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Foraging Fundamentals

- UPDATE: training macaws for release



Six Blue-throated Macaws bred at Paradise Park in Cornwall UK were repatriated to Bolivia by the World Parrot Trust in March 2013. Each bird is identified by non-toxic paint on its chest.

It is 6:30 in the morning here in Bolivia. The day started out cloudy but there is no time to wait. We need to find native food in the forest for our 6 birds. Our team of volunteers doesn't care about the water level in the flooded savannahs or the number of mosquitoes trying to "eat" them. They just know how important it is to have all types of native fruits available in the parrots' fridge for our daily work. They love this work and the parrots!



The evolution of the macaws' dish reflects their remarkable transition from non-native foods including grapes, bananas and even parrot pellets (top) to a diet made up exclusively of native local foods in season like motacú, totaí and sumuqué palm, ambaibo, coquino, cuti, among others (bottom).

The six captive Blue-throated Macaws (*Ara glaucogularis*) arrived from Paradise Park, UK in March and made history by being the first of their kind ever repatriated to Bolivia (see *PsittaScene*, May 2013) for reintroduction to the wild. They are also a living laboratory for refining our procedures for diet change pre-release.

In reintroduction projects, familiarising the animals with the native diet is a crucial step towards maximising survival after release. The natural diet of the Blue-throated Macaw includes a variety of native fruits like motacú (*Attblea phalerata*) and totaí (*Acrocomia aculeata*) palms. Based on observations of wild Blue-throats foraging, it is clear that the motacú is especially important. Besides its crucial food value, these palms also contain cavities used for nesting. Establishing the relationship between these birds and the motacú palm is a key to their thriving in the wild here.

Motacú grow in bunches and the individual fruit have a hard peel which protects the highly nutritious and fatty pulp which coats the seed. Macaws peel the motacú to reach the pulp which they scrape off the seeds. At Paradise Park the birds had a diet that included Kaytee Exact parrot food (pellets), seeds, nuts and a variety of fruit not native to Bolivia. Prior to release, the birds need to be completely switched to a native diet. We are happy to report that that switch has been completely made during their first few months in Bolivia.

In addition to the immediate goal of weaning the birds onto native foods, we also did extensive observation to test the efficacy of our diet change strategy as well as the success of different techniques for introducing native foods. We also tested various techniques to

measure the amount of food that the birds manipulate versus the amount of food that they actually eat. We have refined our knowledge immensely by learning along with these six wonderful birds – Berto, Azura, Bella, Arlo, Cruz and Chica. Their arrival at the Blue-throated Macaw Conservation Center has been one of the most wonderful parts of the recovery project.

Food Presentation

Food presentation is an art! We humans enjoy arranging and modifying food to enhance its appeal. We did the same for the birds. We offered a combination of native and non-native foods and worked slowly with the goal of: out with the old and in with the new! Initially the macaws were given exactly what was offered at Paradise Park including the Kaytee parrot pellets and a variety of non-native fruits, nuts and seeds. The selection of shelled and unshelled nuts was slowly reduced to Brazil nuts only (with shells), in gradually decreasing amounts.

Native food included a variety of 20 native species, most of which were in our database as foods that wild Blue-throats had been observed eating. We also included native plant species that other parrots have been observed eating, especially other wild macaws found in the same area as the Blue-throats including Golden-collared (*Primolius auricollis*), Blue-and-Yellow (*Ara ararauna*) and Chestnut-fronted Macaws (*A. severus*).

Native foods were only offered while each was in season. Some fruits were especially difficult to introduce, like the motacú. It was initially offered unpeeled, but the macaws weren't interested! We immediately began experimenting with different techniques; offering peeled motacú, strips of pulp, then just the pulp wrapped around Brazil nuts and

then finally we added back unpeeled motacú. As the number of peeled motacú and strips consumed by the macaws increased, the brazil nuts coated with pulp were quickly reduced.

For the first month we offered the non-native and native food together early in the morning. After that we began offering native food separately, 2 hours earlier, in order to continue increasing the bird's interest in and consumption of the native food. Along with the volunteers we spent hours talking about the diet change process in order to share observations of the birds' behaviour and to make steps forward every day.



Feeding observations

Immediately after food was offered, the birds were observed for 2-4 hours almost daily, from a blind (hide), except when it rained during the feeding time. The six individuals are distinguished by non-toxic paint in different locations on their chests. During observations all food items taken by each bird were noted. A

total of 461 hours 04 min of observations were made over 178 days summarized here. The food dish was removed from the cage every evening and food was not left in the cage overnight to increase the probability of birds feeding during observations. We weighed all the food of each type being fed and

all the food remaining after feeding. The difference between what was offered and what remained, i.e. the food removed, was assumed to correlate with the food consumed. The macaws did not seem to remove and discard food they disliked from the dish unless it was on top of something they wanted!

In addition to the food offered in the dish, branches of native fruit were hung in the cage starting the very first week to imitate natural feeding situations. Later we started having one day per week when they were only offered food in branches. The only way for the birds to eat those days was to eat from branches. Branches were replaced when no fruit remained on them, the fruit was over-ripe, the macaws destroyed them or when branch day ended. In addition to natural branches of motacú we created artificial bunches by spearing motacú onto wire attached to



The motacú palm fruit is a staple of the wild Blue-throated Macaws diet. The captive bred birds were wary at first. But before long they learned to love and even prefer motacú to the non-native foods they grew up on. They also learned to eat it readily from natural bunches.



The effort to collect local food in season becomes all consuming for staff and volunteers as the macaws make their transition to their natural diet. ▶

◀ “Arlo” is quite relaxed at the conservation centre in Bolivia. He, along with his five fellow travelers, is adjusting extremely well to the sights, sounds and tastes of their native home where they will soon fly free.

the stalk of an empty bunch so that the nuts could be easily removed. We had to do this because natural ripe bunches were not always possible to find. Sometimes when we do find them and start to cut the branch down, all the fruit starts to fall too. You can see how our whole day was nearly consumed with foraging for native foods!

Branch day is a day where we feel very proud of the work we are doing. Watching the birds we can really see the

changes in their behaviour. They have come so far from the days when they paid no attention to the branches at all. Now when one of them starts to eat, the other birds follow, having learned that the branches were not a dangerous thing. The birds are not only eating all the fruits we are offering them in branches, they are also learning to land at the branches like they do in the field. Instead of walking along the perch to look the branches over, they are flying and landing on them directly. This

behaviour makes their adaptation to the wild much easier. I cannot wait to see them perching in a motacú bunch and eating fruits as fast as the wild birds!

Preferences

The Blue-throated Macaws ate many pieces of the non-native fruits during their first months in Bolivia. Bananas and grapes were often taken, while oranges and limes were never touched. Plums and pears were also offered, but were rarely observed being eaten. The



birds always ate all of their shelled and unshelled nuts! In general we observed males eating more food and eating more often than females.

To change the diet completely from non-native fruits to native fruits took us exactly 3 months. At this time we have observed all birds eating between 13-15 different types of native fruits per individual and 19 of 20 different types offered overall. Our daily feeding observations have been very important in monitoring the diet change process.

Motacú obsession

During the first months of diet analysis our focus was on increasing motacú consumption. Motacú is a huge part of our daily lives at the conservation centre! When unpeeled motacú were offered initially they were not observed being consumed. However, all birds were observed consuming some type of prepared motacú (pulp, strips, peeled).

All but one bird, Cruz, were observed consuming motacú strips. There was a progression in all of the birds' consumption from the prepared motacú starting with the pulp coated nuts, followed by strips, peeled and finally to the unpeeled motacú. It appears that once accustomed to the taste, consumption increased. By the time

unpeeled motacú were offered again a month after arrival they were almost immediately consumed by all the birds. Still, during that first month, motacú was never observed being taken from the natural or artificial bunches. Now, not only do the birds toss other foods aside to get to motacú, they also eat it readily whole from the bunches.

Ground feeding, a no-no

Early on, the macaws often dropped fruit prior to fully consuming it only to then eat it from the bottom of the cage. As Blue-throated Macaws do not naturally eat from the ground, we wanted to discourage this behaviour. We did so by modifying the cage so they could not get to food that was dropped. This simple action decreased the amount of food removed from the bottom of the cage dramatically and sped up the transition to eating from the bunches and branches.

In conclusion, our first experience completely changing the diet of these 6 birds shows that it can be done. On one hand the diet change process allows us to dramatically increase the birds' skills prior to release, especially their ability to find and manipulate native fruits in branches; on the other hand we reduced almost to zero our feeding costs, which it is really important

considering the extreme care we take with funds for the conservation project. The most important thing is that we can demonstrate for other colleagues and projects that this process, which is extremely important for the survival of released birds, is also a wonderful experience for the people involved.

Soon we will start to do the special pre-release training of our birds. At that time, we will start to offer native fruit in branches daily and we will stop offering food in the dish. This will be the next new and exciting step at the conservation centre and for these wonderful birds. We will be sure to let you know how it goes since you are an extremely important part of our conservation work too.

We would like to express our thanks to all the volunteers that have participated in the process. Special thanks to the local people at Sachojere who are continuously helping us to find native food and are so interested in how the birds are doing and when they will be ready to be free.

From Bolivia, listening to our six Blue-throated Macaws and many other native parrots echoing them from the field, we just want to say !Eternal life to the wild parrots! 📍