

# Great-green macaw

## Conservation in Central America

by PAMELA WRIGHT, GEORGE POWELL and SUZANNE PALMINTERI

### Editor

Rosemary Low,  
P.O. Box 100,  
Mansfield, Notts.,  
United Kingdom  
NG20 9NZ

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### Cover Picture

We are grateful to Steve Winter, distinguished photographer, for permission to use his shots of this important research project being conducted in Costa Rica. His close up of an adult macaw at its nest, used on our front cover, is especially notable.

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Over the past 5 years, we have pursued a multi-faceted, science-based, conservation project that centres on using the endangered Great-green macaw, *Ara ambigua*, as the focus of a campaign to conserve the macaw and its habitat, a unique lowland Atlantic forest assemblage, in Costa Rica. This lowland rainforest ecosystem, which is distinguished by a high density of almendro (*Dipteryx panamensis*), is not represented in Costa Rica's conservation areas and is rapidly being eliminated due to a high demand for the wood of the almendro tree. 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 classification of species in the most serious condition).

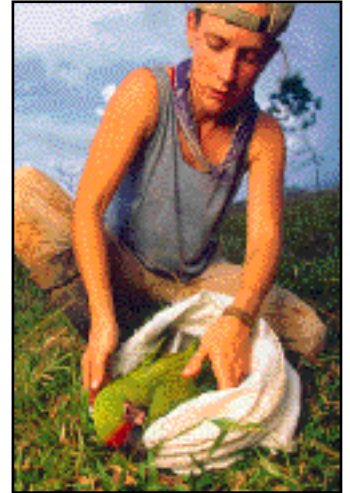
Given its endangered status and its large and complex habitat requirements, we have selected the Great-green macaw as a 'focal species' for identifying and publicising priorities for conservation action in the region that will lead to the macaw's conservation. Our objective is to establish a nucleus of protected natural forest that is interconnected with surrounding ecosystems as required to sustain a viable population of macaws. Our working hypothesis is that 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.

### Radio-telemetry study

To set minimum conservation goals for maintaining the viability of the Great-green macaw and its habitat, we have been pursuing a radio-telemetry-based study. We developed techniques for

capturing and radio-tagging adult macaws and then monitoring their movements through the lowland rainforest habitat. We are developing a database on the 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 are also monitoring fruit production of the tree species used most heavily by the macaws.

To collect these data, we have developed a research team with major participation by Latin American pre- and post-graduate students who join the project as interns for 3-6 months. We have found this to be an excellent opportunity to provide hands-on training in applied conservation biology for young scientists who wish to dedicate their skills to conserving the biodiversity of their respective countries. The students gain hands-on learning experience while providing the



Pamela Wright examining macaw chick.

project with a highly motivated field staff. The project has already involved students from 10 countries.

### 'Local pride' program

Our research findings have already produced specific results. We helped initiate a regional environmental awareness program, implemented by former Costa Rican field assistant Mario Rivera, that was developed around the theme of building local pride in the macaw. This program 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 as a result of our discovering and publicising that



Pamela and chick with Erika Delgado (Mexico) and Guisselle Monge (Costa Rica). Photo: Steve Winter



Radio-tracking Great-green Macaws, Tana Wood (USA) and Virginia Zeledon (Nicaragua). Photo: Steve Winter

the macaw and the tree it uses predominantly as nesting and feeding substrate are close to being eradicated from Costa Rica. This organisation is made up of eighteen 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, *Dipteryx panamensis*, a threatened tree species that is heavily used by the macaw during the nesting season.

## Current goals

Our current goals are: 1) to fully determine minimum breeding habitat requirements of the Great-green macaw; 2) to identify post-breeding migratory habitat and major food species; 3) to develop a proposal for the establishment of a national park to protect macaw habitat; 4) to publish our research findings to date; and 5) to continue the intern training program. We will continue to encourage and facilitate the innovative individual projects of staff and interns that have already resulted in a wide array of activities and impacts.

While the primary aim of this project is developing and implementing science-based conservation objectives, a secondary goal is training Latin Americans in these skills. We have assumed this priority in recognition of the fact that there are few opportunities for Latin Americans to obtain hands-on training in applied conservation biology and conservation. We also recognise the importance of training non-Latin Americans who are able to cover their own transportation costs. Demand from both Latin Americans and others interested in participating in our training program far exceeds our capacity to absorb them.

The project's data collections, analysis and write-ups have been and continue to be carried out almost entirely by young professionals starting their careers in conservation, with direction from Dr. George V N Powell a senior conservation scientist with the World Wildlife Fund (Powell donates all of his time to the project). All current staff members participated in the intern program, the Costa Rican



Ulises Aleman (Costa Rica), a vital member of the team since the beginning, lowers a macaw for examination. Photo: Steve Winter

and Canadian women acting as incoming co-directors are replacing a former US intern turned director who is leaving after 4 years to pursue a doctoral degree in Conservation Biology.

## New research project

Former interns are applying their experience in jobs and master's degrees programs in conservation related fields, a few examples follow. Virginia Zeledon, a Nicaraguan master's student, participated as an intern, is implementing her own research of the Great-green macaw in Nicaragua, where the habitat is pristine, but the distribution and density of the macaws is poorly understood. Erika Delgado, a recent Mexican intern is performing an assessment of the current situation and efforts on behalf of the Scarlet Macaw in Mexico for her thesis. Toa Kyle, a former Canadian intern, is continuing his tropical conservation interest with a master's thesis studying vertebrate use of clay licks in Peru. Toby Query, a former US intern, continued studying the space requirements of endangered birds by joining the field team using telemetry to study the Western spotted Owl. Additionally, we provided guidance in study design and are providing unpublished baseline data to Costa Rican master's student, Marco Hidalgo, studying the distribution of Great-green



Pamela Wright receives the chick. Photo: Steve Winter

macaw, foraging species, and the chemical makeup of the seeds.

In addition to the explicit research goals of the project, interns and assistants are encouraged to expand on their experience by continuing with individual projects. Our encouragement has included finding funding for some initiatives, as in the case of a previous Costa Rican field assistant, Mario Rivera. Mario has been implementing a regional multi-faceted education program with support from the USFWS, RARE Centre for Tropical Studies and Fundacion AMBIO. This program has heightened awareness of the plight of the macaw and its habitat among school children and the general public while stimulating a feeling of pride for these natural resources.

## Involvement of local entities

Local people participate in the project as intermittent volunteers, more formerly as interns and as staff after having been trained through previous intern experience. Our interns interact with local individuals and groups that have been spawned as a result of Fundacion AMBIO's environmental awareness

campaign and other macaw conservation efforts in the area.

Information is provided to local groups such as community environmental committees, community development associations and schools upon request and at annual presentations of recent results. Our central field station is an old rental house in the small frontier town of Boca Tapada. This site is not only conveniently located in the centre of the current breeding population of Great-green macaws in Costa Rica, but also assures constant interaction with members of the local communities on a less formal basis at the grocery store, public phone, festivals etc. Our second field site is strategically located in the foothills of the Central Volcanic Range where the macaws migrate in the non-nesting season. This second site is located near the Sarapiquí Conservation Learning Centre, which provides access to the local community for informal outreach. Although the value of these informal interactions is hard to measure, in the past it has resulted in people reporting nests, poachers, illegal logging and requesting advice on forest protection, reforestation and the placement and design of artificial nests.



WPT has previously part funded a 4WD vehicle for this project, and wants to do more. Any reader who would like to help in Costa Rica, please email Mike Reynolds at [worldparrottrust@compuserve.com](mailto:worldparrottrust@compuserve.com), or write to the UK office.