

Tanzania Wildlife Discussion Paper No. 30

Rolf D. Baldus and Ludwig Siege (Eds.)

Saadani

An Introduction to Tanzania's Future 13th National Park

By

R. D. Baldus, K. Roettcher and D. Broska

**Wildlife Division
Deutsche Gesellschaft für Technische Zusammenarbeit
GTZ Wildlife Programme in Tanzania
Dar Es Salaam 2001**

TABLE OF CONTENTS

WHY IS SAADANI SPECIAL?

p. 1

CLIMATE

p. 1

HISTORY

p. 1

The Swahili and Their Origins

p. 1

Indian Ocean Trade

p. 2

The Swahili Coast under Shirazi, Portuguese and Omani Foreign Rule

p. 2

Caravan Trade

p. 3

Saadani and its Ruler Bwana Heri

p. 4

The German Invasion

p. 4

SAADANI GAME RESERVE

p. 6

WILDLIFE IN SAADANI

p. 9

Mammals

p. 9
Reptiles

p.15
The Green Turtle

Birds p.16

p.19

HOW TO GET THERE p.23
Map – Overview of the Saadani Game Reserve and Surrounding Areas

WHERE TO GO p.25
p.26

WHERE TO STAY p.27
The Original Saadani Experience / Saadani Safari Lodge p.27
Saadani Village Camp Site p.27
Mbuyuni Beach p.27
Zaraninge Forest Camp Site (Kiwandi Camp) p.27

SAADANI ALPHABET p.28

REFERENCES p.30

The Discussion papers may contain authors' views and positions which do not necessarily correspond with the official position of the Wildlife Division, GTZ and the editors

Address: Deutsche Gesellschaft für Technische Zusammenarbeit
Community Based Wildlife Conservation Programme
P.O.Box 1519, Dar Es Salaam, Tanzania

Tel:
255-22-2866065

Fax: 255-22-2116504
Email: scp@africaonline.co.tz
Website: <http://wildlife-programme.gtz.de/wildlife>

● Why is Saadani Special?

In the centre of the historic triangle of Bagamoyo, Pangani and Zanzibar, Saadani Game Reserve is one of the few wildlife sanctuaries bordering the sea. It offers the unique combination of both marine and mainland flora and fauna in a historically and culturally fascinating setting. Elephants have been rumoured to bathe in the Indian Ocean off the Reserve's coast, green turtles come to its beaches to breed, black and white colobus monkeys frolic in the canopy of the evergreen Zaraninge Forest. Roosevelt Sable Antelope too have their home here.

Besides game drives visitors can relax on the beach, go on foot safaris or venture up the Wami River by boat, braving waves and hippopotami, past crocodiles and flamingos.

● Climate

The climate is coastal, hot and humid. The average temperature lies between 25 and 30 degrees Celsius. Humidity is high throughout the year, reaching levels of up to 90% in the rains. The south east monsoon (trade wind) locally referred to as "kusi" from the Swahili word for South, "kusini" blows from April to October. The northeast monsoon, the "kaskazi", blows from October to March.

● History

The Swahili and their Origins

The term "Swahili" derives from the Arabic for "coastal people". One of the oldest Swahili communities on the East African coast, Saadani village once was an important harbour-town and slave trading centre. Now it is a small fishing village with about 800 inhabitants whose livelihoods are prawn fishing and coconut growing. An ethnically heterogenous group of Bantu-speaking peoples, the ancestors of the Waswahili were settlers from the interior of the African continent who intermarried with Arab, Persian and Indian traders along the coast. Apart from the Waswahili, Wazigua and Wadoe are the predominant groups around Saadani. All along the coast the Arabic influence is very visible. Mud-and-wattle houses with *makuti* (palmfrond) roofs are interspersed with flat-topped Eastern architecture. Multi-storied stone buildings and the typically carved wooden doors tell of the great wealth and history of by-gone days. Islam was adapted to traditional African beliefs and became the predominant religion. Muslim names and rituals were adopted. The language with its many Arabic words became known as Kiswahili.

Muslim men wear small embroidered caps and, on Fridays or for official trips, the typical Arabic white gowns called *kanzu*. Often women wear an enchanting adaptation of the traditional black *baibui*, using colourful *vitenge* (large pieces of cloth) to cover the head, shoulders and legs.

A commercial guide from the Graeco-Roman period the *Periplus Maris Erythraei* gives the earliest reports on the trade crossing the Indian Ocean in ca 130 – 140 A. D.. Descriptions of the first Bantu settlements along the coast show that much of this culture has been preserved to the present day. The first Bantu settlers lived in mud-and-wattle houses thatched with palm leaves. With their dug-out canoes, small sewn

plank boats and „wicker baskets“ they fished within the reef or close to the shore. They were also engaged in farming, grew sorghum, millet, rice, coconuts, various vegetables and fruits, kept livestock and hunted wild animals. They traded these goods as well as ironware, shells, beads, cloth and pottery with their neighbours. Each settlement was autonomous and ruled by its own chief. Larger market towns like Rhapta, which is mentioned in the *Periplus* and which may have been located close to Pangani, were oriented more towards overseas trade.

Indian Ocean Trade

The whole Swahili coast stretching from Southern Somalia down to Northern Mozambique, has for more than 2000 years been a place of interaction and exchange between the East African mainland and the outside world of the Indian Ocean. As early as the second century B.C. Arabs were involved in trade with the East African coast and acted as intermediaries in the trade with the Ptolemies of Egypt, the Romans and the Indians. They provided the Mediterranean with Oriental luxuries and with ivory from India and East Africa.

On their trading voyages the Arabs made use of the seasonal reversal of the monsoon winds. They left their home ports on the Arabian coast with the northeast monsoon in winter, sailing by dhow for up to a month until they reached the East African coast as far South as Zanzibar. When the wind turned to become the southwest monsoon in summer they returned home with their loads of ivory, rhinoceros horns, tortoise shells and coconut oil. Until the Persians entered into trade with East Africa in the seventh century A.D. the Arabs held the monopoly in the Indian Ocean trade.

Now the Persians took on a role as middlemen in the trade between East Africa, India and China. Up to the tenth century they were the main importers of ivory and slaves.

Goods most in demand were slaves, ivory, gold, tortoise-shell, leopard skin, rhinoceros horn, ambergris, sesame, iron and timber, especially mangrove poles, which were used for construction. In return the Swahili traders received frankincense, myrrh, pottery, Chinese celadon and porcelain, cloth, beads and glass.

The Swahili Coast under Shirazi, Portuguese and Omani Foreign Rule

In the ninth century merchants of Persian origin, arrived in East Africa in order to control the gold trade. Referred to as *shirazi*, which denoted real or imagined Middle-Eastern ancestry, they made Kilwa on the Southern coast of present day Tanzania the main trading centre for gold and ivory. This came from Mozambique and Zimbabwe via the Mozambican coastal town of Sofala. In the thirteenth century Kilwa was ruled by the Shirazi dynasty under Ali bin al-Hasan. Under Shirazi domination of the Indian Ocean trade new coastal trading centres were established and expanded. The Shirazi also founded Mkwaja village three miles south of its present site on the coast North of Saadani.

In 1498 the Portuguese arrived with Vasco da Gama's fleet on the Swahili coast. They hoped to take over the gold trade, to control all trade in the Indian Ocean and to end Muslim rule. However, after only two centuries of Portuguese's supremacy, the Swahili expelled them in 1729 from the coast with the help of Omani Arabs. These had a history of raiding Portuguese positions and garrisons along the coast and on Zanzibar and finally defeated the Portuguese after decades of fierce fighting.

Now the Omani imposed their power over the coastal towns. They made Zanzibar their stronghold in 1799 and gave order that all oversea exports and imports had to pass through the island town. The island became the major market for the most profitable trade items from the hinterland, ivory and slaves, gum copal and cowries. It also became the greatest importer of manufactured goods such as cotton, beads, wires, guns, gun-powder, china and glass from India, America and Europe.

Sayyid Said bin Sultan, Omani ruler (*imam*) since 1804, had signed commercial treaties with foreign traders. He moved his capital to Zanzibar in 1840 and encouraged Indians, who he appreciated for their expertise in business, to settle and set up enterprises on Zanzibar. They soon dominated commerce as customs agents, financiers and wholesale traders. Sayyid Said also introduced clove growing for which a huge amount of slaves was needed to work in the about 45 plantations. In the 1850s Zanzibar's 150, 000 inhabitants may have included 60, 000 slaves. Sayyid Said bin Sultan sent Omani governors, called *liwali*, to the coastal towns on the mainland.

When he died in 1856 Zanzibar became independent of Oman and Sayyid Majid inherited the East African half of the Oman empire. He built up a new capital on the mainland coast – Dar es Salaam, „Haven of peace“. He also strengthened his control over the slave trade.

In 1873 the British made his successor Sultan Bargash sign a decree which prohibited all slave trade by sea and in 1876 another banning trade also on the mainland. Business however continued illegally. In 1877 a missionary stated that he saw slave caravans passing to Saadani daily, each with about one hundred children in chains!

Caravan Trade

A rising international demand for ivory and slaves and an increasing need for slaves on Zanzibar in the nineteenth century revived long-dormant Swahili towns. New settlements too sprang up. Boom towns like Bagamoyo, Pangani and Saadani emerged as new trading centres with long-distance trade routes leading to Tabora and later to Lake Tanganyika and Zaire.

Around 1800 the Wanyamwezi from Central and North-central Tanzania were the first to penetrate to the coast on direct trade routes which they had developed out of regional trade networks. In the 1820s, when prices for ivory and slaves were high, Arab and Swahili caravans followed the routes pioneered by the Wanyamwezi inland for ivory and slaves. With them Islam and the Swahili language spread.

In the nineteenth century Saadani became a serious trading competitor of Bagamoyo as both towns were termini of the central trade routes to Tabora. The Wanyamwezi, who were either supplying ivory or slaves themselves or simply imposing heavy tolls on trading caravans, competed with the Wazigua on the Saadani caravan routes until the 1880s. The Wazigua, who lived along these routes, raided for slaves which they sold besides foodstuff to the caravan traders for firearms and other manufactured products. In this way they achieved considerable power and dominated the whole region West of Bagamoyo and Pangani.

The trade boom of the last third of the nineteenth century attracted the community of Khoja Indian merchants to Saadani. They disappeared however soon after the German conquest.

Saadani and its Ruler Bwana Heri

After Sayyid Said bin Sultan's death in 1856, Saadani was the only important coastal settlement which had remained without an Omani governor (*liwali*).

Bwana Heri bin Juma, said to have been of Wazigua, Wadoe and „Shirazi“ parentage, had ruled Saadani since the early 1870s. According to oral tradition, he was a mythological founder-hero, even though Saadani village had existed before him. Bwana Heri wore a turban, sandals, a flowing *kanzu* besides the usual regalia of office – the *siwa* (horn), two drums and an umbrella. Bwana Heri was regarded as first Sultan Majid's and subsequently Sultan Bargash's representative on the Saadani coast, but retained his autonomy from the Sultan. He resisted all Zanzibari attempts to occupy the town and defeated the Sultan's troops in 1882. However he still sought Sayyid Bargash's recognition of his own position as chief.

Bwana Heri developed strong ties with the Nyamwezi caravan traders and received their support in political and military affairs. Saadani, the same as Bagamoyo, was often filled with large numbers of traders. These stayed in their own quarters or encampments, lining the streets with the many tusks they brought. Heri's influence with hinterland chiefs, especially with the unruly Wazigua, was well known, and he was praised by European traders and missionaries for his friendliness and usefulness in helping to arrange travel. The British and German missionary societies, who came to East Africa in the 1850s in order to fight against Arab slave trade and to propagate Christianity, established missionary stations along the coast and the Saadani routes.

The Saadani routes were favoured by the Europeans for a long time. The German and British traders and missionaries were followed by European explorers including Burton and Speke who set out on their expedition to the interior from Saadani in 1858.

Bwana Heri was not opposed to European traders provided they worked to his economic and political advantage. This changed with the arrival of the German colonialists.

The German Invasion

In 1884 28 year old Carl Peters together with some friends founded the „Society for German Colonisation“. The aim of the society was to acquire colonies for Germany. That same year they landed in Saadani and marched inland getting local chiefs to sign over their territories in bogus treaties. Bwana Heri kept a watchful eye on their activities. He and his upcountry partners were very wary of the German threat. Between 1884 and 1886 the German East African Company (DOAG) sent out 18 expeditions to extend the territory. In 1886 the German protectorate's borders were settled and Sayyid Khalifa, Zanzibar's ruler after Bargash, agreed to limit his possessions on the mainland to a ten mile strip along the coast. When the Sayyid in 1888 granted the Germans the control of customs throughout the coast, Bwana Heri became an enemy of Khalifa. In 1888 the coastal people organized resistance against the Germans under the joint leadership of Abushiri bin Salim al Harth and Bwana Heri. They fired on a German warship at Tanga, hung two company representatives in Kilwa on poles outside the German station and imprisoned the remaining officials in Dar es Salaam and Bagamoyo.

In April 1889 the Germans sent Major Hermann von Wissman, a 34-year-old officer with experience of travel in Africa, to help suppress resistance and save the German name. In 1883 he had been Bwana Heri's guest at the end of a trans-continental trek. Between May and December 1889 von Wissmann and his army to which he

had recruited 600 Nubians, 50 Somalis, 350 Zulus from Mozambique and 20 Turks, quickly captured towns North of Dar es Salaam, starting with Pangani. Abushiri escaped inland but was hanged at Bagamoyo in December 1889. On 6th June 1889 Saadani was bombarded and taken by the Germans. Bwana Heri retreated inland where he built a series of forts - one after the other as they were destroyed by the Germans. Sayyid Khalifa's mediation finally enabled Bwana Heri to surrender at Saadani on 5th April 1890. As von Wissmann regarded Bwana Heri as an honourable enemy he told him to rebuild Saadani.

The coastal resistance finally collapsed in May 1890 when Kilwa was taken by the Germans who then established firm control over the area. Several graves from that time are to be found in Saadani to this day. Some might be those of German soldiers, who fell in the fight against remnants of Bwana Heri's troops. Two inscriptions remain:

James H. Redman
Missionary of the CMS
Appointed to Mambid
Died at Ndumi Feb 29 1892
Aged 43 Years

And

Waldemar Suege

Zollamtsassistent II Klasse

Geb 14 April 1871

Gest 15 Oktober 1900

Saadani's and Bagamoyo's caravan trade went into decline between 1896 and 1902 while Dar es Salaam rose to be the most important entrepot. Commercial agriculture along the coast where crops like rice, sugar and copra had been produced for export to Zanzibar and the Indian Ocean market was destroyed after German invasion. Subsequently many small ports fell into ruin.

The DOAG invested in the construction of railways as well as in huge plantations. These produced cash crops such as coffee, cotton and sisal for the European market. Sisal plantations were set up from Tanga south to Saadani. Following the passing over of the protectorate to the British after the First World War sisal, kapok, cashew estates and cattle ranches were established in the Saadani area.

Ruins of stone houses still bear testimony to the former flourishing conditions. It is reported that the Old Customs House of Bagamoyo was transported to Saadani in 1895 where it was rebuilt as an administrative headquarter. An old *boma*, ie government house, can indeed still be found in Saadani. At present however it is in need of maintenance and repairs. Currently it stands in danger of disappearing completely as local villagers have started dismantling it in order to obtain stones for building and a church is being constructed within the remaining walls.

● Saadani Game Reserve

Saadani Game Reserve (SGR) was conceived by Mr Mahinda the Director of Wildlife in 1966. It was officially gazetted in on the 24th January 1969 after he had consulted

the Saadani village elders. These agreed hoping to gain some revenue from the Reserve. Compensation was awarded for the loss of cultivated land taken away for the protected area. When the Reserve was established, a zoological garden was opened as an additional attraction. Further some houses were built by the sea. These were for the use of dignitaries wishing to enjoy a break from Dar es Salaam and who came to hunt by special privilege. One of these, the Saadani rest house is still there and in use by the Reserve's management.

The circa 2000 sq km of relatively intact continuous ecosystem around the Reserve includes Mkwaja North (280 sq km) as well as the Zaraninge Proposed Forest Reserve. The ecosystem falls into the three districts of Bagamoyo in Pwani Region and Handeni and Pangani in Tanga Region.

Saadani Game Reserve was initially roughly 200 sq km large until Mkwaja South, an area of 217 sq km bordering the north of the SGR, was acquired by the Wildlife Division with financial assistance from the European Union in 1996 and annexed to the Reserve. The current Game Reserve is to become a National Park in the near future, whereby both Zaraninge Forest and Mkwaja North may become part of the Park.

Mkwaja North is the remainder of a cattle ranch started in 1952. No longer managed for livestock the last of the cattle were sold in July 2000. The conservation of Zaraninge Forest is the focus of a WWF Lowland Coastal Forest Project. The forest is of great interest to botanists due to the great number of endemic species found within it. Vines, epiphytes and parasitic plants too are present next to the wide variety of forest trees, shrubs and herbs.

On village land coconuts and cashewnut plantations line the Mkwaja – Pangani road to the North-east of the Reserve. The dark green foliage of mango trees give shade in the villages. Commercially grown sisal dominates the landscape to the North of the Saadani ecosystem. In the villages to the West a variety of fruit and vegetables are grown. Pineapples are one of the crops grown in the villages directly bordering Zaraninge Forest.

The flora of the Saadani Game Reserve covers a wide range of both forest and savanna species. The latter are dominated by *Acacia*, *Dichrostachys* and other shrubs which provide good fodder for herbivores. Mangroves are found on the saline soils along the coast. Most of these fall into the families of the Rhizophoraceae, Avicenniaceae, and Sonneratiaceae. Species present include *Avicenna marina*, *Rhizophora mucronata*, *Bruguiera gymnorhiza* and *Ceriops tasgal*. Some areas are so saline that only the so-called saltbush and salt tolerant *Sporobolus* grass grow next to wide open salt flats.

Saadani Game Reserve is the only coast based wildlife conservation area in Tanzania. About 30 species of larger mammals are present as well as reptiles and birds, and marine species in the adjacent sea.

Marine species range from over 40 species of fish including 8 species of the Carangidae, warm-water anchovies and other herring-like fish, over jellyfish, cuttlefish, a variety of crabs to prawns and mantis shrimps. Due to the proximity of the Wami River and the shallow waters off Saadani, the fish are adapted to muddy flats such as the sea catfish, *Galeichthys* species. Small sharks presumed to feed off prawns and sting rays occur as well as the Green Turtle, *Chelonia mydas*. Humpback whales and dolphins have been observed off the coast in the Zanzibar Channel and a few years ago a crocodile appeared in Zanzibar which was assumed to have come from the Wami River!

The terrestrial fauna is not entirely indigenous due to the species imported in 1968, 1969 and 1974 to stock the zoo: Animals were brought in from as far afield as Arusha and Mbeya. The first 12 animals arrived in August 1968. These were 2 buffalos, 2 wildebeest, 2 oryx and a lioness. In December of the same year 2 eland arrived together with a suni, an elephant and a warthog. More animals were brought to Saadani over the years.

All the animals were kept in cages and fenced areas. One area was referred to as the "small zoo" or "small fenced area". This held several cages and was home to the carnivores. A larger area was used for keeping the herbivores. These were sometimes taken out by game scouts to a feeding ground for grazing. The carnivores on the other hand each had their own particular menu: Each lion was fed 40 kg of either beef or warthog meat per day, hyenas received 15 kg. Jackals were fed 5 kg of beef a day and the "snake", presumably a python, 10 chickens a month.

Non indigenous species introduced to the area were the oryx and the ostrich – neither of which are found in the area today – as well as the wildebeest, eland, zebra and jackals. A couple of impala too are said to have been introduced from Arusha in 1969. There is no evidence to their presence in the area today, though allegedly in the past they used to occur naturally at the coast between Tanga and Pangani.

Representatives of 18 species indigenous to the Saadani ecosystem too were brought in, covering a diverse range of species, from duiker to lion, leopard and cheetah.

Lions had always been present in Saadani though they had been few in number. In 1977 the zoo had four lions which had come from different areas. The first lion, a lioness, came from Muheza in Tanga Region. She was brought on the 21st August 1968 when she was 4 ½ months old and weighed between 25 and 30 kg. She was named "Bibi Maendeleo" - Miss Progress. The second lion was a male from Kunduchi, Dar es Salaam. He had been in private hands until the owners decided to hand him over to the government. At the age of 18 months, weighing 90 kg he arrived in Saadani zoo on the 16th April 1975. His name was "Azimio", Manifesto. The third lion was again a lioness. She arrived from Morogoro Region on the 20th November 1975 at the age of three. She weighed 165 kg and was called "Namha-Mbulinyi". The fourth was another male lion from Tanga Region where he had been rescued from a hole. Aged 4 to 5 months he weighed 25 to 30 kg.

In 1977, after inspection of the zoo by the Coastal Region Environment Officer, it was realized that at 138 ha for 120 animals the size of the zoo was too small for the number of animals kept. There was a shortage of food, water and shelter for the game. As no funding was available to increase the productivity of the zoo's land by means of irrigation or to have transport to bring in fodder from outside the decision was taken to close down the zoo and to release the herbivorous animals to prevent their starvation. The carnivores were sold, mainly overseas.

Since the establishment of Saadani Game Reserve conflicts have occurred between men and wildlife. Crop damage occurs when game feeds in the cultivated areas. Bushpigs and baboons especially cause a lot of damage eating whole fruit, pulling up plants for their delicious roots and breaking off their shoots. Elephants too cause problems: Though relatively few in number it takes them no time at all to destroy a farmer's long-term investment such as a coconut plantation.

Small boys are often given the responsibility of guarding the fields. Perched on a tree stump or other vantage point they chase away smaller intruders such as

baboons with stones. Larger mammals may require the assistance of the Reserve's scouts.

Further conflicts arise over illegal cutting and burning of trees by villagers for building materials, fire wood and charcoal. Poaching too is a problem though this has been reduced by the Reserve's management during the last two years. Conflicts over land are also an issue as people living in adjacent areas feel more and more land is being taken away to be incorporated into the Game Reserve.

Way back in 1969 SGR was the first project area of the Game Division which sought to find a way of achieving development within the bordering villages through the utilization of wildlife and the areas other natural resources. Game ranching and the domestication of wild animals formed part of the projects vision.

In 1998 the Saadani Conservation and Development Programme (SCDP) was started by the Wildlife Division of the Ministry of Natural Resources and Tourism, Tanzania, in collaboration with the German Agency for Technical Cooperation (GTZ), in order to rehabilitate the Reserve and integrate directly adjacent villages into the conservation effort. Since then poaching has decreased and wildlife numbers have increased. Eventually the SGR is to be upgraded to National Park status under the Tanzania National Parks authority (TANAPA) in order to afford the area the highest level of legal protection.

Both the current and the future management of the area have recognized the need for increased communication and co-operation with the surrounding villages.

● **Wildlife in Saadani**

Mammals

Elephants, *Loxodonta africana*, in Saadani are relatively shy so you will be lucky to catch a glimpse of one. The largest of the land mammals male adults grow up to 3 m tall and weigh up to 6 tons. Grown females are a bit smaller, but at up to 3.5 tons not to be taken easily. Elephants are mixed feeders, feeding on grasses and herbs in the rainy season and consuming a higher proportion of woody plants in the dry season. In Saadani they like the taste of coconut palms and will occasionally enter a villager's coconut plantation. The damage a few animals can inflict in a very short time does not make them popular with the plantation owners. Generally the elephants in the Saadani ecosystem and adjacent areas follow the rains so that when water becomes available in the Reserve they too reappear. About 50 elephants are estimated to live in the Saadani ecosystem, mainly in the North.

The common **hippopotamus**, *Hippopotamus amphibius*, lives in the Wami River to the South of the Saadani Protected Area. Hippos live 35 to 50 years during which time males reach a height of 165cm and a weight of up to 3.2 tons. The females are smaller, weighing up to 2 tons. During the daytime hippos prefer to stay submerged in water or lie on sandbanks in a gregarious fashion. They can remain submerged for up to six minutes and will often reappear with a huge snorting ``laugh``. At night they come ashore and wander inland to graze individually, except for females with young who will forage together. A hippo can consume up to 40 kg of grass a night – however this is not so much when one considers their size. The bulls fight each other quite frequently for control of sections of the river and females. Groups of up to 35 hippos have been seen resting on the banks of the Wami.

Panthera leo, the **lion** is also found in Saadani. They are the largest of the African carnivores, adapted to catch mammals such as wildebeest, zebra and buffalo. Many attacks on prey animals are unsuccessful.

The size of a pride's territory will depend on the amount of available prey therein. A pride of lions consists of females and their cubs with the male lions joining a family for several months or years, until other males force them out. Fights between male lions are common, sometimes causing the death of the loser.

Female lions do most of the hunting, but the males will take over the prey and fill their stomachs first. Young lions are the last in the hierarchy to feed from a carcass and when prey animals are scarce, cubs may starve because the older ones, including their mothers, leave them nothing to eat. Cubs can also die because they are deserted by their mothers or killed by males who have recently taken over the pride as part of the male reproductive strategy. Occasionally hyenas will kill a lion cub, but otherwise they have no natural enemies apart from man.

Lions are less popular with the people living around the Reserve than they are with tourists. Sometimes lions successfully preying on livestock have to be shot in areas outside the Reserve. As a whole Tanzania has to account for 200 to 300 human deaths from wild animals annually, another proof of the great sacrifice made by the country for conservation. Fortunately, no casualties have occurred in Saadani in recent years although humans and lions live in close proximity and lions sometimes feed on the goats grazing near Saadani village. Utmost care is advised with all dangerous game, in particular if the visitor is on foot.

Leopards, *Panthera pardus*, are said to occur in the Zaraninge Forest Reserve and probably live in the Reserve as well. Seldom seen this beautiful animal is mainly nocturnal. Leopards are well adapted to many of Saadani's habitats but prefer dense bush and thickets. They can live in close proximity to humans. Being very efficient solitary hunters, leopards can kill any mammal up to the size of a bushbuck. They also eat fish, insects and birds. Often they will haul their kill up into the branches of a tree and return for feeding. Scratches in the bark show the attentive eye that they are around.

The spotted **hyena**, *Crocuta crocuta*, has two activity peaks: Around dusk and around dawn. When possible the hyena will scavenge and when hunting will go for the most easily available prey. Hyenas can reach a speed of up to 60 km/h and can follow their prey over many kilometers. They are almost entirely carnivorous. In comparison to other carnivores it is a very efficient eater, consuming its prey almost entirely leaving only rumen contents and horn bosses of big antelopes. A good observer can spot them during the day resting in a bush, a ditch or the shade of a tree. Since the time of Aristotle it was incorrectly believed that hyenas were hermaphrodites, having both male and female organs. Their sexual organs are identical until puberty and it is difficult to differentiate between adult males and females at a distance. They live in large female dominated clans and, in the case of the spotted hyena, mothers provide for their own cubs only. The hyena's whooping call is a sound typically associated with nights in the African bush and has sent a shiver down many a visitor's spine! The hyena however is very rare in Saadani.

Smaller carnivores occurring in Saadani include the **genet** (*Genetta* spp). A small cat with rows of spots and black and white stripy tails, genets live both on trees and on the ground. Nocturnal they are especially active in moonlight and when hunting will also wait in ambush for their prey: This ranges from bush babies to snakes to grasshoppers. Civets are slightly larger. Their favourite food includes snails. Both are predominantly nocturnal.

The **civet**, *Civettictis civetta*, too occurs. Its feeding habits are omnivorous. A sedentary species with regular habits the civet is nocturnal, solitary and territorial. "Civetries", dung middens, mark boundaries of neighbouring areas. When hunting a civet searches out hiding prey, which is captured using the jaws. In cases where dangerous prey is caught, such as snakes, civets will leap out of the way of retaliation darting in and out until the final "death shake" has finished off the prey.

Wild dogs, *Lycaon pictus*, and **cheetahs**, *Acinonyx jubatus*, have not been observed in Saadani in recent years.

The Saadani Game Reserve is home to a couple of herds of black **buffalo**, *Syncerus caffer caffer*. These live in large herds of females and young with a coherent social organisation. An individual's location within the herd is an indication of its social status. Dominant animals stay at the front of the herd with better access to food and are usually the larger animals or cows with calves. While she is breeding, a female might improve her location within the herd, but may then have to return to the rear after weaning her calf. A large herd offers the best protection against predators.

Solitary or small groups of bulls run a higher risk of attack from lions, who are the buffalos main enemies. Old bulls normally stay with the herd only temporarily during breeding, as they quickly lose condition when mating and fighting with other males. They leave the herd to regain weight and improve their condition again before rejoining.

Both sexes carry horns and sometimes those of the females are wider than those of the males. However, as female horns are usually slimmer and the „boss“ not so pronounced, they can easily be differentiated from the males. Buffalo feed mainly on grass, but as they have the most efficient digestive system of all the East African herbivores, they are adaptable and can also subsist on fibrous plants which other grazers cannot digest.

Before the turn of the century, the buffalo nearly died out due to an epidemic of rinderpest. It was transmitted from domestic cattle brought to Eritrea by the Italians for their Ethiopia campaign. The epidemic swept through the whole of Africa from the North to South and decimated buffaloes and antelopes. About 400 buffalo are estimated to live in the Saadani ecosystem.

The Liechtenstein's **hartebeest**, *Alcelaphus lichtensteinii*, can be observed relatively frequently in the Reserve. It favours drainage-line grasslands in Miombo woodlands as habitat, ideally containing at least two plant communities, access to water and firm footage. The horns of this hartebeest differ from all others and so make it easily identifiable. They are shaped like the letter „S“ and are relatively thick and short when compared to the horns of other hartebeest. They usually live in small herds of less than 15 animals and it is thought female Liechtenstein's hartebeest live in harems on the territory of a single male, especially in marginal habitats. Projected population estimations for the Saadani Protected Area from March 1999 estimate the population of hartebeest at about 1000 individuals.

The Saadani ecosystem has a small population of **sable** antelope, *Hippotragus niger roosevelti*. Sable are up to 140 cm in height. Males weigh up to 263 kg and have a brown to black fur differentiating them from the chestnut coloured females. These weigh up to 232 kg. Both sexes have long backward curving horns which can reach a length of 154 cm in some sable species, whereby *H. n. roosevelti* has the shortest horns. Sable are gregarious and live in herds, which are larger in the dry season when water is limiting and which break up into smaller groups when more water and fodder are available.

Regional differences in sable populations are seen in animal and horn sizes, colouration and facial markings and are thought due to competitive pressures within their favoured habitat, the miombo woodlands. Other sable groupings are found in Southern and Western Africa. About every fifth individual of sable populations in Western and Central Tanzania belongs to the Southern African Sable, thought to have migrated northwards. In these mixed populations up to 18% of the mother genes can differ from individual to individual, without apparent differences in phenology – the greatest difference in genes found in mammals to date.

Recent genetic research conducted by the Berlin based Institute for Zoo and Wildlife Research on behalf of the Wildlife Division and the Saadani Conservation and Development Programme has shown that the Saadani sable as well as the Selous sable right down to the Mozambican border too belong to *Hippotragus niger* subspecies *roosevelti*. This beautiful animal got its name following a hunting expedition of President Theodore Roosevelt and his son Kermit to Africa. Upon return to the US their collection was sent to the Smithsonian Institute where the zoologist Edmund Heller first described the newly found subspecies *Hippotragus niger roosevelti*. These had, until this discovery was made, been regarded as highly endangered. Only about a 120 individuals had been considered to have survived in the Kenyan Shimba Hills. The subspecies has now been taken off the Red List.

In Saadani they occur mainly in and to the West of Mkwaja South. The population is estimated to be between a 100 to 200 head strong in Saadani. The Roosevelt's sable are smaller and slightly lighter in colour than the common *Hippotragus niger kirkii* sable in Central and Western Tanzania, and also have shorter horns.

Eland, *Tragelaphus (Tragoutragus) oryx*, are the largest of all the antelopes with the adult bulls weighing up to 900 kg and the females up to about 450 kg. Despite their size and weight they are magnificent jumpers, leaping more than two meters even from a standing position. They are gregarious creatures, moving around in herds of sometimes up to a hundred animals. Bulls are greyish in colour, particularly when they get older, the females are a light brown. Eland are adapted to most habitats, only avoiding dense forest. In Saadani their number is estimated to be around a hundred.

Eastern Bohor **reedbuck**, *Redunca redunca*, can frequently be seen in the Saadani Game Reserve. They are medium-sized antelopes, yellow-brown in colour above, white on the underside and who have a bare spot, a scent gland, below each ear. Only the males, who are larger in size than the females, have horns, which are ringed and curve forward. Their preferred habitat is in reed beds near swamps, floodplains and drainage-line grassland where they can seek shelter in the long grass. Depending on the prevalent conditions the Bohor Reedbuck is either polygynous in habit, ie one male will look after several (on average one to five) females, or monogamous, the latter especially in Savanna lands. In times of draught or fires they concentrate near water holes and areas where sufficient grass cover remains.

Bushbuck, *Tragelaphus scriptus*, are forest dwelling solitary antelopes. The horn bearing males are up to 1 m in height, the females are up to 85 cm tall. They are mainly nocturnal, solitary and hide by day in dense bushland alongside rivers and lakes. Their colour is reddish brown with vertical white bands and white spots on the flanks. They emit a loud alarm bark and live either singly or, in case of females with offspring or subadults, in pairs or small groups. Bushbuck feed mainly on herbs, shrubby legumes and fruit.

Red duiker, *Cephalophus* sp, occur in the Saadani ecosystem. Small, reddy-brown antelopes with a rounded back, stronger and longer hind- than forelegs and a crest

of hair almost concealing short horns red duiker tend to seek cover in dense bush and forest. Their build allows them to get through dense undergrowth easily. Duikers differ from all other antelopes in the form of their preorbital glands which can be seen as large swellings on the cheeks.

The duiker tribe, the Cephalophini, has specialized on eating fallen fruit reducing competition in Saadani to the bushpig. The Cephalophini show great evolutionary radiation: The „red duiker complex“, viz Estes, 1991, alone contains the very rare Ader's duiker, *C. adersi*, and Harvey's duiker, *C. natalensis harveyi*, as well as Peter's duiker, *C. callipygus*, and the red duiker, *C. natalensis*. Both the latter are considered to possibly be superspecies. Verification of DNA is underway to establish the identity of the Saadani red duiker.

A plains' animal the **Eastern White-bearded wildebeest**, *Connochaetes taurinus albojubatus*, are large antelopes with long white beards and short inward pointing horns best known for their migrations in the Serengeti Region. Roughly 140cm tall and weighing 200+ kg wildebeest species vary in colouration from grey-blue to tan with *C. t. albojubatus* being the lightest variation. Wildebeest tend to form herds of cows and bachelor herds. Calves are able to run within 6 minutes of being born should this be required, the long beard of the mother animal occasionally serving as cover. Mothers recognize their calves by means of scent and will not adopt calves other than their own.

The **common waterbuck**, *Kobus ellipsiprymnus*, occur. Brown in colour it has a white ring-shaped marking on the rump. Standing up to 127 cm tall, whereby the females are slightly smaller, the males have forward curving horns which may be up to 99 cm long. The hornless females resemble the red deer of Europe in appearance. Waterbuck are extremely dependent on water. They live in semiclosed herds whereby a male will tolerate bachelor males on his territory next to his herd of females.

Impala, *Aepyceros melampus*, appear to be absent from the Saadani ecosystem. This is remarkable insofar as the habitat would not seem to rule out the possibility of their presence and they occur in large numbers further upriver of the Wami. A German colonial memorandum on wildlife of the year 1911 states that impala were common everywhere in Bagamoyo District. The apparent absence of the impala from a seemingly suitable habitat warrants investigation. One suggestion by Milevski, 1993, has been that reedbuck and bushbuck together cover the same dietary range and habitat as the impala, hence outcompeting it in the Saadani ecosystem. This is however not very convincing, as in other habitats such as the Northern Selous all three species occur together in high numbers.

Plains zebra, *Equus burchelli*, too are found in the Reserve. Members of the horse family, their bold black and white stripes serve as excellent camouflage by breaking up their outline. Generally zebra return to the same watering place on a daily basis, travelling no further than 13 km away from this. They feed on coarse, fibrous grasses which are broken down quickly in the rumen and assimilated. As however their food is less nutritive they have to spend 60 % to 80 % of their time awake feeding. Stallions of this species look after 2-5 females.

The **giraffe**, *Giraffa camelopardalis*, is the national symbol of Tanzania. The tallest animal in today's world, their characteristic long necks allow them to browse tall trees using tongues especially adapted for selective browsing. The giraffes horns are formed of cartilage from a layer of skin and only fuse to the skull later. Giraffes are nonterritorial, forming open herds, often also „kindergardens“, groups of young looked after by one adult giraffe.

Giraffe have a gliding gait and Masai giraffe, *G. c. tippelskirchii*, can often be seen amongst the acacia trees in the Southern part of the game Reserve and around Saadani village. They defend themselves against predators by kicking. Further they have excellent eyesight and can run very fast. These factors combine to make adult giraffes virtually immune to predation.

Warthogs, *Phacochoerus aethiopicus*, are diurnal animals and are frequently seen running with their tails up, or kneeling on their front legs, feeding on short grass, roots and fruits. In Saadani Game Reserve they are extremely common. This could be evidence of the Islamic belief of the populations around the Reserve who may be poachers, but would not touch a warthog or bushpig since these, as members of the Suidae are considered extremely unclean, *haram*, animals by Muslims. A warthog's eyesight is poor, so when approached they often take a couple of steps towards the observer before deciding on what to do. Their sense of scent and hearing are well developed. They require water daily and so never move far away from it. Often they spend the night in abandoned aardvark holes. With a bit of experience, one is able to differentiate between the males and the females, as the latter do not develop warts below their eyes. Old males can grow enormous tusks, which are used as formidable weapons against predators.

Bushpigs, *Potamochoerus porcus*, on the other hand though very common in Saadani are rarely seen because they are mainly nocturnal and prefer to rest during the day in dense thickets close to rivers or wet areas. Individuals can weigh up to 80 kgs. They are brownish in colour, with white markings on the head and a white mane down the back. They resemble the European wild boar. As with all the pigs, they feed on anything they find, such as roots, wild fruits, eggs, insects or meat.

The **yellow baboon**, *Papio cynocephalus cynocephalus*, the **vervet monkey**, *Cercopithecus aethiopicus*, and the **blue** or **sykes monkey**, *Cercopithecus mitis*, all occur in the Reserve and the neighbouring Zaraninge Forest. After the first rains baboons can often be observed sitting in open grasslands munching on the fresh roots and shoots. Vervet monkeys can frequently be observed amongst the *Acacia zanzibarica* trees. They have a more delicate build, a small black face rimmed by grey fur and a long tail. The blue monkey has a more feline look and darker fur. It can be glimpsed balancing high up in the big evergreen trees of the Zaraninge Forest.

In Saadani Game Reserve the impressive **black and white colobus**, *Colobus guereza*, too can be found moving from tree to tree in family groups. They live in small territories and subsist mainly on leaves, unlike most other monkeys. Black and white colobus tend to specialize on feeding mainly from just one common tree species. They communicate by means of six types of calls, defending and indicating territorial boundaries with displays of jumps.

If you are interested, ask your guide to take you to places where they are known to occur, such as along the Wami River.

Reptiles

The Wami River in the South is home to the **nile crocodile**, *Crocodilus niloticus*. Thought to be the second oldest reptile order after the tuatara, the crocodylian order encompasses the largest reptiles in the world. Three families – Gavialidae, Alligatoridae and Crocodylidae – containing 22 living species represent the order today, amongst them the nile crocodile which grows to a size of up to 12 foot in length. The same as amphibians and fish, reptiles are poikilothermic, ie cold

blooded terrestrial vertebrates. Unlike modern reptiles crocodilians have completely four chambered hearts as found in mammals. A further trait uncommon in other reptiles is the fact that crocodiles care for their young.

Crocodiles live mostly on fish. They will however also prey upon smaller and even larger animals when these come to the river to drink. Crocodiles lying in shallow water and on river banks are easily mistaken for dead trees. Be very careful if walking by a river and keep a safe distance from the water. A crocodile will swim as close as it can to a possible victim and the ensuing attack is powerful and fast. The victim is flicked in by a stroke of the powerful tail and then drowned or torn apart by a couple of crocodiles spinning their bodies in the water. On land crocodiles walk with their entire body clear off the ground and can move at high speed if necessary. Many human deaths and losses of limbs result from crocodile attacks, especially in areas where settlements are situated on the banks of large rivers.

Crocodiles have always been equated with evil and some of the early European explorers boasted in their books of shooting them by the dozen to relieve mankind of a pest. They are, however, social animals who care for their offspring. After laying and burying the eggs in the sand the female guards them until they are ready to hatch. She then excavates the hatchlings and carries them in her mouth to the water, where they are watched over for up to three months. The same jaws that can twist off the hind leg of a buffalo carcass can carry a tiny soft baby crocodile without so much as a scratch.

Nightcounts conducted upriver starting at the mouth of the Wami River have shown approximately 10 crocodiles per km for the first few kilometers of freshwater. Absolute figures however can be expected to be a lot higher as only part of the population will have been observed.

The Green Turtle

The most common of turtles coming to Tanzania and Saadani to nest is the Green Turtle, the largest of the hard-shelled sea turtles. The Green Turtle gets its name from the colour of its fat. They come to the beaches to lay their eggs. However this is not without its hazards: First the mother turtle needs to reach the beach, past the nets of prawn trawlers, fishing boats and men. Then the site where the eggs were deposited needs to remain undetected: Predators such as civets, mongoose and crabs as well as local people walking from one village to the next along the coast look upon their eggs as a delicacy. A sought after source of highly proteinaceous meat and eggs to the local population, the Green Turtles, *Chelonia mydas*, are eaten by the predominantly Muslim coastal community even though these, the same as the Suidae, are *harâm*, ie islamically prohibited. Finally, having escaped predation and collection, the young hatchlings must get back out to see past all the dangers the mother avoided on her way to the beach.

First however let's take a look at the turtles themselves, their biology and habitats.

What Does the Green Turtle Look Like?

The Green Turtle grows to about 120 cm in length and can weigh up to 200 kg. The turtle's carapace, the hard shell, protects the turtle from predators. The head is rounded in front and can be up to 15 cm wide and has a single pair of large, rectangular pre-frontal scales just above the nostrils distinguishing *Ch. mydas* from other species. Each of the Green Turtle's flippers, ie limbs, normally only has one claw, sometimes two. They use their fore flippers to swim, motioning these up and down like birdwings, and their hind flippers for stabilization and direction. Adult male turtles have larger front flippers than the females. Black in colour dorsally and white

beneath as hatchlings, adults are generally brownish above and yellowish underneath. Individual weights of up to 230 kg have been recorded. The width of their tracks left on breeding beaches is between 100 and 130 cm on average. Hereby the tracks are deeply cut with symmetrical diagonal markings made by the forelimbs with a straight tail drag mark running along the center. Turtles can see well under water, are thought to have a very good sense of smell, react to low frequency sounds and like other marine animals have glands to remove salt superfluous to their system.

Distribution and Status

The Green Turtle occurs in all sub-tropical and tropical seas. Marine organisms which have been around for hundreds of millions of years, turtle abundance in the world's oceans has decreased tremendously from population numbers in the millions in former centuries. Overall turtles are not considered to be gregarious animals.

Now all seven species feature on the IUCN Red List of Threatened Animals, with the Green Turtle listed as Endangered.

Lifecycle

Each of the seven species of turtles – or eight if the Black Turtle or Eastern Pacific Green Turtle, *Chelonia agassizii*, is considered a separate species - show migratory behaviour and an extraordinary sense of direction allowing them to return to the precise spot of their hatching. Distances covered during migration can be in the thousands of kilometers.

The migratory behaviour for the Green Turtle can be summarized as follows: Young hatch from soft shelled eggs which have been deposited and buried by the mother turtles above the high tide line in suitable beaches. The female digs herself a body pit before laying a clutch of about 110 to 130 eggs, 4 to 4.6 cm in diameter into the egg chamber which she has dug about 60 cm deep in the sand. Afterwards the mother turtle may spend considerable time making false burial marks and throwing sand around on the beach in order to confuse predators. She will return usually three times to the beach at an interval of roughly two weeks and will deposit two to five clutches of eggs. The sex of the hatchlings is determined by temperature of the egg during incubation. Higher temperatures result in more female hatchlings. The period between each successful laying of eggs and the next attempt to do so is the „inter-nesting interval“, whereas the period between nesting periods is called „remigration interval“ and lasts about 3 to 4 years.

The hatchlings emerge after an incubation period of 50 to 60 days, pushing up through the sand and emerging at dusk. In the darkness they then come out and rush for the sea. Upon hatching the hatchlings leave the nesting beach and begin an open ocean phase. This phase can last for several years before moving to shallower waters. Here the still immature turtles may move from one specific feeding ground to the next depending. Moving to the next „developmental habitat“ appears related to the size of the young turtles. However information on how long individuals / species remain in one area of the sea prior to moving on is scarce.

Adult turtles have their own feeding areas: Places rich in jelly fish or seagrass beds and algae, whereby the Green Turtle is the only herbivorous of the seven species. Hereby the turtles are thought to play an important role in nutrient cycling as they feed in nutrient rich areas, encouraging growth in these, and then return to more typically nutrient poor coastal habitats to nest.

The turtles further appear to have specific internesting areas for courting and mating, so-called „breeding stations“ in proximity of the breeding beaches. During the

reproductive season both male and female adult animals move to the internesting area. Females nest more than once per year. Long-lived organisms with a life span of up to 200 years, first reproduction is delayed. In the wild Green Turtle females lay their first eggs at the age of around 15 years – but some only reach sexual maturity at the age of 50 – and remain reproductive for about 20 years. For environmental reasons not well understood numbers of females returning to lay eggs vary greatly between years. Local variations of nesting season of the Green Turtles along the East African coast, which is generally in the period of March to June, may follow the patterns of the monsoons.

Nesting Site Requirements

Preferred nesting habitats have an open offshore approach as is given in Saadani and range from large, open beaches to small cove beaches both on mainland and islands. Hereby Maziwi Island off the shore of Pangani to the North-east of Saadani used to provide an important hatching site for the turtles, holding on average 200 out of an estimated 300 nests along this part of the coast. However this in the 1980s eroded and became submerged by the sea.

Threats

Trawlers, gill nets, dredging, oil and mineral exploration, pollution of the seas as well as intentional and accidental capture threaten the future of turtles worldwide. In Saadani the Green Turtles, and also incidentally the livelihoods of the fishermen in the villages, are threatened by the prawn trawlers operating off the Saadani coastline. These operate without Turtle Excluder Devices, „TEDs“: Panels of large mesh webbing in front of the shrimp nets. By-catch, including turtles, are thus prevented from being caught in the actual prawn catching nets and are deflected out of an escape hatch.

Capture of nesting females and the raiding of turtle egg nests constitutes the other big threat to turtles in Saadani. If you are fortunate enough to witness a female turtle come out to lay eggs you may wish to watch her or ensure someone reliable watches her until she has returned safely to sea. You may wish to contact the rangers at Madete Beach so they can ensure safe incubation and hatching of the next turtle generation.

Rubbish from passing ships may cause a turtle to choke to death and / or drown.

So, What is Being Done in Saadani to Help the Green Turtle?

In 1993 a **Green Turtle** Conservation Project was established at Madete beach 13 km south of Mkwaja village, just south of the Sima River, by the Fox family. Madete beach appears to be the preferred hatching site for the turtles between Dar Es Salaam and the Kenyan coast. Here for several years a hatchery successfully supervised the hatching of young turtles and their return to the sea. Though it is best to leave turtles to hatch from where they were laid, the twice daily collection of the eggs under the programme ensured the survival of the young by reducing collection by villagers. Between 1993 and 1999 a total of 9630 eggs were collected and 8147 hatchlings returned to sea.

The Birds and Their Habitat

On the Shore

In Saadani Game Reserve many marine and fresh water birds can be observed fishing along the shores of the Indian Ocean feeding on fish, crustaceans and algae. Some, such as the **Woolly Necked Stork**, *Ciconia episcopus microscelis*, which is a glossy black stork with a white ruffled neck, will patiently follow fishermen when these return to shore with their nets. **Grey Herons** can be observed standing motionless, up to 1m tall: A diurnal feeder *Ardea cinerea cinerea* has grey upperparts and a black line along either side of the head and plume and is often seen hunting along the shore. Other waders of the Ardeidae family present in Saadani include the **Di-morphic Egret**, *Egretta (garzetta) dimorpha*, a medium sized egret which only occurs in coastal areas. White and dark representatives exist of which the latter are more common and is a darkish egret with white chin and upper throat. This species is sometimes considered to belong to that of the **Little Egret**, *Egretta garzetta*, an entirely white, small egret with black legs and yellow feet also encountered in the area. The feet help distinguish it from the **Great White Egret**, *Casmerodius albus melanorhynchos*, which has black feet and is about the same size as the Grey Heron. White in colour it has a yellow bill which turns black in the breeding season just as its yellow eyes turn red.

The olivebrown **Common Sand Piper**, *Actitis hypoleucos*, a palearctic wader and seasonal visitor to Saadani. A solitary bird, it can be seen teetering along the shoreline.

Species present further include the **Yellow Billed Stork**, *Mycteria ibis*, which has a yellow bill, red face and white feathers and the **Openbill Stork**, *Anastomus lamelligerus*, all black with a bill which when seen from the side shows a gap. **Pied crows** too live in Saadani and can often be observed scouring the beach for edible things brought ashore by the tide.

The **Palmnut Vulture** also known as Vulturine Fisheagle, *Gypohierax angolensis*, with the characteristic big white markings on the underside of their wings when seen in flight feeds on dead fish or the fruit of oil palms. It can be observed along the shore as can **Yellow-billed kites**, with angular wings and forked tail, and a variety of eagles.

The Mangrove Forests

Mangroves trees are salt tolerant and evergreen. They form tidal forests which grow in the transitional zone below the high water level of spring tides and above the mean low water level. The trees grow to a height of roughly 3 meters and have characteristic thick, rubbery leaves adapted to water conservation in the saline environment as their roots get inundated by sea and brackish water depending on the tide. Depending on species of mangrove, the trees have butt roots or so-called knee roots rising in arches from the underlying silt. Young shoots grow from propagules, ie long seeds, which remain stuck upright in the mud upon falling from the mother tree.

Mangrove forests provide a resting and feeding place for many bird species, bats, monkeys, hippos and wild pigs. They are also utilized by humans, primarily for construction poles, dhow masts and firewood, especially to produce lime, salt and dried fish. According to the Forestry and Beekeeping Division mangrove forests cover about 7392 ha in Bagamoyo and Pangani Districts in 1991.

A close relative of the storks, the **Hamerkop**, *Scopus umbretta*, a medium sized reddish brown bird, whose crest shape gives it the name of „hammer head“ can frequently be seen fishing near watercourses and water holes in the Reserve. The

only member of the Scopidae, it builds huge nests in trees near water. **Pied** and **Malachite Kingfishers**, can be seen, the former hovering prior to dropping spear-like into the water in hunt of prey, the later a colourful flash darting across. **Spoonbills** too occur in the Saadani ecosystem and can be seen along the Wami River.

The Sandriver Inlets, Creeks, Salt Pans and Bare Saline Areas

Salt pans and bare saline areas cover about 4827 ha in Bagamoyo and Pangani Districts. Some of these are also located within the Saadani protected area. Characteristically they are stretches of sand and flimmering heat, of fatamorganas giving an illusion of water making the palmtrees float in the background, bordered by pink flowering desert roses.

At the Saltworks

The picturesque **Flamingo**, *Phoenicopterus* spp, with their pink and white plumage can be seen at the saltworks. Both the Greater and the Lesser Flamingo can be seen here. Tall and slender birds with webbed feet and beaks which are flattened above and bent downwards sharply at the middle. These they use as filters, pushing mud and water out with their tongues. Lesser Flamingo feed on algae and Greater Flamingo on invertebrates. Both species fly in V formation whereby the Greater Flamingo make goose-like sounds as opposed to the higher pitched „quirrik“ of the Lesser Flamingo.

In the Savannah and the Acacia Woodlands

The term savannah encompasses both grassland and open woodland. Further within Saadani Game Reserve there are areas of very dense Acacia woodland. These are mainly composed of *Acacia zanzibarica*, with a yellow bark and big round white thorny knobles.

In the areas of open country seed-eating birds are commonly found. As in the other habitats too a variety of „LBJs“, i. e. „Little Brown Jobs“, await the keen birder. More easily identifiable is the **Cattle Egret**, *Ardeola ibis*. A gregarious small egret slightly yellowy in colour the Cattle Egret is often found close to buffalo or elephants catching insects disturbed by these.

The **Collared Pratincole**, *Glareola pratincola*, is an insectivorous bird of the flat open country which breeds in the rains, as do many others, who in many cases change colouration such as the widow birds and bishops during this time. The **Temminck's Courser** too is found in Saadani.

The **African Broad-billed Roller**, *Eurestomus glaucutus*, also known as the Cinnamon Roller likes perching on tall trees. Predominantly orangey-red in colouration it has a broad yellow bill. Often it can be located by its hoarse call. The colourful **Lilac-breasted Roller**, *Coracias caudata*, which feeds on large insects and lizards is found in the Acacia woodlands and individuals are also usually seen perched on a vantage point. The bird life of Saadani further includes the **Fork-tailed Drongo**, a black and shrike-like bird which catches prey insects in flight before returning to perch. **Crested Frankolins**, **Red necked Spurfowl** and **Guineafowl** too occur.

Scimitar-bills can be seen: Their long, narrow, downward curving bill gives them their name. **Green Wood-hoopoes**, *Phoeniculus purpureus*, slender dark birds with white dots on their wings and a scimitar-like beak bright red in adults may be glimpsed flying between trees or snaking their way up a tree's trunk in pursuit of

prey. To escape detection from the observer they tend to seek the far side of the trunk or branch.

Bucorvus leadbeateri, the **Southern Ground Hornbill** is mainly terrestrial in habit. Big black birds with red and blue facial colours Ground Hornbills travel in groups consisting of a dominant male and his partner, usually accompanied by juveniles or adult relatives which assist in feeding young birds. Upon take-off and in flight their white wing tips are well visible. The Ground Hornbill feeds on insects but also on small reptiles and mammals. The **African Grey Hornbill**, *Tockus nasutus*, is an omnivorous bird with a large bill characteristic of the Bucerotidae. As its name says this species is tawny brown to grey in colour. It can often be heard calling and can be observed flying from one group of bushes to the next frequently. In many species of hornbill the female gets built into the nest by the male in the breeding season and is fed by him through a small opening in the nest wall. Upon moulting which takes about a month the female leaves the chicks to reseat themselves in the nest with excrement.

Colonies of **Village Weavers** can be found in the west of the Reserve and occasionally a **Secretary Bird**, *Sagittarius serpentarius*, striding in search of food is encountered. A large grey bird with long feathers reminiscent of pens stuck into a scribes coiffure in days gone by it feeds on insects, rodents and reptiles, the latter which it stamps to death.

Occasionally a **Chanting Goshawk**, can be observed flying between the open stands of trees as can **Dickinson's Kestrel**, *Falco dickinsoni*. The **White-backed Vulture**, *Gyps bengalensis*, can be observed rising on the thermals, soaring high in order to get a good view. It is easily recognized by the white triangle visible on its rump while in flight. **Bateleur Eagles**, *Terathopius ecaudatus*, and the **Southern Banded Snake Eagle**, *Circaetus fasciolatus*, a stocky brown eagle with narrow bars across its underparts and four dark bands across the tail – as opposed to the rarer Banded Snake Eagle, *Circaetus cinerascens*, which only has a single broad white band across a shorter tail, can be seen. **White-headed Vultures** and **Martial Eagles**, who prey on carrion and small reptiles, have been observed as have the **Long-crested Eagle**, *Lophaetus occipitalis* and the **African Crowned Eagle**, *Stephanoaetus coronatus*. Both of the latter are well described by their name: The former is an eagle of dark, almost black, brown colouration with several long feathers at the back of its head, the Crowned Eagle is lighter in colour its head giving a square impression due to short feathers apparently crowning its head.

Namaqua Doves, *Oena c. capensis*, **Emerald Spotted Wood Doves**, *Turtur chalcospilos*, **Blue-naped Mousebirds**, *Urocolius macrourus* and **Speckled Mousebirds**, *Colius striatus*, are all found in the Reserve. As is the **Mombasa Woodpecker**, *Campethera mombassica*, easily thought to be the Goldentailed Woodpecker, *Campethera abingoni*, which occurs in the West, eg Serengeti and Arusha National Parks. *C. mombassica* is relatively common in coastal forests. Golden-green above it is yellowy with dark streaks below with a dull yellow tail barred with brown stripes across. Males have red on their crown feathers and the back of their neck as well as red and black malar stripes. Further the colourful **Little Bee-eater**, *Merops pusillus*, a small green bee-eater with yellow throat patch and black eye stripe up to 16cm in size can often be observed. One of the most abundant of African bee-eaters the Little Bee-eater generally occurs in pairs or small family groupings in open country with scattered trees and bushes. Brown and green **East African Brown Parrots**, *Poicephalus m. matchiei*, occur in flocks. In this subspecies of the Meyer's Parrots adults have a yellow band across the crown and on the

shoulders distinguishing them from the Brown-headed Parrot and the greyish-brown of the head and upper breast is slightly darker than in *Poicephalus m. meyeri*. The parrots particularly like figs and acacia seeds and also feed on nuts and berries. Seen flying in small groups they can sometimes be located by their shrill screeching. At night they roost in hollows of tall trees close to water. During breeding from June through to December they will choose tall trees to nest in, often taking over the nesting-holes of woodpeckers and barbets.

Zaraninge Forest

Zaraninge or Kiono Forest as it is also known is home to birds of forest habitat. These are often frugivorous, i.e. fruit eating. Birds reported from Zaraninge Forest include the **Silvery-cheeked Hornbill**, *Bycanistes brevis*. A black and white bird with a big conspicuous pale yellow beak it has silver tipped feathers on the side of its face giving it its name. The **Eurasian Hobby**, *Falco subbuteo*, too is said to frequent the forest. *Pogoniulus leuconystax*, the **Moustached Green Tinkerbird**, has been reported present as have the **Black Roughwing**, the **Zitting Cisticola** also known as Fantailed Warbler, *Cisticola junadis uropygialis* and the **Black-throated Wattle-eye**, *Platysteira peltata*. **Amethyst Sunbirds**, *Nectarinia amethystina*, black with a brilliant blue green head, red throat and shoulders, flash through the canopy.

The Coastal Thickets

Close to the shore the soils are predominately sandy and coralline supporting low shrubs and some trees. The soils moisture holding capacity is low and some areas are extremely alkaline. They are in part poorly due to the occurrence of a hard subsoil. In the thickets you may see the **White-browed Senegal Coucal**, a medium sized bird, black, beige and copper in colour known as the „Waterbottle bird“ for its song which sounds remarkably like a bottle being emptied of water, flit from bush to bush.

Amongst other colourful birds a patient observer can see if he quietly watches is the **Red-cheeked Cordonbleu**, *Uraeginthus bengalus*, a small blue bird with red cheeks, usually seen in flocks looking for seeds on the ground, as are **Red-billed Firefinches** and **House Sparrows**.

By the Dams

To the North of the Reserve a lot of dams remain from the former cattle ranch. Here **White-faced Whistling Ducks**, **Hadada Ibis** and **African Jacana**, also known as Lily Trotters can be observed. The **Goliath Heron**, *Ardea goliath*, is recognizable by its size, and further differs from the grey heron in having a rufous brown head, neck and shoulders. *Ardeola idae*, the **Madagascar Squacco Heron**, is a medium sized bird ca 40 cm tall of a squat appearance, white below with a yellow neck with dark streaks and brown wings.

African Fish Eagle, white and copper in colour, regally perch on trees and bushes around the dams, throwing back their head to emit one of the haunting sounds of Africa. Here the call too of **Diederick's Cuckoo**: „Dee-dee-deederik!“ can frequently be heard.

● How to Get There

Saadani Game Reserve is located roughly 45 km if measured in a straight line from Bagamoyo. However in order to cross the Wami a 150 km detour has to be made

via Msata. Dar is about 200 km from Saadani, Pangani roughly 75 km. Zanzibar is circa 40 km, a 3 ½ hour boat ride away.

Travel **by boat** from the island is however currently not an option for foreigners. Customs regulations on Zanzibar discourage direct commuting to the island as do concerns for the safety of tourists.

To get to Saadani from Dar Es Salaam **by road** there are two possibilities:

- Either the tarmac road to Chalinze and then on the Chalinze-Tanga road about 30 km as far as Manderu village about 2 km after crossing the Wami River. At Manderu there is a signpost on your righthand side when coming from Chalinze indicating the dirt road to Saadani. From Manderu it is 58 km, approximately 1 ½ to 2 hours drive, to Saadani village.
- The second option is to drive via Bagamoyo. The road to Bagamoyo is tarred most of the way. It takes a good hour to reach Bagamoyo from where it is another 60 km on a good dirt road to the Chalinze-Tanga road. On reaching the Chalinze-Tanga road follow the road north across the Wami and follow the instructions as for the first route from Dar. Please note that the direct connection which previously existed between Bagamoyo and Saadani has been closed due to the defunct Wami River ferry. This is currently under repair and may soon be open again.

Though going via Chalinze is slightly longer as far as actual travelling distance is concerned than going via Bagamoyo the travelling time is about 3 ½ to 4 hours to Saadani in both cases.

In the rainy season current infrastructure (dirt roads) make access from the main road and getting around within, the Reserve by car very difficult to impossible. This is especially the case in the lower lying areas in the 10 km radius around Saadani village due to black cotton soil, sandrivers and yellow sandy loam soils.

To get to Saadani from Tanga **by road** follow the road to Pangani. Take the ferry across the Pangani River and follow the old Bagamoyo road. This track will take you in a direct line past the Sakura sisal estates to the former Mkwaja Ranch. Do not turn West (right coming from Pangani) at the Ranch entrance sign but continue straight along. Pass through Mikocheni village. About 5 km before the village there is a graded road leading off to the right / West. Take this road (if it is in bad condition continue into Mkwaja village and cut across from there). Follow it for another 3 km and in a bend there is a smaller track leading off to the South sign posted „Saadani“. This track is the old Bagamoyo road which at about an hours drive (ca 30 km) leads directly to Saadani village.

You can also get to Saadani via Mkata, opposite the turn-off to Handeni on the main Tanga-Chalinze road. The track from Mkata takes you through the village of Kwamsisi and past Mkalamo to Mkwaja Ranch. The road leads you to Mkwaja Village on the coast. It is not recommended to use this road during the rainy season due to a lot of black cotton soil and slippery clays. In the bend in the road just prior to an old ranger post on your left (North) you will see the old Bagamoyo road leading south to Saadani.

The Original Saadani Experience run a scheduled car service on Fridays, Sundays and Wednesdays between Dar es Salaam and Saadani.

Direct **flights** from Zanzibar and Dar Es Salaam can be booked. For further details contact Tent With A View Safaris (see below) or any travel agent or charter company.

Park Fees in 2001 are \$12 per person per day for residents and \$20 per person per day for non-residents.

- **Where to Go**

In the Reserve itself there are a multitude of drives to be explored. We would recommend you take a gameguard along to assist you with routes and where to find the game. Drinking water, a spare tyre, jack, torch, matches, med kit and mosquito net are also things which should rate highly on the list of items carried along at all times when in the bush.

To see the South follow the Mandera-Saadani road west from Saadani village for about 5 km. Here a track crosses north to south. Turn south and follow this track through dense Acacia stands. In the dry season you are most likely to encounter game in this section of the Reserve, as the game moves south to the Wami River for water. Eventually you will emerge on a bigger road. Follow this to your left (the east) and upon reaching **Coastal Salts** either visit the **flamingo** on the salt pans or leave passing the school and take the track past the school to travel back to Saadani Village.

If on emerging you decide to turn right, the road will take you to Matipwili (= Wami) village. Either explore the village which has a larger market than Saadani or cross the railway line before reaching the railway station characterized by huge piles of salt and continue to the **Zaraninge Forest**. Stop at the WWF office for advice on where to find the **Nature Trail**. You can return to Saadani either by returning past Matipwili or by following the track right round to the road from Mandera to Saadani. Turn right here to return to the Reserve.

From Matipwili village it is also not far to the Wami River: Turn left before entering Matipwili and drive about 10 km east to the river. To see hippo and crocodile however a boat ride is recommended as the road takes you to where the old ferry is and usually there is not much game to be seen there.

Alternatively drive a loop to the North following the track which crosses the road leading from Saadani village to Mandera to the right. This drive includes crossing a sand river and can bring you back in a loop via some small water holes and the **Saadani airstrip** where waterbuck and other game can frequently be observed.

The **Original Saadani Experience** offer a **boat ride** which takes you down the coast and into the Wami river. This safari is highly recommended. **Foot safaris** are another possibility for exploring the Saadani Game Reserve. Enquire at the Reserve's head quarters or organize a foot safari through the Original Saadani Experience who further **offer visits to Saadani village**.

● **Where to Stay**

The Original Saadani Experience / Saadani Safari Lodge

The tented camp lies about 1 km to the North of Saadani village. Situated on the beach, the camp consists of tented bandas, with full bathroom facilities. At the centre of the camp is an attractive restaurant and bar, both with a view of the sea.

Behind the camp, overlooking a small waterhole is a treehouse. It is a lovely spot to enjoy a book or some tea while watching animals and birds come and go. In December 1999 the first luxury banda was opened.

The Original Saadani Experience can be contacted at the following address:

A Tent With A View Safaris Ltd.

P.O.Box 40525, Dar es Salaam

Tel: ++255-(0)741 323 318 Tel / Fax: ++255-(0)222 151 106

Email: tentview@intafrika.com

Web site: www.saadani.com

Saadani Village Camp Site

Currently under preparation there will shortly also be the possibility to camp at Saadani village. At a reasonable fee per head per night you will be supporting Saadani village as part of the Saadani Conservation and Development Programme. For information on camping in the village and a guide to the site ask at the Reserve Head Quarters on arrival. Please make sure you get receipts for any payments you make and that your payments are registered. If camping at the village you can ask the boys carting water to bring you some as well. For a little fee they will be very happy to oblige. At present it is advisable to travel self contained if you are planning on camping.

For the real experience have traditional Tanzanian tea with mandazi and chapati for breakfast in a tea house in the village. In the evenings little nibbles are sold by children outside the market. These include exciting things such as fingersized doughnut bake ware, *kashata* (coconut biscuits) and goatmilk biscuits.

Mbuyuni Beach

Another possibility is to follow the road from Saadani village north in the direction of Pangani as far as a sign post to Mbuyuni Kuu Beach. This is another site in preparation within a traditional fishing village by the Indian Ocean. Again traditional foods will be available within the settlement, but it is advisable to bring food, drink and tents as well as anything else you might require during your stay with you.

Zaranginge Forest Camp Site (Kiwandi Camp)

Turn off the Saadani – Mandera road outside the game Reserve following the local WWF signs for Zaranginge Forest. For directions to the camp site which is in the centre of the evergreen forest ask at the first WWF house. The main WWF office is about 20 minutes drive further along the track. There you can contact Mr Justo the Project Manager for further information, however it will mean retracing your steps. A nature trail is just being opened by the camp site in order to introduce the visitor to some of the endemic species. Proceeds from the camp site are to go to the neighbouring communities.

Note: Close your windows if you have air-conditioning or can bear the heat – there are several species of Tsetse flies out there to get you! But do not kill them, they are the best game wardens around.

• Saadani Alphabet – You will be tested on arrival! 😊

A

Ants
and wipe surfaces after use.

Always place food in airtight containers

Buffalos and elephants – Stay away from them, they are dangerous. Buying ivory or elephant hair bracelets is illegal in Tanzania. Do not get out of your vehicle within 200 meters of any wild animal and do not move more than 25 meters away from your vehicle unless accompanied by an armed game scout or an authorised guide.

B

Crocodiles

As above. Do not swim in the Wami River.

Dollars

Spend the Shilling equivalent of some of these in the villages adjacent to the Reserve and you will be increasing the local population's interest in conserving the Saadani ecosystem.

Entry

Reserve headquarters in Saadani

Please make sure to register and pay at the

village unless you are staying at the Tent with A View Saadani Safari Camp on

arrival.



- Fish Eat lots, you're at the coast. Best in coconut sauce or spicy tomato sauce.
- Hunting Illegal in a Game Reserve. Do not bring firearms or any other weapons into the Reserve.
- Immigration Currently it is not permitted for tourists to take a dhow from Zanzibar to the mainland. Check with immigration as there may be exceptions.
- Jelly fish Avoid them while swimming unless you are a fan.
- Korongu Ditch. Place you might find yourself in if you exceed the speedlimit of 50 km/h (30 mph). The recommended speed is 25 km/h for game viewing. Any accident involving injury to or death of an animal has to be reported at the first opportunity – of people too, of course! So please drive carefully.
- Litter Please do not throw things out of the window whilst travelling. If you are camping please burn paper and cardboard taking care not to start a bushfire. Take home any items made of plastic, metal or glass. Further do not light fires, discard burning cigarette ends or matches.
- Mangoes Delicious, available at Christmas time.
- Nudists Not allowed on the beaches. Bear in mind the sensibilities of the Muslim community and cover up.
- Off road driving – Not allowed. Do not encourage it, not even for that one better picture. It damages the environment as tracks stay for months. Please tell your driver you do not wish to leave the official tracks as he may feel under pressure to give you a better view.
- Photographs If taking pictures of people please make sure they do not mind. Generally they will be happy to have their picture taken if you are willing to send them a copy. Please keep your word, pictures are treasured for a long time. The animals in Saadani do not mind being photographed!
- Quantum theory, traffic jams and noisy neighbours – Forget about all that and relax.
- Rabies Do not stroke those lions and please leave your pets at home!
- Snakes Though most of these are harmless it is advisable to stay away from them. They will play dead so do not pick them up if found lying completely still. Do not kill them either.
- Tea Traditionally made with a lot of sugar. Sometimes milk and water are boiled together with ground cardamom.
- Ungulate Hooved animal.
- Virus Be aware of AIDS.
- Water Always carry water with you on safari, you never know when you might get stuck. Drink 3 to 4 liters of water a day.
- X-cellent That is how we wish your stay will be.
- Yodel Please refrain from loud parties, as noise should be kept to a minimum so as

not to disturb other visitors. Keeping quiet will also encourage animals to have confidence in man.

Zigua

Wazigua: Predominant local tribe.

Language: Kizigua.

• References

Alvarado, J. & Murphy, T. M. (1999) Nesting Periodicity and Internesting Behaviour. In: Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington

Baillie, J. & Groombridge, B. (1996) IUCN Red List of Threatened Animals. World Conservation Union (IUCN). Gland. Switzerland. In: Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington

Baldus, R. D. (1999) Where Wildlife Meets the Indian Ocean. Talking About Nature. Dar Es Salaam Guide, No 15. Dar Es Salaam. Tanzania

Baldus, R. D. (2001) Where the Bush Meets the Beach – Saadani Game Reserve Through the Eyes of an Artist. Dar Es Salaam Guide, No 23. Dar Es Salaam. Tanzania

Baldus, R. D.; Broska, D. & Roettcher, K. (2001) Saadani Game Reserve and Village. Tantravel. Vol 8, No 3. Dar Es Salaam. Tanzania

Burgess, N. (2000) The Biological Importance of Tanzania: Endemic Bird Areas. Miombo. Wildlife Conservation Society Tanzania. Dar Es Salaam. Tanzania

Carr, A., Carr, M. H. & Meylan, A. (1978) The Ecology and Migrations of Sea Turtles. The West Caribbean Green Turtle Colony. Bulletin of the American Museum of Natural History 162:1-46. In: Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington

Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington. USA

Estes, R. D. (1991) The Behavior Guide to African Mammals: Including Hoofed Mammals, Carnivores, Primates. University of California Press. Berkeley and Los Angeles, California. USA

Forestry and Beekeeping Division (1991) Mangrove Management Plan of Bagamoyo District. Management Plan for the Mangrove Ecosystem of Mainland Tanzania. Vol 3. NORAD. Ministry of Tourism, Natural Resources and Environment. Dar Es Salaam. Tanzania

Fox, B. (No Year) Mkwaja Ranch Green Turtle Conservation Project. Mimeo

Game sub-Division (1969) Annual Report of the Game sub-Division United Republic of Tanzania. National Printing Co. Ltd. Dar es Salaam. Tanzania

Glassman, J. (1994) Feasts and Riot. Revelry, Rebellion, and Popular Consciousness on the Swahili Coast, 1856 – 1888. Social History of Africa Series. Heinemann, Portsmouth, NH. James Curry, London. UK. E.A.E.P. Nairobi. Kenya. Mkuki na Nyota. Dar es Salaam. Tanzania

- Hofmann, R. R.; Pitra, Ch. & Lieckfieldt, D. (1999) Phylogenetische Differenzierung von Subpopulationen der Rappenantilope (*Hippotragus Niger*) in Ostafrika. With an English Foreword / Summary. SCP Discussion Paper No 25. Siege, L. & Baldus, R. D. (eds). Dar Es Salaam. Tanzania
- Howell, K. M. (1994) In: WWF (1998) Marine Turtles: Balancing Nature in the Deep. Spotlight on Endangered Species. Kakakuona / Tanzania Wildlife. Jul – Sep 1998
- Hussein, B. (1999) Saadani Game Reserve. The History of the Establishment of Saadani Game Reserve, Mimeo, Saadani Conservation and Development Programme. Dar Es Salaam. Tanzania
- Ilfie, J. (1979) A Modern History of Tanganyika. Cambridge. UK
- IUCN / SSC Turtle Specialist Group (1995) In: WWF (1998) Marine Turtles: Balancing Nature in the Deep. Spotlight on Endangered Species. Kakakuona / Tanzania Wildlife. Jul – Sep 1998
- Langton, T. (1999) Hell for Leatheries. BBC Wildlife. March 1999
- Martin, D. (2000) Ngorongoro, Tanzania. Land, People, History. Ngorongoro Conservation Area Authority and African Publishing Group (International), Harare. Zimbabwe
- Meylan, A. B. & Meylan, P. A. (1999) Introduction to the Evolution, Life History, and Biology of Sea Turtles. In: Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington. USA
- Milevski, A. V. (1993) The Saadani Ecosystem: A Preliminary Ecological Study and Project Proposal. Department of Zoology, Field Museum of Natural History. Chicago. USA
- Nurse, D. & Spear, Th. (1985) The Swahili – Reconstructing the History and Language of an African Society. Philadelphia. USA
- Olendo, D. (1994) Sea Turtles. Swara. July – August 1994
- People and the Planet (No Year) In: WWF (1998) Marine Turtles: Balancing Nature in the Deep. Spotlight on Endangered Species. Kakakuona / Tanzania Wildlife. Jul – Sep 1998
- Pritchard, P. C. H. & Mortimer, J. A. (1999) Taxonomy, External Morphology, and Species Identification. In: Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington
- Richardson, J. I. (1999) Priorities for Studies of Reproduction and Nest Biology. In: Eckert, K. L.; Bjorndal, K. A.; Abreu-Grobois, F. A. & Donnelly, M. (eds) (1999) Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group. Publication No 4. Washington
- Roettcher, K. (2000) Saadani Socio-Economic Study. Report on the findings of the Participatory Rural Appraisal conducted in villages bordering the planned Saadani National Park. Oct – Dec 2000. Saadani Conservation and Development Programme, Wildlife Division / GTZ. Dar es Salaam. Tanzania (unpublished)
- TANAPA (1998) Proposal on the Upgrading of Saadani Game Reserve and Zaraninge Forest Reserve into a National Park. TANAPA Planning Unit. Tanzania National Parks. Arusha. Tanzania
- Williams, J. G. & Arlott, N. (1980) A Field Guide to the Birds of East Africa. Collins. Glasgow. UK

Winnegge, R. (1999) Water and Wildlife. An Assessment of the Water Resources in the Saadani Game Reserve, Tanzania, and Proposals for their Development. Tanzania Wildlife Discussion Paper No. 26. Dar Es Salaam. Tanzania

WWF (1998) Marine Turtles: Balancing Nature in the Deep. Spotlight on Endangered Species. Kakakuona / Tanzania Wildlife. Jul – Sep 1998

<http://www.nafcon.dircon.co.uk/crocs1.html>