



Dear Teachers

This set of teaching materials has been developed to help provide support to teachers in the rural areas. Schools in these areas are often seriously short of resources. Many lack even basic text books. It can be extremely difficult to teach under such conditions especially when no reference materials are available. It is hoped that the materials provided here will help by offering information and ideas.

This Guidebook has been written to give you and your students the opportunity to discover the rhinoceros. The rhinoceros is a very rare and special animal. We the people of Africa, and especially our children, have a vital role to play in protecting this unique animal from being destroyed forever. Here you can find information about where and how rhinoceroses live, why they are under threat of extinction, what is being done to save the rhinos and the important roles we all can play in protecting the African rhinoceroses from extinction.

This Guidebook is part of a SCHOOL SET of teaching materials for rural schools that has been developed to promote awareness of the rhinoceros. Part One of the Guidebook contains information about the rhinoceros. It is designed to be an easy reference for teachers to provide them with a better understanding of the rhinoceros and somewhere to find answers to student's questions.

Part Two of the Guidebook is designed to support teachers in the use of the RHINO CARDS. The RHINO CARDS have been developed for use within the present Zimbabwean primary school syllabus. There are eight sets of six cards each that can be used to teach Environmental Science, Geography, Mathematics and English. Each card is designed so it can be given to the students as a lesson. This section explains how it is intended for the cards to be used. Ideas for how to expand the use of the card, games to play and activities are suggested.

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*The Rhino Card Team*



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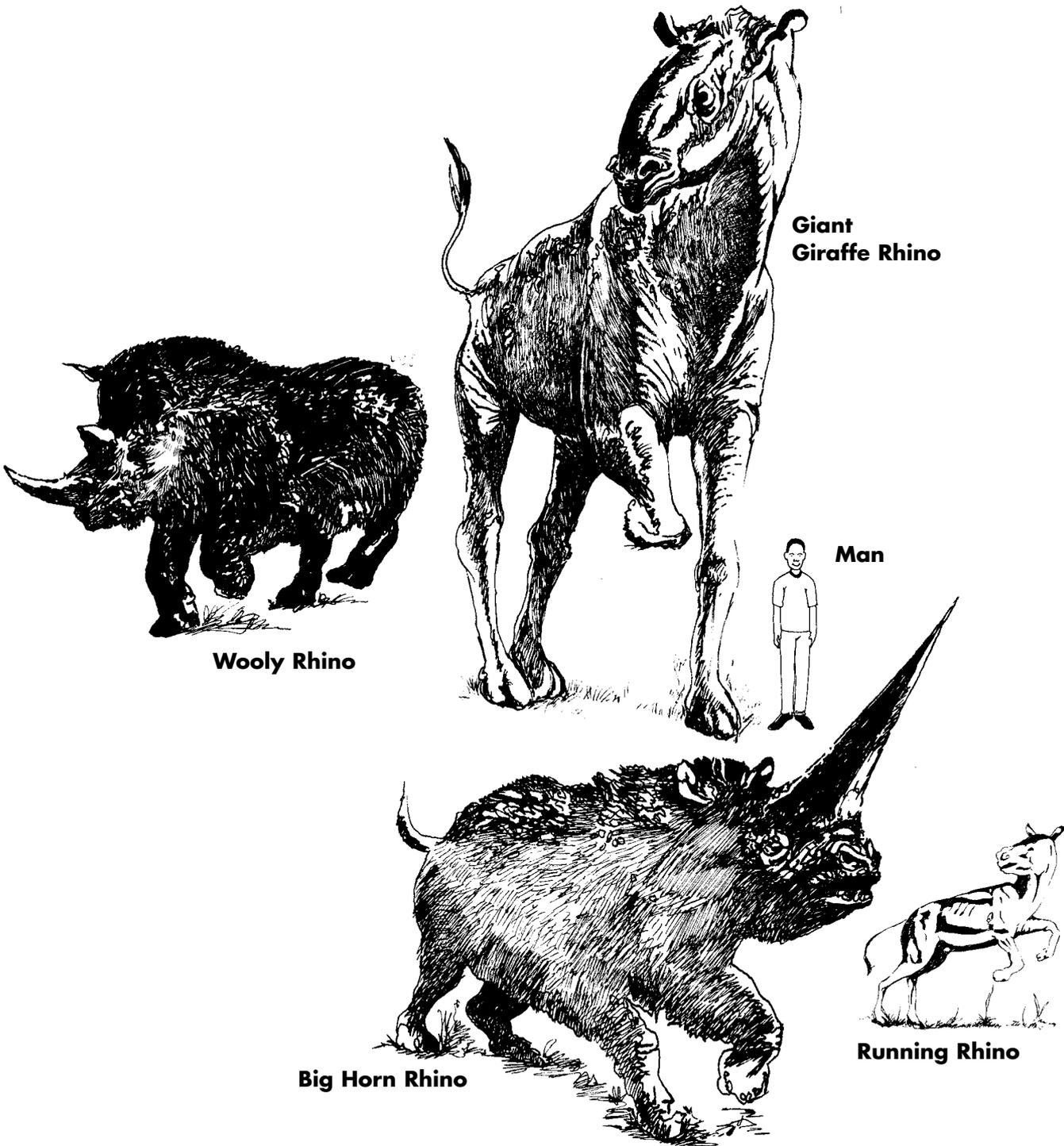
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# general Rhinoceros History

# Part 1

The Rhinocerotoids (ancestors of the modern rhinoceros) first appeared on the earth 50 million years ago. They have been the most diverse and successful large herbivores the world has ever seen. Hundreds of different species of rhinoceroses have come and gone from this planet. The largest land mammal that ever lived was a rhinoceros. It stood up to 6 m tall at the shoulder, may have weighed 20,000kg (about the same as four big elephants) and its skull was over 2m long. Its large size and long neck indicate that it was a sort of rhino-giraffe, eating from the tops of trees. There were also small, hornless, long legged running types of rhinos. Others were water living grazers much like the hippo.



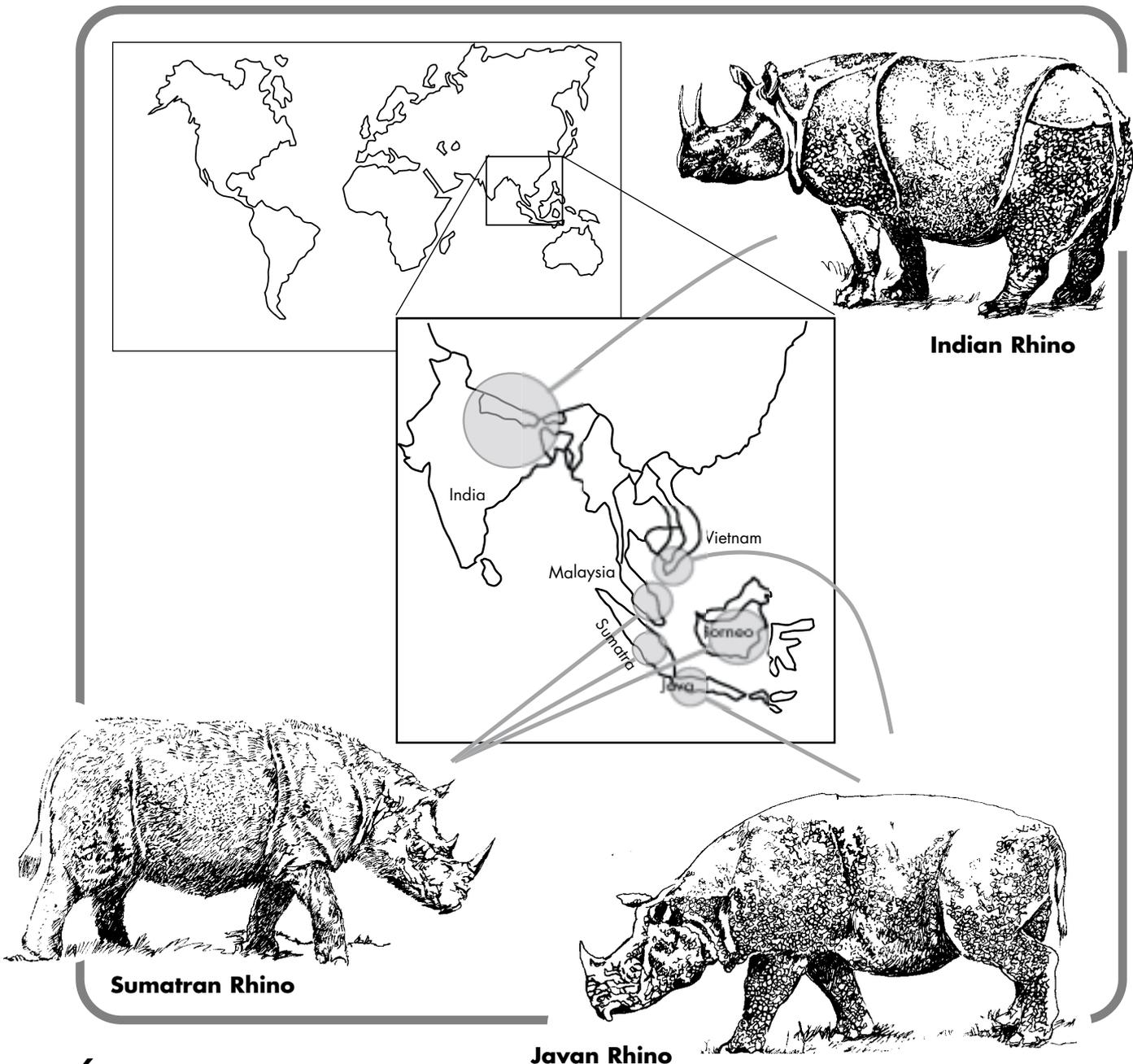
The modern rhino that we see today evolved between 10 and 7 million years ago. Modern man has only been here for less than half of that time. The rhinoceros is actually one of the oldest living species.

Today the world has only five different types of rhinoceros. Asia is home to the Indian, Javanese and Sumatran rhinoceroses. The Black and the White rhinoceroses live in Africa.

Indian or the Greater Indian one-horned rhinoceros is the largest of all the rhinos. It may be as tall as 2m at the shoulder and weigh up to 2,700kg. Its skin has great folds that look like plates of armour.

Javan or Lesser one-horned rhinoceros is the rarest of all the rhinos. There are less than 60 animals alive today. This rhino weighs up to 1,400kg and 1,7m at the shoulder.

Sumatran or two-horned Asian rhinoceros is the smallest of all the rhinos at only 1,000kg and 1,5m tall. Unlike the other rhinos the Sumatran has quite a bit of hair covering its skin.



# features of the African Rhinoceroses

## Similar Physical Features of the African Rhinoceroses

Both African rhinos have two horns on the front of the face. The horn nearest the nose is normally the longest. Females will often have longer (though thinner) horns than males. The longest horn ever recorded on a black rhino was 136cm long. The longest for a white rhino was 158 cm. The horns grow continuously at a rate of about 5cm per year. Normally it will be about 50cm long on an adult.

The horn is made from thousands of compressed hair-like strands. It is very similar to human fingernails. It is very tough but it does get worn down and can break off or split. If the horn is broken or cut off it will re-grow just like fingernails. Rhinos often rub their horns against trees and bushes. Because they will often use the same tree eventually a smooth, well-rubbed site develops. Rhinos will use their horns for self-defense or to attack.

Rhinos have very good hearing. Even when sleeping the rhino's ears continue to listen for sounds of any movement nearby. They also have a very strong sense of smell. Like other wild animals, rhinos often sniff the air to find out what other animals are nearby. Normally if a rhino smells a human it will run away.

Rhinos are thought to be nearsighted which means they can only see clearly objects that are close to them. The range of good sight is thought to be about 30m. Beyond that it is difficult for them to work out what they are actually looking at. Their poor eyesight helps explain why rhinos tend to move forward when they hear something. They need to get closer to see what it is.

Rhinos have very **thick skin**. On the hindquarters it can be as thick as 1,3cm. Some people say that a rhino's skin is so tough that it is like armour and can stop bullets. Unfortunately for the rhino this is not true. In fact, more rhinos are killed by bullet wounds than by any other cause of premature death these days. The skin on the soles of the feet is harder than anywhere else on a rhino's body. Rhinos have very little hair except for long eyelashes, a fringe of hair on the edge of the ears and a brush of coarse hair on the end of the tail.

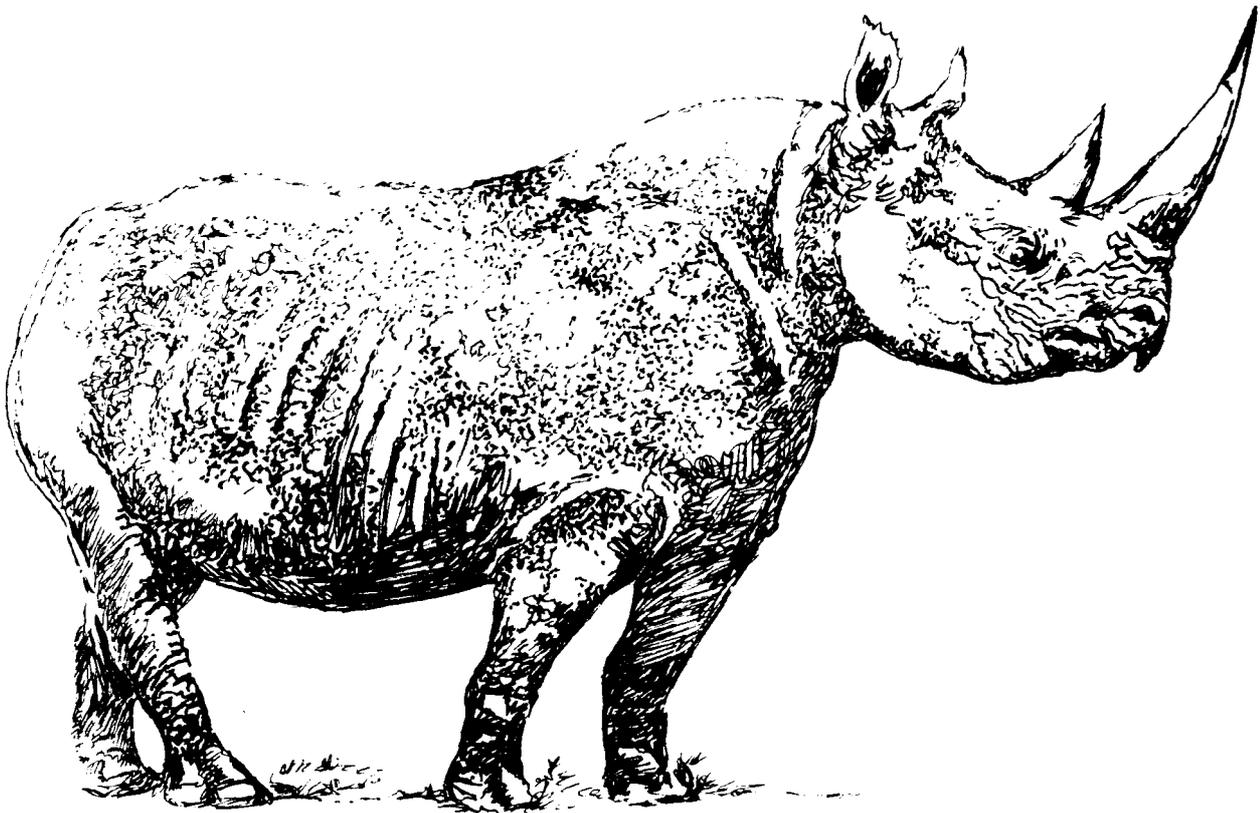
Rhinos legs are very strong and flexible which makes it possible for them to move surprisingly quickly at times. The front legs carry more weight than the back legs. To help carry the weight the front feet are larger than the back feet. Bigger animals normally have bigger feet. It is often possible to tell from the size of the spoor if an animal is male or female, young or old.

There are **three toes** on each foot. These toes are short and large and each has a toenail on the end. The toenails often leave marks on the ground when the rhino walks. The marks that an animal leaves on the ground when it moves are called spoor. Rhinos can live to be over 40 years old in the wild.

# the African Rhinoceros

## The Black Rhinoceros

The English name for black rhinos is confusing because it would have you believe that they are black in colour. This is not true. A black rhino's skin is actually grey. It may look black if it has been wallowing in mud but it may also look red if it has been rolling in red dirt. Black rhinos are also called hook-lipped rhinos. This name refers to the rhino's pointed upper lip.



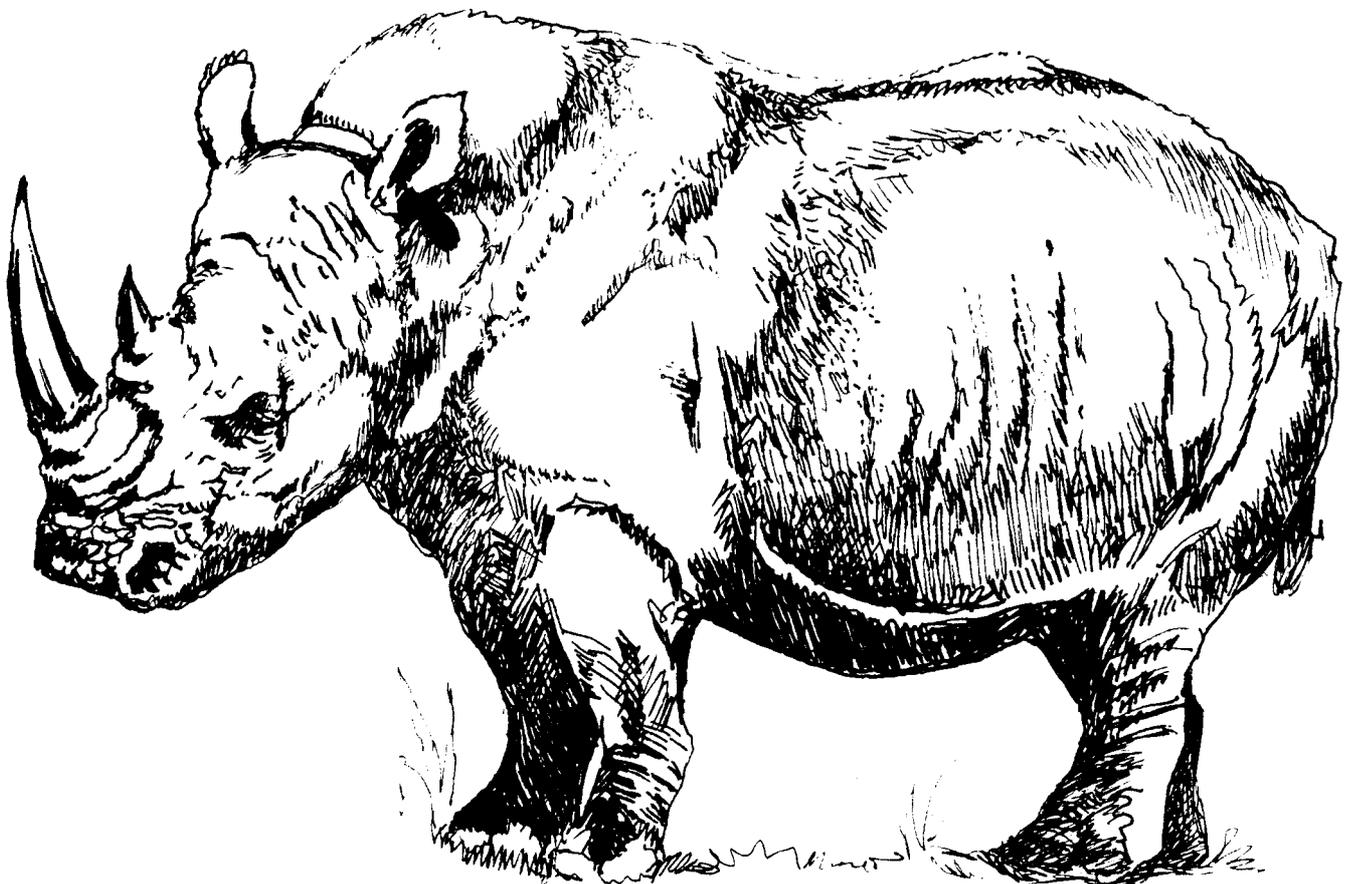
## other names

Shona: **Chipembere, Nhema**  
Ndebele: **Umhejane**  
Venda: **Thema**

Scientific: ***Diceros bicornis***  
Common: **Rhino**

## The White Rhinoceros

White rhinos are also grey in colour. There are a few different ideas as to how white rhinos came to be called this name. Some people say it is because the English confused the Afrikaans name "weidt" for white. "Weidt" means wide in Afrikaans. They were probably referring to the rhino's wide upper lip. Other people say that the name was given because the first animal described had been rolling in white dirt and so it looked like it had white skin. White rhinos are also known as square-lipped rhinos.



### other names

Shona: **Chipembere**  
Ndebele: **uBhejane**  
Venda: **Tshuguly**

Scientific: ***Ceratotherium simum***  
Common: **Rhino**

# different body features of the African Rhinoceroses

## The Black Rhinoceros

- Size** Black rhinos stand on average at about 150 cm at the shoulder. They are very heavily built and can weigh anywhere between 700 and 1,200kg – that is as much as 20 men!
- Lip** Black rhinos have a pointed upper lip. This lip is prehensile which means it is capable of gripping objects like fingers do. Black rhinos are **browsers**, which means that they eat trees, shrubs and herbs. Black rhinos use their special lip to pull twigs and branches into their mouths so they can bite them off.
- Head** Because they feed on leaves and branches above the ground black rhinos have a relatively short head and tends to hold it up.
- Ears** A rhino's ears are large and rounded in shape so that they can catch sound. The ears can be turned to listen in different directions. Black rhinos have very good hearing. Good hearing is very important for black rhinos as they spend most of their time in thick bush where it is impossible to see very far. The best way for them to work out what is going on around them is to listen.
- Speed** When a black rhino charges it can reach speeds of up to 55kph. This is much faster than any human. They are also very agile and capable of turning sharp corners very quickly.
- Spoor** The footprint of an adult black rhino is normally between 20-25cm across. The distance between steps can help tell you how big the rhino is. The distance between steps is called a stride.

# different body features of the African Rhinoceroses

## The White Rhinoceros

- Size** White rhinos can be as tall as 180 cm at the shoulder. They are very large and can weigh up to 2,000kg. White rhinos are the second largest land mammal in Africa after elephants.
- Lip** White rhinos have a square upper lip. They are **grazers**, which means that they eat grass. The lip is used to pluck grass. Having a very wide mouth helps the rhinos eat more. Such a large animal needs to eat a lot of food.
- Head** White rhinos have a relatively long head that helps makes it easier for the animal to reach down to the grass they like to eat. The head is carried low.
- Ears** White rhinos ears are narrower but longer than those of black rhinos. They are also more tube shaped (not as open).
- Speed** When a white rhino charges it can reach speeds of up to 40kph for a short distance. This is very fast for such a large animal. Very few people are able to run as fast as a rhino over even a very short distance.
- Spoor** The front footprint of an adult white rhino is normally larger than that of black rhino.

## Behaviour of the African rhinoceroses

Areas that have the types of food rhinos like to eat and water for them to drink are called rhino habitats. A **habitat** is the natural home of an animal. Within the right habitat, each rhino likes to live within a part that they know. These parts of the habitat are called **territories** or **home ranges**. Rhinos tend to drink at the same water holes regularly. They even have regular places to sleep, often under a nice tree for shade. Most feeding is done during the cooler times of the day. They use the same paths to move around the area they live in. In a black rhino's territory these paths become well worn and easy to identify through the thick bush that is usually their home.

Normally the most dominant bull in an area has his home range where the habitat is best. Other rhinos may come into his area to feed or drink but they will not stay. They will go back to their own home range to rest and sleep. The size of a home range depends on how much food is available. Where there is a lot of food the home range will be smaller than in an area where there is not a lot of food available, because the rhinos do not have to move so far to find enough food.

A rhino will mark its territory with its scent so that other rhinos know who it is and that this is its home area. Many animals use sound to communicate who they are and where they live. Birds do this by calling. Sound only works though when those you wish to communicate with are close by. Because the territories rhinos live in are so large it is not common for them to be close enough to others to hear them. To overcome this, rhinos communicate with each other by scent. Scent markings last for long periods of time so any rhino that comes to that site, even days later, will be able to tell that another rhino has been there.

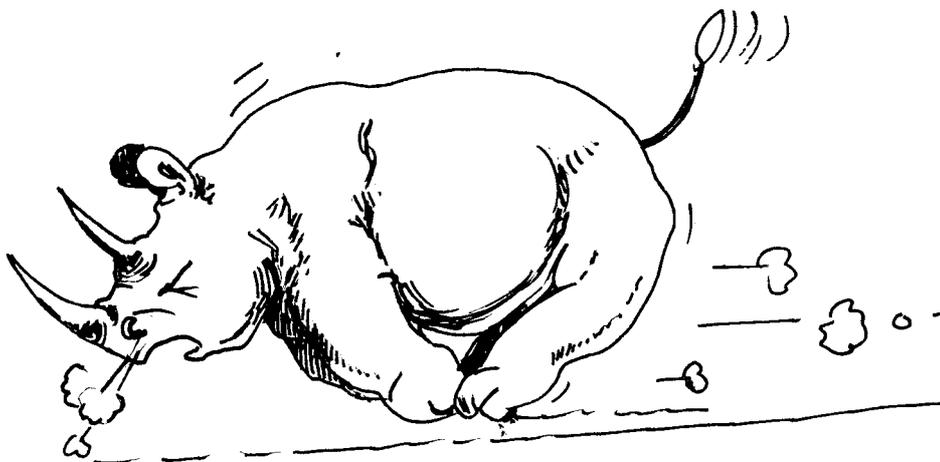
Rhinos make piles of dung that are called **middens**. More than one rhino may use the same midden. Where black and white rhinos live in the same area, both species sometimes use the same midden. Rhinos will drop dung in other places too. They scrape their hind feet in their dung to get the smell all over their feet. This scraping helps leave a strong scent trail wherever they walk. Males scrape their feet in their dung more than females. It is easy to see where a rhino has rubbed its feet in dung. These places are called **scrapes**. Middens and scrapes are two easy-to-see signs that indicate a rhino's presence.

Males mark their territories more than females. Middens and scrapes are more common towards the edges of the territories of males. Males also spray urine onto rocks and bushes around the outer edges of their territory. They do this to make sure other rhino know this is where they live.

When a male rhino is in the territory of a more dominant male he will be submissive. When two males meet the non-dominant animal will back away. If they are not sure who is dominant they become tense, snort and paw the ground. They may sweep their heads back and forth and thrust their horns into the air in an effort to prove that they are the stronger of the two. If one does not walk away they may give a false charge to frighten the other away. If this fails it is usually the male that lives in the area that attacks the new rhino. He will lower his head, pull his ears back and make a screaming sound as he charges. Rhinos fight with their horns, using it to either stab or club the other rhino.

Females are not as aggressive when they meet. They may bump with their heads or the sides of their horns but they do not try to hurt each other. Rhino cows are very protective of their calves. Hyenas and lions sometimes attack young rhinos. A rhino that is missing part of its ear or tail was probably attacked while it was young. A rhino cow is known to have killed a lion that tried to attack her calf.

An adult rhino has no natural enemies. Most rhinos are killed by people. Both rhinos are naturally curious animals and are known to walk towards sounds that interest them. This makes it very easy to hunt and kill them. Rhinos are known to **charge** people that get close to them. The best and easiest way to avoid being charged by a rhino is to keep away from them. Rhinos like to stay in the same area, walk the same paths and drink at the same place. It is normally easy to identify these places and avoid walking there. If you have to walk through these areas and find yourself close to a rhino try to stay very still and quiet. Often the rhino will run away. If the rhino thinks you are too close it will think you are a threat and will charge. The best thing to do is quickly climb a tree or get behind a bush or rock. Often a rhino will rush past you and keep on going because they are frightened by you and want to get away.



Rhinos like to **wallow** in mud to help keep their skin healthy. The mud cools the rhino down in hot weather and protects the skin from sunburn. Wallowing also helps control skin parasites like ticks and lice. The wet mud kills some parasites by smothering them. Others, like ticks, are pulled off as the mud dries and is rubbed or flakes off. Rhinos will also roll in dry dust baths. Rolling is a way of scratching itches. Because rhinos are so large it is easy to see where they have been wallowing or rolling. This is one of the ways to tell if rhino lives in the area.

When it is hot and dry rhinos likes to **drink water** every day so they will stay within 5km of water if possible. However, rhinos can go several days without drinking water.



# different behavioural features of the African Rhinoceroses

## The Black Rhinoceros

- FOOD** Black rhinos are **browsers**. They browse on woody shrubs and small trees. They will also eat wild berries and other fruits. Sometimes they will eat grass when they are eating other plants close to the ground. Black rhinos are big animals so they need to eat a lot of food. They usually eat more than 23kg of vegetation every day. They also need to be able to eat a variety of different plants so that they get all the nutrition they need.
- HABITAT** Black rhinos can be found in many different habitats. They like to live in **wooded areas** because they can find more food and shelter in these places. The highest concentrations of black rhinos in Zimbabwe are found in the lowveld where there are lots of trees and shrubs. Some black rhinos have adapted to living in the deserts of Namibia.
- TERRITORY** Where there is a lot of food, like in parts of South Africa, territories may be as little as 260ha. If there is only a little food, like in the desert, as much as 13,300ha may be needed for one rhino to find enough to eat.
- BEHAVIOUR** Black rhinos are thought to be bad tempered and aggressive. Part of the reason for this is that often when people and black rhinos meet it is by mistake, in the thick bush that these rhinos love to live in. Naturally both the person and the rhino are surprised when they meet each other under such conditions. When a black rhino gets a fright its response is to return the favour and give what ever has frightened it a fright back. This they do very well by charging. Black rhinos are like people in that they each have their own personality. Some are friendly and curious. Others can be grumpy and bad mannered.

# different behavioural features of the African Rhinoceroses

## The White Rhinoceros

- FOOD** White rhinos are **grazers**. They graze on grass. White rhinos like to eat short grass but will eat long grass if it is all that is available. White rhinos are very big animals so they need to eat a lot of food. Their wide lip helps them get a lot of grass into their mouths with each bite. Even with such a wide mouth white rhinos spend half of their life eating to feed their massive bodies. It is not uncommon to find groups of white rhinos grazing together. This is possible because the grass they eat is normally concentrated and plentiful so there is little competition for food.
- HABITAT** White rhinos live in **savanna bushveld** where there is plenty of grass available for them to eat.
- TERRITORY** Territories vary in size from 200 to 500ha depending on the availability of food. White rhinos are more territorial than black rhinos. Only the dominant male scent marks the territory. He will share this territory with one or two subordinate males. Dominant males behave as subordinates when outside their own territory. This normally occurs when a dominant male must leave his own area to drink. He will not spray urine while he is out of his home territory. Generally only the dominant male mates with females and he will try to keep breeding females inside his territory.
- BEHAVIOUR** White rhinos are considered to be not as aggressive as black rhinos. In part this is due to the different habitats they live in. In the savanna, where white rhinos live, it is easy to see a rhino at a great distance so the chances of getting too close to one without knowing it are very low. The more open country makes it easy for the rhinos see people approaching and so there is plenty of time for them to move away if they wish. White rhinos do charge at times.

## Rhinoceros Reproduction

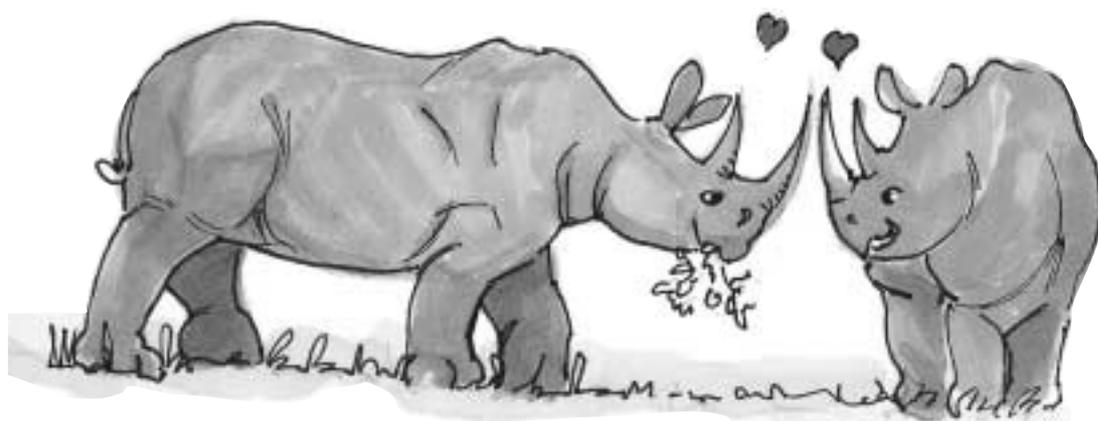
The rate of reproduction is an important factor for wild life survival. Animals that are frequently eaten by predators, like impala and warthog, are relatively small in body size. This is why they are easy for the predators to kill. But because they are relatively small they can reproduce quickly. They breed every year and can produce more than one young each season. In this way the species survives by producing lots of new animals to replace the ones that are killed. Animals that are generally not eaten by predators, like the rhinoceros and the elephant, are often larger animals. These big animals take much longer to reproduce. These animals do not reproduce every year and they can have only one calf at a time. These species maintain their population numbers by having a high survival rate rather than a high reproduction rate.

Rhinos can breed at any time of the year. Females become sexually mature between the ages of 5 and 8. Males mature at about 8 years of age but often don't breed successfully until they are 10-15. This happens because the younger bulls must compete with older, more established bulls for females.

When a female is ready to breed an adult male will join her and they will form a temporary group. In black rhinos, a pregnancy lasts for 15 months. For white rhinos it is 16 months. A healthy cow normally produces a calf every 2,5 years. If conditions are very good she may have a calf every two years. If the habitat is not so good or she is getting old, three years or more may be the average.

A rhino calf can stand up an hour after it is born and is able to walk within two hours. A black rhino calf can weigh as much as 45kgs at birth. A calf will suckle milk from its mother for about up to 2 years. A young rhino will stay with its mother after it is weaned. When a calf is between the ages of 2 and 5 it will be forced to leave its mother when she mates (the bull chases it away), or when a new calf is born. The calf will often join other calves and sub adults or a single female until it is full grown (about 7 years). Sometimes a female calf will return to her mother once she has been mated or has had her new calf and the three will live together for some time.

Rhino cows are very protective of their calves. Cow and calf normally stay close together. When moving a black rhino calf follows its mother. This is done so that the calf can walk more easily through the thick bush along the path created by the mother. Another possible reason for this habit is that if the pair bump into a predator in the thick bush the mother is in front and able to protect the calf. Sometimes a black rhino cow will leave her calf hidden while she goes to drink or browse. With white rhinos the calf moves in front of the cow. Because they live in more open country any potential threat to a calf can be seen at a distance and the pair can move off together. If the predator chases them the mother is behind and in a position to protect her calf.



## Rhinoceros Populations

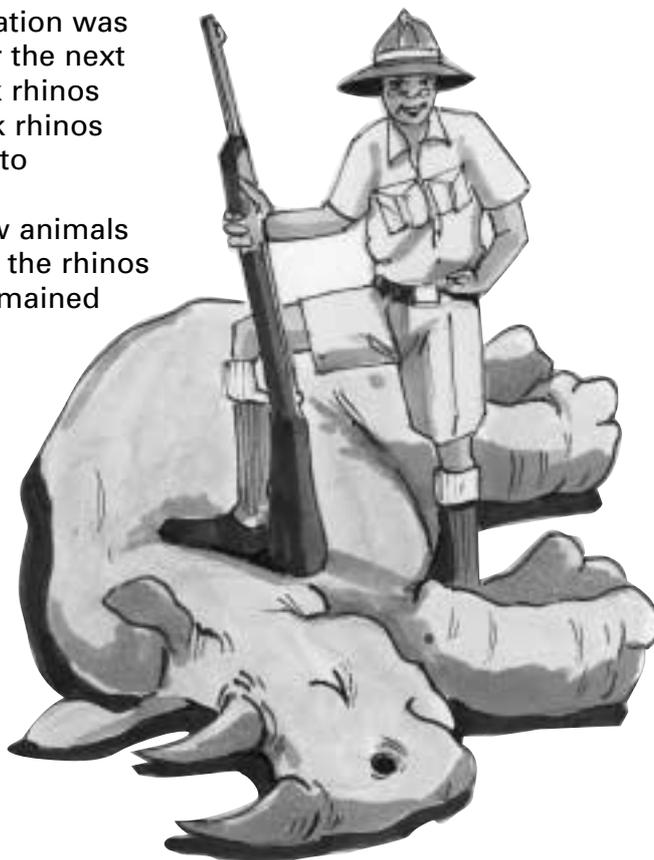
### Population history

Less than 200 years ago vast herds of animals roamed all over the African landscape. People hunted wild animals for food and their skins but the numbers of people were few and therefore so were the number of animals they killed. The wild animals could reproduce quickly enough to replace the ones that were killed and so a balance existed.

Over time, with introduction of Western medicines and technology, the number of people living in Africa increased. The growing population needed to kill a growing number of animals for food. Also, the Europeans who came to Africa with their rifles indulged in their passion for hunting. In the early days of the white man in Africa the wildlife resources seemed endless. Large numbers of animals were killed for sport. Skins, tusks and horns were taken to trade overseas. Now, instead of there being a balance, the populations of wild animals started to decline. In addition to the increasing hunting pressure the people, both black and white, kept taking more and more land for their fields and livestock, leaving less and less land for the wild animals to live on. For some species the dual pressure of increased hunting and reduced areas to live in was too much. Animals like the quagga, a relative of the zebra, and the blue antelope became **extinct**. They were hunted until the very last one of their kind was killed.

The African rhinoceros, being a slow breeder and relatively easy to hunt, is now also in serious danger of becoming extinct like the quagga. They have been shot as hunting trophies, for meat and to clear land for farming. Their skins have been used for shields and good luck charms. Their blood, urine, bones and dung have been used in traditional medicines in Asia. In more recent times it is the foreign demand for rhino horn that has caused Africa's rhinos to be slaughtered to the point of near extinction.

In the early 1800's there were thought to be more than a million black rhinos living in Africa. This population was reduced to approximately 65,000 by 1970. Over the next 25 years more than 95% of the remaining black rhinos were killed. By 1995 Africa had only 2,410 black rhinos left. Vast areas that had previously been home to thousands of rhinos now had populations only numbering in the hundreds or less. With so few animals living in such large areas it became difficult for the rhinos to find mates to breed with. Some countries remained with only two or three rhinos. Such small populations cannot recover because of inbreeding problems. Africa's black rhinos were heading straight for extinction.



## Rhino horn trade

The demand for rhino horn comes from two main sources. In **Asia** it is used in **traditional medicines**, mainly to treat fevers. The other is the **Middle East**, where the horn is used to make handles for ceremonial curved daggers called **jambiyas**.

In Asia, they have already killed almost all of their own rhinos. All three Asian rhinoceroses are classified as critically endangered. With so few of their own rhinos left the Asians have turned to the Africa's rhinos to satisfy their wants. Asians consider African rhino horn to be not as good as Asian rhino horn.

In the Middle East, Yemen and Oman in particular, rhino horn is carved to make handles for jambiyas, a curved dagger. Men wear jambiyas made with rhino horn as a symbol of their wealth and social status. The demand for jambiyas increased dramatically in the 1970's when the oil-based economies of the Middle East boomed. One Yemen trader claims to have imported as much as 36,700kg of African rhino horn. Over 12,750 African rhinos would have been killed to provide this amount of horn.



To be able to trade in rhino horn you need to know who to buy it from and who to sell it to. The person who knows these things is often called the "middleman". He normally makes the most money but does the least work and takes the least risks.

The middleman buys the horn in Africa from a rhino poacher. A rhino poacher normally moves into an area where there are rhinos and asks the local people to help him. He needs them to give him shelter and tell him where the rhinos live and how they are guarded, so he can find them and kill them with least risk to himself. Rhino poachers often use rifles to shoot the rhinos when they come to drink at their favorite water holes. Sometimes wire snares are used to catch rhinos. Once the rhino has been killed the poacher leaves the area to avoid getting caught. The community is often left in this way to take the blame for killing the rhino and the people end up in bad relations with their neighbours and the authorities. The poacher sells the horn to the middleman. The middleman pays the poacher a fraction of the value of the horn. The horn is then taken overseas and sold for many times more than what the poacher was paid. Even this selling price is insignificant compared to the value of a living rhino in a healthy rhino population (see Rhino Rewards)

Over time, as more and more rhinos are killed, the population starts to get smaller and it becomes harder for the poacher to find rhinos to kill. When this happens the middleman and the poacher simply move to another area that still has rhinos and kills them until the same thing happens again. If the rhino poacher is caught and taken to jail the middleman does nothing to help him. He will not risk getting caught because it is also illegal to trade in rhino horn. The middleman simply finds another poacher to kill for him.

## The Threat of Extinction

The demand for rhino horn from Asia and the Middle East has encouraged Africans to destroy their own rhino populations. Today, both the black and white rhinos are considered to be **critically endangered species**. This means that both species are facing an extremely high risk of extinction in the wild in the immediate future.

Rhinos are not the only species facing extinction today. The human population of the world is becoming dangerously large and the demand for resources, be it horns, meat, or wood, is growing with that population. The human population of the world in 2000 was about 6 billion. That is 6,000,000,000 people. The problem of this increasing demand is that many species are not able to grow or reproduce fast enough to replace what is taken. The populations of many species are becoming dangerously low in numbers. Today, over 10,000 different species are threatened with extinction.

Many people are very worried about the fact that the planet is losing so many species. It has taken millions of years for these different species to develop and we know very little about the roles they play in the natural processes of our world. It is not only animals, but people too that depend on these natural processes. Scientists understand that environments that have a large number of different species in it are much healthier and more stable than environments with fewer species. By allowing more and more species to become extinct we are weakening the health and strength of the very environment we all live in. By protecting the species we share our environment with, we are also protecting ourselves. Every species plays a unique and special role in our world and we are all dependent on each other for our survival.

Rhinos play a number of different and important roles in maintaining a healthy and productive environment. White rhinos create grazing "lawns" from which the coarse, tall grass is eradicated, which stimulates the growth of fresh green grass that supports other animals. Black rhinos play an important role in recycling nutrients by eating twigs and stems that are too coarse for other animals to eat. They return parts of these twigs and stems to the soil in their dung. The dung supports many different types of fungi and dung beetles, which further break down the twigs and branches, releasing nutrients back into the soil. In this way the rhinos dung enriches the nutrient content of the soil, making it possible for more plants to grow.

Rhinos also help trees by eating their seeds. Trees with strong seedpods, like the baobab and the sausage tree, reproduce with the help of rhinos. The seeds pass through the gut of the rhino and then come out in the dung. Because the rhinos move around the seed is deposited away from the parent tree. The dung acts like fertilizer and helps the new plant grow. This is good for the environment because it helps maintain both the diversity and number of trees.

## Rhino Conservation

Historically, almost every sub Saharan country had rhinos. By the end of the 1800s the white rhino was extinct in every single African country except South Africa. The heavy poaching for horns in the 1970s and 1980s exterminated all the black rhinos in a number of countries, including Angola, Botswana, Malawi and Zambia. Fortunately people realized before it was too late that the number of rhinos being killed was excessive and huge effort has been made to save both the black and white rhinos from extinction.

To help control the international demand for rhino horn both species of rhinos were placed on the CITES Appendix I list in 1977. CITES stands for the Convention on International Trade in Endangered Species. An Appendix I listing makes it illegal to trade in any part of the listed species. Interpol – Wildlife Sub-Group, which is the wildlife division of the international police force, along with TRAFFIC (Trade Records Analysis on Flora and Fauna In Commerce) work internationally to identify and arrest people trying to trade in rhino horn.

Efforts are being made in the countries that buy the horn to make people aware that the horn they purchase is driving the rhino populations in Africa to extinction. In the Middle East, alternative materials such as water buffalo horn, camel nail, agate and jasper are being used to make the handles for jambiyas. To help control the demand from Asia studies are being done to establish exactly what medical benefits, if any, rhino horn actually has. So far there is little evidence to support the notion that rhino horn has special qualities and today there are many modern medicines available to take its place.

The countries that still have rhinos have changed the way they manage their rhino populations to improve their protection and reproduction.

Many countries have made it **illegal to kill a rhino** without a permit from the government. **Penalties** for killing a rhino are very severe in an effort to make rhino poachers realize what a serious crime it is to hunt a species to extinction. Mandatory jail sentences are common. In South Africa and Namibia rhino poachers have recently received sentences of 10 and 20 years respectively. These sentences reflect the reality that killing a rhino is not just killing a single animal, it is threatening the survival of an entire species. Some governments have a shoot to kill policy for poachers found inside rhino areas. In Zimbabwe there is also a reward equivalent to US\$200 for information that is used to convict a rhino poacher.

Zimbabwe's rhinos are classified as a **Specially Protected Species**. This has been done to help give the rhinos the protection they need for their numbers to build up again. A poacher that kills a Specially Protected Species receives harsher penalties than other poachers. Other Specially Protected Species are the aardwolf, bat-eared fox, cheetah, gemsbok, Lichtenstein's Hartebeest, pangolin and the python.

Many people think that someone who kills a rhino is just making a bit of money for himself. This is not true. The reality is that rhino poachers are stealing from everybody. The country, through its government and other organizations like NGOs, puts a lot of effort and money into protecting rhinos so that the species can be made safe from extinction. Once the rhinos are safe again the nation as a whole can enjoy the economic and environmental rewards that come from successful conservation (see Rhino Rewards). As long as poachers are allowed to kill rhinos and the species remains at risk of extinction, we all continue to carry the cost.

Communities that live close to rhino populations are in an important and powerful position. The people that live in these communities are able to play a direct role in saving Africa's rhinos. In many ways it is the most important role of all because the people that live close to rhinos are able to stop poachers BEFORE they kill a rhino. As we have discussed earlier, rhino poachers use the local people to help them kill rhinos. If the people refuse to help it makes it very difficult for the poacher to succeed.

A rhino poacher needs to live in the community while he is finding out where the rhinos are. The community should be suspicious of strangers who want to know where exactly the local rhinos live and drink. If you think there is a rhino poacher in the area it is a good idea to tell the local authorities. This could be the police, National Parks or local scouts, teachers or community leaders. By making it known that there is possibly a rhino poacher in the area the authorities are given an early warning and the security for the rhinos can be increased. People can be on the lookout for unusual behaviour like signs of poachers going into rhino areas, people with rifles or heavy wire snares. By helping the authorities in this way the community is not only protecting the rhinos but also themselves. Communities that helps stop and catch rhino poachers often have better relationships with the authorities and their other neighbours.

Not all rhinos are killed by outside rhino poachers though. It is not uncommon for rhinos to get caught in snares made to catch other wildlife. It is very difficult to control this illegal snaring because many snares are placed in the bush over large areas. Because the rhino is so big it is normally able to break the wire free from the tree but the snare stays on the leg or neck. If the wire is not removed a large wound develops and eventually the rhino dies. It costs about US\$1,000.00 to find and treat a rhino that has snare wounds. Local communities can do a lot to stop rhinos from being killed or wounded by snares.

Most people that live near to rhinos know which paths the rhinos like to use and where they often drink. Setting snares in rhino home ranges, especially on rhino paths is waste of effort on the poacher's part. Snares that are set in these places are very likely to be carried away by a rhino so the poacher gets no meat, loses his snare and risks killing a rhino. Removing snares set in rhino's home ranges saves rhinos lives. It is vital to report any unusual spoor sightings. A rhino that has a snare wound often drips blood as it walks. If the wound is bad the rhino may have trouble walking and drag its leg. The earlier the snare can be removed the better the rhino's chances are of surviving.

## **White rhino conservation**

The recovery of the southern white rhinoceros from very near extinction is one of the great conservation success stories of the world. From being a relatively widespread species in southern Africa the southern white rhinoceros was reduced to less than 100 animals by the late 1800s early 1900s. These animals were given very tight protection and by 1970 the population had built up to 2000 animals. This population was thought to be too great for the area they were in so animals were moved out to other areas where they could continue to increase in numbers under protection from poachers. Today the southern white rhino population is over 10,000. Countries that lost all their white rhinos to poachers are now able to have them again thanks to the special efforts of South Africa.

## Black rhino conservation

Even with all the efforts being made to stop the trade in rhino horn, the population of black rhinos continued to decline into the 1990s. It was very difficult to give the black rhinos the protection they needed because they live in such vast areas in countries that at the time were facing both economic and political instability.

**Zimbabwe** was home to the largest population of black rhinos in 1980. Between 1,300 and 1,400 black rhinos lived in the Zambezi Valley at that time. By 1988 the population had been reduced to about 600 animals. The long river border with Zambia, where many of the poachers came from, was impossible to control and the decision was made that to effectively protect the remaining rhinos they needed to be moved away from the Zambezi Valley. This effort to save Zimbabwe's black rhinos from extinction was called "Operation Stronghold".

Under this national conservation strategy black rhinos were captured in the Zambezi Valley and translocated (moved) to various places where it was felt they could be better protected from poachers. Moving the rhinos also brought together isolated animals so they could become a part of healthy breeding populations.

Some rhinos were exported to zoos overseas. This was done as a safety measure so that if Africa failed in its efforts to save its rhinos in the wild there would still be some rhinos safe in other countries.

Others were moved into **Intensive Protection Zones (IPZs)** within National Parks. Four IPZs were established – Sinamatella (in Hwange National Park), Matusadona (on the southern shore of Lake Kariba), Matobo (near Bulawayo) and Chipinge (on the eastern side of Zimbabwe). Government anti-poaching resources were concentrated on protecting these smaller areas.

About 190 rhinos were moved onto private land where the landowners undertook to look after them on behalf of the government. This is known as a **custodian scheme** because the rhinos continue to belong to the government. To provide better protection for the rhinos some landowners joined their properties together to form conservancies. The most successful of these are the Bubiana, Save Valley and Chiredzi River Conservancies in the lowveld. The habitat and protection provided in these areas allowed the rhino populations to grow rapidly. By 2000 the black rhino populations in these lowveld conservancies had doubled.

From the lowest point of about 370 animals in 1993 the Zimbabwean population has grown to over 500 animals. There is still a long way to go before the black rhinos can be considered safe from the threat of extinction though. Losing even one animal is a major loss when the populations are so small. The poaching of just one female rhino represents a loss of as many as 18 rhinos over 20 years. When she is killed so is every calf she would have had in her life and every calf her female calves would have had also. This is why it is so important to control poaching.

## Increasing rhino populations

One of the strategies being used to help increase the number of rhinos as quickly as possible is to maximize the rate of reproduction. Rhinos are relatively slow breeders. If a population of 100 animals increases by just 8 in a year the population is considered to be breeding well. One of the best ways to keep the rate of reproduction high is to have plenty

of food available for all the animals. Well-fed rhinos start to breed earlier. In the Lowveld conservancies, many black rhino cows have their first calves at less than six and a half years of age. In other areas where the food is not as good and plentiful, cows often don't start reproducing until they are over the age of seven and a half. The better-fed animals also calve more often. A calf every 2,5 years as opposed to a calf every 3,5 years can make a big difference to how quickly a population grows.

## Monitoring

To know how well a population is reproducing they must be monitored. This involves checking regularly on every animal in the population. Every rhino in a conservancy should have a record of when it was born, whom its mother is and where it likes to live (its home range). Most rhinos even have names given to them by the scouts who check on them. It is especially important to keep track of the females to know when they have calves. By collecting this information it is possible to work out if the population is breeding as well as it can.

For every area where rhinos are kept scientists have looked at how much food is available and how many rhinos can be supported with this food supply. When the population grows to that number some animals are taken away to start a new population elsewhere. This is done to keep the whole African population increasing as quickly as possible. If the rhinos were just left in the same area they would start competing with each other (and other animals) for food. They would start to breed more slowly and the population would not increase as quickly as it could.

The aim of monitoring and protection is to get rhino populations back up to safe numbers as quickly as possible. It will be many, many years before the rhinos in Africa are considered safe from extinction. Especially since poaching remains a constant threat. The success that Africa has achieved since it started protecting its rhinos is great. Today, both black and white rhino populations are increasing. The white rhino populations in South Africa are now large enough that they play an important role in the economy there.

## Rhinoceros Rewards

South Africa has been very successful in protecting its rhinos from poachers and today they have healthy, growing populations of both black and white rhinos. South Africa has over 7,000 white rhinos and over 1,000 black rhinos. With these larger populations it is now possible for tourist to come and see the rhinos in their natural habitats. The rhinoceros is one of the "**Big Five**" along with elephant, buffalo, lion and leopard. Nowhere else in the world is it possible to see such large and impressive animals living together in the wild.

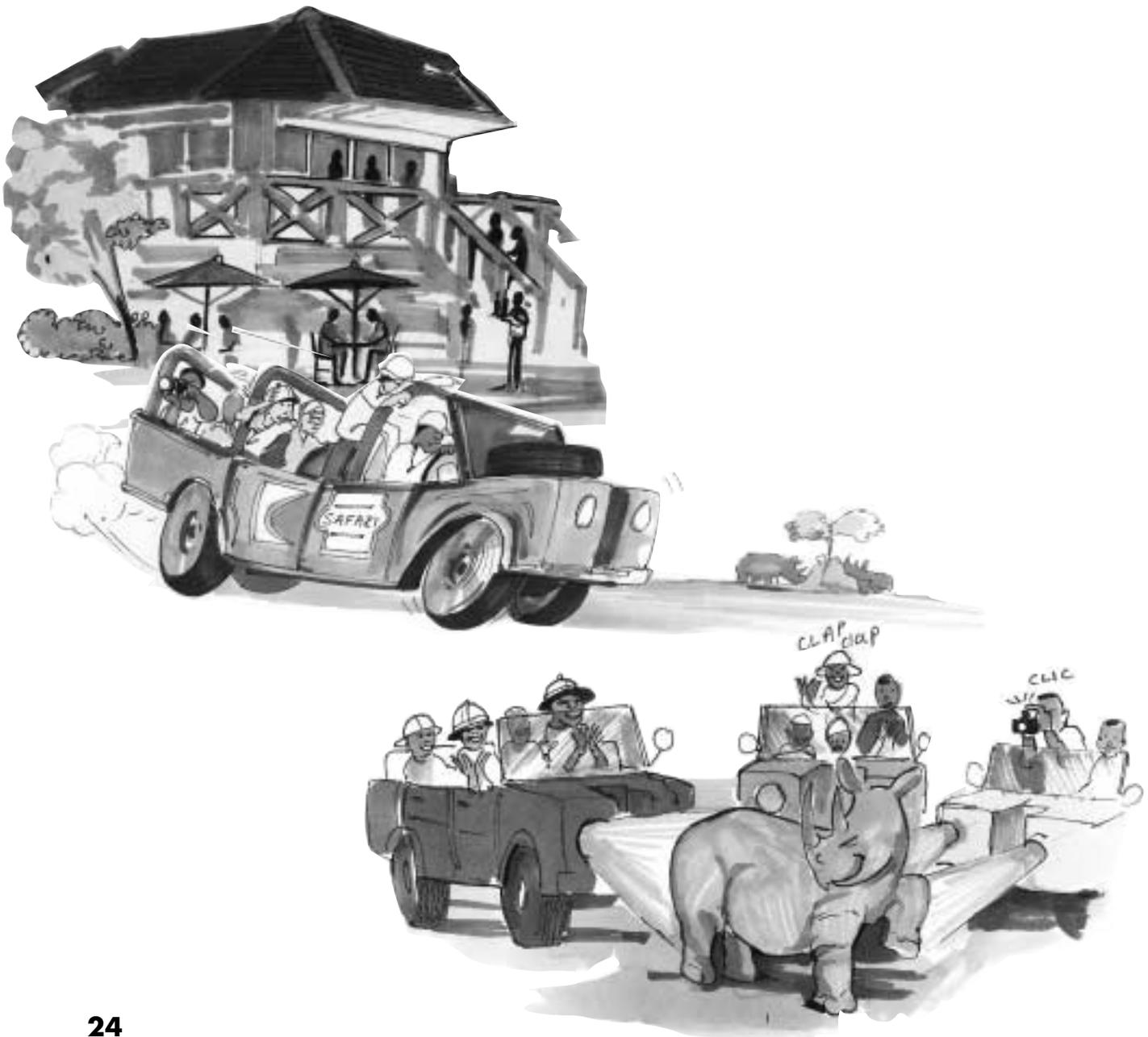
**Tourism** is now a growing industry in South Africa and is an important part of the economy there. Tourism provides many jobs. There are the scouts who protect the rhinos, the guides who help find the animals, the managers, cooks, waiters, maids and gardeners who run the hotels and lodges. Now, instead of only the poacher receiving money for the horn many more people benefit from the value of the rhinos.



The white rhino populations in South Africa have grown so much they can now sell them. The owners of tourism venues know that people want to see rhinos and pay large amounts of money to buy them. At a sale of live game in South Africa in 2002, a white rhino and her calf were sold for R235,000.00. Live black rhinos are worth more than double that amount. The foreign currency from hunting and tourism is taxed and channeled through the legal money systems so that the whole country benefits.

## The Future of Rhinoceroses in Africa

As the rhino populations recover in other countries, they too will start to see the rewards that South Africa is enjoying. Along with the financial and employment benefits that come with tourism these nations can be proud that they have been successful where so many others have failed. Instead of letting yet another species vanish from the face of the Earth, Africa is winning the fight against poachers and bringing the rhinoceros back from the brink of extinction. What we need to do is unite against those who continue to kill rhinos for their own selfish gain so that we can all enjoy the rewards that come from protecting and maintaining a healthy and diverse environment sooner rather than later.



## **GLOSSARY**

ADAPTATION:	Changes in the structure, behaviour, body form or function of an animal, which help it to exist or survive in its environment.
BIODIVERSITY:	The full variety of life on earth and all the processes and interactions that sustain it.
BROWSER:	A herbivore that feeds on parts of plants such as leaves, twigs or small branches.
BUSHVELD:	Land that grows a variety of trees, bush and grass together.
CAPTIVITY:	To be confined to one small place. Not able to move freely.
CAPTIVE ANIMAL:	An animal that lives in a zoo or an animal park or that is kept as a pet.
CITES:	Convention for the International Trade in Endangered Species. Cites is an agreement between individual countries aimed at preventing the excessive and unsustainable trade in endangered species between countries.
DEHORNING:	The removal of most of a rhino's horn. This is usually done to make the rhinos less attractive to poachers and to stop the rhino from hurting itself or others when it is being moved.
DOMESTIC:	Animals that have been tamed by humans and that are used by humans for a particular purpose; examples include cattle, goats, donkeys, cats and dogs.
ENDANGERED SPECIES:	A species that is in danger of extinction. Its survival is unlikely if the cause of its decline continues.
ENVIRONMENT:	All the physical, chemical and biological factors that affect or make up the surroundings of an animal or plant.
ERADICATE:	To remove completely from an area.
EVOLVE:	An animal or a plant changes its characteristics over time, both as individuals and as populations, in order to survive better in the environment. This process of change is called evolution.
EXOTIC:	An animal or a plant that does not naturally occur in an area but has been brought in by humans.
GESTATION PERIOD:	The length of time a female is pregnant with young.
GRAZER:	A herbivore that eats grass.
HABITAT:	The place where a species lives. The environment where a plant or animal naturally occurs.
HERBS:	Small, low growing plants that are not grasses.
HERBIVORES:	Animals that eat plants.
HIGHVELD:	Ranging between 1,200 and 1,600m in altitude with moderate temperatures and frequent frosts. Good summer rainfall. Mostly open grasslands and deciduous forests with msasa or mfuti.
HOME RANGE:	The entire area in which an individual animal lives.
IMMOBILISE:	To restrict and control movement often by using very potent drugs.

KERATIN:	A tough fibrous protein that looks like compressed hair. Your fingernails and a rhino's horns are made of keratin.
LOWVELD:	The hot, dry areas below 800m. Rainfall averages less than 400mm and evaporation is high. Common tree species – baobab, mopani, Acacias, Combretums, Commiphoras and Grewias. The Sabi, Limpopo and Zambezi valleys are all classed as lowveld areas.
MAMMAL:	A warm-blooded animal that has hair on its body. The young drink milk from their mother until old enough to eat other food on their own.
MANDATORY:	Compulsory, no other option is given.
MONITOR:	Regular looking and checking to see what is happening.
PARASITES:	Organisms that use other organisms to benefit themselves at the expense of their hosts.
POACHING:	A type of hunting that is against the law.
POPULATION:	Total number of things (plants or animals) in a given place.
PREHENSILE:	Part of the body specially designed to grip objects.
PROTECTED AREA:	A special piece of land used to conserve and look after animals and plants.
SAVANNA:	Open grassy area with few or no trees.
SHRUBS:	A plant smaller than a tree, often with more than one stem.
SOLITARY:	Alone, without others of its own kind.
SUBMISSIVE:	To surrender, give way and not resist another.
TAXA:	Plural of taxon.
TAXON:	A level of classification of plants and animals, normally at the level of genus, which indicates a level of similar features and characteristics.
TERRITORIAL:	Active defense or control over a certain piece of land.
TERRITORY:	Area of land occupied by an individual animal.
TRANSLOCATION:	The capture and moving of a wild animal from one area to another.
VULNERABLE:	A species that is likely to become endangered in the future if the cause of its decline continues.
WEANED:	When a mammal mother has stopped feeding milk to her young and the young has learned to eat other food.
WILDLIFE:	Natural plants and animals of an area.

## **IUCN Categories of Threat**

The black rhino is classified by the IUCN (International Union for Conservation of Nature) as **CRITICALLY ENDANGERED**. The IUCN have a **RED LIST** of taxon that are facing the threat of extinction.

There are eight categories of threat:

### **EXTINCT (EX)**

There is no reasonable doubt that the last individual of this taxon has died.

### **EXTINCT IN THE WILD (EW)**

A taxon is extinct in the wild when it is known only to survive in captivity.

### **CRITICALLY ENDANGERED (CR)**

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.

### **ENDANGERED (EN)**

A taxon is endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.

### **VULNERABLE (VN)**

A taxon is vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the near future.

### **LOWER RISK (LR)**

A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the above categories. Taxa included in the Lower Risk category can be separated into three subcategories:

- 1. Conservation Dependent (cd).** Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.
- 2. Near Threatened (nt).** Taxa which do not qualify for Conservation Dependant, but which are close to qualifying for Vulnerable.
- 3. Least Concern (lc).** Taxa which do not qualify for Conservation Dependant or Near Threatened.

### **DATA DEFICIENT (DD)**

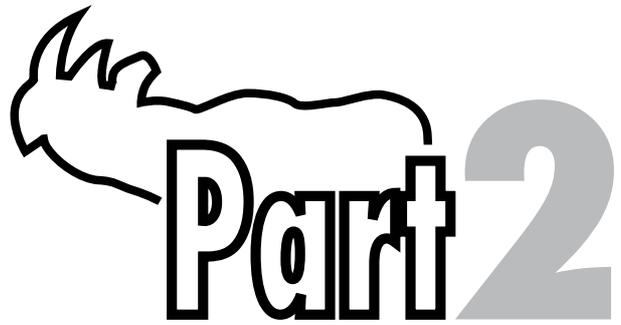
A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

### **NOT EVALUATED (NE)**

A taxon is Not Evaluated when it has not yet been assessed against the criteria.



# card guide



# Part 2

This section is intended to help guide teachers in the use of the Rhino Cards. Most of the cards have been developed to help teach specific subject units in Environmental Science though teachers should feel free to use them for other subject as well. For example, Card 6, Rhino Geography may also be used to teach about Land for Wildlife. The cards may also be used to teach at different grade levels by adding detail from Part One of the Guidebook. The suggestions made here are by no means exhaustive. It is hoped that they will act as a starting point for teachers who should feel free to use the cards as they see fit.

## card summary **Table 1**

<b>CARD</b>	<b>TITLE</b>	<b>KEY CONCEPT</b>
1a	Wild animals live in the Environment	Wild animals live in the Environment
1b	Wild animals live in the Environment	Wild animals live in the Environment
2a	Black Rhinos.	Wild animals have some similar features
2b	White Rhinos	Wild animals have some different features
3a	Black Rhinos Populations and Reproduction.	The population of wild animals has decreased over the past 100 years
3b	Black Rhinos Populations and Reproduction	Plants and Animals Reproduce
4a	Land for Wildlife	National Parks, game areas and some commercial and/or communal areas are set aside for wildlife management
4b	Land for Wildlife	The population of wild animals has decreased over the past 100 years
5a	Habitat	Different animals live in different places in the environment. These places are called habitats
5b	Territories	Different animals live and feed in territories within habitats
6a	Rhino Geography	Geography
6b	Rhino Geography	Geography
7a	Rhino Poem	English
7b	Rhino Story	English
8a	Rhino Maths	Mathematics: Addition and Subtraction
8b	Rhino Maths	Mathematics: Multiplication and Division

# CARD 1a

## WILD ANIMALS LIVE IN THE ENVIRONMENT

The students can use this card to explore the different wild animals which live in the environment. Ask the students to identify all the animals in the drawing. They should be able to see klipspringer, dassie, zebra, warthogs, impala and giraffe. There is also a rhino in the bushes. The students may not see the rhino at first. Later they can come back to the card and look again once they learn that not all animals in the environment are easy to see.

What other wild animals live in the environment? Encourage the students to name as many wild animals as they can.

Ask the students to describe the animals in the photos. Young students may simply describe what the animals look like. Older pupils should consider what the animals eat, where these animals live and how they behave.

Make a list on the board of the features the children describe and then ask them to identify which animals have the same features and which animals have different features.

It is not common to actually see wild animals. Most wild animals are shy and run away from humans. It is much more common to see where animals have been by the tracks they leave on the ground.

Ask the class to identify the tracks drawn on the bottom of the card.

Take the class outside and let the students look for tracks and other signs of wild life. Let the students experiment with making their own tracks in different surfaces (soft sand, fine soil, rock etc.). Ask them to work out which surfaces are good for making tracks in and which ones are not. Help them use this information to work out where it is best to look for tracks.

There are many different ways of investigating what animals are living in the environment. Encourage the students to use all their senses to find out about their environment.

What animals do they see? Dassies, baboons, klipspringers.

What animals do they hear? Birds, jackal, leopard.

What sign (tracks and dung) do they find? Rhino and snake tracks.

What animals do they smell? Waterbuck, wildebeest.

Using more of your senses will help you find out more about what animals are living in the environment. Especially animals that are rare like the black rhino.

# CARD 1b

## WILD ANIMALS LIVE IN THE ENVIRONMENT

This card looks more closely at tracks and signs of black rhinos. Black rhinos are shy animals and are very rare. They tend to live in thick bush so people do not often see them. It is easy to see where a black rhino lives though because they mark the areas they live in.

Work through the card with the students and discuss each of the different signs rhinos leave in their environment.

Spoor is another name for tracks. When rhinos walk they often leave behind marks in the ground. These marks are large and easy to find if the soil is soft.

Add more detailed information from Part One for older students.

The students should now look at the drawing on side a again to see if they can find any other signs that there are wild animals in the environment. They should see tracks on the ground, a bird's nest in the tree and warthog holes. They should be able to see different signs of where the rhino has been.

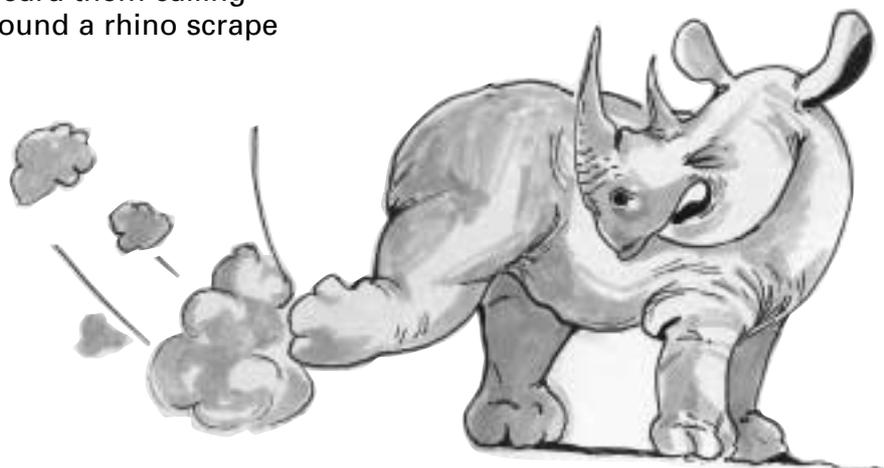
Younger students may simply give verbal answers. Older students could be asked to write their answer to practice their writing skills.

For example: 'You might expect to see a bird here because there is a nest in the tree.'

Ask the children to look for signs of wild animals on their way to and from school. In the morning make a list of the different wild animals the students discovered and how.

For example:

<b>ANIMAL</b>	<b>IDENTIFIED BY</b>
Snake	Tracks on the ground
Bird	Heard them calling
Rhino	Found a rhino scrape



# CARD 2a

## BLACK RHINOS

This card can be used to explore the differences and similarities between wild animals. Teachers are encouraged to use Part One of the Guidebook to help teach this lesson. Additional information can be introduced to match the level of detail the students are capable of dealing with. For example the card by itself is suited to Grade 2 students. With extra information from Part One it can be used to teach Grade 5, Different plants and animals live in the environment.

Work through the cards with the students and help them understand the different features on the black rhino.



# CARD 2b

## WHITE RHINOS

This card describes the features of the white rhino. Once the students have worked through both sides of the card they can start to compare the two different animals.

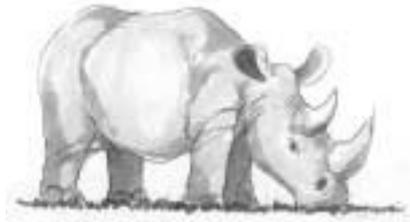
Explore the various features that the black and white rhinos share. For example, skin colour, shape, two horns on the front of their face, small populations etc.

Next explore the ways in which the two species are different, for example, the shape of their lips, what they eat, their size and height.



# CARD 2

## EXERCISE



Once the students are familiar with the various features divide the class into two groups, one group are "WHITE RHINOS" the other "BLACK RHINOS".

The teacher then asks questions

**"If I have..... what am I?" or "If I do.....what am I?"**

The children have to respond by standing up and answering if they think their group fits the question.

Example: The teacher asks, **"If I have a pointed lip, what am I?"**

The "BLACK RHINO" group should all stand up and say "A BLACK RHINO".

If a student stands up in response to the wrong description, he/she has to leave the group. The winning group is the one with the most students left at the end of the game.

**If I have a pointed lip, what am I?**

(A BLACK RHINO)

**If I have a wide lip, what am I?**

(A WHITE RHINO)

**If I eat trees and shrubs, what am I?**

(A BLACK RHINO)

**If I eat grass, what am I?**

( A WHITE RHINO)

**If I have three toes on each foot, what am I?**

(Both BLACK AND WHITE RHINO)

**If I am as tall as a boy, what am I?**

(A BLACK RHINO)

**If I am taller than a man, what am I?**

(A WHITE RHINO)

**If I weigh more than a Land Cruiser, what am I?**

(A WHITE RHINO)

**If I like to live in SAVANAS , what am I?**

(A WHITE RHINO)

**If there are only 3,100 of my kind still alive, what am I?**

(A BLACK RHINO)

**If I have grey skin, what am I?**

(Both BLACK AND WHITE RHINO)

**If I grow to 1,6m tall, what am I?**

(Answer BLACK RHINO)

**If I thousands of my kind have been killed, what am I?**

(Both BLACK AND WHITE RHINO)



**If I am Critically Endangered, what am I?**

(Answer BLACK RHINO)

**If I eat leaves and branches, what am I?**

(Answer BLACK RHINO)

**If I like grasslands, what am I?**

(Answer WHITE RHINO)

**If I live in bush land, what am I?**

(Answer BLACK and WHITE RHINO)

**If I weigh up to 2,000kg, what am I?**

(Answer WHITE RHINO)

**If once there were lots of me all over Africa, what am I?**

(Both BLACK AND WHITE RHINO)

This game can be played with older students by including more detailed information from Part One. More specific questions can then be asked of the students.

This exercise helps encourages the students to learn the features of the two species and reinforces their understanding of the differences between them.

# CARD 3a

## **BLACK RHINOS POPULATION AND REPRODUCTION**

Read through the card together with the class and discuss the various reasons behind the decline of black rhino populations. Information from Part One can be discussed to help the students develop a deeper understanding of the problems facing the black rhinos.

Encourage the students to see that they have a positive role to play in the fight to save the black rhinos from extinction. Part One offers various suggestions as to the positive contributions local communities can make to rhino conservation. Discuss that poachers often try to get information about where to find black rhinos from people who live near by. Help them to understand that the people who live near black rhinos are actually the people in the BEST position to save the black rhinos from extinction because they can help stop a rhino poacher BEFORE he kills a rhino. Discuss with the students what to do if they find snares in rhino areas. Identify who students should tell if they think there is a rhino poacher in their community, e.g. teachers, scouts, and local community leaders.



# CARD 3b

## BLACK RHINOS POPULATION AND REPRODUCTION

The black rhino is used to explore the key concept that animals reproduce. Work through the card with the students.

A black rhino cow could have up to 4 calves in ten years if she has a calf once every two and a half years.

Ask the students about the reproduction rate of other animals they are familiar with like goats and cattle. Do these animals reproduce more quickly or more slowly than the black rhinoceros? The children can experiment with the concept of reproduction and populations as a simple maths exercise. Each group should start with the same "population", (seeds or stones will do). One group will represent goats. Another group can be cows and another rhinos, etc. Each group will reproduce (be given more seeds or stones) equivalent to the reproduction rate of their animal. Each round represents one year. So in one round the goat group will have two added to their population to represent twins, the cow group will have one added and the rhino group will be given one. In the next round the populations of the goat and cow groups will grow again but the rhino group will not. They will have to wait another two and a half years before the rhino can reproduce again. After a suitable number of round the students must count their populations and work out which animals have the biggest populations and why.

This exercise can be made more complex for older students by including deaths (subtractions). Students that are old enough may be asked to consider the fact that the number of females in a population influences population growth. The populations can grow in relation to the number of reproducing females (multiplication).

The final population of black rhinos will always be less than for the others animals. Ask the class why this is? Discuss the implications of this for black rhino populations. Because the rhinos reproduce very slowly it takes a long time to replace animals that are killed. This is one of the reasons why it is very important to protect black rhinos from being killed.



# CARD 4a

## LAND FOR WILDLIFE

Read through and discuss the content of the card with the students.

Ask them to name some National Parks or wildlife areas that they know.

Ask them what different animals they think live in those areas?

Older students should be encouraged to think about the various reasons for maintaining land for wildlife and the benefits these areas provide.

The Bubiana Conservancy is a black rhino conservancy. Refer to Part One for information about the conservancy and the custodian program it was established under. Discuss with the students the value of wild life areas for the environment and the economy.

Many tourist visit Africa to see wild animals in these special areas. Tourist pay to be able to visit these wildlife areas in much needed foreign currency. Tourism is one of the largest industries in the world and provides many different jobs.

# CARD 4b

## LAND FOR WILDLIFE

Highlight the role wildlife areas play in conservation. Without wild life areas it would not be possible to save the black rhinos from extinction. Discuss Intensive Protection Zones in National Parks and Conservancies and the important role they play in saving the black rhinos from extinction. Refer to Part One for details about IPZs and conservancies.



# CARD 5a

## HABITAT

Once the students have read through the card ask them to explain what a habitat is in their own words. Help them to understand that animals, like humans, need certain things to survive. Ask questions to see if the students understand.

What is a rhino's equivalent to a borehole? (Water hole)

What is the human equivalent of thick bush and trees? (Crops and houses).

Part One provides more detailed information about rhino habitat.

Ask the students to fill in the table and then discuss the answers. The students should understand that a habitat has many different parts and the destruction of any one of those parts effectively destroys the habitat. They should also be aware that it is not always possible to re establish a habitat once it has been destroyed. Help the students to see the link between habitat destruction and the survival of wild animals.

It may be useful to use this card in conjunction with Card 1a so that the students can explore the fact that there are different habitats and that different animals live in them.

For example: Klipspringers live in kopje habitat.  
Black rhinos live in bush habitat.

The students should explore the different habitats around the school. Help them identify river habitat, kopje habitat and bush habitat and the different animals you would expect to find in each.



# CARD 5b

## TERRITORIES

Read through the card with the class and help the students understand the concept.

Rhinos are not the only animals that have territories. Most wild animals live within territories. Draw a map on the board to show an area with a river, kopjes, thick bush and open areas. Outline the territories of some animals that live in that area. Put a klipspringer territory around the kopje, a rhino territory around the thick bush and down to the river. A leopard's territory can overlap the kopje, thick bush and river. A duiker territory could be near the river.

Ask the students about the different territories the animals keep.

Which animals have overlapping territories?

Which animals have water within their territories?

Why are some territories large and others small?

It is useful to be aware of the territories of different animals within your environment. For example, if you know that a certain kopje is inside a leopard's territory it would be best not to leave your goats there overnight to avoid them being eaten. If you see dung piles and scrapes it is likely that the area you are in is part of a black rhino's territory. It is very likely that the rhino will be somewhere in the area. To avoid getting too close to the rhino, which may charge if it gets a fright, try to avoid walking through the thick bush, where the rhino often rest during the day.

Older students could be asked to draw their own maps. They could choose a piece of land near the school to base it on and map the territories of wild animals they think could live in the area.



# CARD 6a & b

## RHINOS GEOGRAPHY

This card aims to introduce the students to maps. The card uses simple drawings to help the students understand that maps represent areas of land and that information about an area can be read from a map.

Read through the card with the students.

Ask the students to explain what the map shows them. From what they have read on the card they should be able to see that the fence is keeping some rhinos apart from each other. Other rhinos are being kept too close together by the fence and are chasing each other. One area has cattle. Some areas have no animals at all.

Read through side b with the class.

Now ask the students to explain what is different in the second map. They should notice that the fences are gone. The rhinos that were separated before are now together. The other rhinos are no longer chasing each other. The cattle have not moved.

Ask the students which map represents the best situation for the rhinos and why.

Older student may like to make a map of the school and the surrounding area. They can work in groups or alone. The students can present their maps to the class.

Ask the students to draw another map showing the same area but with changes that they think would make it better. For example maybe they would like a sports field or a school block. There could be an area for wild animals and an area for shops. Let the children present their maps to the class and ask them to explain why they would make the changes they have shown on their maps.



# CARD 7a

## RHINO POEM

Younger classes may need to have the poem read to them as an English exercise. Older students can read the poem and answer the questions themselves.

Ask the students to make up their own poem about a black rhino or another wild animal that they are familiar with.



# CARD 7b

## RHINO STORY

This card is intended to be used as an English comprehension exercise. The story may be read to the class or allow the students to read through it on their own.

Some possible questions:

- What size was the cake?
- What is on the rhino's nose?
- How many ears does a rhino have?
- Which sea did the rhino swim in?



# CARD 8a

## RHINO MATHS

### Addition and Subtraction

Answers:

1. 23 black rhinos.
2. 26 black rhinos.
3. 28 black rhinos.
4. 4 black rhinos die. 24 black rhinos are still alive.
5. 13 Males and 11 females. Of the 8 calves born 4 would be male and 4 female. Two adult females were killed by poachers and with them die 1 male and 1 female calf. So from a total of 14 females, 3 were killed leaving 11 females. From a total of 14 male 1 was killed leaving a total of 13 males.
6.  $55\text{km/hr} - 35\text{km/hr} = 20\text{ km/hr}$ . A black rhino can run 20km/hr faster than a person.
7. 1980
8. 1995
9.  $14\ 785 - 2\ 410 = 12\ 375$
10.  $100 - 2\ 475 = 625$
11. Angola 1995, Botswana 1995, Malawi 1992, Mozambique 1999, Swaziland before 1980 and Zambia 1995.
12. Botswana, Malawi, Namibia, South Africa, Swaziland and Zimbabwe



# CARD 8b

## RHINO MATHS

### Multiplication and Division

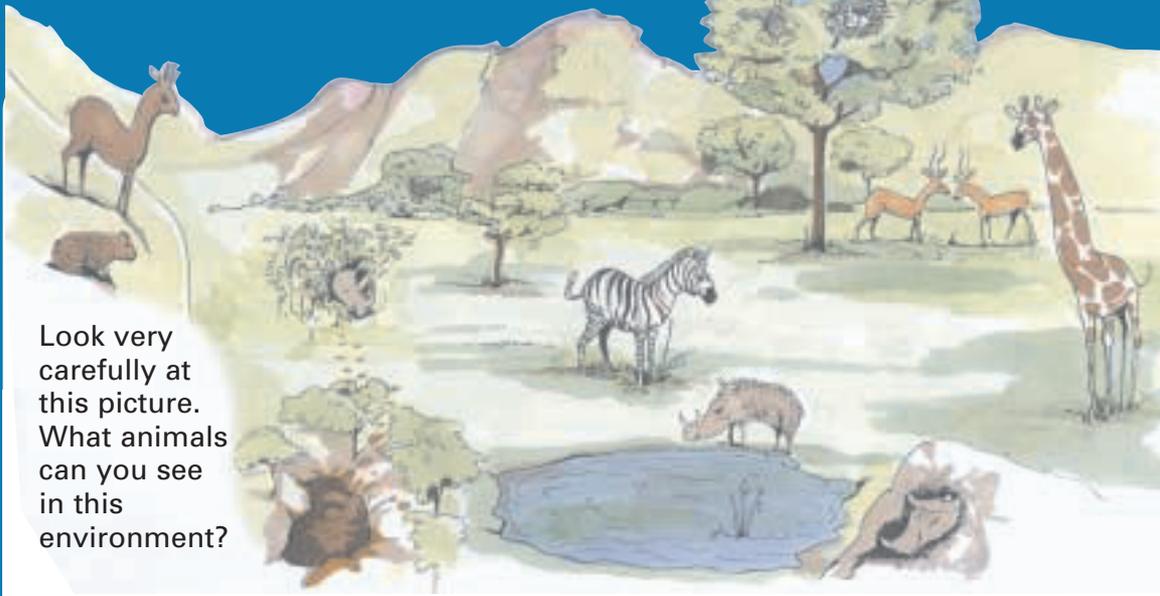
Answers:

1. 4 calves.
2.  $1.4\text{kg} \times 7\text{ days} = 9.8\text{ kg} + 40\text{kg} = 49.8\text{ kg}$
3. R 470 000.00
4.  $150/10 = 15\text{m/sec}$
5. Use a watch to time the students running.
6. The rhino.
7.  $50/5 = 10\text{ years}$ .
8.  $136/5 = 27\text{ years}$ .
9.  $465/7 = 66.4\text{ weeks}$ .
10.  $23 \times 7 = 161\text{kg}$ .



## **NOTES**

## **NOTES**



Look very carefully at this picture. What animals can you see in this environment?

A RHINO has two horns on its face.

A RHINO holds its tail up in the air when it runs.



A GIRAFFE is very tall.

A GIRAFFE has two horns on the top of its head.



A ZEBRA has no horns.

A ZEBRA has black and white stripes.



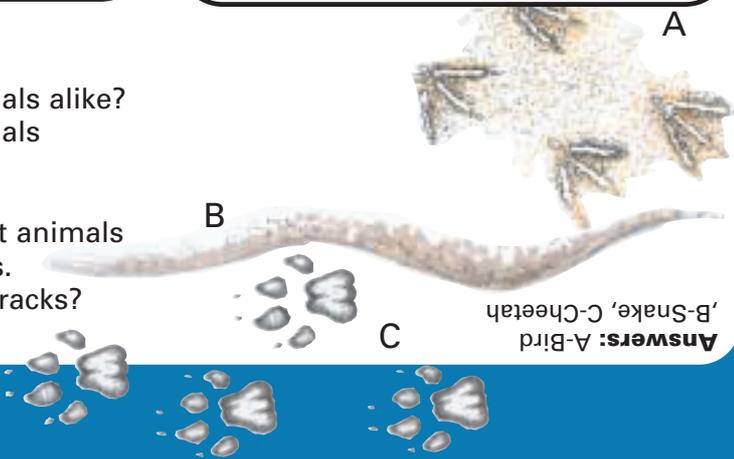
A WARTHOG has two tusks.

A WARTHOG holds its tail up in the air when it runs.



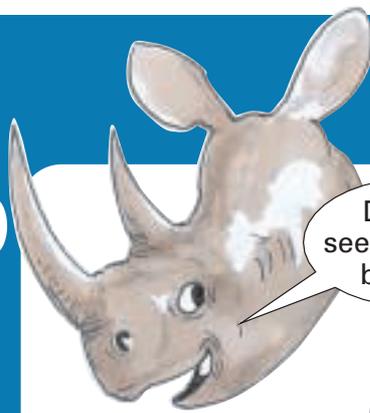
In what ways are these animals alike?  
In what ways are these animals different?

Sometimes you can tell what animals live in an area by their tracks.  
Which animals made these tracks?



Answers: A-Bird, B-Snake, C-Cheetah

1b



Did you see me in the bushes?



It is easy to see where I have been.



I have really big feet. I have three toes.

**WALLOWS**



I love to roll in mud. I also like to roll in dust.

I like to go to the toilet in the same place to make a pile of dung. I also rub my feet in my dung so that they smell a lot.



Chip has been here. I can tell by his smell.



Now look again at the picture on the other side of this card and see if you can tell where the Black Rhino has been.





I am not black. My skin is actually grey.

A Black Rhino weighs more than a small car and is taller than one too.

The Black Rhino's top lip is pointed. The lip is used like a finger to grab branches and pull them into the mouth so that they can be eaten.



Height: 1.6 m  
Weight: 850kg

**FACTS**



Black Rhinos like to live where there are lots of different trees and shrubs to eat...

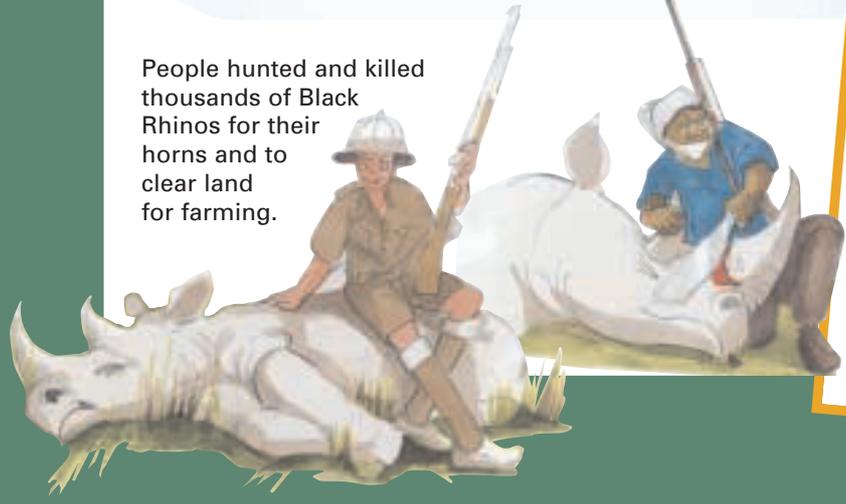


...and water to drink.



Once there were lots of Black Rhinos all over Africa.

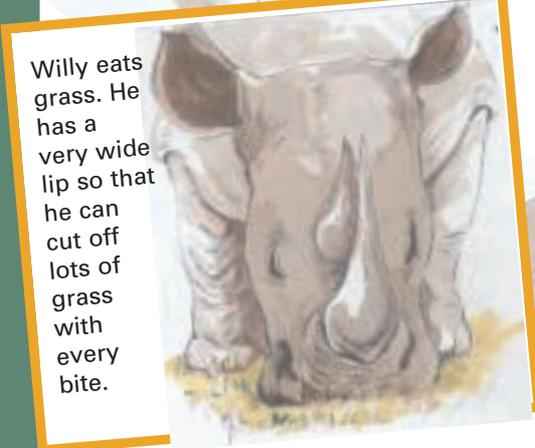
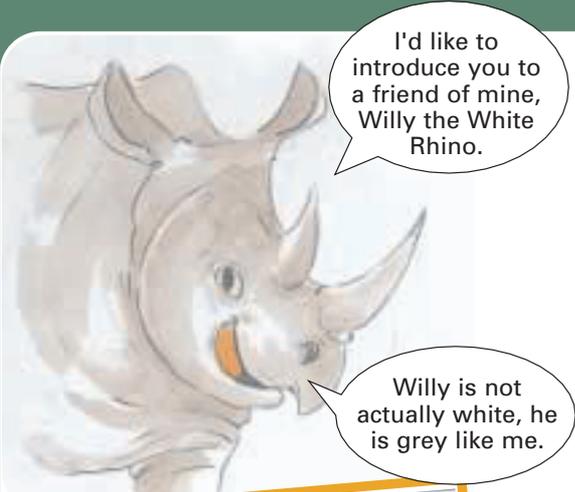
People hunted and killed thousands of Black Rhinos for their horns and to clear land for farming.



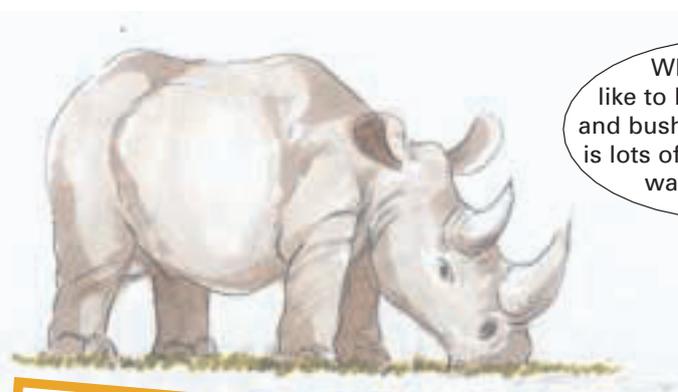
Today there are only 3 100 Black Rhinos left alive in Africa.

**Black Rhinos**

2b



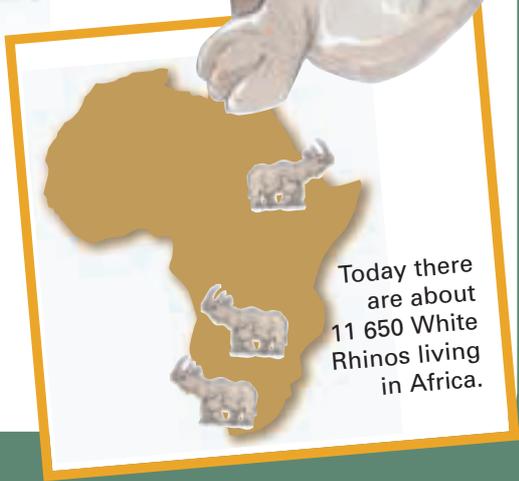
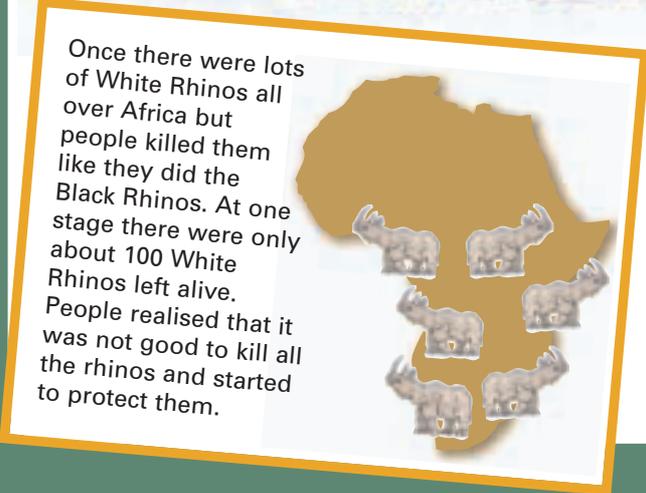
White Rhinos can weigh as much as an empty Land Cruiser and are taller than most people.



White Rhinos like to live in savannas and bushveld where there is lots of grass to eat and water to drink.



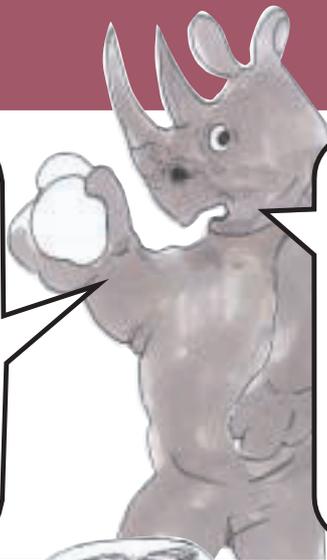
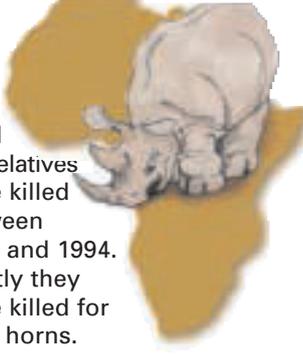
**White Rhinos**



# Black Rhino Populations and Reproduction 32

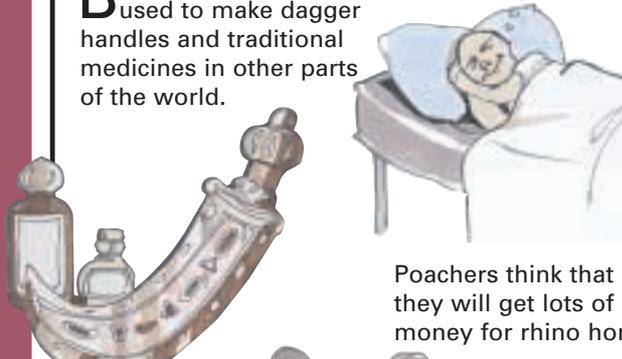


As little as 30 years ago I had over 65 000 relatives all over Africa.

96% of all my relatives were killed between 1970 and 1994. Mostly they were killed for their horns.

**B**lack Rhino horn is used to make dagger handles and traditional medicines in other parts of the world.

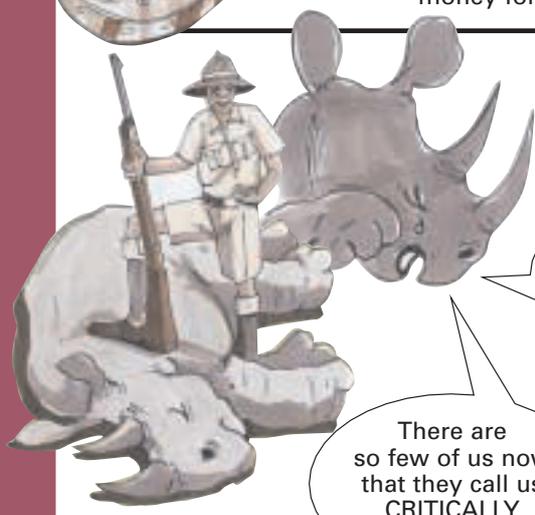


Poachers think that they will get lots of money for rhino horn.

The poacher only gets a little money from the people they sell to. These people then sell the horn again for much more money.



The poacher risks his life and years in jail so that someone else can make easy money.



So many Black Rhinos have been killed that very soon there will be no Black Rhinos left alive.



There are so few of us now that they call us **CRITICALLY ENDANGERED**.

You can help me by telling others about me and how I am rare and protected.



REWARD for CAPTURED RHINO POACHERS

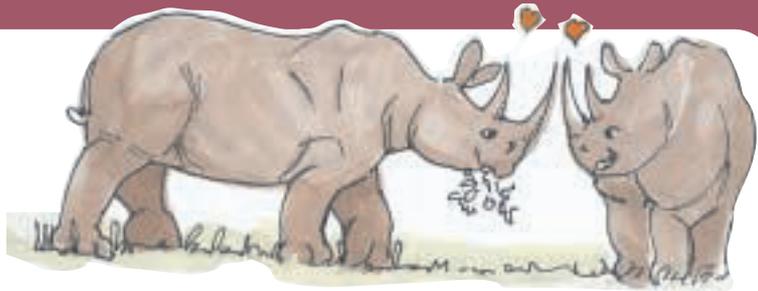
WANTED RHINO POACHER

People are paid to help arrest rhino poachers. In many countries rhino poachers must go to jail.

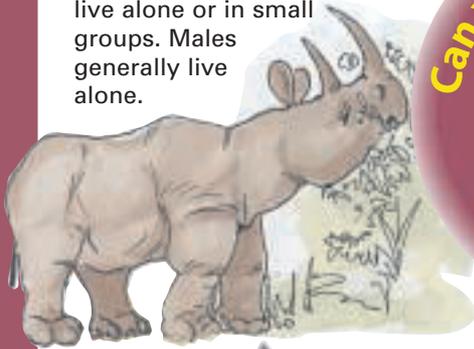



3b

Female Black Rhinos are normally more than five years old before they are sexually mature. A male Black Rhino will join the female when she is ready to mate. A Black Rhino can live to be 40 years old.



Black Rhinos either live alone or in small groups. Males generally live alone.



**Can you answer this question?**  
A Black Rhino cow can have a calf every two and a half years. She can only produce one calf at a time.  
How many calves could she have in ten years?

The gestation period for a Black Rhino is about 465 days. This means that from mating to birth takes about 15 months.



The calf will live with its mother till it is between the ages of two and five.



Black Rhinos only have one calf at a time.



I am called a CALF.  
My mother is called a COW.  
My father is called a BULL

Most other wild animals can have babies every year. Some can even have twins or more. Black Rhinos breed very slowly compared to other wild animals. This is one of the ways rhinos are different from other wild animals. It is going to take a long time for the populations of Black Rhinos to increase.



When my Great Grandfather was alive he told me that there use to be lots of wild animals everywhere and very few people.

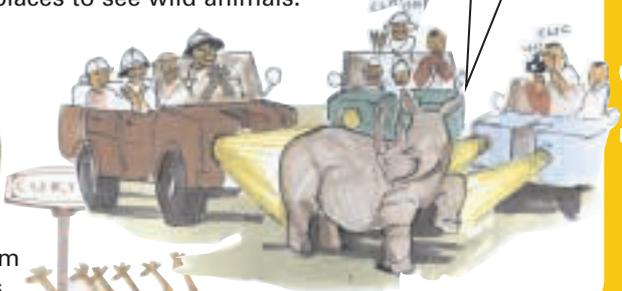
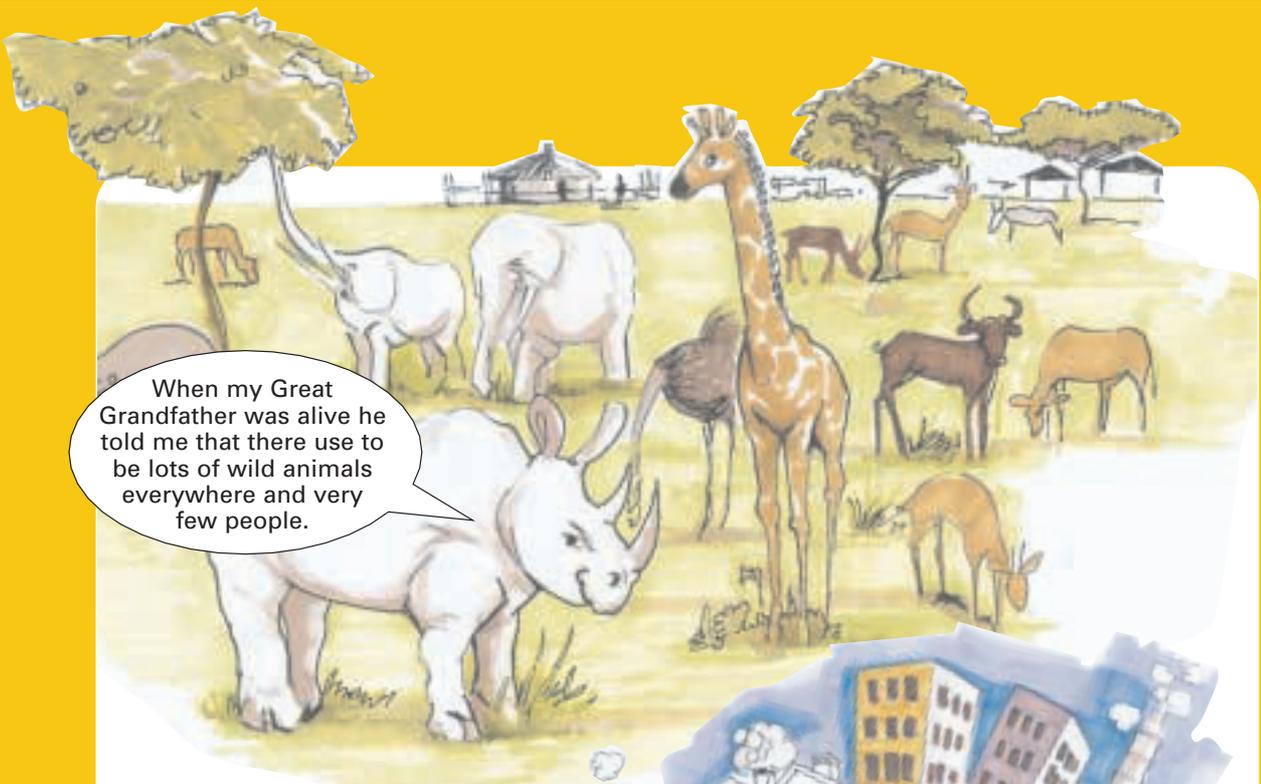
Today it is the other way around. Now there are lots of people and few animals. These people use lots of land for their towns and farms leaving fewer places for wild animals to live in

Many governments set up NATIONAL PARKS so that the wild animals could have somewhere to live. Some private citizens also let wild animals live on their land. These places are called GAME PARKS or CONSERVANCIES. Visitors pay to visit these places to see wild animals.

I am a big tourist attraction because I am so rare and famous.

Lots of money and lots of jobs come from keeping wild animals.

Land for Wildlife



4b

In the 1970s and 1980s commercial poachers killed 96% of all the Black Rhinos. In Angola, Botswana and Zambia, poachers killed every last rhino. The poachers only wanted the horns to sell to other countries in the Middle East and Asia where it is used to make dagger handles and traditional medicines.



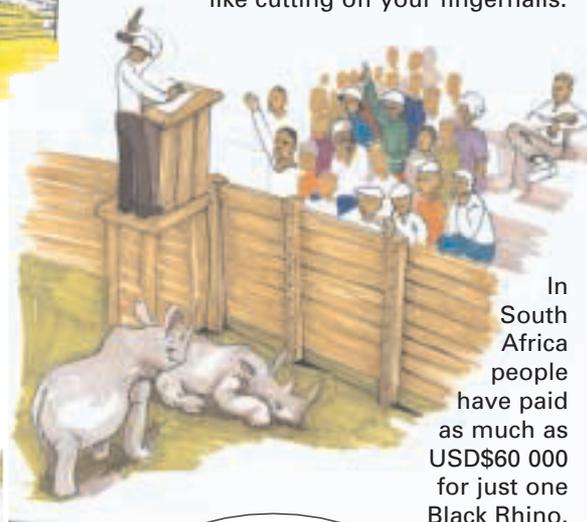
Some countries managed to stop the poachers from killing all the rhinos. In some places people moved the rhinos that were left into safer areas so that they could protect them better.



Moving a rhino is a difficult job because they are such big animals. It needs special trucks and veterinarians. It is expensive and dangerous work. Sometimes wildlife managers will cut off the rhino's horns so that it is not worth the poacher's effort to kill the rhino. Cutting off horns is a bit like cutting off your fingernails.



Today most Black Rhinos live in special areas in national parks or conservancies. Most of these areas are fenced and patrolled regularly by special rhino scouts. These rhino scouts check on all the rhinos to make sure they are safe and well.



In South Africa people have paid as much as USD\$60 000 for just one Black Rhino.

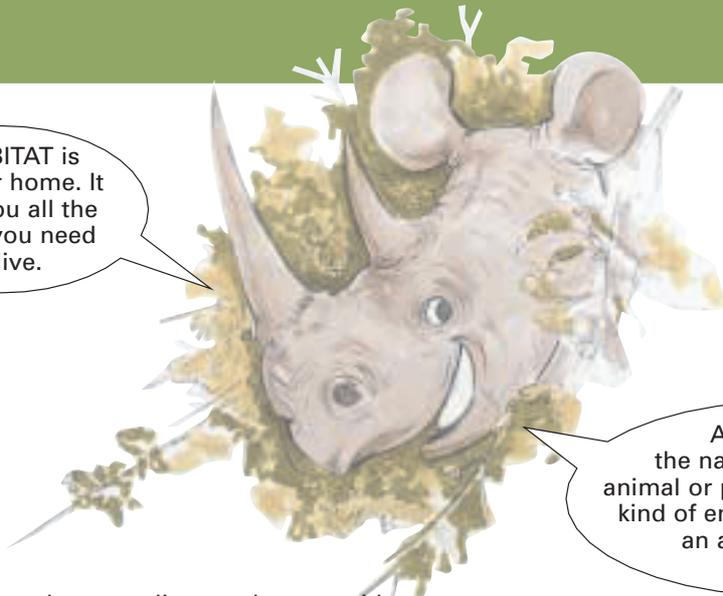


Black Rhino populations are now slowly increasing. This is because a lot of effort has been made to stop poachers. Also people now realize that a Black Rhino is worth a lot more money alive than dead.

Black Rhinos are very valuable as tourist attractions because we are so rare and unusual.



A HABITAT is like your home. It gives you all the things you need to live.



A HABITAT is the natural home of an animal or plant. It is a particular kind of environment in which an animal or plant can live.

The place where you live needs to provide you with all these things to be your home / habitat.

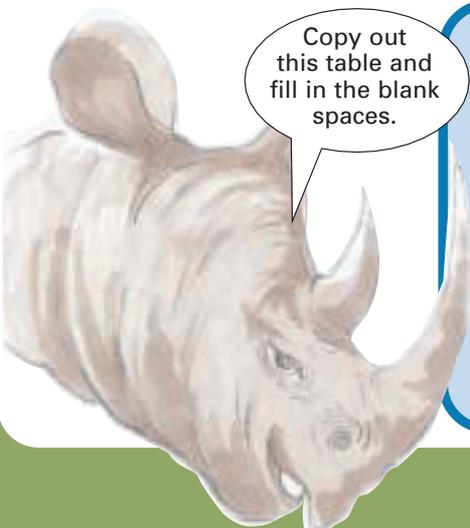


Food

Shelter

Family and Friends

Water



Copy out this table and fill in the blank spaces.

Imagine that for some reason your house was destroyed. You would have no \_\_\_\_\_(1). Could you live without your house? If you wanted to keep living here you would have to re build your house wouldn't you?

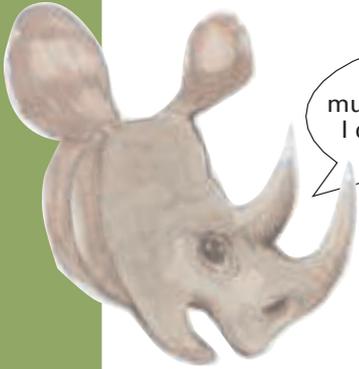
Imagine that someone destroyed my thicket. I would have no \_\_\_\_\_ (2) or \_\_\_\_\_(3).

Like you a rhino can not live without these things. For the rhino to survive he needs his thicket back. What will happen to the rhino without his thicket?

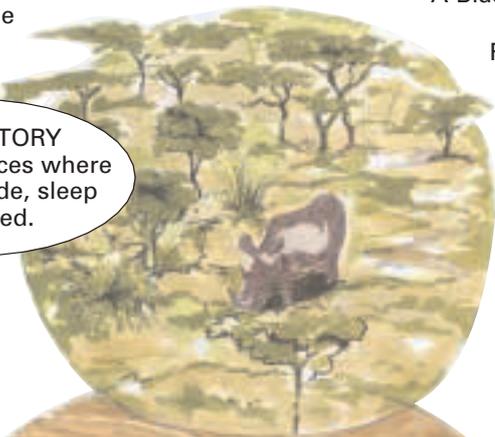
(1) Shelter. (2) Shelter. (3) Food.

# 5b

Within a habitat animals have **TERRITORIES**. A territory is the area in which an animal lives.



My **TERRITORY** must have places where I can feed, hide, sleep and breed.



A Black Rhino's territory is also called a **HOME RANGE**. The size of a **HOME RANGE** depends on how much food is available. Where there is a lot of food, as little as 260ha is enough. If there is only a little food a rhino may need as much as 13,300ha to find enough to eat.

Rhinos like to keep to areas that they know within a suitable habitat. Normally the most dominant bull in an area lives where the habitat is best. Other rhinos may come into his area to feed or drink but they will not stay. They will go back to their own territory to rest and sleep.



Black Rhinos mark their territories with scent so that other rhinos know they live there. Rhinos scrape their feet in their dung so that when they walk they leave their smell on the path. Males mark their territories more than females.



Dung piles and scrapes are two signs that can be seen that indicate a rhino's presence. Males also spray urine onto rocks or bushes to let other rhinos know who they are and that they live there.



# Territories



**Black Rhino  
Distribution  
1700**



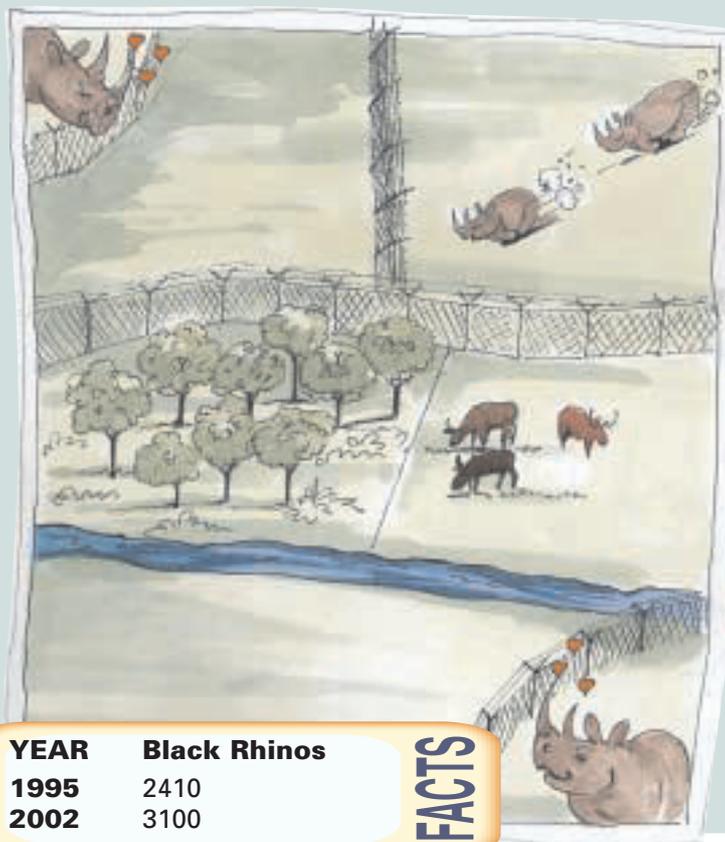
Many years ago Black Rhinos lived in many different countries all over Africa.

**Black Rhino  
Distribution  
2000**



Over time, people killed thousands of Black Rhinos. Now Black Rhinos can only be found in a few areas where they are specially protected.

Specially fenced and patrolled areas have been important to protect the few surviving Black Rhinos in Africa from poaching. Now populations are starting to increase again.



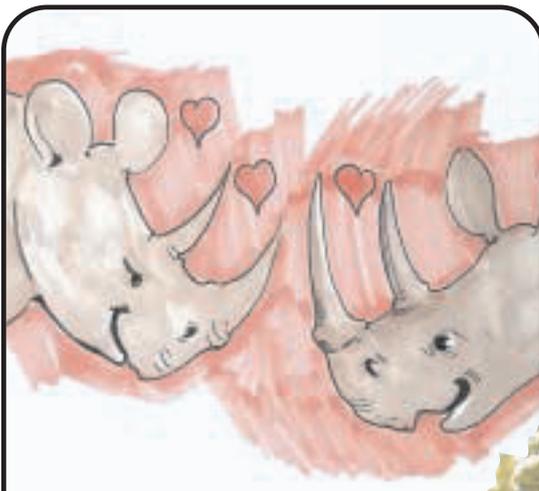
As the populations increase the fences that help protect them can start to become a problem. Fenced in, the growing population has to feed on the same number of trees and bushes. The rhinos will eventually start fighting for food and space. This causes the rhinos to breed more slowly.

Having separate populations is not good for breeding rhinos. It can be hard for the rhinos to find mates.

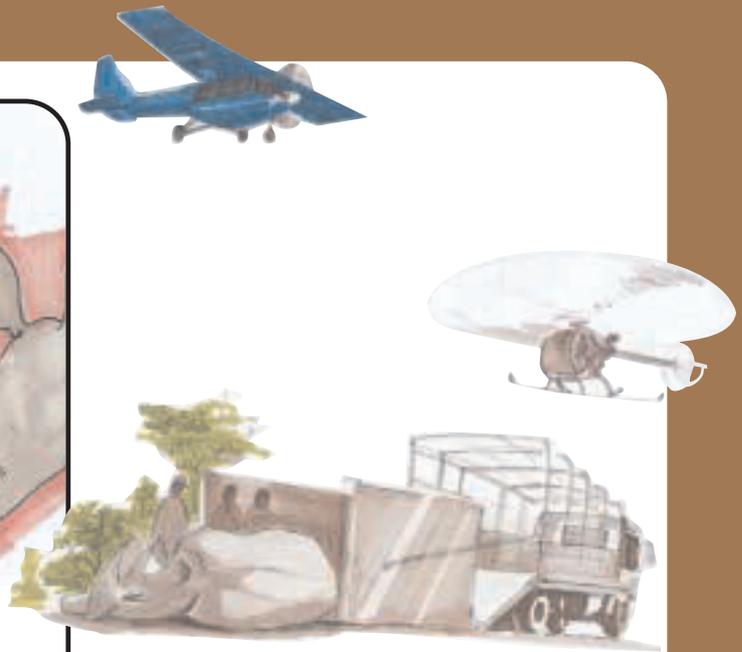
YEAR	Black Rhinos
1995	2410
2002	3100

**FACTS**

6b



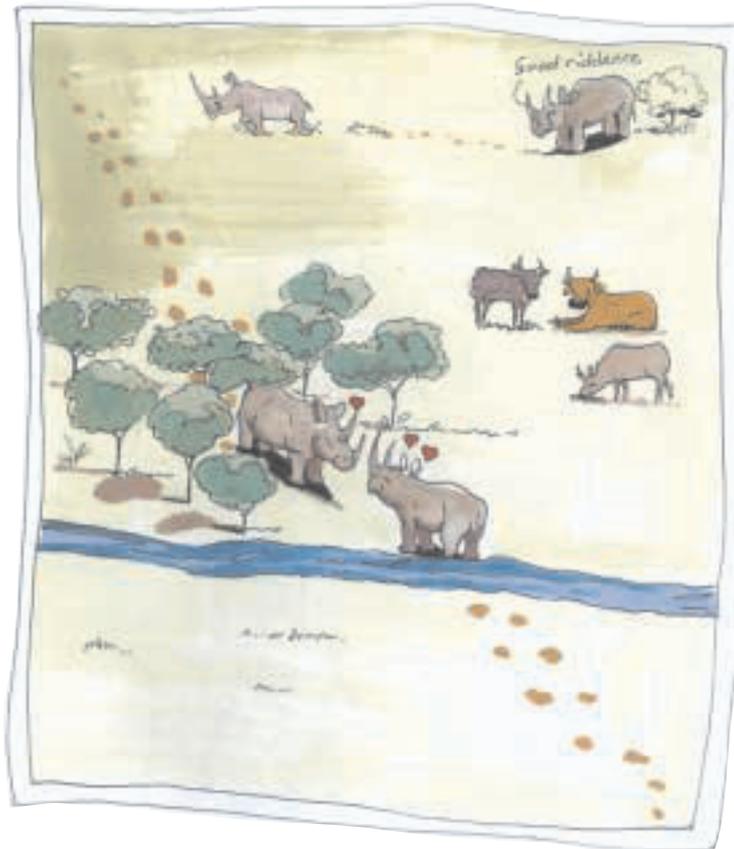
To keep the population of Black Rhinos increasing we need to find different ways to give them more places to live.



To help the rhinos with these problems people move them into other protected areas where there are less or no rhinos. This is called **TRANSLOCATION**  
TRANS = Move and LOCATION = Place

# Rhino Geography

In some countries it has been possible to join up different Black Rhinos' areas. In these places the fences are taken down so that the rhinos can move themselves to find new mates and places of their own to live.



It is hoped that by doing this the populations of Black Rhinos will increase to the point where they are no longer in danger of becoming extinct.

### Sunrise over the River

Creatures stir and begin their day.  
One appears and all the trees tremble.  
It's a young rhinoceros out to play.



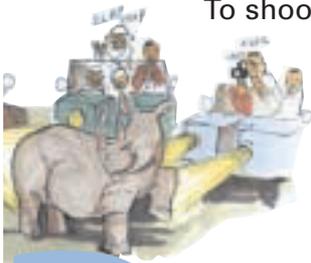
There's a one-ton, two-horned giant in the sun.  
It's a three-toed, four-legged rhino on the run.  
For he's all too rare, so do take care  
To shoot him with a camera and never with a gun.

Feeding time in the broad bushveld.  
Black Rhinoceros wander free.  
Roll in dusty bath, feast on tender trees.  
Snooze at peace in the shade of a tree.

There's a one-ton, two-horned giant in the sun.  
It's a three-toed, four-legged rhino on the run.  
For he's all too rare, so do take care  
To shoot him with a camera and never with a gun.

Sunset over the River  
To water the thirsty creep.  
Black rhinoceros take your fill  
And wander off to cover, then go to sleep.

There's a one-ton, two-horned giant in the sun.  
It's a three-toed, four-legged rhino on the run.  
For he's all too rare, so do take care  
To shoot him with a camera and never with a gun.



**Where does this Black Rhino live?**  
**Can you tell me what he eats?**  
**What are some of the things he likes to do?**  
**How many toes does a Black Rhino have?**  
**Why is it important not to kill a Black Rhino?**



## How the Rhino got its Skin

Once upon a time, on an uninhabited island on the shores of the Red Sea there lived a man with magic powers. One day he took flour and water and sugar and things, and made himself one cake that was two feet across and three feet thick. Just as he was going to eat the cake there came down to the beach from the Uninhabited Interior one Rhinoceros with a horn on his nose, two big ears and few manners. In those days the Rhinoceros's skin fitted him quite tight. There were no wrinkles in it anywhere. He said 'HOW!' and the man with the magic left his cake and climbed a tree. The rhinoceros spiked the cake with his horn and then he ate it and he went away, waving his tail. The magic man came down from his tree and said:

**'Them that takes cakes  
Which the Parsee-man bakes  
Makes dreadful mistakes.'**

Five weeks later, there was a heat-wave in the Red Sea, and everybody took off all the clothes they had. The Rhinoceros took off his skin and carried it over his shoulder as he came down to swim. In those days it buttoned up underneath with three buttons. He never said anything about the magic man's cake, because he had eaten it all; and he never had any manners, then, since, or ever. He waded straight into the water and blew bubbles through his nose, leaving his skin on the beach.

The magic man found the skin, and he smiled one smile that ran all round his face two times. Then he danced three times round the skin and rubbed his hands. He then went to his camp and filled his hat with cake crumbs, for the magic man never ate anything but cake, and never swept out his camp. He took that skin, and he shook that skin, and he scrubbed that skin, and he rubbed that skin just as full of old, dry, stale, tickly cake-crumbs as it ever could possibly hold. Then he climbed a tree and waited for the Rhinoceros to come out of the water and put it on.

And the Rhinoceros did. He buttoned it up with the three buttons, and it tickled like cake-crumbs in bed. Then he wanted to scratch, but that made it worse; and then he lay down on the sands and rolled and rolled and rolled, and every time he rolled the cake-crumbs tickled him worse and worse and worse. He then ran to a tree and rubbed and rubbed and rubbed himself against it. He rubbed so much and so hard that he rubbed his skin into a great fold over his shoulder, and another fold underneath, where the buttons used to be (but he rubbed the buttons off), and he rubbed some more folds over his legs. And it spoiled his temper, but it didn't make the least bit of difference to the cake-crumbs. They were inside his skin and they tickled. So he went home, very angry indeed and horribly scratchy; and from that day to this every rhinoceros has great folds of skin and a very bad temper, all on account of the cake-crumbs inside.



Based on Rudyard Kipling's tale in his book *Just So Stories*

**ADDITION AND SUBTRACTION**

- You are taking care of a population of 20 Black Rhinos. 10 are male. 10 are female. 3 females produce a calf each. How many Black Rhinos do you now have?
- Next year another 3 females produce another 3 calves. How many Black Rhinos do you have now?
- In the next year another 2 calves are born. What is your Black Rhino population now?
- Poachers sneak in and put up snares. Two female rhinos are killed. Without their mothers to feed and protect them their calves also die. How many Black Rhinos die? How many Black Rhinos are left alive?
- Black Rhinos normally produce as many male calves as females. This means that out of 10 calves 5 will be female and 5 will be male. Use this information to work out how many males and females there are in your population assuming that one of the calves that died was a male and the other female.
- A Black Rhino will normally run away from people but if it gets a fright it sometimes runs towards what ever has given it a fright. A Black Rhino can run as fast as 55km/hr. The fastest people can run about 35km/hr. How much faster than a person can a rhino run?

**BLACK RHINO POPULATION ESTIMATES 1980-2002**

	1980	1984	1987	1991	1992	1993/4	1995	1997	1999	2002
ANGOLA	300	90	?	50	50	10	0	0	0	0
BOTSWANA	30	10	<10	<10	5	4	0?	0?	0?	1
MALAWI	40	20	25	5	0?	2	2	3	6	7
MOZAMBIQUE	250	130	?	50	50	45	?	13	0?	0?
NAMIBIA	300	400	449	479	489	583	598	707	695	893
SOUTH AFRICA	630	640	577	771	819	897	1024	1043	1074	1179
SWAZILAND	0	0	6	6	6	4	9	10	10	10
ZAMBIA	2750	1650	>106	40?	40	33	0?	0?	0?	0?
ZIMBABWE	1400	1680	1775	1400	425	381	315	339	435	450
AFRICA	14785	8800	3665	3450	2475	2550	2410	2660	2700	3100

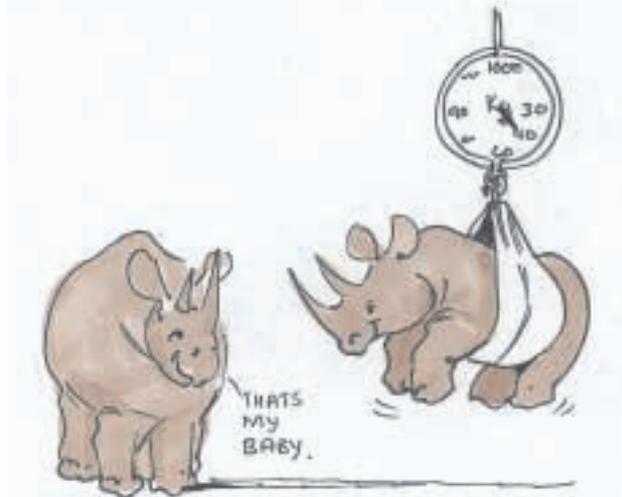
**From the table find the answers to the following questions:**

- In what year did Africa have the most rhinos?
- In what year did Africa have the least rhinos?
- What is the difference between the highest and lowest populations for Africa?
- By how many animals did the African population increase by between 1992 and 2002?
- Which countries lost all their rhinos and in what years?
- Which countries have growing populations of Black Rhinos?



## MULTIPLICATION AND DIVISION

1. A female Black Rhino in good habitat will produce a calf once every two and a half years. How many calves will she have in 10 years?
2. A Black Rhino calf will weigh about 40kg when it is born. For the first 4 months it will grow at a rate of 1,4kg a day. At the end of its first week how much does the calf weigh?



## LIVE RHINO SALES

3. At an auction in South Africa a white rhino and her calf were sold for R 235 000.00. One Black Rhino can be sold for double that amount. How much can one Black Rhino be sold for in South Africa?
4. If it takes a Black Rhino 10 seconds to run 150 m how fast is the rhino running?
5. How long does it take you to run 50m?
6. Who is fastest?
7. The horn on a Black Rhino's face grows at a rate of 5cm per year. How many years would it take for a horn to grow to a length of 50 cm?
8. The longest horn ever seen on a Black Rhino was 136cm long. How many years would it take to grow a horn that long?



9. A female Black Rhino will be pregnant for 465 days. How many weeks is she pregnant for?
10. Black Rhinos need to eat a lot of food. They need more than 23kg of food every day. How much food does a Black Rhino eat in a week?

