



Haiti

A WORLD TO SAVE

The Massif de la Hotte is home to numerous species of endemic amphibians, some of which are still unknown. Here, Professor Blair Hedges is racing against the clock to discover and protect treasures of the Caribbean Islands hotspot before the forest disappears.

BY MARIE LESCROART

HELICOPTER

is the best way to travel
quickly to remote,
hard-to-reach areas
of Haiti.



“You would have said it was a drawing by a naive painter with gigantic bald and fuming mountains in the distance. Up there, peasants collect dry wood to burn. I can see the outlines of a man, a woman and three children in the corner of the old mountain. The man was in the middle of making a fire right by his house, a little cottage with one door and two windows. [...] A thick black smoke lifts towards the clear blue sky.”¹ Amid a storm of dust, the silver firefly lands outside the small house, as the gathered peasants look on in amazement. Its legs are slender, and it seems almost to levitate on the narrow headland. Four men and a woman climb out, smiling. “American? American?” ask the kids bunching around them. Slightly further back, their parents eye the foreigners cautiously: “What have they come to do in our mountains?” Jean Mary, who’s Haitian, kicks off the discussion in Creole. He talks about *krapo* (frogs), *koulèv* (snakes), *zwazo* (birds), *zandolit* (lizards), *konnen lanati pi byen* (understanding nature better)... Suspicion gives way to astonishment: “People coming from so far away, in a helicopter, to study our forests?” In this hemmed-in region, 10 hours by foot from the nearest village, their visit is far from ordinary... The Americans are in a hurry. As soon as our passengers have disembarked, the helicopter departs again. See you in two

SLASHING WITH A MACHETE IS BEST RESTRICTED, TO AVOID OPENING UP PATHS FOR WOODCUTTERS.

days’ time! The arrivals quickly pitch their tent, put on their backpacks, and head for the mountains. At more than 1,500 metres altitude the heat isn’t too stifling, but the slope is steep and the undergrowth dense: slashing with a machete is best restricted, to avoid opening up paths that woodcutters could use later. After a three-hour hike, the group arrives in a mixed pine and broadleaf forest – a diverse habitat that promises a fruitful hunt. Night is falling, and the frogs, savouring the cool, begin their chorus. This is handy for the scientists, who locate them by ear. “I’m sure it’s there,” whispers Blair Hedges, a professor at Pennsylvania State University and a leading amphibian and reptile specialist. A metallic sound, more like a cricket’s serenade than a frog’s croak, is coming from the ground. Blair hesitates. A second “tss-tss” rings out. This time, he squats by a tree and sticks his index finger into a small cavity: “I can feel it! It’s moved backwards, but it’s in its hole.” In a jiffy, with a surgical gesture, he extracts the little animal from its hiding-place: “Oh, cute! Look at those orange spots... And the feet! The best thing is that I don’t recognise it at all!” Professor Hedges – doctor of biology, evolution specialist, associate researcher at the American Museum of Natural History in Washington, expert adviser for the International Union for Conservation of Nature, member of the editorial committee of half a dozen scientific journals, and frequent recipient of research grants and prestigious awards – is kneeling down, headlamp shining, in a Haitian forest. He hasn’t slept for 20 hours and has only eaten two granola bars since noon, but doesn’t feel tired or hungry. Professor Hedges is searching, and finds three new species a day on average.

Found in one place only

It is June 2013, in the Massif de la Hotte, west of the Tiburon peninsula that occupies all of southern Haiti and gives it the shape of a crab claw, poised to grab La Gonave Island. “Two and a half million years ago,” says Hedges, “this mountain range was separated from the rest of the island by a stretch of sea.” Birds could join their peers on the other islands – as could mammals, just about, by riding for a few days on tree trunks that served as rafts, and drifting on the currents to other shores. But the frogs, which were less mobile and not so strong, remained confined to these mountains. Because they were isolated, they evolved on their own. “This explains why the Massif de la Hotte has a particularly striking level of endemic amphibians, which are found nowhere else,” Hedges concludes. Haiti is generally well endowed in this respect. Its very rugged

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BLAIR HEDGES and his team set up their gear to film fauna and flora in the Haitian mountains.

A full-page photograph of a lush tropical forest. The scene is dominated by tall, slender tree trunks covered in thick, green moss. The forest floor and the lower branches are filled with a dense carpet of various types of ferns, some with bright green fronds and others in deeper shades of green. Sunlight filters through the canopy, creating a dappled light effect on the foliage. A few small, bright orange flowers are visible on the left side of the frame. The overall atmosphere is one of a vibrant, untouched natural space.

THE TROPICAL FOREST
or "cloud forest", of the
Massif de la Hotte in Haiti
hosts unique fauna and
flora.



Eleutherodactylus bakeri

CLAUDIO CONTRERAS



Eleutherodactylus thorectes

CLAUDIO CONTRERAS



Eggs of *Eleutherodactylus caribe*

S. BLAIR HEDGES



Eleutherodactylus parapelates

ROBIN D. MOORE

ROBIN D. MOORE

166 AMPHIBIANS AND REPTILES have been identified in Haiti, including this frog, *Osteopilus pulchrineatus*.



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terrain, with jagged mountains jutting out of the Caribbean Sea and reaching more than 2,000 metres in altitude only 10 kilometres from the coast, has promoted the development of “microworlds” at valley or even copse scale, inhabited by often unique species. Of Haiti’s 166 known amphibians and reptiles, more than 50% exist nowhere else – not even in the Dominican Republic, even though the two countries share the same island. The small beige frog with the pointed nose that Hedges and his teammate have just unearthed is perhaps one of these gems as yet unknown to scientists, and unique to the Massif de la Hotte. But making sure would require genetic analyses and a fair few scientific bibliographies: “In other words, years of work!” admits the professor.

Eldorado for naturalists, and still under-explored

If the specimen turns out to be from a species already described and named by his colleagues, the researcher will not be disappointed. “One of my best memories of an expedition to Haiti is a rediscovery,” he recalls. “In July 2011, our helicopter had landed near a hill covered by a magnificent forest, totally free of human traces. After walking just a few metres, we literally came face to face with *Anolis darlingtoni*!” This superb green lizard with black streaks, first discovered in 1930 on the north side of the Massif de la Hotte, had been spotted again in 1984, but not since – “even though an expedition to find it again was specially organised by Harvard scientists a few years

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THE CARIBBEAN ISLANDS are particularly rich in reptiles and many of these are endemic. Notably, Haiti is home to the Hispaniolan green anole "*Anolis coelestinus*".

ago," exclaims Hedges. "Despite an intensive search lasting several days, they went home empty-handed." Hence the jubilation when the animal appeared in one of his teammates' headlamp beam. "It was sleeping innocently on the leaves of a huge tree fern," says the scientist. Naturally, the finest plant specimens host the most remarkable fauna: as it turned out, this tree fern belonged to an unknown species.

Endemic euphorbias, giant heathers and magnolias still inhabit Haiti's most inaccessible areas and sheerest slopes. For the team's botanist Joel Timyan, as for Hedges, Haiti is a largely under-explored eldorado. But while the tempo at which new endemic species are being discovered mirrors the wealth and diversity of the country's wilderness, it also means – given the pace at which vegetation is going up in smoke – that mass



A VERY RARE SPECIES, the lizard *Anolis darlingtoni* was only spotted twice by scientists between 1984 and 2011.

S. BLAIR HEDGES

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ROBIN D. MOORE

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S. BLAIR HEDGES

Anolis rupinae

Sauresia sepsoides

Anolis monticola

Sphaerodactylus copei



HAITI'S FORESTS are shrinking at a dramatic rate. Wood is primarily chopped down by local people to make charcoal, their main source of energy.

PHOTOS: S. BLAIR HEDGES

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extinction is under way. "Haiti is the hotspots' hotspot," says Pierre Carret of the CEPF, which helps fund Hedges' work and several other initiatives to safeguard Haiti's biodiversity. "There's an extremely large number of endemic species there, and they're under extreme threat."

Conservation emergency!

And yet two national parks exist... on paper. Macaya National Park in the Massif de la Hotte, stretching around the peak of the same name, was officially created in 1983, but its boundaries have since remained blurred. And with no effective protection on the ground, it has now been invaded by woodcutters. Haiti's forests have shrunk drastically, after covering almost the whole country a century ago; 30% in 1940; 10% in 1970; and now less than 2%, say the latest reports. Subject to frequent torrential rainfall that washes its thin soil layer seaward, Haiti seems destined for desertification. The reasons? There are many, including demographic pressure. Haiti has nearly as many inhabitants as its neighbour Cuba, but with a quarter of the area; and its population is growing by 2% a year. For a long time now, its requirements in building materials, farmland and – especially – energy have exceeded the production capacity of the country's forests. And Haiti is still cooking with charcoal. Here, the smallest twig ends up under the pot.

As for the "first black republic" which, in gaining its independence in 1804 against Napoleon's armies, sent a message of hope to the entire world, many of its people have given up: "Too little, too late," they say. Prof. Hedges, however, is still a believer and he's not alone. Other optimists include members of Société Audubon Haïti,² and in particular Philippe Bayard, its co-founder and president. A member of high society, and an ornithology and nature buff, he set up the organisation to encourage the government to protect the country's last natural spaces but also take account of local people's needs. While Hedges is recording biodiversity, Jean Mary Laurent is surveying people for Société Audubon to better understand the local causes of deforestation. "In Macaya National Park, charcoal is

often the problem. But where we are at the moment, it's more due to peasants clearing trees to provide farmland," he notes. "If we help them switch to more effective cultivation methods, this would limit the damage."

Time is of the essence. Nine years after the discovery of the precious streaked lizard *Anolis darlingtoni*, Blair Hedges went back to the same hill, now renamed "morne lézard". "The vegetation, which back then was intact, is now so degraded that I'm not even sure the species is still there," he sighs. "Here, things move very fast." So, given the urgency of the situation, the researcher is capturing specimens of frogs, which he then packs for transportation to Philadelphia Zoo. There, the frogs will take part in a programme to breed amphibians in captivity. They can then be reintroduced into their original ecosystem if, in the meantime, they become extinct in the wild. In parallel, in his lab at Pennsylvania State University, Hedges has created a cryobank where the cells of amphibians and reptiles are kept in liquid nitrogen. "This is a second species conservation technique," he explains. "We can envisage cloning them from frozen cells, and then reintroducing them."

Blair and his team have now returned to base camp. And the silver dragonfly is back, too. We climb aboard, and as we fly back to Port-au-Prince, noses pressed against windows, we behold in silence the bald mountains, littered with fuming piles of wood from which charcoal is made. There's still hope, tenacious hope. At the top of the mountains, Haiti's luxuriant nature is still alive. ▀

1. Dany Laferrière, *L'Odeur du café*, published in English as *An Aroma of Coffee* (transl. by David Homel), Coach House Books, Toronto, 1993.

2. Born in Haiti, Jean-Jacques Audubon (1785-1851) is considered the New World's first ornithologist.