

Horned Guan



CAPTIVE BREEDING PROGRAM AND HUSBANDRY

Presented at the 2009 AFA Convention, Houston, Texas, by Juan Cornejo

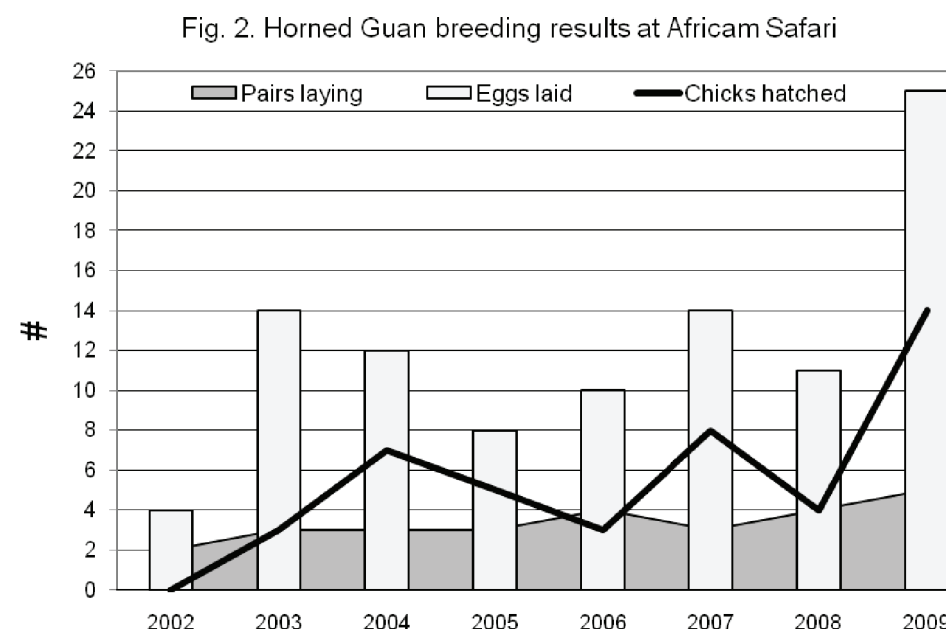
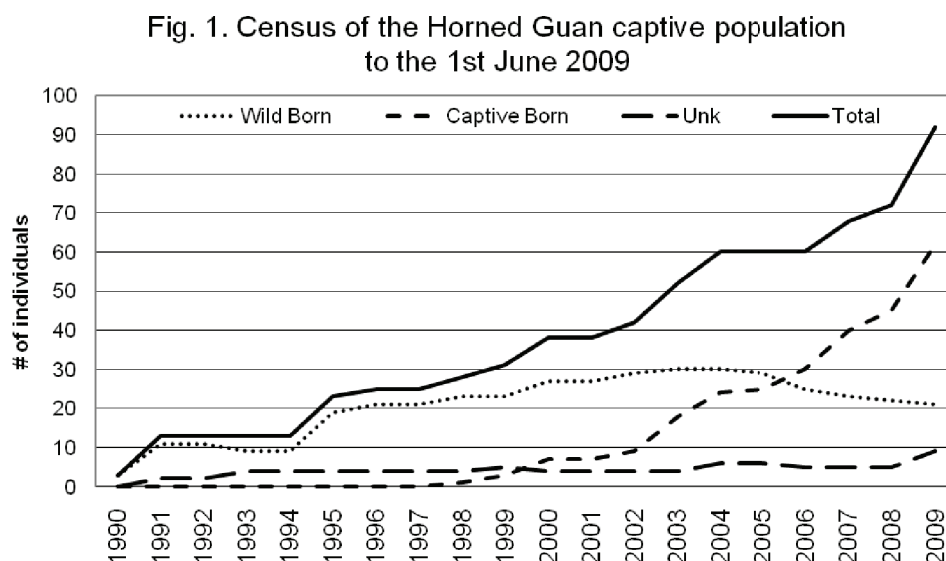
AFA Watchbird **23**

Introduction

The Horned Guan (*Oreophasis derbianus*) is the only member in monotypic genus *Oreophasis*. It is the only survivor of a very ancient lineage of the order Craciformes that has been evolving independently from all other living members of this family. It's an unmistakable, large (84 cm, 2 kg), black-and-white cracid. Glossy black above with bluish sheen. Whitish flecked black on neck, breast and upper belly. Long black tail with white band. Unusual red horn of bare skin on top of head and small red dewlap. It is endemic to the cloud forest of Chiapas, in the southeast of Mexico, and of south-western Guatemala, where it inhabits the cloud forest at elevations between 1200 and 2500 m. It is considered Endangered by BirdLife International and IUCN, and of Immediate Conservation Priority by the IUCN Cracid Specialist Group. Habitat alteration, hunting and illegal trade have been generally identified as the most important threats. The global population is estimated between 1,000 and 2,500 individuals.

Horned Guans in Captivity

The first report of Horned Guans in captivity comes from a letter to M. Delacour in 1975, which states that a private collection in Jalisco, Mexico, housed three birds of wild origin, two obtained as eggs and another as a chick. In 1976 two chicks were captured and brought to the ZooMAT in Chiapas, Mexico. Between 1982 and 1983 four eggs were collected and hatched under domestic Turkeys in a private collection in Mexico. In the 1990s different zoos and private collections acquired Horned guans and the population in human care has been slowly growing since then. It is still considered a very rare species in aviculture. Their first successful reproduction in captivity probably did not occur until 1994 in the private collection 'La



Siberia', near Mexico City.

The last edition of the Horned Guan International Studbook (data current to December 31, 2008), records a historic population of 110 individuals, 72 (36.23.13) of those alive and distributed between 10 institutions: 16 in Europe, three in Guatemala, two in Chile, 50 in Mexico and one in the USA (Saint Louis Zoo, MO). During 2009, one more institution in the USA (Dallas World Aquarium, TX) added the species to their collection (two pairs), and 18 chicks hatched and 2 birds died, making a living population of 92 individuals by

June 1, 2009.

So far breeding has been achieved at six of the registered institutions, with a total 84 birds hatched since 1994, 55% of them between 2006 and 2009. But only two institutions currently keeping the species have been consistent in breeding it for more than 2 years (Africam Safari (Mexico) and Leon Zoo (Mexico)).

There are 22 potential founders in the population, of which 82% have reproduced. The founders' representation is highly biased as 55% of the captive born birds are descendants from the same two pairs. There is almost no



PHOTO BY JUAN CORNEJO / Two Horned Guan eggs with external pip

information about the regional origin of these wild caught individuals. A genetic study of the relatedness of the founders in the studbook is under way. The results of this research will be extremely valuable in order to minimize the genetic diversity loss by pairing the

wild-caught birds in accordance to their Mean Kinship values.

Africam Safari Breeding Program

Africam Safari is a private zoological institution founded in 1972, and

located in Puebla, Mexico, at an altitude of 2200 m. In 2000 it received a group of wild-caught (3.4) and captive-hatched (1.5) guans, and since then, it has committed to the conservation of Horned Guan and a successful breeding program was initiated that leads the ex situ conservation efforts. From 2003 to 2009, 47 chicks hatched at Africam Safari, contributing to more than 50% of all the individuals born in captivity.

Diet

The Horned Guan is a specialized herbivorous bird that feeds mainly on fruits and green leaves. At Africam Safari, Horned Guans are offered a morning dish of nine different seasonal fruits and vegetables, and chicken pellet is available ad libitum. Avocado is consumed to the greatest extent, followed by grapes and bananas. An analysis of the ingested diet by five pairs showed to contain 8.5% protein and 17.2% fat.

Housing

Africam Safari's main breeding

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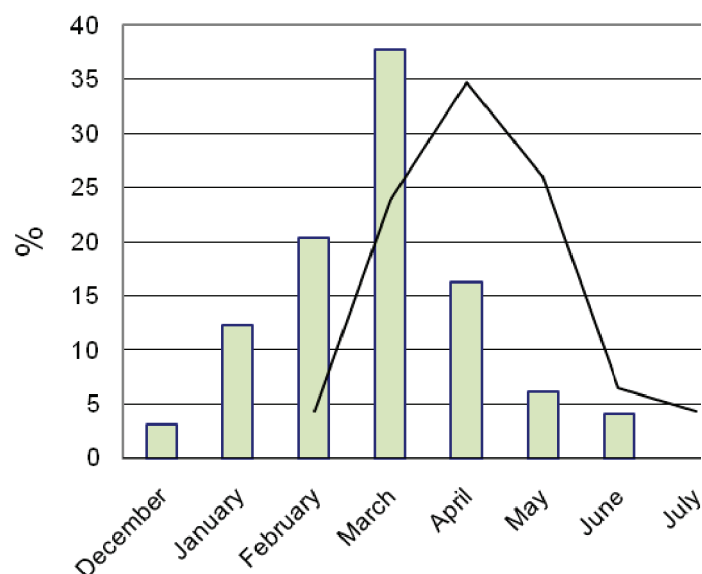
aviaries measure 6 m x 7 m x 3 m high, with 2 m of the back sheltered. They are well planted to provide visual barriers and adequate perches. The substrate is a mixture of volcanic gravel and leaf litter. The birds participate in both sun and sand bathing, so available space and resources should be provided for these activities. Different pairs are able to hear each other's calls but they are not within visual contact. They can be mixed in their enclosure with smaller birds, such as conures, doves and quails, although they may show aggressive behavior towards the chicks of the other species.

Outside the breeding season Horned Guans can be held in mixed groups if enough space is available but during the breeding season males can be aggressive towards females. A group of four adult males have been together all year around for several years in a large aviary and they have not shown aggression among them, probably because there were no females in the group. Caution should always be taken when introducing new animals, and a preparatory period of visual contact is highly recommended. Although the Horned Guan is reported to be polygynous in the wild, the best breeding results in aviaries have been obtained with pairs. In the cases where a male has been put together with two females, one of the females is usually ignored and in some cases even attacked.

Nest

The nest of the Horned Guan in the wild is a shallow depression on the epiphytic vegetation that grows on tree

Fig. 3. Seasonability of Horned Guan egg laying and chick hatching at Africam Safari



branches. At Africam Safari they have used wood boxes (60 cm x 60 cm x 35 cm deep) filled with a mix of leaf litter, moss and packed roots of aquatic grasses. The best results have been obtained when the nest is placed high in the enclosure, in a corner under a shelter, but nests on branches have also been accepted by the birds.

Before laying, the male frequently visits the nest to prepare it by digging in the substrate. The female also participates in this task but with less intensity. In the presence of the female, the male will work on the nest in an inclined

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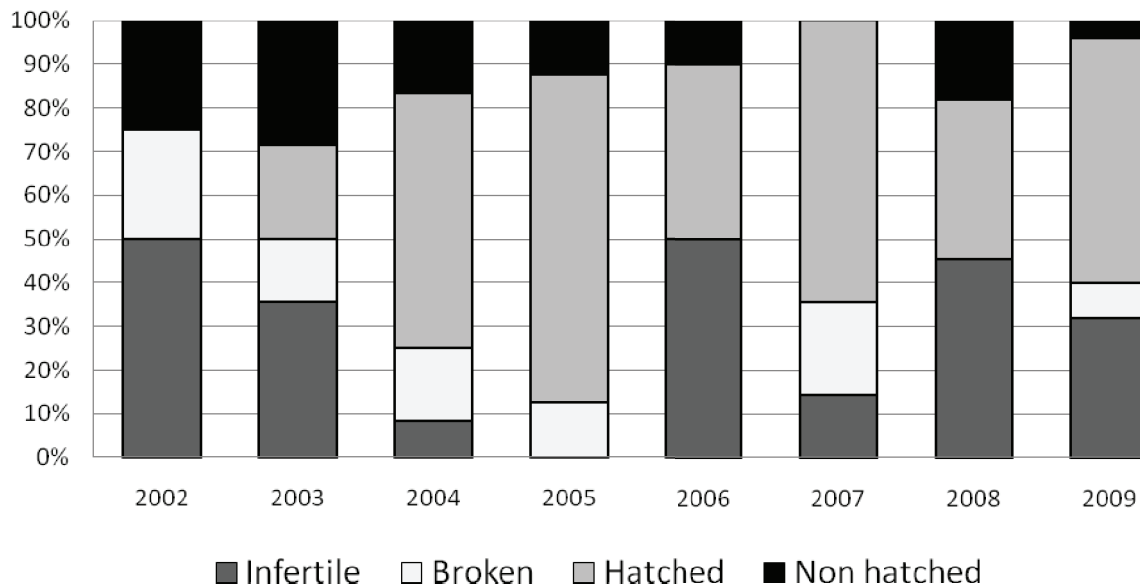
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Fig. 4. Proportion of the results of the Horned Guan eggs laid at Africam Safari



position: laying on his chest, with the neck and head resting on the substrate, and the tail fanned in an almost vertical position while facing her. If she decides to enter the nest, he will perch on the side of the nest with his back towards her and the tail fanned, sheltering her, and stays in this position for the duration of her work in the nest. While these events take place, the male usually picks up small pieces of nest material with his beak and offers them to the female, who usually accepts them.

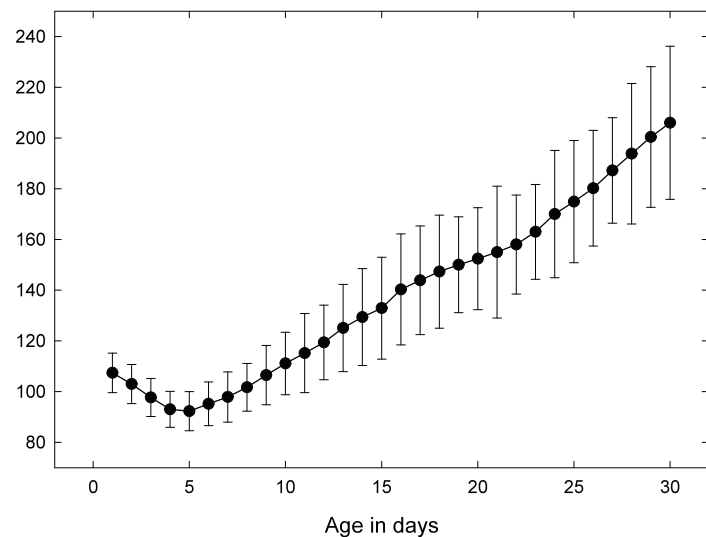
Eggs

The breeding season in the wild begins at the end of October and continues until May. At Africam Safari the earliest eggs are laid in December, the last in July, with a main peak in March. Horned Guan clutches consist of two eggs, laid 1 day apart. The average measurements of 74 eggs are: 5.9 cm wide and a length of 8.7. For 85 eggs the average fresh mass was 167.5 g. If the first clutch is removed, up to three more replacement clutches may be laid. From 2003 to 2009 the average fertility have been 72%, and 80% of fertile eggs have were successfully hatched by a combination of artificial incubators (Grumbach and Humidaire) and domestic Turkeys. Eggs were artificially incubated at 37.2°C. The average incubation time is 34 ± 1 days, with an average mass loss of 17. Internal pip occurs 3 days before hatching.

Natural and artificial chick rearing

For the first time at Africam Safari, in 2008 and 2009, a female was allowed to incubate and rear its own chicks. As soon as the female laid the first egg the breeding aviary was

Fig. 5. Weight gain of the Horned Guan chicks at Africam Safari for the first month of life



divided into two spaces to prevent the male from disturbing the female during incubation, while maintaining visual contact. The eggshells remained in the nest ignored by the female. The chicks received their first food the same day hatched by picking the regurgitate from the female's beak. During the chicks' first day of life, the female only abandoned the nest for a few minutes, and the second day the chicks jumped from the nest, encouraged by the calls and high activity of the female. For the next weeks the chicks followed the female, who looked after them and protected them by covering them under her wings and defending if anybody approached. At 1 week old, chicks are able to make short flights around the aviary. They eat by themselves and stop sheltering under the female's wings after a month, but still follow her and



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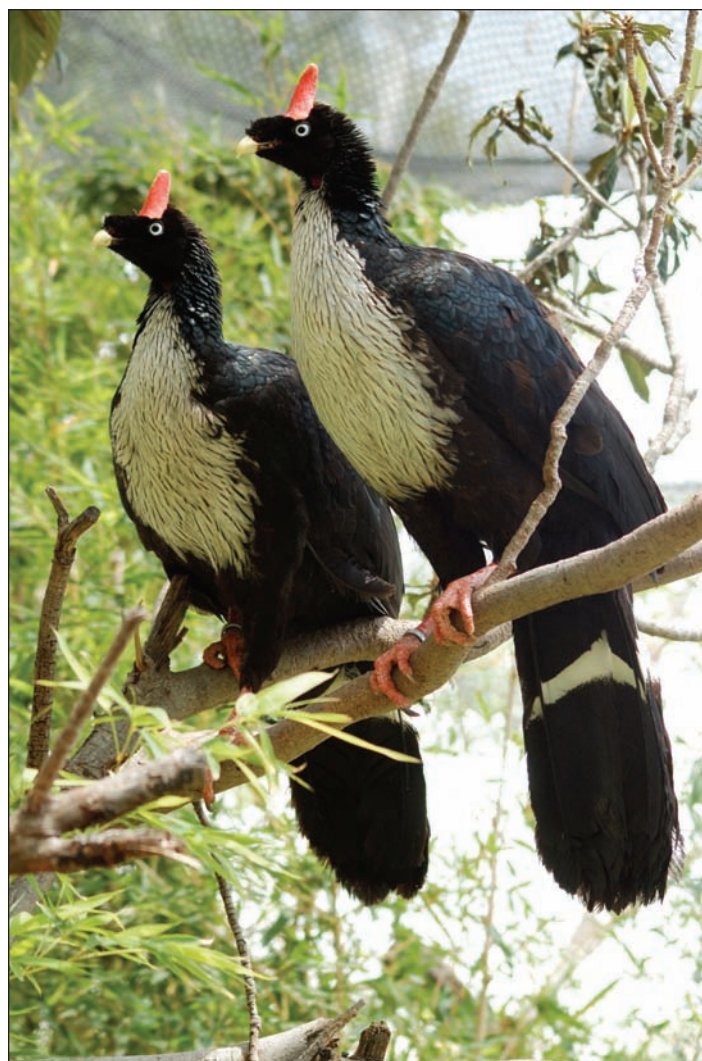



PHOTO BY JUAN CORNEJO / A pair of adult Horned Guan

receive regurgitated food at four months of age.

Following the protocols for other cracids, Horned Guans do not present special difficulties when rearing artificially. A diet of fresh alfalfa, chicken pellets and soft fruits is offered for the first weeks, and is progressively changed to the adult diet. For the first few days, it is important to encourage the chicks to eat and drink by offering food and water with the tip of one's finger. Invertebrates, such as mealworms (*Tenebrio molitor*), will be accepted by the chicks. To avoid imprinting it is advisable to avoid unnecessary contact with the keepers and to rear more than one chick together.

Chick Development

At hatching, chicks weigh on average 108 g. Artificially reared chicks, after 3 days of losing an average of 4% body mass each day, start increasing their mass at a rate of between 2 and 6% every day for the first 2 months. Growth rate of parent-reared chicks shows a faster development. Adult body mass is not achieved until approximately 1.5 years after hatching (males 2212 ± 98 g; females 1940 ± 138 g,



PHOTO BY J. RIVAS / Hunting for food by local people is threatening the Horned Guan populations.

max). The horn, which can measure more than 4.5 cm long in adults (measured from the front of the base to the tip), starts growing at the age of 3 months and takes more than 3 years to obtain its final size. It starts as two different structures that later merge into a single horn.

The Cloud Ambassadors Program

In 2006 Africam Safari spearheaded the creation of the Cloud Ambassador Program, with the aim of making a real impact in the conservation of the species through its captive breeding. The main objectives of the program are: 1) to create a financial fund to support the in situ conservation efforts of the Horned Guan and its habitat, and 2) to create an international network of zoological institutions that are committed with the ex situ conservation of the species. In order to generate funds and achieve these goals, captive bred Horned Guans are sent on loan to reputable zoological institutions outside of the native range of the species, for its exhibition, breeding and research. The financial contributions provided by these holding institutions form the Cloud Ambassadors Fund. Through an annual open call, provides funding for in situ conservation programs and field research for the Horned Guan and its habitat.

By April 2008 a total of 10 Horned Guans have been sent under this scheme from Africam Safari to two institutions in Europe and one in the USA. With the funds generated eight different field conservation projects have been funded, for a total of 36 thousand us\$, and funds are secured to maintain the support for the coming years.

There are currently birds available to be sent to zoological institutions interested in contributing toward the conservation of the Horned Guan and its native habitat. This program has proven to be a very successful endeavor, where the



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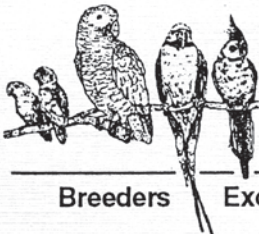
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captive breeding efforts have a direct and measurable positive impact in the conservation in situ of the species.

Conclusions

Our knowledge of the aviculture of the Horned Guan has increased dramatically in the last few years. Africam Safari has achieved a significant success in the breeding of this species, nevertheless, current breeding achievements of the captive population are not enough to maintain its viability in the long term. To achieve this we need to increase the effective size of the population and equalize the representation of the wild-caught individuals. It is imperative to establish an active international breeding network that cooperates by sharing information and exchanging animals.

We also need to establish husbandry guidelines, in order to improve husbandry management, and train staff at

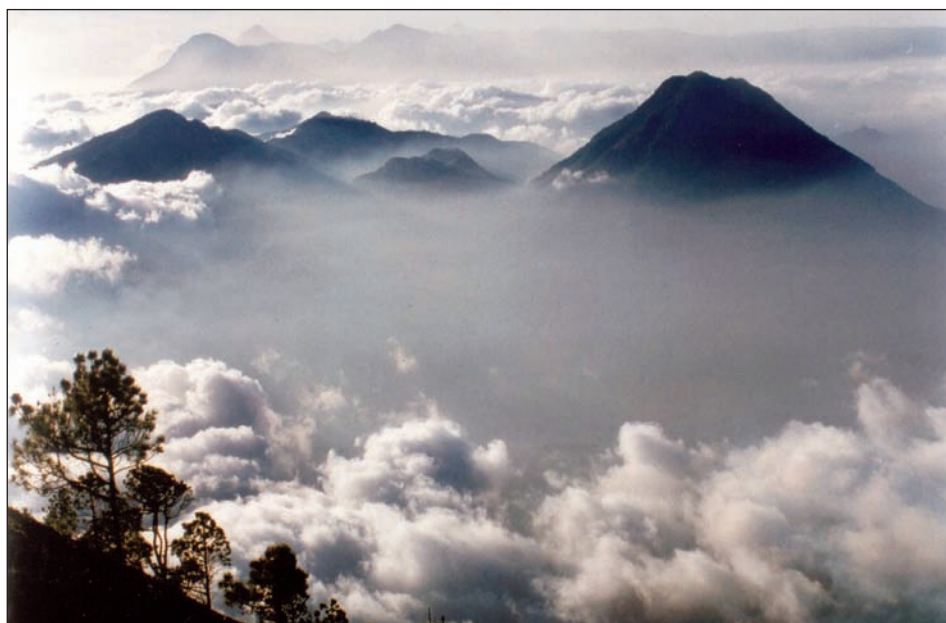


PHOTO BY M. BARRIOS / View of the volcano peaks from Sierra Madre del Sur, habitat of the Horned Guan populations.

different institutions, to ensure consistency and improve the chances of successful breeding programs.

Acknowledgments

The success in the Horned Guan

breeding program at Africam Safari and the collection of the information presented here would not have been possible without the dedication and persistence of Africam Safari's Bird Department staff.



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