

THE METAMORPHOSIS OF

MALI

Perhaps you know Mali's Dogon country – dramatic cliffs, villages perched precariously on the rocks, mud-brick mosques with rounded minarets. However, the survival of the fascinating Dogon culture depends little on its picturesque surroundings. For this, it's necessary to examine the biodiversity of the region and the complex relationship between the people and their resources. Joining a band of nature conservationists and agriculturalists, environmental consultant **Joy E. Hecht** was inspired by the potential that is evident in this usually arid, sometimes unexpectedly lush, landscape. ▶

TEXT BY JOY E. HECHT

PREVIOUS SPREAD An abandoned Dogon village at Teli on the Bandiagara cliffs. The Dogon people lived on these sheer slopes as a security measure; today most have moved to villages at the base of the escarpment.

OPPOSITE Flat-topped houses and granaries (distinguished by their witches' hat roofs).

BELOW A woman pounds millet. Other crops farmed by the Dogon on small plots where water is found are rice, sorghum and onions.

Dogon country is actually three distinct 'countries'. An escarpment some 500 metres high and 150 kilometres long crosses the region from south-west to north-east. To the west is a rocky plateau, connected by tarred roads to Sévaré, Timbuktu, Gao, and further south to Bamako, the capital of Mali. To the east, a sandy plain extending to the Burkina Faso border is dotted with villages and towns, but has only a few dirt roads that are slowly being smothered by thick sand. Separating these two worlds is the rocky cliff face itself, a rich transition zone where waterfalls splash into pools shimmering in the glaring sun, villages cling to the steep slopes and unique ecosystems thrive in narrow fissures in the rock.

I have come to accompany my Malian colleague Idrissa Sissoko on a mission for the US Agency for International Development (USAID). Our brief? To investigate how people and wild species are interdependent in this dry part of the

world and what can be done to protect the country's biodiversity. Our adventure has begun in Sévaré, at a meeting with representatives of the regional nature conservation directorate. Work like this depends on collaboration with the government, and you don't head out to see the resources the directorate manages without taking its representatives along. All meetings begin with the ritual of Malian greetings:

'Good day, how are you?'
 'Fine.'
 'And your family?'
 'Excellent, thank you.'
 'Your son?'
 'Very good, very good.'
 'Your older daughter?'
 'Yes, she's fine.'
 'Your younger daughter?'
 'Good too.'
 'Your mother?'
 'Doing well.'
 'Your father?'
 'Good, thank you.'
 'Your wife Mounissa?'
 'She's well.'
 'Your wife Fatimatou?' (Malian men often have several wives.)
 'Good, good.'
 'And the baby?'
 'Coming soon, any day now.'

Even the smallest of queries of someone you've never met, such as 'Where's the lavatory?', must be preceded by greetings. So after many questions and formal presentations of our project and the conservation activities the directorate hoped USAID might fund, we were joined by Mamadou Berthe, the regional director of planning, and were on our way.

In Bandiagara, on the Dogon plateau, we picked up Cristina Nardone, head of the Mali arm of the Global Sustainable Tourism Alliance (GSTA), a tourism project funded by the US government. No greetings required, she's American. Cristina had spent two years as a Peace Corps volunteer in the small village of Sangha on the cliff face. When her assignment ended she stayed on with GSTA, having learned the Dogon language and settled into a community very different from that of her native Los Angeles. She was happy to join us, as she had never ventured as far as the Sounou River near the border with Burkina Faso. And we were happy to take her along, because everyone in Dogon Country knows and loves Cristina. She led us to the local nature conservation service, where, after more greetings, we were also joined by Mamadou Ba, the local conservation director.

From Bandiagara it is a short drive to the cliffs, and soon we were winding down steep switchbacks. The ground was bare and dotted with massive black boulders, but where waterfalls poured down the cliff face, pools formed and flowers bloomed. In the crevices of the cliff,



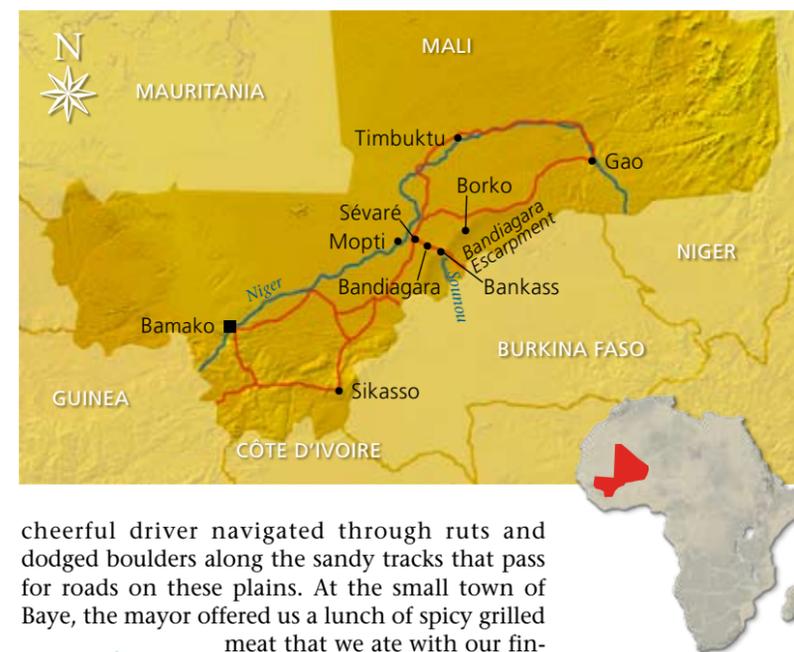
ARIADNE VAN ZANDBERGEN (2)



greenery sprouted from the rocks, each fold in the stone a miniature ecosystem sheltering tropical species rarely found in the arid Sahelian landscape. One of those species, *Acridocarpus monodi*, exists only on the Dogon cliffs. It is known to have been used in traditional medicine, but biologists understand little about it beyond its identification and classification. Other plants growing in the cliff walls are more typical of humid tropical forests than of the dry Dogon country. We lingered by a waterfall to relish it, lured by lush vegetation and purple flowers.

At the base of the cliffs, a village surrounded by fields and grazing land was fast being suffocated by sand dunes. These are a local phenomenon. Dust-laden winds blowing across the plains are blocked by the cliffs and drop their load at their base. Dunes form, stifling pastures, fields and villages. Vegetation is the best way to stabilise dunes, so the forest service has been working along the foot of the escarpment to help villagers plant bushes to hold the sand in place. As the plants spread they enrich the soil – seeds that fall or arrive on the wind can take root; insects feed on the plants; and birds feed on the insects and seeds, with their droppings fertilising the ground even more. Today's dune may be tomorrow's small patch of wilderness.

We continued east towards the Sounou, stopping in the town of Bankass to pick up Sidi Sofara, yet another nature conservation official. In the car, chatter and jokes flowed in a mix of English, French, Bambara and Songhai, the Malians all advising Sissoko on which ethnic group would be best for his second wife. Our



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cheerful driver navigated through ruts and dodged boulders along the sandy tracks that pass for roads on these plains. At the small town of Baye, the mayor offered us a lunch of spicy grilled meat that we ate with our fingers, spitting the gristly bits on the ground for the chickens to peck at. Unlike the inland delta of the Niger, the Sounou has received little attention from biologists or conservationists, and everyone was excited that we hoped

to work there. They wanted to protect the river's resources, but with no documentation of the species living there they couldn't hope to get funds for conservation. And with no funds for conservation, they couldn't hope to document the species living there. So our visit looked too good to be true. ▶



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leaning the grease off our fingers, we headed to the river. Near a road bridge, the mayor pointed to a spot where hippos emerge at dusk to graze, and told us about crocodiles and manatees that lurk beneath the surface of the water. We saw birds among the reeds: African jacanas, squacco herons, black-winged stilts. They're common enough species, to be sure, but the stilt is a migrant from Europe, and a more thorough bird census would probably show that the Sounou supports birds from throughout Eurasia, as occurs in the inland delta of the Niger. We chatted with a group of fishermen, who complained that the hippos destroy their nets; that the fish are getting smaller; that making a living here is hard. They said they didn't hunt the ducks or geese that soar over the wetlands, although the wildlife conservation staff questioned that claim. As we talked, children from the fishing camp surrounded

Today's dune may be tomorrow's small patch of wilderness

us, watching with wide eyes as their fathers spoke to the foreigners and the strange Malians in business suits.

No one knows for sure what species of plants or animals live in this river. A wildlife census would not only start the process of conservation, it would facilitate sustainable management of the fishery, and perhaps allow the identification of strategies to minimise conflicts between hippos and fishermen. We talked about this later with Bakary Koné of Wetlands International, who explained the techniques used to count birds in the inland delta of the Niger. 'It's a challenging task,' he told us. On foot, you might avoid startling the birds, but it's hard to survey a wide area. A car is faster, but during the flood season on the delta you must travel by boat. From the air you can scan a large area quickly, but you have to be able to estimate bird numbers in the few seconds it takes them to scatter in fright at the noise of the aircraft. However you do it, you need to have your species identification down cold if your results are to be at all believable. Ideally the census should be conducted twice a year: once in winter to count northern migrants, and again in summer to observe native species. Neither is easy or inexpensive, but Koné too was excited that USAID was considering the undertaking.

The next day we headed north from Bandiagara. On the way we passed a village where Nardone's project focused on working with traditional healers to develop a garden for the cultivation of medicinal plants. Like dune stabilisation, such gardens serve a dual purpose: they meet local needs for medical care and also provide habitat for other species that cannot find a home in the arid environment. GSTA was building a water tower to permit irrigation of the plants, and the results were anticipated with interest.

Further north, we drove through the forest of Toupéré, the only large forested area remaining on the Dogon plateau. The road we took was new, connecting Bandiagara to the main road from Sévaré to Gao. Already, villagers living along it, who had previously been cut off from efficient transportation, were cutting firewood to sell to those driving by. It was only a matter of time before the dense Toupéré Forest would become a similar target, eliminating both a valuable resource for nearby residents and key habitat for a wealth of plants and animals. In addition to fuelwood, Toupéré is home to dramatic baobab trees, and to many rarer or African fan palms, prized as a building material because the wood is hard and termite-resistant. As the forest is degraded, it will become a destination for communities seeking more farmland, who will clear the remaining trees to plant crops and build homes. With the road already in place, immediate action is

needed to prevent this. As on the Sounou River, the first step is to document the resources, map the forest, walk transects to count and measure trees and other plants, and record any evidence of birds and mammals. Once everyone knows what lives in the forest, Sissoko can work with the nearby villagers to develop a plan for sustainable management to allow them to benefit from the resources without depleting them, and without destroying the habitat they provide to wildlife.

Our final destination was the village of Borko, located in a steep valley below the northern end of the plateau. A river through the valley forms a number of ponds around which the town is built. They contain water almost all the time; the only dry period occurs in May, just before the rains begin. This year-round presence of water makes Borko a unique micro-ecosystem. The valley is verdant, the streets are lined with lush trees and the cultivated land is planted with vegetables all year. Indeed, Borko feels like an oasis to the traveller coming down from the Dogon plateau or across the plains from the Sévaré-Gao road.

Best of all for tourists interested in nature are the ponds and wetlands, which are home to a large population of Nile crocodiles, some 200 of them according to one town official. They are sacred to the locals, who feed them regularly; one man demonstrated how he could call them out of the water to be fed chunks of meat. With the new road, far more tourists are expected to make their way to see this sight. But in the past two years the ponds have been infested with two invasive plant species that threaten the crocodiles. Cattails *Typha angustifolia* first appeared in 2004 and have taken over about half of the open water, and *Pistia stratiotes*, commonly known as water lettuce, appeared for the first time in 2008. This bright green leafy plant spreads rapidly over the surface of the water, blocking light to the plants and animals under it.

Helping the villagers to remove the plants is an obvious way to strengthen the biodiversity of the valley and boost its income from tourism. While this would require some organisation and equipment – all the cattails must be removed while the water level in the ponds is high – it shouldn't be a difficult task for the villagers themselves to undertake before the next dry season. This looked like a perfect activity for GSTA, since it neatly combines biodiversity and tourism promotion in a single place.

As we strolled through the town looking at the crocodiles and talking with the villagers, thick clouds poured into the valley and opened up to drench us in just minutes. A mad dash to the car marked the end of our excursion. Sorry to leave, we returned to the office to prepare

NATURE CONSERVATION in Mali

The conservation of nature falls under the authority of Mali's Direction Nationale de la Conservation de la Nature (DNCN, the National Directorate for Nature Conservation), which is represented at three sub-national levels of government: the region, the circle and the commune. Sikasso region, with an area of 70 280 square kilometres, is home to almost two million people in 147 communes. The 79 000-square-kilometre Mopti region has 108 communes; its population stood at 1.5 million in a 1998 census. The author's team carried out the assessment of biodiversity activities in collaboration with the regional nature conservation directorates of Mopti and Sikasso and with the circle-level conservation services of Sikasso and Koutiala in Sikasso and Bandiagara and Bankass in Mopti.



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our notes to motivate USAID that they should indeed help conserve the biodiversity of the astonishing Dogon region.

AUTHOR'S NOTE: We travelled through Dogon Country in October 2008. On 2 December, Cristina Nardone was killed instantly when a water tank funded by her project collapsed on her. Her colleague Brenda Adelson was badly injured and is recuperating in the US. USAID is interested in funding work on the Sounou River, the Toupéré Forest and the ponds of Borko, and to support Wetland International's census efforts on the inland delta of the Niger.

ABOVE Some 200 Nile crocodiles live in the river at Borko. Assistance is needed to help eradicate the invasive plant species that threaten their future.

OPPOSITE A waterfall drops into a cool pool through a crevice in the 200-kilometre Bandiagara Escarpment. Watery spots like these shelter vegetation rarely found in the dry Sahel.

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