

Re-introduction of the white-winged guan in north-west Peru

The white-winged guan (*Penelope albipennis*) is a cracid endemic of the dry forests of northwest Peru. It is classified as Critically Threatened due to hunting and habitat loss and its wild population is estimated at less than 250 individuals (BirdLife International, 2000). Its distribution is now restricted to a small narrow strip along the western foothills of the Andes, where it inhabits dense forest in ravines with permanent water sources. After its discovery in Tumbes in 1877, there were no more records of the species and by 1973 it was considered extinct (Delacour *et al.*, 1973). However, it was re-discovered in 1977 by del Solar and O'Neill (de Macedo, 1979) in Lambayeque. After the re-discovery del Solar began a captive-breeding program in the village of Olmos with the long-term aim of re-introducing the guan back into its historic habitat. The first captive-born chick was born in 1986 and by 1990 there were 24 captive guans and in 2000 there were 100. With this success, conditions were now favorable to initiate the White-winged Guan Pilot Re-introduction Program in 2000.

Re-introduction site selection and characteristics

The re-introduction site was selected in accordance with the IUCN criteria as set out in the *IUCN Guidelines for Re-introductions* (IUCN, 1995) and is located inside the Chaparrí Private Conservation Area – a community owned protected area. The site chosen was a ravine within the guan's historical distribution area but from where it had been extirpated some 20 years ago due to hunting. The habitat characteristics of the site ensured that the ecological needs of the guans would be met and that hunting had ceased due to the communities fully supporting the re-introduction program. The main objective of the pilot re-introduction program was to establish a viable long term white-winged guan population, permitting re-introduced individuals to successfully reproduce in the wild. Now that a new wild population has been established at this site it will now be connected with existing known wild populations found at Cásupe (12 km from the release site), Caña Brava (18 km) and the Reserved Zone of Laquipampa (19 km), thus forming a corridor between the re-introduction area and these sites. This will facilitate the exchange of genetic material among individuals and so avoid possible genetic depression within these small populations, which can be at risk of disappearing due to their geographical isolation. A second objective of this project was to return to the Santa Catalina de Chongoyape community who are owners of the land, a natural resource, which if well-managed could benefit the local community through eco-tourism.

White-winged guan selection

Individuals were selected from the captive-breeding center in Olmos, taking into account the following considerations:

- ◆ Maximize distance in blood relationship between individuals in the release group in an effort to minimize inbreeding.
- ◆ Have an adequate proportion of both sexes (1:1) to form

PHOTO REMOVED FOR WEB VERSION

the founder group. Due to the monogamy of the guans there should be an adequate proportion of both sexes (1:1).

- ◆ Choose individuals in optimal health to avoid disease transmission between the release group and with the wild population and other fauna. Individuals destined for release should undergo an appropriate veterinary screening protocol.
- ◆ Ensure the temperament of any individual to be released is not too tame or too aggressive. Also choose recently mature individuals from both the F1 and F2 generations to make them experience their first sexually active breeding season in the wild.

Pre-release methods

Three different pre-release methods were tested in order to find out how best to adapt individuals to their new surroundings in terms of both survivorship and ease of surveillance. The "big cage" which is a large semi-captivity cage constructed out of rope mesh and is built in a ravine, covering an area 70 m x 30 m (2100 m²), with a height of 13 m in the highest part. This enclosure includes part of the ravine's permanent watercourse and native trees and bushes such as *Ficus padifolia*, *Cordia lutea* and *Mutingia calabura*, which are natural food sources of wild guans. Ten individuals were kept inside the cage for a period ranging from one to 18 months. The "small cage" method consisted of a semi-captive cage located on a mountain slope, covering an area 25 m x 5.5 m (138 m²), with a height of 2 m. Water was artificially supplied and the main type of bush found inside the enclosure was overo (*Cordia lutea*). Six individuals were kept inside this cage for period ranging from one to five months. The last method used involved taking individuals from the Olmos captive-breeding center straight to the re-introduction site and hard-release them directly into the wild without the use of pre-release cages. This method was used in the case when replacement of individuals was carried out.

Pre-release management

Guans inside the pre-release cages were supplied with supplementary food. This additional food was decreased during the wet season when natural food sources such as wild fruits became more abundant. Even with the additional food supply present the guans continued consuming flowers, fruits, leaves and fruits from the surroundings of their new environment. Harris hawk (*Parabuteo unicinctus*) are known to predate upon white-winged guans (adults and chicks) so to prepare the release individuals against this predator, a trained hawk was used to predate and kill domestic chickens outside the cages and in the presence of the guans. They responded well to the Harris hawk presence and used dense bushes to hide in as soon as they saw the raptor's shadow. Anti-predator control was carried out to capture and relocate predator species such the pampas cat (*Oncifelis colocolo*), sechuran fox (*Pseudalopex sechurae*), tayra (*Eira barbara*) and South American opossum (*Didelphis albiventris*).

Release

On 23rd September 2001, six guans from the small cage were released and on 11th October 2001, ten from the big cage were released. These individuals were released from the semi-captive cages to the wild in a gradual manner by allowing them first to remain in the area directly outside the enclosures until they became accustomed to their new surroundings and were confident enough to move away and explore their new environment on their own accord.

Post-release management and monitoring

Food was provided for a year after release to measure if individuals were independent enough to find food from natural sources to fully sustain themselves and artificial nests were also supplied (similar to those used in the breeding center). Released guans were all marked with two leg bands of different color combinations to allow identification by sight and additionally ten of the sixteen released guans were fitted with AVM "Backpack" transmitters. The guans attached with a radio-transmitter were tracked at least once a week during the first three months and then once a month. Individuals without transmitters were also searched for and monitored during this time. A Geographical Information System (GIS) was constructed to analyze the released guans movement and it consists of a digital map of the re-introduction area and includes water sources, rivers, altitude, roads, human settlements and vegetation types.

Results

The distance the individuals move from the release site is a function of the availability of food and water. These movements were generally solitary and this varied from a few meters up to 13 km with registered dispersions of 6 km, 7 km, 10 km and 11 km respectively. Three pairs were formed after release and all attempted to breed in the first breeding season (November to April). Two pairs failed in nesting due to predation of their nests and one pair built their nest on the ground which was predated three days after the eggs were laid and they then moved to an artificial nest in a tree but the male was predated upon. A second pair constructed two different nests but laid eggs in a third constructed nest but this was also predated. A third pair built their own nest in a more 'predator-safe' location in a 5 m

tree covered with bushes and they laid a single egg which they incubated normally. During the first days of April 2002 they hatched a chick that has since matured to an adult completely in the wild. With reference to survival it has been found that the highest predation occurs inside the semi-captive cages during the dry season (May – December). Of the released individuals at least three died and it has been found that predation of adults by the pampas cat and humans also occurs. Predation of nests by the sechuran fox and opossums has also been observed. Two guans were returned to the breeding center due to health problems (broken leg and ear infection) and another three due to unsuitable tame behavior.

Conclusions

- ◆ We can conclude from the data obtained that with the dispersion distances that it is possible to connect the re-introduced population with the nearest wild populations. However what has not occurred is that the guans have not moved in the correct direction to meet a wild population.
- ◆ Regarding the time spent in the semi-captive cages there has been no significant difference with respect to survival rates once released. Also the risk of predation within the actual cage was higher the longer the individuals were kept there and therefore for future releases the time spent in a semi-captive should be kept as short as possible.
- ◆ Awareness campaigns with local communities in the area should be intensified both before and during the implementation stage. The only known case of predation by humans occurred outside of the conservation area by a settler who claimed not to know the species.
- ◆ Breeding by re-introduced individuals appears to be feasible as they behave similar to wild guans in respect to nest building and protecting their chicks. The fact that a first chick was obtained only six months after the release date, is a positive sign that gives reason for hope to be able to save this species from extinction. The reproductive success of re-introduced individuals is a sign of a success implementation of this re-introduction program (Sanz & Grajal, 1998).

Acknowledgements

I want to thank to Gustavo del Solar, Heinz Plenge, Backus Foundation, Asociacion Cracidae Peru, Idea Wild, the "Santa Catalina de Chongoyape" community. To Jeremy Flanagan for the revision of the early draft.

References

- BirdLife International. 2000. Threatened birds of the world. *Barcelona, Spain & Cambridge, U.K.: Lynx Editions and BirdLife International.*
- Delacour, J. & D. Amadon. 1973. Curassows and related birds. *American Museum of Natural History.*
- de Macedo, H. 1979. Extinct bird Found in Peru. *Oryx. Vol. XV. N 1*
- IUCN. 1995. IUCN Guidelines for Re-introductions. *IUCN HQ, Gland, Switzerland.*
- Sanz, V. y A. Grajal. 1998. Successful re-introduction of captive-raised Yellow-Shouldered Amazon Parrots on Margarita Island, Venezuela. *Conservation Biology, Vol. 12(2): 430-441.*

Contributed by Fernando Angulo Prato Longo, Director del Zoológico Barbara D' Achille & Programa de Reintroducción de la Pava Aliblanca, Asociación Cracidae Peru, Torres Paz, Chiclayo, Peru, e-mail: angulo@viabcp.com