTI Decadal Plan and moved marine science from discovery into national decision-making — informing marine spatial planning and MPA expansion, supporting sustainable use under Operation Phakisa: Oceans Economy, and contributing to the 2025 National Biodiversity Assessment, led by the South African National Biodiversity Institute (SANBI), whose Marine Realm Assessment acknowledges the inputs of five ACEP projects. Through these contributions, ACEP has advanced the frontier of marine science in South Africa while helping ensure that this knowledge underpins the management and protection of the nation’s ocean.

ACEP MARINE PLATFORMS

The vessels to reach the ocean, the means to map it, the eyes to observe it, and the network to follow its movements

Each of the four ACEP Marine Platforms — Coastal Craft, ATAP, MaRIP and GeMaP — stands as a significant national research asset that can deliver meaningful impact independently or as an integrated research infrastructure. The Coastal Craft's national Vessel Fleet gets people and equipment to sea, MaRIP images life on and above the seafloor, ATAP tracks tagged animals once they can no longer be seen, and GeMaP provides foundational seafloor maps. Together they give South Africa a nationally accessible marine research capability unmatched on

the continent, underpinning multidisciplinary science from estuaries into the deep sea, growing the science-to-policy pipeline, and enabling the everyday research access behind the country's Blue Economy, fisheries management and Marine Protected Area planning. Their teams extend ACEP's reach well beyond the Open Call itself, supporting numerous other projects, leading major expeditions, sitting on national and international advisory panels and committees, and engaging the public and the next generation of scientists directly.





Coastal Craft

South Africa's marine science depends on more than instruments and expertise; it depends on getting people and equipment offshore in the first place. The Coastal Craft platform — a nationally accessible fleet of three vessels, RV *Phakisa* and RV *uKwabelana* in Durban, and RV *Observer* in Algoa Bay — is a cornerstone of South African marine research infrastructure, providing the sea-going access behind ATAP, MaRIP and GeMaP's work, as well as the wider national marine science and monitoring community's access to the coast. Fully subscribed through the ACEP Open Call, the fleet is a critical means by which South African researchers reach offshore and coastal study sites in support of oceanography, geochemistry, fisheries and marine spatial planning.

Over the current SSM contract period, the fleet completed more than 430 research sea days, sustaining demand even as heavy, continuous use brought each vessel due in turn for significant maintenance and

refurbishment. In 2025/26 alone, it supported all five ACEP Open Call projects, SMCRI's long-term ecological monitoring, Department of Forestry, Fisheries and the Environment (DFFE) squid-survey work, and deep-sea lander trials for SAPRI off KuGompo City — the latter combined with an international training event run jointly with the National Geographic Society's Pristine Seas programme, extending South Africa's reach into deep-sea research capacity-building. What sets Coastal Craft apart within the national research fleet is its accessibility: smaller, more agile and far more cost-effective to operate than the large offshore vessels used elsewhere in the system, it can be deployed quickly and put the specialised equipment developed by ATAP, MaRIP and GeMaP directly into the hands of the broader research community, making Coastal Craft a practical foundation on which the country's marine science and Blue Economy ambitions are built.

**“The vessel fleet that gets South African marine science to sea,
from Richards Bay to Mossel Bay”**





Acoustic Tracking Array Platform

Understanding the intensifying pressures on fishery resources from climate change, habitat modification and resource exploitation has never been more pressing. Established in 2011, ATAP is a nationwide, collaborative network of roughly 300 acoustic receivers that is uniquely positioned to address these challenges, advancing scientific understanding, informing conservation planning and supporting sustainable resource management, while training the next generation of movement ecology researchers. These activities speak directly to the objectives of South Africa's National Development Plan, including environmental sustainability and resilience, education and innovation, and a capable state.

Over the current SSM contract period, the network has recorded more than 19 million detections, tracking 46 species — including Critically Endangered sharks and rays — and has grown into the only network of its kind on the African continent. This movement data allows researchers to identify biologically and

ecologically important areas and guide more sustainable management, Blue Economy policy and resource utilisation, ultimately improving livelihoods and food security. The value of this evidence base has already been demonstrated through real regulatory change: a change in legislation within Maputo National Park, Mozambique, protecting a sought-after gamefish species, and the inclusion of ATAP data in a published systematic conservation plan for sharks and rays in South Africa, developed through the WILDOCEANS Programme. ATAP remains driven to be a leading aquatic telemetry platform, producing research for the sustainable management and conservation of South Africa's aquatic resources. ATAP is a key member of the Ocean Tracking Network's International Scientific Advisory Committee, the European Tracking Network's Open Protocol Steering Committee, and the platform's public engagement stretches from student training workshops to online talks for school learners as far afield as the United States.

“Africa's largest acoustic receiver array, tracking fish movement and water temperature along more than 2 200 km of coastline”





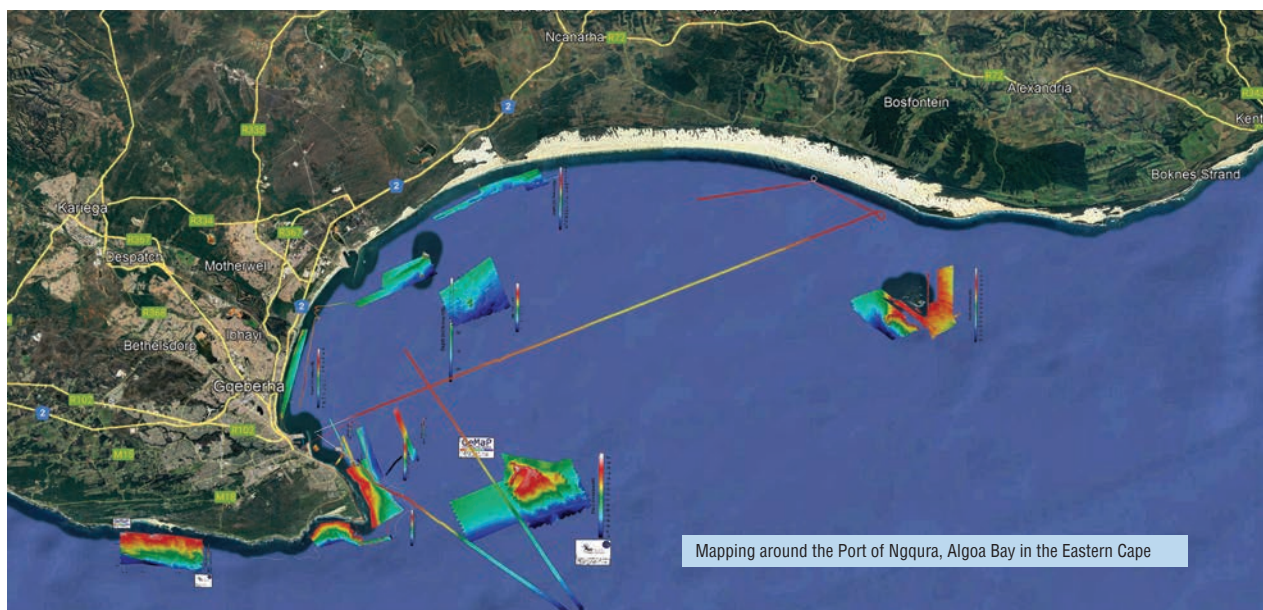
Geophysics and Mapping Platform

Ensuring sustainable development and effective management of aquatic systems takes more than understanding the living resources that occupy them; it also requires closing knowledge gaps in spatial data, particularly bathymetric mapping, which is essential to understanding how species associate with benthic habitats. Built around two multibeam echo-sounder systems (a Reson SeaBat 7101 and an R2Sonic system) capable of surveying to 850 m depth, and now extended into freshwater systems using a dedicated sonar unit, GeMaP delivers the high-resolution hydroacoustic mapping that reveals the relationships between aquatic habitats, geology and biodiversity across marine, estuarine and freshwater environments.

Over the current SSM contract period, GeMaP mapped more than 1 400 km² of seafloor, including a standout 838 km² in 2025/26 alone — driven substantially by its contribution to the Nekton First Descent expedition to the Comoros. These baseline datasets already underpin ecosystem monitoring, conservation planning and

evidence-based management: generated maps have informed South African National Parks' management of lakes and estuaries and are shaping marine spatial planning and Marine Protected Area decisions at uThukela Banks and iSimangaliso. Through the ACEP Open Call, GeMaP has expanded access to this equipment, technical expertise and hydroacoustic data for research projects along South Africa's east coast, while building national and international research capacity through collaborations that include the Nekton Comoros mission and postgraduate training. GeMaP is uniquely positioned to contribute seafloor data to the international Seabed 2030 initiative to map the world's ocean floor and works closely with the Council for Geoscience to advance South Africa's national seafloor-mapping capability. As hydroacoustic technology advances, GeMaP is extending its mapping capability beyond the continental shelf into South Africa's poorly explored deep-sea environments.

“South Africa’s largest non-commercial seafloor mapping system, revealing what lies beneath our coastal and offshore waters”



ACEP MARINE PLATFORMS



Marine Remote Imagery Platform

What lives below the depths, and how is it changing in response to environmental and global change? MaRIP answers this question through a full suite of imaging equipment — a Remotely Operated Vehicle (ROV), stereo-Baited Remote Underwater Video systems spanning intertidal to deep-sea lander configurations, drop cameras and diver-operated video — backed by dedicated data storage and video-analysis infrastructure. That evidence base underpins fisheries management, Marine Protected Area planning and Marine Spatial Planning decisions that would otherwise be made without direct observation of the seafloor.

Over the current SSM contract period, MaRIP completed close to 1600 imagery deployments and over 370 ROV dives, supporting seven of the nine ACEP Open Call projects and culminating in its contribution to the Nekton First Descent expedition to the Comoros, where ROV and lander surveys characterised deep-sea ecosystems previously unobserved in the region. MaRIP,

with SAPRI funding, also developed a deep-sea lander successfully tested to 2350 m and led an international stereo-BRUV training workshop in KuGompo City, filmed by the National Geographic Society's Pristine Seas programme. Its imagery is now used operationally: DFFE and SANBI draw on MaRIP's stereo-BRUV data for species and ecosystem management, and DFFE specialists are currently developing AI-validated population metrics for the Critically Endangered seventy-four seabream (*Polysteganus undulosus*) from over a decade of MaRIP records — a direct pathway from platform data to national fisheries policy. Beyond its own project work, MaRIP's reach extends into national and international science governance, with representation on South Africa's Marine Ecosystem Committee and National Marine Biodiversity Working Group, a seat on the international GOOS EcoBio panel, and the co-chair of the SCOR CoNCENSUS working group.

“South Africa’s only national platform for imaging life on the seafloor, from the shallows to the deep sea”



Image courtesy of Nekton

ACEP CAPACITY DEVELOPMENT

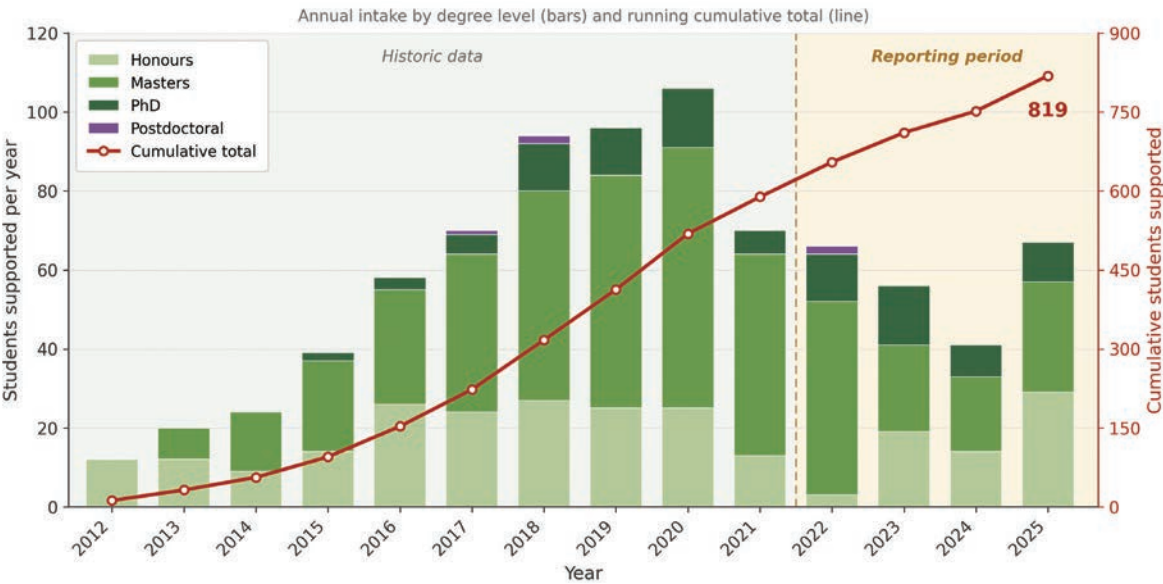
Overview

Supporting home-grown marine research for profound societal impact

Beyond its research platforms and Open Call projects, ACEP has prioritised capacity building at four Historically Disadvantaged Institutions (HDIs): the University of Fort Hare (UFH), the University of Zululand (UNIZULU), the University of the Western Cape (UWC) and iYunivesithi Walter Sisulu (WSU). This work rests on two complementary mechanisms. The ACEP Phuhliisa Programme, the largest directed DSTI/NRF transformation initiative within South Africa's National System of Innovation, provides funding for bursaries, running costs, platform access and structured training

for postgraduate students and their supervisors at these institutions, redressing long-standing imbalances in the demographic profile of South African marine science. The ACEP Joint Marine Laboratories (JMLs), established in 2022, embed dedicated, state-of-the-art research infrastructure at each HDI campus, jointly coordinated with NRF-SAIAB. Together, Phuhliisa and the JMLs have built a durable, transformed pipeline of marine scientists, directly answering the DSTI Decadal Plan's imperative to strengthen research capacity at HDIs.

Cumulative student support through the Phuhliisa Programme, 2012–2025



Cumulative student support delivered through the Phuhliisa Programme, 2012–2025. Stacked bars show annual student numbers by degree level (Honours, Masters, PhD and Postdoctoral), while the line traces the running cumulative total, reaching 819 students over the period. Shaded backgrounds distinguish the historic record (2012–2021) from the current reporting period (2022–2025).

ACEP CAPACITY DEVELOPMENT

ACEP Phuhlisa Programme

Since its inception in 2012, the ACEP Phuhlisa Programme has grown into a targeted initiative under the DSTI transformation strategy, designed to redress imbalances in the demographic structure of South African marine science and to entrench the discipline more deeply within HDIs. The programme now supports researchers and postgraduate students at four HDIs — the University of Fort Hare, the University of Zululand, the University of the Western Cape and iYunivesithi Walter Sisulu — through bursaries, research running costs and preferential access to ACEP's national research platforms, including its offshore vessels, ROVs, dive teams and 4x4 field vehicles. Beyond funding, Phuhlisa addresses the articulation gap facing many students from disadvantaged schooling backgrounds through custom training in scientific writing, presentation, supervision and essential field skills such as skippering, diving and first aid. Governance runs through a Phuhlisa Steering Committee and management committees at each HDI, working alongside the NRF's Human and Infrastructure Capacity Development directorate.

Across the four years of the SSM Phase 3 contract,

Phuhlisa supported cohorts of between 41 and 67 postgraduate students each year, with at least 18 supervisors across the four HDIs receiving dedicated professional development support. Student composition remained close to 100% designated groups throughout, comfortably exceeding the contract's 70% transformation target. The 2026 graduation season illustrated the programme's reach: Dr Naledi Nkohla, who published three peer-reviewed papers during his PhD, graduated and was appointed Lecturer at iYunivesithi Walter Sisulu, while Dr Phila Sibanze completed his PhD at the University of Fort Hare and has since co-founded the geospatial technology company Innocomgeospatial. Across all four HDIs, large 2026 Honours cohorts progressed into Masters study through the South African Master of Oceans Sciences (SAMOS) Programme, sustaining the pipeline of black and female South African marine scientists that Phuhlisa was established to build.



ACEP Joint Marine Laboratories

Established in 2022 with an initial capital investment of R18 million, the ACEP Joint Marine Laboratories Programme (JMLP) twins the expertise of the four partner universities with that of NRF-SAIAB and its extensive research network, embedding state-of-the-art, home-grown research infrastructure at Historically Disadvantaged Institutions. Each laboratory is jointly coordinated by its host university and NRF-SAIAB and tied to a directed transformation research grant integrated with the Phuhllisa student pipeline. By mid-2026, the four laboratories had collectively supported over 170 postgraduate students, from Honours through to PhD level, directly answering the DSTI Decadal Plan's call to strengthen research capacity at HDIs.





University of Fort Hare

BIO-ECONOMY AND BIO-DISCOVERY LABORATORY

The University of Fort Hare's Bio-economy and Bio-discovery Laboratory, launched in March 2022 under Prof. Graeme Bradley and Dr Ntombekhaya Nqumla-Gwebu, isolates and characterises bioactive compounds from Eastern Cape red algae and their associated bacteria. Research targets the inhibition of the alpha-amylase and alpha-glucosidase enzymes involved in carbohydrate digestion, with extracts from selected red algae species demonstrating superior inhibitory activity to acarbose, a widely used anti-diabetic drug. Parallel work screens compounds for anti-cancer activity against lung, breast and prostate cell lines, and for roles in wound healing, anti-obesity and chronic inflammatory disease.

The laboratory has supported 42 Honours, nine MSc and three PhD students, including two PhD graduates to date, and produced two peer-reviewed publications, with five further manuscripts in preparation or under review.

A landmark 2026 achievement was the sequencing and annotation of the mitochondrial, plastid and nuclear genomes of the red alga *Gelidium pristoides*, alongside partial characterisation of its heat-shock and cell-wall proteins, undertaken in collaboration with Nelson Mandela University and Stellenbosch University. The facility is advancing transformation directly: roughly 80% of supported students are female, and four black female laboratory assistants are currently in training, with Dr Ntombekhaya Nqumla-Gwebu being mentored to assume laboratory management. Financial constraints limiting student access to off-campus equipment, gaps in on-site instrumentation, and delays in university supply-chain processes remain the laboratory's principal operational challenges, with dedicated student bursaries and capital equipment investment identified as priorities for the next phase.





— UNIZULU Ecotoxicology

University of Zululand

MARINE AND ESTUARINE ECOTOXICOLOGY LABORATORY

The University of Zululand's Marine and Estuarine Ecotoxicology Laboratory, led by Dr Ntuthuko Masikane, was launched in December 2023 and comprises an Analytical Section, housing an ICP-OES, muffle furnace, sieve shaker and microwave digester. An Exposure Section of five controlled rooms for ecophysiology and bioassay work was fully refurbished by May 2025. The laboratory quantifies metal contamination in water, sediment and biological tissue across KwaZulu-Natal and Eastern Cape estuaries, with active projects spanning bioaccumulation and neurotoxicity in sesarmid crabs at uMhlathuze Estuary, meiofauna diversity as a habitat-quality indicator in Algoa and St Francis Bays, and metal contamination in Mzingazi Lake, alongside the PUFFINS project, a collaboration between UNIZULU, NRF-SAIAB and Norwegian Research Centre (NORCE – Norway) tracking spotted grunter (*Pomadasys commersonnii*) movement.

The laboratory has supported 25 Honours, nine MSc and five PhD students, including 16 Honours and two MSc graduates to date, and produced three peer-reviewed publications. Its first PhD candidate, Ms Lungelo Nsibande, won first prize at the 2024 South African Society of Aquatic Scientists (SASAqS) conference; Mr Muzi Cele repeated the feat in 2025, with fellow PhD candidate Sazi Nzama placed runner-up. Mr Nzama has since been appointed a permanent lecturer at the university while completing his PhD, an early marker of the laboratory's contribution to academic succession at HDIs, and Dr Nokwanda Hendricks graduated with her PhD in Chemistry in 2026. A UNIZULU-funded postdoctoral fellow, Dr Odo Bassey, was appointed in 2026 to help manage the facility, to address the absence of dedicated laboratory staff identified as the programme's principal operational risk.



ACEP CAPACITY DEVELOPMENT



— UWC Microplastics and Coastal Research

University of the Western Cape

MICROPLASTICS AND COASTAL RESEARCH LABORATORY

The University of the Western Cape's Microplastics and Coastal Research Laboratory, led by Prof. Anusha Rajkaran, investigates the sources, environmental impact and health implications of micro- and macroplastics in South African estuaries and coastal systems, building a comprehensive baseline dataset on microplastic concentration, composition and distribution. The laboratory's Bruker LUMOS II FTIR imaging microscope enables polymer identification from water, sediment and biological samples collected from mangrove forests in KwaZulu-Natal, Mossel Bay and Western Cape estuaries, with research extending to microplastic loads in ecologically and economically important species including crabs, birds and aquaculture stock.

The laboratory has supported 22 Honours, 19 MSc and six PhD students, including five MSc graduates in the past year alone, all of them female, and produced four peer-reviewed publications on microplastics, with

several more under review or in preparation. A new international collaboration, arising from Prof. Rajkaran's role as external moderator at the University of Seychelles, produced the first documented assessment of microplastics around the Seychelles islands and has since grown into a partnership with The Oceans Project Seychelles analysing freshwater microplastics on the archipelago's main islands. PhD candidate Stephanie Nicolaides has engaged directly with the Department of Forestry, Fisheries and the Environment on national plastic-waste policy and attended the Bergen Summer Research School in Norway. Recurrent FTIR instability and building humidity control remain the laboratory's principal risks, and plans for the next phase include machine-learning-assisted polymer analysis and a BRICS-funded collaboration with Stellenbosch University, Egypt and Brazil on plastisphere communities in aquaculture systems.





— WSU Coastal Livelihoods

iYunivesithi Walter Sisulu

RURAL COASTAL SUSTAINABILITY LABORATORY

iYunivesithi Walter Sisulu's Rural Coastal Sustainability Laboratory, established in 2024 under Dr Thembinkosi Steven Dlaza, is structured around five pillars: human capital development; research excellence; community engagement and marine literacy; ecosystem monitoring and climate adaptation; and food security and livelihood support. The laboratory integrates Western scientific methods with Indigenous Knowledge Systems, using microscopy facilities, a histology unit, aquaculture tanks and dedicated field equipment, including a vehicle and boat, to support 40 research projects, among them morphometric studies of the brown mussel (*Perna perna*) and crustacean-holdfast associations along the Wild Coast.

The laboratory has supported 18 Honours, nine MSc and seven PhD students and produced five peer-reviewed publications. Dr Naledi Nkohla, first author on three of these papers, graduated with his PhD in May 2026 and was appointed lecturer at WSU. Nasiphi Mdusulwana was placed second in the 2024 FameLab science-communication competition. A 2025 collaboration with DIPLOMICS and NRF-SAIAB's Aquatic Genomics Research Platform equipped the laboratory with a DNA extraction platform, expanding its research scope from seaweed and invertebrate taxonomy into microbial taxonomy and population dynamics. Sustained community engagement, including the Blue Schools Programme at Zimele High School, annual Marine Day events with the OR Tambo District Municipality, and co-management support for small-scale fishing cooperatives at Dwesa-Cwebe MPA, has embedded the laboratory firmly within Wild Coast communities.



ACEP OPEN CALL PROJECTS

Competitive access to South Africa's marine research infrastructure, for the questions that matter most

The ACEP Open Call is a nationally advertised, competitive funding instrument, managed through NRF-RIISA (Research, Innovation, Impact Support and Advancement), that gives multidisciplinary research teams funded access to ACEP's marine platforms and infrastructure, opening the door to impactful science that would otherwise be beyond their reach. It is one of the few national instruments to link platform access, running costs, technical support and postgraduate bursaries in a single award, designed to answer priority research questions set out in South Africa's Marine and Antarctic Research Strategy (MARS) and aligned with the Science, Technology and Innovation Decadal Plan

2022. The call spans four priority research themes: marine bio-discovery, robotics and low-cost technology innovation; biodiversity, ecology, oceanography and seafloor geoscience; marine spatial planning and resource management; and the impacts of climate change and human pressures on coastal and marine ecosystems. Its geographic focus is South Africa's east and southern coasts, spanning habitats from estuaries to the deep sea.

Two funding cycles ran across the SSM Phase 3 contract period: four projects from 2021 to 2023, and five from 2024 to 2026, summarised in the sections that follow.



SALPA

PI: Prof. Warren Potts (Rhodes University)

The South African Linefish Physiology Assessment (SALPA) project set out to test whether MPAs build climate resilience into South Africa's exploited fish populations. Over three years, an interdisciplinary team combined laboratory respirometry, otolith microchemistry, baited remote underwater stereo-video, acoustic telemetry, genomics and larval dispersal modelling to compare fish from protected and exploited reefs.

The findings were striking and consistent: fish from MPAs such as Goukamma and Tsitsikamma were more active and had greater aerobic capacity at thermal extremes than fish from exploited sites, and were also bolder and more catchable. Fishing therefore selectively removes the very individuals best equipped to cope with a warming ocean, while MPAs conserve and export this resilience, with modelled larval dispersal reaching up to 250 km along the coast. Offspring of MPA-spawned fish also proved more resilient to ocean acidification.

SALPA built substantial human capacity, training two postdoctoral fellows, two PhD, four MSc and four honours students, several graduating with distinction. Findings were shared with government scientists, presented at international conferences in Australia, the UK, France and Italy, and taken directly to recreational anglers through public talks and competitions reaching some 450 anglers, plus a well-attended MPA Day webinar.

By demonstrating that MPAs are a practical tool for future-proofing coastal fisheries, SALPA strengthens the scientific case for South Africa's MPA network and directly informs marine spatial planning and the National Biodiversity Assessment, supporting food security, livelihoods and climate adaptation in coastal communities.



OPEN CALL PROJECTS

SmartZone

PI: Prof. Amanda Lombard (Nelson Mandela University)



The SmartZone project used the newly proclaimed uThukela MPA to build a rare, time-sensitive social-ecological baseline against which future MPA management can be measured. Co-funded through the Blue Action Fund's uThukela Ecosystem-based Adaptation project, the team surveyed the upper mesophotic zone (40–70 m) that spans every management zone of the MPA.

Highlights include multibeam hydrographic surveys of all 14 mesophotic reef complexes, 35 ROV dives characterising benthic biodiversity and reef geomorphology, and 170 stereo-BRUV deployments across 10 sites inside and outside the MPA, generating South Africa's most comprehensive baseline fish dataset for this depth zone. Parallel plankton and eDNA sampling tracked ichthyoplankton and reef-fish diversity across MPA zones.

Recognising that MPAs succeed or fail on social as much as ecological grounds, the project ran household surveys, focus groups and participatory mapping with the Nyembe and eNqutshini communities adjacent to the MPA, and identified perceptions, Indigenous Knowledge and livelihood needs that will shape future co-management. The project trained a strong cohort of postgraduate students across Nelson Mandela University (NMU), University of KwaZulu-Natal (UKZN) and Rhodes University/NRF-SAIAB, with three PhD and several MSc and MA students, and grew the WILDTRUST Ocean Stewards Fellowship to over 130 young marine science advocates.

By combining geology, biodiversity, oceanography and social science, SmartZone is delivering the SMART (Specific, Measurable, Achievable, Relevant, Time-bound) evidence base South Africa needs to demonstrate, and adaptively manage, the real conservation and socio-economic value of its newest MPA.

Agulhas Bank Connections

PI: Dr Natasha Karenzi (University of Cape Town)

The woman-led Agulhas Bank Connections (ABC) project tackled a persistent public misconception: that river water reaching the sea is “wasted”. Instead, ABC showed how freshwater, sediment and nutrients flowing from South Africa’s rivers sustain the muddy shelf ecosystems that underpin commercially vital *Merluccius* (hake), *Austroglossus* (sole) and *Argyrosomus* (kob) fisheries.

Fieldwork across the Agulhas muddy mid-shelf, from Mossel Bay to Algoa Bay, combined ROV surveys, grab and dredge sampling to characterise mud-dwelling communities, while genetic work on the aggregating sea cucumber (*Hemiodon insolens*), confirmed that its three colour morphs are a single species, albeit with some genetic structuring across its Agulhas Bank-Benguela range. A machine-learning tool using satellite imagery was developed to track river-plume sediment and chlorophyll inputs from the Breede, Duiwenhoks, Goukou and Gouritz rivers, and a new scoring method quantified trawling impacts on mud habitat structure.

ABC translated science directly into policy: 12 scientists from five institutions produced a government-facing policy brief on the marine value of freshwater inflow, and an expert-driven IUCN conservation strategy and updated Red List assessments were developed for three threatened kob species. A 2023 capacity-development research cruise, run with the One Ocean Hub, trained 11 emerging researchers from five South African institutions in ROV and benthic sampling.

The project graduated three students, produced multiple peer-reviewed papers, and its land-sea connectivity science and two PhD candidates now continue into the currently funded ACEP SAFEZone project, extending ABC’s contribution to sustainable, equitable management of South Africa’s coastal-marine continuum.



OPEN CALL PROJECTS

Deep Connections

PI: Prof. Kerry Sink (South African National Biodiversity Institute)

Deep Connections was South Africa's first home-led coelacanth research programme since the rediscovery of the species in 2000, pairing genetic, oceanographic, ecological and socio-cultural research to strengthen marine spatial planning and biodiversity decision-making.

Across seven field expeditions since 2021 (including 151 ROV dives), the team resighted long-known coelacanth individuals decades after their discovery (including one seen 23 years on), identified more than 20 new individuals in total, and grew South Africa's coelacanth catalogue to 48 fish, feeding a mark-recapture population estimate for this Critically Endangered species. The team also successfully piloted eDNA detection of coelacanths and advanced genomic work on seabreams supporting linefish management.

Deep Connections made deep-sea science tangible to communities through the Umkhosi Wenala theatre

production and a woven coelacanth puppet made with local basket-weavers near iSimangaliso, an animation blending indigenous and scientific knowledge, children's stories, and a new public aquarium exhibit, reaching audiences from rural KwaZulu-Natal to the United Nations Ocean Decade. Its stakeholder engagement at Aliwal Shoal helped resolve long-standing community concerns, leading to gazetted MPA zonation changes in 2024, and seeded the emerging SeaPeople collective supporting inclusive participation in the Global Biodiversity Framework's 30x30 protection target.

The project's mapping and planning research directly underpinned South Africa's ten-fold expansion of its Marine Protected Area estate and the National Coastal and Marine Spatial Biodiversity Plan, while training a strong cohort of PhD and honours students, cementing Deep Connections' legacy across science, policy and society.



SAFEZone

PI: Prof. Amber Childs (Rhodes University)

Led by Prof. Amber Childs (Rhodes University), SAFEZone (Area-Based Management for Sustainability) is tackling the priority conservation actions identified in South Africa's kob (*Argyrosomus* spp.) Conservation Strategy and working to improve management of the linefish socio-ecological system as a whole. Five interlinked work packages address land-sea connectivity, spawning and nursery habitat mapping, fishery and bycatch hotspots, marine spatial protection efficacy, genetic population monitoring, and science-to-policy and science-to-public interventions.

Since inception the project has registered three PhD students (Rhodes University, University of Pretoria and University of Cape Town), two MSc and two honours students. Progress spans a hybrid de novo genome assembly of silver kob (*Argyrosomus inodorus*), physiological and thermal-tolerance studies of dusky kob (*A. japonicus*) and *A. inodorus*, and acoustic tagging of 26 *A. japonicus*, complemented by a further

15 *A. inodorus* tagged for a new 2026 MSc project. A highlight was the discovery of a likely spawning aggregation of adult *A. japonicus* and *A. inodorus* in Algoa Bay aboard the RV *Observer*, prompting ATAP to contribute 20 additional acoustic transmitters and strengthening the case for expanding MPA protection at the site.

SAFEZone has graduated two students, including an MSc awarded with distinction in 2025, and published two papers in a 2025 *African Journal of Marine Science* special issue on dusky kob thermal tolerance and movement behaviour, shared at the 6th South African Marine Linefish Symposium alongside the project's "Linefish Connect" workshop for 60+ managers and fishery representatives. A co-investigator's appointment to the DFFE Linefish Working Group has taken the kob conservation strategy directly into policy discussions, while genetic sampling with angling associations builds a national linefish research Community of Practice.



OPEN CALL PROJECTS

Coollest Tropical Forest

PI: Dr Jean Harris (WILDTRUST)

Led by Dr Jean Harris, the Coollest Tropical Forest project is undertaking the first in-depth study of a newly discovered, extensive *Ecklonia radiata* kelp forest in the upper mesophotic zone (40–70 m) of the iSimangaliso Wetland Park World Heritage Site, the first confirmed record of this ecosystem on South Africa's subtropical east coast, extending at least 35 km along the coastline.

Two multi-leg cruises aboard the WILDTRUST vessel RV *Angra Pequena*, in 2024 and 2025, combined with shore-based fieldwork aboard RV *Hispidus*, have mapped kelp bed extent and density, characterised associated benthic biodiversity, and sampled plankton, environmental DNA and oceanographic variables, despite considerable weather disruption to both expeditions. A 2025 breakthrough of 12 successful ROV dives, after a complete washout in 2024, documented dense kelp, extensive rhodolith beds and coral/sponge-

dominated reefs, including a likely new regional record of acid weed (*Desmarestia* spp.). Thirty-two stereo-BRUV deployments, including the first inside the kelp bed itself, delivered South Africa's first robust visual fish dataset for this habitat. Multibeam bathymetric mapping now covers 117 km² of the focal area.

The project is building capacity through postdoctoral and MSc research analysing this imagery, and has engaged WILDTRUST Ocean Stewards in cruise fieldwork. Coverage in 17 traditional media pieces and social media that reached an estimated 2.3 million people in 2025 has raised public awareness of this newly documented ecosystem. These early findings already position the iSimangaliso kelp forest as a previously unrecognised contributor to South African marine biodiversity and coastal community value, with further seasons of fieldwork planned to complete the picture.



Geomapping

PI: Dr Bastien Linol (AEON-ESSRI, NMU)

Led by Dr Bastien Linol from the Africa Earth Observatory Network – Earth Stewardship Research Institute (AEON-ESSRI) at Nelson Mandela University, the Geomapping project is building new scientific understanding of the South African transform margin and its links to the Indian Ocean, and developing marine geophysics and geochemistry capacity to inform ocean ecology, and socio-economic planning. Fieldwork centres on Algoa Bay, using the RV *Observer* for magnetometer, sparker and multibeam echo-sounder surveys, alongside sediment coring and seawater sampling, in collaboration with the Council for Geoscience and IFREMER (France).

To date, the project has completed 21 days of seismic ambient-noise recording across 30 km² around the Port of Ngqura, 170 km of multibeam bathymetry profiles, 62 sediment cores totalling nearly 16 m, 124 seawater samples, 330 km of seismic-sparker profiles and further bathymetric mapping. Installation of a Sercon isotope ratio mass spectrometer at NMU has enabled in-house carbon and nitrogen isotope measurement for the first time, with a noble gas mass spectrometer also newly installed.

The project is training a strong postgraduate cohort, including a PhD student who spent three months at IFREMER, France, processing passive seismic data, alongside further PhD and Masters students working on sediment cores and historical seismic reinterpretation. Two papers are in preparation on the isotope geochemistry results, and findings have been presented at the Southern African Geophysical Association conference and the International Conference on Seafloor Landforms, Processes and Evolution in Durban. Completing the remaining objectives will depend on further vessel access and sediment core data, but the project has already established one of South Africa's few in-house capabilities for marine carbon and nitrogen isotope analysis.



OPEN CALL PROJECTS

Coast-to-Core

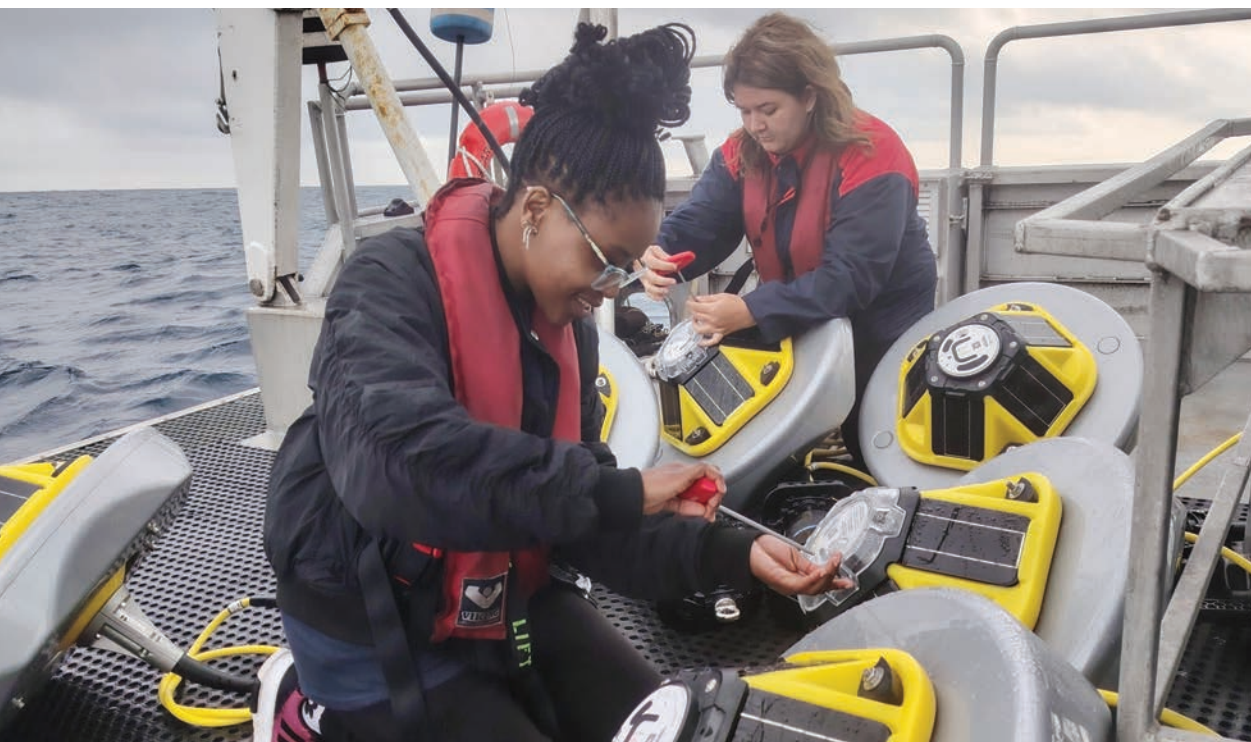
PI: Dr Tamaryn Morris (NRF-SAEON/SAWS)

Led by Dr Tamaryn Morris, the Coast-to-Core project is establishing a physical, biogeochemical and planktonic monitoring programme of the southern Agulhas Current and its influence on the adjacent coastal region, including anomalous events such as Natal Pulses, the Port Alfred upwelling cell and current filaments entering Algoa Bay.

Regular multidisciplinary survey transects aboard the RV *Observer*, combining underway CTD, plankton nets and discrete water sampling, run from the coast out across the current off Port Alfred. Of four planned 2025 surveys, three were completed in full, with a fourth curtailed by vessel engine problems; the team nonetheless deployed 13 SOFAR Ocean drifting buoys fitted experimentally with current meters. A transect run aboard the SA *Agulhas II* as part of the SEAmester cruise extended sampling further offshore. Through the first half of 2026, the team has continued short deployments of SOFAR Ocean Spotter buoys along the transect line,

including one tracking a mesoscale cyclonic feature offshore of Algoa Bay, while focusing on data analysis, student projects and publications.

The project is training a strong postgraduate cohort of six students in oceanographic seagoing skills, with PhD student Neha Ramsarup winning the best poster award at the Southern African Marine Science Symposium (SAMSS) in 2025. Results have been presented at the Ocean Sciences Meeting in Glasgow and the team is preparing to share findings with stakeholders at a workshop in Gqeberha in September 2026. Data are being channelled to operational and research ocean models at South African Weather Service (SAWS) and South African Environmental Observation Network (NRF-SAEON) to validate and refine their forecasts, while the team separately develops science communication materials for coastal stakeholders and schools.



SoundSeas

PI: Prof. Jaco Versfeld (Stellenbosch University)

Led by Prof. Jaco Versfeld, SoundSeas is testing whether underwater marine soundscapes can indicate the health and condition of marine ecosystems, and developing acoustic monitoring tools to support management decision-making, while building South African capacity in underwater soundscape ecology and machine learning.

The project has retrieved and analysed acoustic datasets from the Amathole, Childs Bank and Namaqua National Park MPAs, and completed inshore reef soundscape characterisation at four Algoa Bay sites (Addo, Sardinia Bay, Riy Banks and Cape Recife), providing important baseline information on spatial and temporal variability in South African marine soundscapes. These findings, led by PhD student Kuhle Hlati, are under review at *Scientific Reports*. Acoustic monitoring has been paired with stereo-BRUV and ROV imagery to classify benthic invertebrate communities and habitat use by the Critically Endangered seventy-four seabream (*Polysteganus undulosus*), with these datasets also feeding fisheries stock assessment work.

Two PhD and one MSc student are progressing well, with Kuhle Hlati due to visit the Ecoacoustics Laboratory in Taiwan in late 2026 to strengthen sound-source separation methods for biodiversity assessment. PhD student Luther Adams has won student presentation awards at a SANBI student research day (2nd place) and the Western Indian Ocean Marine Science Association Symposium (WIOMSA) (1st place). Recovery of an offshore mooring at the Orange Shelf Edge MPA remains outstanding. SoundSeas remains on track to deliver novel acoustic baselines, analytical tools and a trained cohort supporting marine biodiversity conservation and ocean governance in South Africa, as data analysis and publication continue.



ACEP SCIENCE ENGAGEMENT AND OUTREACH

Bringing ocean science to South Africa's classrooms, coastlines and communities

ACEP's third contractual objective commits the programme to promoting public engagement and awareness of marine science, in step with the DSTI's national awareness priorities. Across the four years of the SSM Phase 3 contract, ACEP met or exceeded this target every year, delivering a diverse programme of engagement that reached school learners, university students, the public, the scientific community and international partners alike.

ACEP's strategy is to work through the platforms and people already embedded in the research, translating fieldwork, data and expertise into activities pitched at the right audience rather than treating outreach as a separate exercise. Education and professional capacity building anchor much of this effort, closely intertwined with the Phuhlisa Programme's own transformation mandate.

NRF-SAIAB's Winter and Summer Schools gave HDI and Phuhlisa students hands-on sea-going and laboratory experience. Career talks and a Sea Cadets cruise aboard RV *Observer* extended this reach to

school learners, and Phuhlisa supervisors received structured professional development. Postgraduate researchers and platform staff, in turn, trained the wider marine science community through workshops such as the stereo-BRUV landers course in KuGompo City, the biennial MaRIP BRUVs workshop hosted at NRF-SAIAB (60+ participants, 18 institutions), and acoustic tagging and data visualisation workshops facilitated by ATAP, while Phuhlisa itself (along with NRF-SAIAB personnel) was represented at the 11th WIOMSA Scientific Symposium in Mombasa, Kenya.

Public-facing communication carried this reach further still, from World Ocean Day and MPA Day media releases to public talks at the Two Oceans and BayWorld Aquariums and a World MPA Day event drawing over 100 visitors to the East London Museum. Stakeholder engagements at iSimangaliso and uThukela Banks, science diplomacy with Comoros government officials and the newly launched BRICS Deep-Sea Resources International Research Centre, further extended ACEP's influence into policy and regional cooperation.



WHERE TO FROM HERE

Building on Phase 3, ACEP enters a new SSM contract with a sharper focus on impact, transformation and regional reach

Phase 3 of the SSM contract demonstrated that NRF-SAIAB can design, manage and deliver a complex, multi-component national marine research programme within a fixed-term agreement, consistently meeting or exceeding its research, platform, training and public engagement targets. ACEP now enters a new SSM contract carrying similar objectives, but a sharper emphasis on societal impact, in line with the NRF's 2025/26–2029/30 Strategic Plan and the institutional resolve to weigh outcomes as heavily as outputs.

Transformation remains central to this next phase. The Open Call continues largely unchanged with five grants supported over 2027–2029, with the addition of a ring-fenced funding allocation (20%) for Early Career Ocean Professional (ECOP) researchers, that will open the door to a younger, more transformed cohort. The Phuhlisa Programme's directed support is being formalised into its own ring-fenced instrument, that will fund up to 10 projects, open to the four HDI partner universities and to black researchers at other NRF-recognised institutions.

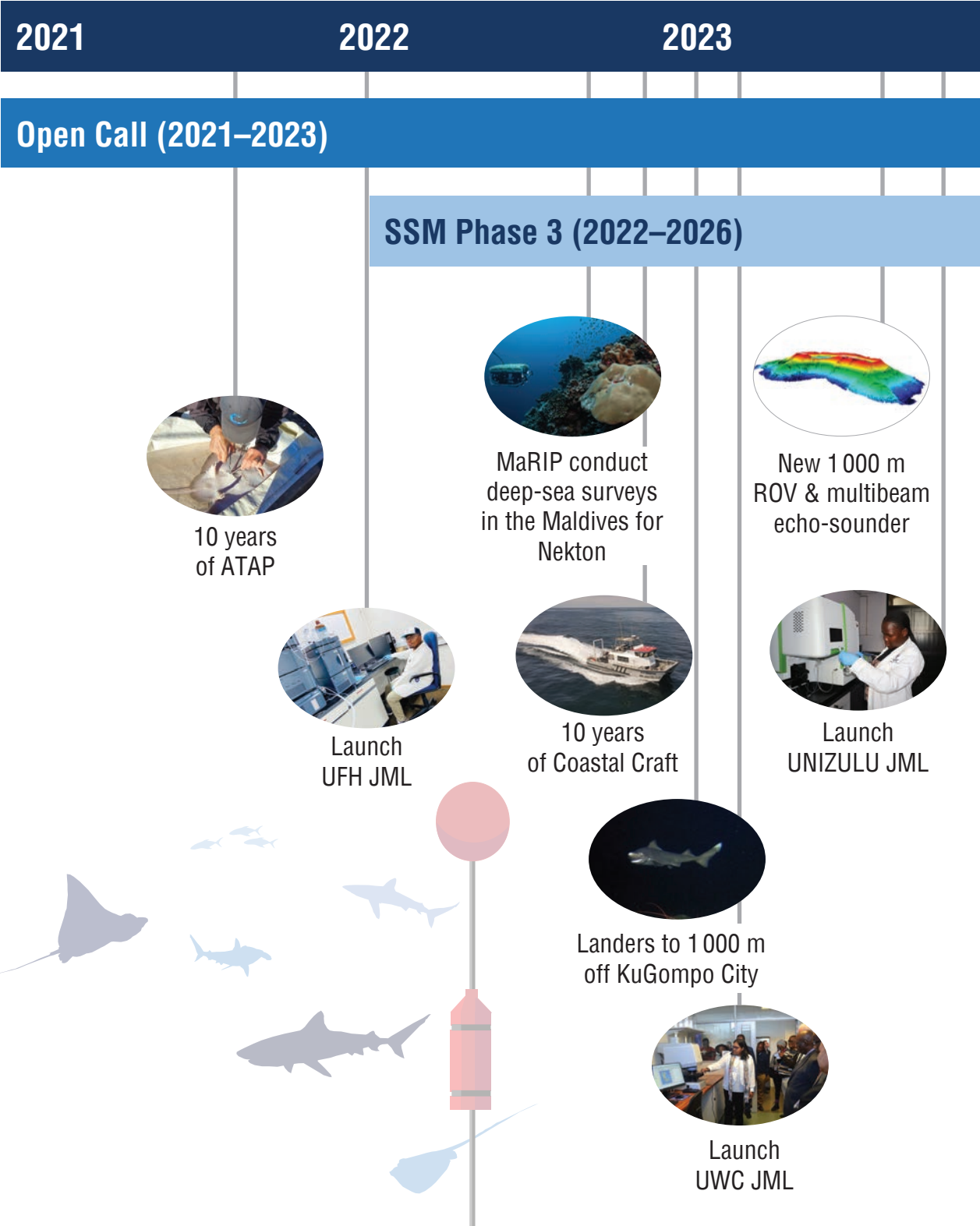
The Marine Platforms carry a clear equipment agenda into the new phase: Coastal Craft RV *Phakisa* and RV *Observer* will be refurbished and the engines on RV *uKwabelana* will be replaced; GeMaP will replace its discontinued Reson 7101 multibeam system (an

estimated R10 million) and extend its mapping capability into the deep sea with BRICS and Southwest Indian Ocean partners; ATAP will consolidate recent equipment investment, continue to support smaller projects through equipment loans in conjunction with the nationwide infrastructure backbone, and finalise its 2027–2031 strategy; and MaRIP will move its 3500 m lander system to full operational status, deploy its 1000 m ROV onto slope ecosystems, grow its biodiscovery contribution, and invest in a physico-chemical sensor array to monitor benthic boundary layer processes.

More broadly, building on existing collaborations with Seychelles, Mozambique, Comoros and Kenya, the platforms will expand their footprint into the Southwest Indian Ocean. The Joint Marine Laboratories, established in 2022, enter a second phase currently being tabled for the new contract. Phase 2 will deepen the laboratories' integration with the Marine Platforms and build long-term sustainability. In the first year of the new SSM contract, ACEP will also undertake a major stakeholder review of the programme's inputs, outputs, outcomes and impact over the past 15 years, to map realised pathways to impact and the barriers that must be addressed to sustain it.



ACEP MILESTONES



2024

2025

2026

Open Call (2024–2026)



10 years
of MaRIP



Deep Connections
detects coelacanths
from eDNA



Launch
WSU JML



4 new ROV
pilots trained

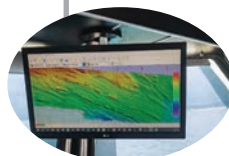
ATAP NEP
award
(R3.8 million)



SAFEZone dusky kob
aggregation discovery



GeMaP & MaRIP
enable deep-sea
surveys in Comoros
for Nekton

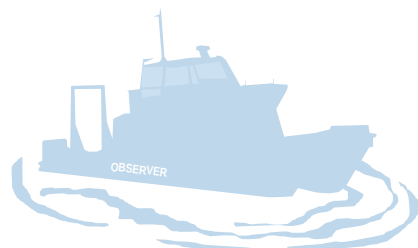


10 years
of GeMaP



Landers to 2 350 m
off KuGompo City

MaRIP FBIP
award
(R4.4 million)



ACEP KEY STATS 2022–2026



9
OPEN CALL PROJECTS



**CAPACITY
DEVELOPMENT**



19
ENGAGEMENT EVENTS

85

**Open Call & Platform
Students**



116
PUBLICATIONS

TRANSFORMATION

4

**Historically Disadvantaged
Institutions**

18

Supervisors

230

**Phuhlisa Student
Enrolments (Phase 3)**

4

Joint Marine Laboratories

RESEARCH REACH

880

Citations

300+

**Institutions Worldwide
(co-authorship)**



MARINE PLATFORMS



> 218 Researchers **33** Institutions (Platform Access)



430 Coastal Craft – Sea Days



1 400 GeMaP Seabed Mapping (km²)



1 600 MaRIP Deployments

370 ROV Dives



90+ ATAP Receivers (NRF-SAIAB)

19 Million+ Detections

300 ATAP Receivers (Full Network)

46 Species Tracked

ACRONYMS AND ABBREVIATIONS

ABC	Agulhas Bank Connections project
ACEP	African Coelacanth Ecosystem Programme
AEON-ESSRI	Africa Earth Observatory Network - Earth Stewardship Research Institute
ATAP	Acoustic Tracking Array Platform
BRICS	Brazil, Russia, India, China, South Africa intergovernmental organisation
BRUV	Baited Remote Underwater Video
CoNCENSUS	Advancing standardisation of Coastal and Nearshore demersal fish visual CENSUS techniques
CTD	Conductivity, Temperature, and Depth
DFFE	Department of Forestry, Fisheries and the Environment
DSTI	Department of Science, Technology and Innovation
ECOP	Early Career Ocean Professional
FBIP	Foundational Biodiversity Information Programme
FTIR	Fourier transform infrared spectroscopy
GeMaP	Geophysics and Mapping Platform
GOOS	Global Ocean Observing System
HDI	Historically Disadvantaged Institution
IFREMER	Institut français de recherche pour l'exploitation de la mer
IUCN	International Union for Conservation of Nature
JML	Joint Marine Laboratory
MaRIP	Marine Remote Imagery Platform
MARS	Marine and Antarctic Research Strategy
MBES	Multibeam Echo-sounder
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NEP	National Equipment Programme
NRF	National Research Foundation
NORCE	Norwegian Research Centre
RIISA	Research, Innovation, Impact Support and Advancement
ROV	Remotely Operated Vehicle
RV	Research Vessel
SAIAB	South African Institute for Aquatic Biodiversity
SAEON	South African Environmental Observation Network
SALPA	South African Linefish Physiology Assessment project
SAMOS	South African Master of Oceans Sciences
SAMSS	Southern African Marine Science Symposium
SANBI	South African National Biodiversity Institute
SAPRI	South African Polar Research Infrastructure
SARIR	South African Research Infrastructure Roadmap
SASaqS	Southern African Society of Aquatic Scientists
SAWS	South African Weather Service
SMART	Specific, Measurable, Achievable, Relevant, Timebound
SMCRI	Shallow Marine and Coastal Research Infrastructure
SOFAR	Sofar Ocean Technologies, a leading ocean technologies intelligence platform
SSM	Strategic Science Missions
UK	United Kingdom
UFH	University of Fort Hare
UKZN	University of KwaZulu-Natal
UNIZULU	University of Zululand
UWC	University of the Western Cape
WIOMSA	Western Indian Ocean Marine Science Association
WSU	iYunivesithi Walter Sisulu



**science, technology
& innovation**

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA



SAIAB
South African Institute
for Aquatic Biodiversity