

## MANAGEMENT AND CONSERVATION OF THE LARGE MACAWS IN THE WILD

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**Resumo.** – Manejo e conservação das grandes araras na natureza. – Araras e papagaios (Psittaciformes) representam um dos grupos de aves mais ameaçados do mundo. Por séculos, araras foram capturadas por suas penas e para serem usadas como animais de estimação. Os principais fatores que ameaçam as araras são a destruição de habitat (perda e fragmentação), caça clandestina ou captura para o comércio (penas, ovos, filhotes, adultos). Outros fatores importantes são endogamia e distribuição geográfica restrita, especialmente para populações pequenas, especialização da dieta e hábitos, baixa taxa reprodutiva e grande tamanho corporal que os predispõe à extinção. O objetivo deste trabalho é resumir alguns dos estudos de campo conduzidos com grandes araras da América Central e do Sul durante os últimos anos, e descrever as atuais atividades de manejo e conservação conduzidas com araras azuis (*Anodorhynchus hyacinthinus*) no Pantanal Sul, através do Projeto Arara Azul.

**Abstract.** – Macaws and parrots (Psittaciformes) represent one of the world's most endangered groups of birds. For centuries, macaws have been captured for their feathers and to be used as pets. The main factors threatening macaws are habitat destruction (loss and fragmentation), poaching or capture for commerce (feathers, eggs, chicks, adults). Other important factors are endogamy and restricted geographic distribution, especially for small populations, diet and habitat specialization, low reproductive rate, and their large body size which predisposes them for extinction. The objective of this paper is to summarize some of the field studies conducted on large macaws of the South and Central America during recent years, and describe the management and conservation activities currently conducted on the Hyacinth Macaw (*Anodorhynchus hyacinthinus*) in the South Pantanal, as part of the Hyacinth Macaw Project. *Accepted 21 February 2004.*

**Key words:** Macaws, management, conservation, Scarlet Macaw, Red-and-green Macaw, Great Green Macaw, Lear's Macaw, Hyacinth Macaw, Peru, Costa Rica, Brazil.

### INTRODUCTION

Macaws and parrots are some of the most impressive species of tropical birds. Because they are beautiful, with many colors, because they adapt to captivity, and because they can imitate the language of people and interact with them, the parrots (Psittaciformes) represent one of the world's most endangered groups of birds (Snyder *et al.*

2000). Human interest for the macaws is so old that, for centuries, they have been captured for their feathers and to be used as pets.

Because of their great popularity, nine macaw species are considered as vulnerable or endangered, and two are thought to be extinct in nature. The Glaucus Macaw (*Anodorhynchus glaucus*) disappeared in the last 50 years. Only one Spix's Macaw

(*Cyanopsitta spixii*) was known to be living in the wild until recently, but it disappeared in October 2000. However, some 60 individuals are still living in captivity around the world.

The main factors threatening macaws are habitat destruction (loss and fragmentation), poaching or capture for commerce (eggs, chicks, adults) and collection of feathers (Collar & Juniper 1992, Guedes & Harper 1995, Snyder *et al.* 2000). Other important factors are endogamy and restricted geographic distribution, especially for small populations, diet and habitat specialization, low reproductive rate, and their large body size which, according to Galetti *et al.* (2002), predisposes them for extinction.

One of the goals of conservation biology is to maintain viable populations in their natural environment. There is lack of knowledge about the basic biology of many parrot species, mainly because their nests are hard to find, and the species are not easy to be monitored and studied at the nests. There is a lack of trained people and resources are limited. According to Beissinger & Snyder (1992), many of the basic questions to be answered about behavior, life history and ecology are fundamental in the ecological theory and conservation. On the other hand, for the above-mentioned reasons, macaws can be considered “flagship” species for promoting the conservation, not only of one species, but of the environment as a whole.

My objective is to summarize some of the field studies conducted on large macaws of the South and Central America during recent years. I also want to describe the management and conservation activities currently conducted on the Hyacinth Macaw (*Anodorhynchus hyacinthinus*) in the South Pantanal, as part of the Hyacinth Macaw Project of Universidade para Desenvolvimento do Estado e da Região do Pantanal (UNIDERP).

## RESULTS

*Costa Rica.* According to Hilburn & Higgins (2000), in 1998, the Nature Restoration Foundation (NRF) acquired a property and built facilities for a conservation project on the Scarlet Macaw (*Ara macao*) having as a goal the reintroduction of birds raised in captivity, confiscated or donated, aiming at the establishment of a third population in the country. The liberation center is located in southwestern Costa Rica. The specific objectives are 1) to increase the Scarlet Macaw survival, 2) to develop a pre- and post-release protocol, 3) to encourage ecotourism, and 4) to promote environmental awareness. This is an example of reintroduction program. In 1999, 18 individuals were released. Most were monitored with a radio-transmitters and 12 survived. Another project was developed with the Scarlet Macaw in Costa Rica by Marineros & Vaughan (1995) in the Carara Biological Reserve. They studied reproductive biology, developed artificial nests, and evaluated the impact of ecotourism. Besides success with the use of artificial nests, they succeeded in having local people involved in the conservation of the species.

In Costa Rica, there is also a project conducted by the Tropical Science Center on the conservation of the Great Green Macaw (*Ara ambigua*). According to Arias *et al.* (2002), the project began in 1994 with the objective of studying the natural history of the Great Green Macaw to generate information that can be applied to the protection of the species. In 9 years, much was learned about ecology reproduction, primary food resources, habitat, and distribution, including migration. As a consequence, in 2002, the Biological Corridor San Juan-La Selva, an area of 60 thousand ha, was implemented to protect the nesting places and migration flyway of the Great Green Macaw in Costa Rica, as far as the Nicaragua border, where the species is

also found. The researchers verified an increase of the breeding population and monitored the post-nesting migratory movement with the use of radio-transmitters. In addition, the research group dedicated hard work convincing the legislators to promulgate laws for the protection of the habitat and nesting sites of the species.

*Peru.* In Peru, studies were conducted ) in the Manu Biosphere Reserve and Tambopata-Candamo Reserved Zone with three large macaws, the Blue-and-yellow Macaw (*Ara ararauna*), the Scarlet Macaw, and the Red-and-green Macaw (*Ara chloroptera*), with the objective of evaluating and increasing reproductive successes (Nycander *et al.* 1995). More recently, similar studies were carried out in the Tambopata Research Center and the Amazonas Lodge (Brightsmith, 2000). The objectives of these studies were to develop techniques for increasing the reproductive success and helping other more endangered species. The survival and reproduction of hand-fed macaws reintroduced during 1992–1995 in the Tambopata Research Center have been evaluated; the structure of nests that can be used by macaws has been designed and tested; the seasonal and annual variation in the use of clay licks by macaws, and the impact of ecotourism, have been evaluated.

*Brazil.* In Brazil, studies dealing with the conservation of the Lear's Macaw (*Anodorhynchus leari*) have been carried out by the Brazilian Government through CEMAVE (Centro Nacional de Pesquisa para Conservação de Aves Silvestres). The general objective of the project was to ensure the conservation of the species which occurs exclusively in the Raso da Catarina region, in northwestern Bahia, and guarantee the establishment of a viable wild population (Nascimento pers. com.). The current population, estimated to 280 individuals, feeds basically on licuri coconuts (*Syagrus*

*coronata*). The food shortage is one of the main threats to the survival of Lear's Macaws. In 2002, a research station was built in Jeremoabo-BA for the development of environmental education activities to restrain hunting and illegal capture and protect the species. Other activities to be developed for the conservation of Lear's Macaws include nest monitoring, studies of reproductive biology, periodical counts, and habitat management to ensure the long, medium and short term food supplies for the species, and continuity in the protection of its habitat.

Finally, an ongoing research that started in 1990 is devoted to the breeding biology of Hyacinth Macaws. This project turned out to be a model for the management and conservation, not only of Hyacinth Macaws, but also of other parrots (Guedes 1993). It has for objective to promote the long and medium term conservation of the species, and the awareness in the general public of the conservation of Pantanal's biodiversity. The studies conducted in the South Pantanal helped to clarify many ecological questions regarding feeding, reproduction (Guedes 2002, Guedes & Toledo in prep.), competition, habitat, survival and chick mortality (Seixas *et al.* 2002), behavior (Schneider & Guedes in prep.), nests (about 345 natural nests), predation, sickness (Raso in prep.), movement and threats that were reducing the wild population. Taking into account the results of these studies, artificial nests (about 180) were installed and cavity management (about 80 per year) has started. From 2000, with the approval of the Committee for Hyacinth Macaw Conservation, coordinated by IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis), the management of eggs (artificial incubation) and chicks (feeding only in the first days, reintroduction or translocation) started to increase the reproductive population and the number of chicks that survive and fledge every year. Today, it is possible to

say that the Hyacinth Macaw is one of the best known parrots in the wild. The data collected and the analysis of the results generated several publications, masters and doctoral theses, covering biology, genetics, veterinary and communication subjects. The involvement of local inhabitants was sought from the beginning and they acted as project collaborators. As a result, the Hyacinth Macaw population more than doubled in the South Pantanal region and started to expand to other areas (estimate of 6500 individuals in the wild). Ornithologists and naturalists of other places have been trained and received information from the Hyacinth Macaw Project/UNIDERP to implement research in other regions such as Mato Grosso (1998) and Bolivia (2003). Besides that, ecotourism activities (9 of the 45 farms monitored by the project are hotels or lodges) were promoted, as well as incentives for the confection of hand-made items and the appreciation of local customs and culture, so that local inhabitants feel proud and get involved in the conservation of the environment where they live, with the macaws.

## CONCLUSION

Some studies of the management and conservation are being done with the large macaws in nature but there is still a lot to be done, especially with some more critical species and with reduced populations, like the Red-fronted (*Ara rubrogenys*) and Blue-throated (*Ara glaucogularis*) macaws in Bolivia. Most work that is being done is successful, especially because the projects are long-term, and because they seek the involvement of local people. The researchers are persistent and dedicated and work hard to achieve their goals. What is lacking is more people in the field, because there is still much to be done.

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