

Module # 6 – Component # 1



Marine Reptiles and Birds

Objective

The **objective** of this component is to familiarize the marine guide with the most common marine birds and reptiles of Southern Africa

Expected Outcomes

The learner will be able to:

- Describe the basic structure of marine reptiles and birds
- Explain the feeding mechanisms of marine reptiles and birds
- Recount the reproductive processes of marine reptiles and birds
- Recall the basic types of marine reptiles and birds
- Discuss the ecological issues threatening marine reptiles and birds

Pre-test: Test your current knowledge of marine guiding.

Question 1.

The oystercatcher mainly feeds on oysters on the Southern African coast

- a) Yes
- b) No

Introduction

Reptiles and birds have long been thought to have **the same pre-historic ancestor** due to particular similarities in their composition. In this section however we will deal with them as separate classes but in the same component. In Southern Africa the marine reptiles comprise about **five turtles** and a **sea snake**. The marine birds are more diverse and maybe more **difficult to classify** due to the fact that some are seasonal **visitors**, some are **vagrants** from other regions, not all are solely dependant on the ocean and yet others are difficult to tell apart.

Structure

Although anybody will be able to discern between a bird and a reptile the most common difference is that birds are mostly feathered whereas reptiles are mostly scaly with thick impermeable skins and the turtles have adapted a thick hardened carapace (shell). **Because the marine reptiles live most their life at sea they have adapted the ability to excrete excess salt through special glands** (salt-secreting glands). Many sea birds have **webbed feet** and penguins even have wings adapted into paddles. Some birds also display the **ability to secrete salt** through special adaptations. Both marine reptiles and marine birds are **generally streamlined** and adapted to movement through the air by wings (birds) and through water using webbed feet and/or flattened paddle appendages or flippers (birds and reptiles). Some of the largest reptiles on earth are found in the ocean, like the leatherback turtle, which can attain the size of a **Volkswagen beetle**.

Feeding

Turtles display remarkable **variation in their feeding habits** and this probably contributes to a reduction of competition between species for food and space. The following list of species and foods illustrate this niche specialization:

- Green turtle** - Plant material like algae
- Leatherback turtle** - Jellyfish
- Loggerhead turtle** - Bottom dwelling mollusks and echinoderms
- Hawksbill turtle** - Sponges
- Olive Ridley turtle** - Crabs and prawns

The Yellow-bellied sea snake **readily hunts small fish** from pelagic ambushes like floating seaweed or debris.

Marine birds feed on a wide range of seafoods from fish to other birds, molluscs to crustaceans, worms and even phyto-and-zooplankton.

Reproduction

Of the five species of turtle that occurs in Southern African seas only the **leatherbacks** and the **loggerheads** breed on our local beaches. The green turtle, for instance, is only a visitor and breeds on the central Indian Ocean islands where they are **tremendously threatened**. The other two common species (hawksbill and Olive Ridley turtles) are also just occasional visitors to our waters.

Sea turtle breeding in Southern Africa

Sea turtles lay their eggs on Northern Kwazulu-Natal and Mozambican beaches between **October and February each year**. First to arrive are the males who pursue and breed with the newly arrived females in the sea. Once her eggs are fertilized the female will clamber onto the land and laboriously haul her bulk up to the **spring high tide mark** on the beach where she will **dig a flask shaped hole** (about 60 to 80 cm deep) for her eggs using her flippers as spades.

Once the nest hole is dug she will lay up to **100 eggs** in the hole, the eggs are soft skinned and lubricated with mucous and therefore doesn't break on falling from her cloaca.

After the eggs are laid the hole is refilled and compacted down until level with the beach. Sand is also thrown over her back to help **disguise the location** before heading back into the sea. A female may make up to **seven similar nests during breeding season**.

After about two months and depending on the temperature the eggs will hatch. In **cooler temperatures** (20 to 24°C) the clutch will **mainly consist of male hatchlings** while in **warmer temperatures** (up to 29°C) the yield will mostly consist of **females**. In between temperatures (normally mid season) both male and female hatchlings may occur.

Hatchlings **emerge after dark** in a concerted effort of breaking through the egg wall with an **egg-tooth** and a simultaneous movement to escape the sandpit. All the activity brings about a sand shift downwards, from which the upward scrambling juveniles emerge. During this phase they **are extremely vulnerable to predation and many are lost to ghost crabs** on the beach and to predatory fish like sharks and kingfish in the inshore waters.

If they escape predation they keep **swimming for a couple of days until they reach the Agulhas current**. The powerful Agulhas current with its eddies and gyres keep them **captive in cycles for the following 3 to 10 years** where they grow strong on bluebottles, jellyfish and even bubble raft shells in the case of loggerhead turtles. It is said that **much less than 1% of hatchlings make it to maturity**, which comes around at the age of **12 to 15 years**. Female turtles are normally called back to the **beach of their own birth** to nest and they probably recognize it from familiar smells and scents remembered or imprinted upon them since birth.

Yellow-bellied sea snakes on the contrary are **ovoviviparous** and mate out at sea. This means the female **gives birth at sea** to 3 to 8 young during early winter to spring. They don't give birth to live young, although it look as if this is what happens. Rather in **ovoviviparity**, the female **retains her eggs within her body instead of laying them**. Her offspring then hatch "internally", emerge from their shells, and then emerge from their mother.

Most Marine birds are **oviparous** meaning they make **nests on land and lay eggs on which they sit and brood until the young hatch**. Their breeding seasons are normally greeted with elaborate mating and breeding behaviors that are unique to each species. The spectacular "dance of the flamingoes" (a mass synchronized extravaganza of head flagging, wing salutes and broken neck displays) is a point in case as is the fact that African black oystercatchers mate for life.

Sea Turtles

Phylum: Chordata
Subphylum: Vertebrata
Class: Reptilia (Reptiles)
Order: Chelonii
Superfamily: Cheloniodea (**Sea turtles**)

Family: Dermochelyidae

Leatherback turtle (*Dermochelys coriacea*)

It has a leathery back with seven longitudinal ridges. They grow enormously large up to a length of 2.5 meters and 1.5 tones in weight. Feeds on jellyfish and bluebottles

Family: Cheloniidae

Loggerhead Turtle (*Caretta caretta*)

Upper surface of carapace is broken up into a series of non-overlapping plates consisting of a central row and associated side plates (costals). The loggerhead has 5 pairs of **costals** and 4 pre-frontal shields between the eyes.

Green Turtle (*Chelonia mydas*)

The plates of the carapace doesn't overlap but it has 2 pre-frontal shield plates. It eats sea grasses and seaweeds.

Hawksbill Turtle (*Eretmochelys imbricata*)

The shields of the carapace overlaps and it has 4 pre-frontal shields. It has a marked hooked bill, hence the name hawksbill. It eats sponges.

Olive Ridley Turtle (*Lepidochelys olivacea*)

A rare visitor to the upper eastern coast that subsists on prawns and crabs.

Sea Snake

Phylum:	Chordata
Subphylum:	Vertebrata
Class:	Reptilia (Reptiles)
Order:	Squamata (Snakes and lizards)
Family:	Elapidae (Cobras, mambas and sea snakes)

Yellow-bellied sea snake (*Pelamis platurus*)

Not mistaken with its **ventrally flattened head, laterally flattened tail** paddle and a body with distinct black upper surface and yellowish lower surface. They are **venomous with neurotoxin effect** not unlike the mambas and cobras on land but we need a unique sea snake anti-venom in bite cases. However while being one of the **most venomous snakes in the world, they are also one of the most placid**. Brave (idiotic) divers frequently play with these deadly serpents.

They feed on small fish. They are mostly found in the pelagic zone with only occasional beaching after rough weather, and therefore not frequently encountered.

Albatrosses

Phylum:	Chordata
Subphylum:	Vertebrata
Class:	Aves (birds)
Family:	Diomedeidae

Some of the **largest flying birds** in the world. They have goose-sized bodies and long slender wings, up to 3.5m in the Wandering Albatross, the largest Albatross in Southern Africa. They are mostly black and white and they have strong beaks with a hook on the tip of the upper jaw/beak in which is embedded unusual tube shaped nostrils used in the excretion of excess salt.

Some species around Southern Africa:

Wandering Albatross	(<i>Diomedea exulans</i>)
Royal Albatross	(<i>Diomedea epomophra</i>) – Rare vagrant
Shy Albatross	(<i>Diomedea cauta</i>)
Black-browed Albatross	(<i>Diomedea melanophus</i>)
Yellow-nosed Albatross	(<i>Diomedea chlororhynchos</i>)
Sooty Albatross	(<i>Phoebetria fusca</i>)

Flamingos

Family: Phoenicopteridae

Two species occur in and around southern Africa. The Greater Flamingo is the largest of all flamingos reaching lengths of 140 cm. It is almost white with brilliant red wing patches in flight and has a pale pink bill with a dark tip. It feeds by treading in a circle in shallow water and mud to churn up tiny animals, which it then filters through its bill that is fitted with special rakes (reminiscent to the baleen combs in whales). The Lesser Flamingo is smaller and pinker than the greater flamingo and its bill is dark red with a black tip. It also feeds by filtering the water but it doesn't tread and churn the water like the greater flamingo.

Species:

Greater Flamingo	(<i>Phoenicopus ruber</i>)
Lesser Flamingo	(<i>Phoenicopus minor</i>)

Penguins

Family: Spheniscidae

African Penguin (*Spheniscus demerrus*)

A very common and locally abundant resident of the west and south coast areas. It has black and white facial patterns and white under-parts with encircling black bar diagnostic: some with double bar. Call: is donkey like 'braying', heard mostly at night.

Although about 18 species of penguin are confined to the southern hemisphere, the African penguin (*Spheniscus demersus*) is the only penguin to occur naturally on the African continent, apart from a few rare visitors of other species from the sub-Antarctic islands. It is endemic to South Africa and Namibia, breeding on 25 islands and a few mainland sites between Bird Island, off Port Elizabeth, and Hollams Bird Island, Namibia. Individuals are often found or in groups in coastal colonies on offshore islands and mainland beaches. Size: 63cm

Gannets

Family: Sulidae

Cape gannet (*Morus capensis*)

Distinctive black lines on the bill and face plus a black line down center of the throat. They are large, black and white birds with a yellow head and hind neck. The chicks change color when they reach two years of age. They are found offshore both individually or in straggling flocks. Large aggregations are found over fish shoals. Individuals plunge dive repeatedly to feed. They roost at night in colonies on offshore islands or at sea. Gannets sky-point with neck upright and beak pointing upward to appease other nesting gannets while moving through the colony. Size: 87-100 cm.

Cormorants

Family: Phalacrocoracidae

Cape cormorant (*Phalacrocorax capensis*)

A locally abundant resident also known to be one of the oldest unchanged species to be found in the area. They have distinct black plumage with a short tail. They can dive down to a depth of 18m. They are generally found flying over the sea and schools of fish. Long lines or “flying treks” can be seen just off the western coast.

Size: 64cm

Great cormorant or White breasted cormorant (*Phalacrocorax carbo*)

A local resident that is identified by a large white marking from throat to breast and a bright yellow patch at base of bill. Chicks have entirely white under-parts. They are found both individually and in groups on coastal rocks and large inland waters where they are often found perching and nesting in dead trees.

Size: 90cm

Gulls and Terns

Family: Laridae

Kelp gull (*Larus dominicanus*)

A common resident to Southern African waters but especially in the Cape. Adult has dark eyes and olive legs; chick initially mottled dark brown (could be mistaken for a skua). Found singly or in big groups scavenging along coasts, especially harbors, rarely inland. The largest gull at 60cm

Other Gulls:

Hartlaub's gull (*Larus hartlaubii*)

Grey headed gull (*Larus cirrocephalus*)

Some common gulls

Caspian tern (*Hydroprogne caspia*)

This is a common resident and the largest tern in this region. Its massive red bill, black cap, deeply forked tail and overall size make it unmistakable. Found in pairs or small groups at costal lagoons and large inland waters.

Size: 52cm

Common tern (*Sterna hirundo*)

It is a common summer visitor, which during breeding season has grey plumage on its rump and tail. During breeding season the plumage is white and it has a red bill with a black tip. This bird is found in thousands offshore, roosting in estuaries and on beaches. Size: 35cm

Oystercatchers

Family: Heamatopodidae

African black oystercatcher (*Haematopus moquini*)

A common, endemic resident and is the second most threatened bird species in South Africa. Has distinct black plumage with bright red bill, legs and eyes. It has brownish plumage as an adolescent. It has a dramatic alarm call: 'ki-ki-kis'. It is a monogamous species (pairs for life). Although it is called an Oystercatcher they also feed on the worms found inside mussels on rocks. In fact the name oystercatcher can be misleading because the birds feed mainly on mussels, limpets, whelks, crustaceans and worms.

Petrels and Shearwaters

Various families

White chinned petrel (*Procellaria aequinoctialis*)

It is larger than other petrels with a greenish bill and a white chin. They are a large dark long-winged pelagic bird with a stiff winged flight. Found in large gregarious groups around trawlers. They are summer breeders with breeding colonies found on Nightingale, Marion and other inaccessible islands. Length 54cm.

Wilson's storm petrel (*Oceanites oceanicus*)

It is a common year round visitor. Its rounded wings and a uniformly dark under-wing pattern identify it. It has long spindly legs projecting beyond a squaretail. Flight action is similar to that of a swallow not the 'bat-like' action of the European species. Size: 16-19cm

Sooty shearwater (*Puffinus griseus*)

An abundant, year round visitor with sooty brown plumage and conspicuous pale areas on its under wings. It feeds in mixed flocks of Cape Gannets and Cape Cormorants and is often seen close inshore. Size: 46-53cm

Plovers

Family: Charadriidae

White fronted plover (*Charadrius marginatus*)

This plover is endemic to sub-Saharan Africa. It is encountered along the entire South African coast where it forages on both sandy and rocky shores. Inland it occurs at lakes and along large sandy rivers such as the Zambezi, Limpopo and Okavango. The Whitefronted Plover is the most common coastal-breeding wader species in southern Africa.

Skuas

Family: Stercorariidae

Sub-antarctic skua (*Catharacta Antarctica*)

Also known as the bully of the ocean, it is a common visitor year round. Looks like a brown sea gull. Known as opportunistic feeders. They are often seen harassing other birds so that they regurgitate their food. An aggressive scavenger that also preys on other seabirds. Usually found individually at sea but gathers in flocks around trawlers. It is a summer breeder.

Size: Up to 60cm

Ecological Issues

In the early part of the twentieth century, **egg and guano collecting** had a dire effect on seabirds, reducing their populations to a fraction of their original size. Today **oil spills, food shortages, climate change and marine pollution** all take their toll on seabird populations as well

African Black Oystercatchers

They are South Africa's **most rare, endemic coastal bird**. They are more rare than the southern right whales that visit our shores in winter and are listed on the International Red Data list as a **threatened species**. Oystercatchers are only able to **raise one brood of chicks in a year**. By comparison with other species of bird, their breeding success is low. **Every year fewer than 500 chicks are fledged** and many of these chicks will die before they can breed.

The two main reasons for **low breeding success are disturbance and predation**. Oystercatchers breed in summer, probably in an effort to avoid winter storms, when high seas might prevent them from reaching their feeding areas for days at a time. If human disturbance prevents adults from feeding when they have chicks, the effects could be as devastating as winter storms. With their nests in the open and on the ground, the oystercatcher's eggs and young are also at risk from being crushed by walkers or beach vehicles or being eaten by dogs.

The Gannet Population

Gannets **compete with humans** and other predators (e.g. seals) **for food** and is therefore **also threatened**. However, oil pollution also poses a serious threat to gannets, and a major spill near a breeding spot would spell disaster. In the past, guano was scraped from the islands to be sold as fertiliser. This negatively impacted the gannet population by **removing the material they need to build nesting mounds**. Nests built on flat terrain are often flooded, killing both eggs and chicks. Fortunately, gannets are no longer threatened by guano scraping as the activity has been halted.

The African Penguin

This species has been classified by the World Conservation Union as "**vulnerable**", with a **high risk of extinction in the wild** in the medium-term future. For the African Penguin, this translates to a **10% chance of extinction within 100 years**. The estimated 575 000 adult penguins that existed a century ago had been reduced by half by 1950, when the first aerial census was conducted, and today number less than **180 000**. This means that the population has been decreasing at 1-2% per year over this period.

Turtles

Turtles are critically endangered. It is therefore essential that a concerted effort is made to ensure the future survival of these fascinating creatures. Their endangered status is a result of **pollution, over-exploitation** of the adults and eggs, **destruction and alteration of breeding beaches, gill nets and human ignorance.** Many turtles lose their lives due to **eating floating pieces of plastic**, which they mistakenly confuse as “jellyfish”. Long-term survival of turtles can only be achieved by collaboration and co-operation of all countries in the range of the turtles. This has been done through an international regional agreement under the **Bonn Convention** (Convention on Migratory Species of Wild Animals), to which South Africa is a signatory.

Since 1963, KwaZulu-Natal Wildlife has spearheaded turtle conservation efforts in South Africa. **Nesting turtles are tagged to help scientists study the migration patterns, nesting and ageing of the animals.** In 1966, only five leatherback turtles nested on the Zululand coast. The average number of nesting leatherback females has now risen to **more than 90** – a wonderful return to a healthy population, with numbers slowly increasing over time. The number of loggerhead turtles has also risen from less than 100 in the early 1960's to 500 nesting annually within the Maputaland Marine Reserve.