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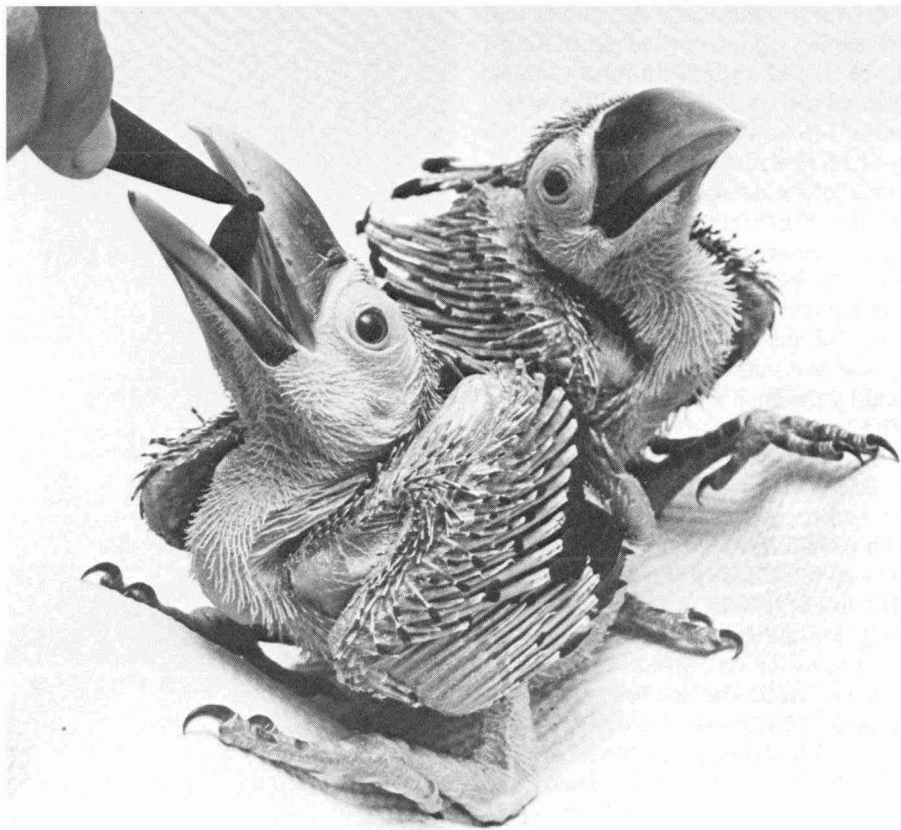
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*Red-breasted toucans 4½ weeks old.*

# Red-breasted Toucans flourish in Phoenix

by Kristin Buhl  
Senior Keeper/Birds, Phoenix Zoo

Toucans, with their garish colors and oversized beaks, are found in the wild in open wooded areas of tropical South America. There are 41 species of toucans and 7 genera. The Red-Breasted toucan, *Ramphastos dicolorus*, is also known as the Green-billed toucan. Although among the smaller toucan species in size and beak length, it is one of the most aggressive toucans.

In December 1978 a Red-breasted toucan was donated to the Phoenix Zoo by a local patron. While in quarantine, a laparotomy was performed revealing that our new resident was a male. He was exhibited by himself in an 8' x 20' x 10' enclosure of 1" x 2" welded wire. After nearly two years of searching and advertising a second bird was finally located, but its sex was unknown.

While the newcomer was in quarantine, slight differences were noticed in the beak sizes of the two, which, in toucans, is usually indicative of sex difference. The

new bird's culmen had a slightly higher arch, making its beak appear a bit stouter and shorter than the male's. A difference in raspy vocalizations was also apparent; the male's was more intense and drawn out than the other's.

The two were visually and vocally introduced to each other in 4' x 5' x 5' cages set side by side, so that there was no physical contact possible until compatibility could be assessed. Not only did he sit as close as possible to the other's perch and call constantly, but he also offered tidbits from his fruit bowl through the wire. All of this attention was seemingly ignored.

Before the two were relocated to their new exhibit, a 5' tall, 1½' diameter date palm log was set in the cage. A cavity about 8" wide and 18" deep was hollowed out. A plywood lid closed the top, and a 4" entrance hole was punched in the side about 4" from the top. In the wild, toucans do not excavate their own nest sites (they use abandoned woodpecker cavities or

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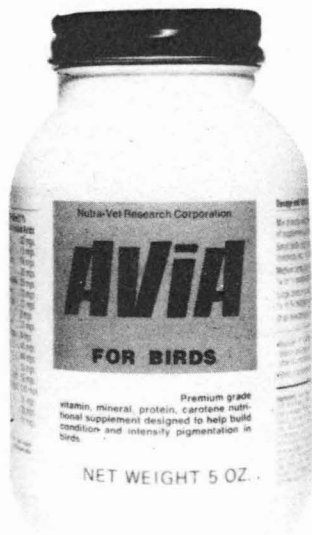


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decayed trees), but rotted pieces of wood or debris may be removed or the entrance hole enlarged.

At their introduction in the toucan exhibit, there was no aggression between them. The new bird was preoccupied with getting familiar with the new surroundings; the male, however, immediately inspected the log, then proceeded to court the other bird in earnest. With each grating call, he would change his posture from stretching tall with beak extended to a low crouch. He hopped after the other persistently with food offerings in his beak, making a rolling click sound if he got its attention. Although the new bird seemed disinterested in his advances, after six weeks of courtship, activity around the nesting log inspired us to make a quick inspection which revealed two rounded white eggs (May 1981).

The incubation period for toucans is relatively short, only 16 to 19 days, depending on the species. Sixteen days after the eggs were discovered, "growling" noises were heard whenever one of the toucans entered the nest log. Their daily food ration was increased, and a fresh crock of food put in twice a day instead of just the usual morning delivery. Their diet consisted of a variety of chopped soft fruits and vegetables, small kibbles of dry dog food, mynahbird pellets and a mix of whole ground meats with added vitamins and minerals (referred to as bird-of-prey diet). The dog food and mynah pellets were offered both dry and soaked; before nesting the adult toucans preferred dry dog food, but fed the moistened foods to the young. Mice, mealworms and crickets offered to the toucans prior to the hatching were inspected but ignored. Once feeding the young, however, mice were taken but insects still refused. Interloping sparrows were avidly killed by the toucans, and pieces of them also fed to the young.

As the parents were attentive and feeding the young, and vocalizations could be heard, the keepers stayed away from the nest log to avoid upsetting the adults. Feeding was shared by both sexes. A morsel from the food crock would be taken to the nest entrance, where the bird perched and called to the young by a "ratchet" sound. (Later, after the young were gone from the nest, the male continued to exhibit this behavior).

One day, however, two weeks after the hatching, there was a message that, "There's this pink blob — maybe a bird — on the ground." Sure enough, one of the chicks was on the ground. I quickly returned it to the nest after checking it for injury, and while there discovered that there was a total of three nestlings. Two hours later the



*Pair of red-breasted toucans near their palm nest log.  
Red-breasted toucan youngster.*



Photo by Dick George, Phoenix Zoo

Photo by Renee Immel, Phoenix Zoo

blind, naked chick was on the ground again, and one of the parents was trying to kill it. Since the parents were obviously not going to accept it back in the nest again, we took it for hand-raising.

Still later that afternoon, a second chick was on the ground; it was also taken for hand-rearing. The third nestling was taken from the cavity but as it was plumper and seemed healthier than the other two, it was returned for the parents to raise. They continued to tend it for two more weeks, after which time the nestling died and the adults pulled it out of the cavity. Temperatures at that time were over 110° F, and though the log was in a shaded location and mistheads were spraying a fine, cooling mist, the temperature inside the log may have become excessive.

The two surviving toucan chicks were nestled into a deep cup-like depression in a large towel that we placed in a box. A folded paper towel at the bottom of the depression facilitated frequent cleaning, yet allowed the young to grip the sloping sides of the terrycloth, in nearly the same posture as they would have had in the nest log. When necessary, a heating pad was placed behind one side of the towel so that the chick could move toward or away from the warmth. For humidity, a small wide-mouthed dish with a water-saturated paper towel was placed in the box.

The box was partially covered with a towel, which not only kept the birds in darkness and prevented drafts, but also illustrated an interesting behavior of cavity nesting birds — nestlings raised in tree cavities respond dramatically to “shadowing,” that is, the darkening of the cavity when the parent enters the hole of the nest



*Toucan exhibit and breeding aviary at the zoo.*

log. The darkness stimulates the young to instinctively begin gaping for food. At each feeding time, this shadowing effect was simulated by putting the towel completely over the box, then withdrawing it to feed once the chicks had responded.

When the young are newly hatched their first meals are regurgitated to them by their parents. Some of the parents' digestive enzymes are probably transferred as well. As these chicks were two weeks old, they were most likely receiving morsels directly down the throat.

When the two chicks were evicted from the nest, they were so weak that instead of

solid food the first meal prepared for them was mashed banana, mashed peeled apricot, dog chow soaked in Pedialite (a water solution with electrolytes used for conditions of dehydration or stress), and Vilec-sol (a multiple vitamin for birds). This was cooked in a baby food warmer for 5 minutes and fed from a parrot spoon (a square measuring spoon with the sides bent up to form a trough-like shape).

Both chicks swallowed the food, but the weaker nestling, which seemed near death, regurgitated it. Fifteen minutes later, mashed, peeled grape was fed, which it managed to keep down. Feedings from then on were neither mashed nor cooked, as small chunks of chopped fruit were accepted and were much easier to administer.

That first afternoon the birds were fed once every 20 minutes, then once every half hour from sunup to sundown for the next three weeks. For three days the weaker nestling had to be force fed, and at nearly every feeding for the first two days there was some regurgitation by both chicks. By the fourth day, however, both were accepting much larger chunks of food and had gained markedly in stamina. Now when they gaped, they stretched up tall and held their heads up longer. They competed not only in gape, but also in enthusiasm of vocalization. By the fifth day they could accept whole pinky mice.

Their diet consisted of a variety of soft fruits and vegetables (grapes, cherries, banana, orange, peach, plum, zucchini, peas, apple, celery tops, and soaked raisins), small balls of bird-of-prey diet,

*Youngsters at 5 weeks of age.*

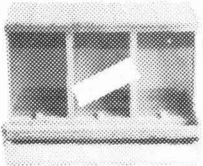


Photo by Renee Jimmel, Phoenix Zoo

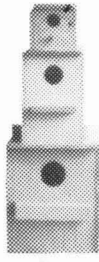
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mynah pellets, dog food kibbles, and pinky mice. Osteoform, a calcium/phosphorus supplement, was added to the bird-of-prey meat. The mynah and dog food pellets were soaked in Vilecsol.

Favored items at the early stages of development were mice, grapes, cherries, zucchini and peas. Since fledging, they no longer accept mice (once the young left, the parents no longer took mice either). Apple and banana were least favored. Fresh red raspberries were available for three days and were taken with relish. It is interesting to note that during those three days, their stools were vivid lavender. As toucan digestion is fast and not always complete, the tails and legs of the pinkies consumed were often obvious in the droppings.



Photo by Dick George, Phoenix Zoo

Red-breasted toucans 2½ weeks old.

Advancement in their development could be seen daily. Within five weeks they transformed from naked, pink chicks with closed eyes to alert and extremely curious feathered fledglings with big blue eyes. Toucans have a much shorter incubation period than most birds (16 to 19 days), but the parental care period is much longer; toucans fledge at seven weeks.

At three weeks the chick's eyes began to open; by three and a half weeks they were open but the birds didn't yet seem able to distinguish forms. At four weeks, when the hand with food reached into the box to feed, the chicks would shy away. From three and a half weeks on, the response to shadowing gradually diminished, while the response to the ratchet sound (made by the keeper) became more stimulating.

At five weeks a difference in the size of the chicks' heads and the shape of their beaks was obvious. There were distinct personality differences as well: the female was much more bold, aggressive and curious; the male more mellow and shy,

with a slightly lower voice.

At five weeks they were not content just to have food dropped down their throats; they would taste and play with the morsels. As they were eating only about half as much as they had been, their feeding schedule was gradually reduced from once every half hour to once an hour.

Before they were even six weeks of age, they were venturing up to the edge of the box, and a week before due to fledge, the young female tried out her powers of flight. The two frequently would get into bitter squabbles, threatening each other with harsh vocalizations and lashing out with their ever-enlarging beaks.

While in the nest log, young toucans have a calloused area on their hocks known as "heel pads" that prevent abrasion from the rough surface of the cavity. After fledging, these pads gradually disappear. At two weeks of age, the pad was a callous encircled by hard bumps resembling dull thorns; by ten weeks there were only the slightest remains of the bumps.

By seven weeks they were trying to master flying and perching. The only feat left for them to accomplish was feeding themselves and learning to drink water (not an easy task with such cumbersome lips!) Food was left scattered about for them to toy with; they tasted and tossed the morsels around before swallowing, and gradually became independent and energetic fledglings.

By four months of age their coloration was nearly identical to that of their parents, and they had become healthy and curious young birds. Though tame from the close contact with humans as they were growing, they gradually assumed a more wild nature. By five months they no longer flew to a keeper's arm or endured handling. They still tolerate humans much more readily than do their parents.

The long five weeks of care, and of watching the toucans develop from blind helpless nestlings into healthy and handsome fledglings was fascinating and most rewarding. Hopefully, next Spring the adult toucans' next procreative endeavor will be a complete achievement by them, but if not, we now know that patience and determination of keepers can also be successful. ●

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