

## 9.7 Species at Risk

**The marine and coastal environment of KZN is enormously rich and diverse in plant and animal species. Precise numbers do not exist, but the more than 1 800 species of coastal fish, some 8 000 types of invertebrates, about 250 species of seaweed, at least 40 sorts of marine mammals and about 100 species of coastal and oceanic birds are testimony to the marvellous diversity of our coastal environment (see Chapter 4 for details).<sup>1; 2; 3; 4; 5</sup>**

Marine species are generally considered to have low risk of extinction because of the size of the world's seas, which create large continuous habitats, and because of the open nature of marine habitats and the life-history characteristics of many marine species. This is no basis for complacency, as various threats to our marine fauna and flora exist, and critical population declines for marine species have occurred.

### **Why are some species more vulnerable than others?**

Vulnerability can be interpreted in different ways, ranging from the extreme risk of extinction to different levels of depletion as

in the case of some fish stocks. Moreover, risk is not confined to direct human exploitation but may also be attributable to indirect impacts, the state of the environment, climate change and the inherent biology of species.

There are a number of natural features that may render a particular species susceptible to higher levels of risk. Slow growth and late maturity is one element of risk, normally resulting in low population turn-over times. Examples of this can be seen in several types of fish, sharks, rays and sea turtles. It is no surprise that fish such as the red steenbras, brindle bass and musselcracker are at risk when maturity is only attained after 7-10 years and specimens can reach an age of 33-45 years. Endemism is also a major feature of vulnerability, as endemic species are confined to a limited local distribution and thus cannot be replenished from elsewhere. Some 16% of our coastal fishes are endemic, rendering them vulnerable to exploitation. Examples include slinger, Scotsman, bronze bream and white steenbras. In some cases, isolation and habitat fidelity heightens vulnerability. Small animals that live burrowed in the muddy bottom of estuaries are confined to a particular

Loggerhead turtle returning to the water after laying her eggs. Laying eggs on the beach makes turtles vulnerable to predation and human pressures.



Photo: Camilla Floros



system, and are thus highly vulnerable to changes in its health and natural functioning. Their demise can have a cascade effect on other species in the food web.

Breeding behaviour can also elevate the risk to a species. Some fish and crustaceans aggregate in huge spawning concentrations, making them vulnerable to predation and harvesting at a critical phase, as in the case of the once plentiful linefish, the seventy-four. Similarly, sea turtles are enormously vulnerable to attack and depletion when females emerge onto a beach to nest. Their eggs and new hatchlings are also highly vulnerable to exploitation and predation (Section 4.3). Some are naturally rare species, which increases the risk to their survival. A good example is the coelacanth (Section 4.5), which, though not immediately under threat, is nevertheless vulnerable to environmental and human impacts.

In recent years, climate change has been recognised as a factor increasing risk for some species. Rainfall affects estuarine species, and especially the rich offshore muddy banks such as the Thukela Banks, which sustain valuable prawn populations. Increased temperatures over time may threaten our coral reefs and also those temperate endemic fish species that are unable to adapt to warmer conditions as detailed in Section 9.4.

### How is risk evaluated and measured?

Unfortunately, there is no perfect way to measure and quantify the risk to a marine species, as they have to be abstractly assessed and modelled to establish their risk status. However, some risk assessment systems have been developed and provide a useful yardstick against which to measure the relative risk profiles of species and to plan protective actions accordingly.

#### *IUCN-Red List System*

One system that encapsulates vulnerability is the IUCN Red List, primarily developed for terrestrial use as an indication of the risk of extinction of individual species, but progressively improved to be of relevance to marine organisms.

Species are allocated to categories of risk depending on their level of depletion and risk of extinction. Criteria for such grouping include population size, maturity levels, population reductions and continued declines, extreme fluctuations, severely fragmented populations, range and area of

occupancy. Evaluations are conducted by a network of specialists who assess the status of species based on the best expertise and information available. Clearly, there are too many plant and animal species in the world to do justice to them all, so that greater effort and progress is often made by the personal interest and most diligent of respective specialist groups.

The IUCN<sup>6</sup> currently “red-flags” a total of 738 marine fish species for the West Indian Ocean region, including KZN. However, more useful is the combination of the three most vulnerable categories. This reveals a list of 78 fish species (73% being sharks and rays); 10 critically endangered (CR), 11 endangered (EN) and 57 vulnerable (VU). Of these, 25 occur in coastal KZN, with 4 critically endangered, 4 endangered and 17 vulnerable. The high proportion of sharks and rays signifies the higher levels of risk associated with elasmobranchs.

For invertebrates, the IUCN red-flags 618 species for the West Indian Ocean, with 102 species listed as “threatened”. However, all are tropical hard corals, of which eight are considered endangered. Several of these species occur in KZN; all of which are found in the well-protected iSimangaliso Wetland Park. Some 19 species of marine reptile are red-flagged for the region, all but five being sea-snakes not common in KZN. However, all five turtle species found in the region are grouped as “threatened”, with two critically endangered, two endangered and one vulnerable (Section 4.3).

In all, some 40 marine mammals are red-flagged for the West Indian Ocean, with 3 endangered and 4 vulnerable. Of the 13 most common species of marine mammals that frequent coastal KZN, two are listed as vulnerable.

Coastal vegetation is also under threat. The once prolific seagrass *Zostera* is listed as vulnerable and declining, while several species of mangroves are especially at risk in KZN, largely because of estuarine degradation.

#### *CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora*

CITES is an international agreement between 177 governments and agencies to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Species are allocated to lists, based on a comprehensive assessment of their status. *Appendix I* is a list of those species that are under critical threat and may not be traded at all, while *Appendix II* documents threatened species and places trade controls for the listed species.

### National species conservation lists

In addition to the red-flagged and CITES-listed species, countries also identify additional species at risk, as is the case for South Africa. This is especially the case for harvestable fishes, where the status is often statistically calculated as a percentage of its virgin reproductive potential. Based on the species' growth rate, reproductive output and prevailing mortality rates, its spawner biomass is calculated. A biomass level above 40% of the unexploited state of the species is considered stable, whereas 25% is the lower threshold below which the species is considered to have collapsed.

The graph below shows the lamentable situation for 30 KZN linefish species with 18 (60%) rated as collapsed and only seven species in optimal condition.<sup>7</sup>



A number of marine species are listed, and those relevant to coastal KZN include sawfishes, several sharks, the coelacanth, several fish species and one species of sea turtle (see Section 4.3).

For years, mankind viewed the ocean as a source of infinite resources. Its vast size and depth and unexplored frontiers made the ocean appear invulnerable to overexploitation. Despite our relatively healthy marine and coastal environment, a considerable number of KZN species are vulnerable, and thus are at heightened risk to human activities. These risks are various, including ecosystem and/or habitat destruction, climate change and fishing pressure. Severely declining catches have rung alarm bells, globally and in KZN. The decline of sea turtles, depleted linefish such as the seventy-four, and concern about shark populations have resulted in actions being taken. ■

The once-plentiful Seventy-four is extremely rare and vulnerable.



Photo: Dennis King

