



**The Leopard - a Key Umbrella Species for Biodiversity Conservation  
and Environmental Education in the Western Cape**



**Annual Report  
2009**

## **Introduction**

The Cape Leopard Trust (CLT) was established with the primary objective of facilitating and promoting research in support of conserving predator diversity in the Western and Northern Cape. The conservation strategies include *inter alia*; several bio-geographical research projects, advisory services relating to farmer-predator interactions and supporting of an environmental education component. The latter includes a program of community involvement within the Cederberg and other study areas. In order to fulfil our education mandate, we are providing educational camps for school children. We consider it imperative that this opportunity to experience the wilderness and learn about the environment be available to children from all backgrounds.

## **Research and Conservation**

Research on the ecology of leopards *Panthera pardus* in the Western and Northern Cape has been ongoing for over six years now. The use of modern technology, such as GPS satellite tracking devices and remote camera traps has provided valuable insight into the ecology of these elusive animals. We are striving to fully understand their ecology and needs in order to conserve this unique population.

The ongoing leopard research in the Cederberg has played a vital role in management and conservation of this threatened population. The completion of Quinton's PhD on the ecology of leopards in the Cederberg will allow conservationists and other researchers to use similar techniques to study leopards elsewhere, using these results to model the habitat requirements and movements of leopard populations in other similar mountain terrain. The Cape Leopard Trust aims to continue monitoring the Cederberg leopard population as a long-term project (>15yrs), using this as an opportunity to analyse population trends.

Since August 2005, the Cape Leopard Trust has been involved in 28 leopard captures for research purposes. No animals were relocated. Thirteen individual adult leopards have been collared and monitored using GPS collars, collecting data on their activity and movements, specifically to find better ways of managing predator/land owner relationships. The mean number of fixes from each collared animal is 1780; while the average length of time leopards have been collared is 12months. Four of the resident leopards have been recaptured and collared with new collars after batteries expired. During the duration of the study, only 2 leopards have been killed due to farmer-predator conflict situations. This is a far cry from an average of 7 leopards per year before the project began.

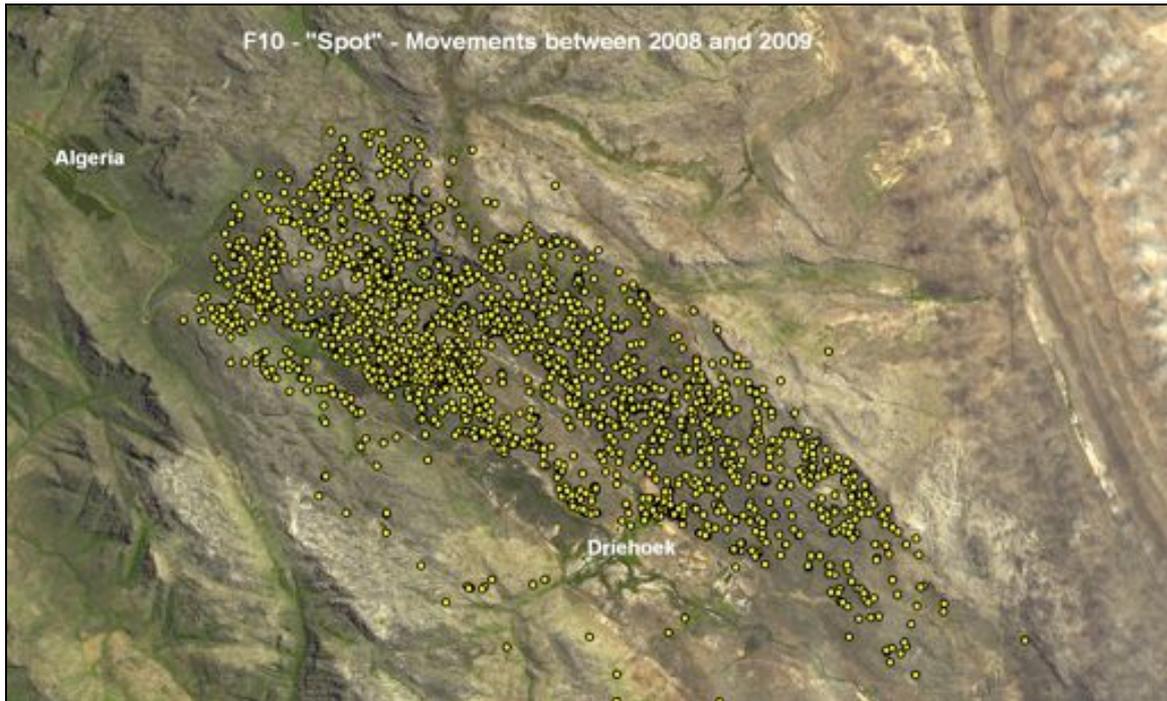


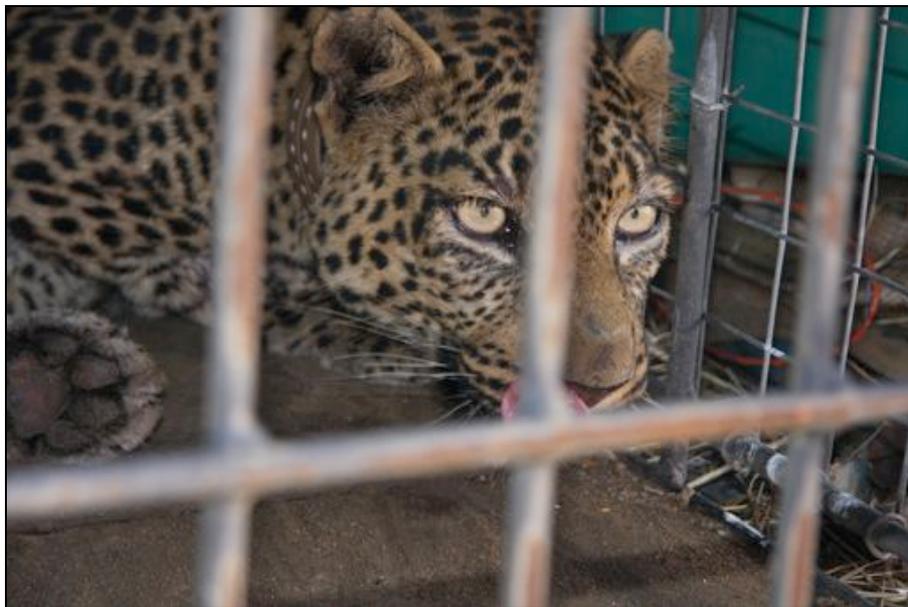
Figure 1. Yellow dots representing 2300 GPS fixes over 12 months of tracking F10

This year proved to be very taxing in terms of recapturing specific individual leopards to re-collar them in the Cederberg. Only one of the two females we aimed to recapture was re-collared. The other female, F5, evaded our traps after her collar malfunctioned. We will recapture her in the cooler months in 2010. However, the female F10 ("Spot") was recaptured and is proving to be the flagship leopard for the project. We are easily able to track her and have had a number of sightings of her on foot. Spot will soon have her den site and cubs monitored. No concrete information has been published on their breeding behaviour other than odd photographs from camera traps or tracks seen in the sand. We will invest in a professional camera to film this, providing valuable project exposure and visual records of the event.

Spot's collar is now programmed to capture 8 GPS fixes every day. The collar also monitors her activity every minute of the day, generating vast amounts of data on these elusive and poorly understood predators. To-date, Spot has concentrated her range in the central Cederberg. Using GPS clusters, we have managed to find many of her kills she has made providing invaluable data on leopards feeding habits. For example, data clearly show how F10 kills significantly more large prey in winter (~300%) than in summer. This matches farmers' complaints of more stock losses in winter than in summer. Simple precautionary measures to minimise stock losses would be to spend more resources on protecting livestock during this time, effectively taking them off the leopards "menu".



**Figure 2.** Although not ideal working conditions, we opted to invite farm labourers and visiting tourists to have a quick look at F10 when she was recaptured on the farm Driehoek.



**Figure 3.** “Spot” (F10) – recovering from her anaesthetic and just beginning to focus those beautiful eyes...on someone.

Ending the years trapping was met with a measure of success when we captured and collared a newly identified male leopard, M14 in the Boskloof valley of the Cederberg. The staff at Karukareb Nature Reserve monitored the cage for us, having done so for several months earlier this year – with no success. Soon after removing the cage, we placed 2 camera traps to document the leopards moving on the path we were trapping on. We captured 5 photographs of this new male

within a month. This time, we set the cage and a week later had caught M14 - the male we were after.



Figure 4. Newly identified male M14 at Karukareb

Data obtained while researching leopards has also highlighted aspects of the ecology of other fauna in the region. One example is the inter-related behaviour patterns of caracal *Caracal caracal* and leopard. Ensuring concurrent data on habitat use will assist in fully understanding what conservation management strategies are needed to conserve both these predators, as well as assist farmers in avoiding future and continued depredation of their livestock.



Figure 5. A lamb killed by a caracal. The result: traps set by the land owner and a female caracal killed. Photo: Cape Leopard Trust (2)

Caracals are the most highly persecuted predators in SA. They are believed to contribute to considerable losses in the red meat and wool industries. These industries claim an annual loss in revenue of R2.9 Billion due to predators. Although most likely an inflated estimate, livestock losses are a reality, and the resulting negative effect on production and SA's biodiversity is the result. How does one deal with human-wildlife conflict issues where many attitudes and perceptions are historically ingrained over 300yrs or more? The CLT has seen that using robust data from our studies has proved to be the essential ingredient in the future conservation of our natural heritage. A farmer in our study area, convinced we were adopting the right approach by understanding the problems and dynamics involved in predator farmer conflict, quoted Kelvin in saying "to measure is to know". For instance, who would have thought one male caracal patrolled and defended a massive area of 87km<sup>2</sup> in the Cederberg Mountains.

Caracal behaviour, as well as their role in the ecosystem, is also poorly understood, yet little research has been done on them in SA. The collaring and monitoring of these cats will help find solutions to current problems. One way in which to achieve this is through the use of GPS collars. GPS collar technology has radically changed the outputs of this project. Until recently, the large GPS collars available on the market were not suitable for use on caracal in our study area. As a result, we opted to use VHF telemetry to track and monitor caracals in the area.



Figure 7. The minimum home range and points where the collared caracal, Rocky, was observed.

Willem Titus was given the opportunity to track and monitor a male caracal using VHF radio telemetry in the Cederberg. Apart from his daily duties of servicing and monitoring camera traps and leopard cage traps, Willem spent a substantial amount of time tracking "Rocky" the caracal on foot. He was lucky enough to have numerous sightings, including a visual of him with a female. However, many days saw Willem return exacerbated by not having even had a radio signal from the elusive cat. The question was always: "Where could he be when I have checked all the places we

would expect him to be?” This is where the role of GPS comes into play. Using VHF collars, snow leopards in Mongolia were thought to have territories of less than 100km<sup>2</sup>. Once collared with GPS collars, ranges were seen to be over 1000km<sup>2</sup>. On day a researcher was unable to locate his/her study animal meant that it could have been a lot further away than expected. Recently, we have had access to a smaller, lightweight GPS collar we could place on a caracal for the first time.

The process involved having to recapture Rocky, remove his old VHF collar, assess whether he was in good enough condition to continue monitoring, and then replace his collar with the new GPS collar. Having built a special cage for this procedure to ensure he would not be injured, Willem set infra-red camera traps at suitable sites to see which would be the best location to recapture “his” cat. Soon we found the perfect spot – regular photographs of Rocky (and his female) appeared on the digital camera, including the photograph below. Soon after setting the trap we managed to recapture this handsome cat and fit the valuable GPS collar. Results thus far have provided intimate details on his feeding behaviour.



Figure 8. Camera trap photograph of Rocky.



Figure 9(a) Willem with Rocky after he was recaptured; (b) Quinton and Willem removing the old VHF collar.

The research into the behaviour of caracal is strongly tied to the Cape Leopard Trust project in Namaqualand where human-wildlife conflict issues due to small predators such as black-backed jackal and caracal is proving to be key to our ensuring the survival of a viable leopard population in the Kamiesberg Mountains. Our work thus far has made use of infra-red camera traps and surveys of how farmers manage predators.

### **Project Development**

The expansion of the CLT has resulted in the Trust effectively covering the majority of leopard habitat remaining in the Western Cape as well as parts of the Northern Cape. We currently do not have full-time employees in the Namaqualand and Gouritz regions, but are providing students, especially post-graduate students, with exciting and valuable opportunities to work with this dynamic and hands-on conservation organisation - providing them with unique research opportunities and opportunities to be exposed to "real" conservation work. The aim is to offer successful students positions of employment with the CLT, having had 2-4 years to assess their competency and dedication, as well as providing them with the skills to do this.

As a result, we have made the following positions available:

*Gouritz Corridor* - PhD candidate (Rhodes University) - 4 years beginning January 2010.

*Namaqualand* – Masters candidate (Nelson Mandela Metropolitan University) - 2 years beginning January 2010.

*Boland Mountains* - MSc candidate (University of Cape Town's Animal Demography Unit) - 2 years beginning January 2010.

*Gouritz Corridor* - Nature Conservation Practical year (Saarsveld) - 1 year

Aneri Vlok - newly appointed student from SAARSVELD College. Aneri has expressed great interest in our project over the past 4 years while working at Bushmans Kloof Reserve as a field ranger. We encouraged her to go back to obtain

a formal qualification in nature conservation. She has done this and has excelled over the past 3 years. We are providing her with a scholarship and opportunity to do her practical and post-graduate studies with the Cape Leopard Trust in the Gouritz region - with the aim to provide an opportunity that when qualified, she will remain with the project as an employee. She also helps with administrative activities of the trust in that region.

All post-grad students will act as ambassadors for the Cape Leopard Trust and if successful in their work, be encouraged to remain in the employ of the trust.

#### *Departures:*

*Leigh Potter* - Gouritz Co-ordinator completed her 2 year contract and resigned so as to live with her partner in Mpumalanga.

*BenJon Dreyer* - the Namaqualand project member was fully funded by an international organisation (Critical Ecosystem Partnership Fund - CEPF) for his first year of employment. We extended his contract for another 9 months, funding his salary through the CLT. Very good relationships have been forged in the area, ensuring farmers and stakeholders are involved in the project, helping to effect change.

## **Projects**

### *Predator Research*

Predator research will continue in the Cederberg in order to ensure the monitoring of leopard populations here over a long period. This research will involve the continuing of *ad hoc* camera trap surveys, where existing cameras are deployed in different regions to keep up to date with leopard movements, especially dispersal and immigrant animals. GPS collars will continue to be used in monitoring targeted individuals within this population. The refining of the caracal research will take place with experimentation using newly designed GPS collars designed and manufactured by students of the University of Stellenbosch (SUN) in an effort to offer better, light-weight and affordable technology for mammal researchers. Collars will first be available in 2010 for testing. SUN engineering department have been actively involved in solving several other technical dilemmas experienced in our field research. They have designed new cage trap transmitters, cage remote release mechanisms and other communication systems making safer trapping conditions for leopard captures.

The PhD project set up in the Gouritz Corridor involves a full research scholarship and project funding from the CLT to model the movements and habitat requirements of leopards in the mountains of the Cape, testing this model in the Gouritz Corridor. The value of this work is particularly seen in the potential to extrapolate findings to better understand the needs of leopards throughout their range, also identifying important corridors that would be effective in conserving this threatened population. Importantly, if this model works, one could justify moving away from having to continue collaring individuals in other regions, as their behaviour could be predicted in a non-invasive manner.

Our research in Namaqualand once again has the CLT provide a full scholarship and project funds for a highly motivated individual to find ways to alleviate human-wildlife conflict issues in the Northern Cape's Namaqualand region. This project is of high priority, dealing with very sensitive issues such as livestock losses, economic loss for communities, loss of food production in SA and loss of biodiversity in the world's second most important arid region or "hotspot".

An MSc candidate will receive a scholarship to determine the population status of leopards in the entire Boland Mountain region. This infra-red camera trapping project already has a great deal of support in from the public, Cape Nature as well as the City of Cape Town. Surrounding schools will be given the opportunity to assist in the monitoring process. Data will collectively add up to the largest mammal survey conducted in the region, providing invaluable baseline data for informed management decisions to be made by statutory conservation bodies. The education and awareness value of the project is unquantifiable and far reaching.



# Education and Outreach Programme



## **Introduction**

The Cape Leopard Trust's Education and Outreach Programme started on 12<sup>th</sup> January 2009. One of the primary aims of the programme is to generate in children (and adults) a real interest in the natural environment and through this connection, give them a reason to want to conserve it. The programme takes place at different levels, from school presentations and day outings to environmental camps.

## **Training**

Elizabeth Martins, Quinton Martins and Willem Titus completed their First Aid Courses and now have certificates for 3 years.

Elizabeth and Willem did the Advanced Mountain Walking Leader course and will do the examination after the required consolidation period. This included theoretical and practical training in mountain safety, weather interpretation, rope-work, orienteering, trip planning and good leadership. Quinton has level 3 in field guiding, so is always able to assist where needed.

## **Legal and safety requirements**

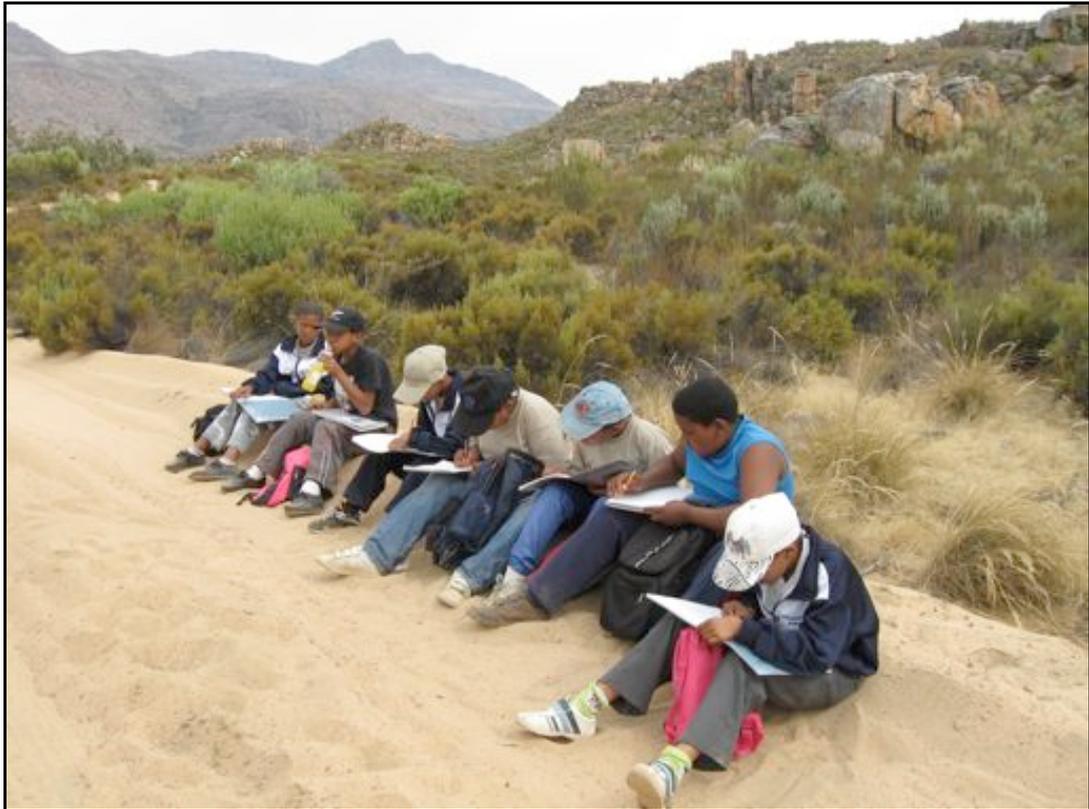
- Satellite phones were purchased for emergency use.
- All facilitators have First Aid certificates and kits.
- Quinton and Elizabeth have Professional Driving Permits.
- The Cape Leopard Trust has Public Liability Insurance (R5 Million).
- All participants in camps and outings must fill in an indemnity and medical form.

## **Sponsors**

The Education Programme has been given generous support by the following organisations/private parties: The Hans Hoheisen Charitable Trust (managed by BoE Private Clients in its capacity as sole Trustee); Three Cities Group; Deutsche Bank Africa Foundation; Whitton Day Nursery (UK); Kathy Ruttenberg (USA); and the Claremont Rotary Club.

## **Enviro-clubs**

The teachers at the two Cederberg rural schools, Dwarsrivier Primary and Eselbank Primary, were very excited by the idea of the Cape Leopard Trust taking the children on regular outings into the wilderness surrounding the schools. As the programme has progressed they have continued to be enthusiastic and supportive. Before beginning with the children, we met with both groups of parents and they too were pleased with the idea. All the children in the Grade 4 – 6 classes have participated eagerly. Thus far we have done 10 outings as well as 5 art classes with the Dwarsrivier Primary School and 7 outings and 1 art class with the Eselbank Primary School. These children also joined the CLT for a three-day camp.



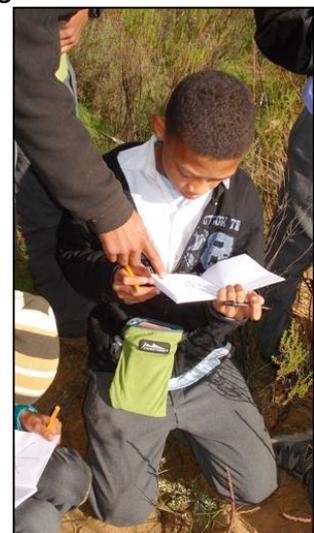
*Children from Dwarsrivier on an outing, documenting all their observations*

Elizabeth and Willem have worked together in running the enviro-clubs. It has been wonderful to see how Willem has risen to this new challenge and is extremely good with the children, encouraging them, challenging them and explaining things to them. He has handled several outings on his own with ease.

By all reports the children love their outings with the CLT and they are always ready and waiting when we arrive. The Dwarsrivier children even requested that we do an outing with them in the school holidays, which we did.

On the outings they explore many themes in nature – identifying animal tracks and droppings, looking at birds, plants, reptiles, seeds, flowers and their relationships to one another, understanding the weather – as well as other themes such as leadership, learning from their own observation, research methods and equipment, respect and responsibility. They walk, observe, explore, draw, write and generally immerse themselves in nature.

*Children from the Eselbank enviro-club putting their tracking kits to good use.*





*The boys from Dwarsrivier were very interested in figuring out how this leopard cage trap worked.*

The children's observational skills have improved and their interest is unabated. They absolutely loved their camping experience and look forward to another camp early next year.

### **School Presentations**

To date, approximately 2880 children have attended presentations (see below) on the work of the CLT, with a focus on Cape leopards and other mammals of the Western Cape as well as an honest look at human wildlife conflict. Presentations have been given in Afrikaans and English for children ranging between the ages of 9 and 17. Many of the presentations are peppered with perceptive questions, comments and stories from the children.

| <b>Date:</b>  | <b>School:</b>            | <b>~ No. children:</b> |
|---------------|---------------------------|------------------------|
| 10 March 2009 | Wupperthal                | 120                    |
| 10 March 2009 | Wupperthal                | 140                    |
| 11 March 2009 | Dwarsrivier Primary       | 7                      |
| 13 March 2009 | Herzlia Highlands Primary | 50                     |
| 17 March 2009 | Herzlia Weizmann Primary  | 100                    |
| 18 March 2009 | Eselbank Primary          | 9                      |
| 30 March 2009 | Weber Gedenk Primary      | 350                    |
| 2 April 2009  | Cannon's Creek High       | 20                     |
| 12 May 2009   | Michael Oak Waldorf High  | 80                     |
| 21 May 2009   | Bergvliet High            | 1000                   |

|                   |                             |     |
|-------------------|-----------------------------|-----|
| 22 May 2009       | Michael Oak Waldorf Primary | 120 |
| 24 July 2009      | Koue Bokkeveld Primary      | 70  |
| 31 August 2009    | Bishops                     | 100 |
| 10 September 2009 | Zenzeleni Waldorf           | 25  |
| 15 September 2009 | Constantia Waldorf          | 26  |
| 9 October 2009    | Fezeka High                 | 9   |
| 14 October 2009   | Augsberg High               | 400 |
| 19 October 2009   | Elkanah House               | 34  |
| 20 October 2009   | Bridge House                | 50  |
| 20 October 2009   | Bridge House                | 150 |
| 30 October 2009   | Wupperthal                  | 13  |
| 2 November 2009   | Stellenbosch Waldorf        | 6   |

### Day trips

We have done 5 day trips to date. They have been with children from schools on their own camps in the Cederberg and with family groups. These trips are a good opportunity to give an overview on the Cape leopards and the work of the CLT while providing an experience of the fieldwork involved in researching leopards.



*A student of the Bishops post-matric class helping Willem place a remote camera*

### Matjiesrivier Campsite and Education Centre

This year has seen an active, positive partnership developing between the CLT and Cape Nature, focussed on the use of Matjiesrivier Nature Reserve as a research and education base. Cape Nature now fully supports the CLT education programme, providing the location for the campsite for the children's environmental camps at Matjiesrivier. This is a particularly interesting site as it sits on the boundary between the Fynbos and Karoo biomes.

The construction and setting up of the campsite took place through October and November. The camp is beautifully situated, between a cliff and a river in a poplar grove. The place is shady in summer and full of birdsong. The campsite is a simple design, made to have a low impact on the environment. There is a subdivided 'wendy house' that serves as kitchen and storeroom with a covered area at the front where groups can gather out of rain and sun.



The shower block is a combination of cement blocks and canvas, built on an existing cement slab. We are using bucket showers, where the children lower their bucket on a pulley and fill it, then hoist it up for their shower. We hope that through this experience, children will develop an awareness of how much water they usually use, and how much is actually necessary.



Placed separately are the enviro-loos, which use no water at all and apparently produce good compost!



The children can set their tents up under the shade of the trees and all can enjoy a fire at the lapa. There is no electricity at the camp, so we are relying on gas and fires for cooking, as well as a solar oven. Shaker torches and solar lamps also bring in an experience of a different kind of energy source.

### Camps

Before the campsite was ready, we used Kliphuis, a private campsite on the Dwarsrivier farm. The camps started in earnest at the end of August, with the warmer weather. From then until the end of the year there have been a number of camps booked, and some more still pending. Four of the camps have been sponsored and there are other sponsored camps arranged for early next year. See table below for camp timetable:

| <b>Date:</b>                               | <b>School/Organisation:</b>              | <b>No of children:</b> |
|--|--|------------------------|
| 21 <sup>st</sup> – 22 <sup>nd</sup> March  | Kouebokkeveld Training Centre            | 17 students            |
| 28 <sup>th</sup> – 30 <sup>th</sup> August | Dwarsrivier & Eselbank Primary (Gr 4-6)  | 14 children            |
| 10 <sup>th</sup> – 12 <sup>th</sup> Sept   | Zenzeleni Waldorf School (Grade 7)       | 25 children            |
| 15 <sup>th</sup> – 18 <sup>th</sup> Sept   | Constantia Waldorf School (Grade 5)      | 26 children            |
| 9 <sup>th</sup> – 11 <sup>th</sup> October | Fezeka High School Photography Club      | 9 students             |
| 30 <sup>th</sup> Oct – 1 <sup>st</sup> Nov | Wupperthal School (Grade 9)              | 13 children            |
| 3 <sup>rd</sup> – 6 <sup>th</sup> November | Stellenbosch Waldorf School (Grade 6)    | 6 children             |
| 23 <sup>rd</sup> – 26 <sup>th</sup> Nov    | Hermanus Camphill (Upper School)         | 7 students             |
| 26 <sup>th</sup> Nov -1 <sup>st</sup> Dec  | 6 tracking trips with Bishops (Grade 10) | 60 children            |
| 1 <sup>st</sup> – 4 <sup>th</sup> December | Gereformeerde Laerskool (Grade 6 & 7)    | 20 children            |

We held one camp for adults from the Kouebokkeveld Training Centre, as part of their part- time Agricultural Course. The participants were all workers from farms in the area who held managerial roles. The weekend camp with the Cape Leopard Trust was poignant as there was a visible shift in attitude towards the natural environment during the weekend. The programme included hiking; observational

drawing; a presentation on the Cape Leopard Trust; discussions on human wildlife conflict and solutions; and leopard tracking.



*Participants in the Kouebokkeveld Training Centre Camp tracking the leopard 'Spot'*

The camps are proving to be successful. There is a wide variety of 'topics' that can be covered in the Cederberg, so every camp has had a different focus. One theme that we have brought into every camp is animal tracking. It has been a joy to see how the children have suddenly become aware of the diversity and presence of animal and insect life around them - the tracks of a grasshopper, a mouse, a gecko, an African wildcat, a klipspringer, a leopard – all fascinating and stimulating the imagination. It is not just seeing different tracks and starting to recognise them, it is also seeing where the creature was going, and figuring out what it might have been doing. It becomes both serious and reassuring when a puff adder track passes right through the campsite and continues on the other side.



*Children from the Constantia Waldorf School drawing baboon tracks*



*Locust*

Other activities have included exploring the rock art and rock formations at Stadsaal;



feeling the dwarfing majesty of the mountain in the Wolfberg Cracks; delighting in unexpected playthings (like the lovely hard, round Smith's red rock rabbit droppings); and drawing from nature.



### Looking forward

The Education Programme is now established, a solid foundation has been built and we have seen that there is much interest in the experiences that we have to offer.

The Cape Leopard Trust intends to continue with the various elements – presentations, enviro-clubs, outings and camps - in 2010 and to find funding to sponsor camps for those who could not otherwise afford them.

We have seen that our camps are fulfilling our aim of giving the children an experience that is stimulating on all levels and ultimately giving them a sense of connection with and understanding of wilderness. We will endeavour to continue providing relevant and valuable camp experiences.

With the expansion of the new CLT project into the Boland Mountains and Hottentots Holland range, we intend to involve interested schools in this process. They could be involved in a number of ways, including sponsoring and monitoring camera traps, working with data and taking part in creating public awareness. We have already had requests from several schools where we have done presentations to be involved.

Visual aids are very important when speaking to children about animals and tracking. It has been shocking to realize how little the children of the Western Cape know about their own fauna. They are very familiar with the typical 'African animals' – lions, giraffe, elephants, etc – but have very limited knowledge of the fascinating animals that live in the mountains surrounding them. In presentations we show slides

of the various animals, but it has become clear that we need a more handy reference for these creatures. We would therefore like to make posters and photo compilations on the animals of the Western Cape, as well as a Cederberg tracking book for use on camps and in the enviro-clubs.

***Project Budget 2010 and Financial Report are available on request.***

**Board of Trustees**

The current Board of Trustees are as follows:

Dr Andrew Baxter (Chairman)

Johan van der Westhuizen (co-founder)

Peter Lloyd

Professor Chris Henshilwood

Dr Ian McCallum

Dr William Horsnell

Quinton Martins (co-founder)



*Thank you all for your incredible support and belief in the value of this project.*