



TRAVELOGUE

The Black Mambas of the Balule Nature Reserve and Other Notes on the Limpopo Region of Southern Africa

Gad Perry

Department of Natural Resource Management, Texas Tech University, Lubbock, Texas 79409, USA (Gad.Perry@ttu.edu)

Photographs by the author unless otherwise indicated.

The elephants came in the evening, while we were out of camp, and poked around. By the time we returned, they were gone — but they had knocked down some trees, as they have been doing elsewhere in the reserve. The morning before, a person going to the bathroom, located in a separate, roofless structure, reported a giraffe placidly peeking in. The next morning, while the sun was still rising in the east, lions came. A mother and her cub passed through, ignoring the few people already up and about while continuing their stroll. Yes, lots of mammals live in the Greater Kruger National Park region. Although not every outing from the rustic guest cabins at the Indlovu Field Camp is that dramatic, we’ll return to the mammals shortly. This might also be a good time in this travelogue to admit that the Black Mambas in the title are not reptilian — although they’re fairly common in the region when it is warmer — but mammalian as well. We’ll return to them, too.

First, however, a few words about travel. To get to northern South Africa, one normally flies into Johannesburg. Flights from all over the world land there, and the domestic terminal allows convenient connections for those who wish to hurry north — or to the south, where one can see penguins and Great White Sharks. Alternatively, you can take a shuttle or rent a car. However, remember that driving is on the left, and the required adjustment can take some time for those of us from countries where one drives on the right — and this also must be kept in mind when crossing streets! Oh, and in the areas discussed herein, the real fun stuff requires off-road 4x4 vehicles.

The Setting

The history of Africa is long and often painful, rich with wars and migrations and colonizing powers. Modern South Africa is a relatively rich democracy by the standards of the continent. Social inequities remain high, however, contributing to high crime rates, primarily in the larger cities such as Johannesburg, where police may stop you under some

pretext, seeking a bribe. Letting a local navigate such sensitive interactions, which can be confusing to someone from another culture, is generally the best strategy. The northern part of the country, the area covered in this travelogue, is more sparsely populated, generally safe, and attracts many tourists. Although most biologically-minded tourists are focused on the mammals, it is also a great place to go herping.

The Balule Nature Reserve (Fig. 1) is located near a convenient airport in Hoedspruit, close to the boundary between Limpopo and Mpumalanga Provinces. This is a private reserve that houses a number of lodges, as well as the conservation-oriented Transfrontier Africa, which conducts conservation management and research, supports education and community efforts, and operates several camps. We stayed at the bucolic Indlovu Field Camp (Fig. 2), which usually does not house tourists. The town offers services such as well-stocked supermarkets, restaurants, banking, and a laundromat. Just



Fig. 1. Typical habitat in the Balule Nature Reserve in South Africa. Inset: Reserve logo displayed on one of the entrance gates.

outside the town is the Hoedspruit Reptile Centre, which is normally open to visitors. During the winter, when temperatures range from mildly hot to slightly chilly, mammals and birds are easier to see than herps. This is the dry season that runs from May to September, so the vegetation has little of the fresh green growth that is everywhere during the rainy season.

Hoedspruit is in Limpopo Province, most of which lies to the north and west and which borders Botswana, Mozambique, and Zimbabwe. Several large parks straddle the border and create a multi-national conservation area. The Limpopo River marks the border between South Africa and Zimbabwe and offers plentiful aquatic habitats (Fig. 3). Just north of the border, inside Zimbabwe, are the ruins of Great Zimbabwe (Fig. 4), the impressive remains of a walled city built by a Shona trading empire around 1100 C.E. and abandoned in the 15th century. The nearby modern city of Bulawayo hosts the Natural History Museum of Zimbabwe and is surrounded by outcroppings that house impressive San rock art dating back more than 1,500 years (Fig. 5). Even

before covid, however, crossing the land border between South Africa and Zimbabwe was a painfully slow process.

Herein I describe some of the fauna of these relatively close-by locations, but different habitats support somewhat different species. Field guides for herps are readily available, starting with the airport bookstore in Johannesburg.

The Herps

Rivers and lakes in many parts of Africa are likely to host Nile Crocodiles (*Crocodilus niloticus*) (Fig. 6). This is one of the largest crocodylians, a notorious predator on humans, and a frequent victim of human killing — as uniquely documented by Graham and Beard (1973). Crocodile farms have been opened in various places over the years, with the intent of selling meat and hides and attracting tourists, but have often not proven to be economically viable. Crocodile steaks, mostly from tail meat, are offered in some restaurants and are worth trying.

A lot of other herps occur in the region, many of them in taxonomic groups not native to North America or much

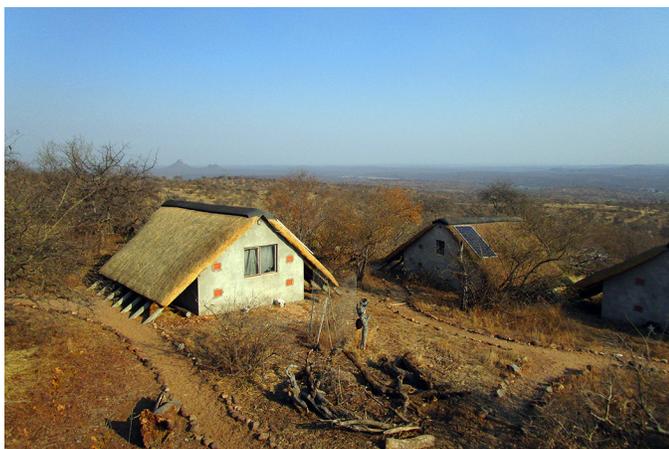


Fig. 2. Some of the chalets at the Indlovu Field Camp in the Balule Nature Reserve in South Africa. Solar panels ensure environmentally friendly power.



Fig. 3. A lake in Limpopo Province. The warning about crocodiles should be heeded in most bodies of water in the region.



Fig. 4. Entrance to the Great Zimbabwe ruins just north of the border with South Africa.

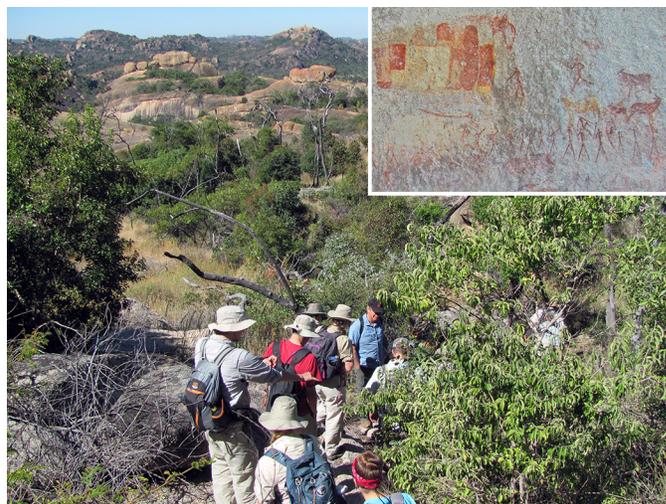


Fig. 5. Students from Texas Tech University hiking in the Matobo Hills of Zimbabwe on their way to caves containing ancient rock art (inset).

of Europe. Four notable lizard families in this category are the monitors (Varanidae), chameleons (Chamaeleonidae), aga-

mas (Agamidae), and cordylids (Cordylidae). Nile Monitors (*Varanus niloticus*) (Fig. 7) are most frequently encountered near



Fig. 6. A Nile Crocodile (*Crocodylus niloticus*) basking on a small island in a reservoir in the Limpopo area.



Fig. 7. A Nile Monitor (*Varanus niloticus*) sunning itself on the banks of a stream in the Limpopo area. Monitors can grow large and be aggressive and, despite their abundance in the pet trade, make poor pets.



Fig. 8. An artisan at a local market offering for sale his wooden carving of dueling chameleons.



Fig. 9. Many agamas are highly tolerant of humans. This Ground Agama (*Agama aculeata*) (left) was perched on roofing materials. Rock escarpments offer a more natural setting for a female Blue-throated Agama (*Acanthocercus atricollis*) (right).



Fig. 10. Flat Lizards (*Platysaurus intermedius*) prefer rocky outcrops. The female (left) is much less colorful than the male (right).



Fig. 11. Common Giant Plated Lizards (*Matobosaurus validus*), such as this stumpy-tailed individual from the Balule Nature Reserve, also favor rocky outcrops.

bodies of water. They are wary and quick and rarely stay put for long. Although they appear occasionally in the pet trade, they grow too large and become too aggressive to make good pets for most enthusiasts. Chameleons (Fig. 8) radiated widely in Africa, with Madagascar being especially diverse. Several species occur in northern South Africa and are most easily detected at night, when they curl up on branch-tips and are often whitish in color. During the day, their ability to change color and their stealthy, slow, and jerky walk help keep them camouflaged. Agamas have been compared by some to new-world iguanians. Although they usually are larger and more robust, like many anoles, they frequently climb trees or rocks (Fig. 9). They also are mostly

diurnal insectivores. However, some agamas are ground-dwellers that can be found in arid environments, even on sand. We failed to find any of the more colorful and larger tree agamas on this trip. Along with some agamids, cordylids, a family unique to Africa, often frequent outcrops (Figs. 10–11). Many, such as the Common Giant Plated Lizards (*Matobosaurus validus*), are flattened, diurnally active insectivores that are heavily armored, hence the common name.

Another family, the lacertids (Lacertidae), do make it to Europe and look and behave very similar to the ground-dwelling racerunners and whiptails (Teiidae) familiar to many North Americans. Also familiar are the skinks (Scincidae) (Fig. 12),



Fig. 12. Skinks are common in many African settings. Rainbow Skinks (*Trachylepis margaritifera*), such as this female (left) can be found in natural and human-associated settings. This Variable Skink (*T. varia*) (right) was in an abandoned pumphouse.



Fig. 13. Some geckos of the region, such as this Turner's Thick-toed Gecko (*Chondrodactylus turneri*) (top left), often reside in human habitations. Others, such as this Tiger Gecko (*Pachydactylus tigrinus*) photographed in southern Zimbabwe, are crevice dwellers in outcrops (lower left). Yet others, such as the widely distributed Cape Dwarf Geckos (*Lygodactylus capensis*) (right), are diurnal.



Fig. 14. Part of the Donald Broadley Gallery in the Natural History Museum of Zimbabwe, this display case shows some of the snakes found in the region.



Fig. 15. Puff Adders (*Bitis arietans*) (top) are responsible for many bites in Africa because they are so well camouflaged in the scrub where they usually occur. An African Rock Python (*Python sebae*) (center) in scrubby habitat near a river bank in the Balule Nature Reserve. Snouted Cobras (*Naja annulifera*) (bottom) may exceed 2 m in length. Photographs by Jay Spencer (top and center) and Aaron Bauer (bottom).

with a diversity of forms found in the region, ranging from completely legless to more traditional in appearance. The many African geckos (Gekkonidae) (Fig. 13) exhibit a diversity of shapes, colors, and lifestyles. Most come out at night. Unlike in many parts of the world, however, some African geckos are diurnal, and although most are scansorial, some species are ground-dwelling. Also, as throughout much of the world, some species exploit the thermal environment and extra food offered by the night-light niche.

Snakes usually are less abundant and more difficult to see. The Natural History Museum of Zimbabwe in Bulawayo, where Don Broadley worked on the herpetology of the region for many years, has a large reptile and amphibian section (Fig. 14). Despite cool, dry winter weather, we encountered an African Rock Python (*Python sebae*) (Fig. 15) sunning itself near the Olifants River. Puff Adders (Fig. 15) are ambush predators with coloration that allows them to disappear in the scrubby habitat. While that facilitates prey capture, it also makes them a common source of dangerous snakebites — a good reason to wear sturdy boots while hiking. The Snouted Cobra (*Naja annulifera*) (Fig. 15) often resides in termite mounds in the savannah.

The dry season is a poor time to search for the many amphibians in southern Africa, as they, like their relatives elsewhere in the world, tend to seek shelter during dry periods. The African Red Toad (*Schismaderma carens*) (Fig. 16) is a relatively large species that can be found in a range of habitats. Other toads (like those in the genus *Sclerophrys*) (Fig. 16) emerge from refugia after rains to breed in pools and ponds. A Grey Foam-nest Treefrog (*Chiromantis xerampelina*) (Fig. 16) remained for several days near a shower at the camp in Balule. Many species in relatively dry habitats, such as the Mozambique Rain Frog (*Breviceps mossambicus*) (Fig. 16), emerge only when plentiful rains provide moist environments and ponds where they can breed.

Plants, Birds, and Mammals

Many other organisms occur in the area — too many to do them justice here. One plant that deserves attention, however, is the Baobab Tree (*Adansonia digitata*) (Fig. 17), which was immortalized in *The Little Prince* (Saint-Exupéry 1943). Unfortunately, climate change threatens its long-term survival. The unusual-looking Secretary Bird (*Sagittarius serpen-*



Fig. 16. The African Red Toad (*Schismaderma carens*) (left) often frequents dry savannah. Most amphibians in the region, including these toads (*Sclerophrys* sp.) emerge to breed in temporary ponds (center left). A Grey Foam-nest Treefrog (*Chiromantis xerampelina*) takes advantage of the moist environment in a shower at the Balule Nature Reserve (center right). This Mozambique Rain Frog (*Breviceps mossambicus*) was defensively inflated when first discovered and was difficult to distinguish from a rock because of all the soil stuck to its skin (right). Photographs by Aaron Bauer (left and center left) and Craig Spencer (right).



Fig. 17. The mighty Baobab (*Adansonia digitata*) has a remarkably thick trunk that stores water and facilitates survival during droughts.



Fig. 18. A Secretary Bird (*Sagittarius serpentarius*) struts in its search for snakes.

tarius) (Fig. 18) is a uniquely African predator that rarely flies and is famous for its ability to subdue even the most venomous snakes.

Even avid herpers get excited when they meet an elephant or rhinoceros face-to-face. A variety of large, medium, and small mammalian species (Fig. 19) are regularly encountered. In this region, elephants can still be a common sight, but the rhinoceros has disappeared or greatly declined in numbers nearly everywhere. Why? In a word, illegal hunting (Fig. 20).

The Scourge of the Illegal Wildlife Trade— and the Black Mambas

In many parts of the world, the main form of illegal hunting is traditional stalking for food, known as bush meat. People hunted animals long before conservation became an

essential activity, and for some of the poorest, it still offers a main source of protein. As human populations grow and natural areas shrink, this kind of consumption, often illegal, is increasingly harmful, although even the most adamant conservationist can hardly blame a parent for trying to provide food for their family. However, the bigger problem is much less well-intended. Whoever the individual pulling the trigger might be, the illegal wildlife trade has become part of a multi-national, trans-boundary, multi-faceted crime empire. In the words of Meredith Gore and her colleagues (2019), it “has become the largest financial driver of social conflict, with severe implications for peace and security.” A bit simplistically, the same transportation networks that move rhino horns and elephant tusks around the world also are used for illegal drugs and other cross-border smuggling, and the same



Fig. 19. Large mammals frequently encountered in the region include the Cheetah (*Acinonyx jubatus*), African Lion (*Panthera leo*), Plains Zebra (*Equus quagga*), Hippopotamus (*Hippopotamus amphibius*), African Bush Elephant (*Loxodonta africana*), South African Giraffe (*Giraffa camelopardalis*), and Spotted Hyena (*Crocuta crocuta*).



Fig. 20. Remains of a poached elephant (left) and the Black Mamba anti-poaching unit of the Balule Nature Reserve (right). Inset: Unit logo of the Black Mamba anti-poaching unit. Photographs courtesy of Transfrontier Africa.

kingpins profit. Efforts to combat this trade also are multifaceted, and they enjoy bipartisan support in the U.S. Congress. Law-enforcement and non-governmental organizations are involved in the effort, as are academics and conservation professionals from around the world. As periodic news stories attest, these efforts have led to some successes — but the butchery of rhinos and other high-value species continues.

This is where the Black Mambas of Balule Nature Reserve (Fig. 20) come in. Founded by Transfrontier Africa in 2013, this rigorously trained, all-female anti-poaching unit provides “boots on the ground” patrols that led National Geographic to call them “Badass” (Goyanes 2017). They search for poachers and snares (Fig. 21), use high-tech tools, and are part of the law-enforcement team working in the greater Kruger National Park region — and they do it all while unarmed,

relying instead on skill, training, and guts. In the process, they develop skills that help raise the status of women in the community and earn a salary that helps support their families. Just as important as patrolling, however, the Mambas also emphasize community outreach and social integration as a preventative measure. As part of their education mission they reach out to children through the Bush Babies program (Fig. 21), established in 2015 and engaging thousands of children in and out of school. Their goal is to reduce poaching by changing hearts and minds. As the covid pandemic hits conservation efforts and the tourism-based economy (Panchia 2021), the Black Mambas even assist in alleviating poverty, usually not a traditional role for conservation organizations. In many ways, the program is an exciting and novel model for such efforts — and one that works well.



Fig. 21. Black Mamba patrols search for and remove snares (left) and interact with the community, here at a local school (right). Inset: Logo of the community outreach program. Photographs courtesy of Transfrontier Africa.

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Literature Cited

- Gore, M.L., P. Braszak, J. Brown, P. Cassey, R. Duffy, J. Fisher, J. Graham, R. Justo-Hanani, A.E. Kirkwood, E. Lunstrum, C. Machalaba, F. Massé, M. Manguiat, D. Omrow, P. Stoett, T. Wyatt, and R. White. 2019. Transnational environmental crime threatens sustainable development. *Nature Sustainability* 2: 784–786. <https://doi.org/10.1038/s41893-019-0363-6>.
- Goyanes, C. 2017. These badass women are taking on poachers—and winning. *National Geographic*, 12 October 2017. <<https://www.nationalgeographic.com/adventure/article/black-mambas-anti-poaching-wildlife-rhino-team>>.
- Graham, A. and P. Beard. 1973. *Eyelids of Morning: The Mingled Destinies of Crocodiles and Men*. Chronicle Books, San Francisco, California, USA.
- Panchia, Y. 2021. Covid and conservation – The pandemic’s effects on the wildlife economy in South Africa. *Forbes*, 11 August 2021. <<https://www.forbesafrica.com/current-affairs/2021/08/11/covid-and-conservation-how-the-pandemic-has-affected-the-wildlife-economy-in-south-africa/>>.
- Saint-Exupéry, A. 1943 (2000). *The Little Prince*. Harcourt, Orlando, Florida, USA.