

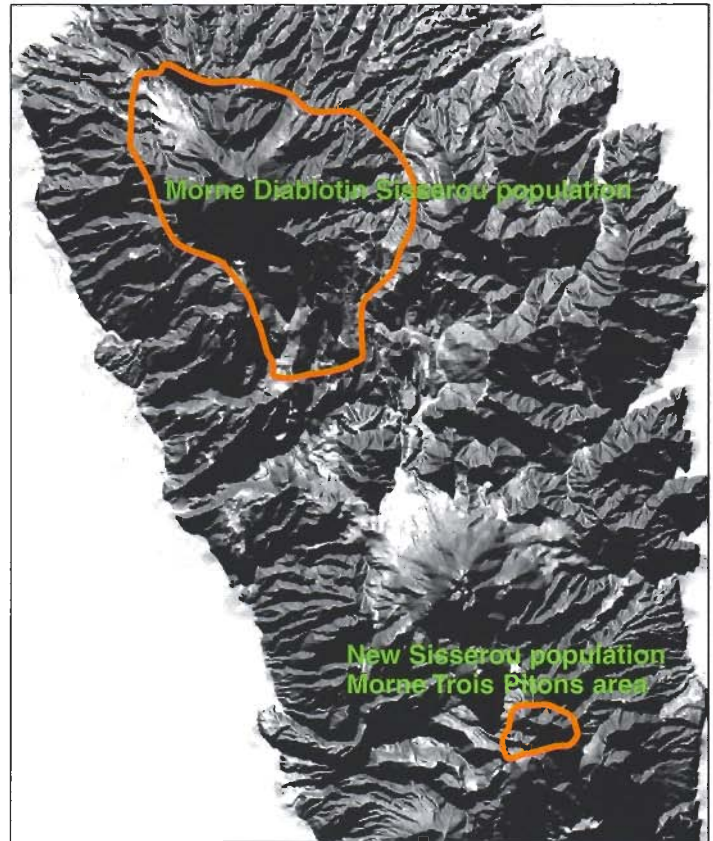
# Imperial Recovery: Dominica's flagship parrot on the comeback

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Dominica's Amazon parrots (*Amazona imperialis* and *A. arausiaca*) are flagship species for the largest remaining oceanic rainforest ecosystem in the eastern Caribbean. A joint parrot conservation programme between the Rare Species Conservatory Foundation (RSCF) and Dominica's Forestry and Wildlife Division has included parrot monitoring in the field, implementing a strategic recovery plan for the Sisserou (*A. imperialis*) Dominica's national bird and among the rarest of Amazon parrots and, most recently, establishing the new Morne Diablotin National Park. Recently developed field techniques have yielded essential data on life histories, behaviour, recruitment rates, and population parameters. Currently an estimated 350-500 Sisserous reside in the forests of Dominica, and only one pair is captive-housed at the Parrot Conservation and Research Centre at the Botanical Gardens in Roseau, Dominica's capital. Parrot conservation efforts have proven enormously effective for promoting island-wide, ecosystem-level conservation, emphasizing the need to protect oceanic rainforest at a broad scale. Recent field surveys reveal the beautiful, shy Sisserou as a compelling indicator species, whose population dynamics and life history show how long-term forest protection schemes enable island parrot populations to recover following devastating hurricanes.

In terms of biodiversity per unit area, degree of species density and degree of threat, Dominica's oceanic rainforest ecosystem is among the Lesser Antilles' highest conservation priorities. As the "Nature Island of the Caribbean," Dominica is the largest and most pristine of the Windward Islands. Mountains consume roughly 75% of this independent nation, with most slopes carpeted in virgin forest; some 52,000 acres are State owned (28% of the total land area). Dominica's mountainous rainforests boast high species diversity (>60 woody plant species/hectare, over 1600 flowering plants) and Gommier trees (*Dacryodes excelsa*) exceeding five feet in diameter. Animal biodiversity is similarly impressive, represented by 166 bird species, 20 species of freshwater and land crabs, 12

native terrestrial mammals, a myriad of amphibians and reptiles (including the Dominican iguana), and a number of spectacular invertebrates highlighted by 55 species of butterflies and the goliath beetle. Dominica is the only island in the eastern Caribbean to have two, endemic Amazon parrots, the Jaco (*Amazona arausiaca*) and the Sisserou (*A. imperialis*), Dominica's national bird, the largest and one of the rarest of Amazon parrots. The Sisserou is probably represented by no more than 500 birds confined to 22,000 acres in and adjacent to the Morne Diablotin and Morne Trois Pitons National Parks. Ever since hurricane David in 1979-the most devastating hurricane in Dominica's recorded history-conservationists have feared for the Sisserou's extinction, as the



Satellite image of Dominica's topography, showing locations of northern and southern Sisserou populations.

species was reduced to a small remnant population on the slopes of Morne Diablotin. The Sisserou's recovery has been the subject of intense field research over the past 20 years championed by Dominica's Forestry and Wildlife Division, but such work is daunting: the Sisserou is very sparsely distributed across vast, mature, mountain rainforest, is exceedingly shy and reclusive, and exhibits a low reproductive rate. Meanwhile, with the ever-present hurricane threat, the Sisserou's recovery has become a race against time.

Since 1997, RSCF and the Dominican government have partnered to research Dominica's parrots and conserve the Sisserou-flagship species for the eastern Caribbean's largest, intact oceanic rainforest ecosystem. Sponsorship has been international and diverse, recently including substantial support from the Loro Parque Fundación,

Amazona Society U.K., U.S. Fish and Wildlife Service, the World Parrot Trust (UK, Canadian, and USA) and a number of American zoological societies including Palm Beach, Chicago, and Cleveland. The program has produced a number of significant results, including first-ever, intra-cavity documentation of reproduction in the Jaco, using a specialized video probe, and quantitative analyses of bi-parental care and recruitment in the Jaco and Sisserou, using direct observations and time-lapse video surveillance. The existing parrot aviary at the Botanical Gardens in Roseau has been enhanced and renamed the Parrot Conservation and Research Centre (PCRC), which now comprises a self-contained parrot incubation, rearing and general research laboratory, as well as a center for field data archival and analysis.

Most significantly, on January 21, 2000, culminating a two-year, \$1.086 million campaign



Parrot Team L-to-R: Stephen Durand, Randolph Winston, Paul Reillo.

spearheaded by the Dominican government and RSCF, Dominica formally declared the new Morne Diablotin National Park, encompassing 8,500 acres (measured flat) of pristine rainforest and a stronghold for the Sisserou. Taking into account the extreme topography of the park, the protected surface-area acreage is at least 20,000 acres. This conservation milestone probably will become the second Natural World Heritage Site for the Caribbean, and the second for Dominica, after the Morne Trois Pitons National Park, established in 1975.

The core of Dominica's parrot program is its stalwart team of field researchers-Stephen Durand, Randolph Winston, and Matthew Maximea, veteran forestry officers with the Forestry and Wildlife Division. The depth of the Division's field expertise is manifest not only in the parrot team, but also across the entire range of staff, many of whom have conducted exhausting parrot surveys and monitoring expeditions across miles of near-vertical terrain. Thanks to the Division's tireless commitment to land stewardship and conservation, Dominica has produced a legacy of forest protection unrivaled in the Caribbean. As a result, parrot populations have persisted, and the RSCF/Forestry partnership has been afforded the opportunity to design and implement a comprehensive parrot conservation and research strategy.

Recently, the parrot team engaged in a series of field surveys that punctuate the importance of Dominica's aggressive, comprehensive forest conservation policies. During the 2000 and 2001 field seasons, the team began applying Global Positioning System (GPS) and Geographic Information System (GIS) technologies to parrot monitoring efforts, initiated with support from a U.S. Fish and Wildlife Service GPS training grant and a Loro Parque Fundação grant (for population surveys) to RSCF. Although the Forestry Division has been engaged continuously in parrot monitoring since 1981, efficient methods to quantify the spatial distribution and abundance of parrots have proven elusive. Rough terrain, dense forest canopy and inaccurate topographic maps have thwarted a comprehensive assessment of habitat utilization by both parrot species. The Sisserou (*A. imperialis*) has been of tremendous conservation concern for decades, but especially since hurricane David in 1979, which



Female Sisserou (*Amazona imperialis*).

brought its population to the brink of extinction-perhaps as few as 50 individuals. Although once distributed in mountain forest above 700 meters elevation in both the Morne Diablotin and Morne Trois Pitons areas, since 1980 the Sisserou has been largely restricted to the slopes of Morne Diablotin, located in the north, central portion of the island. Exhibiting a shy, secretive demeanor and local population densities rarely exceeding one bird per 300 acres, the Sisserou has proven to be a challenging research subject. Despite years of intensive study, few active nests have been examined, and eggs have yet to be described. Only recently have juveniles been monitored in the nest, and data from the past few field seasons suggest the Sisserou may lay a single-egg clutch, perhaps only every other year.

### Re-established in the south

While engaged in GPS/GIS field training sessions during early December 2000, the parrot team sought to explore an area known as Morne Prosper, in the southern portion of Morne Trois Pitons National Park, to investigate a possible Sisserou vocalization detected by a forester during a

patrol. Confirming that Sisserou reside in this area would prove that the species had reestablished itself in the southern portion of its historical range-an event that had been anticipated since powerful hurricane David, 20 years prior, which drove populations in the southern half of Dominica extinct. With GPS technology and co-registered topographic maps and satellite images courtesy of the U.S. Geologic Survey (USGS), the parrot team could now identify the precise location of the Sisserou-if the birds could be located.

Sure enough, on 6 December 2000, following a two-hour climb over steep, rocky terrain to the heights of Morne Prosper, the parrot team was rewarded with a clear sighting of a small Sisserou population, in protected forest at the base of Morne Watt and Morne John. Four birds were seen in flight, and a total of five birds vocalized in the valley beneath the lookout point, on a ridgeline from Morne Prosper that demarcates the Morne Trois Pitons National Park boundary. With good satellite tracking, our receiver recorded our precise position (accurate to within three feet), and the tracks and waypoints were downloaded to map software. For the first time in 20 years, a southern Sisserou population-however small-had

been identified and located with pinpoint accuracy.

Thanks to new technology, training, and field support provided to the parrot team, an exciting conservation milestone was documented. The Sisserou's comeback, albeit slow, is both measurable and significant. As an endemic reliant upon the largest of Dominica's rainforest trees for survival, the Sisserou represents a compelling indicator species for rainforest rejuvenation and recovery. Moreover, as mature forest is least susceptible to hurricane damage, the species is a sentinel for evaluating the magnitude of forest perturbations. Indeed, the Sisserou's near-extinction caused by hurricane David in 1979 signaled the opening of a research window on the characteristics of Windward Island catastrophes and how they relate to long-term ecosystem and species recoveries, the details of which we are only now beginning to appreciate.

Clearly, Dominica's parrots have evolved with their biological and physical environments-including hurricanes-soundly proven by the species' persistence despite centuries of assaults by man and nature. The central element in the Sisserou's survival has been an intact habitat, which affords researchers and nature lovers alike the unique opportunity to observe an oceanic rainforest ecosystem and all of its biological, physical, and temporal dynamics. Our recent Sisserou sighting in the south of Dominica confirms that the government's protected area policies and strong conservation ethic are working. Since its creation in 1975, the Morne Trois Pitons National Park has been maintained as an intact bioreserve, enabling Dominica's national bird to rebound here-20 years after the most devastating hurricane in the island's recorded history. With Dominica's terrestrial park system anchored by Morne Trois Pitons National Park in the south and the new Morne Diablotin National Park in the north, we look forward to the Sisserou's steady recovery to pre-hurricane David levels.

A sobering reality is that the Sisserou's future rides with the next wave of tropical storms rolling westward across the inter-tropical convergence zone. But for now, Dominicans, the parrot team, and ornithologists everywhere can cheer for *Amazona imperialis*, as this magnificent parrot ambassador expands across the blanket of forest that defines Dominica, the Nature Island of the Caribbean. 