

Traveling in Wildlife Reserves in South Africa

Peter A. Leggat, David N. Dürrhein, and Leo Braack

South Africa is a burgeoning tourist destination, with 5,732,049 international visitors during 1998.¹ A prime attraction is the opportunity to observe Africa's magnificent mammals in the wild. Wildlife tourism takes place mainly in National Parks, provincial and private Nature Reserves, and Private Game Reserves. The principal tourist activities are self-drive wildlife viewing from vehicles, wildlife viewing from vehicles driven by field guides, or walking under the guidance and protection of a field guide. The principal national parks or wildlife reserves in South Africa are shown in Figure 1. In 1998, about 950,000 tourists visited the Kruger National Park (KNP),¹ which at 1.949 million hectares, is the largest wildlife or nature reserve in a single African country. The Kruger National Park is also the only park in South Africa, and one of the relatively few in Africa, which hosts abundant numbers of the so-called "big five" species—elephants, rhino (both black and white), buffalo, lion, and leopard.

Although many travelers are concerned about their personal safety when traveling abroad, it is an often neglected area in travel medicine. Personal safety is one of the most important areas for travel health advisers to cover when giving advice to travelers going to virtually any country. Individual responsibility is paramount, as fewer people are going on programmed package tours.² Travelers should also be advised about important safety

nets, such as health and travel insurance and finding medical assistance abroad.³

Which Animals Are Considered Dangerous?

Mammals most commonly considered to fall into this category of dangerous wildlife are elephants (*Loxodonta africana*), lions (*Panthera leo*), rhinoceros (*Diceros bicornis* and *Ceratotherium simum*), and buffalo (*Syncerus caffer*). While leopards (*Panthera pardus*) are also potentially dangerous, they tend to be secretive and avoid human contact. These species, as previously mentioned, are often referred to as the "big five," a term derived from a previous era, when they presented a significant danger to hunters on foot. It is common practice for field guides to be armed in situations where they may confront these mammals on foot.

Are Wildlife Reserves Safe?

It is usual for visitors to wildlife areas to stay overnight in rest camps within the borders of the wildlife area. In the National and Provincial Parks in South Africa, nearly all rest camps are securely fenced to exclude large animals. In private wildlife areas, unfenced camps are more common. Attacks by lions have occurred in unfenced camps, and in one incident involving an elderly couple, the wife was killed and her husband seriously wounded.⁴ Reserves that have habituated, tame, or hand raised animals that have lost their fear of humans pose particular problems, as demonstrated by two fatal attacks involving students who left their vehicles in lion parks in South Africa.⁴ A recently published retrospective study over a 10 year period found that attacks on tourists by wild mammals in South Africa are an uncommon cause of injury and death, with only 7 deaths and 14 nonfatal incidents recorded.⁴ The main reason for the low risk of death or injury by wild mammals is that wild animals usually avoid people. Other reasons may include the industry's attempts to separate tourists from dangerous situations, the presence of trained and experienced field guides and industry workers, and efforts by tourists to educate themselves and to take reasonable precautions.⁴ It is also important that travelers have an awareness of the need

Peter A. Leggat, FAFPHM, FACTM: Associate Professor, School of Public Health and Tropical Medicine, James Cook University, Townsville, Queensland, Australia; David N. Dürrhein, MPH&TM, FACTM: Consultant in Communicable Disease Control, Mpumalanga Department of Health, Nelspruit, South Africa; Leo Braack, PhD: General Manager, Conservation Development, Kruger National Park, Skukuza, South Africa.

Disclaimer: The authors do not necessarily represent the views of the Mpumalanga Department of Health or of the National Parks of South Africa.

Reprint requests: Associate Professor Peter A. Leggat, School of Public Health and Tropical Medicine, James Cook University, Townsville, Queensland, 4811 Australia.

J Travel Med 2001; 8:41–45.

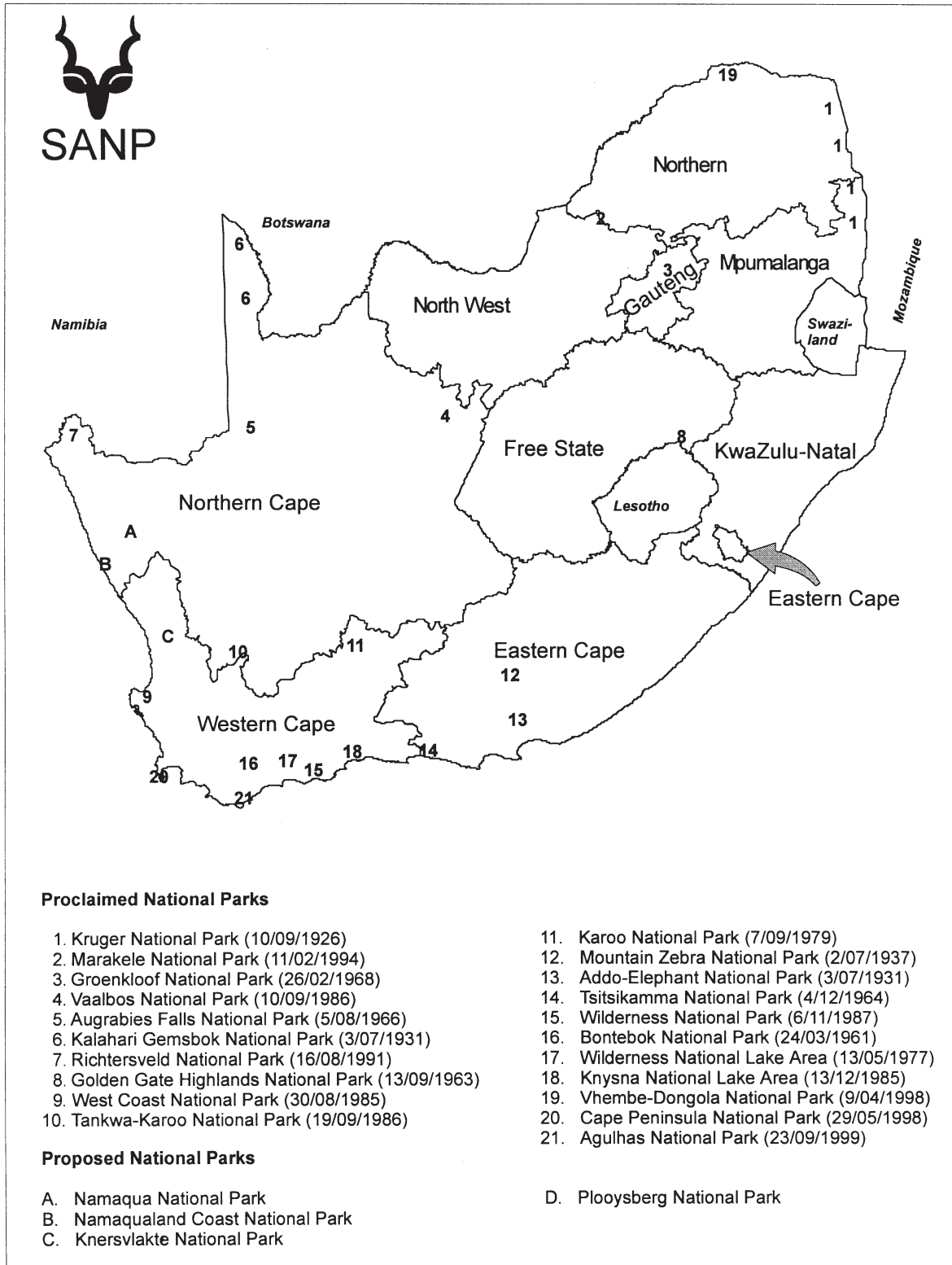


Figure 1 Map showing the location of major wildlife reserves in South Africa. (Map provided courtesy of South African National Parks.)

for personal safety and security in general, which has been discussed elsewhere,⁵ when traveling in South Africa and its wildlife reserves.

Am I Safe In My Vehicle?

Generally wildlife reserve visitors are safe if they remain within a closed vehicle. Because animals in tourist wildlife areas are habituated to vehicles, staying inside a vehicle is not only the safest way of getting close to animals in the wild, it also allows the closest approaches, and causes the least disturbance to the animals. Problems may however occur if visitors protrude their bodies from windows, doors, or sun-roofs for the “photograph of a life-time.” Caution should however be exercised and vehicle windows kept closed when parked in the vicinity of Chacma baboons (*Papio ursinus*). Visitors have experienced unexpected invasions, particularly where food is obvious within the vehicle.

The previously mentioned review found only two occasions recorded where the occupants of a vehicle were attacked, and both involved elephants.⁴ A German tourist was killed when an elephant with an abscess at the base of a tusk charged his vehicle. He was trampled when he left the car to rescue his daughter. In the other incident, a tourist sustained minor injuries when he interrupted a pair of amorous elephants to the annoyance of the musth bull who attacked the voyeur’s vehicle. Elephants can become extraordinarily aggressive when they are in musth, sick, injured, or harassed, if they have young calves, or if they live in or have been moved from an area where elephants have been hunted.

Both episodes may have been avoided as elephants usually display their aggressive intent before charging. The large ears are held outward, the elephant kicks the ground and sways backwards and forwards, and may emit an unmistakable trumpet from a raised trunk.⁶ It is essential that all travelers maintain a safe distance from elephants and that visitors to game reserves are made aware of the obvious danger signs of musth, the initial auricular display of an aggressive elephant, and the necessity of taking immediate evasive action.

Are There Any Other Safety Hints When Driving Through Wildlife Reserves?

Usually, driving through wildlife reserves in South Africa is safe. Although local tourists can drive their vehicles into the wildlife reserves, international tourists have the opportunity to rent a vehicle and travel into the reserves, or hire the vehicle within the major wildlife reserves, such as KNP, which have well-developed road systems and mobile phone service extending into many parts of these reserves. Vehicles are fitted with right hand

drive. Within the wildlife reserves, speed limits of around 50 kilometers per hour are generally strictly enforced for safety of both travelers and the wildlife. Travelers should be advised to rigidly observe wildlife reserve instructions, never approaching animals that appear ill, malnourished, displaying aggressive behavioral traits, or female with young. Information on wildlife behavior can be found on the Internet.⁷

Any behavior that might be construed as antagonistic, and provoke attack by wildlife, should be avoided, such as driving directly at a lion. The risk-enhancing effect of excessive alcohol intake is undesirable in the wildlife reserve setting, as is driving at high speeds after dusk in areas where hippos graze.

Visitors driving through wildlife reserves in all parts of Africa should seek advice from their travel agent and foreign affairs officials concerning safety in the specific reserves they intend visiting. Travelers have encountered life-threatening situations from armed bandits in some African wildlife reserves,⁵ and travel warnings about the risk of robberies in wildlife reserves should be sought through consular offices. To date, no such incidents have occurred in any of the southern African reserves, where there is a strong law enforcement presence.

Are There Any Additional Precautions For Walking Trail Participants?

Five additional hazards may pose a threat to visitors on walking trails.

Unqualified or Inexperienced Trail Guides

Unqualified or inexperienced trail guides have been known to lead walking trail participants into long grass or reeds during the heat of the day when buffalo, which are sensitive to heat, are taking shelter, which have led to dire consequences. Some inexperienced guides even employ hazardous practices, including attempting to entice large carnivores by imitating the calls of their young. It is important that travelers are advised to seek information on the registration and experience of field guides when they are speaking to their travel agent or tour operator.

Excessive Sun Exposure

It is essential that adequate precautions are taken to prevent sunburn and dehydration. Temperatures in the Kruger National Park, and certain other adjoining reserves, may reach 45°C in summer. It is important to advise travelers to limit walking to the early morning or late afternoon periods.

Aquatic Hazards

Southern African water bodies may contain two additional adversaries, one microscopic and the other for-

Table 1 Grading System for Field Guides Registered by the Field Guide Association¹¹

Grade	Requirements
Grade 1	Applicant/Beginner
Grade 2	One year of experience
Grade 3	Two plus years experience
Grade 4	Grade 3 requirements plus training with dangerous animals

midably larger. *Schistosoma haematobium* and *Schistosoma mansoni* (bilharzia) are widely distributed throughout the eastern half of South Africa where most nature reserves are located. Infection by skin penetration, while wading across or swimming in infested dams or streams, can result in cercarial dermatitis, Katayama fever, or chronic debilitating disease. Exposure to the Nile crocodile (*Crocodylus niloticus*) usually has more profound acute consequences. Crocodiles are responsible for most of the deaths attributable to wildlife in Africa each year.⁶ Areas inhabited by crocodiles in built-up areas are often sign-posted and travelers should look for these and seek local advice on safe swimming locations.

Venomous Snakes

There are few fatally venomous snakes in South African reserves. Despite their fearsome reputation, snakes like black mamba (*Dendroaspis polylepis*), Mozambique spitting (*Naja mossambica*), Egyptian cobras (*Naja haje annulifera*), and boomslang (*Dispholidus typus typus*) prefer to avoid human contact by a variety of mechanisms including fear-some displays, flight, or feigning death. However, one species, the puff adder (*Bitis arietans arietans*) relies on immobility and cryptic camouflage to escape detection. Its habit of basking in the sun on footpaths and striking with lightning speed if trodden on or next to, place walking trail participants at risk of envenomation with highly cytotoxic venom that may cause severe swelling, extensive tissue damage, and even gangrene. It is therefore essential that travelers are watchful and avoid unwittingly threatening these dangerous reptiles. If bitten by snakes in wildlife reserves in South Africa, travelers should be advised to undertake routine steps in first aid and use the pressure immobilization method.⁸ This method involves “firm but not tight bandaging of the entire bitten limb with a long bandage starting over the site of the bite and incorporating a splint”.⁸ Medical advice should then be sought as soon as possible. In the KNP, there is always a private general practitioner available at Skukuza camp.

Ticks

African tick typhus characterized by fever, rash, and classical eschars, may result from bites from ticks infected with *Rickettsia conorii*, and cases have been documented

following visits to South African nature reserves.^{9,10} Persons walking in high grass or bushveld should wear clothes that cover the body, particularly the legs, and apply insect repellent on exposed skin. In general, travelers can be advised that insect repellants and synthetic pyrethroid insecticide for treating clothing are readily available in shops in all the main National Parks and Game Reserves.

How Do I Choose A Guide?

There are about 1,600 field guides registered by the Field Guide Association in South Africa. Although registration is required by law, there are large numbers of unregistered guides operating in the industry. In South Africa, field guides are graded on a four-level grading system where grade is dependent on accredited training and relevant supervised experience (Table 1), but only the highest level, grade 4, requires training on dangerous animals. Remuneration is proportional to grade, and unfortunately there is no minimum legislated prerequisite grade for trail guides. Larger wildlife reserves and lodges usually insist on grade 3 or 4 trail guides, but smaller concerns may be more flexible with attendant potential risk to the guide and visitors. The credentials of trail guides should be provided or obtained from the lodge or reserve management, tourism authorities, or the travel industry prior to travel.

Field guides, conducting walking trails, often take responsibility for clients with no experience of the African bush or the animals that live in it. These clients may be physically incapable of taking the necessary evasive action in case of an attack, and their behavior may actually increase the probability of an attack. Some clients put pressure on guides to approach dangerously close to large animals. It is generally accepted by both clients and guides that guides will, if necessary, endanger themselves in order to protect their clients, and it is standard practice that field guides are armed when conducting walking trails in areas where dangerous wildlife occurs. However a recently published retrospective study over a 10 year period found that injurious attacks on wildlife reserve workers by wild mammals in South Africa are also uncommon, with only 13 fatal and 14 nonfatal incidents recorded.¹¹

Do I Need To Take Malaria Pills?

In general, malaria in South Africa is limited to border regions and is largely seasonal, but is present in some of the major wildlife reserves in the north and northeast,⁸ including KNP and many of the KwaZulu-Natal Parks. Malaria risk was recently investigated by means of a postal survey of a large cohort of KNP visitors, and a low attack rate of 4.5 cases of *Plasmodium fal-*

ciparum malaria per 10,000 visitors during the high risk month of April was documented, which is considerably lower than that documented in other parts of Africa frequented by international visitors.¹² However, travelers should not be careless, and must be advised to take appropriate chemoprophylaxis and careful personal protective measures in malarious regions throughout the year, as these are sometimes neglected.¹³

What "Shots" Do I Need?

Travelers to wildlife reserves in South Africa should be advised to ensure that their routine immunizations are up to date. In addition, it is advisable that all travelers be offered vaccination against common food and/or water borne illnesses, such as polio, typhoid and hepatitis A virus.¹⁴ Travelers should also be cautioned to observe care in deciding what they eat and drink in order to limit their risk of traveler's diarrhea.¹⁵ Travelers going to or returning from yellow fever endemic areas of Africa (or other parts of the world) to South Africa should obtain a yellow fever vaccination, and international certificate of vaccination.⁸ Those going to work or study in South Africa for an extended period, especially where they will spend time in the field in close contact with animals, should be advised to consider the need for rabies vaccination.¹⁶ These travelers should also be advised about what to do if they are bitten by a suspected rabid animal.¹⁷ In general, the risk to travelers of rabies is probably low.¹⁸

Is There Anything Else I Should Know?

To ensure an enjoyable and incident-free wildlife experience, local advice on personal safety in wildlife reserves should be provided or obtained from lodge or reserve management, tourism authorities, or the travel industry prior to travel. South Africa has an extensive public health system that caters to the needs of the majority of the local population. Services are free, but restricted to South Africans, and displaced migrant refugees. A well-developed private health care system is accessible to travelers. Travelers should also ensure that they have adequate travel insurance, including aeromedical evacuation contingency plans, discussed elsewhere.³ It is also advisable to hire vehicles from wellknown rental companies, and to consider hiring a mobile telephone and access emergency numbers, as an additional safety net against unexpected problems. If there is a medical emergency within a wildlife reserve and travelers do not have telephone communications, travelers should be advised to flag down the next car passing by. They should ask the occupants of the vehicle to relay a message to the camp closest to the situation, and to send help. Each camp in wildlife reserves

has someone trained in First Aid. If it is a life-threatening situation, a helicopter may be sent out to fly the patient to the nearest hospital. Otherwise, the management of the wildlife reserve will initiate a graded response based on the nature of the medical problem. Some of the bigger wildlife reserves, such as KNP, have their own helicopter and resident general practitioners.

Conclusion

South Africa has a well-developed tourism industry and health care system. Despite the precautions recommended in this paper, travelers should be advised in the context that the wildlife reserves of South Africa have an excellent record of safety, and high standards of health and hygiene.

References

1. South African Tourism Board. A survey of South Africa's international tourism market. Pretoria: South African Tourism Board, December 1999.
2. Behrens RH. Protecting the health of the international travellers. *Trans R Soc Trop Med Hyg* 1990;84:611-612, 629.
3. Leggat PA, Carne J, Kedjarune U. Travel insurance and health. *J Travel Med* 1999;6:243-248.
4. Dürrheim DN, Leggat PA. Risks to tourists posed by wild mammals in South Africa. *J Travel Med* 1999;6:172-179.
5. Leggat PA, Klein M. Personal safety advice for travelers abroad. *J Travel Med*, 2001; 8:46-51.
6. Apps P. *Wild ways*. Johannesburg: Southern Book Publishers, 1992.
7. Wildlife Africa. <http://www.wildlifeafrica.co.za/animalbehavior.html>, Northcliff, South Africa, 1999. (Last accessed October 29, 2000.)
8. World Health Organization. *International Travel and Health*. Geneva: WHO, 2000:59-60.
9. Puente S, Lago M, Subirats M, et al. Spotted fever attributable to *Rickettsia conorii*: ten cases imported from subSaharan Africa. *J Travel Med* 1995; 2: 204-205.
10. Raeber P, Winteller S, Paget J. Fever in the returned traveller: remember rickettsial disease. *Lancet* 1994; 344: 331.
11. Leggat PA, Dürrheim DN, Apps P. Occupational risks posed by wild mammals in South African wildlife reserves. *J Occup Health Safety-Aust NZ* 2000;16:47-54.
12. Dürrheim DN, Braack LEO, Warner S, Gammon S. Risk of malaria in visitors to the Kruger National Park, South Africa. *J Travel Med* 1998;5:173-177.
13. Dürrheim DN, Leggat PA. Prophylaxis against malaria. Preventing mosquito bites is also effective. *BMJ* 1999; 318: 1139.
14. Steffen R. Travel medicine: prevention based on epidemiological data. *Trans R Soc Trop Med Hyg* 1991;85:156-162.
15. DuPont HL, Khan FM. Travelers' diarrhea: epidemiology, microbiology, prevention, and therapy. *J Travel Med* 1994;1:84-93.
16. Anonymous. Guidelines for the medical management of rabies in South Africa. Pretoria: Department of Health, 1998.
17. WHO Expert Committee on Rabies. *Tech Rep Ser* 824. Geneva: World Health Organization, 1992.