







The species

Hyacinth Macaw

Scientific classification:

Species: *Anodorhynchus hyacinthinus*

Genus: *Anodorhynchus*.

Family: Psittacidae

Order: Psittaciformes

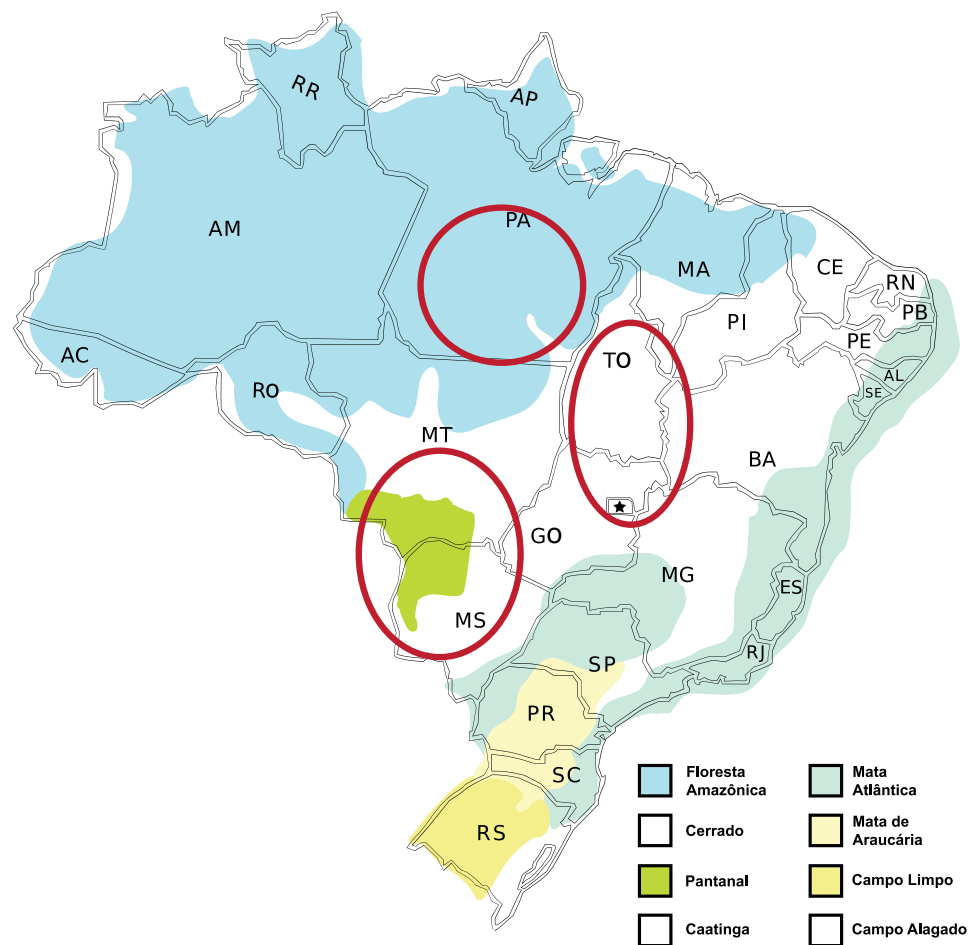
Class: Birds

Phylum: Chordata

Kingdom: Animalia



Photo: Flavia Bouch



Macaws belong to the same family as parrots and parakeets, called Psittaciformes. They are known for their colorful plumages, for being very intelligent, for their ability to imitate the human voice. The Hyacinth Macaw is the largest representative of this family, reaching a meter in length from the tip of its beak to the tip of its tail and weighing about 1.3 kilograms.

It is a South American bird, almost exclusively Brazilian, and when the Portuguese arrived in Brazil, it already inhabited this country and today can be found in three regions: Pantanal (Mato Grosso do Sul, Mato Grosso, Bolivia, and Paraguay); North (Pará); and Gerais (Goiás, Tocantins, Maranhão, Bahia, Piauí, and Minas Gerais), but today, the largest population is found in the Pantanal.

They are monogamous birds, that is, they form a constant pair, which only separates with the death of one of the individuals. They do not have sexual dimorphism, which means that we cannot see the difference between the male and the female just by looking at the bird. In nature, they do not live alone; they are found in pairs, families, flocks, or groups that can vary from two to hundreds individuals.

In the Pantanal, the hyacinth macaws feed on the nuts of two palm trees, the Acuri (*Scheelea phalerata*) and the Bocaiúva (*Acrocomia aculeata*). The feeding is usually done in groups, as a way to increase protection.



Acuri

Bocaiúva





Photo: Fernanda Fontou

Manduvi

The peak of egg laying goes from August to September and this period lasts an average of 28 days. After the eggs hatch, the parents take turns caring for the nestlings for about 100 days until they are ready to fly. Most chicks leave the nest between December and January.

On average, the laying of two eggs per nest is asynchronous, that is, the female lays one egg and about three to five days later lays another, which can vary up to 30 days. This causes the nestlings to be born at different intervals and at different ages. And then a problem arises, where the youngest chick cannot survive and disappears from the nest within a few days. In cases where there is a difference of more than three days, the chance of survival of the second nestling is practically zero.

The parents' care does not end when the nestling takes flight, as it remains under parental care for about a year, causing most couples to breed only every two years. Until they are six months old, the chicks will still receive food from their parents, because they do not have enough strength in their beaks to break the seeds and remove the nuts.

In the palm trees, on the fences or on the ground, an individual always stands sentry and at any noise or strange movement, gives a call and all the macaws fly away. They can be observed feeding more frequently in the early morning and late afternoon.

In the Pantanal, 95% of the hyacinth macaw nests are found in a single tree species, the Manduvi (*Sterculia apetala*). The other 5% are made in other trees such as angico branco, ximbuva, tarumã, jatoba, among others. The nest is made in the hollows of these trees that arise most of the time when a branch falls or when another bird starts a small cavity. The Hyacinth Macaws do not start a cavity, but they have the ability to enlarge a small hollow quickly. For this function, they are called environmental engineers. Their nests are usually disputed by other birds, such as the red-and-green macaw, hawk, toucan, owl, wood duck, among others. Because of this, there is a great dispute for the occupation of the nest cavities in the same reproductive period. The reproduction of the Hyacinth Macaw starts in July and can extend until March of the following year. The incubation of the eggs is done by the female, while the male is the sentinel and responsible for searching for food.



Photo: Project Hyacinth Macaw Air Force



Photo: Cezar Corrêa

Photo: Bruno Carvalho



The Threats

In the early 80s, the situation of the Hyacinth Macaw was critical in nature: with an extremely small population, around 2,500 individuals. It was included in the Red Data Book of the IUCN (International Union for Conservation of Nature), in Appendix I of CITES (International Organization that controls the traffic of fauna and flora threatened with extinction), and in the Official List of Species of Brazilian Fauna Threatened with Extinction.

Research shows four main causes for this species becoming endangered:

Deforestation of their natural habitat

Because they inhabit large regions of agricultural activity, the felling of trees to plant exotic pastures removes from nature not only the specific trees for nesting but also those that provide them with food. However, it is possible to reconcile conservation with sustainable development and this is what the research and management activities of the Hyacinth Macaw Project have been showing in the Pantanal.

Illegal Trade

Smugglers captured the hyacinth macaws for sale in the national and international trade. Until the 1980s, it is estimated that more than 10 thousand individuals were taken from the wild for this purpose. Today this threat has been reduced, especially in the Pantanal, where the efforts of the Hyacinth Macaw Project have managed to reverse this situation.



Hunting for use in indigenous handicrafts and adornments

Because of the beauty of their plumage and because they also inhabit regions close to indigenous reserves, they are hunted for making handicrafts and ornaments. An indigenous headdress, previously used only in cultural rituals, is now sold and requires the death of at least 30 macaws to be made. Today the indigenous populations can continue to use the feathers and other fauna artifacts for their cultural rituals, but the sale of this material is prohibited. Fortunately, in the Southern Pantanal region, this is no longer the case.



Natural factors of the species

A natural characteristic of the Hyacinth Macaws is their low reproductive rate: one chick, on average, every two years. This, plus the loss of eggs and chicks by predation, poor embryo formation, diseases, sudden changes in climate variations, are factors responsible for the slower growth of the population. Besides these characteristics, the Hyacinth Macaw is specific about the use of natural resources, being dependent on three plant species in the Pantanal: two palm trees for food and one tree species, the Manduvi, for reproduction.



80% dos animais capturados são encontrados em uma única espécie de árvore: a Mandacari. A espécie fornece abrigo e alimento para diversos animais. Para auxiliar na reprodução, é necessário proteger e plantar mais árvores. O Projeto Árvore Abel não só ajuda na recuperação e manejo das áreas naturais, como também instala redes artificiais.



Photo: Cezar Corrêa

The Agent

The Hyacinth Macaw Institute

The Hyacinth Macaw Institute was created in 2003, with one of its objectives being to develop research, management, education, income generation, and tourism projects for conservation. However, involving and sensitizing the community living around the threatened biomes with nature conservation projects has been one of the great challenges of today.

Presenting possible and viable solutions for sustainable development has been, in the medium and long term, the solution to the problems in some regions. Poverty, misery, and lack of information are closely related to the misuse of natural resources.

On the other hand, when there is an initiative to involve the local community, providing information and simple solutions as an alternative source of income (such as the production of handicrafts or observational tourism, for example), this community starts to analyze its situation, its actions, and those of its leaders in a more critical way, seeking solutions.

The Hyacinth Macaw Project

An initiative of biologist Neiva Guedes that began more than three decades ago. In the beginning, it was just a way to search for information and solutions to take this species out of extinction, and with time the need to work with other species that cohabit with it has emerged.

The main goal of the Hyacinth Macaw Project is to maintain viable populations of Hyacinth Macaws, in the medium and long term, in the wild, and to promote the conservation of biodiversity and the Pantanal wetlands as a whole. Through the project, the biology and ecological relationships of the species with its natural environment are studied. As a result, nest management is carried out for the conservation of the macaw and other species that use large cavities.

Each year there are specific objectives to be worked on in the field, but all are related to the biology, ecology, reproduction, behavior, habitat requirements, management and environmental education for the conservation of the Hyacinth Macaw and other species such as toucans, hawks, owls, wood ducks, bats, among others, that live with it. Studies with the feeding palms and the nest tree are also carried out.

Through informal environmental education, together with ranchers, farmers, children and tourists, animal trafficking has been significantly reduced. Farmers and ranchers also help when they voluntarily report the discovery of new nests, the occurrence of flocks feeding or roosting on their properties.



Photo: Flavia Bouch



Photo: Fernanda Fontoura

The systematic work

Monitoring natural and artificial nests in the Pantanal.

One of the most important and constant activities of the Project is nest monitoring. This activity is one that demands more energy and financial resources, because it requires a trained and skilled team to walk through the field and climb trees in search of nests that are being explored or are in use by the Hyacinth Macaws or other species. Every day the team goes out into the field to monitor the natural and artificial nests. They check if the nests need management/recovery, if there is egg laying, and note the number of Hyacinth Macaws in the region. Any other occurrence observed in the nests is noted and, depending on the need, new actions are implemented. Since the nests are usually in tall trees, the technique used for monitoring the nests is rappelling. For this action the following materials are used: chair (Bouldrier), vest, elevators, pedals, carabiners, carabiners with locks, ropes, eight brake, tubular tape and ribbons.

Installation of Artificial Nests

With the results of the first field research, it was observed that one of the main factors limiting the growth of the Hyacinth Macaws was the lack of large cavities for reproduction. There were few tree species with the capacity to form cavities and, in addition, nests were being lost to burning, deforestation, and excessive trampling by cattle. Thus, management activities such as experimentation with artificial nests began in the first years of the project. Tests were made with different materials, models and sizes of nests until the model that has been used until today was reached. They are made with native, exotic or commercial species. At first, we try to use fallen trees from the farm itself. If they are not available, boards are bought to make the artificial nests. On the edge of the nests, reinforcements are placed so that the macaws can pinch, a typical behavior that they have to prepare the nest bed for egg laying.



Photo: Cezar Cúrea

Management of Artificial and Natural Nests

The nests are true homes for the Hyacinth Macaws that always return to the same places to reproduce. However, as time goes by, they become worn out and need management to continue to be successfully used by the Hyacinth Macaws. When making the nest bed, the macaws pinch the edge to remove small pieces of wood and this makes the opening of the cavity larger, facilitating the entry of rainwater and predators.

Management with boards, wires and metal plates: these are punctual actions, usually carried out during the reproductive season, which consist of covering holes made by the macaws themselves. The management of nests is carried out in order to increase the life span of the natural cavity or artificial nest. The addition of wood chips reduces the vertical depth of the nest, facilitating parental access and the flight of the nestlings.

Chick Monitoring

Monitoring nestlings is important to follow their development and survival in the nests. They are monitored from egg to flight, mostly by photographic recording. Just before they fly away, they are removed from the nests and taken to the ground in a bucket so that they can be inspected, analyzed, measured, weighed, marked,

and have biological material collected. The identification of the sex is done later by analysis of a blood sample. They are marked with a stainless steel ring, on the foot, and a microchip, with a bar code, in the chest muscles.

Monitoring of other species

Besides the hyacinth macaws, other species, such as the red-and-green macaws, blue-and-yellow macaws, toucans, hawks, owls, ducks, bats, and even the main plant species, such as the acuri, bocaiúva, and manduvi, are monitored and studied by the Hyacinth Macaw Project team or associated researchers.



Photo: Keiany Ramalho



Photo: Fernanda Fontoura



Photo: Lucas Rocha





Results

Since the beginning of the Project, more than 500 natural nests have been registered and more than 500 artificial nests installed in the Pantanal and Cerrado. Currently, 310 nests are monitored per year. The results are the increase in the number of breeding pairs each year and the increase in reproductive success. With this, the hyacinth macaws are not only increasing but also expanding, and it is possible to find them in the cities around the Pantanal, such as Aquidauana, Miranda, Rochedo, Rio Negro and Coxim.

In more than three decades of the Project, hundreds of articles have been published in national and international journals, books (Portuguese/English), book chapters, papers and lectures published in Brazil and worldwide. Neiva Guedes, along with associated researchers from USP, Unicamp, Unesp, UFMS, UFPR, UNB, and Anhanguera- Uniderp, have oriented countless master's theses and doctoral dissertations, fomenting interest on the subject, opening other fields of research, and acquiring international recognition on the work to prevent the extinction of a beautiful animal species.



Awards and honors

Neiva Guedes was the only Brazilian to receive the honor:

Grand Master of the Order of the Golden Ark 2004, an honorary title awarded by His Royal Highness Prince Bernhard of the Netherlands in recognition of people dedicated to nature conservation. Medal of Knight of the Order of The Golden Ark 2004 awarded at Soestdijk Palace, Netherlands, on May 07, 2004.

In addition to the following awards:

Pieter Oyens Award, to encourage young conservationists, up to 30 years old, offered by the WWF-US. Neiva Guedes was chosen by an International Committee for her contribution to nature conservation in Brazil, in July 1995.

Honorable Mention in the Nature and Society Program, offered by the WWF - World Wide Fund for Nature, with the support of USAID - United States Agency for International Development, and the Ford Foundation. Over a three-year period, this Program included 70 master's theses and 57 doctoral dissertations. In 1997 it awarded the six best papers and Neiva Guedes received the Honorable Mention in recognition of the technical quality, innovation and relevance of the master's dissertation, in July 1997.

Trophy Woman Who Makes the Difference in Environment, for the performance and results obtained in front of the Hyacinth Macaw Project-UNIDERP, offered by BPW-Campo Grande, Association of Business Women and Professionals of Campo Grande, Campo Grande-MS, in December 1998.

Neiva Guedes received the **Hyacinth Macaw Trophy**, for her dedication and work towards the conservation of the hyacinth macaws in nature, offered by AMAS - Associação Sul Matogrossense de Atacadistas e Supermercados, during the 21st Expo-Ecos Exposição e Encontro Centro-Oeste de Supermercados, Campo Grande - MS, March 27, 2001.

The Hyacinth Macaw Project received the **Finep Award for Technological Innovation** 2002, Midwest Region, with the "Hyacinth Macaw Conservation in the Pantanal Sul-Matogrossense", developed by UNIDERP.

Trophy awarded in Cuiabá, September 29, 2002.

Super Ecology Prize 2002, second place in the FAUNA/NGO category, awarded by SUPER Interessante magazine, São Paulo, April 2002.

Eco Citizen Award 2004, an award that recognizes the work, attitudes, and actions of personalities and companies that collaborate for the construction of a more autonomous, equitable, and sustainable society.

Von Martius Environmental Award 2004, trophy awarded by the Chamber of Commerce and Industry Brazil-Germany, São Paulo, recognizes the merit of initiatives from companies, public authorities, individuals, and civil society that promote economic, social, and cultural development with respect for the environment.

Ecology and Environmentalism Award, Trophy granted to the Hyacinth Macaw Project/UNIDERP by the City Council of Campo Grande - MS, in honor of relevant services rendered, June 10, 2005.

Medal of Legislative Merit awarded by the Legislative Assembly of the State of Mato Grosso do Sul, in recognition of his dedication and the extraordinary work done in the socio-political-economic context, which contributed in an outstanding way to the development and projection of the State of Mato Grosso do Sul, on 11/30/2009.

MS Cultural Merit Certificate, granted by the Mato Grosso do Sul State Government, for the relevant services rendered to the South-Mato Grosso culture in Bonito-MS, during the 11th Bonito Winter Festival, July 28, 2010.

OAB/MS Environmental Highlight Award 2012, conferred by the Brazilian Bar Association, Mato Grosso do Sul Chapter, by proposition of the Environmental Commission, for active contribution to the environmental issue.

In commemoration of the **International Day of Girls and Women in Science**, Neiva Guedes won a card portraying her as a character from Turma da Mônica - Donas da Rua da Ciência by Maurício de Souza and Productions, on February 11, 2020.





The benefactor

ADOPT A NEST AND HELP SAVE A SPECIES FROM EXTINCTION!

You too can be part of this project!

"Adopt a Nest" is a campaign of the Hyacinth Macaw Project, which aims to raise funds to continue the studies of biology, reproduction, behavior, habitat requirements, management and environmental education for the conservation of the Hyacinth Macaw in nature. These funds will be used to pay for monitoring, nest management, and installation and reinstallation of artificial nests.

By participating in the campaign, you will be contributing to the maintenance of the Pantanal biodiversity: both the hyacinth macaws and several other species of animals that occupy the same cavities. Each nest is checked, on average, once a month and all the data is recorded in specific spreadsheets. Your participation in this campaign is of fundamental importance. Without your help it will be practically impossible to maintain this important work. The person or company that adopts a nest will be a partner of the Hyacinth Macaw Project in the conservation of the species.

The sponsor will participate in the publicity of the Campaign and will be able to announce that he/she is GODFATHER/ GODMOTHER OF A NEST FROM THE CAMPAIGN, during the duration of the adoption, as well as to use the brand of the initiative in certain advertising materials, including websites and banners (monitored and in agreement with the Regulation of the Institute's Campaign).

A lecture on the theme "Biodiversity as a tool for Sustainable Development" will be given to the public of interest (employees, partners and guests), on a date to be scheduled with the Institute's team.

He will receive an exclusive photo made by the Hyacinth Macaw Project team, in high definition, that can be used as a screensaver, post on social media or even print a poster, as well as other exclusive products of the project in a "welcome" kit.

In addition, the sponsor will receive periodic information about the adopted nest with images and information about the species with exclusivity and, when a nestling is born, the sponsor will be able to baptize it with the name of his choice.



Photo: Hyacinth Macaw Institute Archive



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