GENERAL NOTICE

NOTICE 828 OF 2012

DEPARTMENT OF ENVIRONMENTAL AFFAIRS

GREEN PAPER ON THE NATIONAL ENVIRONMENTAL MANAGEMENT OF THE OCEAN FOR GENERAL COMMENT

Minister, B. E. E. Molewa, Minister of Water and Environmental Affairs, hereby publish for public comment, the green paper on the National Environmental Management of the Ocean:, as set out in the Schedule hereto.

Any person who wishes to submit representations or comments in connection with the green paper are invited to do so by no later than 16h00 on **15 January 2013.** Comments received after this time may not be considered. All representations and comments must be submitted in writing to the Deputy Director-General of the Department of Environmental Affairs, Branch Oceans and Coasts:

By post to: **The Deputy Director-General**
Environmental Affairs
Oceans and Coasts
Attention: Ashley Naidoo
PO Box 52126
V and A Waterfront, Cape Town
8002

By e-mail to YMngxe@environment.gov.za

Copies of the English version of the green paper are available at the offices of the Department's Oceans and Coasts branch, located at East Pier Building, East Pier Road, V and A Waterfront and on the Department's website at www.environment.gov.za.

B. E. E. MOLEWA
MINISTER OF WATER AND ENVIRONMENTAL AFFAIRS

The South African Policy on the National Environmental Management of the Ocean

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

October 2012

Table of Contents

Cover photographs source: Ashley Naidoo
Cover map source: Petroleum Agency SA, 2012

TABLE OF DIAGRAMS, MAPS AND TABLES

ACRONYMS

CBD	Convention for Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CCO	Columbian Ocean Commission
DEA	Department of Environmental Affairs
DOD	Indian Department of Ocean Development
EEZ	Exclusive Economic Zone
GDP	Gross Domestic Product
GHGs	Green House Gases
ICM Act	National Environmental Management: Integrated Coastal Management Act
ILA	International Law Association
IMCRA	Interim Marine and Coastal Regionalisation for Australia
IMO	International Maritime Organisation
IOC	Intergovernmental Oceanographic Commission
KZN	KwaZulu Natal
LME	Large Marine Ecosystem
Ports Act	National Ports Act 12 of 2005
Prince Edward Island Group	Prince Edward and Marion Islands
SAMSA	South African Maritime Safety Authority
TAC	Total Allowable Catch
TEU	Twenty Foot Equivalent Units (containers)
UNCED / RIO	United Nations Conference on Environment and Development, 1992
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFA	United Nations Fisheries Agreement
USA	United States of America
Waste Act	National Environmental Management: Waste Act

EXECUTIVE SUMMARY

South Africa's Constitution requires the protection, conservation and sustainable use of the environment. The ocean space under South Africa's jurisdiction is a wilderness area larger than the size of its land territory. The unique ocean current systems around the coast are highly productive and display rich biodiversity. The available living and non living ocean resources represent a significant economic and development opportunity for present and future generations of South Africans. This economic opportunity comprises both historical sectors, like fishing and shipping, as well as significant new and emergent technologically advanced sectors relating to medicine, energy, mining and food production. The Department of Environmental Affairs ("DEA") bears the primary mandate of developing and implementing policies to protect and conserve South Africa's ocean environment.

In protecting and conserving the ocean the DEA aims to maintain the environmental integrity of ocean ecosystems. Ocean ecosystem services are important as they directly and indirectly impact on human livelihoods, food security and agriculture, trade and industry. These services range from planetary functions such as heat distribution, oxygen production, carbon dioxide absorption and influencing rainfall and weather patterns to the harvesting of fish and mining of oil, gas and other minerals. The DEA must also contribute to national planning by understanding and informing decision makers of how the delivery of ecosystem services may vary or change over time.

The DEA also bears the mandate of encouraging the sustainable use of South Africa's ocean resources. It does so in partnership with other role playing departments. The management of South Africa's vast ocean space is a complex and challenging undertaking. The DEA has identified that present ocean environmental management arrangements are not optimal.

The DEA's ability to fulfil its ocean environmental management mandate is heavily reliant on the efforts of sectoral role playing departments to assist it in meeting the DEA strategic objectives. Individual usage sectors contribute to the aggregated and accumulated impacts on the ocean environment. To date, little attention has been paid to managing the aggregation and accumulation of human use impacts on the ocean. Sectoral management of ocean use in South Africa regulates and advances particular economic sectors separately within respective departments. All role playing departments recognise and implement, to varying degrees, environmental management objectives and initiatives. The opportunity exists to considerably enhance the efficiency of these environmental initiatives through improved information sharing and cooperation. This opportunity is increasingly being actioned by coastal states around the world through the development of national ocean policies. Such policies, while seeking to provide better communication among role playing departments, also attempt to unlock and expand the relatively unused sustainable development potential of large ocean territories. This is often achieved through national ocean environmental management policies that are based on the development and efficient distribution of information, understanding and knowledge of the ocean ecosystems within and adjacent to coastal states.

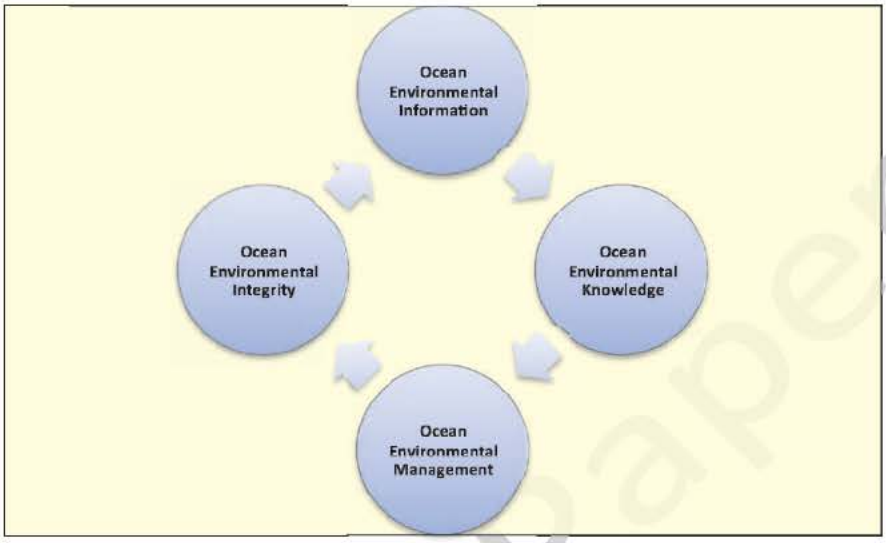
There are similarities between the objectives which various marine nations have identified in their ocean management policies. All seek to:

- Improve the competitiveness and effectiveness of activities existing within their marine jurisdiction, while at the same time researching and developing innovative and responsible future uses;
- Maintain and improve marine ecosystems resilience, conserve biodiversity and restore degraded habitats; and
- Participate and strengthen their involvement in global and regional developments, which support efforts to combat climate change.

South Africa's ocean environmental management policy is comprised of four interdependent policy objectives. Activities and efforts under each of the objectives will be pursued concurrently. The four ocean policy objectives form a coherent reinforcing sequence initiated by the collection of environmental information to the generation of environmental

knowledge informing improved environmental management approaches aimed at the protection and preservation of ocean environmental integrity. Ocean environmental integrity is critical to ensure the continued availability of ecosystem functions and services for current and future generations.

The Four Policy Objectives of Ocean Environmental Management



Objective 1: Ocean environmental information

The available information describing both the bio physical functioning and resource use of the ocean is at present inadequate to accurately determine the status and value of the marine environment. Most of South Africa's large ocean EEZ remains inadequately described. This is true for physical and ecological processes, biodiversity and human impact. Existing reporting requirements articulated in the National Environmental Management frameworks stipulate the method of sectoral reporting on environmental management. These frameworks were established in order that sectoral environmental information would be collated by the DEA. The DEA will develop and facilitate national research competence within itself and in partnership with other government and non government institutions to generate and collate meaningful ocean information.

Policy Statement 1.1: Ensure improved adherence with the ocean environmental reporting requirements contained in domestic legislation.

Policy Statement 1.1.1: Effort will be directed at communicating, assisting and obtaining improved adherence with the existing environmental legislation requiring the gathering and dissemination of management information, together with those departments that exercise functions which may affect or involve the management of the marine environment. This policy statement aims to improve and consolidate the implementation of existing legislation having reference to reporting on the ocean environment. A relatively small number of national government departments are directly involved in pursuing or regulating usages of the maritime zones under South Africa's jurisdiction.

Policy Statement 1.1.2: The DEA will facilitate the obtaining and sharing of appropriate and meaningful marine environmental information. Effort will be placed on initiating active engagement with statutory role

playing departments. Assistance will be rendered in the identification of an appropriate reporting structure and templates.

Policy Statement 1.1.3: The DEA will establish, together with role playing departments, a limited number of high level indicators which will be capable of producing a synoptic description of the status of the ocean environment. The DEA will establish a central repository of marine environmental information and use impact assessments. The DEA will perform the necessary functions to compile ocean environmental compliance reports for the Minister of Environmental Affairs. This will enhance the Minister's fulfilment of constitutional and statutory duties including the presentation of meaningful information for consideration by Parliament. These DEA reports will further allow sectoral departments to obtain an integrated view of marine resource use and the status of the marine environment generally.

Policy Statement 1.2: Enhance existing research and monitoring of ocean ecosystems.

Policy Statement 1.2.1: The DEA is tasked with refining a research agenda to improve knowledge and understanding of ocean ecosystems. The research area will include the mainland continental shelf and EEZ, the Prince Edward Island Group and Antarctica. Research in the marine environment is undertaken by many entities. It is the task of the DEA to seek convergence of a managed network of research effort towards commonly agreed goals. Data and information accumulated from research efforts will be maintained in the planned central repository of marine environmental information.

Policy Statement 1.2.2: The unique complexity and global importance of ocean ecosystems adjacent to South Africa attracts national and international research interest. South Africa has permanent research bases at Marion Island and Antarctica and has a track record of research excellence in specialised areas. These nodes of excellence will be supported by investment in further capacity and infrastructure. Towards enhancing this capacity, South Africa has in 2012 taken delivery of a technologically advanced polar research and supply vessel. The DEA will increase the number of South African science and engineering graduates in ocean related studies and provide opportunities for them to contribute to ocean knowledge, management and beneficial use. Particular attention will be paid to promoting more science and engineering graduates who reflect broadly the racial and gender composition of South Africa.

Policy Statement 1.2.3: South Africa's ocean jurisdiction and the territory under the Extended Continental Shelf Claim remain largely unexplored and the ability to monitor its ocean environment is resource constrained. The DEA will consider and implement innovative methods of monitoring South Africa's extensive marine area including the use of ship based systems, satellite observation, monitoring buoys and other emerging technologies. In addition to gathering information on ocean systems, innovative use of such technologies can also enhance compliance efforts in the EEZ.

Objective 2: Ocean environmental knowledge for sustainable development decision making

Sustainable development decision making is constrained by the present limited knowledge of the ocean environment. This frustrates efforts both to develop and conserve the marine environment. The DEA will undertake the collation, analysis and interpretation of the increasing amount of marine environmental information obtained under Objective 1. In consolidating environmental information the DEA positions itself to promote rehabilitation, conservation and sustainable development by providing better services to role playing departments. The provision of

improved knowledge to enhance decision making by sectoral role players is an important component in fostering better understanding of the roles and responsibilities of the relevant departments. Improving communication and cooperation in this manner is a necessary precursor for the active pursuit of a common set of marine conservation and development goals.

Policy Statement 2.1: Produce information tools to facilitate knowledge and understanding of the natural functioning of ecosystems and of human impact on the ocean environment.

Policy Statement 2.1.1: The DEA has identified that the production of a detailed spatial mapping of biodiversity and natural physical processes of South Africa's marine area is a priority. This process will include mapping the distribution of biodiversity and ocean current dynamics within South Africa's EEZ. The information obtained during the spatial mapping process will be complemented by additional internal and external data sources to produce a South African Ocean Information System. The South African Ocean Information System will enhance South Africa's ability to archive information, summarise data, generate scenarios and support informed decision making. Identified gaps in marine knowledge and data will be fed back into the ongoing marine research agenda pursued in Objective 1.

Policy Statement 2.1.2: The spatial mapping process will inform the division of South Africa's marine environment into Large Marine Ecosystems ("LMEs") or bioregions to be used for management planning purposes. Such regions are capable of further division into spatial zones reserved for specific or mixed use such as development, control and protection, nature preservation and reserved zones, in consultation with roleplayers.

Policy Statement 2.1.3: The scientific effort used while developing the spatial map and analysing existing ocean environmental data will be supplemented with the collection of other information in order to produce knowledge such as scenarios, predictions and trends. The DEA will provide role playing departments with ongoing analyses of the aggregated environmental information. This information will be of great value in improving sustainable sectoral planning initiatives and environmental reporting both domestically and internationally.

Policy Statement 2.2: Establish, in consultation with role-players, ocean ecosystem thresholds for human health and biodiversity conservation.

Policy Statement 2.2.1: The knowledge products generated through spatial mapping, improved environmental data analysis and other research and monitoring will assist the generation of a baseline assessment of the current environmental status of South Africa's marine environment. The establishment of this baseline assessment will provide a comprehensive inventory of living and non living aspects of South Africa's ocean environment. It will provide the basis for dialogue with sectoral role players in establishing a common set of marine ecosystem impact thresholds for the reporting indicators described in Objective 1 above. Impact thresholds may be defined per LME, bioregion or spatial zone. These agreed impact threshold indicators will provide the foundation for proactive and adaptive environmental planning. This planning approach facilitates sectoral alignment in the pursuit of functioning ecosystems for current and future generations.

Policy Statement 2.3: Provide knowledge to promote sustainable development whilst maintaining the resilience of the ocean.

Policy Statement 2.3.1: The inertia around developing the economic potential of the ocean exists in the lack of publically accessible information and knowledge regarding most of the ocean space under South African jurisdiction. Spatial maps, inventories and knowledge tools represent a considerable government investment in unlocking the economic and development potential of the South Africa's extensive EEZ. Increased scientific knowledge of South Africa's EEZ will make more apparent economic opportunities which are currently unknown and increased understanding of ecosystem functioning will directly contribute to sustainable development and job creation opportunities.

Policy Statement 2.3.2: The establishment of commonly agreed LME, bioregion or spatial zone indicators and threshold limits will simplify and focus impact assessments. This will have the benefit of providing direction and reducing the cost and time of environmental assessments, facilitating economic investment in the ocean area.

Policy Statement 2.3.3: Technological innovation is required to efficiently research, monitor, explore and use the large ocean surface, water column and depths. The DEA will partner with the Department of Science and Technology and specialist tertiary educational institutes to stimulate innovation in technology that supports ocean based science and industry.

Objective 3: Environmental management of South Africa's ocean

This objective seeks to identify the DEA's management responses to acting on the information and knowledge produced under Objectives 1 and 2. Increased knowledge of South Africa's ocean environment is likely to highlight existing and emerging challenges faced by ocean ecosystems and the earth system itself. The DEA will engage with role playing departments to determine appropriate management responses to these environmental challenges and trends. The DEA also has at its disposal various existing environmental management tools including the establishment of protected areas and environments. This objective explains how the DEA will pursue its environmental mandate and seek to influence role players in their ocean environmental management planning.

Policy Statement 3.1: Provide timeous information on trends and extremes in ecosystem and earth system functioning.

Policy Statement 3.1.1: The ocean monitoring and mapping efforts together with the other knowledge products developed in Objective 2 will allow the DEA to undertake forecasting, prediction and trend analysis within the marine environment as required by South Africa's Climate Change Policy.

Policy Statement 3.1.2: Long term monitoring programmes will be enhanced to generate time series data that can be used to identify and track shifts in ecosystems functioning that contribute to or result from climate change. Climate change will likely alter the availability and delivery of ecosystem services including rainfall and its seasonal patterns. Changes in rainfall and its seasonal patterns will challenge the sustainability of existing agricultural crop selection and geographic locations. The areas of operation of fisheries may also be influenced. Without the necessary adaptation strategies being set in place South Africa's food security may be challenged. Climate change may also result in exaggerated weather phenomena along South Africa's coastline such as coastal storms and storm surges and impacts on biodiversity.

Policy Statement 3.1.3: The DEA will provide better trend and scenario planning services and reports to aid climate change mitigation and adaptation decision making by role players. This will allow the DEA to inform national planning on how ocean human livelihood services will vary or change in the short, medium and long term at local,

national, regional and global scales. Such services and reports will include variability of the ocean as a rainfall source; the magnitude of sea level rise and implications for coastal communities and improved predictability of exaggerated weather phenomena such as coastal storms and storm surges. Recent extreme weather events have demonstrated that poor communities are disproportionately affected by such phenomena. Understanding trends in ocean temperature and ocean atmosphere interactions will allow the DEA to provide timeous reporting to role players and contribute to early warning.

Policy Statement 3.2: Ensure the conservation, protection and rehabilitation of ocean habitat and species.

Policy Statement 3.2.1: The DEA will seek to partner with role playing departments to improve the implementation of conservation measures and increase the availability of ocean environmental data. This will be done by ensuring that the relevant management authorities of ocean use include targeted conservation and data collection responsibilities into the relevant permitting and licencing frameworks.

Policy Statement 3.2.2: The DEA will assume responsibility as the environmental regulatory authority for all unregulated and new human activity in the ocean environment. International trends suggest that these activities are likely to include carbon sequestration, ocean fertilisation, geo engineering and deep sea exploration.

Policy Statement 3.2.3: The DEA will establish a representative network of marine conservation areas under South Africa's jurisdiction to promote conservation and thereby also contribute to the long term sustainable use of living resources. The DEA recognises the significant contribution of islands to ocean ecosystem functioning. Islands will receive prioritised conservation status. Maximum conservation status will be afforded to the sub Antarctic Prince Edward Island Group additional to the provisions of the Convention for the Conservation of Antarctic Marine Living Resources. There is also currently an international movement towards the establishment of a representative network of marine conservation areas beyond state jurisdiction. The DEA will support this initiative.

Policy Statement 3.2.4: The DEA will undertake and support actions aimed at the rehabilitation of degraded habitats, where necessary, and the protection of threatened species.

Policy Statement 3.2.5: The DEA will adopt internationally agreed conservation targets and practices, where appropriate, as the minimum necessary requirements for conservation.

Policy statement 3.2.6: The DEA will support international efforts aimed at the protection and conservation of habitats and species in the High Seas and in Antarctica.

Policy Statement 3.3: Establish ecosystem and biodiversity management plans in consultation with role-players.

Policy Statement 3.3.1: The DEA will, together with role playing departments, develop and pursue uniformity of high level ocean environmental norms and standards to inform sectoral planning efforts. These norms and standards are aimed at guiding environmental best practice in ocean sectoral use.

Policy Statement 3.3.2: The DEA will develop ecosystem and biodiversity management plans for the ocean environment to protect species and habitats. These management plans will offer maximum protection to key species, such as top predators, and habitats, such as unique benthic fauna and flora and endangered coral reefs and estuaries. The

plans will provide guidance with respect to the setting of common objectives for the conservation and management of the ocean environment in collaboration with role players.

Policy Statement 3.3.3: The DEA recognises the importance of ocean heritage relating to both geographic areas and species. The DEA will prioritise the protection and conservation of South African ocean heritage resources, such as coelacanths.

Policy Statement 3.3.4: The DEA will establish best practice guidelines governing the transport of harmful and noxious substances in the marine environment. The DEA will seek to influence planning aimed at minimising the risk of environmental exposure to harmful and noxious substances including hydrocarbons, persistent organic pollutants and industrial waste.

Policy Statement 3.3.5: The introduction of untreated sewage and industrial waste into the ocean environment will remain prohibited and effort will be placed on encouraging coastal role players to pursue efficient and affordable approaches to treatment.

Policy statement 3.3.6: The DEA will establish and enforce regulations controlling the introduction and beneficial use of alien marine species and minimise the threat of invasive species.

Objective 4: Ocean environmental integrity

Promoting ocean environmental integrity is reliant on coherent and rational approaches to the conservation, protection and sustainable use of South Africa's rich marine resources. It further supports South Africa's contribution to regional and global ocean management responsibilities. The importance of maintaining ocean environmental integrity lies in the preservation of ocean environmental goods and services for current and future generations of South Africans. This objective can only be achieved through effective partnerships and efficient cooperation. The EEZ represents a geographic space larger than the size of South Africa's land area. The State is the custodian of this large ocean space on behalf of the people of South Africa. The management of such a vast space is a complex undertaking involving various role players at a national, regional and international level. The realisation of this custodianship responsibility demands cooperation in effort and investment by all State role players to preserve ocean environmental integrity. The improvement of environmental information, knowledge and the management of South Africa's ocean environment provide the necessary platform for the achievement of this objective.

Policy Statement 4.1: Cooperate at a national, regional and international level to advance sustainable ecosystem-based management of the EEZ, High Seas and Antarctica.

Policy Statement 4.1.1: At a national level the DEA will drive the movement from a sectoral to an ecosystem based bioregional ocean management planning approach. The ecosystem based approach implies coordinated sectoral planning that pursues common ocean environmental objectives. It further underpins the eventual migration to integrated ocean management.

Policy Statement 4.1.2: The DEA will use the existing cluster cooperative governance mechanism to facilitate the improved coordination of ocean environmental management.

Policy Statement 4.1.3: At a regional level the DEA will seek to participate in programmes based in the LME management framework. Initially attention will be paid to the five African and the Antarctic LMEs. The DEA will promote cooperation and strengthen information exchange and management principles across these LMEs. The implementation of national ocean management objectives will be strengthened by aligning them with the regional LME structures, in particular the adjacent

Benguela and Agulhas Current LMEs. This allows for the development of integrated regional ocean governance at the Southern African Development Community level, as well as active participation in, and support for, the Nairobi and Abidjan Convention structures.

Policy Statement 4.1.4: The DEA will continue to play a leadership role with respect to regional ocean governance underpinned by its ocean research and management capacity. Through leadership roles the DEA will secure alignment between national environmental management objectives and regional and international programmes.

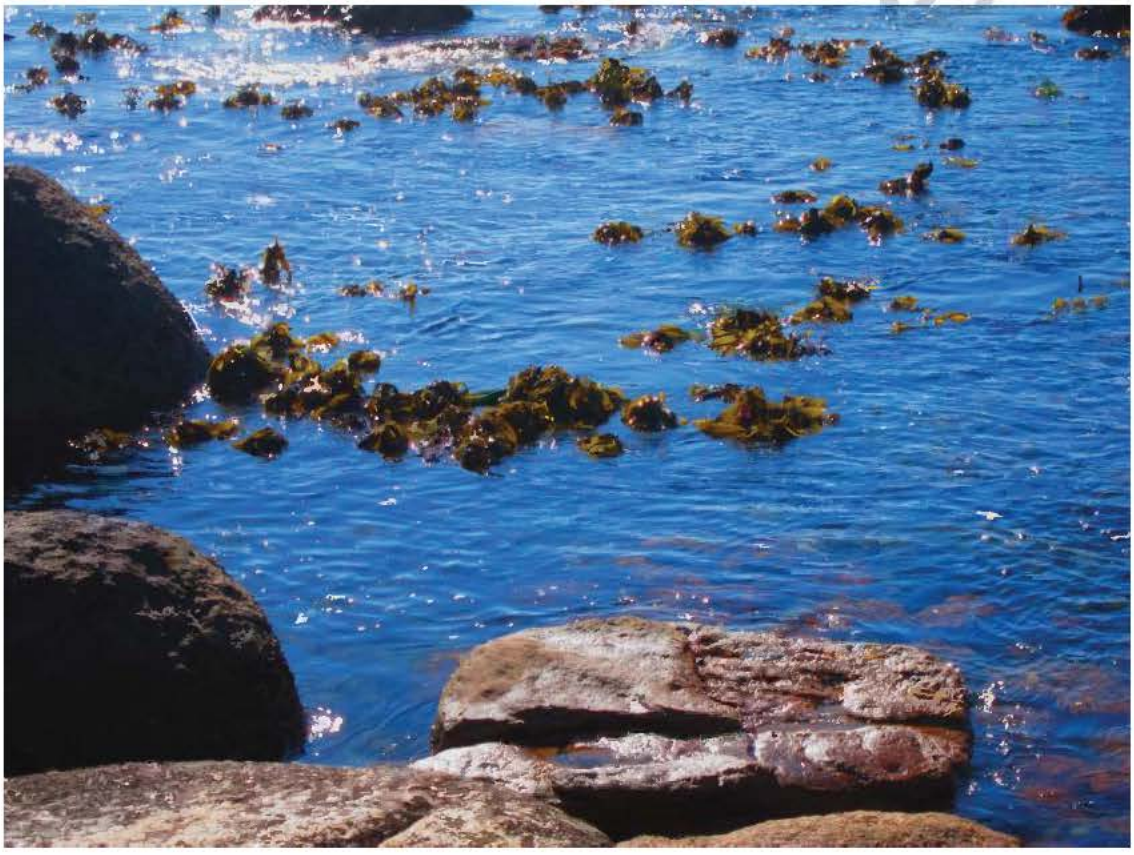
Policy Statement 4.1.5: At an international level, attention will also be paid to improving channels of communication between South Africa's various central authorities established by international agreements. Currently central authorities, who bear international reporting responsibilities, are located within a variety of role playing structures. The ability of central authorities to interact and communicate with one another is not optimum. Improved communication will allow South Africa to undertake its international responsibilities and reporting in a more harmonised manner.

Policy Statement 4.1.6: The DEA will support continuing engagement at international ocean governance fora to promote equitable access and benefit sharing of resources in the High Seas and Antarctica.

Policy Statement 4.1.7: The DEA will promote global ocean environmental protection in South Africa's national interests. South Africa is an original signatory of the Antarctic Treaty and exercises sovereignty over two sub Antarctic islands. As such South Africa is well positioned to influence planning and management strategies in the Southern Ocean. The DEA exercises many of South Africa's international ocean responsibilities and intends to strengthen its interactions on global environmental management initiatives in an attempt to appropriately influence global strategies. The DEA will assist in furthering South Africa's ability to actively partner with Southern Hemisphere marine nations in particular and developing nations generally, such as the India Brazil South Africa partnership. Such partnerships are aimed at enhancing the economic and scientific resources available for the undertaking of large scale research projects with the objective to increase knowledge of shared ocean dynamic processes. This knowledge will enable regional ocean environmental management planning and improved national adaptation decision making. The DEA will also support ongoing cooperation and collaboration with developed countries in the pursuit of global ocean environmental integrity.

The successful implementation of the policy objectives listed above will allow South Africa, in the next five years, to complete the move from sectoral ocean management planning towards coordinated sectoral environmental management. This shift is made possible by building better understanding amongst role players of the benefits of improved environmental information and knowledge to inform environmental planning. Environmental spatial planning relies on improved scientific knowledge of the South African ocean environment and is underpinned by the comprehensive spatial map of the South African marine environment. It allows for a more informed strategic planning process to be undertaken, which seeks to advance sustainable development and conservation and protection of the ocean through an ecosystem based management approach. In the longer term it will be possible to undertake the move from coordinated sectoral environmental management to integrated environmental ocean management. International experience has shown that the undertaking of integrated ocean management planning cannot rely purely on principles of cooperative governance. It will be necessary to undertake the drafting of specific legislation such as an Ocean Act. The Ocean Act will need to establish clear political, reporting and administrative structures, set out an ecosystem based ocean management approach, define the jurisdiction of the Act including linkages to existing legislation and provide for mechanisms to be followed during

integrated spatial planning. The achievement of the policy objectives will give effect to the ocean environmental management responsibilities articulated in s24 of the Constitution and DEA's responsibilities as contained in the National Environmental Management Act. It will further directly contribute to fulfilling South Africa's commitment to Chapter 17 of Agenda 21 (the Rio Declaration) and the Johannesburg Declaration on Sustainable Development, produced during the World Summit on Sustainable Development in 2002.



SOURCE: ELZETTE HENSHILWOOD

1. INTRODUCTION

South Africa's Constitution requires the protection, conservation and sustainable use of the environment. The ocean space under South Africa's jurisdiction is a wilderness area larger than the size of its land territory. Countries with large Exclusive Economic Zones ("EEZs") are increasingly realising the immense global competitive advantage that the living and non living marine resources offer them. The unique ocean current systems around South Africa's coast are highly productive and display rich biodiversity. The available living and non living ocean resources represent a significant economic and development opportunity for present and future generations of South Africans. This economic opportunity comprises both historical sectors, like fishing and shipping, and significant new and emergent technologically advanced sectors relating to medicine, energy, mining and food production.

Under apartheid the management of South Africa's oceans was characterised by the exclusion of the majority of South Africans from access to, and exploitation of, the ocean and coast resources. Access to beaches, coastal areas and rights to exploit marine resources was concentrated in the hands of one racial group. The exploitation of resources was further characterised by selective rights allocation in a few capital intensive sectors. The DEA is required to ensure increased equitable access to the ocean and its resources in its planning processes.

The DEA bears the primary mandate of developing and implementing policies to protect and conserve South Africa's national ocean assets. The DEA also bears the mandate of encouraging the sustainable development of South Africa's ocean resources. It does so in partnership with other role playing departments. The management of South Africa's vast ocean space is a complex and challenging undertaking. The DEA has identified that the current environmental ocean management arrangements are not optimal. In order better to fulfil these responsibilities towards ensuring the integrity of South Africa's environment and ecosystem services, including supporting the earth system, the DEA proposes that the following South African Ocean Environmental Management Policy be considered.

2. THE SOUTH AFRICAN OCEAN ENVIRONMENT

South Africa is a nation bordered by the ocean on three sides – to the west, south and east. The approximate length of South Africa's coastline has been calculated in different ways in various documents. The South African Navy calculates South Africa's coastline as being approximately 3 924 km.[1] This calculation includes South Africa's sovereign possessions of Prince Edward and Marion Islands ("Prince Edward Island Group"). Prince Edward Island has a coastline of 32 km while that of Marion Island is 134 km. Generally most documents reference South Africa's mainland coastline as being approximately 3 000 km. This coastline stretches from the Namibian border on the West Coast to the Mozambique border on the East Coast with few bays or indentations naturally suitable for harbours. There are eight major ports namely: Richard's Bay; Durban; East London; Port Elizabeth; Mossel Bay; Cape Town, Saldanha Bay and Ngqura, which has recently been developed on the East Coast.

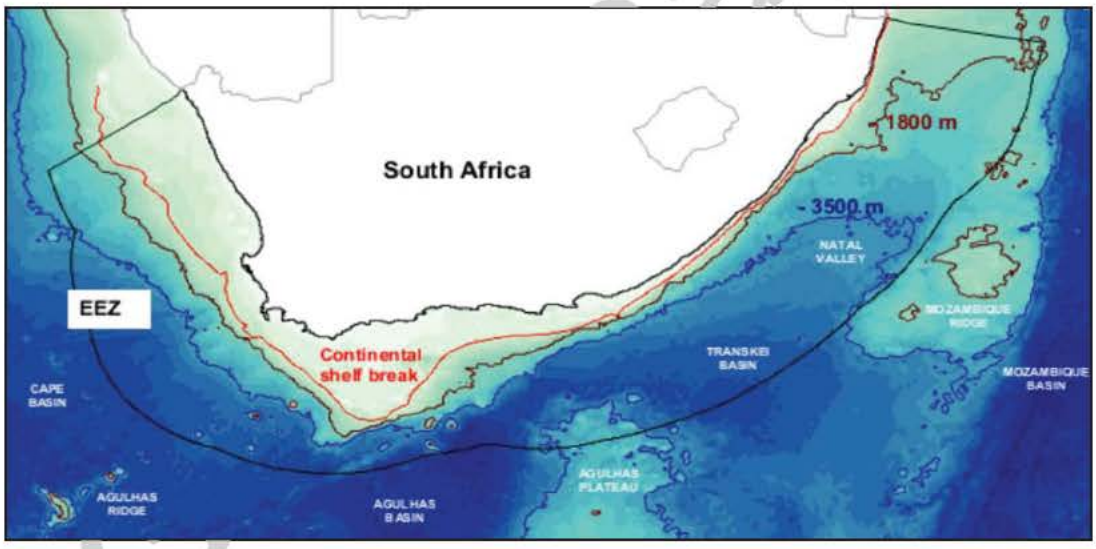
Under international law South Africa exercises marine jurisdiction over:

- its internal waters which include all harbours;
- its territorial waters which include the sea within a distance of twelve nautical miles from the coastal baselines. A nautical mile approximates to 1.85 kilometers;

- its contiguous zone, including its marine cultural zone, which includes the sea beyond the territorial waters but within a distance of 24 nautical miles from the coastal baselines;
- its EEZ which includes the sea beyond the territorial waters but within a distance of 200 nautical miles from the coastal baselines; and
- its continental shelf as defined in Article 76 of the United Nations Convention on the Law of the Sea ("UNCLOS").

Within the EEZ states have the right to exploit, develop, manage and conserve all resources to be found in the waters, on the ocean floor and in the subsoil. The current extent of South Africa's EEZ is approximately 1 553 000 km² and South Africa has lodged further claims under international law to extend its jurisdiction to certain parts of the continental shelf. UNCLOS broadly speaking defines a coastal state's continental shelf as comprising the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continent shelf, or to a distance of 200 nautical miles from the baselines. It is anticipated that once these claims have been processed they will add an additional 1 137 000 km² to South Africa's mainland EEZ and 1 108 000 km² to the EEZ surrounding the Prince Edward Island Group.[ii] Comparatively South Africa comprises 1 200 000 km² of terrestrial jurisdiction. With the additional shelf claims South Africa will potentially exercise spatial jurisdiction over one of the world's largest EEZs.

Map: South Africa's Existing Mainland EEZ. The continental shelf break is shown in red and the 1800m and 3500m are shown in brown and blue respectively. [iii]

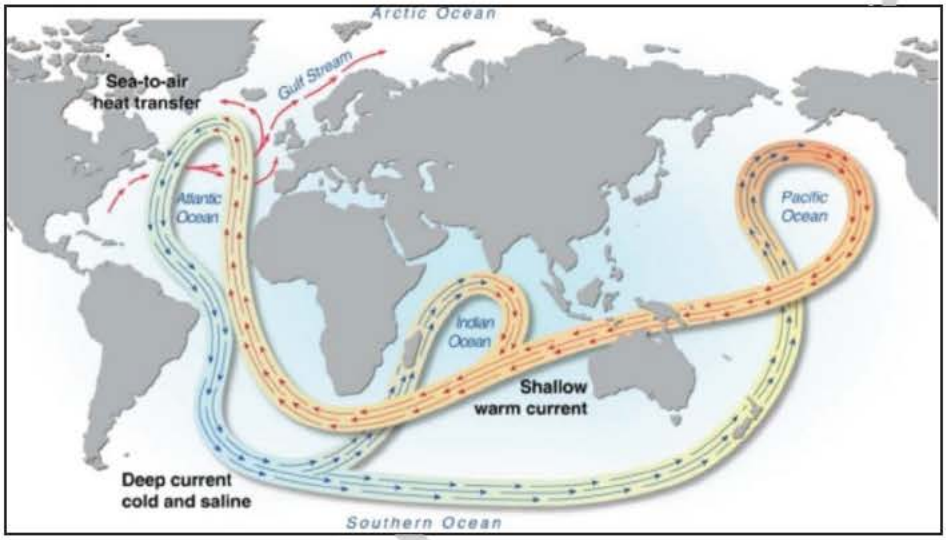


The ocean environment around Southern Africa is one of the most varied in the world. The strong oceanographic variability and in particular the contrasts in temperature, productivity and dissolved oxygen content of the ocean are reflected in the general division of South African marine biodiversity into three broad biogeographic regions (excluding the Prince Edward Island Group) namely, the cool temperate West Coast, the warm temperate South Coast and the subtropical East Coast.

The complex interactions between the ocean and the atmosphere on a regional and global scale, combined with the effects of latitude and topography, affect the rainfall patterns in South Africa. Southern Africa forms a wedge of land sticking into the vast marine region of the South Atlantic, the South Indian and the Southern Oceans. While this ocean

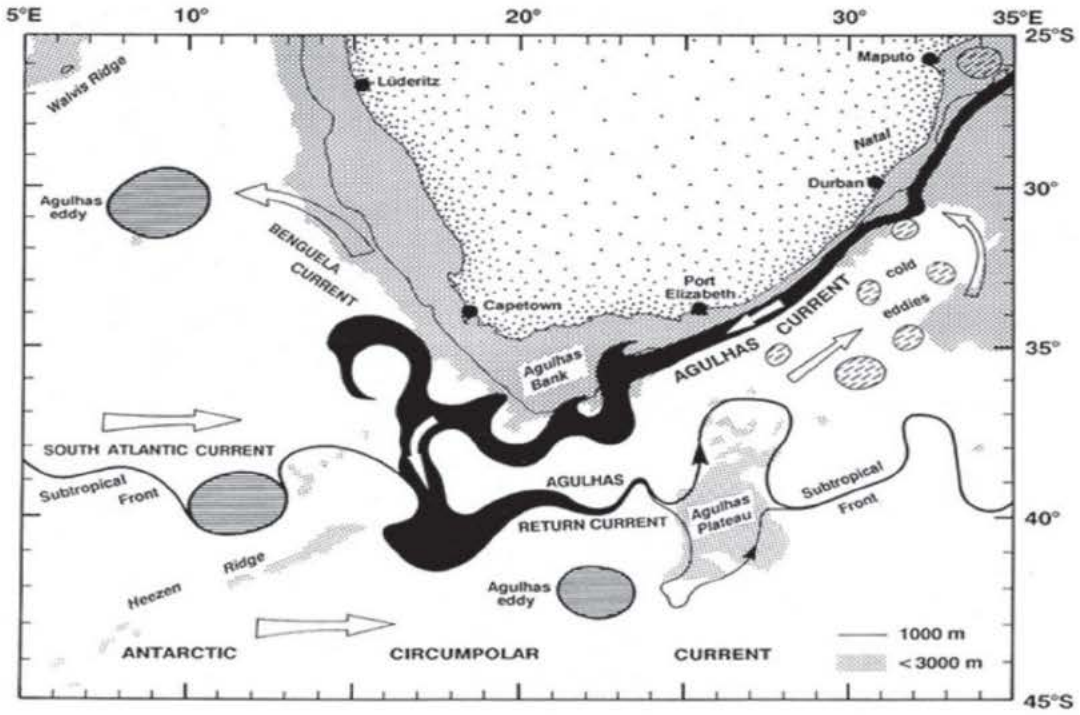
environment plays a definitive role in our own regional climate, it also has significance far beyond South Africa's shores. There is a slow passage of water containing enormous amounts of heat moving past South Africa and up the length of the Atlantic Ocean, where it has a profound warming effect on the climate of Western Europe. This movement of surface waters from the Indian Ocean to the Atlantic is an important component of the global circulation of water. Increasingly international research is being undertaken to obtain accurate data from the ocean adjacent to South Africa due to scientific recognition of the global significance of these ocean processes.

Diagram: World Ocean Thermohaline Circulation[iv]



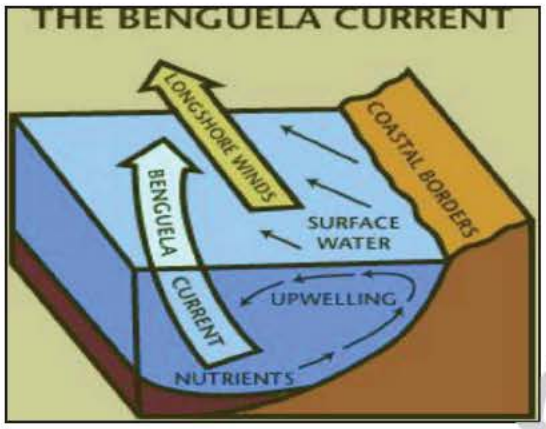
South Africa displays high levels of both terrestrial and marine biodiversity within a relatively small area. For example, some 10 000 species of marine plants and animals have been recorded in South Africa, that is almost 15% of the global marine species diversity. In broad terms, plants and animals are distributed according to the distinctive physical characteristics of the different regions. The marine environment along the West Coast is characterised by cold upwelled waters and has low species diversity and large populations of some species. The South Coast is a transition region between the cool dry West Coast and the warm moist East Coast, and shows characteristics of both areas. The marine environment here has a high biological diversity and moderate productivity. The East Coast becomes increasingly warm, humid and tropical northwards. The marine biodiversity on the East Coast is characterised by increasing species diversity and smaller species populations.[v] The high productivity of the West Coast allows for large volume offshore commercial fisheries and inshore subsistence and recreational fishing. Towards the East Coast the low productivity but higher species diversity allows for subsistence and recreational fishing but is not suitable for large offshore commercial fishing.

Map: South African Coastline Currents [vi]



South Africa has sharply contrasting currents on the West and East Coasts. On the West Coast, in the Benguela Current System ocean and wind interactions bring nutrients from deep waters to the surface where sunlight stimulates photosynthesis and the production of phytoplankton, thereby increasing the overall volume of animal and plant productivity. These areas of upwelling are found where the wind is strongest and where the continental shelf is narrowest and deepest. This forms the basis of a complex food web dominated by a suite of planktivorous fish, including sardines and anchovies. Significant predators on the smaller species include mackerel and hake. Other predators on the small fish include squid, tuna, snoek, seabirds, the Cape fur seal, dolphins and whales. Seabirds in the Benguela Current system include the African penguin, Cape gannet and three endemic cormorants. Sea surface temperatures in the Benguela ecosystem are typically between 13 °C and 15 °C.

Diagram: Benguela Current Upwelling [vii]



On the East Coast, the Agulhas Current System becomes established between southern Mozambique and Durban. This warm western boundary current flows strongly southward along the East Coast, bringing nutrient poor tropical water from the equatorial region of the Western Indian Ocean. The waters are typically blue and clear, with low nutrient levels but very diverse biota from the rich Indo Pacific region. Coral reefs, mangroves and high river input from sources along the East Coast characterise the shelf waters. Two species of turtle breed in Northern KwaZulu Natal ("KZN") and adjoining coastal regions in Mozambique and are dispersed widely into the South West Indian Ocean. The Agulhas Current contains several species of coral, tropical fish, sharks, seabirds, dolphins and whales. Along the narrow shelf on the East Coast, the Agulhas Current runs close to the shelf break (edge of continental shelf), except off the Thukela (Tugela) Bank where the shelf is a little wider. The coastline and adjoining interior has a higher rainfall than the West Coast as heat and moisture are transferred from the ocean to the atmosphere. [viii]

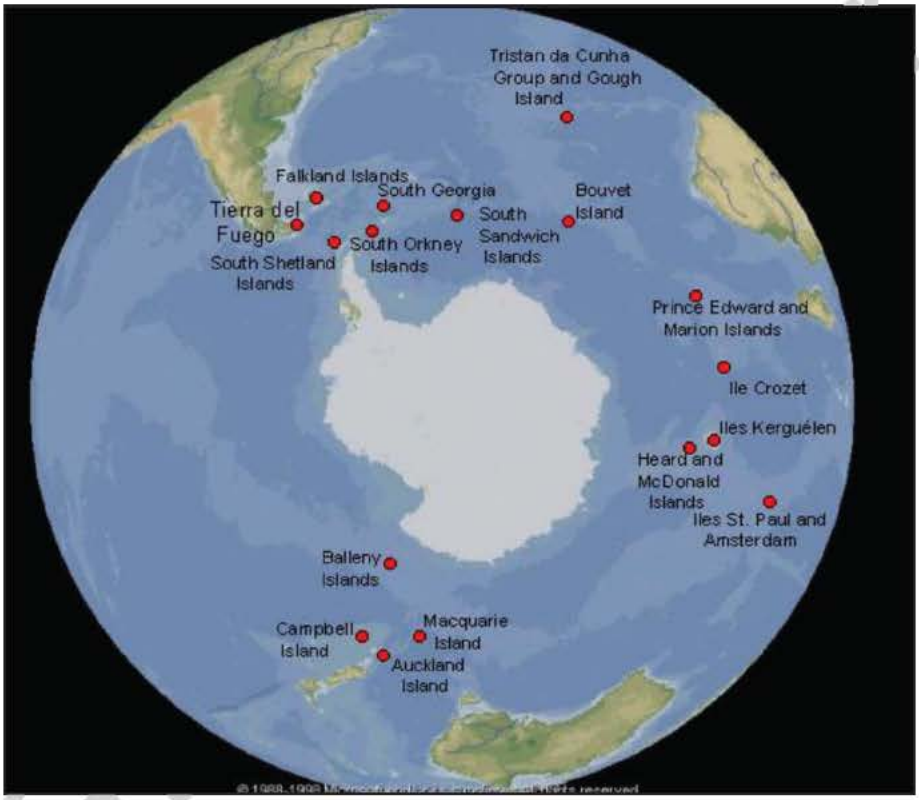
The Agulhas Bank, off southern South Africa, is an intermediate environment between the cool Benguela Current in the west and the warm Agulhas Current in the east. The Agulhas Bank is shallower than 150 m in the east and slopes gently towards the south. Sea surface temperatures over most of the Agulhas Bank are generally 16–17 ˚C in winter and 20–21 ˚C in summer. Concentrations of nutrients over the Agulhas Bank are not as high as on South Africa's west coast but are sufficient to support a productive marine community. On the Agulhas Bank the conditions are generally less turbulent than off South Africa's west coast, providing a more stable environment for fish that spawn in the water column. As a result, many fish migrate to this region to spawn, including anchovy, sardine (pilchard), horse mackerel, hakes and linefish. This intermediate environment is an extremely important area for pelagic fish spawning, as eggs and larvae are swept westwards and northwards onto the West Coast shelf, which young fish utilise as a productive nursery area before returning to spawn on the Agulhas Bank. Seabirds breeding in this area include some of those that breed on the West Coast as well as more tropical species such as the roseate tern. The region is an important nursery and transit area for whales, such as the southern right and humpback whales, which migrate to South Africa from the Southern Ocean.

In 1948 South Africa annexed the Prince Edward Island Group which lies south east of South Africa for strategic military reasons, primarily the protection of the East West sea trade routes. The Prince Edward Island Group is westernmost of islands that form the Kerguelen Province, which also includes Îles Crozet, Îles Kerguelen (France) and Heard and McDonald Islands (Australia). Both Marion Island and Prince Edward Island are shield volcanoes that rise from depths of some 5 000 m. They are linked by a saddle, where the water depth is about 200 m. Sea surface

temperatures around the islands range from 4–7 °C. South Africa has jurisdiction over a considerable EEZ surrounding this area, comprising some 473 380 km².

The Prince Edward Island Group is a haven for large numbers of breeding seabirds and seals, some of which are considered globally threatened. There are four species of penguin, including the macaroni and the king which are the most abundant, five species of albatross, including 44% of the world's population of wandering albatrosses, and a suite of burrowing petrels. There are three species of seals: the southern elephant seal, sub Antarctic and Antarctic fur seals. Fish include the Patagonian toothfish and various members of the family of notothenids or "antifreeze" fish. Crustaceans, especially euphausids (krill), contribute substantially to the diets of some of the seabirds and some whales.

Map: Sub-Antarctic Islands of the Southern Ocean [ix]



Many detailed studies have investigated marine biogeographic patterns around the coast of South Africa and the Prince Edward Island Group. These studies have generally shown little consensus regarding the names of biologically distinct areas, levels of dissimilarity between regions, regional boundaries and the existence of overlap zones.[x] The studies highlight the need for an integration of all the spatial pattern and process information (living and non living) currently available in order to arrive at a more definitive, comprehensive and integrated single description of the biogeography of South Africa's EEZ.

The complex current systems adjacent to South Africa result in a biodiversity complement and range that is unique and requires management and conservation prioritisation. The physical environment also presents South Africa with several economic opportunities such as mining, fishing, shipping and tourism. The national and global significance of the Southern African oceans also serves as a major attractor for scientific research programmes.