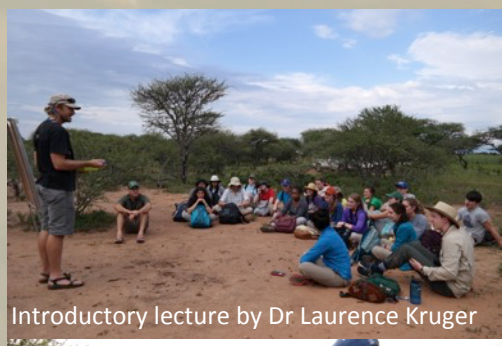
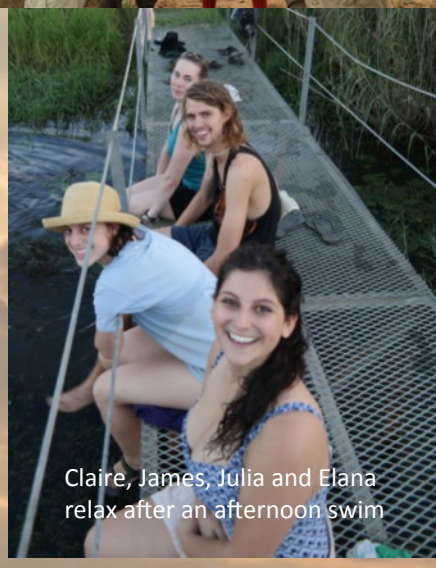
# OTS Spring 2015 Semester Newsletter 1

**Nylsvley**, by Donovan Tye


Introductory lecture by Dr Laurence Kruger


Ted, Betsy, Elizabeth, Kyrstin and Graham tackle fieldwork


Claire, James, Julia and Elana relax after an afternoon swim

It's strange looking back on the start of a course after having spent so much time together. "Bright-eyed and bushy-tailed" – these are words that I would *not* use to describe the 24 students who arrived in Nylsvley Nature Reserve at the start of the semester. Perhaps "weary-eyed with no tails" is a more appropriate idiom.

Nylsvley Reserve is located in South Africa's Limpopo province, approximately 300 km north of the city of Johannesburg, and straddles the Nyl Floodplain – one of South Africa's least impacted and most diverse wetland systems. Birdlife in the floodplain makes Nylsvley truly incredible, and the reserve is both a proclaimed RAMSAR site (a wetland designated of being of international importance) and a declared Important Bird Area by Birdlife South Africa. The reserve is also home to a wide variety of the 'big and hairys', including zebra, giraffe and kudu to name a few, but it is still safe to walk around on foot as there are no dangerous game. All of this makes Nylsvley a great starting point for the course, and everyone took full advantage of the freedom that surrounded him or her. This was a time for introductions to the course, the staff and each other. It's the time when everyone gets to think about how they are going to spend the next 14 weeks together, how to structure their time, and most of all, how to understand the South African accent. Students were introduced to the four academic modules: Biodiversity Conservation, Ecology of South African Ecosystems, Science Skills, and History through Culture. Despite being jetlagged, the crew made a valiant attempt to stay awake during lectures. The start of the course tends to be lecture intensive, the idea being to cram as much theory in as we can before they get over that jetlag and have the energy to tackle fieldwork. *History through Culture* lectures were first up with Prof. Lannie Birch from the University of the Western Cape. Lannie reviewed the turbulent history of South Africa using various media to explore unique perspectives of key moments in the country's past. Next up, some talks, workshops and field lectures on southern African biomes and vegetation dynamics, and what better place to learn about the perpetual battles between trees and grasses than in an African savanna? Throw in a couple bird walks with one of the regions premier bird guide, Lukas Masuka, and everyone started taking every opportunity they could to get into the field. Luckily it wasn't long before we started our first set of field projectswhich gave students a feel for collecting, analysing and interpreting an ecological dataset, old hat for a few but a new game for others.

During this time, we also dove into discussions around the ethics of science and the challenges involved in the integration of science and society with Dr. Fred Kruger, a forest ecologist turned academic with a wealth of knowledge and experience in the processes involved in linking science, management and policy. It wasn't just about the academics in Nylsvley though, early morning birding, afternoon game drives, daily sport sessions, and the occasional yoga class were also on the go. Iris celebrated her birthday, with James, Gabe and Ted (the now-resident course band who are also known as *Graham and the Gang*) serenading her during an "under-the-sea" themed party. Early morning run sessions headed up by Cassie, Sam and Betsy were well attended (for the first few days anyway), while Zack, Tavis, Soren and Kelly racked up their bird lists. Then there were sundowners – a classic South African tradition,which students took up with open arms. After a full week of lectures and a spot of fieldwork, the crew were put through their paces in the *OTS Amazing Race – Nylsvley Edition*, which has been dubbed the most academically challenging and physically demanding race in the southern hemisphere. Teams were sent blazing through the savanna, armed only with a GPS and their wits. The first team to solve the clues and reach the finish line…wins! Apart from a couple minor GPS issues and an epic afternoon thunderstorm, the race was a great success. Before we knew it, it was time to pack up the equipment and get ready for the next leg of the course. Onwards to Cape Town.

**Cape Peninsula,** by Kristi Maciejewski

From Nylsvley the group flew down to the Cape, where they would spend their next 6 weeks. The students were stunned to silence as the crystal clear waters of False Bay came into view and excitement increased exponentially as the plane drew closer to Table Mountain. What a great welcome to Cape Town!

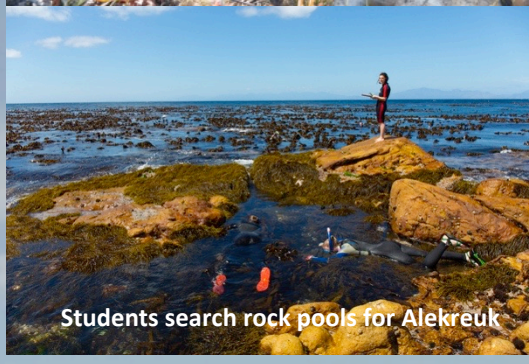
Our first stop was Kirstenbosch Botanical Garden. Acclaimed as the most beautiful garden in Africa and one of the great botanical gardens of the world, Kirstenbosch displays a wide variety of the unique plant life of the Cape flora, presenting the perfect introduction to the Cape Floristic Region. After spending a couple of hours walking around, familiarizing ourselves with the beautiful new world of fynbos, we headed off to Glen Cairne, our new home for the week.

To set the scene, we spent the first day driving around Cape Point where Dr. Laurence Kruger, the Director of OTS in South Africa, introduced us to the wonders of fynbos. Nothing beats sitting amongst Proteas while listening to Laurence describe their life history strategies and introducing us to a whole new range of words and concepts. We also learned about the important role fire plays in maintaining this incredible floristic ecosystem and how these species are geared towards coping with these kind of disturbances. Laurence then drove us to Buffels Bay beach and ended the day's lectures off with a refreshing swim, followed by an invigorating hike up to the lighthouse.The week spent in the Cape Peninsula was largely focused on the first major student deliverable, the Cape Long-term research initiative projects (CLTRIs). These research projects, designed and developed by SANParks and OTS staff, provide the perfect opportunity for students to engage in research for the first time while contributing and potentially influencing management actions in some way. The projects this year included assessing the role tourists play as potential seed dispersers in protected areas, investigating the status and dynamics of Alekreuk, a type of sea snail, populations inside and outside of marine protected areas, the investigation of new methodological techniques to determine avian diversity in Table Mountain National Park using automated acoustic recorders, studying post-fire change in faunal and floral communities and assessing drivers of water bird diversity at Standfontein. Through these projects, students were exposed to a great variety of field work techniques.Cape Town also provided a great opportunity of inviting some local experts to present their research to the students. Dr. Jasper Slingsby, a scientist from the South African Ecological Observation Network (SAEON) *Fynbos* Node delivered a very interesting talk on the Table Mountain Microclimatic Project, a project he is currently involved with.

Spending a week in the Cape Peninsula did not only mean work; students also managed to find some time for play. In between fieldwork students spent some time hiking through Silvermine Nature Reserve, swimming in the Silvermine dam, exploring the surrounding towns such as Noordhoek and Kalk Bay and enjoying sunsets on the beach. All in true Capetonian style.

Zack and Rebecca listen to Laurence's fynbos talk

Elizabeth estimates species composition of vegetation



Students search rock pools for Alekreuk

**De Hoop,** by Dr Mduduzi Ndlovu

In the third leg of the course, we left Cape Town and drove south towards the southern most tip of Africa, Cape Agulhas. The group stayed at the Potberg Environmental Education Centre inside De Hoop Nature Reserve. Situated in the beautiful Cape floristic region, De Hoop is a haven for both terrestrial and marine animals. A number of our students frequently encountered the rare Bontebok, Cape Mountain Zebra and Eland during their evening runs. While, Cape Vultures graced our skies as they soared from their nearby colony.

In De Hoop, students were introduced to their first Faculty Field Projects (FFPs). These are an opportunity for scientists working within South African systems to run research projects with our students. Through these projects, students are exposed to a greater variety of research as well as to some of the career paths available to them in the field of biology. All students participate in data collection for all FFP projects but only one group, of between 4 and 5 students, will write a detailed report on the project.

Prof. Marcus Byrne, an academic from the University of the Witwatersrand in Johannesburg, ran a project on the biology of Dung beetles. During the three field days for this project he led the students through the *fynbos* in search of these beautiful robust insects. Several hands-on experiments were carried out on these beetles and included taking morphometric measurements (mass, gender and lengths of different body parts), using a high-tech thermal camera to record the temperature of the dung beetles bodies and that of the surrounding environment, as well as racing the beetles down a mini track while recording their dung ball rolling speed.

Lauren de Vos, a marine researcher from the University of Cape Town, ran a project on Marine tidal pool biodiversity. Students suited up in wetsuits and went snorkelling in tidal rock pools in search of marine life, quantifying everything that they saw including mussels and barnacles, seaweed, sea lettuce and even the occasional octopus. They also used GoPro cameras to record activity and diversity in marine tidal pools.

We wrapped up most of our fieldwork days sipping on hot chocolate and enjoying scones (a.k.a. biscuits) with jam (a.k.a jelly) at the De Hoop coffee shop.

On our last day in De Hoop we made the most of a day off and visited Cape Agulhas, the southern most tip of Africa and rumoured to be the point where the Indian and Atlantic Oceans meet.

**Tavis, Ashley, Airene and Graham at Cape Agulhas**


**The group at Cape Agulhas**

**Drie Kuilen,** Ceinwen Smith

Leaving the coast behind we headed into the interior of the Western Cape, to the semi-arid Klein Karoo. This region lies between the Fynbos and Succulent Karoo biomes, making it a transitional zone characterized by a unique assembly of fynbos, renosterveld and succulent karoo vegetation. Our home for the next ten days was a private nature reserve called Drie Kuilen, which was converted relatively recently from having an agricultural and hunting focus to one of conservation. The animal life is as diverse as the vegetation here, if a little harder to spot. The beautiful Bontebok, gracious Gemsbok and the high-jumping Kudu are just a few of the many species of game (antelope) found on the reserve along with lesser spotted Aardvark ('earth pig' or African Anteater), Black-backed Jackal and Cape Mountain Leopard.

The FFP for this leg was lead by Prof. Tim Hoffman, an academic from the University of Cape Town and a specialist in the arid and semi-arid regions of the country with a passion for repeat photography as a method for studying our changing landscapes. Dr. Sam Jack, a GIS guru working on land-use change for his post-doc, assisted him and provided a wealth of analytical knowledge. The project focused on the use of the reserve by herbivores, in order to better identify the regions and vegetation types that are utilized and impacted by herbivores. The project members, Graham, Julia and Susan, along with their peers, were thrown in the deep end of this diverse system, wandering through the shrubbery counting, identifying and observing what they saw. Over the next three days the students began to familiarize themselves with counting and identifying game, estimating the plant cover of different vegetation types and tallying up dung counts across the landscape. The project played an important role, contributing knowledge of the plant-herbivore interactions across the different regions of the reserve, which will assist the managers in their development of the reserve's conservation strategy.The climate in this region is characterized by extremes, with temperatures ranging from 10°C at dawn to 35°C by mid-afternoon. This meant that while the days started with plenty of brain and body activity in the field, as the mercury started to peak by mid-day the search for shade and cool water was the only thing on the students' minds. Back at camp, the reserve's large freshwater reservoir provided welcome relief from the mid-day heat while the cool shade of the surrounding pines proved ideal for the musical strumming's of our resident musicians, *Graham and the Gang*. The plethora of trails crisscrossing the reserve provided plenty opportunities for the voracious runners in the group to stretch their legs and lungs across the undulating landscape. Betsy, Sam and Cassie were commonly seen charging effortlessly up steep, rocky tracks barely breaking a sweat while the rest of us sweltered in the shade!

While soaking up the peaceful wilderness and exploring the wide-open space was an important part of the learning process there was still some academics to get through. After several days of consolidation and lectures on movement ecology, conservation planning and the roles of our various reserves and national parks, it was the students' chance to present their knowledge and views on some hot conservation topics. The Conservation Seminars were held over the last two days of our stay and were a great opportunity for students to educate their peers, as well as us as staff, while honing their skills in science communication. Topics ranged from Shark Finning and Whale Strikes to the ethical debate of de-extinction and bringing back the Wooly Mammoth. After the final talks we piled into the back of the game-drive vehicles and bumped up the hill to watch our final sunset, reminiscing on a full week of field-work, fun and stimulating conservation discussions.

**Students hard at work in the field**

**Krom River, Cederberg,** by Donovan Tye

We said our goodbyes to the fantastic Drie Kuilen staff, and headed north-east towards the town of Ceres, a small farming town situated in the heart of fruit and wine country. The drive took us through arid karoo scrublands, *fynbos*-covered mountains, citrus and wine farm valleys, and finally into the southern end of the spectacular Cederberg Mountain Range. The Cederberg gets its name from the Cape Cedar Tree (*Widdringtonia cedarbergensis*, for the botanists out there), which was historically abundant in these areas, however has since suffered severe population declines as a result of overexploitation during the first half of the twentieth century. The characteristic jagged sandstone rock formations of the Cederberg, coloured orange and red from the iron oxide in the rocks, are home to a wide variety of plants and animals (including the secretive Cape Mountain leopard and caracal) and provide a paradise for rock climbers. Climbing enthusiasts from all over the world travel to the Cederberg to try their hand at the many popular climbing routes. The area is also known for the numerous sites and caves with ancient San and Khoi rock art, making this area truly spectacular. We weren't there for the rock formations, rock art, animals, or even the cedar trees, though. We were there for the fish… Why travel all this way to look at fish? Well, although the Cape Floristic Region is well known for its incredible plant diversity (supporting some 9000+ species), the region also has a high diversity of indigenous fish, many of which are unique to this area (25 of the 27 species are only found in the *fynbos* region). A major threat to many of these indigenous species has been the introduction and spread of exotic fish, namely small-mouthed bass and rainbow trout, which has resulted in the loss of indigenous fish from many of the *fynbos* rivers. Krom River valley would be our home for the next ten days, where we were joined by Dr. Jeremy Shelton, a freshwater ecologist from the University of Cape Town, and Dean Impson, a senior fish scientist from CapeNature who ran our next two FFPs. Jeremy and Dean introduced the students to the Cederberg rivers and reviewed key invasive fish removal projects that have been undertaken in the region. For this field faculty project, OTS has joined forces with CapeNature in the establishment of a long-term river monitoring project on the Krom River.


Dr Jeremy Shelton lectures the students in the field


A student holds a Clanwilliam Catfish


Sam, Betsy, Cassie and Susan take a break during field work


Don, Zack and Tavis attempt an "OTS" jump

The Krom River has been earmarked for chemical removal of invasive fish species after the success with this method in the nearby Rondegat River (a project worth reading about for those who might be interested). The success of such projects are dependent on long term monitoring initiatives, a point which Dean Impson stressed to the students as he spoke to us about the importance of the monitoring project to the conservation of indigenous *fynbos* fish. His enthusiasm was infectious!During their week in the Krom River valley, students spent their days either collecting and compiling species inventories and habitat data at sites along the river with Jeremy, hiking in the mountains with Ivan Groenhof (founder of the Rim of Africa trail), or with their heads buried in the books in preparation for the looming ecology and conservation mid-term exams. Heading up this set of projects were Kelly, Rebecca and Julia (team fish), and Elana, Claire and Zoe (team invertebrate). We couldn't have asked for better weather as we waded through the river during the hot days and scoped out the stars on the cloudless nights. Despite the busy schedule, we did manage to find time to take a break and visit the extraordinary Stadsaal rock formations with San rock art scattered amongst the caves and overhangs. Some of the guys (Zack, Gabe and Ted) also managed to squeeze in a trip to Truitjieskraal – a well-known rock climbing site with some great views over the valley. With the heavy workload, down-time took a backseat. A well-deserved day off saw some students indulge in some horse riding, with others spending the day at Malgat rock pools in the neighboring river valley. Two exam days later… the smell of freedom filled the valley, and the students and staff celebrated the start of mid-term break with sundowners on the bizarre landscape at stadsaal. It was time to clean to the gear and pack the cars, because Cape Town and mid-term break was calling.

The students did not waste their well-deserved break, stories abounded when the group settled back into “regular” academic activity in HaMakuya for the next leg of their adventure. They had been hiking up both Table Mountain and Lion’s Head. They went snorkelling with seals, toured vineyards and soaked up the sun on some of Cape Town’s most beautiful beaches. They also revelled in the Cape Town markets and renowned food and drink scene.

Theirs were exhausted but happy faces when they travelled up to Johannesburg on the 21st of March. We will relate some of their stories from HaMakuya, Mapungubwe and, finally, Skukuza in the next newsletter!

Laurence, Kristi, Don, Mdu, Ceini, Philly, Karen, Tanja and Colleen