

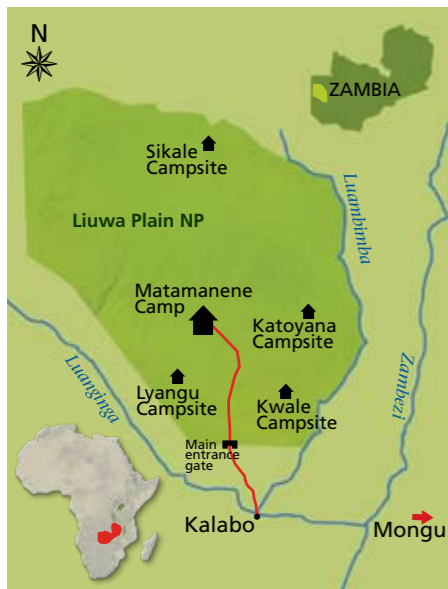


There are few places in Africa where you can still enjoy the spectacle of wild dogs and hyaenas in hot pursuit of masses of wildebeest crossing the savanna. One such place is Liuwa Plain in western Zambia, the setting for the second-largest wildebeest migration on the continent. While watching the bounty, it is hard to appreciate how close this unique ecosystem once came to collapsing. Historically host to an astounding abundance and diversity of wildlife, Liuwa Plain National Park was stripped almost bare by poachers in the past few decades. Today, though, the animals are coming back. **Stephen Cunliffe** turns his spotlight on some of its toothiest inhabitants – carnivores. ▶

TEXT & PHOTOGRAPHS BY  
STEPHEN CUNLIFFE

# summing up carnivores





Putting an ecosystem back together is no easy task. In reference to its management, the great conservationist Aldo Leopold once said, 'To keep every cog and wheel is the first precaution of intelligent tinkering.' While that is sage advice, in the case of Liuwa it is even more complicated, as the challenge lies not only in keeping all the parts, but first identifying what the parts were, and then discovering how best to re-assemble them without a manual.

The complexities of interactions between the different species of wildlife and plants, and the effects of flooding, fire and people, just to name a few factors, are enough to make a park manager's head spin. Nevertheless, this is the task at hand for African Parks Zambia (APZ) and its partner, the *Zambian Carnivore Programme* (ZCP). The two organisations have teamed up to form the Liuwa Carnivore Project, a research and monitoring study that focuses on large carnivore species such as African wild dog, cheetah, spotted hyaena and lion, as well as the animals' prey and habitat. While restoring the populations and diversity to historic levels is one of the more obvious objectives in ecosystem rehabilitation, understanding the dynamics and interactions between species within a carnivore community is the real key to the effective management and conservation of these vitally important animals.

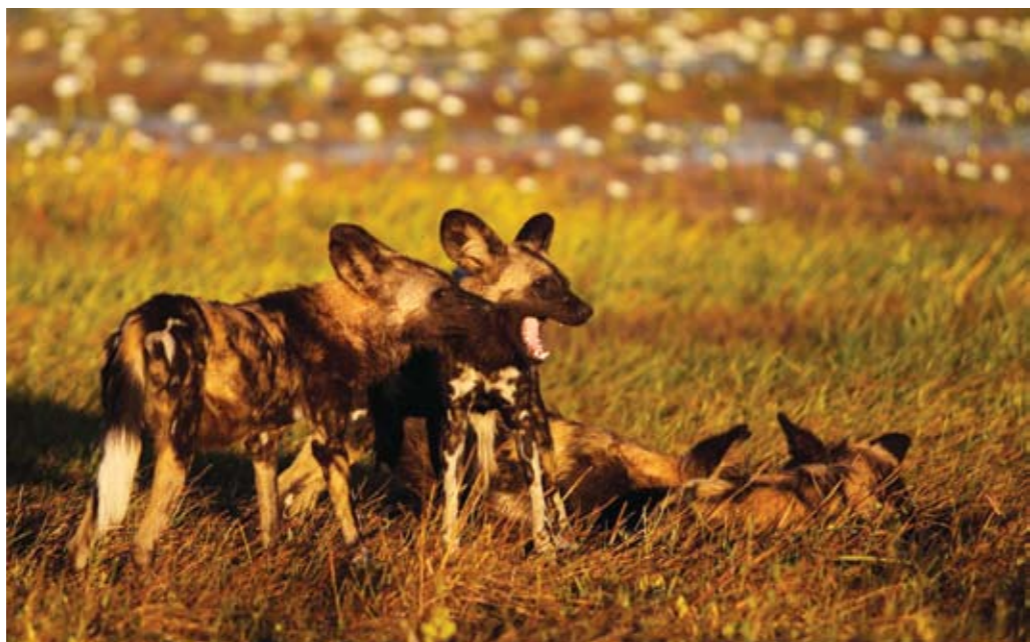
The Liuwa project provides immediate applications to conserve and manage the park's wildlife, and also affords valuable insights into a better understanding of the

competitive interactions within the recovering carnivore community. Dr Matt Becker, who heads up the project, explained, 'It is fundamental that you have reliable information to guide your management and conservation decisions. Well-designed research that documents the changes taking place as an ecosystem is restored not only feeds directly into effective management of the Liuwa system, but will provide insights into the dynamics of large-carnivore guilds. These will hopefully assist in continent-wide conservation efforts.'

An immense and productive wildlife area, Liuwa Plain National Park has the potential to support significant numbers of all the large African carnivore species and their prey, and serves as an area of critical importance to imperilled species such as African wild dog and cheetah.

Initiated in November 2009 with the collaring of two breeding packs of wild dogs, the Liuwa Carnivore Project is an ongoing study that provides a continuous stream of data on populations of targeted species, migratory prey and the influences of fire, flooding and humans. Operated from a research post next to Matamanene Camp in the heart of the park, fieldwork continues in earnest.

Last year I was invited to accompany a Liuwa participation safari, where I observed the ZCP crew in action as they darted and collared lions, hyaenas and wild dogs. The team, consisting of Becker, project leader Jassiel M'soka and locals Dennis Mutanga



and Armstrong Chinga, is enthusiastic about the initiative.

M'soka explained. 'Liuwa is a disturbed system that functionally lacks key components such as lions, and we are getting a unique chance to study an ecosystem before they arrive and to compare our findings to [those made] after they have been reintroduced. We know that the system will change dramatically as the lion population expands and it is a great opportunity for us to document the changes and learn about carnivore dynamics in a short time.'

Because the lion, the top carnivore in the system, was eliminated from the region, the project is able to gain conservation insight into how carnivore species compete with each other as their numbers and interactions change. Given the area's transitional state and its potential to eventually hold substantial numbers of large mammal species at or near their historical capacities, it is reasonable to expect extraordinary changes in species abundance, distribution and habits as the system adjusts.

Liuwa Plain is vital for large carnivore conservation for a number of reasons: its size, its potential connectivity to neighbouring wildlife areas in Zambia and Angola, and the fact that it harbours several endangered and threatened species. Wide-ranging animals such as wild dogs regularly leave the confines of the park to take advantage of the greater Liuwa ecosystem. In 2010, for example, a local wild dog pack, known as the Sausage Tree Pack,



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ABOVE As they migrate, the endless columns of wildebeest and zebra attract an array of predators – including lions, cheetahs and African wild dogs – ranging in close attendance.

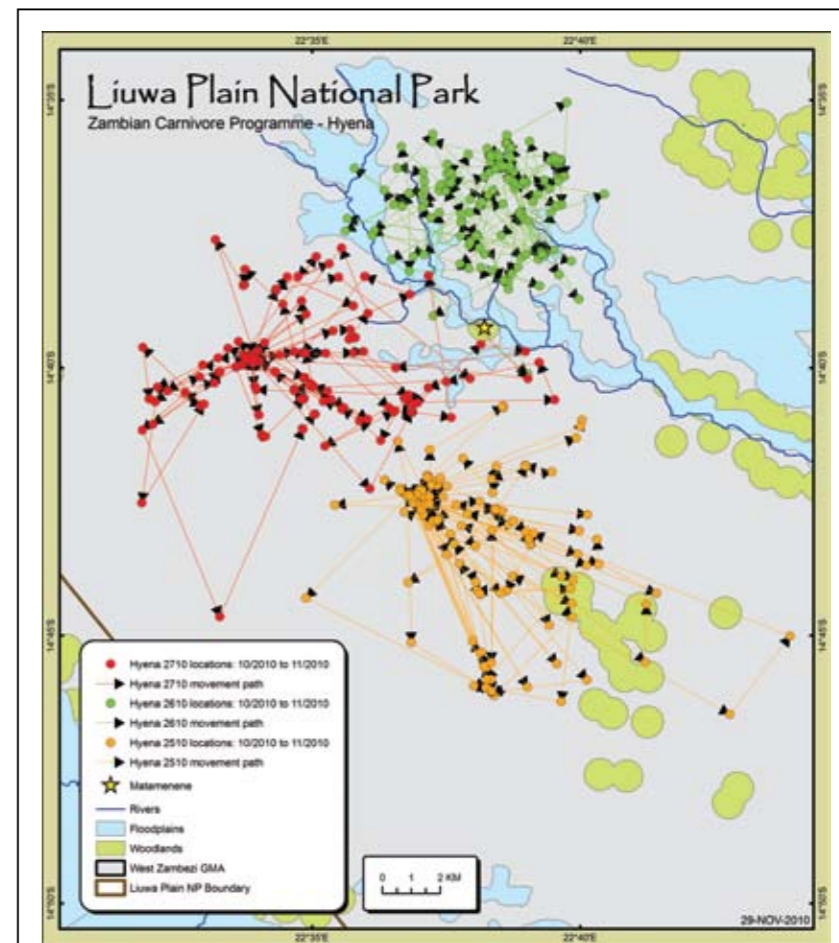
OPPOSITE Liuwa is prime habitat for wild dogs and their numbers are expected to rebound quickly in the absence of a significant lion population.

PREVIOUS SPREAD In May 2009, these male lions were relocated from the Kafue region to boost the Liuwa population. One has been fitted with a state-of-the-art remote-download GPS collar, which has allowed ZCP researchers to monitor the duo's movements, even when they undertake epic 50-kilometre forays in search of the migrating wildebeest herds. INSET Members of a Liuwa participation safari pose with an immobilised hyaena that they have helped collar. Minutes later, Dr Matt Becker (far left) administered the reversal drug to wake the hyaena up.

denied outside the protected zone but within the West Zambezi Game Management Area (GMA). The fact that it did so highlights the importance of focusing on conserving more than just the national park.

The proposed Liuwa Plain–Mussuma Trans-frontier Conservation Area (TFCA), designated around what is thought to be the historical range of the wildebeest migration, does just that. The TFCA is an essential step to protect both the wildebeest herds that migrate annually into Angola and the carnivore species that range widely outside the national park.

The wild dog comeback continues. Nine pups emerged from the den of the Sausage Tree Pack and, beating the odds, have all survived, swelling its ranks to a robust 18. With an unusually high pup survival rate having been documented two years running, the dogs should recover rapidly in the absence of significant lion numbers, boosting an already healthy population of the canines that is roaming the plain for the first time in decades. *To page 44*



The project team is closely observing four large clans of spotted hyaenas. An unexpected revelation has been the discovery that none moved with the wildebeest herds on their north-west migration. Instead, they opted to remain in the south, where they preyed largely on the territorial wildebeest males that had stayed behind. However, one male hyaena, recognisable by a scar on his face, was seen during a predator survey far to the north-west of his normal territory, indicating that at least some individuals do move over considerable distances.

## THE ZAMBIAN CARNIVORE PROGRAMME

Working in collaboration with the Zambia Wildlife Authority and African Parks Zambia, the **Zambian Carnivore Programme (ZCP)** is a charitable trust dedicated to the conservation of large carnivore species and their ecosystems. Formerly known as African Wild Dog Conservation (AWDC), the programme came into being in the Lower Zambezi Valley, where attention was directed on the plight of the highly endangered African wild dog.

In 2005, with the aid of WWF The Netherlands, AWDC expanded its operations into the Luangwa Valley. Four years later, the organisation evolved into a broad-based carnivore conservation programme and today it contributes to the knowledge and protection of large carnivores throughout Zambia. The programme supports anti-poaching work, snare removal and habitat conservation initiatives, as well as the education and employment of Zambian nationals to help ensure that the country retains the benefits of these efforts.

[www.zambiacarnivores.org](http://www.zambiacarnivores.org)

Parked on a small rise beside the well-known Lone Palm in the heart of Liuwa Plain, ZCP project leader Jassiel M'soka appreciates the star-studded heavens and rising full moon as he uses a VHF radio receiver and antenna to check the surrounding area for the presence of collared carnivores.



## RADIO-COLLAR DATA

If you're a researcher gathering critical information on low-density and wide-ranging carnivores, you need to have reliable equipment to locate your study animals, even when they are hidden. Radio-collars are ideal: they provide key data on population sizes, trends and distribution, survival, dispersal, reproduction and diet. And fitting them allows researchers to take blood samples that are analysed to understand genetics and disease exposure.

The collar type is also important. Basic VHF collars have long been the workhorses of wildlife research because they are cheap, reliable and long-lasting. Whenever you see researchers radio-tracking with antennas and receivers, this is probably the type of collar they're tracking, as the VHF emits a signal with a frequency distinct to the collar (much as that transmitted by a radio station). However, the signals can be blocked or distorted by vegetation, topography and even cloud cover, reducing the connection between the pulse and the receiver to less than one kilometre. GPS collars are more expensive, but offer state-of-the-art technology and extremely accurate data. They transmit an animal's locations at regular intervals via satellite, so the researcher can follow its movements. However, GPS collars are not faultless. Problems with reliability, durability and insufficient satellite coverage can hinder research work.

Currently, the Zambian Carnivore Programme is moving towards the use of remote-download GPS collars, which allow researchers to download data without the assistance of satellites. The programme's Dr Jed Murdoch is full of praise for the latest equipment. 'Newer technology in GPS collars can make them less reliable, but when they work it's like flying first class; you never want to go back [to VHF] again.'

ABOVE A spotted hyena turns to check the tranquilliser dart that has just pierced his rump. Seconds later, he succumbed to the drugs.

BELOW The Zambian Carnivore Project team collect tissue samples, take blood, record measurements and fit the hyena with a robust VHF collar.



## PACK YOUR BAGS

Liuwa Plain National Park sprawls across 3 660 square kilometres in Barotseland, on the western side of Zambia between the Zambezi River and the Angolan border.

If you're planning a visit, remember that the plain floods during the wet season, making access virtually impossible, and the park closes from 1 December to 1 June each year. The wildebeest begin to mass here in September and October. For those who don't feel comfortable tackling a Liuwa expedition on their own, check out Bhejane Safaris ([www.bhejane4x4adventures.com](http://www.bhejane4x4adventures.com)) or Navigators ([www.navigators4wd.co.za](http://www.navigators4wd.co.za)) for advice on guided 4x4 trips into the region.

Matamanene Camp, located in the heart of Liuwa, is the base camp for the Zambian Carnivore Programme, Liuwa participation safaris and Robin Pope Safaris. It is not available to the general public. Self-drive visitors can stay at four well-maintained community campsites within the park and at Kayala campsite on the outskirts of Kalabo. The sites offer basic facilities, including freshwater wells and flush toilets.

Supplies and fuel (jerry cans are essential) must be purchased before you leave Mongu, although some goods can be acquired in Kalabo. Only firewood and curios are available within the national park.

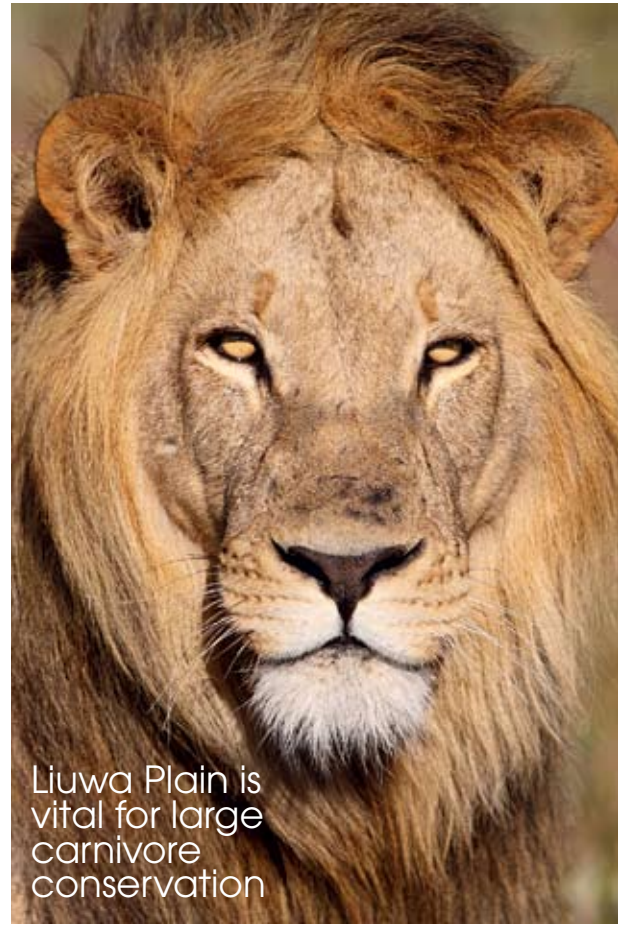
Incidents of violent crime are rare in this part of Western Zambia, but be aware of petty crime in the towns and villages en route. Zambia is a malaria area: consult your GP for prophylactics.

More information can be found at [www.african-parks.org](http://www.african-parks.org) or [www.robinpopesa.com](http://www.robinpopesa.com). For the latest info on the park and road conditions or to book a campsite, e-mail [liuwa@africanparks.co.zm](mailto:liuwa@africanparks.co.zm)

As the most abundant large carnivore in the ecosystem, hyaenas are obviously a key species for the study. The project team has identified 75 individuals, comprising the majority of the hyaena population on the southern plains, and is presently closely observing the habits and movements of four large clans. (See map on page 41.)

Liuwa is also home to a breeding population of cheetahs, although their status and distribution are still being determined. Cheetahs frequent the intensive study area in the southern sector, with a mother and her three adolescent cubs even paying occasional visits to Matamanene Camp and allowing researchers to follow them on hunts. But most cheetahs are shy and it will take time to habituate this rare feline and collect data on it.

The lions hang mainly around the Matamanene area, but also range across the park – radio-collar data revealed that a pair of lions trekked 50 kilometres into the north-west corner of the West Zambezi GMA and back in three days. In general, these big cats remain in the south during the drier winter months, only moving into the far eastern and northern sections of the park to hunt. Lady Liuwa – the fabled last lioness of Liuwa – continues to mate regularly with the re-introduced males, but she has, as yet, not shown any signs of pregnancy. (For more about Lady Liuwa, see the October 2010 issue of *Africa Geographic*.) More lions are slated for reintroduction in the near future and, while full restoration will take many years, the sight of a lion pride with cubs splashing across the waterlogged plains would be a prophetic omen of Liuwa's imminent recovery.



Liuwa Plain is vital for large carnivore conservation

Understanding carnivore dynamics in Liuwa and realising the vision of restoring the historically vast wildlife area are lofty goals. All too often, conservation is simply about holding the line, preventing further backsliding and the loss of habitats and species. APZ and the ZCP are focused on pushing that line forward and bringing back a neglected ecosystem that, after being on the verge of collapse, is pulsing with life once more.

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TOP Liuwa Plain is carving out a deserved reputation as home to southern Africa's ultimate safari experience. Devoid of crowds, it boasts the continent's second-largest wildebeest migration and some of the best predator viewing in Africa, such as this handsome lion.

LEFT The plain's wetlands are an ornithological paradise and Important Bird Area (IBA), with an impressive 319 species, including these majestic grey crowned cranes.

