

Irish vet student's South African adventure



Dr Andy Fraser and Michael Smyth with a leopard which was being relocated after its rescue from illegal capture.

Michael Smyth, a final year veterinary student at University College Dublin with a specific interest in wildlife veterinary and conservation, shares some of his unique experiences working in South Africa last summer and gives some insight into the ongoing conservation efforts being made and the challenges that have to be faced every day

I hope to provide an overview of the current situation regarding South African wildlife including the different ways it's managed and maintained. In South Africa, the majority of wild animals are kept on managed reserves. These reserves fall under two main types of ownership:

- private ownership consists of wildlife reserves used for eco-tourism (wildlife drives/photo-tourism) or game farms used for hunting; and,
- public/state ownership refers to national parks like Kruger National Park which is run by the government.

Both receive help from NGOs with funding and management. There are also various wildlife rehabilitation centres dotted throughout the country. The only truly 'free-roaming' animals are some predators such as leopards, hyenas, wild dogs, or other smaller mammals such as baboons and warthogs, as these animals can easily navigate through any fences separating various reserves and farms.

The areas enclosed by these fences can stretch for thousands of hectares at a time depending on the reserve, allowing the animals to express their natural behaviours unhindered. The main function of the fences is to act as another barrier against poaching and they have little or no impact on the animals themselves.

MSD ANIMAL HEALTH AND FVE SCHOLARSHIP WINNER

Michael Smyth is a final year veterinary student at University College Dublin with a specific interest in wildlife veterinary and conservation. Last summer, using the money he had received from the MSD Animal Health and FVE Scholarship Programme, he travelled to South Africa to shadow and work with a wildlife veterinarian for three weeks. The vet he stayed and worked with was Dr Andy Fraser. Dr Fraser lives and works near a small, rural town called Rooiberg, which is located within the province of Limpopo, a two-and-a-half-hour drive, approximately, from Johannesburg. Andy works predominantly as a wildlife veterinarian, but also does some small animal work.

The organisation of the trip was aided by a group called Vets and Wildlife, run by Loraine Scheepers and Dawn Peterson, who were both a tremendous help in making sure Michael arrived as safely as possible and got the best out of the trip. Vets and Wildlife are an organisation that works with many animal charities and wildlife projects across Africa, India, and Sri Lanka. They work mainly with spay-neuter projects, wildlife rehabilitation and veterinary projects.



A team of 20 people was required to lift the head of this immobilised elephant.

THE TRIP

Over the three weeks I spent there, we worked Monday to Friday, and, if there was an emergency, some weekends. Each day was a completely new and unique experience. Jobs ranged from 'regular' tasks such as TB testing and pregnancy-diagnosing of buffalo to more unusual work such as assisting in the placement of a tracking collar on a five-tonne elephant bull. The wild animals that we worked with had to be immobilised before we could handle them.

Chemical immobilisation with a tranquillising dart is the main method and takes a lot of nerve and skill. There are many different factors involved in each 'darting,' which the vet must consider before choosing an anaesthetics dose. These include: the weight of the animal, how stressed it is, what ailments it may have, and whether it's pregnant, malnourished etc. You also need to consider things like distance, dart size, wind speed and direction (especially from a helicopter), and what power setting to use on the dart gun. The gold standard of each darting is to get one dart to stick directly into a large muscle mass such as the rump or shoulder and have enough anaesthetic to have the animal recumbent in approximately five to six minutes (this timing can vary depending on a range of factors such as the ones listed above).

While there, I was taught that one of the most dangerous things you can do is underdose an animal. This can lead to them continuously running after being darted. This constant exertion with decreased respiration puts the animal at risk of developing an exertional myopathy, which is usually fatal. It's always good to remember that if you hit them with too much anaesthetic the procedure can always be reversed...within reason! Thankfully, Dr Andy Fraser was a pro at darting, and he never seemed to miss a beat. Watching the dynamic way anaesthetics can be used out in the bush was nothing short of incredible. It was fascinating to witness how quickly an adult rhino can go from being fully anaesthetised to up and walking from a tiny amount of naltrexone (opioid reversal agent) administered into an ear vein.

Another interesting use of anaesthetics was in the administration of butorphanol when the vet felt the animal was in too deep a plane of anaesthesia. Butorphanol itself is a competitive opioid antagonist and partial agonist, meaning it uses up and acts on a proportion of the opioid receptors. This then leaves fewer receptors free for the more potent opioid to act on, resulting in a lighter plane of anaesthesia without causing full reversal. One of the anaesthetic combinations I saw used quite regularly on large herbivores was a triple combination consisting of: a potent opioid such as etorphine or thiafentanil, medetomidine and azaperone. It's probably worth mentioning that wildlife vets' views vary in relation to which dosages of each agent they prefer. Some vets don't like to use any alpha-2 whatsoever, others prefer higher doses of opioids, and so on.

FIRST JOB

There was such a variety of wildlife to see, visiting South Africa felt like stepping onto a different planet. But, to put it in context, it was wintertime when I was there, so in fact I only saw a glimpse of what the country has to offer in terms of birds, plants, and reptiles. My first job was to assist with the immobilisation of an adult white rhino to place a tracking collar around her ankle. We have all been to zoos and wildlife parks, but nothing can compare to the feeling of being so close to such an impressive animal in the wild. It was incredible to work on the rhino, feeling how tough their skin is and getting an appreciation for how powerful they are. Another exciting day was when we were called out to safely relocate an illegally captured leopard. Leopards are truly free-roaming due to their agility and intelligence, meaning they are not confined by the fences of wildlife reserves. Leopards hunt many of the antelope species reared by game farmers. Therefore, many farmers see them as pests and will try to capture them in traps. Some wildlife vets offer a free service to safely relocate these captured animals to wildlife reserves where they can live and hunt free from harm.



Michael's South African experience introduced him to a whole new world of veterinary medicine.

As we approached the trap cage, I could hear a deep, threatening growl which got progressively louder and more intimidating the closer we got. My role was to distract the leopard at the front of the cage so Andy could dart her from behind. It was terrifying, distracting a leopard with only a thin, makeshift trapdoor separating us, especially when she was letting out long roars that would send shivers down your spine. What was perhaps even more shocking was when we pulled her out of the cage, revealing that it was a small, young female... not even a third of the weight of some larger adult males!

I was also lucky enough to help place a tracking collar around the neck of an elephant bull. The immobilisation of an elephant takes a tremendous group effort, usually requiring a helicopter for locating and darting the elephant, as well as a substantial ground team. Once the elephant is immobilised, the ground team must work quickly and efficiently. The elephant is first placed in lateral recumbency, with the help of ropes and an enormous amount of manpower.

Next, you need to ensure there is a patent airway, this is done by straightening the trunk and placing a small piece of wood to help keep the airway open. One ear is reverted and placed over the eyes acting as a blindfold. An elephant's ears act as their cooling system, they are made up of thousands of thin blood vessels close to the skin's surface. Barrels of cool water are poured over the ear every couple of minutes to help prevent overheating. Lastly comes the most challenging part, placing the tracking collar. Unfortunately, gravity is working against you when trying to lift the head. However, with the help of 20 people pulling on a rope, we lifted the head just enough to pass the collar underneath.

POACHING AND CONSERVATION

I was fortunate enough to work closely and regularly with the southern white rhino, helping with various anti-poaching solutions. These magnificent animals are at very high risk from poachers. This is due to the value of their horn on the black market, especially in Asian countries where rhino horn is used in traditional medicine. Despite seeing a general decline in recent years, poaching numbers are still worryingly high. Each year, hundreds of rhinos in South Africa are killed by poaching gangs. These gangs use very sophisticated methods to track and kill rhinos. The sad reality is a lot of these rhinos die a very slow and painful death. Furthermore, when a rhino

cow is killed, one must also consider the collateral loss of any unborn calves or future pregnancies.

The areas most affected by poaching are the larger national parks such as Kruger. These are massive areas of land, thus making it very difficult to prevent poaching activity. To put it into perspective, Kruger National Park alone is almost one quarter the area of the island of Ireland. Thankfully, due to the tremendous work done by vets, conservationists and anti-poaching units, we are starting to move in the right direction again.

Poaching is a multifaceted problem, and unfortunately, there is no simple solution. Some measures currently in place which I got to experience first-hand were: dehorning, placing tracking collars and meeting patrolling anti-poaching units. Dehorning is perhaps the most severe of the three and involves darting a rhino and removing their horn with a reciprocating saw. When anaesthetised, rhinos can be very sensitive to light and sound, so they are blindfolded, and their ears are plugged. When removing the horn, you must ensure you take enough so the rhino doesn't need to be dehorned again for another 18 to 24 months, but also not too much, as you can reach nerve endings and blood vessels. There's nothing glamorous about removing a rhino's horn and, in the future, it is to be hoped that we won't need to dehorn our rhino. It is only a short-term fix, because within two years most of the horn will have grown back, thus putting them at risk again. Another issue with dehorning is the effect it has on a rhino's social standing within a herd; therefore, a large proportion of the herd needs to be dehorned at the same time. You can quickly see how this is not a sustainable solution and, as rhino numbers increase, it will become increasingly costly and difficult to implement. Areas that do not dehorn their rhino require 24-hour anti-poaching units patrolling the reserve. These are highly trained professionals, armed with assault rifles, risking their lives every day for the protection of these beautiful animals.

Rhinos are not the only species at serious risk from poaching, but I am using them as an example as I worked with and met so many people involved in protecting them. They also face challenges such as habitat loss due to the development of infrastructure and the conversion of natural wild habitats to arable land.

From what I saw and experienced, conservation and anti-poaching measures are moving in the right direction, and some amazing people are dedicating their lives to the preservation of these wonderful animals. However, the ultimate goal is to have zero poaching, and the way to achieve this is through more funding, more education, and more publicity about the ongoing efforts to save these animals from going extinct.

HUNTING

Hunting can be a very difficult topic to discuss, and it's certainly something I knew very little about before travelling to South Africa. I always remember being shocked by images of trophy hunters posing alongside dead animals. I also thought hunting and poaching were one and the same. I'm going to give you an insight on how they differ based on what I learned from the short time I spent in one area of South Africa.

Firstly, you can pay to legally hunt any species of animal in South Africa, from impala, which is a small antelope, to the African elephant. Animals are generally placed into three different categories depending on their degree of endangerment; the more

endangered a species the more licensing and permits required. There are also rules, regulations, and a hunter's code that are followed by most people.

Hunting usually takes place on 'game farms,' which are privately-owned wildlife reserves that rear wild animals for the purpose of breeding or hunting. As I mentioned previously, loss of habitat is a serious problem affecting many species in South Africa. These game farms help preserve natural habitats that would otherwise be lost to agriculture. They play a very important role in the maintenance of biodiversity, not just for the larger mammals that attract thousands of tourists to Africa every year, but also for many small mammals, birds, insects, and reptiles.

Hunting generates a lot of money, which, in turn, creates many job opportunities for the surrounding community. These jobs include admin, maintenance of the reserve, monitoring of the animals etc. Hunting also helps the local economy indirectly through encouraging activities such as the purchase of feed for the harsh winter months. Furthermore, hunting helps to educate communities about wildlife and offers an incentive to look after it, rather than destroy it.

A huge part of South African culture is to gather around with family and friends for a 'braai,' which is essentially grilled meat over an open wood fire outdoors (I can't call it a South African BBQ or Andy would have my head!). This can be any type of meat and traditionally, in the past, if someone had hunted that day, they would invite some of the local community to their home and share the meat over a braai. Today, meat from hunts is still used in this way, while also being given to the surrounding community. Any leftover meat is also used to make 'biltong,' which is dried and salted meat that is extremely popular in South Africa. This also helps generate income in the local area.

While certain aspects of hunting are far from ideal, it plays an important role in conservation and is also an important aspect of the South African economy and culture. Many antelope species that are commonly hunted such as eland, impala, and inyala were being uncontrollably hunted to dangerously low numbers in the past. Now, through these privately-owned game farms, numbers have risen hugely over the last twenty years. I don't fully agree with some aspects of hunting, such as hunting larger and more endangered animals like the rhino and elephant. But it's worth remembering that hunting gives these animals an inherent value, thus providing another reason to continue to breed and to support the trend of increasing population numbers.

A WHOLE DIFFERENT WORLD

My experience in South Africa was fascinating, to say the least. As a student, it showed me a whole different world of veterinary. It was a pleasure to work alongside Andy, and I was extremely lucky to get such incredible hands-on experience, especially in very tense and highly stressful situations. I'm grateful to have met so many people dedicating their lives to the conservation of these wonderful species. Without them, many of these animals would be on the brink of extinction, and that's not an exaggeration. The fight to protect these animals is far from over and after the recent impact of Covid-19 many reserves and projects are in desperate need of funding. However, looking ahead, I believe, by continuing to spread awareness and interest around conservation, we can pull ourselves back from the brink, and I hope to play my part in the near future.