

# Where the weird things are

*Isolated Socotra, 220 miles from mainland Yemen, is home to a panoply of strange plants and animals uniquely adapted to the hot, harsh, windswept island.*



MICHAEL MELFORD

Botanical icon of Socotra, the dragon's blood tree uses its upraised branches to grab moisture from highland mists. Conservationists fear that poor reproduction threatens the species' future.





MARK W. MOFFETT

*Chamaeleo monachus* is found solely on Socotra, as are 90 percent of the island's other reptiles. Local people believe the chameleon is magic: It's said that a person hearing its hiss will lose the ability to speak.





MARK W. MOFFETT

By Mel White

Photographs by Mark W. Moffett  
and Michael Melford

It's nearly midnight on the broad hill called Firmihin,  
where a dragon's blood forest grows. The moon, a night  
past full, floods the jagged landscape with cool silver.

Inside the rock wall of a shepherd's compound, flames light the faces of four people sitting barefoot around a fire, sharing a pot of hot tea mixed with fresh goat's milk.

Neehah Maalha wears a saronglike garment called a *fouta*; his wife, Metagal, wears a long dress and matching head scarf in rich purple. They talk about their lives on the island of Socotra, in a language whose origins are lost in time—unchanged for centuries and understood today by fewer people than live in Ames, Iowa.

Although the couple can't read, they know that the new sign down the hill says that Firmihin has been declared a protected nature reserve. Foreigners come to their village, they say, to photograph the dragon's blood trees and the desert rose plants and the *mishhahir* flowers. Scientists come and turn over rocks, claiming to be collecting insects and lizards. What are they really looking for?

Two hundred twenty miles across the Arabian Sea from the rest of troubled Yemen, Socotra was once a legendary place at the edge of maps of the known world. For sailors it was fearsome, with dangerous shoals, ferocious storms, and residents who were believed to control winds and turn ships toward shore for capture and plunder. Today Socotra's rich biological diversity brings new explorers, who hope to learn its secrets before the modern world changes it forever.

Land snails climb trees on Socotra's arid Zahr Plain to escape heat—and also carnivorous beetles—but then they're exposed to hungry birds.

Suddenly the worry on Metagal's face gives way to a bemused smile. She disappears into the darkness and returns to offer me a small, paper-wrapped package. Would I like to buy some frankincense? Neehah takes a tiny piece and places it on a coal from the fire. Smoke rises and swirls, and we breathe the lush scent that perfumed the funerals of Egyptian pharaohs and the temples of Greek gods.

THE ANCIENT EGYPTIANS, Greeks, and Romans all tapped the treasures of Socotra's natural world: aromatic resins such as frankincense, medicinal aloe extract, and the dark red sap of the dragon's blood tree, used for healing and as an artist's color. Adventurers came to harvest the island's wealth, despite stories that it was guarded by giant snakes living in its caves. The Queen of Sheba, Alexander the Great, and Marco Polo were among those who coveted Socotra's riches.

The value of incense and dragon's blood peaked during the time of the Roman Empire. Afterward, the island served mostly as a way station for traders, passing centuries in relative cultural isolation. Socotra's residents lived generation after generation as their ancestors had: the mountain Bedouin minding their goats, the coastal residents fishing, and everyone harvesting dates. Island history was passed down through poetry, recited in the Socotri language.

Other than its strategic location off the Horn of Africa, there simply wasn't anything about Socotra that interested the outside world. But that has changed.





MICHAEL MELFORD

Ancient periods of volcanic activity built the Hajhir Mountains, where rugged granite peaks rise to nearly 5,000 feet. Nightly clouds provide moisture for plant life that's among the most diverse in Asia.



Research around the turn of the 20th century proved that this tropical island, despite its size of only 83 by 27 miles, ranks among the world's most important centers of biodiversity, combining elements of Africa, Asia, and Europe in ways that still puzzle biologists. The number of endemic plant species (those found nowhere else) per square mile on Socotra and three small outlying islands is the fourth highest of any island group on Earth—after Seychelles, New Caledonia, and Hawaii. The Hajhir Mountains, the rugged granite peaks that rise to nearly 5,000 feet in the center of the island, are likely home to the highest density of endemic plants in southwest Asia. Every vista on Socotra, from the hot, dry lowlands to the mist-shrouded mountains, reveals wonders seen nowhere else.

One sweltering afternoon I took a walk near the dusty town of Hadibu with botanist Lisa Banfield, a Socotra specialist then on the staff of the Royal Botanic Garden Edinburgh. We climbed a rocky hillside and stopped beside a plant that would have been at home in a

Salvador Dalí painting—a squat thing that looked as though a much taller tree had simply melted in the heat. Its fuchsia flowers inspired the common name desert rose, though it's no more a rose than I am a porpoise.

"This is a famous example of a strategy that Socotra plants have evolved to withstand the harsh drought conditions here," Banfield said. "This is *Adenium obesum sokotranum*. It also grows on the Arabian and African mainlands, but there it's much smaller than on Socotra. Its trunk stores water, and it grows in these weird and wonderful shapes to anchor itself into the rocks. Some people call it grotesque, but I actually think it's a very attractive tree." Spoken with the true soul of a scientist. One 19th-century visitor called the desert rose "the ugliest tree in creation."

We walked a few yards to a plant that would be the undisputed weirdness champion anywhere but Socotra—one that could also deserve the species name *obesum*. Its swollen trunk rose above our heads, topped by a floppy mop of leafy branches sprouting haphazardly like dreadlocks.

"In its growth habit this is very similar to *Adenium*," Banfield said, "but actually it's *Dendrosicyos socotrana*—the cucumber tree."

Cucumber?

"Yes, it's the only tree species in Cucurbitaceae, a family that we'd expect to be growing as straggly climbers or vines. But here you can see some really big ones, with huge trunks. They look completely out of this world."

It is, however, another endemic tree, the dragon's blood, that's come to symbolize Socotra, its distinctive shape even depicted on Yemen's 20-rial coin. A relative of the common houseplants of the genus *Dracaena*, it grows on the plateaus and mountains over much of the island. The most extensive dragon's blood forests are found on Firmihin, where I'd spent the evening with Neehah and Metagal. The next day, under a relentless sun, Lisa Banfield and her Socotra colleague Ahmed Adeeb took me out for a hike around Firmihin.

The landscape was a jumble of limestone rocks eroded into knife-edge shapes. The burnt brown harshness was interrupted here and there by the brilliant crimson flowers of the succulent mishhahir, as anomalous as a flag on the moon. All around us dragon's blood trees lifted their branches skyward, looking, as many have remarked, like blown-out umbrellas. Even in a forest of dragon's blood, the individual trees keep their distance, like shy people at a party.

Hundreds and hundreds of dragon's blood trees stretched in all directions, but Banfield pointed

out a troubling fact: Almost no young trees sprouted from the rocks beneath the mature ones.

Many plants here rely on mists for water. Some of Socotra's rarest endemics grow on steep cliffs in the mountains and around the island's perimeter, where they soak up moisture that collects when mist condenses on rocks. Those upturned dragon's blood branches are in fact an evolutionary adaptation to gather precious moisture from mist in the air—and there is less of that water available now. If climate change is responsible for the lack of regeneration of dragon's blood and other rare plants, there may be no short-term solution. In the meantime Banfield and other conservationists are equally concerned about other human-caused threats to Socotra's biodiversity.

NO DEVELOPED AIRPORT existed on Socotra until 1999, nor were there any paved roads. Since then, though, the pace of development has been rapid. Changes that in other places took decades have been compressed into a few years here. More and more vehicles crisscross the island on an ever growing highway system.

The outside world has come to Socotra both figuratively, through television, mobile phones,

Natural history writer Mel White teamed with Mark Moffett, sometimes called Doctor Bugs, and landscape photographer Michael Melford to tell the story of Socotra. The three are regular contributors to National Geographic magazine.



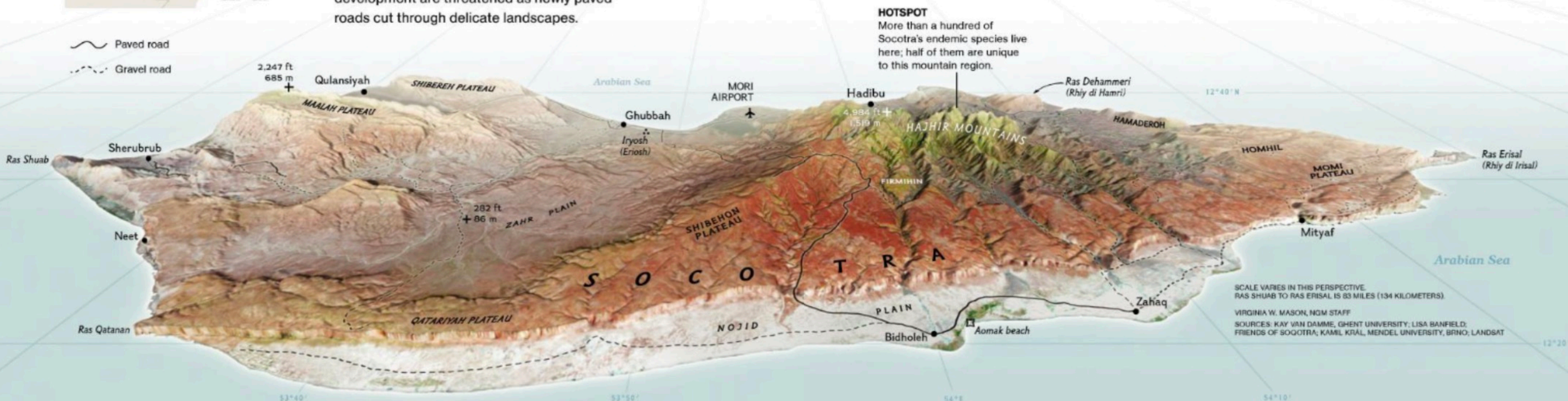
## Only on Socotra

Socotra and its three smaller outlying islands, separated from other landmasses for 18 million years, are home to more than a thousand endemic species: plants and animals found nowhere else on Earth. These species have adapted to a widely varying range of temperatures, moisture levels, and elevations. Now biodiversity and sustainable development are threatened as newly paved roads cut through delicate landscapes.

1,142

TOTAL  
ENDEMIC  
SPECIES

800 Terrestrial  
and marine  
invertebrates  
(estimate)  
308 Plants  
27 Reptiles  
7 Birds







MARK W. MOFFETT

Dragon's blood forests are nearly devoid of seedlings and young trees. Some scientists blame a lack of water caused by a decrease in seasonal cloud cover—and predict that many stands could disappear within a century.





Dazzling white sand dunes stretch for miles in places along Socotra's southern coastline, here at Aomak beach. Extremely high winds during the monsoon season constantly reshape the dunes.

## Just below us, and out of sight above, were the bulldozed curves

and the Internet, and literally, through tourism. Though recent political unrest temporarily limited foreign travel, over the previous decade the island's beautiful beaches, rugged mountains, unique biodiversity, and ancient culture attracted a burgeoning number of travelers—from 140 international visitors in 2000 to almost 4,000 in 2010. Some of Socotra's admirers fear that the Yemeni government's rush to bring the island into the 21st century may have already irreversibly damaged the very things those people came to see and could bring an end to a way of life that has endured for centuries.

BELGIAN BIOLOGIST Kay Van Damme first came to Socotra in 1999 as part of a scientific expedition, flying on an Antonov cargo plane chartered from the Yemeni military. A specialist in freshwater crustaceans, he remembers that he and his colleagues discovered new species simply by walking trails or wading along creeks collecting lizards, snails, insects, plants, and other

life-forms—sometimes finding several previously undescribed species in a day.

As he returned to Socotra year after year, Van Damme's purely scientific focus gave way to a broader concern for the island and its culture. "We were invited into people's houses, and I learned that on Socotra people have a very strong connection to their environment," he says. "I realized that the only way all these species have been able to survive all this time has to do with the traditional ways in which the people have guarded their island."

More than 600 villages, in most cases simply the clustered houses of extended families, are scattered across Socotra, each with its *muqaddam*, or respected elder. Over the centuries Socotrans developed practical ways of dealing with grazing, wood harvesting, land ownership disputes between clans, water-resources use, and similar issues. Unlike their counterparts in mainland Yemen, where violent feuds and tribal disputes have long been a way of life and where many men



A brown booby lands on the western coast. At least ten kinds of seabirds breed on Socotra or the small islands around it, making the archipelago a regionally significant home for them.

## of an unfinished road, a project undertaken despite protests.

carry a gun and *jambiya* (ceremonial dagger) as a matter of course, Socotrans have a tradition of resolving issues peacefully in meetings among neighboring villages. Resource conservation was the only option for survival in the harsh island environment, and it had the side effect of protecting Socotra's outstanding biodiversity.

Van Damme has looked carefully at the effects of development on other islands, and what he's seen worries him. "You have habitat loss, habitat fragmentation, invasive species, loss of biodiversity," he says. "Eighty-six percent of all reptile extinctions have occurred on islands. Look what's happened to Guam, Easter Island, and even New Zealand."

Threats to Socotra's environment abound on both the macro and micro scales, though many have been at least temporarily averted by security issues. One beautiful beach was set to become a major new port, despite no one being able to say why the facility was needed. (When I visited, a sign announcing the development

had been torn down by residents protesting the loss of their traditional fishing and recreation site.) Rumors in coffee shops ranged from the seemingly well founded (a politically connected Yemeni had bought land adjoining an important marine reserve for a resort hotel) to the sketchy (the U.S. military would establish a base on the southwestern coast).

One day Lisa Banfield and I scrambled up to the cliffs near the village of Qulansiyah, on the western end of Socotra. On the red rocks here she showed me the bizarre *Dorstenia gigas*, a fig with a bulbous shape reminiscent of, well, nothing I can think of, and also rare myrrhs and aloes and an array of other island endemics. The Maalah cliffs and adjacent plateau, Banfield said, shelter Socotra's second highest diversity, after the Hajhir Mountains—not just plants and invertebrates but also reptiles, whose endemism on the island tops 90 percent.

Yet just below us, and out of sight above us, were the bulldozed curves of an unfinished





MARK W. MOFFETT

A desert rose anchors itself on the Maalah cliffs, in the company of more than 300 other rare plant species on Socotra. In the distance lies Qulansiyah, one of the island's largest towns.





Called *mishhahir* in Socotri, this succulent has served as emergency food for island inhabitants during periods of famine. Its flowers provide rare points of color amid the gray limestone of the Firmihin area.

*We stopped beside a plant—a squat thing that looked as*

road that would have cut directly across this biological treasure-house. The road project had been undertaken despite protests of conservationists; the cliffs were left unscarred only because the builders lacked the technical expertise to traverse them. Better planning would have protected biodiversity and made construction more practical. At another lowland site, called Iryosh, petroglyphs found on flat rocks may contain clues about Socotra's earliest settlement. But in 2003 the government destroyed at least 10 percent of them by cutting a road across the area.

Such construction opens new areas to development, and if tourism regains its momentum, pressure will grow to sell land to foreign investors. On an island with a tradition of communal ownership, disputed land claims and the possibility of quick profits are dividing villages and even families, as well as eroding long-standing respect for natural resources. Already, newly built roads snake around Socotra's perimeter,

and new hotels and shops are under construction in Hadibu, most of them owned by people who don't live on the island.

Yet in the Hajhir Mountains the old ways seem as enduring as the granite peaks. Village muqaddams arise at dawn and sing to their goats, and rural people still go to traditional healers who burn them to drive away disease. The night mist lifts with the sun, the Socotra starlings flit through the dragon's blood trees, the small doves sing their throaty *oh, rococo* calls, and mysterious flowers bloom on hillsides where no one ever walks.

Toward the end of my trip I traveled with Kay Van Damme, Lisa Banfield, and our guides to the Momi Plateau, an area of rolling limestone ridges and scattered shrubs underlain by vast caves full of rare endemic freshwater shrimps and other invertebrates. As we began our walk, an old man with a wispy white beard came rushing up, shouting, What were we doing on his land? We must leave! He said that if he were



The freshwater crab *Socotrapotamon socotrensis* is endemic to the island. With no native fish as competitors, these predatory crabs occupy the top spot on the aquatic food chain.

*though a much taller tree had simply melted in the heat.*

to let us stay, it would mean that more tourists would come to poison scorpions.

When we agreed to pay him ten dollars, he said he would guide us over the hillside to the escarpment beyond. He walked barefoot across the sharp-edged rocks, carrying a staff that he used to accentuate his arguments. We hiked to cliffs rising nearly 2,000 feet above the shimmering blue Arabian Sea, and as we returned, the old man used his green shawl to gather a large bundle of branches, slinging the heavy load over his shoulder to carry to his hut.

Back at the village, he said he had something to show us: a strange and mysterious object that he had found nearby. He believed it might belong to the magic snakes that guard the caves, but he wanted the foreigners' opinion about what it might be. He took a piece of white cloth from the folds of his fouta and unwrapped it. Inside was a marble—a brown-swirled glass marble that a child might play with, yet in his world a thing of wonder.

"Socotra is still relatively pristine," Van Damme says. "But that also means that this period right now, this whole wave of civilization and development, is the biggest threat ever to Socotra biodiversity. Socotra people have practiced conservation through their traditions, but now it's up to all of us to keep this going in the future, to keep it strong against threats. Socotra is one of the last places on Earth where we can actually still protect a unique island environment, where we can still do something positive before it's too late."

When stability returns to Yemen and roads, resorts, and eager travelers spread across Socotra, will its residents' peaceful ways of settling disputes hold? Will people still gather in mountain villages to recite their poems in a language all their own, and will centuries-old traditions of conservation endure? If so, perhaps those who climb high into the limestone hills will still hear the song of the Socotra bunting, part of the island's weird and wonderful array of life. □