PETE OXFORD (2)

drifting APART

THE HOATZIN'S NAMIBIAN CONNECTION

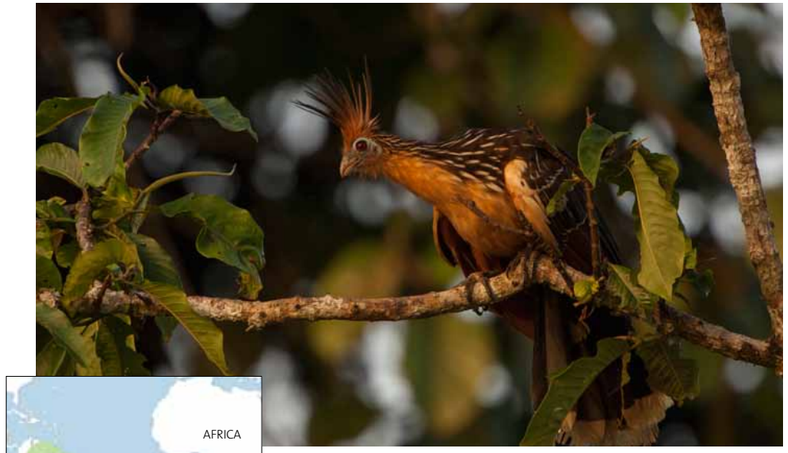
ASK ANY GROUP of birders heading to South America for their first visit to that continent to name the species on their wishlists and it is a safe bet that the Hoatzin *Opisthocomus hoazin* will, without exception, feature in the top ten. This iconic bird inhabits swamps and flooded lowland forests, and has been a source of fascination to ornithologists ever since it was first described to science. The chicks possess claws on the digits of their wings, a feature not found in any other living species but common in early birds such as *Archaeopteryx*. The chicks' claws and the bizarre appearance of the adults collectively imbue the Hoatzin with an air of primitiveness, evoking images of a time when the distinction between reptile and bird was much more blurred than it is now.

It is perhaps fitting that the taxonomic affinities of this exceedingly odd bird have been the source of more head-scratching among ornithologists than those of nearly any other species. The birds with which the Hoatzin has at various times been putatively linked make for a long list, and include groups as diverse as rails, bustards, cuckoos and mousebirds. While the distant family tree of the Hoatzin still remains far from clear, recent research has lifted the lid on a surprising chapter in its evolutionary history, revealing that it is not quite as quintessentially South American as we might think.

The story begins in 2003, when an extinct bird called *Namibiavis senutae* was described from fossil bones found at Arrisdrif on the lower Orange River in southern Namibia, not far inland from the river's mouth. *Namibiavis* occurred in this area around 17 million years ago (MYA) and, when its fossils were first described, it was thought to belong to the order containing modern-day cranes, crakes and rails. However, when the fossil bones were subsequently re-examined by a team led by Gerald Mayr, it became apparent that the earlier assessment was incorrect and *Nambiavis* was, in fact, a species of hoatzin. The same team of researchers also identified another extinct hoatzin that occurred around 23 MYA in what is now south-east Brazil, and they named it *Hoazinavis lacustris*.

Africa and South America were once both part of the supercontinent Gondwana, but were completely separated by around 100 MYA. This was long before the appearance of any group of birds to which the hoatzins could even distantly be related and the possibility of them existing before the break up of Gondwana can safely be ruled out. So these findings of two extinct species on either side of the Atlantic Ocean immediately raise intriguing questions: how did hoatzins cross the Atlantic, and in which direction did they do it?

At the time when early hoatzins somehow crossed it, the South Atlantic Ocean was narrower than it is now but still a formidable barrier. It is extremely unlikely that hoatzins could have flown across; modern Hoatzins are weak flyers, and fossils suggest that their ancestors were equally mediocre in this department. It is a realistic proposition for strong flyers to occasionally cross the Atlantic (as southern African birders discovered when a Black Skimmer, which occurs in North and South America, turned up near Cape Town late last year), but the notion of something as ungainly as a hoatzin flapping across several thousand kilometres of ocean is beyond the limits of credulity.



One of South America's most iconic birds, the Hoatzin may in fact have African roots.

Instead, Mayr and his colleagues argued, hoatzins made the crossing by raft. Animals trapped on large floating mats of vegetation washed out to sea from river mouths can – if the currents and winds are favourable – land up a considerable distance from their native range. We know for a fact that this happens: there are eyewitness accounts of creatures as large as boa constrictors dispersing to distant islands in this fashion. The rafting hypothesis is particularly plausible for hoatzins as lowland riverine habitats are ideal for the formation of natural rafts. It is quite possible that a few early hoatzins found themselves accidental passengers on a large raft well stocked with plants, and survived long enough to float across an Atlantic Ocean narrower than today's.

This leaves the question of the direction in which the ancestral hoatzins made the crossing – eastwards from South America to Africa or in the opposite direction? Although *Hoazinavis* (the fossil hoatzin from Brazil) existed some six million years before *Namibiavis*, Mayr and his colleagues believe that hoatzins actually arose in Africa, and dispersed from there to South America. The researchers came to this conclusion on the basis of evidence suggesting that the ocean currents and atmospheric conditions prevailing at the time would have made a westward rafting journey more likely than an eastward one.

If the sequence of events hypothesised by these researchers is correct, hoatzins evolved in Africa. At some point before 23 MYA, they dispersed by raft across the Atlantic to South America and then existed on both continents for at least six million years. They subsequently went extinct in their ancestral African homeland, leaving South America as the sole refuge for the hoatzin lineage. It is an arresting thought that the species sometimes described as the world's strangest bird may have had an African origin and very likely reached the New World by sea.

ANDREW McKECHNIE

Reference: *Mayr, G., Alvarenga, H. and Mourer-Chauviré, C. (2011) 'Out of Africa: fossils shed light on the origin of the hoatzin, an iconic Neotropic bird.'* Naturwissenschaften *98: 961–966.*