

the breeding of Three Rare African Finches

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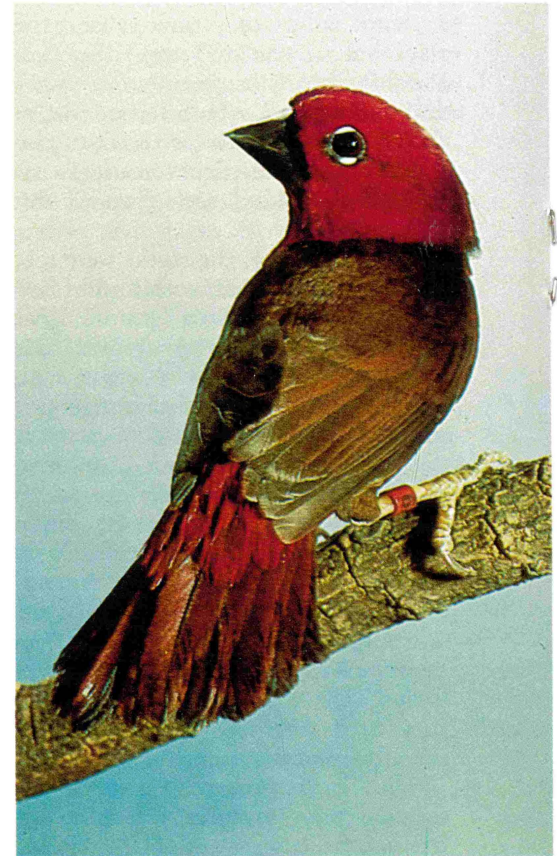
In June, 1980, Riverbanks Park acquired three species of African Estrildine finches, 3.3* black-bellied firefinch (*Lagonosticta rara*), 3.3 crimson seedcracker (*Pyrenestes sanguineus*), and 4.3 blue-bill (*Spermophaga haematina*). The ranges of these three species overlap somewhat throughout west and central Africa where they share a similar bushy, grassland habitat. Though common in the wild, they have apparently eluded frequent capture because they are unusual in private or zoological collections at this time. The birds obtained by Riverbanks all adapted to captivity quite well, and exhibited nesting behavior with varying degrees of success within their first year and a half at the zoo.

The birds were all housed together initially in a glass fronted exhibit measuring 3m† high, 5m wide and 2.5m deep, with no natural light. Duro-test grow lights and incandescent lights were on a fixed 12-hour schedule throughout the year. The exhibit was designed with an artificial tree and ground cover consisting of various dried grasses, bushes and liriopé (ornamental grass). The diet was a standard finch seed mix, supplemented with an insectivore mix (1), egg food (2), greens, and mealworms, all offered daily, regardless of nesting activity.

Very little interaction occurred between the species but intraspecific pairing and territorial disputes began almost immediately. Gradually a pair of each new species was left in this exhibit and other pairs were moved to new locations.

The bluebills were the first to actively show signs of pair bonding. These attractive little birds are named for the male's pearl-blue bill. He is primarily glossy black with a bright red breast. The female is no less striking, being a duller red but having a distinctive black and white spotted belly. A pair bond had

clearly formed between two birds who started carrying nesting material, primarily dried grasses, to various places in the exhibit for several months. In February, they began concentrating efforts on a standard finch box attached to the wall about 6 feet from the floor. The addition of short strips of burlap in early March seemed to accelerate the nest building because shortly after that, one bird was always in the box, presumably incubating eggs. This was confirmed on March 13th when at least 5 eggs could be seen in the tightly woven nest. Small mealworms and larger white mealworms which had shed their outer skin were added to the diet in anticipation of the hatch date but the parents were very secretive in their feeding habits. The nest was checked again March 19th and at least two babies could be seen. There was concern over the parents' inattention to



An adult male crimson seedcracker.

A crimson seedcracker at three months.

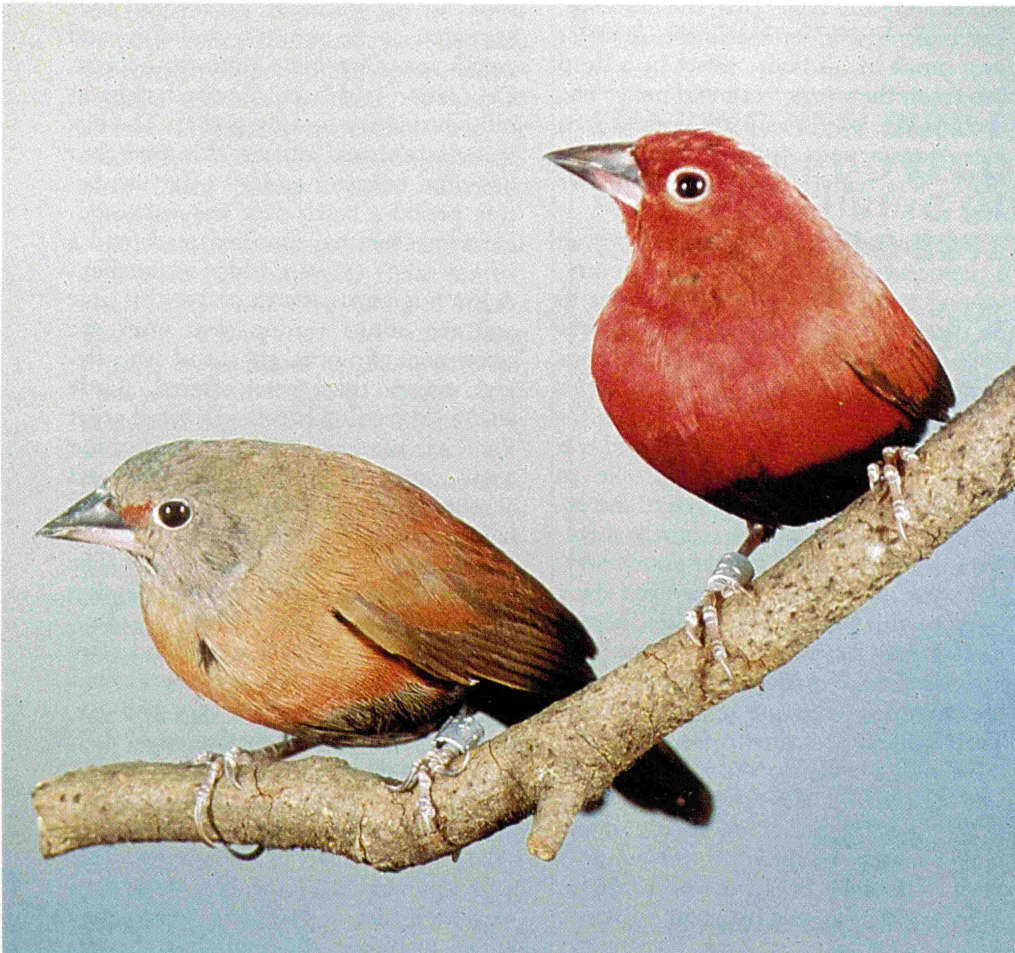


* Indicates 3 males (left of period), 3 females (right of period).

† 1 meter = 39.37 inches



A pair of blue-bill finches; the female on the left, the male on the right.



A pair of black-bellied firefinches; the female on the left, the male on the right.

the nest so it was checked again three days later. This time 5 yellow mouths with distinct black spots could be counted. It was also noted that the chicks had distinct yellow papilla on the edges of the beak, characteristic of many finches. Mealworm and egg food consumption increased over the next few weeks and the adults were also observed feeding on the local roach population.

On April 5th the first two chicks fledged, 18 days after hatching. Three more were out over the next two days. No interaction was observed between the fledglings and the two other species still in the exhibit. The young birds were removed 11 days later, which may have been too hasty, as one died two days after that and a second died ten days later. No specific cause of death was ever determined.

The parents immediately re-nested but went through three attempts before successfully raising four more young. This time the fledglings were left in the exhibit until they were six weeks old, at which time they had begun to obtain their adult plumage and their sex could be determined. Once again the adults immediately went back to nest but failed in three attempts. At this point they were moved to a new exhibit and one of the pairs which had been removed in the early pair bonding was returned.

The original pair continued to nest in a new exhibit but repeatedly failed to rear young. In early March of 1982, two eggs were removed at the time of laying and placed under society finches. The societies began incubating immediately despite a slight size difference in the eggs and proved to be model parents when two chicks hatched at 14 days. The societies were fed the same diet as the blue-bills, with the addition of some newly acquired mini-worms (*Tribolium confusum*), but seemed to prefer the small mealworms. Successful rearing has been repeated with another pair of societies since then.

Another blue-bill pair followed a similar pattern of behavior in an exhibit 3m high by 2m wide by 2.5m deep, where they were housed by themselves. They nested on the ground two months after being removed from the original group, hatched four chicks after a 14 day incubation period and fledged all four at twenty days. Their daily mealworm consumption peaked at about 150 mealworms approximately ten days after hatching.

The parents then appeared to be following the same pattern of going back to nest too quickly so they were removed to a holding area to delay breeding. Two

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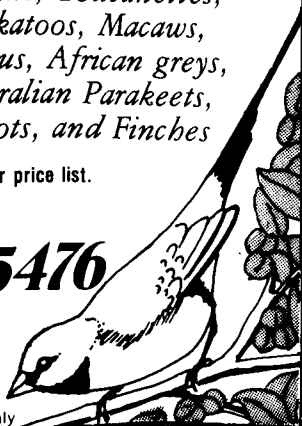
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months later they were put in a wire cage, 1m high, 1m wide and .5m deep and given nesting material and a finch nest box. Within a month they chose to build a nest on the floor, weaving a tight little hut with a side entrance, much as they had in the exhibit. This time two chicks were raised. Another attempt at nesting produced only infertile eggs. The adults were moved again into an even smaller box cage measuring .7m high, 1m wide and .7m deep and given a nest box and grasses. One more attempt failed before March, 1982 when one chick was reared in the box.

Interestingly, the third pair of the group never exhibited nesting behavior even though given all the same opportunities. In January, 1982, the female of this pair was replaced by a seven month old offspring female and the change was immediate. The pair began nest building and laid eggs in February. Two babies lived to ten days before mysteriously disappearing. When the birds nested again, the two chicks vanished at 18 days of age and vermin were suspected so all the birds were removed and the exhibit was rebuilt.

The crimson seedcrackers are probably the most striking of the three species obtained. Slightly larger than the blue-bill, the male is a vibrant crimson in color over much of his body, offset by a deep brown on the wings, back and belly. The eyelids are white and are made even more conspicuous during breeding displays. The female is similar but duller over all.

One male died in the first month from a septicemia caused by an eye injury, leaving two males and three females to be placed on exhibit. Pair bonding was not as obvious as with the blue-bills, but some pairing off was observed, so, in an attempt to encourage this, two birds were removed, leaving one male and two females. When it became possible to determine the male's preference, the extra female was removed. Shortly thereafter, nest building began in earnest. Both the male and female worked daily carrying dried and fresh grasses, shredded palm leaves, burlap strips and Spanish moss to various locations before concentrating on some upper branches. They worked at this site for six weeks, building a loosely domed structure with some semblance of a side entrance hole. It collapsed before being used and the remains were removed to encourage a fresh start which began the next month. They worked on this for another month with no significant progress. Throughout the next building the male was frequently observed in display, holding a long

thin piece of grass, bouncing on a perch while singing to the female. It was during this dance that the white eyelids were most clearly visible. The female was usually receptive and copulation frequently followed. Occasionally she was observed performing a similar display.

After work at this site had slowed down for about a week, the birds were seen building in a new location but without the usual intensity. Surprisingly, this was where the first eggs were laid. The nest was a very loose construction of grass on a chicken wire base and one of the two eggs fell through. The nest appeared to be abandoned so the egg was placed in an incubator but proved to be infertile. All activity ceased after this with the onset of a heavy moult in both birds.

During this time, a pair that had been removed from the original group was set up in a smaller exhibit by themselves. This glass fronted exhibit was 3m high, 2m wide and 2.5m deep and was designed with a grassland habitat similar to the larger exhibit. The birds had been in this exhibit about six weeks before any nesting activity was observed. They had been provided with a finch nest box like the one used by the blue-bills and were seen carrying grass to it. In early July they appeared to be seriously building and began spending more time in the box. Copulation had been observed sporadically during the nesting period. The box was not checked during this time but based on behavior and a 14 day incubation period a hatch date was estimated. Extra mealworms, sprouted seed, and a "finch cake" (3) were added to the diet. A live bug trap was acquired at this time and the adults readily went after the assortment of moths, gnats and other flying insects that were offered. Little change in feeding habits was noted other than this interest in live food. Without great expectations the nest box was checked one week after the predicted hatch date. Surprisingly, two very young chicks and one egg were seen. The parents continued to occupy the nest during the next week. Food consumption remained stable however and after ten days the adults were much less attentive. When the box was checked the babies and egg had disappeared.

The pair renested almost immediately. Once again a hatch was anticipated but the date passed with no behavioral changes on the part of the parents. This time upon examining the nest, four eggs were seen and at least two were determined by means of a penlight to be fertile. Six more days passed without any indication of a hatching. The box was

checked again and two chicks, probably only a day or two old were observed. Unfortunately, the next day one was found thrown out of the nest and the second was found dead in the nest a few days later. No food was detected in the crops of either chick, but black feeding spots were visible inside the mouth and yellow papilla were evident on the beak.

Nesting activity slowed down after this. In early December the female was observed acting lethargic and was removed to a holding area. She died shortly afterwards of unknown causes.

Following the death of this female, her mate was removed to give the first pair an exhibit to themselves. This appeared to be significant because instead of spending weeks at fruitless nest building as they had in the past, they started building and laid eggs in one of the finch boxes within six weeks. They had previously ignored the same kind of box in the other exhibit.

On February 22nd it was believed the female had begun laying so the nest was examined to try to more accurately predict a hatch date. There were two eggs at that time. When the nest was later checked on a date thought to be several days after hatching there was only one chick that appeared to be newly hatched. From this it was concluded that the incubation period had been underestimated and must be much closer to 16 or even 17 days, rather than 14 like the blue-bills. This chick also disappeared, most likely because of the ill-timed disturbance.

When the birds recycled and three eggs were seen on April 1st it was decided to offer as wide a variety of food as possible throughout the incubation period. In addition to the usual diet, mini-worms, live flying insects, finch cake, and small pieces of Bird-of-Prey diet were offered. Food intake increased gradually around the time of suspected hatching with the initial preference for the live, flying insects; but the mini-worms and mealworms were also readily consumed. Every other item was at least sampled daily. Very little evidence of chicks was detected. Begging sounds were thought to have been heard twice but the parents were rarely observed in the nest box. Only the increasing consumption of food gave a clue to the existence of chicks. On May 6th, the nest was checked and three well-feathered chicks were seen.

The three fledged May 9th, at the estimated age of 22 days. Upon fledging they were a dusty, dark brown and still retained the three yellow papilla spaced unevenly on each side of the beak. After

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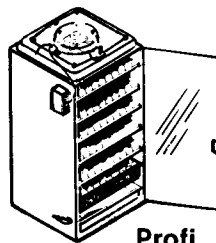


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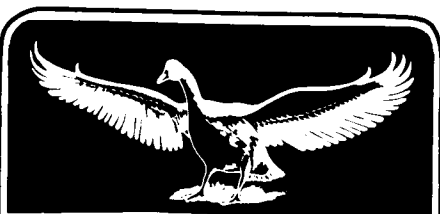
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a few days, dull red feathers were visible on the rump and upper tail coverts. Over the next couple of weeks the brown appeared more reddish in color and the white eye ring began to appear. There was also some difference in size, though it remains to be seen if this is an indication of sex.

In July the parents went back to nest and successfully fledged four young. The first three juveniles were not removed until just prior to the fledging of the second clutch.

The black-bellied firefinch is similar in appearance to the more familiar Senegal firefinch (*Lagonosticta senegala*), the main difference being the black on the belly of the male, hence the name, and the more dull crimson color of the female. Typical of most firefinches, the black-bellied firefinches were the most aggressive of the three species of finches. One male apparently killed a rival male and frequently chased the larger blue-bills and seedcrackers.

After a pair established dominance and the other firefinches were removed, two chicks were successfully hatched and raised in May, 1980. The pair nested in the previously described exhibit which it shared with the other two species. Their nesting habits were similar to other firefinches which have been described in numerous accounts. Typically, a dome shaped nest was woven on the ground in which three or four eggs were laid. Incubation was 14 days and the chicks were raised primarily on small or soft skin (white) mealworms.

As of this writing, no report has been found of breeding the blue-bills or seedcrackers in any public or private aviary. The black-bellied firefinch has been raised in a British collection, as reported in *Aviculture Magazine*, (Cottrell, 1962). The same journal cites the breeding of a red-headed bluebill (*Spermophaga ruficapilla*) owned by a private individual in Kenya, (Ellis, 1977).

Four pairs of offspring blue-bills raised at Riverbanks have been sent to other facilities where nesting has been reported in birds less than a year old. This is not surprising considering how quickly one of the captive raised females hatched young here.

The blue-bills make an attractive and colorful exhibit. They seem very adaptable and should have a promising future in captive collections especially since having more than one breeding pair has enabled unrelated birds to be paired for future breeding programs.

The seedcrackers proved to be more of a challenge and it appeared that the wide variety of live and artificial diets, the

solitary exhibit, and the minimizing of disturbance close to the hatch date were all critical to the success of this much awaited breeding.

FOOD ITEMS MENTIONED:

1. Insectivore Mix

Gaines Dog Meal—finely ground
Mynah Bird Meal—finely ground
Trout Chow—finely ground
Bird-of-prey Diet—finely ground
Hard boiled eggs—finely ground
Gevral protein powder
Bone meal powder

2. Egg Food

- 1 Hard boiled egg mashed with
- 1 T. High Protein Supplement for the Birds
- 1 T. Vionate
- 1 T. High protein baby cereal
- 1 T. Casco vitamins
- 1 T. Petamine

3. Finch Cake

- ½ C. Cornmeal
 - ½ C. Whole wheat flour
 - ½ C. Soy bean meal
 - ¼ C. Vionate
 - ¼ C. Wheat germ oil
 - ¼ C. Cooking oil
 - ¼ C. Baking powder
 - 6 Eggs
 - ¾ C. Hulled millet
 - ½ C. Ground hulled sunflower seeds
- Mix and bake at 350°

PRODUCTS MENTIONED:

Nebraska Bird-of-prey—Central Nebraska Packing, No. Platte, Nebraska

Gevral Protein Powder—Lederle Laboratories, American Cyanamid Company, Pearl River, New York

Supplement for the Birds—obtained through Robert Black, Route 10, Box 131-B, Franklin, North Carolina

Vionate—Squibb & Sons, Princeton, New Jersey

Casco—Carolina Agriculture Company, Monroe, North Carolina

Gaines Meal Dog Food—General Foods, White Plains, New York

Petamine—Loft—Kellogg Seed, Inc., Milwaukee, Wisconsin

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Cottrell, Sir R.—*The Avicultural Magazine* 68 (1962): 27-29

Ellis, Malcolm—"Breeding the Red-headed Bluebill," *The Avicultural Magazine* Vol 83, No. 3 (1977): 124-125

"Notes from a Kenyan Collection" *The Avicultural Magazine*, Vol. 85, No. 2 (1979): 95 •