



TRANSLOCATION OF BLUE-AND-YELLOW MACAWS TO NARIVA SWAMP, TRINIDAD

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ABSTRACT

The Blue-and-yellow Macaw, once native to the island of Trinidad, was extirpated in the early 1960's primarily due to nest poaching for the pet trade. Between 1999 and 2004, the Cincinnati Zoo & Botanical Garden, Trinidad's Ministry of Environment and the Centre for the Rescue of Endangered Species of Trinidad & Tobago (CRESTT) translocated 31 wild caught birds from Guyana to Trinidad. The birds were quarantined and disease tested before import and released into the protected Bush Bush Wildlife Sanctuary. Nine of the first 14 birds released (64%) survived and produced 12 chicks in three nesting seasons. Three to four years later, 17 additional wild caught birds imported from Guyana were released to increase the genetic diversity of the population. There was 100% survival. Fourteen additional chicks were produced totaling 26 chicks over six nesting seasons. Trained villagers collected data on flight patterns, feeding and nesting behavior of the macaws. Poaching was minimized to two incidents in seven years. Community workshops in the villages and conservation education programs in schools increased public awareness of the need to protect both the macaws and the wetland habitat. Blue-and-yellow macaws are now seen once again in the Nariva Swamp, their historic range in Trinidad.

INTRODUCTION

Translocation and supplementation have developed as important conservation techniques for management of threatened species. Parrots are of particular interest in the application of these techniques because trade has built up significant captive populations even as the wild populations decline. Releasing captive-reared or wild caught individuals to supplement existing populations or to reintroduce new populations has become a key component of many endangered species recovery efforts. Since ways to maximize and maintain post-release survival are constantly being evaluated, behavioral monitoring during pre-release acclimation may be another important tool in determining release candidates, and increasing post-release survival and breeding success in the wild. Engaging local community in support of the reintroduction project and promoting conservation education in schools may also help to minimize the risk of poaching especially when other incentives can be offered as alternative means of income.

The Blue-and-yellow Macaw (*Ara ararauna*) is found in eastern Panama, Guyana, western Colombia, western Ecuador and most other areas of the Amazon Basin. Collar lists the species as apparently extinct in many areas of Ecuador, Colombia and Brazil. Extirpation of the species in Trinidad was primarily due to nest poaching of the chicks for the pet trade. Strategies used for the release of wild and captive raised parrots include separating bonded pairs and releasing their mates, releasing bonded pairs, and releasing eggs or young taken from wild nests. Survival and reproductive rates from these releases had varying degrees of success. Although several factors contributed to the overall results of these efforts, the trend suggests that social groupings prior to release may play an important role in the birds' survival and adaptation to their new habitat.

This study reports on the survival and reproduction of two groups of Blue-and-yellow Macaws released on the island of Trinidad. It also analyzes the potential roles of opportunistic and systematic behavioral monitoring of social interactions during pre-release acclimation and its effect on survival, adaptation and breeding success of the birds released in the wild.

MATERIALS AND METHODS

Bush Bush Wildlife Sanctuary, the release site of the Blue-and-yellow Macaws is a protected Wildlife Sanctuary within the Nariva Swamp, a designated Wetland of International importance according to the Ramsar Treaty. Aerial and ground surveys were conducted in the Nariva Swamp in 1999 and 2003 to determine that there were suitable food sources and potential nesting sites to support a population of Blue-and-yellow Macaws. Members of communities bordering the Swamp were recruited and trained to monitor flight patterns and collect data on the feeding and nesting behavior of birds. They were supervised by Wildlife Officers from the Forestry Division of the Ministry of Environment.

- **1999** – (9) male and (9) female wild caught Blue-and-yellow Macaws, identified through laparoscopic sexing were quarantined, disease tested and legally imported to Trinidad from Guyana in November 1999.
- They were acclimated for **4 weeks** in a 5.5 m x 7.3 m x 6.4 m pre-release flight cage in the protected Wildlife Sanctuary.
- Natural fruits and seeds from the surrounding area supplemented their diet of commercial dog chow during their acclimation.
- Between December 1999 and March 2000, (8) males and (6) females were released in three separate releases.
- Behavioral observations were done opportunistically when the birds were fed during the acclimation period.
- Release candidates were selected based on re-growth of primary feathers cut during trapping and their flight capability.
- Supplemental food was available at the pre-release cage for one week following release.
- Trained villagers monitored survival, flight patterns, feeding and nesting behavior of the released birds 3-4 days per week from January to June each year from 2001 to 2003.

- **2003** – In **September 2003**, a second group of (8) male and (12) female wild caught Blue-and-yellow Macaws were imported from Guyana, to increase the genetic diversity of the original group.
- They were acclimated for **3 months** in a large 18.3 m x 8.5 m x 6.1 m pre-release flight cage in the protected Bush Bush Wildlife Sanctuary.
- Natural fruits and seeds from the surrounding area were added to their diet of seasonal local beans and fruit and sunflower seeds.
- A protein enriched plumage enhancer, (Nekton Bio) was added to their diet to facilitate re-growth of cut primary feathers.

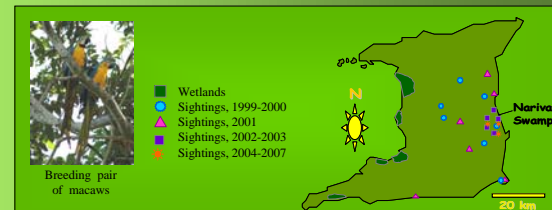
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- Prior to the release of the second group, the social behavior of the birds was systematically documented on a daily basis in contrast to the first group of birds released in 1999-2000.
- Candidates for release were selected based on pair bonding and compatible social grouping in addition to flight capability.
- In **December 2003**, 3 bonded pairs, a group of 2 females and 1 male, and 3 individual females were released.
- Supplemental food was provided for three days after release. All the released birds returned to visit the birds in the pre-release cage for several days after their release.
- In **June 2004**, 2 male and 3 female macaws were released. None were pair bonded.
- One of the birds remaining in the cage died from an infected wing follicle and the other two showed poor re-grow of their primary feathers and were never released.
- Trained villagers continued to monitor survival, flight patterns, feeding and nesting behavior of all the released birds 3-4 days per week from January to June each year continuing to the present time.

RESULTS

TABLE 1. Survival and reproduction of wild caught Blue-and-yellow Macaws released in the Nariva Swamp, Trinidad

Year	Number of birds released	Percent surviving	Number surviving male/female	Number of pairs established	Number of young produced	Number of eggs lost	Total population
1999	4	50	2/0	0	0	0	2
2000	10	70	5/4	2	0	0	9
2001	0		5/4	3	5		14
2002	0		5/4	4	3	3	17
2003	12	100	9/12	4	4		33
2004	5	100	11/15	7	5		43
2005	0		11/15	7	3	2	46
2006	0		11/15	8	6		52
2007	0		11/15	8	7		59
Total	31	84	11/15	8	33	5	59



CONCLUSIONS

- Disease tested wild-caught Blue-and-yellow macaws can be successfully translocated from areas with healthy populations to historic ranges where food and nesting sites are still available.
- Behavioral monitoring to observe social interactions such as pair bonding and non aggressive grouping during the acclimation period can aid in the selection of candidates for release.
- Higher survival rates can be achieved when birds are released as bonded pairs and compatible social groups.
- Local community involvement in monitoring and protecting the released birds can help to minimize poaching and increase public awareness and national pride.
- Conservation education programs in local schools can focus attention on the value of wetlands and the return of an extirpated species.

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Historic range of Blue-and-yellow Macaws in Trinidad



Release site: Protected Bush Bush Wildlife Sanctuary



Working with officers of Trinidad's Forestry Division



Recruiting villagers to monitor macaws and collect data



Practicing for data collection from nests



Preferred nest site in dead Roystonea palm tree

Conservation education programs in schools and corporate sponsor's support help raise public awareness and instill national pride.

