

# Breeding the White-tailed Trogon

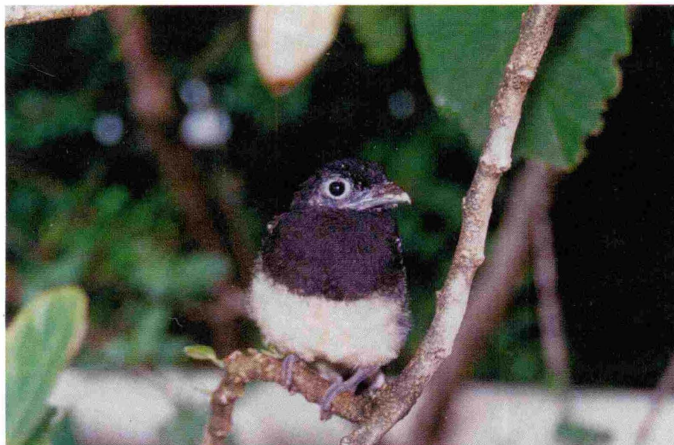
## at the National Aquarium in Baltimore

Text & Photos by Jeff Claffy, Aviculturist - National Aquarium in Baltimore

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### INTRODUCTION

Peaceful, calm, still, sluggish, quiet, patient, solitary, confiding, sedate, dignified, and gentlemanly; these are the adjectives various authors have utilized to describe trogons. Chiefly classified by the peculiar arrangement of their toes, trogons are remarkable birds that also make excellent aviary occupants. The distribution of Family Trogonidae is widespread in both the New and Old World. The range of the forty species of trogons includes Southeast Asia, Sub-Saharan Africa and the tropics of the Americas, with the majority of species occurring in South America. Australia has no trogons and fossil evidence indicates that at one time Europe did. Trogons have no near relatives and appear to be a very ancient, static group (Gilliard, 1958). The heterodactyl foot is the defining Family characteristic. The first and second digits point backward while the third and fourth face opposite. At a glance, this arrangement of phalanges appears simi-



Fledgling White-tailed Trogon

lar to the zygodactylous Psittacines. However, in parrots the first and fourth toes are backwards with the second and third facing forward.

The most notorious trogon is the Resplendent Quetzal (*Pharomachrus mocinno*) yet few visitors know what a trogon is. Accordingly, "What kind of pigeon is that?" is a frequent inquiry. Despite the differences between the two bird types, a shared feature would be a short, stout body of similar size. Other morphological traits of trogons are: a short neck, large head, prominent eyes, small feet, and a long, wide, square tipped tail. The beak is small and slightly curved with basal bristles. The perching posture is very upright with the tail pointing directly beneath, sometimes pointing slightly forward. Small feet are hidden by abdomen feathers when the bird is perched. The sexes are dimorphic with males more colorful than females. Usually the female possesses the same colors as the male although not as brightly or completely colored. Colors include red, green, blue, yellow, black, gray, white and also a variety of metallic and iridescent shades. The plumage is soft, delicate, and loose. Males share all nesting duties. They nest in holes, which both sexes carve, in decaying trunks, occupied termitaries, large arboreal wasps' nests, rarely arboreal ants' nests, or compact root masses of epiphytes (Stiles & Skutch, 1989). Trogons are found alone or in pairs and have a ventriloquial call. The diet includes berries, fruit, blossoms, insects and even small lizards. A widely accepted generalization is that New World trogons are primarily frugivorous whereas Old World species are mainly insectivorous. Insects are taken while the bird is in flight. Other food items are obtained by sallying.

White-tailed Trogons (*Trogon viridis*) can be found from Panama south to tropical South America, east of the Andes in a variety of habitats. These include rain and deciduous forest, second growth,



Adult female White-tailed Trogon

clearings, plantations, and along rivers (de Schauensee & Phelps Jr., 1978). Males have a complete light blue eye ring and a yellow breast and belly, with the remaining portions of the bird glossy black with some iridescent blues and greens on the chest, head, nape and back. The underside of the tail is mostly white. Females have a light blue eye ring and a yellow breast and belly but the remaining areas are a dull slate color. The tail is barred with black and white. Both sexes are similar in size; 11-12 inches (27.9-30.5 cm) including the tail.

#### AT THE AQUARIUM

The National Aquarium in Baltimore has exhibited the same pair of wild caught White-tailed Trogons since 1997. In this period the pair has nested four times. Six chicks have survived to fledging; the first chick was hand reared from day five, five remaining chicks were all parent reared. By trial and error the Aviculture Staff has learned a great deal about the captive husbandry of the White-tailed Trogon. The most important lesson being that there is still a tremendous amount to be learned.

The pair was acquired from an importer in September 1997. We decided to obtain this species because of their diverse mixture of display qualities: large size, brilliant appearance, distinctive call, unique feeding behavior, and a calm, non-aggressive disposition. Furthermore, the birds are native to the region that our exhibit depicts. The trogons are displayed in our South American Tropical Rain Forest Exhibit, which is a mixed species, walk-through aviary. The aviary is a three-sided glass pyramid sixty feet (18.3 meters) tall enclosing approximately 116,600 cubic feet (35,540 cubic meters) of space. Sharing the aviary with the trogons are approximately forty individual birds representing 18 different species. Our avian collection is heavily skewed towards passerines. We display six species of tanagers plus a small mix of cotingas, pigeons, grosbeaks and finches. Additionally there are three species of hookbills as well as Blue-crowned Mot Mot ( *Momotus momota* ), Sun Bitterns ( *Eurypyga helias* ) and Scarlet Ibis ( *Eudocimus ruber* ). Also free roaming in the exhibit are a pair of Hoffman's Two-toed Sloths ( *Choloepus hoffmanni* ) a pair of Golden Lion Tamarins ( *Leontopithecus rosalia* ), several Green Iguanas ( *Iguana iguana* ), and a variety of turtles, toads, and frogs.

#### CAPTIVE REPRODUCTION

In the spring of 2000 the pair began investigating an artificial tree for a nest site. The tree is basically a concrete trunk and several massive branches dotted with planter pockets. The whole structure is veneered in cork bark to create the illusion of a living tree. Live epiphytic plants cover the entire fabrication. Both the male and female would alternate flying to the underside of a "branch" and biting off chunks of cork bark. The pair was persistent in probing the tree for a soft spot. Earlier attempts to excavate a palm log in another part of the exhibit were fruitless. Sharon Hood, a tal-

ented aviculturist and avid reader of naturalist Alexander Skutch, recognized this as a nesting behavior. Sharon promptly designed, built, and installed a nest box. The box was mounted, at approximately a 15-degree angle facing the ground, on the underside of the branch that the birds were investigating. Cork bark partially covered the entrance to the box. Almost immediately the birds excavated the entrance and entered the man-made cavity. A box was provided since it would have been impossible for the birds to construct a cavity from the cement tree.

The nest box was constructed from a standard plywood parrot box 9" wide x 8" deep x 16" high (22.9cm x 20.3cm x 40.6cm) lined on the exterior and interior with cork bark. The exterior dimensions grew to 15" wide x 11" deep x 22" long (38.1cm x 27.9cm x 55.9cm) and the cavity shrunk down to a 4" (10.2cm) diameter cylinder 14" (35.6cm) in length. The 2.5" (6.4cm) entrance hole is centered 10.5" (26.7cm) from the cavity bottom. The distance from the ground to the nest entrance is 18'8" (5.7 meters)

Since the installation of the box the pair has used it continually. To date, we know of four nesting attempts. Three attempts resulted in chicks fledging, although one clutch required human intervention. Successful clutches were laid in late March or early April of 2000, 2001, and 2002. The number of chicks surviving to fledging per clutch were one, two, and three respectively. A nesting cycle in September 2001 resulted in a dead chick estimated at three days old.

In each successful nesting period there have been instances where at least one of the nestlings have fallen or climbed out of the nest box. When this occurred with the first chick in April 2000, staff decided to pull it from the exhibit and attempt hand rearing. Age was estimated at 5 days based on the parents feeding behavior. Thankfully, hand rearing worked. The bird is still alive and well. We have two theories why the chicks may be leaving the nest too early. Our prevalent idea is that the position of the nest box is incorrect. Initially the box was mounted at a 15-degree angle in relation to horizontal. After each clutch we have increased the angle slightly. Currently the box is hanging at a 45-degree angle. We are still waiting for a new clutch to see if modifying the box position did resolve the problem. The second theory to explain the premature departure of chicks is that the cavity may be too small. Perhaps there is not enough room for a brooding parent and several offspring.

Overall, the parents are very attentive to the chicks. Additionally the trogons have tolerated human assistance when we felt it necessary. Our practice is to interfere as little as possible, although during the 2001 and 2002 clutches the staff had to place fallen chicks back into the nest box. So far we have not irrevocably disrupted a nesting cycle by placing chicks back in the box. Interestingly, we are now removing the parents and fledglings from the public portion of the exhibit as soon as the chicks fledge naturally. The adults and offspring are placed in a small, heavily planted, walk-in holding cage (8ft. x 8ft. x 8ft. or 2.44 meters) in a far corner of the main exhibit. Until the fledglings are



strong fliers and the parents completely stop feeding them, they are kept isolated from the dangers of the public exhibit.

Since we practice a strict "Hands Off" protocol during egg laying, incubation, and brooding we have compiled a limited set of reproductive data. There is much data we would like to have collected, but we chose to allow nesting to occur with minimal intrusion. Any information we have collected so far has been deduced from observations of the parent's behavior. All of the reproductive and nesting events we have witnessed fall within the ranges reported in a variety of books by numerous authors. Lastly, three clutches from only a single pair of birds is not enough data for any well-rooted conclusions. Comfortably, we can say the following: Both parents assist in all aspects of nesting. No materials are added to the cavity. The male incubates during the day and we believe the female incubates all night. If one parent stops incubating to venture out for food the other parent will incubate for them. Three eggs are the largest clutch for our pair. Incubation takes between 17 and 19 days with asynchronous hatching. Chicks are completely bald with eyes closed as in all altricial species. Feathering occurs within 12-13 days. Our earliest estimated fledging age is 15 days. Post fledging parents will supplementarily feed the young for about three weeks. The juveniles developed flying skills during this period. Interestingly, the young male will start to develop some of the green and violet iridescent plumage at 30 to 35 days. In the future we hope to record data such as average clutch size, egg size, egg weight, laying intervals, etc.

#### SPECIAL HUSBANDRY CONCERNS

Trogon are a terrific addition to a large aviary. Nevertheless trogons do require some specialized care. Modifications to average soft-bill husbandry will have to be implemented, especially in respect to diet and handling. If the birds will be exhibited in a public space, management of the nesting adults and fledglings can be difficult.

A characteristic of trogons is

the short broad bill. The gape is large; wide enough to swallow berries whole. In this respect trogons are very similar to broadbills (Family Eurylaimidae.). For this reason we have added a variety of berries to our standard Frugivore diet. The base diet consists of a variety of fruits and vegetables mixed with Tropical Bits® by Marion Zoological – a diet we learned about from The Riverbanks Zoo & Botanical Garden. To this diet we regularly add blueberries, raspberries, and other in season berries. Extra corn, peas, and small grapes are also provided because of their berry-like size and shape. Amazingly, when the adult pair was getting acclimated to the exhibit they were swallowing whole Lafeber Nutri-berries® intended for our parrots. The White-tailed Trogons also relish insects. Waxworms (*Galleria mellonella*), Superworms (*Zophobus morio*), and Mealworms (*Tenebrio molitor*) are all readily eaten and seem to be preferred in this order. Surprisingly, the trogons will even eat "Pinkies" which are mice (*Mus* sp.) babies. While feeding young, the parents are given bowls containing free choice amounts of fruit such as papaya, mango, and melon, plus berries and insects.

Trogon also have disproportionately small feet and a small tarsometatarsus bone. Therefore perching needs to be deceptively small. Trogon will fare better with perching appropriate for tanager

size birds instead of pigeon sized ones. Banding the small tarsi can be problematic as well. Before banding, be prepared with two people and a variety of band options.

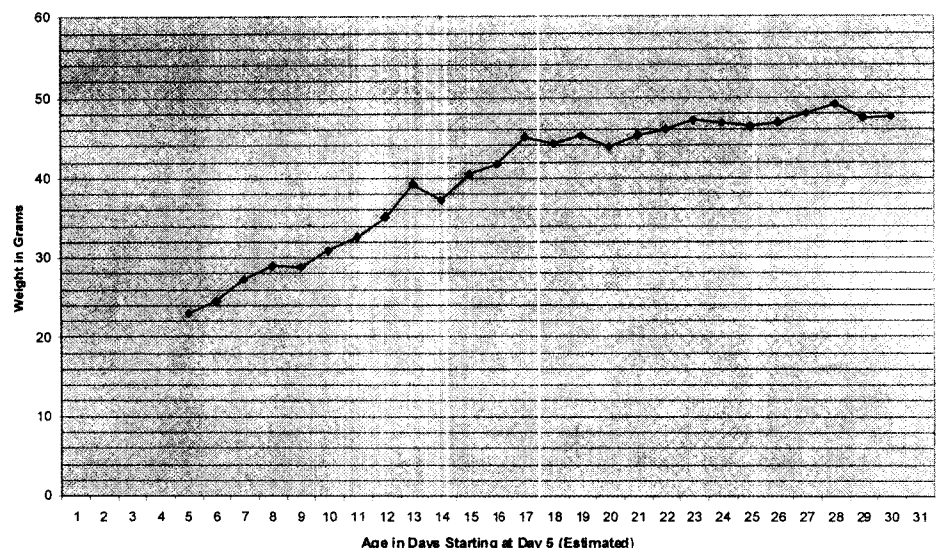
The plumage of trogons is very fine, soft, delicate, and extremely loose. The way feathers seem to fall out with a mere brushing is reminiscent of Leafbirds (*Chloropsis* sp.). Handling should be kept to a minimum.

Finally, the most important special husbandry concern is the bold nature of the adults and young offspring. The adult pair is fearless of people and the fledglings are far too approachable. The parents will perch on railings near to the active nest amidst large crowds. The drive to attend to the young is very strong. While checking the nest box, keepers will often have one of the parents watching from an arm's length away. Staff uses this parental instinct to our advantage when the chicks fledge. By moving a chick and/or the nest box to the holding area the parents are easily contained when they follow in pursuit. It should be noted that during any manipulation of the nest, the dam and sire never exhibit any aggression toward the perpetrator.

#### CONCLUSION

The National Aquarium in Baltimore is very fortunate to have the opportunity and resources to display these magnificent birds. Unfortunately, trogons remain rare

Weight Gain of Hand-reared White-tailed Trogon (*T. viridis*) Chick



in American aviculture. The seemingly non-aggressive nature of this family may prove ideal for mixed species exhibits. At times, management of the species can be tricky but the rewards are twofold. Trogons are a delight to work with; they are keen and tolerant birds. We will continue to breed trogons in an effort to learn as much as possible about their husbandry. Hopefully this data could be applied to other species in the future. By disseminating the information we have learned, we hope to help make trogons more common in aviculture. The two biggest contributing factors to our success seem to be the nest box designed by Sharon Hood and the modifications to our frugivore diet.

We believe that the National Aquarium in Baltimore may be the first institution in North America to successfully breed the White-tailed Trogon. If any readers are aware of prior success please inform the National Aquarium in Baltimore.

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