

Marjan Centre for the Study of Conflict & Conservation

THE WAR FOR RHINOS

A report on rhino poaching in Africa as a case study in Conflict and Conservation as presented at the Marjan Centre Conference 18/10/2011

Prepared by Dr Felix Patton

African Rhino Ecologist

Edition 1 published October 2011

Please visit the Marjan Centre website

<http://www.kcl.ac.uk/sspp/departments/warstudies/research/groups/marjan/index.aspx>

For details of papers and articles published by Dr Patton, visit the website

www.rhinosourcecenter.com and search literature pdf's

Conflict and Conservation: the War for Rhinos

The only predators of the world's six species of rhinoceros are humans who, conversely, are also their only source of defence. Victimisation of the rhino is by either Destruction (of the rhino's habitat) or Death (of individual rhinos by illegal means).

Humans are destroying the forest and bush habitats of the rhinos and other associated wildlife for many reasons:

- To make land available for agriculture
- To make land available for plantations – oil palm, tea
- To sell timber (illegally)
- To produce charcoal for cooking
- To clear land for a shamba (dwelling)

Clearing areas of forest often leads to habitat fragmentation where areas of open or cultivated ground split areas of forest. Since the secretive rhinos will not cross the open land, sex skewing may result with insufficient males available for mating in some areas. In addition, small populations may be genetically unsustainable due to inbreeding.

Clearing the rhino's habitat reduces the amount of food and shelter available which may result in the incumbent rhino population losing performance such as lower breeding rate, lower calf survival and greater susceptibility to disease.

Human activity as a result of habitat destruction often results in the closing off of important migratory routes. Although not appropriate for rhinos, which are non-migratory, this is important for the other key pachyderm, the elephant.

Wildlife populations are also being decimated by illegal killing. Individuals may take animals, particularly antelopes, to feed their family. They may take animals to sell as food, known as bushmeat, a centuries-old tradition but which is putting species such as gorillas and chimpanzees at risk of extinction. Worst of all is the illegal decimation of wildlife populations for financial gain or put more simply for greed.

There is a broad spectrum to the illegal trade in wildlife as illustrated in the table 1.

Table 1. Outlets for illegally required animal species

Market Outlet	Example of Species affected
FOOD	Fish stocks
PETS	Exotic birds
CLOTHING	Skins of tigers, leopards
CARVINGS	Elephant ivory, Rhino horn dagger handles
MEDICINES	Rhino, tiger parts

The recent killings of the African Rhino

At the end of 2010 there were estimated to be 25460 rhinos in Africa and 3095 in India. During 2010 there was an escalation of rhino killings with some 378 poached in Africa (1.5% of the total, see table 2) and 21 poached in Asia (0.7% of the total).

Table 2. Rhino poaching in Africa 2010

<u>COUNTRY</u>	<u>Rhino Poached</u>	<u>Country Population</u>
South Africa	333	16,000
Kenya	22	900
Zimbabwe	22	800
Tanzania	1	160

The killings of rhinos in Africa in 2011 will exceed those of 2010.

The Market for Rhino Horn

The rhinos were mostly killed for their horns which were in demand for processing into an illegal ingredient of certain prescriptions of Traditional Chinese Medicine (see separate report Rhino Horn in Traditional Chinese Medicine). After the removal of the horns, the rest of the carcass is left to rot as it has no value as a source of food. An important market existed for handles of the traditional Jambiya daggers in Yemen but this market has much reduced following the religious leader proclaiming it was against the Will of God to kill an animal for that purpose.

The escalation of poaching in 2010 has been reported as largely due to the emerging presence of Chinese nationals in Africa working on construction projects who offer a ready market for both rhino horns and elephant tusks. In addition Vietnam has become a more important market for rhino horn as a Vietnamese diplomat claimed that rhino horn medicine had cured his cancer. It is also widely used as a status symbol by the newly rich Vietnamese. Details of these drivers of demand will be the subject of a separate report. In addition, an undercover operation has discovered that the new rich of Vietnam use rhino horn as a status symbol. Powdered rhino horn was offered along with rice wine as a cleansing agent.

The Rhino Poachers Weapons

Historically poachers often caught rhinos using cable snares with the rhino either dying of starvation or being speared through the heart. Sometimes simple hunting rifles were available but accuracy was variable. In 2010, more modern approaches were possible. Experienced bushmeat poachers were highly skilled at using spears but the thick skin of the rhino made it almost impossible to kill the animal from any distance. In 2010 poachers in Kenya were able to obtain a Chinese made version of the liquid anaesthetic used legally by veterinarians for rhino immobilisation. The poachers coated the tip of their spears with sufficient liquid such that when the spear broke the rhinos skin the chemical would quickly (within 15 minutes) paralyse the rhino which would then be killed by forcing the spear through the heart of the recumbent animal. An alternative approach was to use bow and arrow to deliver the chemical immobiliser.

Protecting the rhinos

After South Africa and Namibia, Kenya is home to Africa's third largest rhino population. All are held in enclosed areas on government land or in privately owned conservancies of which the Solio Game Reserve is one of the smallest areas. Rhino poaching at Solio offers an insight into the way the operation is carried out throughout the country and elsewhere.

Solio was the first fully fenced private wildlife reserve in Kenya, established in 1966. To assist the government at the time, Solio agreed to provide short term accommodation for 23 rhinos between 1970 and 1973. Security was provided by a unit of the government's paramilitary police General Service Unit (GSU). The rhinos and other wildlife in the reserve were kept free from as much human interference as possible and the populations grew rapidly. However, this approach led to Solio being a major target for poachers in a spate of rhino poaching starting in 2000 and which initially went undetected. It took five years to get it under control by when 29 rhinos had been recorded as killed.

The situation prompted Solio management to introduce their own security and monitoring staff to supplement the hard pressed GSU team. At the start of 2006, Solio had 24 unarmed rangers stationed in and patrolling the reserve. There followed a four year 'rest' period with no rhinos illegally killed. Rhino poaching restarted throughout rhino range states in Africa in the middle of 2009 following a surge in demand for rhino horn in Asia.

The black rhino in Kenya belong to the people of Kenya and, worldwide, is categorised by the IUCN as "seriously endangered". As such, their security is vital and the responsibility of the government, on behalf of the people, who in turn task the Kenya Wildlife Service (KWS) to undertake the work.

As poaching pressure escalated a team of KWS armed anti-poaching rangers was introduced in March 2010, to supplement the Solio ranger team, camping inside the reserve. The team number was increased in June and again in November. Solio recruited a separate team of ten fence monitors in April 2011 whose were housed outside the reserve so that they could walk around the fence twice a day looking for signs of incursions (footprints, cut wire). As poaching continued, the armed GSU officers joined the KWS inside the reserve to carry out joint security operations. In all there were over 50 security personnel deployed.

The Rhino Poachers Methods

The initial method of rhino poaching at Solio was spearing. However, within days of a speared rhino being found, another rhino was shot by poachers using a G3, 7.62mm selective fire, 20-round magazine fed battle rifle. Other later shootings also involved AK47, 7.62mm selective fire, 30-round assault rifles, AK 101 or M16. In the period between mid-June 2009 and mid-June 2011, 23 Solio rhinos were killed – 10 by spearing and 13 by shooting.

Rangers employed by private reserves, even those armed by virtue of a Temporary Police Permit with simple rifles, such as .303mm, had limited powers and were no match for the better armed poachers. This situation was addressed in 2011 by enabling training the private reserve rangers, by KWS specialists at the KWS ranger training school, to become Kenya Police Reservists with the licence to carry and have issued semi-automatic G3 weapons and the power of arrest.

There are two types of "shooter" – the 'amateur' and the 'professional'. The amateur fires several bullets at random aimed at the head or chest and sometimes the rhino will escape only to die weeks later. The professional can kill a rhino with a single shot to the heart or brain with death instantaneous.

Poachers have no regard for the welfare of the rhinos they slaughter. Horns have been neatly cut off by machete by professionals while the amateur may hack off the horns with an axe even if the animal is not dead. If the rhino struggles at all the poachers may chop the backbone of the rhino in order to break its spine or sever the Achilles tendon to stop it running off. Once the horns have been removed, the rhino is left to bleed to death.

Who are the poachers ?

Of those that have been caught, most have come from the communities surrounding the reserve (who have been hired by well connected middlemen) and have had some 'inside' help. Investigations provided information which implicated a GSU officer within the Solio unit but to date there is only (very compelling) circumstantial evidence. The unit was replaced in March 2010.

A gang using poison spears was ambushed and one poacher was shot and another captured. However this team was found to be a spin-off from the original poaching gang and poaching using the poison spear method continued. Acting on information from a Solio informant, further arrests were made and a poacher Mr Mugo admitted he and a group of three men had entered into the game reserve and killed one rhino. The poachers implicated a Solio cattle employee in assisting the poaching and he was arrested. Four poachers were arrested and appeared in court but the KWS witness failed to appear and a new court date had to be set. The defendants appeared this time supported by a lawyer. However the court was busy and a further date was set. At this hearing there were legal problems and the case was deferred for another month and all were freed on bail.

Some gangs have come some distance to poach - one from 100 kilometres away from the communities at the foot of Mount Kenya while another, a team of four of which one was killed and three injured in an ambush, came several hundred kilometres from Bilisa in the south east of Kenya and were known to have poached in Tsavo National Park.

There was a gang using a G3. After reports of hearing shots in the reserve, security set ambushes and a motorcycle with 4 people was caught at 9pm. In the resulting melee, one poacher was shot, another escaped with bullet wounds and was caught the next day. The other two evaded capture but were later arrested. The G3 and 20 rounds were impounded at the scene.

Subsequent investigations and interrogations showed that the group were not responsible for the shooting of the black rhino that night but they admitted they were going to poach rhino in Solio but were scared off by the sound of gunfire. Two former KWS rangers from Isiolo known to be involved in rhino poaching were implicated as a potential threat in the future.

A poacher responsible for three rhino deaths in Solio was a rogue Kenya Wildlife Service (KWS) ranger Ndetta brought into the reserve to protect the rhinos. He was caught after a bullet was recovered from one of the poached rhinos and found to be from an AK101, one of the assault rifles used by the paramilitary KWS. It turned out that the poacher, who had used false documents to get employed by KWS, had enlisted the help of two of Solio's rhino monitoring rangers. With the assistance of mobile communication company Safaricom, money transfers and communications with the poacher were detected and the rangers were arrested. A Nairobi court remanded Ndetta into custody and the two rangers were released on Ks100,000 bail.

As a further illustration of the involvement of "insiders", Solio's captive semi-tame rhino was found with an arrow through its right ear. Had the poisoned arrow penetrated a muscle it would have killed the animal. In the process of jumping the fence into the reserve, one poacher hurt his shoulder and was sent home to recuperate. The other tried to enlist the help of another staff member who informed. The two employees, or amateur poachers, were a gardener and a vehicle washer.

A Somali suspected of poaching arrested by KWS on suspicion of poaching confirmed he had been part of a gang that killed Solio rhinos. Somali poachers were responsible for killing rhinos in the north of Laikipia at the Lewa Wildlife Conservancy.

At nearby Ol Pejeta Conservancy a suspected poacher killed in an ambush was a former KWS officer while his injured accomplice was an army constable.

In July 2011, a man described as the mastermind of rhino poaching in the Laikipia area of Kenya was killed in an ambush, laid as a result of good intelligence, while his three accomplices escaped with gunshot wounds. A G3 rifle and four bullets were recovered. It was hoped that his death would help to reduce the poaching threat in the area.

Good intelligence also led to the arrest of a Nairobi dealer based on the South C estate who had two fresh rhino horns in his possession.

The South African Experience

The poachers of Kenya are quite a different type to many of those operating in South Africa and Zimbabwe. Here the rhino war is at a much higher level involving organised crime and sophisticated weapons. Many of the poachers come from an ex-military background. The gang infiltrates the local community to gain information on where to find rhinos. They then stake out the area and plan the best way to operate.

Poachers are utilising helicopters from which to dart the rhinos and then land close to the anaesthetised rhino. The horns are hacked off or removed by chainsaw and the poachers escape the scene rapidly by air. When the tranquiliser wears off the rhino dies slowly and in much pain. In some cases the poacher kills the rhino using a lethal dose of immobilising drugs as this avoids the noise of gunfire.

In order to avoid detection and capture by daytime law-enforcement patrols, the operation can be carried out at night using night vision goggles and thermal imaging equipment. Helicopter pilots need only file a flight plan when flying from airport to airport which means that flights from an airport to any destination other than an airport and all “bush operations” are undisclosed. To avoid recognition, the pilot either falsifies the aircraft registration number or blanks it out completely.

These poaching gangs are able to afford aircraft and other sophisticated gear because of the very high prices obtained for rhino horn.

The hunting industry, which has access to guns, permits, vehicles and charter aircraft, is also being used as a cover for the rhino poaching syndicates. The number of rhinos legally hunted in South Africa from January to October 2010 was 101 with the overwhelming majority of applications from Vietnamese hunters although the Vietnamese are not known for trophy hunting. Their interest dates back to 2003 with the issuing of CITES export permits for nine rhino trophies and two rhino horns. Thereafter, the number of rhino horn exports to Vietnam increased to 58 in 2006, 73 in 2007 – until a total of 268 rhino horns were reported for the period 2006 – 2009 but reporting discrepancies suggest this does not represent the truer, higher, amount.

The South African authorities were concerned that the same few Vietnamese nationals were consistently recorded as the hunter and amended the regulations to allow only one hunt per person per year. However, the criminal gangs found a way round this by employing ‘mules’, who were often women, to be the hunter with one syndicate fronted by a Thai national using either friends or Thai women working in South Africa as strippers and prostitutes. They were paid R5 000 to do the job. Their passports and fingerprints were needed to complete the necessary hunting permits and CITES paperwork.

A Vietnamese woman and her male companion were arrested in January 2011 with four rhino horns in their luggage from two rhinos that the pair killed on a legal hunt. By law, hunted rhinos and horns have to remain in the possession of the farmer/professional hunter who must have the shoulders, head and horns mounted by a taxidermist and a chip inserted into the horn prior to transportation. Clearly the horns were not going to be exhibited as trophies and even if they had been legally mounted, once in Asia, anything could happen to them.

High-ranking political officials are linked to the movement of rhino horn from South Africa to Vietnam. In 2008, Vu Moc Anh, an official at the Vietnamese Embassy in Pretoria, was caught by undercover cameras accepting rhino horn from a known trader. Vu Moc Anh was repatriated and reprimanded, but there were no further reports indicating that she had been fined or sentenced in accordance with the law. In 2008 and 2009 other members of the Vietnamese Embassy in South Africa involved in illegal rhino horn trade were named as the First Secretary and the Commercial Attache. Embassy staff are suspected of transporting rhino horn in diplomatic pouches.

In response to the recent poaching crisis, law enforcement measures in South Africa have been increased resulting in 123 arrests and six successful convictions so far in 2011.

Considered the most significant syndicate organising rhino horn poaching in South Africa and Zimbabwe, game farmer and hunting safari operator Dawie Groenewald, along with ten other suspects including two veterinarians and three professional hunters were arrested for rhino poaching. The “Groenewald gang” will face 1,872 charges of corruption, fraud, assault, malicious damage to property, illegal possession of firearms and ammunition, and contravention of the National Environmental Biodiversity Act with their trial due to begin on April 23rd, 2012.

The South African Police Service (SAPS) decided to allow game farmers licences for semi-automatic weapons. Normally ordinary citizens cannot get a licence for such weapons, unless they can demonstrate that ordinary firearms are inadequate for their circumstances.

Controlling the market for rhino horn

Diagram 1 shows the supply/demand pyramid for rhino horn. Control of the illegal market can be applied at all or any level.

One of the problems facing those attempting to halt rhino poaching is the lack of good information on the size of the market and the value of horn at each level of the supply chain.

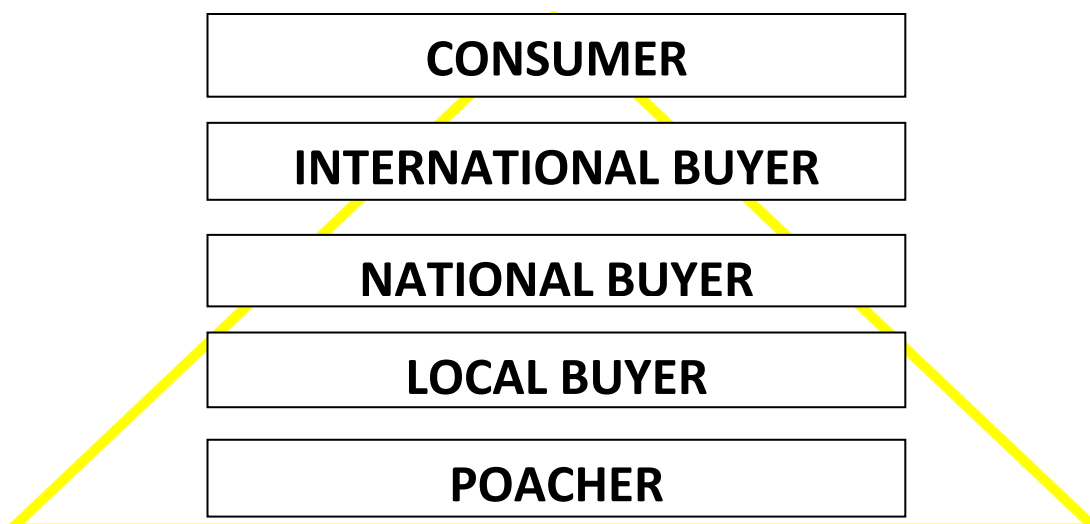


Diagram 1. The supply/demand pyramid for rhino horn

A 2008 report 'International Illegal Trade in Wildlife: Threats and U.S. Policy' by the Congressional Research Service estimated the retail value of rhino horn to be between US\$945 and US\$50,000 per kilogram.

In Kenya it was reported that poachers were being paid between US\$600 and US\$900 per kg though other intelligence suggested that middlemen in Nyeri Town were paying between Ksh.120,000 and 150,000 (US\$1200-1500).

A supplier asked an undercover reporter in Da Lat town, Vietnam for US\$5,000 for 100g of powdered horn.

A reporter from the Thanh Nien Weekly posing as a customer at the Ky Ba Linh Store, one of the largest, if not the largest traditional Chinese medicine outlet on Hai Thuong Lan Ong Street, the hub for such stores in Ho Chi Minh City was quoted VND85 million (US\$4,100) for one hundred grams of a rhino horn from Africa, and VND50 million for the same amount of an Asian horn

A South African report quoted 27,000 rand (US\$3,340) per 100g

What is clear is that, at these values, bribing the police, politicians or government officials will not be beyond the budget of poachers.

At Solio, despite monitoring and security rangers, fence monitoring rangers, GSU armed officers and KWS armed rangers, rhino poachers continued to attack the reserve in 2011 even though two poachers had been killed and several arrested. This demonstrates the difficulty in securing an area even as small as Solio. It is also clear that killing poachers is no deterrent as there appears to be no end to the number of people who are prepared to replace them. However heavy fines and long custodial sentences acts as a deterrent but which is an area that has been found wanting in Kenya but which the introduction of a new Wildlife Act should correct. Rhino poachers caught at Solio and released on bail are known to have returned to poach another rhino in order to pay for their defence.

A strong intelligence network in the local community is important both to inform on local people involved in poaching and/or on strangers coming into the community and acting suspiciously.

Without an outlet for the horn and/or access to a firearm and/or to some funding to carry out the operation, the poaching could not occur. This is the vital role of the middleman (buyer) and so it is equally important to identify and catch them. This has resulted in the "shoot to kill" approach to security generally being suspended as information from the poachers is a vital part of the intelligence required for this. A poachers' mobile phone is a major source of both information and evidence.

The horns have to be exported to the user countries so need to move through border controls and efficient detection of smuggled horns, which are often packaged in crates of legal goods, is important. Kenya has employed specially trained sniffer dogs in support of the detection methods.

The South African Approach

In October 2010, an interim National Wildlife Crime Reaction Unit (NWCURU) within the Department of Environmental Affairs was announced. The Unit's primary aim was to ensure that all conservation agencies in South Africa responded to the increasing spate of wildlife crimes and more specifically the upsurge of rhinoceros poaching and smuggling of rhinoceros horn. The Unit works in close cooperation with the South Africa Police Service, which is ultimately responsible for policing of organized crime in South Africa and the Joint security structures. The Unit is being coordinated by the head of SANParks's Environmental Crime Investigation Unit.

The South African National Joint Operational and Intelligence Structure (NATJOINTS) started a coordinated and comprehensive operation to counter rhino poaching on 30 May 2011. The NATJOINTS is a structure mandated by Cabinet to coordinate major events and cross-cutting joint operations. The main role players are the South African Police Service (SAPS), South African National Defence Force (SANDF) and South African National Parks (SANParks), assisted by the intelligence community and other government departments such as the Department of Home Affairs, the Department of Environmental Affairs and the Department of International Relations and Cooperation.

The area of focus for this specific operation is the Kruger National Park (KNP) as the majority of poaching incidents are taking place within the boundaries of the KNP. Apart from engaging poachers in armed combat, NATJOINTS will also fight bail applications and lobby for stringent sentences against these criminals.

The National Prosecuting Authority of South Africa is supportive and the courts have imposed harsh sentences in a bid to deter offenders. The National Director of Public Prosecutions has assigned twenty prosecutors specifically to rhino cases.

Task teams to investigate poaching incidents have been established in each province with a close working relationship with the Department of Environmental Affairs. In addition, co-operation documents signed between South Africa, Mozambique and Vietnam to make co-ordination and co-operation easier.

In KwaZulu Natal, South Africa leading conservation agencies have joined forces in Project Rhino to enable over-arching co-ordination of rhino conservation interventions including intelligence, surveillance, field ranger competence, advocacy, communication sharing and public awareness and education.

The founding members of Project Rhino include:

Ezemvelo KZN Wildlife; Wildlands Conservation Trust (WCT); Wildlife ACT; Wilderness Foundation; Thanda Private Game Reserve; African Conservation Trust (ACT); Phinda Private Game Reserve (& Beyond); Zululand Rhino Reserve; Zululand Wildlife Security Initiative; Game Rangers Association of Africa (GRAA); WWF Black Rhino Range Expansion Project; Wildlife & Environment Society of SA (WESSA); Space for Elephants Foundation (SEF); Magqubu Ntombela Foundation; Thanda Foundation.

The members have agreed to collaborate in the following areas:

Increased intelligence – information and informant networks; Increased surveillance – with appropriate technologies (aerial, GPS etc); Increased field ranger competence (training); Increased advocacy (legal aspects); Increased communication sharing (central repository for information); Increased public awareness and education.

International Cooperation

Vietnam has become a main driver in the international trade in rhino horn. In October 2010, a South African mission went to Viet Nam to facilitate bilateral talks among officials in both countries. Delegates from the South Africa National Wildlife Crime Reaction Unit met government officials in Ha Noi and Ho Chi Minh City, including Customs, Environmental Police, INTERPOL, and the Association for Traditional Medicine, among others. Discussions focused on increasing the understanding of the rhino horn trade and strengthening enforcement.

The South African delegation promised a donation of equipment to Viet Nam to help track horns in the country that have been legally obtained from trophy hunts as the lack of a system to register and track privately-owned horns in Viet Nam is allowing them to enter commercial trade illegally.

In September 2011, five government officials from Vietnam visited South Africa to discuss the illegal trade in rhinoceros horn. Mr. Fundisile Mketeni, Deputy Director General of Biodiversity and Conservation in the South African Department of Environmental Affairs, and Dr. Ha Cong Tuan, Deputy Director General, Viet Nam Forestry Administration, announced the signing of a bilateral Memorandum of Understanding (MoU) under which both countries can actively collaborate on wildlife trade matters, information sharing and prosecution and law enforcement procedures to stop the illegal trade in rhino horn.

South Africa will be scheduling similar meetings with Chinese and Thai officials.

New Technology in the War for Rhinos

US military radar, the same as that used by the U.S. military in Iraq and Afghanistan, is to be deployed in the fight against rhino poaching. Stone Holdings, a specialist security design and concept company, and wildlife monitoring organisation Wildlife ACT have obtained a license for U.S. military radar technology to be used in rhino and other wildlife poaching. Trials conducted at a private game reserve have proved extremely successful in identifying intruders on foot, in vehicles and in the air in a game reserve or any other fenced-off area. The principle of the system is to secure the perimeters of properties and to identify poachers and trespassers before they are even able to enter the area.

Military specification radar anchors the system. Further testing and fine tuning is necessary to ensure that all scenarios are covered and each installation will need to be custom designed, depending on the geographical layout of the land, and the level of detection that will be required.

Unmanned Aerial Vehicle

The weapons company Denel are manufacturing an unmanned aerial vehicle (UAV) on behalf of the South Africa National Defence Force (SANDF) to be used to help SA National Parks (SANParks) catch rhino poachers. It is unmanned and able to take photos.

The drone is said to be so effective that it is able to detect the colour of the poacher's shirt. In the future it is hoped that the vehicle can be developed so that it can target poachers initially by perhaps painting them so allowing them to be arrested.

ProTagTor

Tramirloc Systems has developed an active GPS RF tag that can be implanted in the rhinoceros' horn enabling the animal to be monitored 24 hours per day, seven days per week. The system was initially developed to monitor livestock.

Every 60 seconds, the GPS tag sends data to the relay stations containing the rhino's movement pattern over the previous 60 seconds. The system processes this data and literally learns each tagged rhino's movement pattern such that if a deviation from the normal movement pattern occurs, the system will raise an alarm. An SMS message gets sent to pre-programmed cellphones (receivers) with the specific animal's ID, the type of alarm (activity, no activity, border alarm) and the exact GPS coordinates of the specific animal. A high activity alarm means that the animal is in trouble, a border alarm will be raised when the animal moves outside predetermined borders (typically the

reserve borders or camp borders) and no activity alarms will indicate that the animal is moving less than is normal.

The alarm will alert an anti-poaching team as to whether the rhino is being chased or shot. The position of the rhinoceros can be seen on a Google™ map on the *ProTagTor™* web page, admission to which is restricted to permitted users only.

The tag battery has a lifetime of between two and three years, after which it gets replaced with a new battery. The *ProTagTor™* system is not dependent on cellphone reception with its own radio network consisting of a couple of relay stations that relay the signals/data to the system.

DNA Traces

Scottish scientists have found a way to obtain DNA traces of a poacher from a dead animal. The poacher must press the carcass, potentially leaving behind skin cells from their fingers, or segments of DNA that have been squeezed out from skin cells. The DNA trace is then put through a process known as amplification, which boosts the amount of material present to the point that it can be analysed. The method is being developed in order to obtain better samples and so offer a better chance of identification and conviction. Stronger samples should also make the processing cheaper – down from about £500-1,000 a time to £100-200.

The technique should work better in warmer, drier parts of the world such as the African savannah, because DNA on carcasses should remain intact for longer before breaking down but its value could be compromised by the limited availability of databases containing DNA records from convicted or suspected criminals.

Another approach with a wildlife crime carcass, is to collect the DNA of the animal and link it back to samples of blood found on implements, such as a machete or axe, that had been used.

Suggested drastic measures to minimise poaching

1. Legalising the trade in rhino horn

Since 1976 it has been against the law to buy and sell rhino horn. However, this has not stopped it being traded. The upsurge in rhino poaching from the middle of 2009 experienced throughout the African rhino range states has been accompanied by the involvement of highly professional and well financed poaching gangs utilising sophisticated equipment. In response to this increased threat, security operations have had to be upgraded at considerable cost but without any additional revenue whilst illegal rhino horn is reported to be trading at as much as US\$50,000 a kilo. South African National Parks spent 160 million rand (US\$20 million) in 2008 but now needs 450 million rand (US\$56 million) for anti-poaching. Some conservationists have argued that allowing the legal sale of rhino horn would be the best, perhaps only, way to obtain the necessary finance for the essential extended anti-poaching operations. Others argue that legalisation would fuel the poaching.

i) Those in Favour

Collection of horns from the natural deaths of rhinos from old age, disease, fighting and so on has resulted in huge stockpiles being held in strong-rooms throughout Africa. The controlled marketing of these stocks could lead to a reduction in the global price of horn. This, in turn, would reduce the poachers incentive to kill rhinos.

The money earned from the legal sales could then be ploughed back into protecting the remaining rhino populations. Rhino owners would be incentivised to maintain the security of their rhinos as they would have an increased value above that of the earnings from wildlife tourism.

As the stockpiles are reduced so they would be replenished by new natural deaths of an increasing African rhino population. Eventually the demand for horn could be met by the annual stock from natural deaths.

In addition to the stockpiles of rhino horn in Africa, over time speculators have (illegally) built up horn stocks expecting that the extinction of the rhino would lead to a boost in the value of remaining horns. An increase in supply from a legal trade would reduce the price/value of horn which may incentivise these speculators to sell off their stock before the value diminished even further which in turn would reduce the market price. If there was a central marketing agency balancing supply and demand and therefore maintaining a reasonable price, speculators would be encouraged to sell to it, the illegal trade diminished and the market for poached rhino horn substantially reduced.

By enabling a legal trade that can control the market by entering into partnership with “Chinese” state pharmaceutical companies, the State would be more robust at closing down the illegal trade.

A Central Selling Organization on the lines of that run originally by De Beers to control the diamond market is envisaged. Since South Africa has the vast majority of Africa’s rhino and horn stockpiles, it should be well placed to control the market. Such a marketing organisation would take away the trading of rhino horn from criminal syndicates who are currently the only beneficiary of the value of rhino horn and only by the death of rhinos.

The key to the legalisation of rhino horn trading would be the establishment of a central marketing organisation with sufficient safeguards to prevent illegal horns entering the system. Modern advances in DNA fingerprinting enable the origin of rhino horn and its derivatives to be determined so that legal and illegal horn could be differentiated.

The Chinese have already started to investigate rhino horn farming, keeping the somehow domesticated animals in concrete pens with the view to grinding down their horns at regular intervals. The concept is similar to the Chinese tiger and bear farms that already exist and for which there has been much outcry from welfare organisations. A legal trade in horn would negate the need for this approach.

ii) Those Against

The most major concern with operating a legal trade in rhino horn through a central selling organisation is whether this could be successfully managed when corruption at all levels is apparent in the current state of poaching – from the rangers that protect the rhinos, through the police and security forces, customs officials at export and import sites, to government officials in both range and consumer states. There are many loopholes that will need to be blocked to minimise illegal horn being traded through the legal system. It is certain that the criminal elements currently profiting from the trade will not be dissuaded easily.

While the actual size of the market for rhino horn is not known, it is impossible to say that existing stockpiles could satisfy demand. The release of such stocks would reduce the price of horn which would stimulate demand. Even with legalised “farming” of rhino horn, demand may not be satisfied so poaching would continue.

Increased supply and reduced prices could induce speculators to buy up stocks with the expectation that prices would increase sometime in the future. This would take usable supplies off the market, raise prices and create a demand for horn from illegal sources.

Legalising trade does not address the root problem and that is while the main consumption countries of China, Vietnam and Thailand have internal trade bans in place, it still goes on due to lack of effective enforcement. In addition, none of the consuming countries have made requests for legal trade to be started, the impetus for this coming from rhino owners. The Chinese response to a demand for rhino horn has not been to consider legalising imports but to consider locally based rhino farming as an aid to rhino conservation.

There are ethical considerations to legalising the trade in rhino horn. Simply because something makes money and is in demand does not necessarily make it right. For example, there is a demand for and big profits in child prostitution and child pornography but they are not considered right, ethical or justifiable. Although there is a demand, market and profit in rhino horn, weighed up against the implications, risks and ethical considerations, trade could be considered unethical.

2. Dehorning

One result of establishing a legal trade in rhino horn would be for owners to want to remove the mature horns from their rhinos in order to sell them. The horn grows back at something like 8cm to 12cm per year such that dehorning could be carried out every two to three years. Therefore, on the one hand there is a serious welfare consideration to dehorning while on the other hand it offers the owner a regular source of income. With rhino owning becoming a more significant business, more people would want to own rhinos thereby making more habitat available for an expanding population.

Repeated dehorning and a legal outlet would result in fewer large specimens of horn being available, a lower value to the horn and an increase in resources to combat poaching. Together this would significantly reduce the incentive to poach and thus the illegal killing of rhino.

A further outcome of dehorning might be a significant reduction in rhino sport hunting as a rhino would generate a regular income throughout its life rather than the one-off return from shooting the animal.

However, dehorning requires anaesthetising the animal which is a stressful experience and in the worst case can lead to the individual's death. Drugging and handling of a large animal like the rhino carries inherent risks that may include injuries, bruising, overheating, cardiac distress, respiratory depression, increased blood pressure and muscular problems. There is also concern that the process may result in a negative effect on a female's rate of reproduction and miscarriages in pregnant females.

If the horn is removed too close to the skull, bleeding, injury, maggot infestation, infection, cavitations and deformed re-growth can occur. Rhinos have extensive sinus cavities and infection in the sinus cavities following dehorning can have serious and fatal consequences.

Dehorning may also affect behaviour but its impact is variable and the extent to which this affects the animal's welfare and survival is not fully understood.

Dehorning is a relatively expensive procedure, requiring vets, helicopters and capture staff. In the current circumstances, with the high price of a kilo of rhino horn remains high, poachers have killed dehorned rhino as the horn stumps are of sufficient value. Until the price of horn is sufficiently lowered, dehorned rhinos will still be a poaching target.

Farming Rhino Horn

Despite the ban on the use of rhino horn in TCM prescriptions, the centuries old belief in its curative and restorative powers have not diminished and consumer demand for such medicines remains but can only be satisfied illegally.

In recognising this, and in an effort to prevent the rhino becoming even more scarce in the wild, China has started to research rhino “farming”. According to a proposal from the China Institute of Science and Technology Research, Beijing, entitled ‘Proposal for Protection of the Rhinoceros and the Sustainable Use of Rhinoceros’, published in 2008, a rhino farm had been started in Hainan Province and called the ‘Sanya City Center for the Propagation of the Rhinoceros’ with a group of animals sourced from Africa. The Center was reported to be actively engaged in research related to rhino nutrition, disease, rearing and breeding. At least 141 white rhinos have been imported into China since 2000.

Some conservationists argue that, should rhino horn farming develop, it is likely to create an easier path for poached rhino horn to enter the market as it could be difficult to distinguish between legally and illegally produced horns. Recent advances in DNA technology have resulted in the “fingerprinting” of rhino horn such that it should in future be possible to determine the exact source of a rhino horn.

Conclusion

An extensive evaluation and understanding of the market dynamics for rhino horn is essential if the most effective strategies for controlling its trade and the consequent poaching of rhinos. Even then the fact that rhino horn has held a special place in Asian culture for thousands of years, makes determining the most appropriate strategies that much more difficult. Western derision of the use of rhino horn in Asia has had little effect as it has not been based on all the facts. A clear picture of the rhino horn trade is essential for plotting a path towards winning the War for Rhinos.