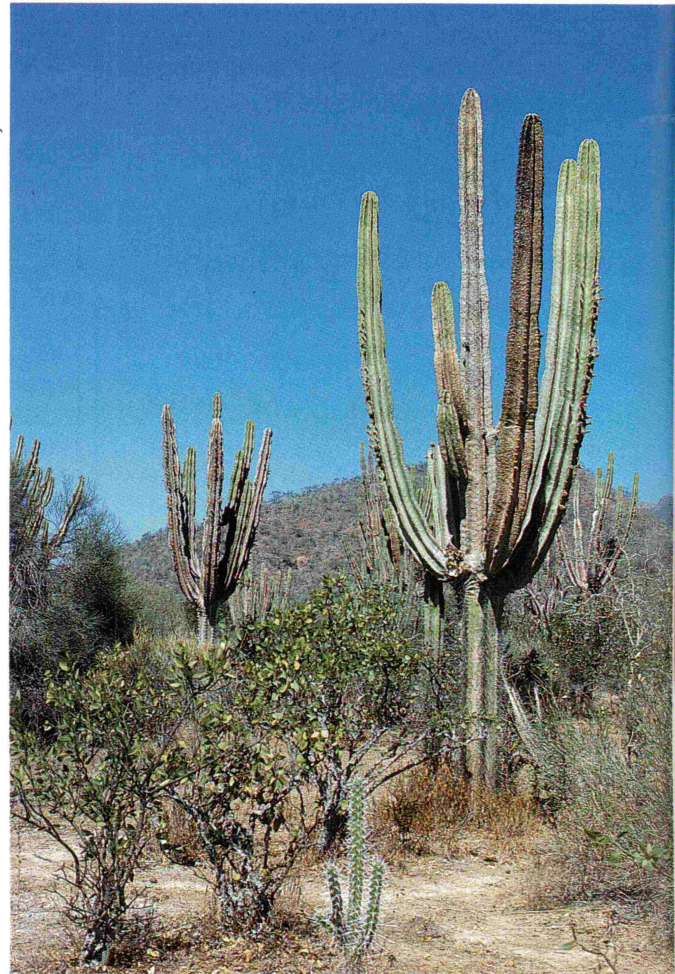


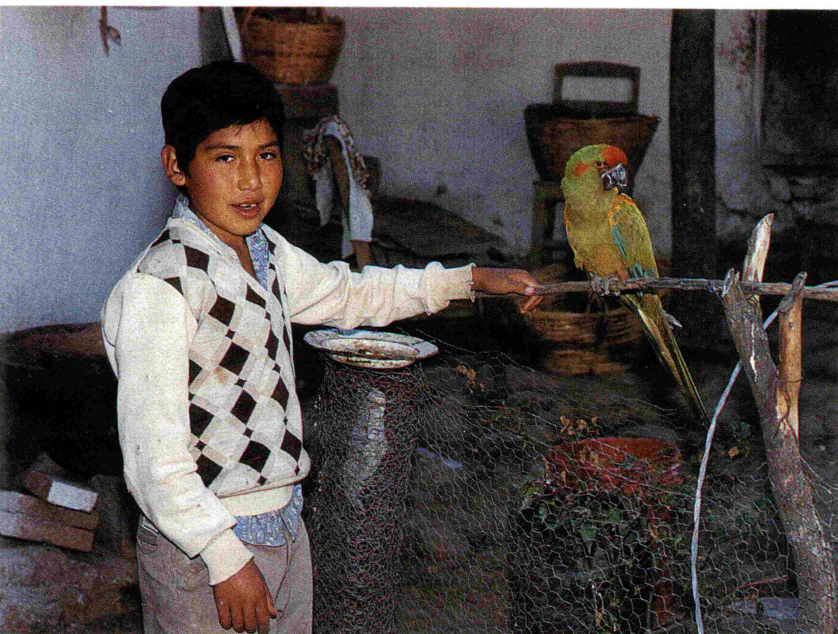
Adult pet Red-fronted Macaw at a home near Trigal, Department of Santa Cruz, Bolivia.



Valley floor near Trigal, Department of Santa Cruz, Bolivia, showing the mosaic of natural and human altered habitats. Red-fronted Macaws have adapted to this mixture and regularly visit fields to pick up corn and peanuts after the harvest.



Dry forest and shrubs with tall Cereus cacti south of Pulquina, Department of Santa Cruz, Bolivia. Notice the bare ground caused by overgrazing of domestic animals and the ensuing erosion.



Young Bolivian boy with his pet Red-fronted Macaw. He is very fond of birds, so his family regularly buys baby macaws for him to raise. He usually sells them for the equivalent of \$20.00 U.S.

The Red-fronted Macaw A Conservation Priority

(Part 2)

by Leticia A. Alamia, Ph. D. and John P. O'Neill, Ph.D.
Baton Rouge, Louisiana

In Part 1 of this article, we described the Red-fronted Macaw's preferred habitat and some of the circumstances surrounding our search for this beautiful bird endemic to the dry interandean valleys of Bolivia. Now we must examine the task we have set for ourselves. We are planning a project for which the goal is the restoration of the Red-fronted Macaw population in the wild. The following are some questions that come to mind in setting up such a project.

Some Population Questions:

- How many birds still exist in the wild?
- How many can their original home range still support?
- How many exist in captivity?
- Is the captive population producing sufficient replacement birds for the market?

Some Natural History Questions:

- What is critical for this species to satisfy its natural food requirements?
- Can critical missing food supply components be restored?
- What is critical for this species to reproduce successfully in the wild?
- Can reproductive requirements be met for existing and projected populations?
- Can critical existing reproductive and food supply components be protected?

Some Environmental Questions:

- To what extent is the survival of this species affected by deterioration of their original habitat?
- Can some deteriorated areas be restored?
- Can undamaged areas be protected?

Some Genetic Questions:

- Does the wild population have sufficient genetic diversity for the long-term survival of a healthy population?
- Does the captive population have sufficient genetic diversity for continued healthy propagation?
- Can captive propagation in Bolivia or the U.S. aid in restoring the wild

population?

Some Conservation Questions

- To what extent has the survival of this species been affected by the past legal and current illegal harvesting of birds for international trade?
- Can we design ecotourism and conservation education programs which will educate the Bolivian and American people about the Red-fronted Macaw?
- Can we initiate ecotourism and conservation education enterprises that will not only replace the income from international trade in live birds, but will exceed it and demonstrate the economic as well as aesthetic and cultural value of maintaining viable wild populations of Red-fronted Macaws and their habitat?

For the Future:

- Can we design a model propagation, recovery, and restoration plan for this species that can also serve in restoring other depleted wild species?
- Can we design model ecotourism and conservation education projects which will serve other threatened environments and species?

WOW—that's a lot of tough questions! How do we propose finding the answers? As we mentioned in the first article, we already have some information on this species. In addition, there are some real "pluses" in working with the Red-fronted Macaw.

First of all, this species does not have a wide natural distribution and there are estimates of the numbers of birds in the wild population. Although these estimates must be verified, they can provide us with a starting point. Some other positive factors in initiating this study are that captive propagation has been successful and therefore we have some knowledge of their requirements in captivity. We also have some knowledge of their food habits and natural history in the wild. Another big plus is that we are working with a species that has a generally pleasant relationship with

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the resident human population! Furthermore, and this is an enormous plus, we will be working with a government that has already made it clear that they want to protect their environment and biodiversity. All wild birds are currently protected by law from commercial capture and export in Bolivia! We also have USDA importation figures from the '70's and '80's to give us an idea of how many birds left Bolivia for the U.S., Europe and Japan during the height of legal exportation.

Information from many studies on populations of many different species leads us to believe that the international bird trade has, particularly over the past several decades, been responsible for marked declines in wild bird populations. Parrots and macaws are not only a major component of the bird trade, but are also particularly vulnerable because of the slow reproductive rates and high energy costs of producing and rearing a young bird to independence. The impact of the international bird trade has been reduced by Bolivia's giving legal protection to all fauna and flora and by the removal of the U.S. as a wildlife trading partner (credited with an 80% share of the trade) through the enactment of the Wild Bird Conservation Act of 1992. However, slow replacement rates and a concurrent deterioration in habitat will prevent some species from returning to their former population levels despite some relief from trapping pressures. Our current knowledge indicates that the Red-fronted Macaw is just such a species.

In initiating this study the American Federation of Aviculture is taking the lead in creating a model management program which will bring together the knowledge and skills of conservationists and aviculturists to restore the Red-fronted Macaw population to a robust, viable state and provide for a sustainable future. This project should also establish AFA as a leader in conservation as well as aviculture and should provide a guide for development of future AFA sponsored conservation programs.

The Red-fronted Macaw project is designed to run for approximately three years under joint AFA/Bolivian management and supervision with the idea that at the end of three years the entire project will be turned over to the Bolivians. AFA participation in some aspects of the project, such as a possible captive breeding program in Bolivia, may continue beyond the three year peri-

od. The following outline briefly describes the proposed development of the Red-fronted Macaw restoration project.

Year One

1. Begin a fund-raising effort to establish a financial basis for further planning and development of the project.
2. Recruit a trained and committed staff to direct the project.
3. Develop a working relationship with Bolivian governmental and non-governmental conservation agencies for management of the project.
4. Meet with international conservation agencies such as IUCN, The Nature Conservancy, and others for possible input into our project.
5. Meet in Bolivia with all agencies and personnel concerned with the project in order to formally finalize the project and draw up necessary written agreements.
6. Begin field studies, especially the detailing of the geographic range of the species, including an attempt to locate as many potential nesting cliff areas as possible and categorizing them as to likely suitability for actual nesting.
7. Set up and initiate computerized GIS (Geographic Information System) for the entire range of the macaw, and begin input of data gathered through field studies.
8. Put together a conservation education and ecotourism working group and make preliminary plans as to what needs to be done, including possible projects and how they are best initiated.
9. Begin contacting local communities about projects conceived under #8, get educational projects underway, and begin talking about ecotourism development and other

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means to bring income and pride into communities that protect their macaws.

10. Begin looking at land use patterns and considering ways in which these might be modified to benefit the macaws while still serving the needs of the local people.
11. Initiate a survey of captive population and begin genetic diversity study of same (both to be done in U.S.).

Upon reading the above 11 parts that we hope to get underway in the first year, it may seem like an overwhelming number of things to initiate, but in actual discussions and meetings many things may be covered at the same time. The project is not designed to be a series of different parts, but an integrated push to get the macaw population back on track and at the same time get the local communities to take pride in their birds so that they can benefit from them and have a tangible reason to protect them.

Year Two

By the end of the first year the main range of the macaw should be mostly documented and the GIS program well underway. Because of the extreme seasonality of the area where the macaws

live, we will have to ascertain the differences in summer and winter ranges, in food availability during the different seasons, and the importance of the nesting cliffs during the various seasons. The second year will still be important in determining the overall distribution of the Red-fronted Macaw. Other essential parts of the Year Two plan are as follows:

1. Get details of educational and eco-tourism programs ironed out and see them in force over as much of the area as possible (they may also be incidentally spread to areas not inhabited by Red-fronted Macaws, especially the educational portion).
2. Determine areas that need to be protected, especially around nesting cliffs, and do what is necessary to try to make this protection legal under Bolivian law.
3. Work on possible land use changes that can benefit the macaw, perhaps outlining them and turning them over to Bolivian conservation groups in their early stages.
4. Decide if a captive breeding program is needed or warranted and determine where it is best carried out.
5. Decide if a genetic diversity study is to be conducted on the wild population; and if it is warranted, it should be initiated.
6. All parts of the project with an end point should be near termination by the end of Year Two, except those initiated at the first part of Year Two. The foreign counterparts (U.S. and other such researchers) will begin taking a back seat, allowing much of the project to be run mainly by Bolivian colleagues.

Year Three

1. If a captive breeding project is necessary the first birds should be ready for release into selected wild areas.
2. Ecotourism and educational programs should be under the direction of local communities with input from Bolivian counterparts.
3. Overall management plan for the continued recovery of the Red-fronted Macaw should be finalized and turned over to Bolivian counterparts and institutions and agencies that will see it perpetuated.
4. Protected areas should be officially under Bolivian legal control, hopefully with local concern for enforcement of the area's status.
5. Foreign (U.S. and other) counterparts

will withdraw unless specific requests are made by Bolivian agencies for their continuance; in general the project will become 100% Bolivian and they will then be responsible for the ultimate fate of the Red-fronted Macaw.

Naturally it is easy to plan a project on paper in the comfort of one's office, but the realities are often not the same. We have planned the various years of the project based upon our experiences in Bolivia and other countries. Obviously some parts of the project may continue for many years, so we will always be looking for alternative sources of funding for them. We hope the Bolivian counterparts will look upon the AFA as an organization that is truly desirous of doing something positive for the conservation and restoration of this beautiful macaw.

With this information and our exploratory trip to Bolivia last summer, we have begun putting together this ambitious and exciting project to restore the Red-fronted Macaw population to a healthy level. Finding the birds was only a small part (the easiest and the most exciting part!) of our visit to Bolivia. The most time-consuming and the most important part was the "people part." We had to contact the many governmental and non-governmental people and agencies whose interest, assistance and cooperation would be essential to the success of the project. Of the agencies contacted, the primary government agency is the Dirección Nacional de la Conservación de la Biodiversidad, an agency aimed at protecting the biodiversity of Bolivia and critical in assisting with permits and generally simplifying and smoothing the path of any approved research project. We have tried to contact all the scientists who have done research on Red-fronted Macaws, and think that we have talked or written to most of them. We have a good group of Bolivian researchers who are anxious to get the project underway and also well-qualified U.S. counterparts who have the experience to guide their part of the project. Most of the proposed foreign participants have already done work with their Bolivian colleagues and are familiar with research in this part of the world. We want this project to produce results that will be a credit to AFA and to American aviculturists in general. This time we want the Red-fronted Macaw to come out as the overall winner! ➤



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