

# Captive Breeding of the Fairy Bluebird at the San Antonio Zoo

by Wendy Worth  
Curator of Birds  
San Antonio Zoological  
Gardens & Aquarium

On a recent birding trip through the Malayan peninsula, I heard the distinctive call of the Fairy Bluebird, *Irena puella*, and looked up to see four or five males flying overhead. The electric blue and velvety black of their plumage shimmered in the sunlight. Although I see them every day in their exhibit in the Hixon Bird House, the sight of this small group flying freely in their natural habitat and the sound of their exuberant whistles and calls was a memorable experience.

These lively, mainly fruit-eating birds live in pairs during the breeding season or small groups the rest of the year in the evergreen lowland forests, up to 4000 ft (Delacour, 1947). Five subspecies are distributed from India, Burma, Thailand, Malaysia to the Philippines and Indonesia; they vary very little in color (Rutgers, 1969). In Borneo, they play a role in the pollination of *Erythrina* and *Grevillea* bushes which provide shade to the coffee plantations. The pollen sticks to their chins as they travel from bush to bush (Rutgers, 1969).

On the Malay peninsula, they were actually called "Coffee birds" due to their fondness for eating the ripe berries of the coffee bushes (Astley, 1910).

Their nests are lined with rootlets. The female lays two pale blue-gray eggs speckled with brown, gray or purple markings (Grzimek, 1968). The juvenile chicks have the female coloration for the first six months, which is a duller, verditer blue. At this age the males begin to get black feathers on their head and breast (personal observation).

According to the latest ISIS, there are 56.54.15 Fairy Bluebirds in zoos in North America, while in 1982 only 61 individuals were listed. Is this increase due to captive propagation or increased importation? Unfortunately it is the latter when it should be the former. For the last decade, it has been the fourth most commonly held passerine in North American

zoological collections (Webster, 1993). For such a popular and important species, breeding success should be more reliable.

The bloodlines and genetic diversity of zoo-based Fairy Bluebirds are managed by a studbook organized by the Toledo Zoo. Although many of the wild-caught birds in zoos have reproduced so that inbreeding is not a problem, the success rate has been unsatisfactory. Captive breeding has been erratic as there is a difficult period at their fledging time, days 11 to 17 (Bohmke, Silveri, 1988). What appear to be healthy chicks often die during this period. This happens whether they are parent-reared or handreared and for various reasons. In a survey of 34 zoological institutions, compiled by Ann Silveri and Bruce Bohmke in 1988, parents were able to fledge only 43% of their chicks and handrearing yielded only an 11% success rate.

## San Antonio Zoo Birds

In 1993, the San Antonio Zoo has had more success than in the past in breeding Fairy Bluebirds. San Antonio Zoo has two pairs of this species; one in a mixed species exhibit, indoors, that is 18 ft wide by 18½ ft deep by 13 ft high and the other in the off-exhibit propagation area called the Avian Reproduction Center (ARC), which measures 8 ft wide by 7½ ft high by 16 ft deep. The substrate is a bark mulch and both areas are heavily planted. The two pairs were successful in raising chicks in 1993 due to a change in protocol initiated in 1992.

In 1992, one pair's first clutch (two chicks) died during that mysterious period, on day 12. When they produced a second clutch, we removed the chicks and were able to hand raise one of them. The one-year-old bird is doing very well, and was named "Blueberry" after its favorite food item!

With the next clutch we decided to try removing the male as soon as the second egg was laid (between 24 to 48 hours after the first egg). The Denver Zoo had tried this with positive results during their 1990-91 season, although they left the male with the female until just prior to the chick hatching (Chacon, 1992). We kept the male within visual and calling access to the female to maintain the pair bond.

We found this to be an excellent solution. The male is in visual and auditory

contact with the female yet unable to harass or destroy the eggs or chicks. The incubation period is quite rapid, 14 days, and the period to fledging equally short, and the female was quite capable of incubating and feeding the chick on her own. We also began offering a large bowl of free-choice crickets, mealworms and waxworms several days before the chicks were due to hatch.

We tried this same technique in our mixed species exhibit. When the female laid her second egg we removed the male. Again the female was able to incubate and raise the chick on her own. We would like to take this one step further this year and put the male in a "howdy" cage and keep him in the exhibit.

In most clutches, although two eggs were laid, and often two chicks hatched, only one chick fledged per clutch. The female begins incubation with the laying of the first egg, so that the chicks often hatch a day apart, which probably puts the second chick at a disadvantage. In one case, two chicks hatched and we pulled one for handrearing and left the other to be parent reared, and both chicks survived. This technique also was used in Denver, where they pulled the second chick at day seven (Chacon, 1992).

## Nests

Another factor that may influence breeding success is nests. Many of the Fairy Bluebirds currently in zoo collections are not reliable breeders. We feel that this may be due to inadequate breeding stimuli in the captive environments. Many of the birds in the captive population are wild-caught birds and may be missing the native plant fibers used for nesting material.

We have found an interesting solution to that problem: we offer our birds Great-tailed Grackle *Quiscalus mexicanus* nests. We soak the nests in diluted bleach for 15 minutes and set the nest in a grapevine frame to support it. Additional hay is also provided. The Fairy Bluebirds respond immediately and are nesting within several days.

## Chick Development

Chicks that were handraised were offered chopped pinkie mice, molted mealworms, waxworms and (after about three days), crumbled low-iron pellets (Zeigler) and mixed fruit. The ingredients were mixed to a thick, soupy consistency and

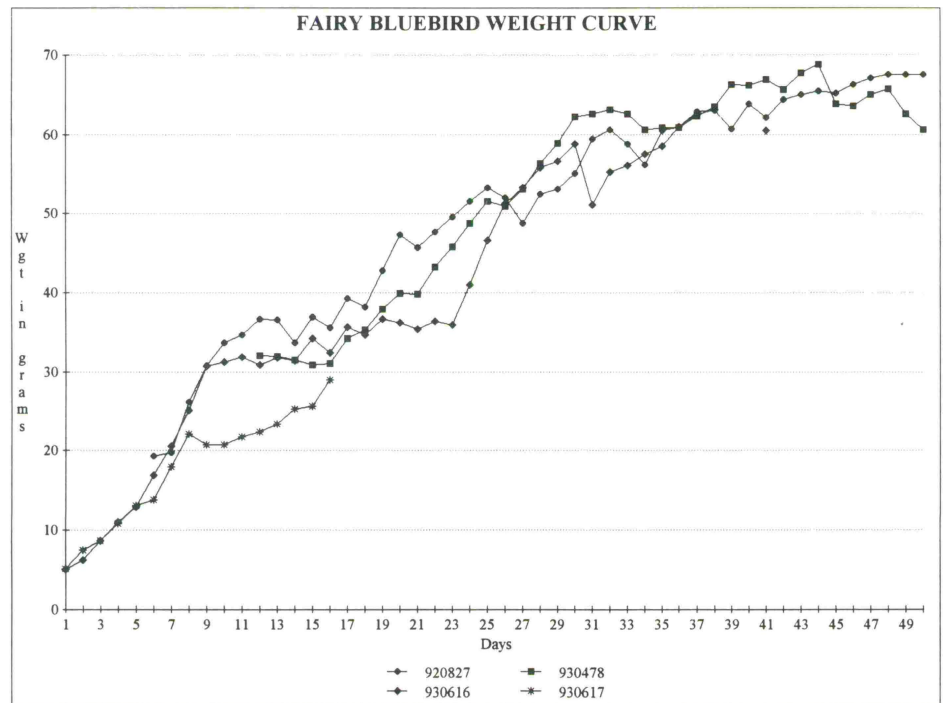


The female is lighter blue. As pairs, they are an ideal aviary subject in both zoos and private aviculture.



The male Fairy Bluebird shows its electric blue and velvet-black plumage in the sunlight.

fed with an eyedropper. A pinch of Nekton-Bio (Nekton) was sprinkled on the food once a day. They were fed every two hours from 6:00 a.m. until 10:00 p.m. By day 7, the mix was thickened and small chunks were offered by forceps. Beginning on about day 30, they were observed picking up food on



their own. They were able to fly by day 15.

The parent-reared chicks were perching on the side of the nest by day 14 and fledged by day 16. The female offered the chick many crickets that she had "tenderized" and from which she had removed the ovipositor. One chick was seen "showering" in a hose mist at day 21.

### Conclusion

We feel that the consistent success we are having with both pairs of Fairy Bluebirds indicates that this technique is valid to be recommended as protocol for captive propagation of this species.

We suggest removing the male one week after the second egg is laid, and keeping him separated until the chick is fully fledged. We also suggest, if possible, to keep the male within sight of the female to maintain the pair bond. In the St. Louis survey (Bohmke, Silveri, 1988) 20% of the eggs recorded were lost during incubation for reasons attributed to the birds' mates: breakage, predation and nest abandonment. Several zoos have seen males killing their offspring (personal communication).

Fairy Bluebirds are among the most popular exhibit birds. With well-organized management a captive population of Fairy Bluebirds could be maintained with minimal infusions of wild-caught birds. Cooperative efforts and exchange of information between zoos hopefully can improve husbandry techniques and

this beautiful bird will flourish for future generations to marvel at.

### Acknowledgments

Josef San Miguel deserves special thanks for overseeing this project. Many thanks to Jeff Perry and Robert Webster for their observations of the parent-reared birds, and to Fawn Kunneman, Gary Frank, Anita Vincent, Roger Berry and Jeff Rouse for their accurate record-keeping and nurturing care of the handreared birds. Terry Fisher deserves thanks as well for his help with the graph.

### Products

Lo-iron pellets, Zeigler Bros., Inc.  
P.O. Box 95  
Gardners, PA 17324-0095  
Nekton-Bio, Nekton USA, Inc.  
14405 60th Street North  
Clearwater, FL 34620

### References

- Astley, H.D., "On Rare Importations and Possessions" *Aviculture Magazine*, Vol. I, No. 6, 1910.
- Bohmke, B. & Silveri, A., *St. Louis Fairy Bluebird Survey*, 1988.
- Chacon, S., Breeding Fairy Bluebirds at the Denver Zoo, *Animal Keeper's Forum*, Vol. 19, No. 8, 1992.
- Delacour, J., *Birds of Malaysia*, The Macmillian Co., New York 1947. pp. 211-216.
- Rutgers, A., *Birds of Asia*, Taplinger Publishing Co., New York, 1969, p. 294.
- Smythies, B. E., *Grzimek's Animal Life Encyclopedia*, Van Nostrand Reinhold Inc., New York, 1968, Volume 9, Birds III, p. 206.
- Webster, R., *Passerine Predicament*, San Antonio Zoo, 1993.
- Worth, W., Fairy Bluebirds, *News from the Zoo*, Vol. , No. 7, San Antonio Zoo, 1993. 