

Bare-faced Curassow (male)



Bare-faced Curassow (female)



Updated Plan of Action 2015/16

Abstract

The Bare-faced Curassow, *Crax fasciolata*, is a Cracid that is considered rare and endangered in Argentina, *IUCN*, although it is possible to source this species either in Neotropical countries further north or in captivity. Fundación Cambyreta para la Naturaleza (FUCANA) in collaboration with COA Carau plans to reintroduce this Cracid to an area in which it was once found but is now considered extinct. The team has built a large bird aviary in which we currently house a male example of a Bare-faced Curassow, and have constructed a well-equipped incubation room.

We have identified a pair of breeding birds in Antingy Reserve which is situated on an island owned by EBY in Paraguay and only a 2 hour drive from the reserve. One or more pairs could be available for the project however governmental authorization could take up to a year to achieve. Eggs may also be available for incubation.

The location for the project is a private reserve called Reserva Don Luis, which lies inside a protected provincial park known as the Esteros del Ibera (Ibera Marshes), the second largest wetland in the Americas.

Initially a breeding program would take place over a period of 1^{1/2} -2 years to provide a stock of this species supplemented by incubation and the use of broody hens. When we have a sufficiently large captive population we would consider a soft release based on the Brazilian project 'Re-introduction of the Red-billed Curassow' and the Jersey project 'Re-introduction of the Red-billed Chough' Dr Glyn Young, Liz Corry. Post release monitoring would be achieved by radio tracking and socio-political outreach programs would be instigated to ensure support of the project.

Bare-faced Curassow

The family Cracidae, which consists of Curassows, Guans and Chachalacas, is part of the order Galliformes and is endemic to the Neotropics, its most southerly range being Northern Argentina.

This family of medium to large avians generally lives in forest areas and is mostly frugivorous. They are also considered to be the most endangered avian family in the region (*IUCN/SSC Cracid Specialist Group*) mainly due to the degrading of forest areas through anthropogenic influence and to a certain extent, overhunting.

Cracids are considered a keystone group (species that others are dependent on), and it is likely that they play a large role in seed dispersal of species such as Lauraceae, Arecaceae and Sapotaceae (*IUCN/SSC Cracid Specialist Group*)

The Curassow is the largest member of this family and spends more time on the ground than other Cracids. Generally monogamous, Curassows unlike other Cracids do not regurgitate

food for their young and only the female broods the eggs, although both parents care for their young. *Curassows and Related Birds* by Jean Delacour & Dean Amadon.

Crax fasciolata or Bare-faced Curassow is considered rare and threatened (IUCN) in Argentina where unsustainable hunting and habitat loss has brought it to near extinction over the past 100 years. It is considered 'Least concern' but declining within its range according to the IUCN red list, but this may be downgraded in the near future. There is still a reasonably large population in the Pantanal in Brazil (*Christine Steiner*) which shares many similarities with the Ibera Marshes (the area in which we hope to eventually establish a population of these birds). Both of these areas have low anthropogenic influences.

The Bare-faced Curassow which somewhat resembles a Turkey, can weigh up to 4kg. They are generally monogamous although there is some evidence of polygamy (typical lekking behaviour observed in the Pantanal) *Arnaud Desbiez & Christine Steiner* – this needs to be studied further. They are also sexually dimorphic as are most of the Curassows.

The male is predominantly black with a white belly and thigh tufts. The bill is heavy and hooked with a bright yellow cere. The head has a very noticeable curly crest which is raised up and down regularly. The legs are long, pale and sturdy and the eyes chestnut.

The female is slightly smaller with a cinnamon or buff belly. Upperparts, neck and tail are heavily barred black and white. She has a black neck and a showy curly black and white crest. She lacks the yellow cere.

In Argentina there is a small population of the nominate sub-species in the gallery forests in the east of Formosa and some examples in Chaco. There is also a small population in Misiones which may or may not be of the same sub-species. They are thought to be extinct in Corrientes although recent registrations of their existence were recorded from Apipe Island and Villa Olivari. In 1998 Juan Carlos Chebez recorded *Crax fasciolata* in Villa Olivari, and 4 years ago this avian was heard calling in a private forestry area near Villa Olivari, just north of the Ibera marshes. The report comes from a reliable source who has been contacted by members of our team.

The IUCN Cracid Specialist group recommends that sub-populations of Cracids should be established to reduce the risk of species loss due to catastrophe, and hastening recovery of species after their habitats have recovered from limiting factors.

Objectives

Our long-term aim is to establish a population of *Crax fasciolata* in the Ibera Marshes. Due to the fecundity of these birds, we believe that a self-sustaining population of 15-20 is possible within 5 years. With this goal in mind, our short-term aim is to acquire one or more breeding pairs and start a breeding program at Reserva Don Luis. We have already studied the adaptation to the location/aviary of a male Bare-faced Curassow and this has been

considered successful. We have studied his behavior using volunteers, staff and camera traps as well as assessing any dangers from predators prior to his arrival.

We plan to use incubation with broody hens as well as natural breeding in order to achieve a viable captive population within a few years.

Methodology

The large aviary was designed and constructed in 2014 and currently houses a male example of the species. A second aviary is currently being designed and quotes have been requested from various builders for the materials. Team members and volunteers will be involved in the construction.

The current aviary measures 10m x 5m x 4m (height). It has been designed based on guidance from Houston zoo (who bred this species up until recently), the *Chough Re-introduction project in Jersey*, the *Red-billed Curassow project in Brazil* and from research from books such as *Delacour and Amadon*.

It is heavily concreted on the base with foundations down to 60cm to prevent foxes from digging underneath. It is situated beneath trees to give partial shade in the afternoon and shading material has been placed over the roosting area. It has been designed so that the birds can have an area in which to hide which has good ventilation. It should also protect the birds from the occasional ground frost that we may get. There are plenty of perches in the aviary as this is essential for the Curassow and vital for chicks within a day of hatching so their feet do not deform.



There are tall shrubs and fruit bearing plants such as Caraguata growing inside the corral to give the birds shade and areas in which to hide on the ground. The release hatches, when installed, will be situated high up on the corral with a barrier against climbing predators.

A botanical survey of Monte Grande was carried out in Nov 2012 and updated in March 2013. The results were confirmed by biologist Lisandro Cardinales and showed a wide variety of native trees including Nangapiri, Higuero, Timbo, Lapacho, Pindo, Laurel, Ubuja. The wood supports 2 families of Black Howler Monkeys, numbering a total of around 12, which share a similar diet to that of the Curassow.

In May 2013 we purchased 3 domestic hens from a neighbor and put them in the aviary to check for any problems with predators. Since then we have incubated another 11 hens and bought a cockerel and have a lot of information from camera traps regarding likely predators. Basically the aviary is safe from Foxes, Geoffroy's Cat, Crab-eating Racoons, large snakes, Possums and other possible predators. Small passerines are able to fly in through the holes in the fencing above a height of around 2m but this causes no problems.

Alejandra Boloqui, our coordinator has been in contact with Parques & Reservas and Fauna since 2013 and was able to get authorization to bring our male Curassow from Parque

Ecologico El Puma, in Posadas across a provincial boundary and to our reserve on 01 April 2015.

We have had 8 months of experience with this species in our aviary. Our male example has adapted very successfully and although particular regarding his diet has settled down to around 400g of fruit each day, including banana, apple, grape, pineapple and kiwi, 50 g of maize and a handful of dried Mealy Worms. This is in contrast to what he was fed in his previous home which was a mixture of grain. He is fed in the morning and in the afternoon, times depending on the season. We always provide water but he does not appear to drink it so there must be sufficient liquid in the fruit for this species. We have tried to feed him native fruit e.g. Ubujay, Pindo, Nangipiri, but he has constantly rejected this so we consider that due to his age (24 years plus) and eating habits he would not be suitable for release.

Tito – male Bare-faced Curassow at Reserva Don Luis



Once we obtain a breeding pair we will place them in the large aviary and relocate our existing male to a new similar aviary, currently in the construction phase, near to the research station. The current enclosure can easily be divided into two in the case that we source a male and female separately. We would use volunteers and camera traps to study reactions between the pair and after a period of time if no antagonistic behavior is noted or if Courtship feeding *Delacour & Amadon* is observed we would gradually introduce them. The older bird (or male) would be introduced into the younger bird's (or female's) part of the aviary. An alternative would be to house the birds as trios with 2 females as has been observed in the wild. *Desbiez, Steiner*

Once established, Curassow pairs forge a bond together. If this is not achievable reproduction may still be possible when the female is receptive - *Curassow husbandry by William Todd, senior keeper, Curator of birds, C. Eckart, Houston Zoo*. However an alternative pairing may be preferable if available.

We plan to feed them native fruit from the start as well as a small amount of grain and some dried 'Mealy worms' which would serve as a simulation of the live insects that they are known to eat in the wild. The juveniles start life with an insectivorous diet then gradually include more fruit *Delacour & Amadon*.

We would provide artificial nesting boxes and suitable material in order that they can construct nests in the aviary. Curassows lay 2 eggs per clutch at an interval of 48 hours apart. If these eggs are removed for incubation, for example, the female will relay a clutch within 30 days. They can lay up to 6 clutches per season if breeding is unsuccessful.

Incubation is 30-31 days for the Bare-faced Curassow and following the advice of the Houston zoo it would be prudent to remove the first clutch if the parents are inexperienced or at least remove one egg and replace with a replica. Reserving the final clutch of the year for parent rearing might be an effective compromise with the desire to maximize production by removing eggs for artificial incubation.

The art of egg incubation is beyond the scope of this paper but the designated Field manager has had sufficient training from experts Suzy Kaziekie from Los Angeles zoo and Pat Whitby from San Diego Zoo at the Durrell Academy.

Eggs removed for incubation will be placed in one of our incubators in our incubation building. The incubator room is a bespoke building near the research station which has been designed based on advice from experts Pat Whitman and Susie Kasielke from San Diego and Los Angeles zoos respectively. The building has been placed under trees to eliminate strong sun rays and has 4 windows and a fan to increase ventilation. The room is easy to clean and has 2 drains in the floor and a ceramic work surface. The incubator is an RCOM 20 Pro, with a backup Brindsea Octogon Advanced model, a Powerlux candler and CSG ES-600 precision scales for weighing the eggs.



Our electricity supply is solar voltaic (Solartec R4000 upgraded to double capacity) which has proved to be very reliable over the past 5 years. We also have a generator as a back-up. There is no supplied electricity in the zone but we have found our solar supply to be more reliable than the electricity in Ituziango, the closest town.

Timescale

| Stages | Provisional Dates | Action | Reason | Tools/personnel |
|----------|-----------------------------|---|--|--|
| Stage 1 | June 2013 | Building of incubation room | To incubate eggs of <i>Crax fasciolata</i> in the future | Miranda Collett BSc |
| Stage 2 | March 2014 | Completed construction of aviary 10m x 5m x 4m(height) | To house pair of <i>Crax fasciolata</i> for breeding | Cepi Oporto Miranda Collett BSc |
| Stage 3 | Oct 2013- Dec 2014 | Introduce domestic hens into the aviary for several months | Monitor any predators e.g. Foxes, Possums, Gato Montes to discover if they are a threat to hens e.g. Do they try to climb the fence? | Camera traps, volunteers, Ranger |
| Stage 4 | Nov 2014 | Complete Botanical evaluation of Monte Grande | To ascertain is there is sufficient fruit to sustain <i>Crax</i> . Completed in affirmative | Pat Haynes, Miranda Collett BSc Biologist Lisandro Cardinales |
| Stage 5 | Spring 2014 | Complete the requirements from Parques & Reservas, Fauna & Recursos Naturales. Contact Saenz Pena zoo & Antingy | Permission to move birds across provincial borders & move eggs across international boundaries. | Alejandra Boloqui |
| Stage 6 | Spring 2014 | Compliance with requirements for AICAS | Don Luis to become AICAS | Alejandra Boloqui |
| Stage 7 | April 2015 | Transport male example from Posadas to Reserva Don Luis and study. | Humane & study purposes | Alejandra Boloqui Cepi Oporto Miranda Collett |
| Stage 8 | June 2015 | Talk to neighbours about project and encourage their interest | Essential to have neighbours on side | COA Carau Alejandra Boloqui |
| Stage 9 | August 2015 | Talk with Aves Argentinas (Gustavo Marino) re fire prevention program at Don Luis. Contract signed. | Requirements for AICAS | Miranda Collett Cepi Oporto |
| Stage 10 | Summer /autumn 2016 | Look for 1 or more breeding pairs or 1 male + 2 females. Male available in Misiones for loan | Initiate breeding program at Reserva Don Luis | Veterinarian Liliana Pintar, Biologist Lisandro Cardinales Team |
| Stage 11 | Spring 2016 | Obtain permission to get eggs from Antingy. | Incubate eggs in our incubator room | Miranda Collett BSc+ volunteers |
| Stage 12 | Spring 2016- winter 2018 | Establish viable captive population of <i>Crax fasciolata</i> . Genetic variation needed | For release after 1-2 years. Genetic variation to reduce in breeding | Team |
| Stage 13 | As above | Establish socio/political outreach programs. Invite neighbours to see project | To educate the local people and to generate support for project | COA Carau |
| Stage | Summer | Build more aviaries. Add release | To house growing captive | Team |

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|----------|-------------|---|--|--------------------------------------|
| 14 | 2017 | hatches | population | |
| Stage 15 | Autumn 2018 | Initiate soft release of suitable birds keeping back pair for further breeding | Radio tracking and continue to grow captive population | Team |
| Stage 16 | Autumn 2018 | Track liberated birds using radio tags, receiver & antenna – horses, 4x4 where possible | Necessity to keep track of birds | Team, volunteers |
| Stage 17 | Winter 2018 | Write up project | Useful guidance for future projects | Miranda Collett Alejandra Boloqui |

Justifications

In order to ensure that a potential re-introduction is thoroughly planned, the key issues to be considered are listed in the table below. These amplify the *IUCN Re-introduction Guidelines* (IUCN, 1998) and are designed to provide guidance on issues that relate directly to Galliformes⁶

A re-introduction will usually only be considered appropriate if the following apply:

- i) There is a gap in the native range of a species where suitable habitat still exists**
 - ii) The issue that caused its local extinction is no longer relevant and no new threats have arisen**
 - iii) Natural re-colonization is unlikely**
 - iv) A source of the species exists that would not harm present wild or captive populations and is of appropriate genetic stock**
 - v) Ultimately, with the resources and area available, a self-sustaining population would result**
 - vi) Such action is not excusing the degradation of other populations/habitat**
- Such action will contribute to the local and national legislative objectives for conservation**

1. We believe that there is a gap in the native range of *Crax fasciolata* where suitable habitat exists. This species was heard within 30km of the proposed re-introduction location up to 2 years ago (Villa Olivari) and there is evidence that it lived in the zone (Chebez et al) previously.

Part of the Ibera Marshes is included in a Provincial protected area which may have its status upgraded to National Park in the future. It comprises 13,000km² of various habitats including swamps, lakes, bogs, grassland, gallery forests and island woods. Reserva Don Luis lies in the Provincial Park and has most of the aforementioned habitats including about 10 island woods. The largest of these is named Monte Grande and is some 5/6 hectares in size. This should be a suitable release site for Cracids, as it appears to have sufficient fruit for a large frugivore, sufficient wooded areas and water. A rudimentary botanical survey was

undertaken in 2012 which has since been updated and tree density was calculated at 2400/Ha⁻¹ (trees with trunks of >10cm). A biologist from EBY has confirmed the findings.

2. The issue that caused the local extinction is overhunting. This is no longer a factor as Reserva Don Luis is 32km down a sand vicinal road and hunters do not venture that far. There are very few neighbours other than Guardeparques and a handful of farm workers. We plan to talk to all the neighbours to explain the project. We have predators such as foxes and Gato Montes but there are no introduced mammals at Don Luis including Brown and Black rats.
3. *Crax fasciolata* has a limited range and are non-migratory. It is therefore unlikely that they will naturally find their way to the Ibera marshes where they are considered extinct.
4. We hope to source our birds from Antingy Reserve in Paraguay where they have several examples. We also hope to source eggs from this Reserve which is situated in an island off Paraguay owned by EBY. Here they have at least 12 *Crax fasciolata* which they allow to breed but have no release program.
5. We see no reason why a self-sustaining population should not exist once again in the Ibera Marshes. There is plenty of suitable habitat, sufficient food, water and nesting areas. Reserva Don Luis, a former cattle ranch (up until 2009) has been restored to nature and other species have returned eg Maned Wolf, Lobito del Rio, Marsh Deer. It appears to be a good place to start the project.
6. Our project will not compromise the degradation of other populations as we have no control over these.

We believe that our project will contribute to the local and national legislative objectives for conservation as we are hoping to establish a population of endangered birds into an area in which they were present before overhunting took place.

RESERVA DON LUIS

Aerial shot of the houses at Don Luis



Reserva Don Luis is a privately owned research station, which was purchased in April 2010 with the purpose of restoring the habitat to its natural state. It was a former cattle ranch and it has taken several years for the flora to settle and the saplings to attain a reasonable size without predation from cattle. The fauna have returned and we regularly see Marsh Deer, Neotropical Otter and occasionally Maned Wolf. We also have approximately 6 species of endangered bird.

FUCANA is based here (Argentine section of Collett Trust for Endangered Species, a Jersey registered non-profit Trust) and we have several smaller projects running including studies of the Strange-tailed Tyrant (Vu) which is relatively common here. We are also involved in a long-term study of the Chiroptera species of Ibera.

Coa Carau is a birders club affiliated to Aves Argentinas. The members are very willing to spread the word about conservation and will be involved in communications with the local town, Ituzaingo, regarding our project. Aves Argentinas are also involved in the reserve with respect to fire control and general advice relating to our Muitu project.

Conservation Land Trust, CLT, the largest landowners in Ibera, have helped us with advice and we hope that they can offer veterinary assistance when required as they have experience of reintroductions e.g. Giant Anteater, Green-winged Macaw, and currently the Jaguar.

Research Cabin at Don Luis



Monte Grande – largest wood at Reserva Don Luis



Monte Grande Aerial Shot



The area of Don Luis is 1600 Ha and it is bordered by Cecilio Rodriguez, cattle ranchers to the east, Amadey/Popescue, cattle ranchers, to the north and south and the Esteros (marsh) to the West. It is part wetland part grassland and has areas of banados, esteros, malezal and island montes, typical of Cambyreta.

We have built an aviary in our largest wood, which is a 20 min walk from the houses. This wood is called Monte Grande and its area is 5/6 hectares. The trees are quite dense and all native to the area.

Members of Team Muitu

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|--------------------|--|
| Alejandra Boloqui | coordinator and President of FUCANA |
| Miranda Collett | Project Field Manager, researcher |
| Cepi Oporto | Designer and constructor |
| Miguel Rinas | Veterinarian |
| Lilana Pintar | Veterinarian |
| Lisandro Cardinale | Project biologist |
| Abel Yunis | in charge of locating examples of Curassow |

Thank you to our collaborators:

Glyn Young and Liz Corry from Durrell Wildlife Trust in Jersey, Channel Islands

Chris Holmes from Houston Zoo

Pat Whitman from San Diego Zoo

Suzie Kasielke from Los Angeles Zoo

Prof. Luis F. Silveira, curator of ornithology at university of Sao Paulo

Bruno Carpinetti, former head of National Parks & Reserves

Dr. Malcolm Nicoll, University of Reading, UK

Ignacio Jimenez Perez from CLT

Discussion

This project has been running for 4 years and has been well planned and studied. Now that we have an example of *Crax fasciolata* at the reserve we are learning a lot about the species.

We are now looking for a biologist who has experience of reintroductions and we are in dialogue with Gabriel Terny from Fauna Nacional regarding bringing birds and eggs across international boundaries. We already have the offer of one or two male examples from Misiones and plan to start the breeding program next spring (September/October) providing we can get the required authorization.

We have invited many visitors to see our Bare-faced Curassow from many different organisations and are getting a lot of support from Aves Argentinas. We are confident that we have the support of our neighbours and the local people in Ituzaingo for the project and will begin social outreach programs when we start breeding. Our club, COA Carau which is affiliated to Aves Argentinas, is well established in Ituzaingo and we now have several hundred members, some of which are already spreading the word through the schools.

Funding for the project is guaranteed by Collett Trust for Endangered Species.

We are confident that we can go ahead with this project in a well prepared manner that has been carefully thought through.