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Hind limb morphology and adaptive evolution in turacos and cuckoos (Aves: Cuculiformes)

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In most classifications, the order Cuculiformes comprises two families: turacos (Musophagidae) and cuckoos (Cuculidae). Representatives of the first have the most complete set of hind limb muscles in the order, placing them at its base in adaptive evolution. In them, a well-developed *m. iliofemoralis externus*, *m. ambiens*, *m. fibularis longus*, *m. popliteus* and postacetabular segment to the *m. iliotibialis lateralis* point to adaptations for running. Field observations indeed confirm turacos as skillful runners that use almost the same mode of locomotion in trees as

on the ground. They walk or run about the tree canopy, using the reversible fourth toe of their hemizygodactyl foot to better grip such uneven substrates as branches. Many members of the Cuculidae can also walk and run. However, their zygodactyly and lack of a *vinculum tendinum flexorum* indicate that they are more specialized for grasping branches. When they reach for food items, their reversed first and fourth toes effectively compensate for gravity, tending to turn them around the axis of a perch. An elongated claw on the first toe in the genus *Centropus* is an adaptation for walking through interwoven vegetation. In *Centropus*, over-extension of the claw phalanx in the first toe is prevented by a special, the *ligamentum flexorum hallucis*, while the entire toe is flexed solely by the *m. flexor hallucis brevis*. The weakness of the postacetabular segment of the *m. iliotibialis lateralis* and *m. fibularis longus*, and the disappearance of *m. iliofemoralis* in the genus *Cuculus* indicate that members of this genus are not runners or even walkers but perch-pouncers. As soon as a food item is seen, the cuckoo lands nearby and reaches for it. Such a tactic is effective in relatively open treed habitat with numerous food items of the same kind.