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Socio-Economic Uses of the Coast

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The coastal environment is extremely important to people, both resident at the coast and as a tourist destination. The coast and its resources are used for traditional, cultural and subsistence reasons, with the focus shifting, in recent years, to recreational and leisure activities and use. This chapter provides an overview of the main socio-economic uses of coastal and marine resources.

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7.1 Historical, Cultural & Traditional Resource Use

Much has been written about specific resources and features along the KZN coast. Many materials exist that provide evidence of the use of these coastal resources and the creation of certain features; the relics of hunters and gatherers, the activities of farmers, conservationists, soldiers and traders, missionaries and the many ordinary men and women of KZN, both historically and in the present.

When describing the historical and cultural uses of coastal resources, it is useful to examine these during three periods: 1) the pre-colonial, 2) colonial, which includes the apartheid period, and 3) post-apartheid period.

Pre-Colonial Period

Many hundreds of years before the arrival of the white colonial settlers, indigenous people, who made iron tools,

grew crops and raised domestic animals (mainly cattle), lived in the area that today we call KZN. In this time, kingdoms arose and families began to accumulate cattle as a form of wealth.¹ These kingdoms flourished in KZN due to plentiful rainfall and vegetation, especially along the coastal belt. This in turn allowed these groups to grow and live together in a more complex way. Labour became specialised and men spent time learning the skills of the woodcarver and blacksmith; conducting rituals and learning the art of being a warrior. The women were responsible for the cultivation of subsistence crops, while the men controlled the cattle which represented wealth and power.

Along the southeast coast of South Africa, a more hierarchical form of social organisation emerged, with powerful local chiefs paying homage to a king. The people from the Phongolo to the Mzimkhulu Rivers lived in small-scale units ranging from a few hundred to a few thousand individuals, ruled over by chiefs.^{2,3} The chiefdoms were clusters of shifting

Traditional fish traps at Kosi Bay.



Photo: Bronwyn Goble



homesteads, where the communities paid allegiance to the chief. These communities were relatively stable but did enlarge, reduce, and coalesce depending on local political and power relations.

Around the middle of the 18th century, some of the chiefdoms along the southeast region were amalgamated and the Zulu Kingdom emerged, led by King Shaka. He developed a military system and became the strongest leader in what is today the KZN region. King Shaka was defeated by the British forces in 1879, which ended the Zulu Kingdom, and in 1888, the territory north of the Thukela River was annexed as the Colony of Zululand.

During this pre-colonial period, indigenous people had full access to the coast and used this area as a source of food and for other resources. Evidence of this use is found all around the coast between the high water mark and 5 km inland.⁴ Evidence of the long-term use of shellfish as a resource for hunter-gatherers and settled communities can be found in the form of middens. They show evidence of the harvesting of turtles, seabirds and fish, as well as crustaceans, such as crabs and lobsters. There is also evidence of the consumption of large marine mammals, such as dolphins, seals and infrequently, whales.⁴ It is believed that middens have been constructed along the coast for the last 120 000 years,⁴ some being very large and deep, while others are much smaller and are likely to have been eroded.

The impact of these early inhabitants on coastal resources was minimal and they left little impact on the environment.⁵

The other important cultural resource that is a legacy from this period are the names of all the rivers that flow into the Indian Ocean, all having Zulu names: the largest being the Thukela, and other examples include Mdloti, Mfolozi, Umtamvuna, Mzimkhulu, Umkomaas and Manzimtoti rivers.

The Colonial Period

A number of British adventurers, traders and hunters entered the coastal zone between the Phongolo and the Mzimkhulu Rivers from around 1830, and settled in a small community around the Bay of Natal. The trek boers entered into Natal from the North West, over the Drakensburg Mountains, and established Pietermaritzburg as the capital of their Republic. They established farms in the interior, but also settled a community at Congella, on Durban Bay.

The British annexed the territory (now called KZN) in 1843 from the Boers, who had occupied it from 1837 to 1842. The area became known as the Colony of Natal. The important changes that occurred in the colonial period were the alienation of communal land to British settlers for farming, and the creation of “native reserves”. From this period, the population in the region grew as a result of both natural growth and the importation of indentured labour from India to work on the sugar farms and other enterprises.

The rural economy of the Zulu people was systematically disrupted with the emergence of colonial trade, whereby animal skins, elephant tusks, cattle and sometimes labour were traded for produced goods (e.g. farm implements, knives, guns, beads and mirrors).⁶ In the post-1889 period, a hut tax was levied as a way of getting labour for the emerging productive and commercial farming economy. This resulted in male family members migrating to the towns and commercial farms to earn a cash wage, ultimately resulting in the migrant labour system still evident in South Africa today.

Access to coastal resources was limited for black people and the most strategic land along the coast was allocated to white settlers for farming sugar. The hilly and drier areas of land further inland were allocated for “native reserves”.⁶

During the era of the Union, after Natal had been incorporated into the Union of South Africa, with the defeat of the Boers by the British in 1899, the *Natives Land Act* was promulgated. This cemented the allocation of separate land for blacks, originally the “native reserves”, and expanded these areas to accommodate the resettlement of blacks from “white areas” and farms. Later (after 1948), the apartheid government created the system of “homelands”, and in Natal the “homeland of KwaZulu” came into being in 1976. Limited amounts of coastal land were allocated to the homeland, resulting in a lack of access to the coast for most black people living near the coast, and the exclusive use of coastal resources for white settlers and farmers.

It was during the colonial period that a number of small, “white” towns developed along the KZN coast; the largest being Durban, situated on the Bay of Natal. In the colonial period, Durban grew into a trade and commercial centre, with the beginnings of the first industrial development occurring around the port.⁷

From the late 19th to the early 20th century, the coast of Natal also became an important destination for tourists. White

workers from the Witwatersrand migrated to Durban and the Natal coast for their annual holidays. A series of small towns became established along the coast as tourism and service nodes. Traveling from south to north, these smaller towns include Port Edward, Southbroom, Ramsgate, Margate, Uvongo, Shelley Beach, Port Shepstone, Scottburgh, Umkomaas, Amanzimtoti, Umhlanga Rocks, Ballito Bay and Salt Rock. Durban and the south coast became a tourism mecca in South Africa and stimulated the tourism industry along the rest of the Natal coast.⁸

Post-apartheid

At the end of apartheid, the homeland of KwaZulu was reincorporated into Natal, resulting in the renaming of the province “KwaZulu-Natal”.

Four important historical facts have had an effect on access to the coast and its resources in the post-1994 period: Coastal resources once more have become open to all; the administrative restructuring of boundaries has led to the creation of a set of municipalities which now play a greater role in the management of the coast (*Section 10.2*); population and development pressure on coastal resources has escalated due to population and economic growth; and the Government has identified tourism as a means of facilitating economic and environmental regeneration in urban areas.⁷

This has led, over the past two decades, to large swathes of coastal land being developed for residential and recreational purposes as outlined in *Section 9.2*. Fortunately, a third of KZN’s coast has been proclaimed as a World Heritage Site (1999) – the iSimangaliso Wetland Park, which has led to increased protection of the marine and coastal resources in the north. This has been accompanied by a range of social and economic programmes to create benefits for local people, e.g. the beneficiation of land claimants, access to natural resources (such as ncema), and skills development for jobs in the ecotourism sector.⁹

From a pristine coastline hardly impacted by early indigenous hunter-gatherers to the mecca of “sun, sand and sea” tourism in South Africa, the KZN coast has undergone a transformation to a highly developed coastal zone. The coastal zone has since experienced pressure from increasingly rapid urban development including the development associated with the world-class ports of Durban (largest in Africa) and Richards Bay; the intensification of commercial sugarcane farming; and coastal urban residential sprawl through the growth of small towns and gated coastal estates. This development has been somewhat mitigated by the establishment of a coastal World Heritage Site in the north of the province. ■



Fisher using a traditional spear.

Photo: Bernadine Everett

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7.2 Access to the Coast

The coast has cultural, historical and spiritual significance to the people of KZN, thus it is important that access to the coast be maintained. However, access to the coast was restricted for many in the past (Section 7.1), making it imperative that free access be maintained in the future. In addition, coastal access provides opportunities for recreation, education and overall improvement of both mental and physical health.¹

Coastal access is now defined in the *ICM Act* as “land adjacent to coastal public property specifically designated for enabling public access to that coastal public property”. This includes associated facilities such as parking areas, public toilets, boardwalks and formal boat launch sites. Historically, the public has gained access to the coast through street ends, parks and public piers. However, increasing urban development along the coast has restricted free, easy access to the coast and the benefits it provides.

Current coastal access

It is estimated that, on average, the province has six access points per one kilometre of coastline, with density increasing from north to south. Local municipalities south of the Thukela River have significantly higher number of access routes than those located north of the Thukela. The vast majority of access routes are informal pedestrian pathways covered by grass or sand, with only a small number of hard-surfaced, formal routes capable of providing vehicle access to the beach.

For many years, the use of off-road vehicles such as 4x4s and quad bikes in the South African coastal zone was subject to little or no regulation. While this ensured access to the coast for some users, it resulted in damage to coastal ecosystems.² As a result, *The control of vehicles in the coastal zone of South Africa Regulations (No. 1399 of 2001)* was enacted in January 2002 as part of the *National Environmental Management Act*. These regulations prohibit members of the public from

Durban's beachfront promenade facilitates better coastal access.



Photo: Bronwyn Goble

driving motorised vehicles within the coastal zone. Drivers may be exempt from this rule only for health and safety emergencies, and to assist persons with disabilities. Permits may be issued to allow vehicle access to the coast for purposes such as scientific research, tourism and commercial fishing activities. Exceptions to the rule include designated mining areas, proclaimed harbour areas, and official boat launch sites, where towing vehicles may have limited access to the beach to launch boats.

Boat launch sites

Prior to the 2nd World War, most boating activity along the KZN coast took place from protected harbours such as The Bay of Natal. However, with the development of the trailer-able “ski-boat” in the late 1940s, boat fishing along the KZN coast became more accessible to the public as boats could be towed onto the beach and launched through the surf. Although the vessels used were designed to be launched through the surf, safety was a major concern and protected bays and river mouths were often used as preferred launch sites. Ultimately this led to the identification and subsequent management of small vessel launch sites along the KZN coast, primarily based on safety and logistical considerations.³

With the banning of vehicles in the coastal zone, launching of ski-boats from designated beach launch sites was also placed under stricter control, with the obligatory licensing of these launch sites. The new regulations placed greater emphasis on the environment, a task delegated to the Provincial Department of Agriculture and Environmental Affairs in 2003. This presented an opportunity for the Province’s coastal zone managers to obtain useful information on the usage patterns of launch sites and to further the ecological understanding of the use of offshore marine resources. Through extensive stakeholder participation, this licensing initiative introduced a mandatory launch and catch register system, known as the Boat Launch Site Monitoring System (BLSMS), developed for each successfully licensed small craft launch site in 2004. This generates comprehensive launch site statistics and information about associated activities.

This innovative system is the first attempt at a province-wide monitoring initiative for launch sites in South Africa and is an example of unique, mutually beneficial co-operation between

different stakeholders towards the common goal of improved management.

There are currently 30 licensed beach launch sites in KZN and all participate in the BLSMS. In addition, a further nine boat launch sites within Durban and Richards Bay harbours also voluntarily participate in the BLSMS, thus providing comprehensive coverage of small vessel launching activities in the Province. In 2010, a total of 54 110 individual launches were recorded, consisting of ski-boats (63%), inflatable vessels (27%) and jet-skis (9%).

While boat access to the coast is effectively managed in KZN, there is still a need to ensure pedestrian access and associated facilities for beach goers. The ICM Act requires municipalities adjacent to the coast to designate strips of coastal access land for public use. They are also responsible for enforcing the rights of the public, preventing any environmental impacts, and providing other related infrastructure as required (e.g. signage, parking areas, restrooms, etc.).

However it is difficult to provide these facilities, given that some sections of coast are significantly developed, restricting coastal access. There are also increasing climate change and environmental concerns (Sections 9.4 and 9.5) that should be taken into account in planning for future coastal access and associated infrastructure. ■



Launch of a recreational vessel.

Photo: Stuart Laing



7.3 Artisanal and Subsistence Fishing

A generally accepted definition of artisanal fisheries is that they usually have a long history and tradition or culture; mostly make use of low technology fishing gear (often made by hand); and catch fairly low value resources.

Also sometimes known as “small-scale” fisheries, artisanal fisheries are usually commercially driven and involve individual fishers who primarily fish for profit, despite often originating as subsistence activities. Subsistence fisheries, on the other hand,

refer to those fisheries where poor, unemployed people harvest fish or other marine organisms in close proximity to where they live, as a means to meet their basic needs for food security.¹

By comparison to other areas on both the East and West African coasts, the KZN coast has relatively small artisanal and subsistence fisheries. There are two main reasons for this. The first is due to the high-energy nature of the KZN coastline and the lack of sheltered bays and inlets. This made the

development of artisanal fisheries using low technology fishing gear and vessels such as canoes and/or dhows difficult. The second is because the people who migrated into the region from the north and inland were traditionally cattle herders. It is reported that they historically did not eat fish, regarding it as “white meat” and the “meat of a snake”.² As a result, the Zulu people did not develop active fisheries along the coast, and even today, there are very few isiZulu names for marine fish species.

The Khoisan people (colloquially referred to as “strandlopers”), on the other hand, lived along the entire South African coast and made extensive use of marine invertebrate and fish species.³ These people preceded the arrival of the Nguni people from the north and the middens of shells and fish bones they left behind are still evident in many places along the KZN coast (Section 7.1).⁴

Another exception was the Thonga people, who lived in the coastal areas of northern Zululand (Maputaland) and southern Mozambique. These coastal people had a long tradition and culture of fish trapping and spearing, and a good example of this artisanal fishing practice still exists in Kosi Bay.



Photo: Bernadine Everett

Subsistence fisher harvesting mussels.

The British, who arrived in KZN in the 18th Century (*Section 7.1*), brought with them fishing skills but these were more of a commercial and/or recreational nature (e.g. trawling and line-fishing). When they brought in labour from the East, the practice of beach-seine netting was brought to Durban Bay and a community of Indian seine-net fishermen and their families lived on Salisbury Island in the Bay for many years.⁵ Two of the three beach seine net licences still in use today in the Durban area belong to the last remaining family members of this group, to whom this tradition has been passed down.

At Kosi Bay there is also a recent, but locally important, artisanal fishery in which local people pump sand prawns to sell as bait to recreational anglers. The fishery's impact has been investigated and was found to be of a sustainable nature and so it was added to KZN's list of fisheries to be recognised and formally managed.

The Kosi Bay fish traps and sand prawns and the Durban beach seine fishery are therefore perhaps the only true examples of traditional and/or artisanal fisheries still in existence in KZN. Some may argue that the illegal gill-net fisheries present in a number of the larger KZN estuaries such as Kosi Bay, St Lucia and Richards Bay could also be considered as artisanal fisheries.^{6,7} This practice was only introduced during the late 1960s; and, after two unsuccessful attempts to legalise these fisheries, has remained illegal.^{8,9}

With rapid population growth and the increase in unemployment in KZN, subsistence invertebrate harvesting and line-fishing along the coast has inevitably increased. It was estimated in 2002 that there were approximately 21 641 households along the KZN coast involved in subsistence fishing.¹⁰ It is believed, however, that this was a substantial overestimate as roving creel surveys conducted along the entire coast during 1994-1996¹¹ and again in 2009-2010,¹² showed that "true" subsistence line-fishers made up a relatively small percentage (3-6%) of the total number of shore fishers.¹²

Management of subsistence and artisanal fisheries

The *Marine Living Resources Act* made provision for the recognition and management of the subsistence fishing sector. Prior to the promulgation of this Act, most subsistence and artisanal fishing was considered illegal, although in areas such as Kosi Bay they were often benignly ignored. In 2000, following some success with pilot projects at Kosi Bay and Sokhulu, Ezemvelo KZN Wildlife rolled out a co-management

programme for the management of subsistence fisheries along the entire KZN coast. In KZN there are more than 23 communities presently involved in subsistence and artisanal fishing, with approximately 2 500 people from these communities participating in five types of fisheries. In order of importance (in terms of overall catch) these include:

1. estuarine fish traps (Kosi Bay);
2. marine and estuarine rod and line fishing (shore fishing);
3. marine rocky and sandy shore invertebrate harvesting (mainly brown mussels);
4. estuarine sand and mud prawn harvesting (bait harvesting); and
5. traditional spear fishing (handheld spears used only in Kosi Bay).

In terms of the annual amount of food harvested, in 2010 the Kosi Bay fish trap fishery harvested 75 176 kg; the marine subsistence rod and line fishery harvested 57 401 kg; the estuarine subsistence rod and line fishery harvested 6 072 kg; and the subsistence marine invertebrate fishery harvested 12 677 kg in 2009.^{13; 14}

Formal operational management plans developed for the subsistence and artisanal fisheries, and endorsed by the Department of Agriculture, Forestry and Fisheries (DAFF), guide management of the individual fisheries, and try to ensure sustainability and management in accordance with the principles of co-management. A provincial Ezemvelo KZN Wildlife Subsistence Fisheries Implementation Unit (SFIU) is mandated by DAFF to facilitate the management of subsistence fisheries in KZN. The Unit has successfully established co-management agreements with ten communities. Agreements define the rights and responsibilities of each party in the co-management partnership. Crucial to the community is the right to nominate community members who meet specific criteria to participate in the fishery and receive exemption permits. Agreements have yet to be concluded with 12 subsistence fishing communities in the Maputaland region. These fisheries remain largely informal or illegal, despite numerous interventions over the years. In 2012, significant resources were allocated to correct the situation and progress has been made.

With the exception of much of the Maputaland shore, all formal subsistence fishing is confined to specific harvesting zones along the coast. South of Maputaland the intertidal invertebrate fishery is controlled primarily through a quota system, determined by an annual *in situ* stock assessment.



Photo: Bernadine Everett



Photo: Bernadine Everett



Photo: Bernadine Everett



Left to right: Subsistence line fisher; subsistence collectors sorting harvested mussels and red bait; subsistence fisher cleaning fish.

The subsistence rod and line fishery controls are aligned to national recreational fishery regulations, except that fishers are permitted to harvest increased, but specified, quantities of certain baitfish species (e.g. pinkies, karanteen, etc.). Subsistence line fishers are also allowed to sell certain specified fish species, but strict conditions apply to these sales.

A comprehensive monitoring programme, presently funded by DAFF and the Working for Fisheries Programme has been implemented. A total of 67 catch data monitors are employed to collect catch, effort and stock status data, and 30 fisheries awareness monitors are employed in the Kosi Bay area to assist with fishing compliance and awareness.

Management challenges

Despite the progress made with the recognition and formalisation of subsistence and artisanal fisheries in KZN, challenges to contemporary management of these fisheries are considerable. For example, one of the important challenges identified in recent years was the lack of recognition of artisanal or “small-scale” fishers in current legislation. This resulted in the development of the *Small-scale Fisheries Policy*, gazetted in June 2012 (*Government Gazette* No. 29391). The new policy seeks significant changes to the management of small-scale fisheries in South Africa, and the principles of preferential access and a multiple-species approach may have an impact on subsistence fisheries management in KZN. In addition, subsistence and artisanal fishers in Maputaland operate with few or no controls and recent research strongly suggests that current harvesting

pressures may be contributing to a decline in targeted resources. A critical process required in this region is to identify legitimate fishers and to cap fishing effort at, or reduce it to, appropriate and sustainable levels. Recognised fishers need to have legal access to resources and, where possible, to participate in the co-management of these resources to ensure their wise and sustainable use.

As the population of KZN continues to grow (Section 6.1), additional employment opportunities may not materialise and the demand for marine resources, especially in poor rural communities, will increase. Already, within the recognised formal fishing communities, fishers and harvesters have expressed dissatisfaction with the controls that have been implemented, particularly the restriction on selling their catch, as they view these as unnecessary barriers to accessing food and money. Within informal fishing areas, the commercialization and modernisation of fishing gear is occurring. Unfortunately, most inshore fisheries in KZN cannot sustain commercial harvesting pressure, which would ultimately lead to the collapse of the fishery. ■

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7.4 Recreational Activities

The waters of the KZN coast are mostly sub-tropical and usually remain between 22-27°C,¹ encouraging a number of recreational activities such as swimming, surfing, sailing and diving. In addition, the KZN coast represents a subtropical transition between tropical Indo-Pacific biota in the north-east and warm-temperate biota in the south,^{2;3} making it a premier destination for recreational activities such as fishing, surfing, scuba diving and swimming.

Recreational invertebrate fishery

The invertebrate fishery consists of harvesting species such as mussels, east coast rock lobsters (colloquially known as crayfish), oysters and octopus for seafood, and species such as red bait, sand prawns and mole crabs for bait to catch linefish. Mussels, oysters and octopus are generally collected at spring low tide along rocky shores, while rock lobster are most often caught by snorkel diving on shallow, subtidal reefs.

A permit is required for recreational harvesting of invertebrates along the KZN coast, and harvests of individual species are regulated by means of daily bag limits, size limits,

closed seasons and closed areas. There are also limitations on the type of gear that can be used to harvest certain species; for example, no scuba gear is allowed for the collection of rock lobster.

Between 1999 and 2008, an average of between 3 800 and 5500 people purchased recreational permits to harvest rock lobster, mussels and other marine invertebrates along the KZN coast. Invertebrate harvesting is managed by Ezemvelo KZN Wildlife, and the Oceanographic Research Institute undertakes regular monitoring and periodic stock assessments to confirm the sustainable use of these valuable resources.

Recreational line-fishery

The recreational line-fishery consists of four distinct sectors: shore angling; light-tackle boat angling; ski-boat angling; and spearfishing. Each sector has competitive and non-competitive participants, with most competitive anglers being affiliated to clubs. Surveys suggest an estimated 15% of coastal residents fish in the sea on a regular basis.⁴ Recent estimates suggest that only about 3% of recreational shore

Sunset boat launch, Sodwana.



Photo: Rose Palmer



anglers in KZN are affiliated to registered fishing clubs, and fish competitively.⁵

Recreational shore angling is by far the biggest sector in the KZN recreational linefishery. In 2009, there were an estimated 55 000 participants, who collectively undertook 800 000 angler days of fishing.⁵ Shore angling effort is highest in, and adjacent to, urban areas (e.g. within eThekweni Municipality) and lowest in remote rural or protected areas, where there are few access roads or angling is prohibited.

The annual catch taken by the shore fishery varies from year to year, ranging between 250 and 600 tons.^{6,7} Over 84 species from 39 families have been recorded in the shore anglers' catches. Dominant species caught include shad/elf,

karanteen/strepie, blacktail, pinky/piggy and stonebream.^{5,6,7} Based on aerial counts of shore anglers conducted in 1994/95 and repeated in 2007/08,^{6,8} there has been a substantial decline in fishing effort along the KZN coast. Reasons for this are likely to be a combination of the implementation of the beach vehicle ban in 2002 (*Section 7.2*), declining catch rates, increasing costs (tackle, bait, travel, etc.) and increasing crime.⁸

The recreational boat angling fishery comprises various types of vessels from paddle-skis (also known as fishing-skis) to large, harbour-based vessels (>10 m). However, the most common vessel used for offshore fishing along the KZN coast is the "ski-boat" which is normally powered by two outboard motors and can be launched from the beach through the surf. This fishing vessel and method of launching is unique to South Africa.⁹ The development and use of ski-boats, jet-skis and paddle-skis has allowed boat fishing to spread out along the entire KZN coast.

Current estimates suggest that there are at least 10 000 recreational boat fishers who undertake over 30 000 recreational boat launches along the KZN coast each year.¹⁰ The total annual catch taken by this fishery has been estimated at between 400–470 tons per annum.^{6,10} More than 86 species from 27 families have been recorded in recreational boat anglers' catches. Dominant species caught include slinger, blue emperor, Englishman, yellowfin tuna, king mackerel and dorado.^{6,10}

It is important to note that shore and boat angling also occur in several estuaries in KZN (e.g. Durban Bay, St Lucia). It is estimated that there were approximately 51 000 anglers using estuaries in KZN.^{11; 12; 13; 14; 15} Ostensibly, there is much overlap between the fishing sectors, with a large proportion of anglers fishing in both marine and estuarine environments. The annual catch taken by estuarine anglers (from the shore and boat) was estimated to be approximately 100 tons, of which spotted grunter, Natal stumpnose, dusky kob, perch (river bream) and mullet made up the majority of the catch.¹¹ These values may have dropped considerably since the prolonged drought and subsequent closure of the St Lucia estuary mouth, in 2002.

In recent years, a large charter boat fishery has developed,¹⁶ that operates from Durban and Richards Bay harbours and



Photo: Bruce Mann

Recreational shore anglers, Durban beachfront.

from popular launch sites, such as Shelly Beach, Rocky Bay and St Lucia. Charter boats provide a means for recreational anglers who do not own vessels to fish at sea. It is therefore an extremely popular tourist activity and over 6 000 charter boat launches occur annually along the KZN coast, taking approximately 15 000 anglers to sea.^{10; 16}

In the South African recreational spearfishery, divers are limited to breath holding (a.k.a. free-diving) and may not use SCUBA gear. As a consequence, spearfishing is limited to a maximum depth of about 30 m, although most spearfishers cannot effectively dive much deeper than 15 m.¹⁷ Spearfishing can take place by either swimming from the shore or diving off a boat. Either way, spearfishing is undoubtedly the most physically challenging of all types of angling and requires both physical and mental fitness in order to be successful. There are approximately 1 800 spearfishers active in KZN and the total annual catch taken by the spearfishery was estimated at approximately 108 tons in 1994.⁶ Over 48 species from 18 families have been recorded in spearfisher's catches, including queen mackerel, king mackerel, garrick/leervis, bronze bream, baardman and knifejaws.¹⁷

Surfing

The KZN coastline has several world renowned surfing breaks (e.g. Bay of Plenty and New Pier). What makes surfing unique in KZN is that there are more than 48 well-known surf spots, which in the right conditions can produce great waves for the professional and beginner. KZN has developed some top international surfers, i.e. Jordy Smith and Shaun Thomson to name a few, who have competed in high profile surfing events against some of the best surfers in the world.

Winter is the best time to surf, as cold fronts moving up from the Cape combined with onshore winds create swells of up to 4 m. Summer swells tend to be a bit smaller, but the generally uncrowded beaches still provide excellent surfing.

Sailing

The warm water and moderate winds off KZN offer fantastic sailing conditions year-round, providing enjoyment to social and professional sailors, with Durban and Richards Bay both

having hosted international, national and local competitive regattas. The harbours and coastal waters are regularly used by small dinghies and large yachts, and the marinas situated within the main harbours offer safe moorings for yachts. The Durban marina in particular is popular amongst sightseers, some of whom are lured out to sea for a short trip on charter boat operations.

SCUBA Diving

KZN has approximately 46 documented dive sites,¹⁸ of which the Maputaland coral reef complex, Aliwal Shoal and Protea Banks are most famous.¹⁸ In 2011 it was estimated that there were approximately 11 000 boat outings undertaken solely for SCUBA diving, which made up 20% of all boat launches conducted in KZN.¹⁹ By itself, the Maputaland coral reef complex, which is situated in the Maputaland and St Lucia marine reserves, accounts for 65 000 SCUBA dives per year.²⁰ This complex, which is described in *Section 3.8*, is particularly unique, since it has some of the southernmost coral reefs in the world.²¹ This area is widely accepted to be the centre of the SCUBA diving community in South Africa, and Sodwana Bay is the only significant site where sufficient diving infrastructure is available to access these reefs.¹⁸

Aliwal Shoal, located only 5 km offshore from Umkomaas, is a highly rated dive site and probably the best known after Sodwana Bay.¹⁸ It offers a host of exciting dives with diverse reefs and a broad mix of fish species, including large congregations of ragged tooth sharks at certain times of the year.¹³ Another form of SCUBA diving which is becoming



Surfers about to take to the water.

Photo: Kirsty Bowles



increasingly popular is wreck diving. Two shipwrecks, the *Nebo* and *Produce*, are popular dive sites in the Aliwal Shoal area as they attract a host of different fish species.¹⁸

More recently, shark diving is a growing attraction, where divers can dive with zambezis, raggies and tiger sharks at Aliwal Shoal (see Section 4.6).

The Protea Banks, although not as famous, provide a unique experience, with deep shoals that host more than a dozen different shark species.¹⁸ The reefs are located offshore from Margate and are easily accessed from the Shelly Beach ski-boat launch site.¹⁸

Snorkelling

Snorkelling is a less taxing underwater activity and is ideal for beginners and children. Almost any calm body of water, especially rock pools that are exposed at low tide, can be used to snorkel in, and a host of fish and invertebrate species can be seen. The most popular snorkelling spots include Kosi Bay,

Island Rock, Black Rock, Mabibi, Sodwana Bay, Cape Vidal, Vetch's Pier and Limestone Reef, in front of uShaka Marine World in Durban.¹⁸

Swimming

The KZN coastline is renowned for its great swimming beaches, with numerous protected beaches being designated for this purpose. At these protected beaches, there are lifeguards on duty to ensure public safety, although at some of the less popular beaches this is only on weekends or during peak seasons. For the less experienced or less bold swimmer, a number of tidal pools have been established along the KZN coast. These have come to be a main tourist attraction, providing safe bathing area for those that do not want to brave the sea. The tidal pools are filled with sea water on the incoming tide, providing a clean swimming area; They are usually warmer and ideal for floating and playing in, unaffected by sea currents. For most visitors to the KZN coast though, the main attraction is to swim in the warm sea.

KZN Sharks Board checking shark nets.



Photo: Jeremy Cliff

Shark safety gear

Although the frequency of shark attacks in KZN is extremely low, a spate of 21 attacks on bathers near Durban between 1943 and 1952 convinced the authorities to protect the local tourism industry by deploying shark nets at Durban beaches. In time, nets were set at additional beaches, with a major expansion of the shark net program taking place in the 1960s. At its maximum extent in the early 1990s, there were 44 installations with 45 km of netting. However, several installations were later removed, in most cases because the number of bathers did not warrant their retention. Between 1999 and 2004 the length of netting was again reduced by approximately one third, the objective being to reduce catches of marine animals.

A typical shark net measures 213.5 m long by about 6.3 m deep, is manufactured from black multifilament polyethylene braid, and is set about 400 m from shore in 12-14 m water depth. The nets at Durban, Anstey's Beach and Brighton Beach measure 304.8 m by 7.6 m.

In February 2007, approximately 50% of the nets on the Hibiscus Coast were replaced with drumlines, a more selective shark fishing device that has been in use off the coast of Queensland, Australia, since 1962.^{22; 23} By December 2010 there were 38 installations comprising a total of 23.1 km of netting and 79 drumlines. A drumline consists of a large (14/0) J-shaped shark hook, baited with a fish and suspended from an anchored float.^{24; 25; 26}

On the Hibiscus Coast, where both net reduction and the introduction of drumlines has occurred, a typical beach that was protected by three shark nets in the 1990s is now protected by a single shark net and four drumlines. The introduction of drumlines has reduced the catch of non-shark animals at such beaches by over 50%.²⁷

Most beaches are protected either by two shark nets or by one net and four drumlines,²⁶ although the quantity of gear varies from beach to beach. However, during the annual winter sardine run (Section 5.2) the nets and drumlines are taken out of the water for several weeks, to prevent other animals that follow the sardines from being caught in the nets.²¹

Contrary to common perception, shark nets do not achieve their protective function by acting as a physical barrier to sharks. Instead, by "fishing" for sharks in the vicinity of a

protected beach, both shark nets and drumlines reduce local shark numbers and hence the probability of an encounter between a shark and a person in the water.²⁸ Importantly, the nets do not eliminate the risk of shark attack completely, but have been very effective in achieving their objective and have reduced the risk at those beaches by over 90%.²⁸

Shark nets catch not only potentially dangerous sharks but also animals that pose no threat to people.²⁹ Hence, it is desirable to reduce the quantity of shark fishing equipment in use and to seek measures that result in reduced catches of marine animals. Although the KZN Sharks Board (KZNSB) is required to implement measures to safeguard bathers against shark attack, in terms of the *KZN Sharks Board Act (Act No. 5 of 2008)* it is also required to endeavour to reduce the environmental cost associated with providing protection. For this reason, KZNSB is committed to the investigation of new beach protection technologies, such as electrical and other shark repellents, that have the potential to reduce environmental impact.

The process of inspecting the gear, recording and removing the catch is known as "meshing" and usually takes place at first light each weekday. The process includes replacing the drumline baits. Each installation is typically meshed on about 19 days per month and each net is replaced with a clean one approximately every 10 days. A fleet of 15 ski-boats is used daily, each with a crew of five. All catches are recorded; live animals, including sharks, are released. About 60% of the sharks caught are taken to the central facilities of the KZNSB and are dissected in front of a public audience for purposes of both research and public education.

Since KZN has pleasant all-year-round temperatures, warm sub-tropical waters and is in relative close proximity to the well-populated interior, it is one of the most popular recreational holiday destinations in South Africa. However, in order to ensure long-term multi-use of the coast, all activities need to be appropriately managed. ■

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