

# Sisserou to the Rescue

— how an endangered parrot promotes biodiversity protection in Dominica

by PAUL R. REILLO, Ph.D.

Staring out with lifeless eyes from her bottle of alcohol, Martha the pickled parrot casts a vigil over me as I write. Unlike so many museum specimens archived only for their reference potential—for measurement, genetic analysis, all sorts of comparative research—Martha's preserved remains also carry an additional, sobering epitaph: she was the last female of the rarest Amazon parrot on earth, the Imperial Amazon, in captivity. And yet, despite her present state, her story is one of hope for a parrot species facing extinction. Brilliantly coloured, and among the largest of the Amazon parrots, the Sisserou, as it is known locally, is the national bird of Dominica, the largest and most pristine of the Windward Islands in the West Indies. Sandwiched by Martinique and Guadeloupe, Dominica is a picturesque, volcanic land 29 miles long and 16 miles wide blanketed by some of the finest virgin stands of rain forest in the Caribbean. It is the only Caribbean island to have two large, endemic Amazon parrots, the Sisserou (*Amazona imperialis*) and the Jaco (*Amazona arausiaca*). These parrots are surprisingly well-known even though few people have seen them in person—neither species has ever been kept in any number in captivity, and Dominica's terrain defeats many bird-watchers. In many respects, the rarity and obscurity of Dominica's parrots, particularly the Sisserou, has been the source of fascination and intrigue for ornithologists and aviculturists for decades. What we know about these birds is very recent.

More importantly, what we have yet to discover may well hold the key to their survival.

While the Jaco, a robust, gregarious, noisy parrot boasts a population of 1,300 or more individuals, the shy and elusive Sisserou is among the rarest of Amazon parrots. There are probably fewer than 200 Sisserous inhabiting the rain forests surrounding Morne Diablotin, the Caribbean's tallest volcano. It is located in Dominica's Northern Forest Reserve. It was never abundant, but was in serious decline following hurricane David in 1979.

Since endemic island species are surrounded by unbridgeable sea, they are at much greater risk of extermination. With nowhere to go to escape hurricanes, predation, poaching, and the

endless environmental assaults brought by man, many island species disappear quickly along with the ecosystems that surround them. Dominica offers the rare contemporary alternative to this grim scenario, possessing forests so pristine that it is the only Caribbean

island that Christopher Columbus would recognise today.

Our organisation, the Rare Species Conservatory Foundation (RSCF), was introduced to Dominica through the urgings of a close veterinary friend and colleague, Matthew Bond, DVM, who had visited the island to see the parrots first-hand. Bond was instrumental in rejuvenating interest in the Sisserou among U.S. aviculturists and conservationists in the early 1990's.

With such a wealth of nature in such a small, topographically challenging space, the Forestry and Wildlife Division of Dominica's government has shouldered the daunting responsibility of studying and managing the forest's resources and particularly its green, feathered ambassadors. Without question, the Forestry Division has been the lifeline to Dominica's environmental well-being, and the stimulus for vital educational programmes that ensure lasting pride in Dominica's natural history. Thanks to instructional programming and financial assistance from the RARE Centre, MacArthur Foundation and the Nature Conservancy, every Dominican, from child to elder, is a spokesperson for nature. And the Sisserou, undisputed symbol of Dominica and her lush forests, is everywhere — on flags, stamps, T-shirts, billboards — even the Coat of Arms.

The logistical difficulty of sorting out the Sisserou population's status with some measure of confidence might



The Caribbean island of Dominica.

Photo: Paul Reillo

help explain why few tangible conservation efforts appear to support the species in the wild.

To the astonishment of many ornithologists in the U.S. and Europe, Dominica's Forestry Division has supported a parrot monitoring programme since 1981. Vigilant foresters have clocked tens of thousands of hours observing parrots and nest trees in remote areas, often from dawn to dusk throughout the breeding season, January-June. Forestry's programme has been championed by Forestry Officers Arlington James, Michael Zamore, Stephen Durand, Ronnie Winston, Matthew Maximea and Bertrand Jno. Baptiste, assisted over the years by biologists from the Wildlife Preservation Trust International, U.S. Fish and Wildlife Service, Jersey Trust, BirdLife International, and Dr. Peter Evans, who received funding from the Loro Parque Foundation.

The parrot monitoring programme has yielded a wealth of descriptive information about species' distributions, nest-tree preferences, foraging behaviours, diet and courtship. Helping Forestry with its parrot programme is where our little organisation fits in. Since 1996, scientists with the Rare Species Conservatory Foundation have worked directly with foresters, tramping the hills of the Northern Forest Reserve, devising study methods for the Jaco and Sisserou, and improving the aviary at the Botanical Gardens in Roseau. With the help of donors and corporate sponsors, Forestry has received boots, ponchos, waterproof binoculars, specialised video equipment, tools, forestry ladders and a Nissan 4x4 pickup truck. Martha's friends in the aviary have benefited from an improved diet.

## Jaco eggs and chicks documented

In our first joint efforts with Forestry, we set out to gather basic ecological data, particularly breeding cycles and clutch sizes. With a specially designed telescoping video probe and a time-lapse recorder,

we were able to document Jaco eggs and chicks in natural rain forest nests. These techniques permitted Forestry officers like Stephen Durand and Michael Zamore, who have studied the parrots since the monitoring programme began nearly 20 years ago, to finally see baby parrots in the nest. We now know that the Jaco clutch size is three, and that in good years with ample food, parents can raise three chicks through full-feather and fledge two. We also know the activity schedules for Jaco parents, how much time they spend feeding chicks and foraging, and that Jacos exhibit a high degree of nest site fidelity.

Despite concerted efforts, Sisserou nests have proven elusive, and those known to have had activity in the past have been abandoned. All were beyond the reach of even the craftiest of researchers and their fancy cameras. Population-level studies have not fared much better—rarely are more than two birds, presumably pairs, seen in a given patch of forest.

Just when the parrot team needed it most, a miracle of sorts occurred in January 1999. While scouting familiar terrain in the Northern Forest Reserve near the base of Morne Diablotin, Forestry officers took a lunch break along a well-hewn trail, resting on the buttresses of a 220-foot-tall Chatannye tree. Soon after, they recognised the unmistakable, hollow yodel of Sisserous above. The foresters had stumbled (and sat!) on an active Sisserou nest tree.

This tree was along a slope unsuitable for time-lapse video surveillance—the 150-lb. batteries would have had to be slogged nearly half a mile over near-vertical terrain. To make matters worse, the nest cavity was complex—roughly 80 feet from the ground, and embedded beneath huge epiphytes at the crotch of the 10-foot-diameter Chatannye. After observing the parents entering and exiting the nest, we surmised that the nest chamber was likely to be deep within the tree. By all measures, our telescoping video probe would be useless. The decision



Pair of Imperials

Photo: Paul Reillo

to watch and wait was unanimous. We cautiously watched the nest from January through June, usually no more than once per week, observing when the birds came and went, and how they interacted with one another. The female, the smaller of the two, spent considerably more time in and around the nest, and was vocal only when the male was nearby. The male vocalised whenever he arrived at the tree—he even would direct his calls at us some 300 feet away and fly with an intimidating, noisy display. As the weeks passed, both parents spent increasingly greater time foraging and less time in the cavity. Visits to the nest tree yielded fewer observations as parents would spend up to three hours out of the cavity, and only 10-15 minutes inside. We knew a feathered chick was growing within, and by late May, fledging was imminent.

With June came the early summer rains and the familiar sounds of young Jacos and their parents exiting nest trees and filling the forests with chatter. Upon visiting the Sisserou nest tree during the first week of June, the Forestry parrot team found the area silent. Up-slope, the team discovered two adult Sisserous accompanying a clumsy juvenile exhibiting characteristically erratic flight and performing uncoordinated crash landings in the canopy above. Given the close proximity to the nest tree, and no observations of Sisserous in this area during the season, we surmised that the trio must be the family we had anticipated.

## Population estimates

To conduct a parrot census on Dominica, one would need at least a dozen teams of observers placed strategically all over the island, most in areas that take most of a day to access. Wonderful as it would be to count birds as we see them, meagre resources demand a more indirect approach. Here's one method: we know that Jacos congregate, sometimes 30 or more birds per roost tree. Estimates of local density, or numbers of birds per unit area, are known to equal or exceed one bird per 30 acres (0.033 birds/acre), in many parts of the island. Given that there exists at least 60,000 acres of potentially suitable Jaco habitat and if the average density across all habitats is only 2/3 of our rough density estimate (0.022), a very conservative guess at the Jaco population is ~1,300 birds.

Since the Sisserou has not been seen in greater local abundance than roughly one bird per 200 acres, and its range is confined to no more than 40,000 acres of forest within and adjacent to the Northern Forest Reserve, (a distribution well documented following hurricane David in 1979), the total population, theoretically, cannot exceed 200. Of course, as with Jaco habitat, much of the available forest has not been systematically monitored, offering hope that Sisserous are more locally abundant in areas presently unknown to researchers. Unfortunately, until hard data can be assigned to

these local sub-populations, potentially boosting our very rough average density estimate, the safe assumption is that 200 or less Sisserous currently survive on Dominica. One sits alone in a cage at the Botanical Gardens in Roseau, Dominica's capital. An eight-year-old male, blown to the ground during a tropical storm in 1992, he has been alone since June 1998.

Despite their influence as educational icons, as ambassadors for conservation, and even as effective examples of carefully managed breeding programmes in zoos and conservatories, endangered creatures born in captivity virtually always die there. Even so, captive breeding can offer an undeniable refuge from extinction, especially for island species like the Sisserou, reduced to such low numbers that a direct hit from a single hurricane could wipe it out forever. When contemplating the Sisserou's status in the wild while staring at the only caged Sisserou on earth, even the staunchest of field conservationists has to admit that it would be nice to have at least a few breeding pairs safely tucked away somewhere.

RSCF has long supported Forestry's position that the unreleasable birds in the Roseau aviary should be given every opportunity to reproduce. In

1998 one of the captive Jacos laid a clutch of three eggs—infertile, but a first step. This event, repeated in 1999, corroborates our field observations of natural Jaco nests: the Jaco clutch size is unquestionably three. Even Martha made history during her time in captivity. She died egg-bound. Sadly, her advanced age and poor health spelled disaster all around.

Is aviculture an option for the Sisserou? Maybe we could pull an egg or chick from the active nest to provide a mate for our lone bird. With new blood-sexing techniques, we could even verify a chick's sex before we took it. Maybe we could learn enough about raising and breeding Sisserous, even from a single pair, to propose a bona fide captive breeding programme.

In early October 1999 we knew the birds were not entering the nest, even though they were in the area keeping a close eye on us. Cradled in a saddle, I inched along the 80-foot climb to the nest cavity and got a clear view of the cavity entrance, thickly camouflaged with anthuriums; after inspecting from a safe distance, I descended. We proved we could get to the cavity, and likely get inside—if need be.

Sadly, our discoveries offer little immediate consolation for

Martha's 'husband' in the aviary. For the time being, Mr. Sisserou lives a lonely life, though he does get to argue with his Jaco neighbours. As field exploration expands, more nest trees are discovered, and data accumulate, the chance of recruiting a mate for Mr. Sisserou increases, along with the number of conservation options. Early in 1998 we realised that what the Sisserou needed was a novel approach, and soon. But when you don't know what specifically to do to help conserve a species, because the root causes of its population status are beyond grasp, then what do you do? That's when we started thinking about the Sisserou as a conservation fulcrum to leverage protection for the entire rain forest ecosystem.

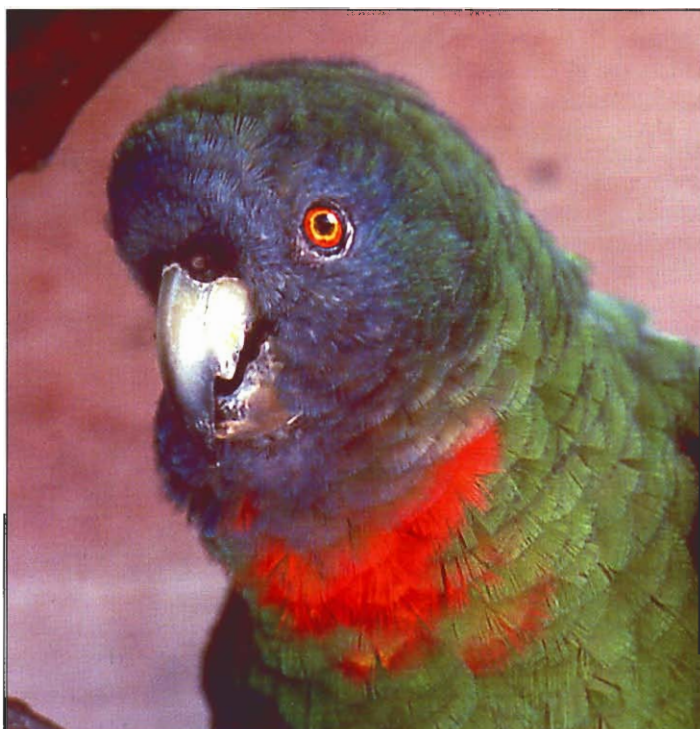
Bringing all or part of the Northern Forest Preserve under Dominica's National Parks System has been the dream of many conservation groups and the Forestry Division, since the late 1970's. In the mid-1980's, RARE (with its "Project Sisserou"), the Wildlife Preservation Trust International, The Nature Conservancy, Rosemary Low and other conservation collaborators proposed a new national park which would forever protect, under Dominica's constitution, the primary rain forest habitat of the Jaco and Sisserou. Of particular concern was the eastern boundary of the Northern Forest Reserve, known as the Syndicate Estate area, because of the pressures placed upon it by agriculture. Case-in-point: more rain forest trees in or near the Northern Forest Reserve have been cut down in the last twenty years than during the previous 100.

### *New national parks*

To their credit, and despite the economic enticement to sacrifice forests to farming, each of the two previous Dominican government administrations has managed to create a new national park. Morne Trois Pitons National Park, Dominica's most famous, was one of the Caribbean's first national parks, established in 1975, and became the Caribbean's first and only

Natural World Heritage Site, sanctioned by UNESCO in 1997. The Cabrits National Park, encompassing the grounds of an extensive English garrison at Fort Shirley and over 1,000 acres of marine sanctuary near Portsmouth, was added in 1986. With the national trend toward eco-tourism gaining momentum and banana profits beginning to slip in the early 1990's, government saw an opportunity to create another park, the Morne Diablotin National Park. In 1991, it almost happened.

The culmination of a dozen-plus years of brainstorming, small land grants, encouragement from conservation, local and international groups and much political manoeuvring, the Forestry Division's 1991 proposal to create Morne Diablotin National Park was inspiring, particularly in light of government's precarious finances. The Park would include nearly 10,000 acres of pristine rain forest, all within government-owned land, stretching from the Syndicate area across Morne Diablotin itself, encompassing vast riverine valleys and all known nesting and foraging areas for the Sisserou. It would include a small interpretative/welcome centre for visitors, complementing a mile-long, flat, trail loop (currently known as the Syndicate Nature Trail), where visitors could experience some of the finest old growth forest in the Caribbean without having to become mountain goats. The trail had been manicured by the Forestry Division years before. Signs identify rain forest plants and trees, many in excess of 200 feet, as the trail winds along a scenic ridge overlooking the Picard River Gorge, which spills from the base of the mammoth Morne Diablotin, which at 4,747 feet, is the Caribbean's highest volcanic peak. Visitor access would be naturally restricted to the Nature Trail and the famous Morne Diablotin Trail (offering Dominica's most physically demanding day hike), defining the Park as a true bioserve for one of the most biologically diverse and largest remaining oceanic rain forest ecosystems in the New World.



Red-necked Amazon, or Jaco.

Photo: Paul Reillo

The park plan was pursued with vigour by the Ministry of Agriculture and the Environment, which was prepared to present it to Dominica's Cabinet, so that the Morne Diablotin area could be protected formally and permanently under the National Parks and Protected Areas Act of 1975. That's when the Division of Surveys discovered a privately held tract of 1,301 acres within the proposed park. How could the government establish a national park around private property that in the future could be legally logged, farmed, or used in some other manner incompatible with a surrounding nature preserve?

## Conservation schizophrenia

We at RSCF became intrigued by the notion that a new national park and the resultant protection for vast expanses of Sisserou habitat could hinge on a 1,301-acre land deal. A form of conservation schizophrenia overcame us in early-1998, as the urgencies of parrot field research became tempered by the looming, unequivocal land conservation priority. A confluence of factors—government's endorsement of the park, a looming agricultural/economic downturn, national pride in the Sisserou, Forestry's upcoming 50th anniversary and Dominica's

21st birthday in November 1999, and the soon-to-follow millennium—identified a rare opportunity to create a park conceptualised nearly 20 years before. We suddenly found ourselves in the real estate business, a somewhat unusual role for a scientific organisation, as we immediately co-ordinated with government to help underwrite the land purchase, and get the Morne Diablotin National Park on the books as quickly as possible.

I don't know which is more compelling, the feeling of moral superiority while undertaking a good cause, or the feeling of complete inadequacy and resignation when even best efforts fall short. Since the land was in an area with a long agricultural history, its value, recognised by the owner and government alike, was considerable—just over one million U.S. dollars. If we could secure \$750,000, government agreed to pay the rest over time. By mid-1999, a series of Dominican Cabinet decisions authorised creation of the Morne Diablotin National Park, its boundaries, and the terms for acquiring the private land parcel. But despite all of the presentations, grant proposals and the many generous contributors—private individuals, family foundations, even corporate and zoo sponsors—we were missing the \$750,000 mark by a mile.

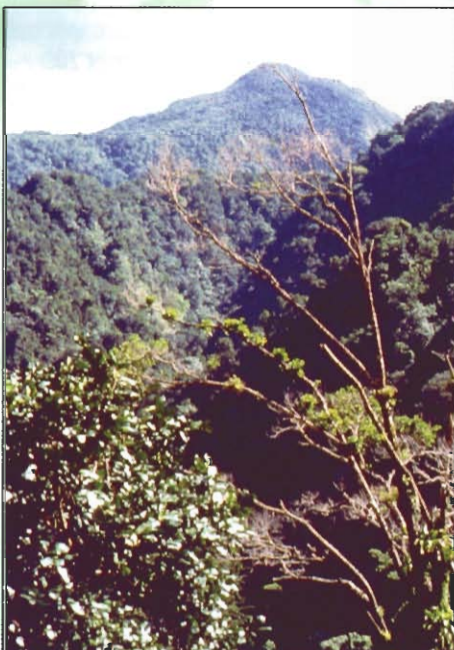
In late September 1999 we decided to put RSCF on the line and use every asset imaginable to close the deal. I called in favours from everyone I knew, begged some from friends who owed me none, and charged forward. RSCF threw its mortgage money into the pot with the blessings of the donor who had given it, along with every spare dollar we could find. A single contributor, Mr. Peter Allard—a true hero already underwriting RSCF operations and the establishment of a companion wildlife sanctuary in Barbados—was footing a full third of the bill, \$250,000. Grants and gifts took care of a big chunk, and in the end RSCF was in debt for over \$200,000. But at least the money was in the restricted escrow account, the contracts were signed, and the die was cast. With much fanfare and enormous pride, on 21 January 2000 the Government of Dominica officially declared the Morne Diablotin National Park at the State House in Roseau.

With six billion humans now crowding the planet, arguably sealing the fate of many endangered ecosystems, it is sometimes difficult to identify the people who truly stand apart. I have been lucky enough to meet and work with many of them in support of the Dominica programme, without whom the quest to create the Morne Diablotin National Park and

thereby buy the Sisserou and its forest more time might simply have ended. All of us know that the work has really just begun, and that the Sisserou's future is far from secure. Money and effort must be committed now if the parrot research and conservation efforts are to be expanded. The arduous process of managing this bioserve—scripting policies and programmes, inventorying its resources—will challenge the international conservation community's technical resources. I welcome this future, continually reminded how a shy bird came to symbolise, and ultimately rescue, the rain forests on this beautiful island. With the Morne Diablotin National Park comes a promise to maintain a course set long ago by Dominica's extraordinary people, to sustain natural resources by preserving them, thereby setting an example for the rest of us. Just as Martha has become my sentinel, so must humanity become nature's steward. What a privilege it is to watch over the Sisserou as this magnificent species survives and inspires.

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The summit of Morne Diablotin.



The Parrot Team, from left Stephen Durand, Matthew Maximea, Ronnie Winston and Paul Reillo.