

Great Green Macaw: flagship species of Costa Rica



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Over the past 8 years, we have pursued a multi-faceted, science-based, conservation project, using the endangered Great Green Macaw (*Ara ambigua*) as the focus of a campaign to conserve a unique lowland Atlantic forest assemblage in Costa Rica.

The lowland rainforest ecosystem is distinguished by a high density of almendro (*Dipteryx panamensis*) and provides habitat for the Great Green Macaw and other endangered species. The macaws depend on the huge almendro trees for nesting and as a primary source of food. In Costa Rica, the almendro forest, and consequently the macaw, is currently restricted to the north-eastern corner of the country, between the San Juan River (the border between Costa Rica and Nicaragua) and La Selva Biological Station.

The almendro tree has become the primary hard wood for flooring, truck beds, and other such specialised uses. Consequently, as the species becomes scarcer, price for the wood has increased dramatically. Unfortunately, Costa Rica's exemplary system of protected areas includes Tortuguero National Park as its only representation of this Atlantic forest. That park consists primarily of swamp forest and contains very little of the upland sites that are required by almendro; no Great Green Macaws nest in the park. In the absence of

official protection, lowland Atlantic moist forest is disappearing as a habitat in Costa Rica. As a direct consequence, the Great Green Macaw is threatened by habitat loss and is currently recognised internationally as an endangered species. (It is on CITES List 1).

The macaw's historic nesting zone in Costa Rica has been reduced in size by 90%, principally by the country's uncontrolled logging and land clearing for cattle and bananas. The macaws face other threats, including their sale as pets (chicks are sold locally for between \$150 and \$300) and hunting pressure for sport and feathers.

The breeding range of the Great Green Macaw is limited almost exclusively to Central American almendro forests in Honduras, Nicaragua, Costa Rica, Panama and adjacent zones in Colombia and one isolated site near Guayaquil, Ecuador. Our radio-telemetry studies have revealed that breeding pairs of these macaws use large, non-overlapping home ranges. After the breeding season, they disperse from the

lowlands to higher elevation forests in the piedmont of Costa Rica's mountain ranges to the west, as well as to drier forests to the north in Nicaragua.

Project achievements

We have selected the Great Green Macaw as a "focal species" for identifying and publicising priorities for conservation action in the region. Our objective is to establish a nucleus of protected natural forest that is interconnected with surrounding ecosystems as required to sustain a viable population of macaws. Protecting habitat required by the Great Green Macaw will also result in the conservation of a viable population of almendro and other biodiversity that is unique to the area.

We have been pursuing a radio-telemetry-based study and have developed the techniques for capturing and radio-tagging adult macaws and then monitoring their movements through the difficult lowland rainforest habitat. We have a database on nesting ecology (nest site selection, nesting success, habitat use, overlap among breeding pairs), fledgling survival through the first year, foraging behaviour including diet, habitat use during the non-breeding season, and adult survival.

We helped initiate a regional environmental awareness programme developed around building local pride in the macaw. This has heightened awareness of the plight of the macaw and its habitat among school children and the general public. A National Great Green Macaw Commission was formed in 1996 as a result of our discovering and publicising that the macaw and the almendro tree were being eradicated from Costa Rica. This organisation is made up of 13 governmental and non-governmental organisations with the common objective of protecting the macaw and sustainably managing its habitat. One of the Commission's first accomplishments was to establish a legal decree that limits the extraction of the almendro, though even under this decree, the allowable harvest of this species is not sustainable. Thanks to



Great Green Macaw.

legal action that we had undertaken against the Ministry of Environment in 2001, harvesting of the almendro has been temporarily suspended by the Minister of Environment, until new technical studies are undergone to determine the current state of the population of this tree species and its relationship with the Great Green Macaw clearly established.

Importance of habitat

Our efforts to focus attention on this area have recently taken on added meaning because the last remaining nesting habitat for the species in Costa Rica (estimated to be less than 10% of its original range) is located in a critical juncture of the Mesoamerican Biological Corridor. The macaws' remaining breeding habitat is situated between Nicaragua's Indio-Maíz Biological Reserve and the large conservation complex in Costa Rica that includes La Selva, Braulio Carillo National Park, and other smaller interconnected national parks, such as Volcán Poás Poás and Juan Castro Blanco National Parks. At the local scale, the future integrity of La Selva, a small (around 1,500 hectares) lowland biological field station, depends on the maintenance of biological connectivity with the much larger Indio-Maíz Reserve. At the regional scale, the area provides ecological linkage between highland and lowland ecosystems for species that migrate seasonally between these areas. At the continental scale, this area is the last remaining connection between Nicaragua and Costa Rica of the Mesoamerican Biological Corridor.

In 2001, the Executive Committee of the San Juan-La Selva Biological Corridor was formed. It consists of 15 organisations, including the Tropical Science Center and the Wildlife Conservation Society; they are now responsible for implementing the Corridor (246,608 ha) and its associated Maquenque National Park (30,359 ha).

The protection goals of this effort are based in large part on findings from biological research on habitat use by the Great Green Macaw.



Tambor Lagoon, home of the West Indian Manatee, within the area of the proposed Maquenque National Park.

The size and location of the proposed Maquenque National Park and surrounding biological corridor are based on scientific data. The corridor will connect key habitats. The creation of a new national park in Costa Rica's northern zone would also diversify the local economy, creating opportunities in an economically-depressed area that currently depends on limited-potential forestry and agricultural activities. This area's scenic rivers, rich biological resources, and small town hospitality are all attractions that will contribute to small-scale ecotourism. The Maquenque National Park would also protect the Great Green Macaw population of Nicaragua, which maintains genetic interactions with the Costa Rican population.

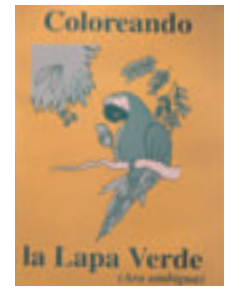
We built an alliance with Fundación del Río, a Nicaraguan NGO working in Southeast Nicaragua, along the San Juan River banks and the buffer-zone of Indio-Maíz Biological Reserve. This co-operation gave birth in 2002 to a joint campaign titled "The Great Green Macaw, Pride of the San Juan River Basin", including educational materials such as leaflets and calendars. Four workshops and field trips were organised in Indio-Maíz Biological Reserve's buffer zone, Nicaragua. They reached the Ministry of Environment and Natural Resources (MARENA), members of the National Army's outposts along the San Juan River, local community leaders, young people, schools, NGOs, local government and researchers. A campaign to report macaws' nests in Nicaragua was launched in January 2002.

As Costa Rica and Nicaragua's population increasingly recognise native charismatic species like the Great Green Macaw, the programme will have major payoffs, in terms of biological conservation and the enhanced commitment by the Costa Rican population to conserving their exceptionally rich natural heritage.

Corridor concept and zoning

In order to consolidate habitat into an effective biological corridor, we propose a three-level classification of public and private lands within the corridor area: a core protected area (Maquenque National Park); a series of corridor nuclei, or priority areas, that could serve as stepping stones for species that depend on relatively large blocks for corridor functionality; and the basic corridor matrix, that would surround the core and nuclei areas.

This zoning is designed to protect the full complement of native species and fulfill basic corridor functions of connectivity, while maximising compatible sustainable forestry uses and benefits from environmental services.



Don't buy wild animals! Save the Great Green Macaw! sticker and a colouring book for children produced as part of the conservation education programme.

Macaw festival in May

Due to this excellent collaboration, we decided to turn the yearly small-scale Festival into the First Bilateral Macaw Festival in Boca San Carlos, on the San Juan River banks on the border with Nicaragua (the San Juan River itself). Twenty six organisations were involved. The Great Green Macaw Research and Conservation Project raised US\$8,000 with the United Nations Development Program (UNDP), the Mesoamerican Biological Corridor and private donors to finance the event.

This sum allowed us to bring 125 Costa Ricans and 125 Nicaraguans to the event, and to provide them with free transportation, food and lodging. Despite the rainy weather, and slippery muddy roads, more than 500 people attended the event, most of them coming from surrounding communities. The mayor of San Carlos (Costa Rica) and the mayor of El Castillo (Nicaragua) opened the event together, symbolically planting the 'Almendro of Brotherhood'. Other activities included a beach volley tournament, a drawing contest previously organised with local schools, folk dancing, craft exhibition, music groups and play featuring macaws and almendros from both countries. The central piece of the Festival was the annual presentation of prizes for nest caretakers, with eighteen local farmers receiving awards.

Due to perseverance through the years and a continued awareness campaign in Costa Rica focused on the Great Green Macaw and conservation actions the newly elected Minister of the Environment, Carlos Manuel Rodríguez, declared the establishment of Maquenque National Park one of the country's top priorities and promised to inaugurate the new park on August 26, 2004, National Parks National Day. He agreed to politically back up our initiative to reach its goals, a new state of mind compared to Minister Elizabeth Odio's last administration. We have now all the support needed on our side and will use the next four years to do whatever be possible to establish Maquenque National Park, with the help of the World Parrot Trust and other organisations.