Metabolic Bone Disease (Rickets) in Juvenile Turacos

Clive W Humphreys, Larvon Bird Hospital, Lake Chivero, Norton, Zimbabwe

It has been my experience and that of other turaco breeders that young fledgling turacos (or louries as they are called in this part of the world) can develop deformities of the long bones (particularly the legs) but also the neck and beak during the rapid growth period in the nest referred to as fledging. It seems to be a problem associated with captivity and usually specifically related to diet. I have observed it in all three commonly kept species in Zimbabwe (being the three indigenous species) and it occurs in other softbill species. Fledglings are often brought in for rearing at different stages but I have never observed specimens brought in with the condition though some have gone on the develop it.

I have reviewed standard veterinary texts on this condition and this is my attempt to explain the cause and development of the disease and measures for its prevention.

For the development of animal bodies, particularly during the juvenile growth spurt period, the diet needs to provide the basic elements for correct bone growth and also in the correct proportions. These include protein, phosphates, calcium, and Vitamin D, in particular, for bone development. Rachitis or Rickets is the old-fashioned terminology for a wide range of bone conditions where the limb bones of individuals were deformed and soft as a result of defective calcification of the bone. This term is replaced now by the term Metabolic Bone Disease of the particular form in which it is found.

Rickets tends to present itself in the final stages of the disease (often terminal) whereby keepers will notice that the bones, particularly the legs, are of a soft leathery nature, bent or twisted due to the malformation of the bones; it can also manifest as an under- or over-shot beak and badly contorted necks. The extremities of the long bones may be very enlarged and the malformed areas are often hot to the touch.

Breathing is frequently labored due to the accumulated metabolic effects and, if severe, death may ensue. Once deformed, bones cannot usual be successfully treated. Lesser deformities can be overcome by corrective dietary management.

The causes of Metabolic bone disease MBD can be put done to **1)** a lack of phosphates – **Aphosphorosis, 2)** a lack of Calcium – **Hypocalcaemia 3)** a lack of Vitamin D – **Hypovitaminosis D, 4).** a lack of protein in order of prevalence or of a combination of any of these factors. In very rare instances MBD can be of an inherited genetic form or spontaneous genetic abnormality in which case all the dietary elements are correct and the disease occurs because enzymes for correct calcification and assimilation of bone are absent. Aphosphotitic MBD may occur in oats- or maize-derived meals which are very low in phosphate content, it may also occur in very protein rich diets, like pinkies, which are very poor in minerals particularly calcium and phosphate and have a bad Phosphate to Calcium ratio. Hypocalcaemic rickets is a result of low calcium intake in the diet and is the reason why as children we are always encouraged to drink lots of milk and eat dairy products! In formulated diets attention has to be paid to the balance of Phosphate to calcium, the physiological ratio is roughly 4 : 1 hence large amounts of calcium without corresponding phosphate levels are not useful for bone development. Lack of vitamin D or Hypovitaminosis D is another major cause of MBD. Vitamin D is vital for the growth of juvenile bones. It is the sunshine vitamin and for the final stage of its use in the body it is metabolized in the skin. It is thought that birds may ingest some through feather grooming. Thus sunlight is important for healthy birds. Where vitamin D is thought to be lacking it can be supplemented with various fish oils and wheat germ oil as it is present in germinating seed.

There is no real treatment for rickets – it is a case where prevention is certainly so much more important than a cure. However, in some cases the administration of calcium phosphate may help simultaneously with vitamin D. It should be borne in mind, though, with supplements that as a fat-soluble vitamin Vit D can also be very toxic in excess, as are calcium salts too, with results like rickets. There has been some focus too on the surfaces on which young turacos are raised. It seems that very smooth slippery surfaces can lead to leg deformities and, curiously, so can thick clinging nest materials in which juveniles' legs get stuck. By all accounts the best surfaces seem to be wire bottom grids or trays or rough wooden floors – this can be best explained perhaps by the flimsy haphazard stick nests that parent turacos build. ❖

The Larvon Bird Hospital & adjacent Vet Clinic is being developed as a part of the Kuimba Shiri Bird Garden in Zimbabwe. The bird park is set in 70 spectacular acres on the shores of Lake Chivero next to the National Park and is the only such park in Zimbabwe displaying a large number of Zimbabwe's many species of birds. It is 40 kms south of the capital Harare in an area where there are other wildlife tourist opportunities and visitors are always welcome seven days a week all year round.

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