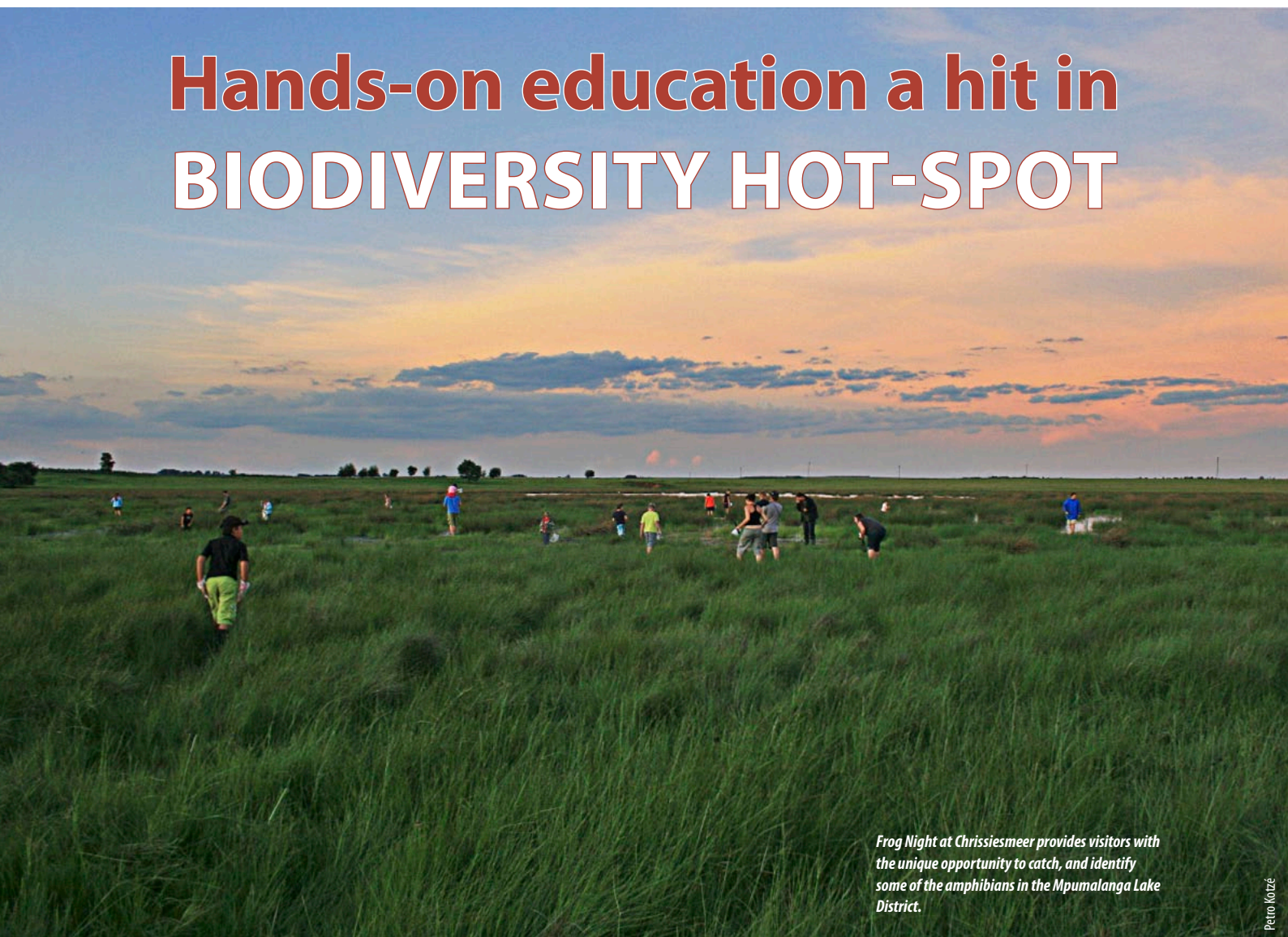


Hands-on education a hit in BIODIVERSITY HOT-SPOT



Frog Night at Chrissiesmeer provides visitors with the unique opportunity to catch, and identify some of the amphibians in the Mpumalanga Lake District.

Petro Kotzé

An eco-tourism initiative in Chrissiesmeer is teaching young and old to catch on to conservation. ***Article by Petro Kotzé.***

As the sun sets, the choir starts a vaguely organised array of snores, rings, whistles and pings. The audience is ready for the show, donning the necessary headlamps and plastic bags. This is no ordinary performance, especially not from the elated crowd. Rather, it is a somewhat alternative choice of entertainment, especially for a weekend in the countryside. Welcome to Frog Night, an annual highlight in

Chrissiesmeer, Mpumalanga, for the past 13 years.

Located just over 20 km from Carolina, a stone's throw from the Swaziland border, the Chrissiesmeer village itself is but a handful of streets surrounded by a lively community dependent mainly on farming and forestry. A small sign at the entrance provides the first clue to where the town's priorities lie, as it warns drivers to slow down...for the frogs. "This is probably the only town where you will have rocks thrown at your car if you run over a frog," the barmaid in the town's oldest, and only hotel, says cheerfully.

One particular weekend, at the beginning of each December since 1997, is an interesting weekend to be a frog around Chrissiesmeer. About 160 people of all ages head to the area for Frog Night. Presented by the Matotoland Eco-Tourism Association, the event not only educates guests about the amphibian species found in the area, but gives them a chance to get to know them first hand, literally donning sneakers and plastic bags to catch them in one of the abundance of local pans.

However, visitors to Chrissiesmeer who think that frogs are the area's only claim to fame are dearly mistaken.

MORE THAN MEETS THE EYE

In general, pans in South Africa are spread in a band across the interior. The bulk sits in the drier, western part, around the Northern Cape, Free State and North West Province, while a unique cluster in the eastern part is centered in Mpumalanga around Lake Chrissie,

Really an elevated plateau, the MLD is a unique geomorphic entity. In fact, it has been described as a glimpse of one of the most ancient land surfaces in southern Africa and between 10 and 20 million years old. Frogs are not the only reason why visitors should tread carefully, underfoot is possibly one of the last remnants of the post-Africa I surface.

“This is probably the only town where you will have rocks thrown at your car if you run over a frog.”

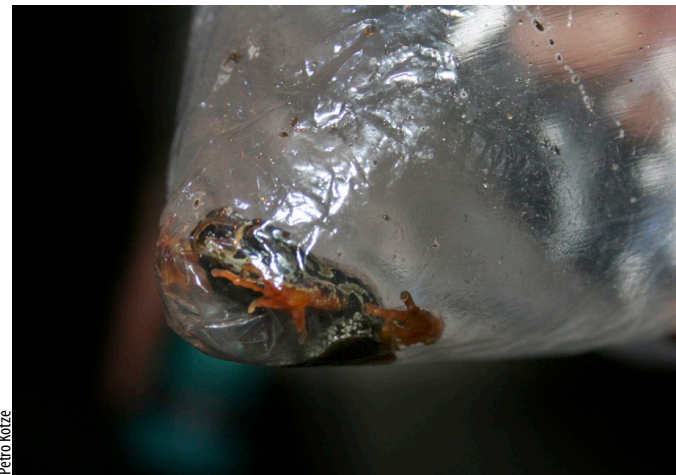
the largest natural body of freshwater in the country (with a circumference of 25 km). Some 270 pans are scattered in a 20 km radius around the village of Chrissiesmeer, and are also less saline than their western counterparts.

Here, a number of features are of significance. Even though there are no rivers in the area, it's surrounded by the drainage basin of four river systems; the Vaal River, which eventually turns into the Orange at Douglas and ends in the Atlantic, is one. The Komati, which then flows past Komatipoort to Mozambique, is another, while the Usutu River that ultimately empties into Maputo Bay is the third. The last is the uMpuluzi.

The perennial (during normal rainfall seasons) pans of the Mpumalanga Lake District (MLD), as the pan field is known, receive water in a number of ways. Rainfall and run-off from surrounding watersheds are two sources. Some water also percolates into the ground to become groundwater, of which a small amount migrates into the pans.

Furthermore the area, specifically the Tevreden Pan Peatland Complex in the northern part of the MLD represents a unique wetland type uncommon in the South African landscape, namely peatlands (also refer to *The Water Wheel*, July/August 2010).

Post Africa I and II refer to periods of uplift and tilting of the sub-continent (respectively 20 million and 5 million years ago) that resulted



Petro Kotzé

in the 'rejuvenation' of rivers in the interior. As a result, downwards and headwards erosion took place, removing the veneer of ancient soil and exposing younger erosion surfaces. Some of the old land surface

*Above: Frogs are placed in see-through, inflated bags for easy identification, such as this Rattling Frog (*Semnodactylus wealii*).*



Petro Kotzé

*Left: The Rattling Frog (*Semnodactylus wealii*).*



DID YOU KNOW?

There are no Rain Frogs in the MLD. It is speculated that the predominant soggy (clay) soil is the reason, as the species prefer sandy soil for breeding purposes. During mating, the male of this species is glued to the back of the female (with a sticky secretion). The eggs are laid in burrows, within which the tadpoles develop and emerge from as fully formed froglets.

No one is sure what the lifespan of a frog in the wild is (being understandably hard to track) but Bullfrogs in captivity have lived up to 25 years. This hardy amphibian buries itself during times of drought, where it is able to slow-down its breathing and heartbeat to almost zero. It can remain in this state for years at a time.

The female Foam Nest Frog is fertilised by about ten males at her sides, which generate foam by churning the egg jelly with their hind legs. Nests are common in trees that overhang pans in the bushveld. When the tadpoles hatch, they fall into the water below.

can still be identified at the MLD, where it is slowly being eroded being encroached by head-cutting of the four rivers mentioned earlier.

The origin of the pans is still a matter of speculation. A popular hypothesis was put forward by the late Prof John Wellington. He theorised that the pans can be linked to form an eastward flowing drainage network, which once formed a tributary network to the ancestral uMpuLuzi. When head-cutting by the Vaal River cut into this drainage network, it was deprived of its water and rendered moribund (stagnant) as the water was diverted to the Vaal itself. Westerly winds formed dunes with sand from the river beds, which divided the drainage network into a series of isolated segments (the pans).

Other hypotheses include regional warping of the sub-continent (the pan belt coincides with a continental-scale drainage divide that divides northerly from southerly flowing tributaries) or even the occurrence of exceptionally dry periods that coincided with the ice ages in the Northern Hemisphere. The thought is that reduced vegetation during these times would have promoted the formation of wind-blown sand deposits along the courses of the rivers.

Around 20 million or so years later in this same geologically

significant region, one night in December 2010, a question was posed: "How do you catch a frog?"

SNORES, RINGS AND WHISTLES

The answer came in a confident voice from among a hoard of excited, young faces: "You throw it with your Croc!"

Luckily for the MLD's 13 frog species, explained the night's speaker, herpetologist Jerry Theron, the answer is much more diplomatic: You listen to them. Male frogs call to attract their mates. Most females have no larynx, with the one exception in South Africa being the female Platanna. Each frog's call is like a fingerprint, and is species-specific; a deep vibrant snore for the Guttural

This Common Caco (Cacosternum boettgeri) was one of the many caught on the night.



Petro Kotzé

Toad (*Bufo gutturalis*), a clear 'quoip' for the Bubbling Kassina (*Kassina senegalensis*) and a piercing 'pip', sometimes in short bursts, for the Striped Stream Frog (*Strongylopsus fasciatus*).

Incredibly, what would sound like a confusing choir of clicks, pips, snores, rings and whistles to the untrained human ear, is a clear signal for female frogs that indicate potential mating sites. The amphibian ear is exceptional, particularly since the female can only hear the 'voice' of her specific species. The sounds, formed by blowing air over the vocal chords into a vocal sac that resonates, differ in frequency, pulse rate and duration, making each quite unique. As for female choice, choir leaders apparently stand a better chance to be selected, while size and age (bigger and older being the preference) are also possible deal-breakers.

Calls, however, can also indicate if a male frog's territory is encroached upon. "The Painted Reed Frog, for example," explains Theron, "has an inter-male spacing of 50 cm." If this space is entered, the mating call changes to a territorial call. A River Frog's usual 'click-click-click' changes to a feisty 'meow' and a somewhat gentlemanly vocal fight results.

During the December Frog Night, the talk on the aspects of the breeding ecology of South African frogs was followed by a visit to a nearby pan, just as the sun was setting (most frogs are nocturnal). In summary, frog hunting is dirty work. More specifically, it is wet, muddy and not for the faint hearted or impatient. Theoretically, they occur around the shallow edges of the pan.

The trick is to listen for the call, approach the direction slowly

DIGGING DEEP TO SAVE THE MLD

The pristine pans of the MLD are under threat from rampant applications to develop open coal mines in the area. In fact, says Mpumalanga Lake District Protection Group (MLDPG) project-coordinator, Koos Davel, there is literally not one farm in the region between Carolina, the Warburton Road, and the Lothair/Ermelo Road that has not received an application for prospecting rights.

The trend, explains Davel, is for any investment or financing company, which has no interest in mining, to apply for easily-attainable prospecting rights. Once the potential for coal mining can be proved, the mining right is then re-sold for huge amounts of money to mining companies.

The MLDPG has been vigorously opposing these applications, as opencast coal mining will disrupt the hydrology of the pans and cause irreversible pollution. The organisation, with the Mpumalanga Tourism and Parks Agency (MTPA) aims to have the

MLD declared a Ramsar site, in order to offer the area more protection. The Ramsar Convention, otherwise known as the Convention on Wetlands of International Importance, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

Studies have shown that the bulk of the aquatic biodiversity in the area is irreplaceable, while the water is almost pristine. Geohydrological investigations of fountains on the farm *Lusthof* have proved the exceptional quality of water, rated substantially cleaner than the South African Class 0 (ideal) drinking water quality. "The water is so clean," says Davel, "I can still see birds feast on fresh-water mussels in a vlei nearby my property."

The fight to save the MLD from development is ongoing.



Petro Kotzé

SOURCES

- www.chrissiesmeer.co.za
- Mining and conservation of the Mpumalanga Lake District by T McCarthy, B Cairncross, J Huizenga and A Batchelor (published on www.chrissiesmeer.co.za)
- The Tevredenpan Peatland Complex of the Mpumalanga Lake District by P Grundling, A Linström, R Grobler and J Engelbrecht (published on www.chrissiesmeer.co.za)
- Sasol First field guide to frogs of Southern Africa by Carruthers V. (2001), Struik Publishers.
- www.ramsar.org

The collected species are identified before being released back into the pan where they were found.

Cape River Frog (Amietia fuscigula).

(at which point they will most likely stop, having been disturbed), wait, and repeat the exercise. As a rule, captured frogs are kept in clear, inflated, plastic bags for easy identification. On the night, eager faces (of both the young and the young at heart) then discussed size, call, skin texture and so forth for purposes of identification. “Kids rarely get the chance for an opportunity like this to learn more about nature,” explains Theron at the end of the “Lucky 13th”

Frog Night, after the prize giving and frog count.

Even more encouraging is the increasing amount of people interested in attending the festivities – this year, they had to show many away. “Frogging” (as it is also referred to) is by no means a common choice for a weekend activity but, by the looks of it, Chrissiesmeer and the Frog Night’s encore will resound for a long time still to come. □



Petro Kotzé

3rd ORANGE RIVER BASIN SYMPOSIUM

Hosted by the UNIVERSITY OF THE FREE STATE'S STRATEGIC ACADEMIC CLUSTER
"Water management in water-scarce areas", BLOEMFONTEIN

8-9 JUNE 2011

THEME: THE ROLE OF WATER IN FOOD SECURITY

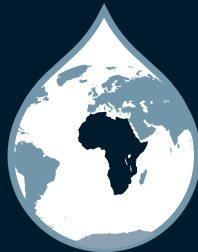
This is to be our third Orange River Basin Symposium. Please join us in discussing matters of mutual interest in a friendly atmosphere. The Orange River is South Africa's largest river. The catchment straddles South Africa, Lesotho, Botswana and Namibia and plays a major role in agriculture, industry, mining and rural development. The Orange River is also a major source of water for the dry west of the sub-continent and it is the subcontinent's major non-perennial river system.

FOCUS AREAS OF THE SYMPOSIUM:

The Programme is broadly accommodating and not restricted to the overall theme, but we ask participants, where possible, to consider it in the light of the following preliminary topics:

PROVISIONAL THEMES:

- Environmental water requirements
- Water Harvesting
- Changing environments
- Water-related rural development issues
- Water-related urban development issues
- Training in Integrated Water Management
- Transboundary Water Issues
- State of the Orange River
- The role of water in food security
- Acid mine drainage
- Wetlands
- Water Disaster Risk Management



STRATEGIC ACADEMIC CLUSTER:
WATER MANAGEMENT IN
WATER-SCARCE AREAS
UNIVERSITY OF THE FREE STATE, SOUTH AFRICA



OBJECTIVES OF THE SYMPOSIUM

The symposium aims annually to provide a forum and a communication channel between academics, researchers, public officials (local to national, government and parastatal), industry, suppliers, consultants and development organisations interested and affected by the Orange River Catchment. In line with the objectives, facilities can be made available for associated meetings, workshops and courses.

IMPORTANT DATES:

Second Announcement: 11 April 2011

Abstract Deadline: 2 May 2011

REGISTRATION:

EARLY BIRD: R1 000 (before 6 May 2011) per delegate, payable in advance.

LATE FEE: R1 400 (after 6 May 2011) per delegate, payable in advance.

Subvention will be considered for UFS staff and students on application. Fees cover lunches, a dinner, teas and the programme.

ENQUIRIES: Sanet Neethling
Tel: +27 051 401 2863, Fax: +27 051 401 2629, E-mail: neethlingis@ufs.ac.za

Visit our website for more information and registration forms:
www.ufs.ac.za/orangeriver

UNIVERSITY OF THE
FREE STATE
UNIVERSITEIT VAN DIE
VRYSTAAT
YUNIVESITHI YA
FREISTATA



UFS·UV
NATURAL AND
AGRICULTURAL SCIENCES
NATUUR- EN
LANDBOUWETENSKAPPE

STRATEGIC ACADEMIC CLUSTER: WATER MANAGEMENT
IN WATER-SCARCE AREAS

Tel: +27 051 401 2863
Fax: +27 051 401 2629
E-mail: neethlingis@ufs.ac.za
www.ufs.ac.za/orangeriver

205 Nelson Mandela Drive
Park West, Bloemfontein 9301
P.O. Box 339
Bloemfontein 9300
South Africa