

Conservation Leadership Programme: Final Report

Title Page

1. CLP project ID & Project title
Improving fledgling recruitment and habitat quality for the yellow-shouldered parrot at Margarita Island, Venezuela.
2. Host country, site location and the dates in the field
Venezuela, Margarita Island, Península de Macanao, 2007-2008.
3. Names of any institutions involved in organising the project or participating
Provita
IVIC (Venezuelan Institute for Scientific Investigation)
INPARQUES (National Parks Institute)
Fondo Mixto de Turismo
Fundación Empresas Polar
Alcaldía Municipio Península de Macanao
4. The overall aim summarised in 10–15 words
Increase the annual recruitment rate of *Amazona barbadensis* through the implementation of artificial nests, ecological restoration and environmental education.
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7. Date which the report was completed
August 15, 2013

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Section 1:

Summary

Margarita Island holds large biodiversity, including several endemic and threatened species. Among these, *Amazona barbadensis* (Yellow-shouldered parrot) was chosen in 1989 to become a flagship and umbrella species for many conservation efforts, mostly conducted by Provita, a Venezuelan conservation NGO. Back at that time the population barely reached 700 parrots, while at present it is estimated at 1,900. Two main threats affect the population numbers: 1) the illegal poaching of chicks for the pet trade and 2) habitat degradation through sand mining. With this project artificial nests were installed to increase parrot recruitment on the main breeding area; thanks to these nests 100 more parrots fledged from 2007 to 2013 than they would have from natural nests only. Long-term habitat restoration was initiated through the successful planting of 640 trees on 16 plots, including specially plant species that are relevant as food or nesting. Community involvement and environmental education was strengthened through training more young men to serve as biomonitors on the monitoring and surveillance of the breeding seasons, restoration efforts and interpretive guiding on a nature trail; also, environmental teachers were bolstered through workshops and the production of education materials.

Introduction

Margarita is a Venezuelan inland located on the southeastern Caribbean (Fig. 1). Its biodiversity stands out among Caribbean islands, but it is also a threatened species "hotspot:" at least seven endemic birds and mammals are threatened with extinction, while the tropical dry forests covering it are considered among the most threatened ecosystems in the world. *Amazona barbadensis* (Yellow-shouldered parrot), globally listed as "Vulnerable," and considered "Endangered" in Venezuela, is found here. It is only found on Macanao peninsula, the western portion of the island, which has no formal protection, but is being considered for designation as a wildlife reserve. The main factors in *A. barbadensis* decline are the capture of nestlings for the pet trade, and the destruction of nesting and feeding habitat by open-sky sand mining (Rodríguez, & F. Rojas-Suárez, 2008; Briceño-Linares, 2010; Briceño-Linares, et al 2011). In 1989, Provita (a local NGO), in collaboration with other national and international organizations, initiated a conservation program on behalf of the species. At that moment, population size was estimated at 700 parrots, while it currently reaches around 1,900 birds. With this project the availability of nests was increased and a restoration protocol was applied to begin long-term habitat sustainability at La Chica (the largest nesting site, Fig. 1); capacity building and environmental education were also strengthened, especially over biomonitors and local school teachers, so that they can sustain conservation efforts on the long-term.

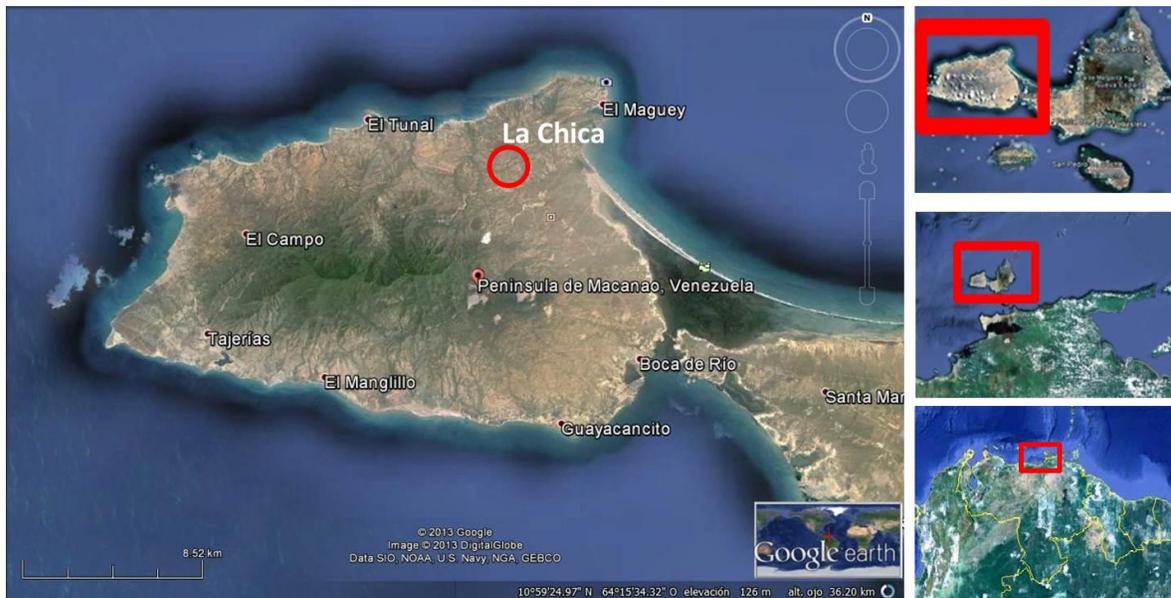


Fig. 1. Map of study area. Arenera La Chica, Macanao Peninsula, Margarita Island, in the Venezuelan Caribbean,

Project members

a) TEAM LEADER-Name, Nationality and age: Laurie Fajardo, Venezuelan, 43
Email Address: fajardo.laurie@gmail.com

Team Role: Dry Forest Restoration

Experience /Education: PhD on Ecology, currently postdoctoral Fellow at IVIC. Laurie has continued to develop dry forest restoration protocols, establishing successful plots on several degraded areas in Macanao.

b) Name, Nationality and age: María Abarca, Venezuelan, 32

Email Address: conepatussemistriatus@yahoo.com

Team Role: Artificial Nests

Experience /Education: MSc. on Ecology. Currently PhD candidate on Ecology at IVIC. María has focused her research on estimation of mammal populations for conservation purposes.

c) Name, Nationality and age: Marianne Asmüssen, Chilean, 33

Email Address: marianneasmussen@gmail.com

Team Role: Environmental Education and Community Development

Experience /Education: MSc. on Ecology. Currently PhD candidate on Ecology at IVIC. Marianne has focused her research on wildlife trafficking, with emphasis on threatened fauna.

d) Name, Nationality and age: José Manuel Briceño-Linares, Venezuelan, 40

Email Address: josemanuel.bricenolinares@gmail.com

Team Role: General Technical and Logistics Support

Experience /Education: Biologist (Universidad Central de Venezuela, 2001) currently, achieving a Master's degree on environmental education at Universidad Pedagógica Experimental Libertador. José Manuel is currently Provita's Senior Advisor for the conservation of *A. barbadensis*, and ECOGUARDIANES Coordinator (a cooperative dedicated to the conservation of yellow-shouldered parrots, ecotourism and restoration). José Manuel is also an environmental management Professor at the Bolivarian University of Venezuela.

e) Name, Nationality and age: María Alejandra Faría-Romero, Venezuelan, 39

Email Address: mariaalejandrafaria@gmail.com

Team Role: Environmental Education Support and Media Contacts

Experience /Education: Marine biologist (Universidad de Oriente, 2002). M.Sc. in Environment and Development (Universidad Simón Bolívar, 2004); PhD candidate on Education and Innovation at UNEFA (dissertation pending, written thesis approved). She has continued to conduct environmental education, community involvement and communications for coral, sea turtle and whale conservation projects in Reunion Island, Madagascar and Canada.

Section 2:

Aim and objectives

Overall goal: Increase the annual recruitment of yellow-shouldered parrots on Margarita Island, and improve the long-term availability of natural, protected nesting and breeding habitat, in order to decrease its extinction risk.

Objectives:

1. Double the number of available protected nesting sites at our study area by designing, building and installing artificial nests in the section monitored and protected by Provita.
2. Create a new 0.5-1 ha patch of tropical dry forest in an area where vegetation was completely cleared by sand mining, contiguous to currently protected nests.
3. Expand and strengthen environmental education and community development activities in the field, by focusing on the interpretive nature trail as a tool site for ecotourism, and explicitly integrating it to nest monitoring and tropical dry forests restoration.

Methodology

Our field site is located at Fundo La Chica, a private holding located in Macanao peninsula that sustains an active sand mining operation, but is also sympathetic to parrot conservation. Macanao has remained relatively undeveloped and is sparsely populated. This is where much of the island's natural habitat remains, where remnant populations of most threatened species are located, and where Provita does most of its work.

Objective 1. Nest design, monitoring and surveillance.

1.1. Artificial branch nests were built cutting-off dead branches from *Bulnesia arborea* trees that in the past held parrot nests. The branches were repaired using wire netting and plaster, tinted with non-toxic elements, a technique that was previously implemented successfully with poached nests.

1.2. Artificial plastic nests were built using PVC tubes, following the method developed by White et al. (2005) for Puerto Rican parrots (*Amazona vittata*).

1.3. The artificial nests were placed on mature trees that didn't have cavities before parrot courtship begun, in order to have them available for nesting.

1.4. Nest selection and nest use has been continuously observed, quantifying their productivity, during the following nesting seasons.

Objective 2. Dry forest restoration.

2.1. Seedling production: seeds of *Prosopis juliflora* (Mimosaceae), *Cercidium praecox* (Caesalpiniaceae), *Tecoma stans* (Bignoniaceae), *Bulnesia arborea* (Zygophyllaceae) and *Piscidia piscipula* (Fabaceae) were collected in remnant forest patches; these species were selected due to their value to *A. barbadensis*, and capacity to grow quickly and over degraded soil. Germination of seeds was carried on a plant nursery under 60% shading net; seedling growth was monitored periodically (measurement of diameter and height) until growth reached 40 cm.

2.2. Conditioning of reforestation area: 16 plots of 12.5 x 8 were conditioned removing weeds and large rocks, and opening holes for planting.

2.3. Trees were planted at the beginning of the rainy season (December), adding 15 grams of hydrogel polymer at the bottom of each hole, to help maintain moisture during their establishment. Trees were watered at the moment they were planted and every dry month during 6 months.

Objective 3. Environmental education and local capacity building.

3.1. Young men from different communities around Macanao peninsula were recruited and trained to work as biomonitors during breeding seasons, restoration and interpretive guiding on the nature trail. For monitoring, they acquired capacities to collect data. For surveillance, they were trained approach poachers non-confrontationally, explain about conservation efforts and ask them to leave the area. For restoration, they learned to care for the seedlings, condition the plots and the use of hydrogel. For interpretive guiding, they learned to transmit what they observe in nature to each audience, emphasizing on conservation.

3.2. Workshops were designed and addressed at environmental teachers and professors, park guards, students and community members, so that their capacities are increased and they could serve as replicators on environmental information to their students and visitors.

3.3. Visitors to our field site were guided through the interpretive nature trail, providing information on the importance, challenges and efforts to conserve Macanao's biodiversity.

Outputs and Results

Objective 1. Nest design, monitoring and surveillance.

1.1. 12 artificial branch nests were installed.

1.2. 13 artificial PVC nests were installed.

1.3. 8 of the branch and 5 of the PVC artificial nests have been continuously used by *A. barbadensis* since the installation and until August 2013 (see pictures on Appendix 2).

Objective 2. Dry forest restoration.

2.1. 16 plots of 12.5 x 8 m (a total of 1,600 m²) were restored, using species that are relevant for *A. barbadensis* as food and nesting sites.

2.2. 640 seedlings were planted, 40 on each plot (see pictures on Appendix 3).

Objective 3. Environmental education and local capacity building.

3.1. 5 men from local communities were trained as biomonitors.

3.2. 3 workshops were addressed at environmental teachers, covering the topics of Macanao biodiversity, plant nurseries and restoration with local wild species and the role of protected areas for conservation. The workshops were attended by 32 teachers, 6 community members, 1 plant nursery keeper, 4 members of INPARQUES and 2 environmental management professors and 4 students from Universidad Bolivariana de Venezuela.

3.4. A manual on plant nursery maintenance was provided to workshop attendants, so that they can create plant nurseries cared for by their student's environmental brigades (Appendix 4).

3.5. A manual on protected areas as a conservation tool was provided to workshop attendants, so that they can see the value of formal protected areas and our field sites as an alternative, given the local difficulties over the creation of a legal protected area (Appendix 4).

3.6. A coloring book of the birds of Macanao was produced and distributed throughout the 1st and 2nd grade of elementary schools and public libraries of Macanao (Appendix 6).

3.7. The yellow-shouldered parrot festival has continued to be supported, aiding schools and communities with organization and logistics, and printing a promoting poster for each edition (Appendix 5).

Achievements and Impacts

5 years have passed since the activities of the project were completed and broader impacts are already clearly visible on Macanao.

Objective 1. Nest design, monitoring and surveillance.

Over the past seven years, 13 of the artificial nests installed during the project have been continuously used by *A. barbadensis*. This has allowed the recruitment of 100 more parrots, which represent 20% of the 489 fledged since 2004 and a mean of 42% increase on the total fledged compared to natural nests only since 2007 (Table 1).

Table 1. Number of parrots fledged and poached, 2004–2013. Interventions were added (+) or subtracted (-) each year, on top of those existing previously. On 2007 begins implementation of artificial nests.

Year	Intervention	Fledged parrots (from artificial nests)	Poached parrots
2004	Environmental education + Biomonitors	25	32
2005	+ Foster nests + Pilot assisted breeding	56	12
2006	+ Assisted breeding	72	0
2007	+ Artificial nests	23 (0)	34
2008	+ Veterinary + Municipal police	53 (18)	10
2009	+ National guard	66 (13)	1
2010	- Assisted breeding - Veterinary - National guard	40 (10)	8
2011	Same as 2010	50 (15)	16
2012	Same as 2010	27 (14)	0
2013	Same as 2010	77 (30)	0
Total		489 (100)	113
Mean values 2004–2013		49 (10)	11

Objective 2. Dry forest restoration.

The 16 plots restored with the project are now clearly visible patches of forest on La Chica. The trees have had an 86% survival rate, and until August 2013 reach 3 to 5 meters tall, depending on the species. Measurements of the recruitment of other plant species and interactions with fauna on the plots are currently ongoing. The restoration method developed for these plots has already been applied on other plots and degraded areas of Macanao, further proving its efficiency.

The workshops on plant nursery and restoration bolstered other groups into restoration efforts, mainly Universidad Bolivariana de Venezuela has combined the protocol used in the project with other techniques, and also 3 plant nurseries have remained active on the schools of Macanao.

Objective 3. Environmental education and local capacity building.

Biomonitors have continued to be the cornerstone for monitoring and surveillance of *A. barbadensis* breeding seasons. On 2011 they settled a cooperative, aiming to become an independent and sustainable business in Macanao, through monitoring, ecotourism and restoration services.

The interpretive nature trail has continued to be a success and even proved more popular than expected. Groups from every single elementary school on Macanao, as well as schools from the eastern portion of Margarita Island have visited the trail; trekking and biking groups, tourists, families and university students are also frequent visitors of the trail. Since 2008 the average number of visitors is estimated at 400 people per year, reaching a total of 2,400 visitors on the last 6 years.

A network of environmental teachers has continued to be active throughout Macanao. The plant nursery and protected area manuals, as well as the coloring books have been used by them as tools to provide environmental education to their students.

The Yellow-shouldered parrot Festival has reached its 20th edition, sending a message of biodiversity conservation to the communities of Macanao. The main event preceding the festival is a drawing competition for the festival poster, between children from each of the schools. The poster is used to promote the event and includes recognition to those who have believed in the conservation efforts around *A. barbadensis*.

Section 3:

Conclusion

Artificial nests are a successful strategy to increase fledgling recruitment on the wild population of *A. barbadensis*. The nests built with old branches seem to be preferred over those built with plastic tubes. Unfortunately, since poaching is still an important threat, artificial nests need to be combined with surveillance, in order to not become an easy prey for poachers and guarantee the successful recruitment of the chicks.

Training of local men as biomonitors seems to be a successful strategy to engage and transfer conservation responsibilities to local communities. More efforts need to be done to help them on their goal of becoming an independent, sustainable business.

Using the appropriate species and protocols, direct tree planting is a viable way to restore *A. barbadensis* habitat on a relatively short period of time, even under the harsh conditions of aridity and heat on Macanao.

Problems encountered and lessons learnt

The main difficulty continuously affecting the project is the damage caused by poachers. Not only taking the chicks, poachers often damage severely the nests, during one night before a breeding season had even begun, they damaged 10 of the artificial nests and on two occasions they have fired warning gunshots at the biomonitors. Biomonitors are not allowed to be armed and are always trained to avoid confrontation, but there's no denying the risks for them are very high. Some of them quit because of these reasons. The project always makes all possible efforts to keep authorities such as the local police or National Guard on the area, at least during the nights, which is when most poachers attack, but this isn't always possible. Since poaching is illegal, recurrent poachers have been reported to the police and in a few cases, they've been arrested and imprisoned for a few days, but no major police operation has ever taken place.

On the restoration efforts, the water scarcity is an important difficulty. Land owners have helped by installing water tanks near the plant nurseries, but this is often not enough to produce large numbers of seedlings and aid during the first months after trees are planted on the plots. Also, the amount of work required to have appropriate soil on the plant nursery bags, to do maintenance on the seedlings and to condition the plots for planting was higher than expected. This is why the area restored had to be reduced to 16 plots.

In the future

- Cooperativa Ecoguardianes, the enterprise created by biomonitors, will continue to be aided by Provita, until they achieve their goal of becoming a self-sustained conservation-related business. Alliances have begun to be made with experts on ecotourism, and they have shown great interest on training Ecoguardianes and helping establish a network of community-based tourism in Macanao.
- Breeding seasons will continue to be monitored and surveyed and nests will continue to be repaired, by the Ecoguardianes, hired by Provita.
- Families in Macanao have been recently trained to produce the trees and join Ecoguardianes to provide restoration services as a sustainable business. Several potential clients have already been detected and some are under negotiation in order to conduct the restoration of larger plots during 2014.
- Environmental teachers will continue to be encouraged and strengthened to conduct environmental education activities and promote environmental brigades among their students.

Section 4:

Appendices (attached on separate documents)

- 1) Account of income and expenditure.

Itemized expenses	Total CLP requested (USD)	Total CLP used (USD)
PHASE I - PROJECT PREPARATION		
Administration		
Communications (telephone/internet/postage)		98,42
Environmental education & capacity building strategy	500,00	
Other: (building personnel & field assistant)	1.700,00	
Equipment		
Scientific/field equipment and supplies (Please detail: nest building & plant nursery materials)	2.700,00	3.882,65
Boat/engine/truck (maintenance)	1.000,00	51,99
PHASE II - IMPLEMENTATION EXPENSES		
Administration		
Insurance		407,14
Transportation		
Fuel		54,65
Field vehicle maintenance		36,14
In the field (\$16 per day for 5 people * 42 days)	3.360,00	2.908,84
Transportation	560,00	326,79
Customs and port duties		0,47
Workshops		
Outreach/education activities and materials (brochures, posters, video, t-shirts, etc.)	800,00	
PHASE III - POST-PROJECT EXPENSES		

Administration		
Administration	1.623,00	1.614,41
Report production and results dissemination	200,00	
Total	12.443,00 *	9.381,50

* Although the requested amount was US\$ 12.443,00, the amount granted was US\$ 9,375.00.

- 2) Artificial nests pictures.
- 3) Plot restoration pictures.
- 4) Environmental education manuals (protected areas & plant nurseries).
- 5) Yellow-shouldered parrot festival posters.
- 6) Copies to the following papers and publications by team members:

- Briceño-Linares J. M. (2010). Nidos artificiales como una estrategia de manejo para la conservación de la cotorra cabeciamarilla (*Amazona barbadensis*) en quebrada La Chica, península de Macanao, estado Nueva Esparta. 229-234pp. En: R. De Oliveira-Miranda, J. Lessmann, A Rodríguez-Ferraro & F. Rojas-Suárez (eds.). Ciencia y conservación de especies amenazadas en Venezuela: Conservación Basada en Evidencias e Intervenciones Estratégicas. Provita, Caracas, Venezuela, 234 pp.
- Briceño-Linares, J.M., Rodríguez, J. P., Rodríguez-Clark K. M., Rojas-Suárez F., Millán P.A., Vittori E.G. & M. Carrasco-Muñoz. (2011). Adapting to changing poaching intensity of yellow-shouldered parrot (*Amazona barbadensis*) nestlings in Margarita Island, Venezuela. Biol. Conserv. Biological Conservation (144)1188–1193 pp.
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- Sucre, Bibiana; Briceño-Linares. José M.; Giraldo. Diego y Rojas-Suarez. Franklin; (2012). Participación Comunitaria en la Conservación y Uso Sustentable de la Diversidad Biológica de la Península de Macanao, Isla de Margarita. 1er Congreso Venezolano de Ciencia, Tecnología e Innovación en el marco de la LOCTI y del PEII. Caracas, Venezuela. 23-26 septiembre 2012.
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