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Psitta Scene

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Cover Picture By BILL KING

A wild Mitred Conure (*Aratinga mitrata*) having a go at a mango in the Mizque valley, Bolivia. It is a widespread, highly successful parrot of the Andean foothills.

Extensive trapping and trade from Bolivia has made this species a common pet parrot in Europe and North America. The Mitred Conures and their relatives are among the most successful feral parrots now established in many rural areas around the world.

Thick-billed Parrots in Mexico

By CLAUDIA MACIAS-CABALLERO, ERNESTO C. ENKERLIN-HOEFLICH and MIGUEL ANGEL CRUZ

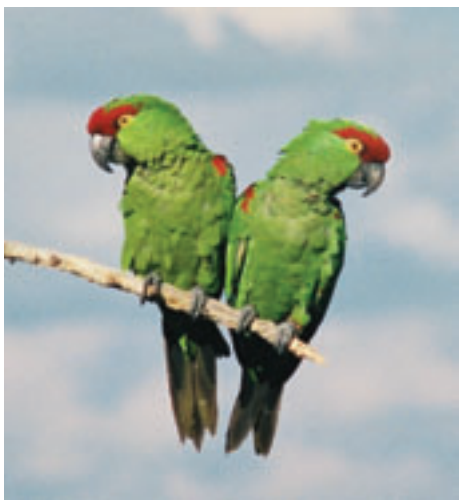
The Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*) is globally threatened and conservationists have emphasized the need for its protection in the IUCN's Global Parrot Action Plan. The species has long been considered endangered and is closely dependent on pine forests for food. Populations of the Thick-billed Parrot have declined markedly in Mexico mainly due to large scale felling of the pine forests of the Sierra Madre Occidental. The species has also been under stress from extensive trapping for the pet and aviculture trades. Thick-billed Parrot is not limited to virgin forest and can exist in selectively logged areas where suitable dead standing trees for nesting are available and trapping does not occur. While the parrots still persist in suitable numbers in the best remaining forested areas, all such areas will surely be cleared of their large trees in the near future unless conservation efforts continue and prove to be successful (Snyder et al. 1999, Enkerlin et al. 2000).

After eight years of study (1995-2002), we have gained a better understanding of the biology and ecology of the species and of important features to consider plans for its management and conservation. We have achieved the protection of the most important nesting area for the species: Tutuaca Forest Reserve (Cebadillas de Toasanachi). The old growth forests in Sierra Madre Occidental have suffered an immoderate tilling during more than 100 years up to a point where it is estimated that old growth forests have been reduced to less than 0.06% of their original distribution (Lammertink et al 1996). Therefore new conservation strategies have to be implemented, including improving the quality of life of local people, which reduces logging pressures and at the same time provides real economic alternatives.

Goals and objectives

Our goal addresses the broader framework of the Mexico Conservation Program. We use a practical, multiscale approach that includes species, ecosystems and landscapes to achieve conservation and sustainable development. Specific objectives include:

- Continue the study of breeding biology and habitat requirements for the species through monitoring nesting effort and nesting success in known breeding areas
- Document chick mortality causes
- Document the foraging ecology of the species, as well as document the chicks' diet components during breeding season
- Participate in the screening of wild bird diseases
- Document movements and site fidelity of some breeding pairs that have been translocated in the past two years within the current breeding range
- Continue the development of innovative, community-based conservation mechanisms through ecological planning, sustainable forestry, and habitat conservation plans
- Integrate high quality biological information in a general model framework for conservation, using charismatic flagship species



Methods

We have a research team located in the Sierra Madre Occidental. Field observation was the primary technique of study. Status and distribution studies for the Thick-billed Parrot involved on-the-ground surveys, interviews and counts at roosts, especially during the non-breeding season. We monitored active nests in all nesting areas using climbing gear to verify their contents and assess their reproductive stage. Once the eggs were laid, we recorded the conditions inside the cavity and width and

length of the eggs. Each egg was individually marked with a number and colour in non-toxic paint. After a chick hatched, we recorded the weight, wing-chord length and feather conditions of the chick every 7 days in most cases, and at least every 15 days in remote nests. The relationship between nesting success and forest maturity was analyzed from several standpoints: sizes of nest trees, growth rates of young, feeding rates at nests correlated with stand characteristics, and sizes of foraging ranges of nesting birds. Health effects on nesting success were investigated by screening nestlings and older birds for diseases and parasites.

Results and discussion

As in previous years, before the nesting season started we fumigated almost 40 nest cavities to control parasitism and reduce chick mortality. From July to October 2002, our field crew in Chihuahua monitored the Thick-billed Parrot nesting season, documenting the parameters of reproductive output of the species, the number of nests that had breeding activity during 2002 season, the annual productivity and success rates.

Productivity and success

We monitored 33 accessible nests cavities with eggs, 21 in Madera, 5 in Bisaloachi, 5 in San Juanito and 2 in Mesa de las Guacamayas. However not all nests could be monitored due to the snags' weakness. Information on reproductive variables was obtained for 33 clutches in accessible nests (*Table 1*). Of these, 10 were total failures and 23 were successful, for an overall success rate of 87%. Clutch size ranged from one to six eggs; although most of the clutches (48.48%) had three eggs. Two and four egg clutch represented 39.39%, one and six egg clutch with 12.12%. None of the clutches had 5 eggs. This season 93 eggs were laid. The two nest cavities inspected at Mesa de las Guacamayas were successful and showed an average of 3 chicks per nest. None of the 5 nests in Bisaloachi failed, however one egg did not hatch and one chick died of unknown causes. The chick/nest average for Bisaloachi was 2.4, the same as San Juanito's. Madera's nest success was 85.7% with an average of 2.2 chick/nest. Fledglings per nest for the 2002 season were the same as previous years' (1.6), similar parameters showed mean clutch size, percentage of eggs hatched, and brood size per nest (Monterrubio et al 2002). Percentage of chicks that fledged was lower than previous years average (70). We need to continue monitoring the breeding effort/productivity to document tendencies for the species population. We also determined mammal depredation as the main cause in chick's mortality.

The Thick-billed Parrot is not limited to virgin forest. Photo*: Javier Cruz*

Experimental translocation

Pair translocation was not possible during 2002 season mainly because the Thick-billed Parrots captured showed a weight considered below the required to carry the radio transmitters (380g). However we have conducted wild translocations in previous years, as potential strategy for bringing the Thick-billed Parrots back to Arizona and New Mexico, where they once existed. We carried out in 2000 an experimental translocation of two pairs from the southern-most nesting location to the northern-most nesting location. The translocated pairs remained each in their new nesting site, selected a nesting cavity, and successfully reared offspring (two chicks). However the next season (2001), we monitored and radio-tracked those birds and found out the birds came back to their original breeding site, chose new nesting cavities and successfully nested. These results lead us to think that translocation of wild parrots from Mexico could be a successful strategy for reestablishing the species in their original range in the United States. Efforts of reintroduction to the wild have been unsuccessful, despite all the money spent in different projects. APC has determined translocation of healthy Mexican populations into the U.S. could be the only way to re introduce the species into its original distribution range.

Table 1. ***Parameters of 2002 season reproductive output of Thick-billed Parrots compared with previous seasons.***

Parameter/Year	1995-2001	2002
Accessible nest with eggs	187	33
Nest Success (%)	80	87
Number of eggs	510	93
Mean clutch size	2.7	2.8
Eggs hatched (%)	79	77
Brood size per nest	2.1	2.3
Chicks that fledged (%)	75	70
Fledglings per nest	1.6	1.6
Fledglings per egg (%)	60	58

Food availability

Because of logistical limitations, no systematic sampling of pine seed availability was carried out during the study, although qualitative assessments of food availability and foraging behaviour were made on an irregular basis. During 1995, 1997, 1998 and 2001, frequent parrot flocks (a minimum of three a day) were observed foraging on large emergent durango (*Pinus durangensis*) and white pines (*Pinus ayacahuite*) in the Cebadillas-Piceas, and Madera study areas. In contrast, pinecone crops were obviously poor in 1996, 1999 and 2000 and we noted no Thick-billed Parrot foraging flocks in the nesting localities in those years.

Disease analyses in wild and captive birds

During the 2000 breeding season we collected some fecal samples from Thick-billed Parrot chicks as part of our collaboration in the project led by Nadine Lamberski from Riverbanks Zoological Park & Botanical Garden. She is studying

Thick-billed Parrot diseases in the wild and in captivity in United States and Mexico.

Management and conservation implications

We interacted with local people in order to explore new chances to cooperate and protect important areas. Due to the synergy generated by several NGOs' efforts, we have been able to protect the most important nesting area: Tutuaca and redefine it as a Forest Reserve. We are trying to protect some other important sites for the species, according to the goals proposed on the Priority Species Recovery Project (*Proyecto de Recuperación de Especies Prioritarias*) of the Mexican Government (Semarnap 2000). Among these areas are Madera, the only place where the parrots nest on aspen trees and Mesa de las Guacamayas, the most northern nesting site. Due to Madera's importance for Thick-billed Parrots, we elaborated the Justification Technical Study to declare Madera as a Sanctuary. In November 27th 2002 the Mexican National Official Diary published the notice addressed to the general public about the studies availability, which justify decree expedition to declare Madera as a Sanctuary with a surface of 2,800 hectares. We have been participating in several meetings, carried out among collaborators and project participants, such as Sierra Madre Alliance, Naturalia, The Wildlands Project, Unidos para la Conservación, Pronatura Noreste, Chihuahua Government Tourism Secretary, Chihuahua Government Ecological Secretary; in order to design and develop joint projects in Sierra Madre Occidental.

Future work

We are looking for different strategies to preserve the important areas, such as ecological servitudes, forestry activitities re-planning studies and implementation of ecosystem sustainable management practices. These actions will increase local people forest's value, provide real economic alternatives, improve agricultural practices, avoid soil loss and degradation, fire prevention and at the same time reduce community's dependence on logging activitities.

We want to integrate the Mesa de las Guacamayas to the efforts carried out to create a Biosphere Reserve at Janos. We will closely work with leaders in this Biosphere Reserve proposal and with authorities and different partners interested in preserving these important areas. We also will continue monitoring the breeding effort, productivity and population tendencies for the species and involvement with local people for the species conservation, continue fieldwork on nest parasite control, disease evaluation and determine migratory movements, through telemetry techniques in order to implement the translocation program of Thick-billed Parrots.

Photo*: Javier Cruz*

Wintering areas exploration is required. There is barely any knowledge of the wintering habits and requirements for the species. There are few potential wintering areas remaining in Sierra Madre Occidental Mountains, therefore we need to determine crucial wintering areas for Thick-billed Parrots conservation. We must also finalise construction of ecotourism cabins in Tutuaca Forest Reserve and raise funds.

Young Thick-billed Parrots look out of their nest. Photo*: Javier Cruz*

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