

# HADADA IBIS AT THE OREGON ZOO



*By Charlie Rutkowski and Gwendolyn Gerdson*

In 1989, the Oregon Zoo opened its Africa exhibit. One of the subsections of that exhibit is an open-air aviary. This aviary has housed a number of birds and mammals over the years and one of the residents has been a pair of Hadada Ibis (*Bostrychia hagedash*). The male ibis was hatched on 16 July 1992 at the Franklin Park Zoo, Boston and the female was hatched on 14 May 1990 at Zoo Atlanta. These ibis have been very successful in hatching out and raising offspring over the last couple of years. Information gathered from their endeavor is being presented here.

The aviary is approximately 8300 square feet of surface area

with a wire mesh (1x1 inches for the side netting and 2x2 for the top) to enclose it. The substrate has ranged from pea gravel to dirt with occasionally grass being grown in the exhibit. There are a number of large trees that have been allowed to grow through the upper netting. Bamboo is the main plant in the exhibit. A concrete pond that has been coated with a rubberized coating and is cleaned by the dump/clean/and fill method is in the exhibit. There is a holding area that the animals can walk into as well as two small barns.

There have been numerous species housed in the exhibit over the years besides the Hadada Ibis. One species of mammal has been the Red-flanked Duiker (*Cephalophus rufilatus*). These

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Hadada Ibis egg after a chick has hatched

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duikers have been successful in breeding and rearing young in the exhibit and are currently housed there today. Other species of birds which have been exhibited with the Hadadas include Saddle-billed Storks (*Ephippiorhynchus senegalensis*), Spoonbills (*Platalea alba*), a Hooded Vulture (*Necrosyrtes monachus*), Hartlaub's Duck (*Pteronetta hartlaubii*), and a variety of north American waterfowl. Currently residing along with the Hadadas are Sacred Ibis (*Threskiornis aethiopicus*), Red-crested Pochards (*Netta rufina*), White-faced Tree Tucks (*Dendrocygna viduata*) and Fulvous Tree Ducks (*Dendrocygna bicolor*).

The Hadadas had bred once in the early years but not much of the information concerning that event was recorded. In subsequent years the Population Management Program recommendation was not to breed the birds. The birds were discouraged from reproducing primarily by limiting the nesting materials available to them as well as destroying their nest. When the nest could be reached a second method was

to spray the eggs with cooking spray to inhibit egg development. This second method had the advantage of allowing the birds to incubate an egg and not have the female constantly laying eggs. Correctly colored dummy eggs were not available.

In 2009 the PMP for Hadadas made the recommendation to breed this pair. Earlier in the year some major tree work was done in the exhibit. One of the tulip trees was topped and the birds made a nest on the flat area. This had the added advantage of being able to view into most of the nest by climbing up into a planter that was approximately 30 feet away.

The ibis were left to their own devices and by mid October of that year we had our first chick. Unfortunately no detailed records were kept with regards to when the egg was laid and the chick hatch out. Twenty-eight days after the initial discovery of the chick, it fledged.

In 2010 our first egg laid hatched out after 26 days. This chick was observed being fed and everything appeared to be going well. A second female



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Parent Hadada Ibis on their nest.

Hadada was seen trying to get onto the nest. Whether she wanted to mother the chick, kill it, or just get a closer look at it we don't know. Unfortunately the chick was found dead five days later. There were numerous occasions where that female was seen fighting with the male both around and on the nest. This female was subsequently removed whenever our pair started nesting.

Six days after the chick was found dead the pair were observed breeding. Since the nest was already constructed, the female laid an egg within the week. Thirty-three days after the egg was laid the pair discarded the infertile egg by pushing it out of the nest. At that time a second egg was observed on the nest. Due to the time frame involved it is believed that the hen laid the second egg 30 or so days after the first egg. Twenty-eight days after seeing the second egg, a duiker was seen carrying around an eggshell. The nest was checked and a chick observed. Two days later a second chick was observed.

At 28 days of age the first chick was observed leaving the

nest and going out onto one of the limbs that supports the nest. These chicks were slated to go into our bird show (Wildlife Live or WLL) so the decision was made to catch them up before actually fledging. The main reason for that decision was because of the duikers in the exhibit. Although it would have been an easy task to go in with a net and catch the birds on the ground, that disturbance would have excited the duikers. With attention being paid to catching the bird a scared duiker could easily run into the fencing and sustain injury.

The chicks were given a physical by the vet staff. At WLL, a stall was set up for them. The surface of the enclosure was asphalt covered by sod. Wood chips were avoided for the fear of accidental ingestion and impaction. Limbs were used as roosts and half of an animal transport kennel was used as a replacement nest. This had towels in the bottom of it. A shallow rubber tub for drinking and bathing was provided. A larger tub that the chicks could get into and wet

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Hadada Ibis with chick

themselves down was rejected, as they might not be able to get out. They still could not fly.

Various food items (mealworms, crickets, earthworms, tiny smelt, and their meat diet) were offered. The meat diet and fish were left in for a limited time so that it did not spoil. The other items were offered ad lib to encourage the birds to start feeding on their own. Weights were obtained on a daily basis to monitor their progress. The birds were banded with plastic leg bands, one white and one red.

The baby ibises were behaving and defecating fine but were not observed eating much. Initially they needed some assisted feedings. The hand feeding was done by starting an earthworm down their throat. This elicited the gobble response.

Small fish as well as some of the meat diet was also fed this way. Hand feeding was done three times per day over a seven days period. Then the assisted feedings were reduced in numbers over the next week to encourage them to feed on their own. Their initial consumption each was 90g of fortified meat, 30g of fish (small smelt), and 2 earthworms.

They had a tub with mealworms available for most of the day and through the night. Crickets were tossed to them to encourage their feeding on their own. Both had lost weight initially. The chick with the white leg band went from 1040g down to 890g. The chick with the red leg band went from 1180g down to 1040g.

Nineteen days after they were removed from the exhibit



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the birds were eating entirely on their own which was 45 and 47 days respectively from when they hatched.

On several occasions an adult Hadada Ibis that was already residing at WLL was put in with the juveniles to encourage them to eat. This had the added advantage of allowing them to socialize with an adult bird. There seemed to be no interest in the chicks displayed by the adult. Eventually however, the chicks mimicked the adult bird in foraging as well as vocalization.

Twenty days after the pair of chicks were removed from the nest, the parent birds were again sitting on an egg. Since this was late in the year (September) and we did not want a chick to be raised in the winter, the decision was made to

destroy the nest. By that time there were two eggs and both of the eggs were infertile.

The birds took a hiatus from their reproductive activity until March of the next year. Nesting material was provided in the form of sticks and short branches that the ibis would be able to carry up to the nest. Grass hay that was used as bedding for the ducks was incorporated into the nest by the Hadadas. They built their nest in the same tree as before, continuing to make observations possible. By the end of the month they had an egg. Twenty-eight days later a chick was observed being fed. A second egg was observed to be pipping and two other eggs were seen.

Two days later eggshells were found beneath the nest



Hadada Ibis chick fledgling

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A parent Hadada Ibis stands guard with a chick on the nest.

indicating that the third chick had hatched. All three chicks were observed being fed. Two days after being seen, the third chick appeared lifeless in the nest. Since the adults were observed feeding it we assume it did not die of starvation. It could have been suffocated by the other chicks or had some other type of malady causing it to die. It was found underneath the nest moments after the adult pushed it out. It was too far deteriorated for the necropsy to reveal cause of death. Three days later the nest was found destroyed and the chicks missing. We speculate that

a weasel had gotten into the exhibit, killing and consuming the chicks. The remains of one chick were found partially consumed and the remains of the second chick were never seen. A weasel had been seen on the premises. For several days the parent birds were incessantly calling to the lost chick.

The reproductive urge in our Hadada pair is strong; within 15 days they had rebuilt the nest and were sitting on an egg. One of the behavioral cues that we use to indicate an egg is seeing the male bird constantly sitting on the nest (our birds are banded for easy identification).

A few days later a second egg was laid. Thirty days after the first egg was laid, the birds pushed it out of the nest. It broke on impact and smelled quite rotten. No development in the egg was seen. Three days after that the female could not prod the male to leave the nest. The next day eggshells were found beneath the nest and a chick observed. We speculate that the reason the male would not leave the nest is because the egg was pipping. Around the fifth day the chick was seen backing up and defecating over the edge of the nest.

By day 13, pinfeathers could

be seen on the chick. The chick also started flapping its wings.

On day 26, it was noted that both parent birds were off of the nest for the first time. The chick was doing a lot more walking around the nest. Over the next couple of days the parents spent more time away from the nest flying up mostly to feed the chick. At this time the chick had to do a lot more begging to get the parents to regurgitate food. The young bird would go out onto the limb and the parents would call to it in a similar fashion as they would to a lost chick but without the urgency. Finally, after 37 days, the chick

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left the nest. For the next couple of weeks the parents continued to feed it. During that time crickets and mealworms were tossed in the chick's direction to help stimulate its feeding on its own.

Both birds engage in nest building. The nest is a relatively round structure of loosely lightly woven twigs and branches. Other material such as grass hay that is available in the exhibit is used. The nest is built on a flattened portion of a pruned tree. The eggs are laid every other day or third day with there being an average of two but up to four in a clutch.

The eggs are a tan color with brown spots. They are approximately 43 mm wide and 54 mm in length. These



**Hadada Ibis exhibit**

measurements were taken on three eggshells that had been retrieved. The incubation period by our birds for our environmental conditions has been 28 days. Nest building and breeding activity slows down during our winter.

As nest building progresses the birds can be seen on the nest constantly rearranging the material to their liking. When this activity slows to the point that one continuously stays on the nest we can be assured there is an egg. There is a relief

display exhibited when one of the birds wants to take over the duties on the nest. It will bring to the nest either some of the grass hay or small branches. It will present it to the other bird and then incorporate it into the nest.

This relief display can go on for several minutes with each bird clacking its beak and preening the other bird. Eventually they switch places. When a chick is present the relief display becomes more urgent with the cries of that chick. This encourages the parent with the food to prompt the sitting parent with its foot. Usually this is enough to get the sitting parent to relinquish its spot and the chick gets fed.

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The crickets are fed Flukers Cricket Chow, which is high in calcium. The crickets eat the chow, but can't digest the calcium. This delivers a substantial part of the dietary calcium needs of our birds. The Hadadas will readily consume earthworms when they start laying eggs or have chicks. Other times of the year they are less enamored with the earthworms.

We feed the bugs in a tray that has duck chow in it or scattered fed throughout the exhibit. We always feed one of these trays in our holding area and the birds have learned to come into that area. This has several advantages. There are heat sources in that room so that during cold inclement weather the birds can go in and warm themselves. Also when the Hadadas have chicks they will come in there and demand their ration of bugs and earthworms. If these items were fed solely out in the main exhibit the other occupants of the exhibit would get a majority of the bugs and worms first. Although we have seen the female Hadada be very aggressive towards the sacred ibis, chasing and pecking them when bugs are scattered

throughout the yard. The male usually just ignores the other birds.

The adults feed the chick regurgitated food. The chick, as it gets older, can be observed poking at the parent's bill begging for food.

After a while the parents relents, opens its beak and starts to regurgitate the partially digested food. The chick shoves its beak into the parent's beak and readily accepts this gruel. Eventually the chick will fledge and the parents will feed it on the ground.

In conclusion, the pair of Hadada Ibis since 2009 had at least five eggs that did not hatch. The average incubation period for those that did hatch has been between 26 and 28 days. They raised two chicks that fledged another

pair that were removed to participate in our wildlife show. Three chicks were killed while on the nest and one died of unknown causes. The success in breeding Hadada Ibis at the Oregon Zoo has relied in part on an excellent pair of birds that wanted to breed and raise young no matter what the circumstances. Behavior modification in various forms was used to help ensure the birds success. Although this cannot be thought of as the definitive work on these ibis, it does give some insight into their behavior as well as some parameters for reproduction.

*Special thanks to Shannon LaMonica and Tanya Paul for their notes on dealing with the chicks at Wildlife Live and Michael Illig for assisting in editing this article.*

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