A Great Green Macaw pair peers out of their nest hole in an almendro tree; Sarapiquí, Costa Rica. © Corey Raffel

The Mountain Almond *(Dipteryx panamensis)* — locally known as the almendro — is an enormous tree reaching heights of 50 meters (164 feet), and can be seen towering over the rainforest canopy.

It is a primary food and nesting source for the Great Green Macaw. Sadly, over-harvesting has significantly diminished these trees' numbers.

Four Orgs in Two Countries:

A Great Green Macaw Primer

Great Green Macaws *(Ara ambiguus)* are large, olive-green birds that would nearly blend into the forest canopy were it not for their impressive contact calls, acrobatic flights and bright red forehead. They are found in E Honduras and Nicaragua through Costa Rica, and from Panama to NW Colombia. Subspecies *guayaquilensis* is confined to W Ecuador in Esmeraldas and Guayas.

These macaws are IUCN Critically Endangered in the wild through a combination of human causes, the main one being the loss of important nesting and food trees due to deforestation and drought.

Additionally, despite their Appendix I status they continue to be trapped throughout their range and are even hunted for food in some areas. Because they are long-lived they reproduce slowly, thus population declines that occur are difficult to reverse. Recent estimates place the population at around 500 -1,000 mature individuals worldwide.

The World Parrot Trust (WPT) is working with a number of partners who, with funding from Tracy Aviary in the US, are devoted to bringing this special macaw back from the brink.

Read on to meet the teams.

1 Ara Manzanillo

Beginning in 2010, the Ara Manzanillo team established a Great Green Macaw reintroduction project in a national wildlife refuge near Manzanillo, Costa Rica with the aim of establishing a self-sustaining population there. Ongoing work includes monitoring and health-checking the wild population, captive breeding-for-release, and increasing wild breeding success by installing nest boxes and supplementally feeding wild chicks in need of a boost.

As of 2022, the team has installed 20 artificial nests and from these over 50 Great Green chicks have gone on to join the wild population. The 2023 breeding season has seen over 60 chicks fledge from artificial nests, with many other juveniles hatched in natural cavities joining the adult population. To date, the team has successfully reintroduced 45 captive-bred macaws. And yearly, there are wild birds that need rescuing and rehabilitation, whether from predator attacks or confiscations.

The program has greatly expanded to include community engagement in awareness activities at the breeding station and elsewhere, and receiving students and conservation workers to the site to learn about the macaws and their breeding ecology. The team also relies on volunteer internships for help in the field.

And, with the macaws' forest rapidly being lost there is a critical need to start replacing it; the team cultivates native trees and thus far they have planted out over a thousand trees, primarily mountain almonds. The team's latest effort is to restore the 30 hectares of forest surrounding the field station with select native species to support food security as the flock continues to grow.

Ara Manzanillo works to ensure the long-term future of macaws in Costa Rica's South Caribbean through restoring them to their historic range, contributing to the scientific community, encouraging the protection of tropical forests, and educating the public to assure the benefit and enjoyment of present and future generations.

Visit their website:
aramanzanillo.org

Left: *Staff and volunteers plant out plots in an ongoing reforestation effort*
Right, top: *Great Green Macaws inspect a nest box*
Right, bottom: *A macaw feasts on Chonta palm seed*
Photos © Ara Manzanillo

2 Macaw Recovery Network

At Punta Islita on the south coast of Costa Rica, efforts to boost and monitor wild macaw populations, preserve their habitat and connect with communities continue. On the research front, the Macaw Recovery Network (MRN) team, Forestry and Wildlife, community volunteers, birders and partner organisations aim to gain an estimate of macaw numbers in the country to find out how they are faring. In progress as well are surveys to locate roosts and discover how and where the birds travel in the area. Sixty-three Audiomoths (sound recording devices) have been installed through 5,000 km2 of Costa Rica's northern zone to detect the macaws' presence. They'll be reviewed mid-year to complete research uncovering the spatial distribution, or geographic range, of Great Green Macaws in the area.

MRN staff and university students also join forces to complete critical work. This year a Master's student from the US and two volunteer biologists are monitoring wild nests, and health-checking, genetic sampling and fitting the chicks with radio collars.

Engaging communities benefits both people and Great Greens - local women are being trained to identify, collect and propagate the seeds of trees important to the macaws. The Women Rangers Program in Boca Tapada, Alajuela was founded in 2020. A nursery, "Casa del Titor," which the women manage, currently houses 4,000 plants comprising 43 different plant species. The group has learned to monitor and record the weather and the plants' progress, and coordinate monthly trips out into the wilderness to collect more seeds to bring to the nursery. The team has, to date, planted 1,520 trees and aims to plant a total of 6,000 within the next two years, an ambitious project requiring coordinated efforts from seed collectors and nursery workers to land surveyors and through community outreach.

The Macaw Recovery Network's mission is to protect and recover endangered parrot populations in the Americas. MRN envisions a future in which parrots and their ecosystems thrive and coexist with local communities.

Visit their website:
macawrecoverynetwork.org

Top: *Members of the Macaw Recovery Network team*
Left: *Casa del Titor, home of present and future forests*
Middle: *MRN trustee members visit the facilities*
Right: *A Women Rangers team member with a recently planted seedling*
Photos © Macaw Recovery Network

3 ADOPTA Bosque

In Panama, the threat situation for Great Green Macaws is similar to other countries where the species is found; there are, however, less data on distribution and how the wild birds are coping. This increases the urgency of meeting the challenges facing these macaws. One issue that is known: the trees they choose for nesting tend to be large and old and as a result, frequently fall due to storms or are cut by people. This has been a significant obstacle to their breeding success and recovery.

ADOPTA Bosque works in two indigenous territories, La Marea and Bajo Lepe, in the Darién region, which borders with Colombia and may be highly important as a stronghold for Great Green Macaws. The team works to engage local communities with education and awareness programs to change their perceptions of these macaws and to instil the idea that the birds are better off living in the natural world for the benefit of all.

Communities will gain much from their involvement by becoming nest monitors and trackers, in addition to taking part in ecotourism, handicrafts, and other initiatives. These new activities will help to minimise damaging slash-and-burn agriculture practices and poaching activities.

Further, ADOPTA Bosque collaborates with community members to get them involved in citizen science projects such as nest box construction, installation and monitoring, and reforestation.

As for research and conservation, the team has now located up to five active Great Green Macaw nests. ADOPTA Bosque is looking to increase nest site availability and protection within the Darién, and obtain new data on the birds' habitat use and movements in the area. They have gone further afield in their partnerships and reach, joining a regional collaboration with Colombia and Costa Rica and having journalists from news organisations come to spread the group's work and message across the world for greater awareness and support.

ADOPTA Bosque

ADOPTA Bosque Panamá

ADOPTA Bosque (Adopt a Panama Rainforest Association) is dedicated to the conservation of Panama's unique ecosystems. Through donations and volunteer efforts, the team works to protect the natural wonders of Panama and educate the public about the importance of the neotropics.

Visit their website:
adoptabosque.org

Top and bottom: *Team members work at height installing and checking artificial nest drums for the macaws.*
Photos © Bienvenido Velasco @ Agencia EFE

Panama Wildlife Conservation 4

Based in the UK, Panama Wildlife Conservation (PWCC) has been working to protect Great Green habitat in an effort to bolster their numbers. Their scientifically-based endeavours take them to a protected area known as Cerro Hoya National Park (CHNP), located on the Azuero Peninsula in the south of the country. This area and its buffer zones have been subjected to the most severe habitat degradation in the country through agriculture and drought. Conservation efforts here include habitat restoration (planting over 4000 native flora and trees important to macaw survival), population monitoring, and education and outreach programs. The team is also working with local communities to promote sustainable practices, such as ecotourism, that encourage the protection of macaw roosting and breeding habitat and also benefit people. PWCC's team has also edited and printed the first educational booklet about natural history, ecology and conservation of Great Green Macaws for local school children, with the support of the University of Manchester and the WPT.

Crucially, PWCC is also seeking to uncover where the macaws occur, tree species used as food sources, the birds' ecology, and to explore ongoing and emerging threats. Population studies of the isolated groups that live in the southern part of the peninsula continue with the aim of comparing new data with population estimates elsewhere. So far, they have identified four nesting sites within the CHNP and a flock of over a dozen individuals in the western edge of the park, with more reported on the eastern side. These sightings bring hope for the populations of this area.

PANAMA wildlife conservation

Panama Wildlife Conservation is an organisation dedicated to the conservation of biodiversity, animal species and their habitats through the collaboration with local residents and organisations in Panama.

Visit their website:
panamawildlife.org

Left: *PWCC team members survey the landscape in macaw habitat*
Right, top: *A Great Green Macaw pair investigates a nest cavity*
Right, bottom: *A lone macaw keeps a watchful eye on activities*