

Breeding of Curl-crested Aracari (*Pteroglossus beauharnaesii*) in Zoo Ohrada.

by Renata Kavkova and Jitka Kralickova, 1996



Curl-crested Aracari (*Pteroglossus beauharnaesii*) belongs to a species that is rarely bred and exhibited in zoological gardens, even other representatives of this kind are not normally exhibited or form a part of the general avifauna. The first kind of the *Pteroglossus* that was brought in from the wild was in 1807 and that was to the zoological garden in London it was *P. torquatus* (Collared Aracari).

Even though Aracari *P.beauharnaesii* has already been known for some time from different descriptions and stuffed bird samples, the actual live bird first appeared in captivity only in 1960 and that was in the Bronx Zoo, in the United States, (Ruthers & Norris, 1984). Other imports of this kind were only sporadic. At present time it is bred only in few zoological gardens - San Diego/USA California/, Cambron/Belgium/ (Isis/Arks, 1995), and in Czech Republic only in the Ohrada Zoo in Hluboka nad Vltavou and also in the Zoo in Dvur Králové nad Labem.

Classification, occurrence and the biological kind

The *P.beauharnaesii* is systematically sorted into r. *Pteroglossus* (which in all includes 10 kinds) families Ramphastidae (Toucans) and Piciformes kind. The area covered by this kind goes as far as the Amazon region of Peru, west Brazil and northern Boliva. The birds has its home in the humid forests and grassy regions with sporadic greenery in the lowlands up to 600 m. above sea level. The spacious niche for these toucan birds are the crowns of tall large trees where they search for food and make their nests.

It is mainly fructo-vegetative kind, its main form of food is fruit and different kind of berries. Insect and other form of small vertebrae are only a supplement to his diet, the need increases during the period of nesting. The bird is mainly active during the day. During the night, he sleeps in cavities, during his sleep he lifts his tail feathers directly upwards and rests them on his back, which enables him to fit into very small openings. He nests in cavities without any form of nesting material. His style of flight resembles the flight of a woodpecker; his flight is short and clumsy. On the other

hand, in the tree crowns he moves quickly and ably, jumps, climbs and flies from branch to branch. From time to time, he also flies to the ground to have a drink, or swim or to gather some food. His vocal demonstration is restricted to hoarse non melodic sound or whistling sound, for example stridulous warble while he is feeding his fledglings. If he is excited, he gives out short sharp shrieks. In comparison with the more known kind of *P.torquatus*, he is less aggressive (Rundel, 1976).

With his colouring, he belongs to the nicest kind of aracari. The most known morphological mark of this kind (to which he owes his name) is the curliness of his feathers on the forehead and on the crown of his head. Black shiny feathers remind you of a viscose fibre, twisted by the pull across a sharp edge. The length of his body ranges from 40 - 45 cm, the length of a beak of an adult can reach up to 10 cm. Sexual dimorphism nearly doesn't exist, only one female from our three breeding pairs can be distinguished from others by slighter figure and with a smaller beak.

History of breeding in the world

History of breeding of *Pteroglossus* dates back to 1974, where zoo in Los Angeles brought out a subspecies of Collared Aracari (*P.t. erythorpygius*) (Rundel, 1976).

Curl-crested Aracari nested for the first time in Los Angeles in 1974, but all of the 6 eggs laid in 3 nests were unfertilized. An aviary of the same type (six sided, with a diameter of 5 m) was shared with a pair of Partridge (*Francolinus* sp.). The nesting cavity had a diameter of 15 cm. this was hollowed into a tree stump which was attached to a top of a tree trunk only 120 cm from the floor. Other descendant of this breed, especially of *P.aracari* (Black-necked Aracari) was successfully bred in a Venezuelan zoo in Barquisimeto in 1988.

The breed of Curl-crested Aracari in Zoo Ohrada

The zoo Ohrada bought its first pair of aracari in 1994, and year later another pair, which was consisted of one adult male and immature female bird. The third and so far the last pair was brought into our zoo on the 21st April, 1996, this pair consisted of a adult male and a young female who at the time of import into CR. Showed signs of immaturity. All bought birds come from catchments and their sex was identified by endoscope.

Conditions of breeding

The first two pairs have been separately placed into box shaped aviaries these were housed in the over-wintering accommodation, (the size of these boxes were 145x180 cm., with a height of 280 cm.). The internal facilities were only purposeful: tree trunk with branches for climbing and a nesting box in a trunk, made out of piece of lime tree (with a diameter of 30 cm.). The birds regularly nested in the cavities of the tree. The floor of the aviary was covered with a layer of river sand. Food was offered in stone bowls placed on perch. The birds had normal drinking containers but also a large bowl was provided to give them the possibility of swimming. The lighting system was approximately 12 hourly, (light from 7 - 19 h.) and the temperature moved from 15° to 23° C. During March 1996, the mating with both pairs was not particularly expressive, treading was not seen and nesting did not take place.

The third pair after purchase was placed in a separate aviary in the basement of the workshop area due to insufficient place in the other aviaries. The aviary (floor area of 200 x 330 cm, with a height of 215 cm) had no possibility to fly outside. The wooden structure of the aviary was covered with normal rabbit wire the floor was covered with a layer of river sand. The inside facilities were basic,

oak tree trunk with branches, feeding grid and a bowl for swimming. For the nesting box we again used the lime tree trunk with a diameter of 30 cm, and a height of 55 cm. The opening into the nest was 7 cm wide, it was positioned about 40 cm from the base and 175 cm above ground. The roof of the nesting box was removable and access to the opening was made easier by a set of "steps" made from strong nails, fixed to both sides. The nest was lined with soft lime tinder wood shavings, but the birds threw most of the material out of the nest on to the floor. Due to the absent heat and lighting source, the heating and lighting regime followed natural conditions from April to September 1996.

Feeding

The previous owner offered the birds a very simple diet of sliced apples and special granules for Mynas (*Gracula*). After their arrival in our zoo, we varied their diet. The base of their diet consists of chopped fruit, either home grown or imported, the birds prefer sweet soft fruits - like bananas, cherries, peaches etc. This is then supplemented with small amount of granules for Mynas from Witte Molen co. From time to time, we add a bit of grated carrots or chopped lettuce. During the nesting period, we also offer them sprouted wheat. Protein part of their diet is provided with a small amount of cooked minced beef, egg mixture, some insects, and during the feeding of the fledglings even one-day-old mice. From September 1996 we also enriched their diet with vitamin EX-A, this is a complete additive of biologically active substances, designed for exotic birds. We offered this on a daily basis, as per instructions, and only once a month we substituted this with a concentrated multivitamin Supervit D. Aracari are fed once a day, in the morning.

Nesting

We did not observe the first courting and mating actions, but an increased interest in the nesting box was seen approximately from the middle of June. From the 24.6.1996 both birds spent most of their time inside the nesting cavity. Not to disturb the birds too much, we left their activity to a natural course.

On the 19.7.1996 the keeper heard the first sound of the fledglings. We reduced our activities in the aviary to an absolute minimum, only to feed and water the birds, and cleaning was carried out only twice a week. In the beginning, the amount of food did not need to be increased, but we enriched it with one-day old mice and for a short time even some crickets. Chopped up locusts have been offered to them during the whole season, but because of the minuteness of the food, the pieces of sharp shanks were not removed. Aracari accepted this food happily, the same way as they enjoyed other insects and mice. The female spent most of her time on the nest, while the male stood guard near the entrance to the cavity, and when disturbed he gave out sharp screeching noises. The behaviour of the birds was not aggressive during this time, only when the aviary was approached the female left the nest for a period. Mainly the female fed the fledglings, she collected the food immediately after it was offered, and during which time she preferred the protein part of food offered. From time to time even the male brought food into the nesting cavity. The young fledglings made tuneless croaking noises, these increased in intensity during feeding time. They also made noises after feeding and when one of the parents entered the nest, later on they reacted to their voices.

No extra heat was supplied into the aviary during the nesting time, only at night the window was closed. Closer observation was difficult, because soon as the keeper appeared, the birds noticed him and interrupted their activity and waited to see what will happen. They did not react to other disruptions (at that time there was some reconstruction going on).

We found two well-developed fledglings after the first check on the 12.8. The nesting cavity was completely clean and dry, there were no remains of eggshells, and even all the nesting material was gone, this was carried out by the parents. We replaced the wood shavings and tinder up to about 10 cm high. We were not able to find out the original number of eggs because of the state the nest. Both the fledglings had been fed and sat at the bottom of the nest with their heads upwards. Their skin had a grey-pink colour after 25 days. Their hand and elbow wings started to develop, also tail feathers and head feathers started to grow. Across the back two narrow rows of dark feathers appeared. Their eyes were opened. The beak was yellow-grey; the length of the beak was approximately equal to the distance from its base to nape of its head. We did not weigh or measure the young fledglings, one of them appeared slightly smaller than his sibling.

The second check took place on the 27.8. the remainder of the nesting material (parents started to carry it out immediately after the nesting box was replaced, after the first check) was wet, but the young fledglings were all right. From this day, we checked the nesting box two to three times a week and replaced the bedding as necessary.

The bigger fledgling was seen in the opening to the nesting cavity the first week in September. On the 6.9. the smaller fledgling was found on the ground with visual breathing problems, even after application of antibiotics with an injection, this bird died the following day. Dissection showed signs of circulation problem with dilation of the heart, and large blood congestion in the lungs. No parasites in the blood, nor bacterial infection was found in the body, only catarrhal inflammation in the intestine but without parasitic infection.

Strong invasion of unknown components was found in the trachea and also histological signs of focal tracheitis there were also signs of inflammation in other body organs. There were no similar signs with other individuals. Because of this, heat source was installed within the vicinity of the nesting box. From the first sign of temperature drop outside at the beginning of September, the temperature within the aviary was held at a constant of 19° - 22°C. From the 9.9. the remaining young bird spent most of its time outside the nesting box, but over night, he spent his time in the nest together with its parents. On the 10.9. the birds were treated with Baycox (a product which acts against coccidial) the young bird was given extra product Nilverm (which is against nematodes)

At the beginning, the young bird was being fed by his parents on branches near its nesting box, but approximately in the middle of September, the young Aracari flew regularly to the bird table and was feeding himself. During this time, the source of suitable and freely available insects became sparse due to the cool weather, therefore the protein part of the diet was mainly substituted with cooked meat and floured maggots. However, the young increased its intake of fruit to the detriment of preferred insects and mice.

On the 9.10, we separated the self-sufficient young bird from its parents, at the age of 13 weeks, into the area adjacent to its parental aviary. During the first few days, the parents tried to feed the young through the netting but after awhile they calmed down. The birds over-wintered in an average temperature of 16°C, the light was switched on from 7 a.m. to 7 p.m.

The parental pair stayed together in the same aviary until the 21.12.1996, at that time the pair had to be separated due to mutual attacks, this led into dangerous skirmishes. During the excited flight, the birds locked together and continued their skirmish on the ground. The female remained in the

original aviary and the male was placed to adjacent area, they were separated only by wire fencing. The young bird that was in the same room with its parents up to now, was removed to another building.

We enabled the pair of birds to join again on the 19.2.1997. The female remained in the cavity from the end of February, the male was seen from time to time while he was removing wood shavings from the cavity. On the 8.3. the male was intensively chasing the female this again led to their separation. Day after this incident we placed a dense covering from pine branches and again introduced the birds to each other. The female either remained in the nesting cavity or used the facility of the dense pine branches. We removed the male again at the end of March, because of his aggressive behaviour towards the female, and the female took part in a week stimulation treatment (Combinational E, mice). The mating took place on the 7.4. During the months of April and May, the female spent most of her time in the nesting box, from time to time the male bird joined her even for the whole day, in the nesting box.

Between the 22 and 27.5 the male bird was noticed, that after food was offered, he flew into the nesting box with food in his beak, sometimes even when the female was sitting outside the nest he would fly in with food. On the morning of the 27.5 the female became nervous, left the nesting cavity, and stayed the greater part of the day outside, whereas the male kept flying into the nest. Unfortunately, after checking the nest on the 28.5 it was found to be empty.

In the following period, both birds seemed to behave normally and no mating was seen to take place, nor increased interest in the nesting cavity. The female used the nesting cavity from time to time and probably used it as a safe hideaway from the male.

Random check on the 17.7 unexpectedly showed 1 fledgling and 3 pure white coloured eggs, their shape and size was similar to pigeon eggs. Up to a point, the male also participated on sitting on the eggs, he remained in the cavity while the female took a short flight outside. After discovery of the young, we immediately increased the amount of offered maggots, crickets and locusts, while it was not necessary to increase the total amount of food offered. During the second check, on the 24.7. we found three young bare pink fledglings. One egg remained whole. The young fledglings hatched gradually, which was proven by their varied sizes and development. The female sat from the beginning of egg collection. The beaks of the young fledglings did not show any signs to the family of toucans.

The male proved himself a model and caring father. Immediately to food was offered he fed the young birds (he changed with the female) for majority of the time he was guarding the nest. On the other hand, the female, after the food was offered, fed herself first and only after a while, she started to bring the food to the young. The male who was not restrained by the sitting on the nest, flew immediately with the food to the nest. The male seemed calmest while the whole family was sitting in the nest, and it appears that his supply of food to the nest was over excessive, when during the checks we regularly found live-floured maggots at the bottom of the nesting cavity. Even so, on the 29.7. we found only two young fledglings and no eggs. The young birds were still blind, and bare (with slight signs of tail feathers) their nostrils were small and on each heel, they had signs of nine sharp thorny cirri. Their growing beak did not leave anyone without doubt that they came from a family of toucans.

During the nesting period, we chose to check the nest once a week; during this time, we refilled the nesting material. Contrary to the natural nesting conditions within the cavity of a tree, in a nesting box the natural absorption of excrements and their natural disposal with harmless microorganism does not work. These microorganisms can be found normally within a living tree.

6.8. the eyes of the fledglings started to open and slight signs of flight feathers appeared. When feeding the young with few day old young mice, the female takes them into the nest whole, while the male is able to hold them with his leg on a branch and pull off small pieces with his beak.

11.8. the young birds were slightly dirty, so we decided to change the bedding twice a week. The young aracari could see and on their head, they have visible ear openings, their growing beak was quite noticeable. 15.8. on this day, the tips of red feathers appeared on the neck and chest of the birds, on the lower part of the abdomen yellow feathers. The amount of food consumed during this period increased. 18.8. the tips of the flight feathers on the wings and tail cut through their covers. The spurs lost their sharpness, but they were still markedly developed.

29.8. one of the young was seen in the opening of the nesting cavity. 5.9. it left the nesting cavity and day later even the other young bird left the nest, both of them were fully feathered and could fly. Now the male was mainly responsible for the feeding of the young birds but it did not take long and the young birds learnt to fly to the feeding table and to feed themselves. They were still happy to use the parental care, and when offered food by the parents they started begging by giving out intensive hoarse sounds. The young birds favourite past time was to nibble the bark from branches or to collect insects from the floor.

Once the young birds left the nest, the male carried on feeding them, but then started to chase the female who was not able to feed herself and had to hide her self in the nest. Therefore on the 14.9. we removed the male from the aviary. The female calmed down but by now the young birds hardly paid any notice to her. On the other hand, the male that was only in the next aviary, which separated them only by wire fencing, was agitated and tried to feed the young birds across the wire netting.

The end of September brought some favourable weather conditions, which we used to let the young birds fly out in the new external aviary. The outdoor aviary used mainly the young who sunned themselves and watched the surrounding. The female and male did not fly outside, and willingly stayed inside the room. Both the young and the female stayed together in the same aviary until the beginning of January 1998.

From available information, there isn't a zoo that has been able to breed an Curl-crested Aracari until 1996 nor did any other breeding stations publish information regarding success in breeding young of this particular species. Our worldwide success in breeding Curl-crested Aracari pleases us, especially because we were able to reproduce this bird by natural means.



*The adult pair of Curl-crested Aracari (*Pteroglossus Beauharnaesii*), that successfully managed to reproduce in captivity in the Zoo Ohrada. This kind of bird has no special marked dimorphism, but the female from the pair (on the right) is more delicate.*

Development of young Curl-crested Aracari:



at the age of 7 days (the egg in the front is white in reality)



during checking the nest cavity when 2 weeks old



Further on at the age of 3 weeks



4 weeks (the young can see, developing the wing feathers, tail feathers, the head feathers starting to grow)



5 weeks and...



fully feathered at the age of 9 weeks