The Tale of the Tongueless Turaco

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There are 20 species of turacos that make up the family Musophigidae. These birds are not commonly kept in aviculture and, therefore, little is known about their diet, habits, and anatomy. One species, commonly called Lady Ross's Turaco (*Musophaga rossae*), has been the subject of a summary or stud book, with a total founder population in the United States of just eight birds. Obviously, with such a small population to draw from, breeding of these birds offers a high potential for congenital defects due to the lack of diversity of the gene pool. This report demonstrates the potential risks associated with inbreeding the offspring of these founder birds.

The sire and dam of the chicks in question herein are third (male) and fourth (female) generation birds from wild caught founders. Both parents have in their lineage at the P generation the same female founder bird. Additionally, at the F2 generation on the dam's side, the male was backcrossed to his own mother.

At the time of the first breeding, the sire and dam of the chicks in question here were three and four years of age respectively. Two clutches of two eggs each were produced but the pair refused to brood the eggs so they were artificially incubated. Only one egg in each clutch was fertile and the resulting chick was hand reared. It is interesting to note that both parents were also hand reared, which may have contributed to their inability to carry out their parental duties. Neither of these two chicks have any apparent defect.

By the time the pair laid a third clutch of two eggs they seemed to have developed a sense that they were to brood and, as a result, one egg hatched. (In this species both parents brood and feed the chicks.) Unfortunately, the parents then appeared to have no idea of what to do with respect to feeding the chick and, after 48 hours, human intervention was instigated. This was done in the form of syringe feeding the chick right in the nest and after four days of this the parents took over the process and tended the chick with abundant care, stuffing it full of all the food offered to them.

Within another six weeks, the pair laid a fourth clutch and brooded it appropriately with the exception of breaking one of the eggs early on. When the chick hatched they immediately instigated feeding. Since all appeared to be going well, no intervention was done for at least three weeks. At that point, the chick did not seem to be eating as aggressively as normal nor was it moving about in the nest with the vigor exhibited by its older siblings. Therefore, we climbed up on top of the aviary to do a cursory evaluation.

When the chick "hissed" at us in a threatening fashion it was immediately apparent that it was missing its tongue and supporting tissue, probably some of the salivary glands and most certainly the hyoid apparatus. The trachea and esophageal openings were clearly apparent – approximately 3mm in diameter. No other obvious defects were observed. The chick continued to develop and left the nest at approximately day 24 (these birds are semi-precocial) and the obvious concern was whether or not it would be able to self-feed with this congenital defect. However, at approximately day 31 he was observed to be sitting on the perch next to the food bowls consuming soaked softbill pellets and diced fresh fruit. Within a few days thereafter he was seen to drink on his own from the water bowl, though he continued to beg from his parents for at least another two weeks.

Currently, this chick is 10 months old and doing fine with respect to self-feeding. He was removed from the flight with his parents because they again went back to nest and we were concerned that the male might attack the chick in an effort to protect the new clutch.

It is interesting to note that the pair has laid at least four more clutches since the "tongueless turaco," with the two clutches immediately following producing one chick each with no apparent physical defects. Then, in the last four months, the pair produced two separate clutches that they brooded but which never hatched. An examination of the eggs revealed one egg that was either infertile or was an early embryonic death while the other egg contained a dead, fully developed chick with craniofacial deformities including the lack of one eye. The most recent clutch again failed to hatch and an examination of the eggs showed an embryo arrested at approximately 20 days of development (24 days is the typical incubation period) while the other chick was fully developed but lacked an eye and also lacked a tongue and adjacent structures.

The question this poses is whether or not the close genetic relationship between the parents of these chicks caused or contributed to the deformities and what other deformities may exist in the living chicks that are not obvious on external examination. Lady Ross's Turacos are highly endangered in their native habitat and there are less than 200 in captivity around the world. The hatching of the tongueless turaco may be an indication that more attention must be paid to the breeding of these birds to prevent fatal defects and the eventual extinction of the species as a whole.