

Hand-rearing White-crested Laughing Thrushes (*Garrulax leucolophus*)

as a Method of Increasing Captive Population Sustainability



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A recent survey of 110 avian AZA Breeding and Transfer Plans found that 43 populations averaged an overall decline in population in the last five years (Faust et al., 2011). In Robert Webster's 2012 report of the 100 most numerous passerines in North American institutions, 44 populations number less than 50 individuals (Webster, 2012). In EAZA facilities, only 20% of population increases are a result of institutional breeding, indicating that 80% of European populations are increasing in number because of importation from the private sector.

The solution of importing birds from the wild is no longer a viable option due to cost, availability of quarantine space, lack of in-country contacts, and a lack of permitting knowledge. Many countries are limiting imports and exports of wild-caught birds due to the risk of disease transmission. We must look at all available rearing options and do away with the belief that only parent-reared birds will beget future breeding success. Proper hand-rearing of birds with clutch mates is an easy, though somewhat time-consuming, way to increase passerine populations. Published data is limited but there are several species currently being hand-reared in captive settings, such as Asian Fairy-blue Birds (Bockheim, 2013) and Red-crested Turacos (Peat, 2007), that go on to be successful breeders. There are also reports that some hand-reared bird species, such as the white-crested laughing thrush, will at least partially rear offspring. Pairing these birds with parent-reared birds has resulted in fully parent-reared offspring (Balance, 2014).

White-crested laughing thrushes are very active, gregarious birds found in Southeast Asia. They measure 30 cm tall and typically weigh 120g. As the name suggests, they make frequent vocalizations that resemble raucous laughter. A typical diet in the wild consists of fruit, seeds, and insects from the forest canopy as well as the ground. White-crested laughing thrushes are extremely territorial and live in extended family groups. Both the male and female share incubation and rearing duties. Some instances of cooperative breeding have been observed (Round, 2006).

In the spring of 2012, the Virginia Zoo's pair of White-crested Laughing Thrushes successfully incubated a clutch of four chicks on exhibit. The exhibit is approximately 10 feet wide, 15 feet tall, and 20 feet long. Zoo Mesh (Aviary Mesh) is used on the four sides of the aviary. The top of the back section is covered with green shade cloth. The wooden roof has mesh skylights on one side. A flexible PVC hose with three mister heads runs through the exhibit. The exhibit is moderately planted with small trees and bushes. In addition to 1.1 white-crested laughing thrushes, the exhibit is also home to 1.1 Victoria crowned pigeons and 1.1 pied imperial pigeons (the pied pigeons were removed in 2013 after it was determined that the thrushes were interfering with their incubation). The laughing thrushes are on exhibit year-round while exhibit mates are on exhibit from May-October. The diet of the adult birds, ½ cup softbill mix (70% Mazuri® Lo-Iron Softbill Pellet, 30% produce) and eight bugs,

remains the same throughout the year unless chicks are present. The thrush pair used leaves and coco fiber to build a nest cup inside a woven basket that was placed in a bush in the middle of the exhibit. The nest was approximately one meter above the ground. This nest was also used in 2013. Nests in the wild are typically wide, shallow cups made of bamboo leaves.

These chicks were found to be missing from the nest the day after hatch. Nest predation by pest species was thought to be responsible. In spring of 2013, the pair again incubated and hatched a clutch of four. These chicks were pulled for hand-rearing. The following details the protocol used at the Virginia Zoo in Norfolk, VA, USA to hand-rear the four chicks.

Hand-rearing Protocol for White-crested Laughing Thrushes at the Virginia Zoo, Norfolk, VA, USA

At Hatch

The clutch of four was incubated by the parents on exhibit in an artificial wicker basket they lined with leaves and coconut fiber. The chicks were moved to an Avey cooler brooder after the last chick had externally pipped. Each chick was placed in its own small cup lined with tissue paper and small pieces of coconut fiber. The initial brooder temperature was 94° F and relative humidity was 78%. Pedialyte® was offered via syringe two hours after hatch and every two hours thereafter until feedings began at approximately five hours after hatch. Weight at hatch ranged from 6.5 to 7.7g.

Hand-feeding

Initial feedings consisted of pieces of pinkie mice with the head and appendages removed, finely diced papaya, and pieces of Mazuri Lo-iron Softbill pellet soaked in Pedialyte® (see Table 1 for complete diet history). Each food item was initially offered in equal proportion at each whole feeding. The diet was changed over time so that at fledge the chicks could be transitioned to a typical non-breeding adult diet after fledging. Chicks received one (1) drop (.005ml) of diluted Vitamin B complex (see Products Mentioned) and a small amount of calcium powder on a piece of pellet once a day. Food items were warmed by being placed in a bowl that was floated in a mug of warm water until just warm to the touch. Food was offered via forceps. Feeding between 7 and 10% of body weight resulted in a proper growth weight and satiated chicks. The birds produced intact fecal sacs at almost every feeding. There was no need to stimulate the birds to defecate.

Developmental Notes

At day 3, some of the chicks were trying to stand up at feedings. The first sign of feather growth on the head, back, and abdomen was observed on day 4; small twigs were added to the bottom of each nest cup to prevent splayed legs (Mace, 1991). At day 9, the chicks became more mobile and tried to leave their nest cups; the birds were placed together in a large bowl lined with coconut fiber and twigs. Leg bands were used to ensure identification. On day 10, the chicks were completely covered with feathers. On day 12, the birds and their nest bowl were moved to a fledge cage 3ft long by 2ft wide by 2ft high. A heat lamp was used to create a heat gradient ranging from 77° F to room temperature (72° F). Temperature in the cooler brooder had been decreased after day three at a rate of approximately 1.5 degrees F per day until the birds were moved to a fledge cage (Owens and Edmans, 2007). By day 13, all of the birds fledged. A food bowl and a shallow water bowl with paper towels in it to prevent drowning was left in the fledge cage with the birds at day 14. Food was now presented by using tweezers to move food items around in a bowl in front of the chicks. On day 16, chick 'A' was



Pictorial Progression of the Development of Four White-crested Laughing Thrushes (*Garrulax leucolophus*) at the Virginia Zoo, Norfolk, VA, USA; Pictures Taken (top to bottom) at Hatch, Day 1, Day 5, and Day 9.

observed playing with food items, though not consuming them. By day 19, it was clear that at least one of the chicks had begun self-feeding as food items left in the bowl were disappearing between feedings. Vitamin supplements and the heating of food items were discontinued on day 21. By day 22, all of the chicks showed little interest in food presented at feedings though their weights continued to increase. Day 24 was the last day of hand feeding for all the chicks.


The adult thrushes were allowed to rear their next clutch of eggs on exhibit. Three eggs were incubated and hatched. All three chicks survived to fledge. At that time, one chick died of a fungal infection. Shortly after, one of the other chicks exhibited signs of lethargy and was taken off exhibit and the weaning process was completed by keeper staff in an off-exhibit holding area. The last chick was able to remain with his parents until the weaning process was complete.

There is no discernible behavioral difference between the hand-reared and parent-reared birds. Hand-rearing the first clutch of offspring enabled us to significantly increase our population. Moving forward with this and other passerine species, the zoo community should track the future reproductive success of hand-reared birds in order to determine which populations can benefit from hand-rearing.

Table 1. Diet, Average Amounts Fed, Number of Feedings, and Average Weights of Four Hand-reared White-crested Laughing Thrushes (*Garrulax leucolophus*) at the Virginia Zoo, Norfolk, VA, USA.

Day	Diet (items shown in % of diet)	Average Amount Eaten Per Feeding (g)	Average Amount Eaten Per Day (g)	# Feeds Per Day	Average Weight (g)
0					6.8
1	33 pinkie mouse	5.5	5.5	11	8.3
2	33 papaya	1.21	10.9	9	11.5
3	33 pellet (soaked in Pedialyte®)	1.26	11.37	9	15.65
4		1.49	10.43	7	22
5	33 pinkie mouse	2.05	14.32	7	24.78
6	33 papaya	2.27	15.89	7	29.98
7	33 pellet (soaked in bottled water)	3.3	19.79	6	34.08
8	30 pinkie mouse, 33 fruit, 33 pellet (soaked in bottled water), 3 cricket abdomens	4.07	24.4	6	41.93
9	30 pinkie or fuzzy mouse (with head and appendages), 33 fruit, 33 pellet (soaked in bottled water), 3 cricket abdomens	4.68	28.08	6	46.15
10	28 pinkie or fuzzy mouse	4.27	25.6	6	50.1
11	33 fruit	3.7	14.83	4	53.9
12	33 pellet (soaked in bottled water)	3.95	19.73	5	49.08
13	3 bugs (meal worms and cricket abdomens)	3.53	17.65	5	49.95
14		4.53	22.63	5	49.92
15		4.73	18.93	4	52.13
16	23 pinkie or fuzzy mouse	3.93	15.7	4	53.88
17	20 fruit and veg	5.38	21.5	4	55.13
18	47 pellet (soaked in bottled water)	5.13	20.53	4	57.95
19	10 bugs (meal worms)	5.28	21.13	4	59.05
20		5.56	22.25	4	61.03
21	20 pinkie or fuzzy mouse	5.86	17.63	3	61.73
22	25 fruit and veg	5.26	15.77	3	63.25
23	50 pellet (soaked in bottled water)	4.76	4.76	1	67.03
24	10 bugs (meal worms and super worms)			1	68.15
25				0	73.57

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Products Mentioned

Avey Cooler Brooder: <http://www.precisionincubators.com/brooders-for-parrot/the-original-cooler-brooder/>

Pedialyte®: Unflavored, <http://pedialyte.com/products/liters>

Vitamin B complex HP (high potency). A 1:9 dilution.

Each 1 ml (undiluted) contains:

Thiamine Hydrochloride (B1) 100 mg

Riboflavin 5'Phosphate Sodium (B2) 5 mg

Niacinamide 100 mg

Pyridoxine Hydrochloride (B6) 10 mg

d-Panthenol 10 mg

Cyanocobalamin (B12) 100 mcg

with Citric acid and benzyl alcohol
1.5% v/v (preservative)

Zoo Mesh, Aviary Mesh <http://www.zoomesh.net>



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