



The bird that thinks it's a COW

Birds don't normally graze leaves in herds, digest for hours and emit a smell of fresh manure. **James Parry** finds out more about the hoatzin – South America's most extraordinary bird

GETTY
The hoatzin, seen here in Peru's Tambopata National Reserve, is a misfit that has ripped up the evolutionary rule book

Paddling along a tributary of Ecuador's Napo River shortly after dawn, I felt closer to the rainforest than on any of my previous visits to this glorious region. A tangled mesh of vegetation cascaded down from the canopy above and trailed in the water next to my canoe. Iridescent blue *Morpho* butterflies the size of dinner plates sailed past, almost within touching distance, and squirrel monkeys cavorted in the waterside trees.

I thought I heard the yelp of a giant otter, while closer to hand the siren-like call of a screaming piha – surely the noisiest bird in the rainforest – reverberated through the understorey. It was all stirring stuff, but something was missing. Hoatzins (*Opisthocomus hoazin*), those zoological curiosities, were what had lured me here. I didn't want to leave without seeing – or smelling – them.

A gang of the unusual birds had been here the previous day, but they had moved on. The reason why was clear – the tree in which they had been spotted was stripped bare. Uniquely among birds, hoatzins are folivores, or leaf-eaters. They'd simply scooped the lot and gone to find more.

Hoatzins are often said to smell of fresh cow manure or sweet-smelling hay as a by-product of their unconventional diet. While wondering if the legend of their scent had any basis in fact or belonged in the realms of folklore, I rounded a bend in the river and there they were: half a dozen gawky-looking birds draped over a shrub, busily tucking in.

A couple of the group flapped about clumsily to find a new sprig on which to gorge themselves. One wasn't eating at all, instead perching almost motionless in a shaft of early morning sunshine. That's another thing about hoatzins – nothing they do is ever in a hurry.

Fashion statement

By no stretch of the imagination could they be described as beautiful – a few assorted handsome features, to be sure, but the sum total of these parts almost borders on the grotesque. Yet I've always found a quirky charm in the species' eclectic appearance. A funky mohican crest and neon-blue facial skin surrounding a beady red eye are accessorised by dramatic, cape-like wings and an extravagant fan-



Getting airborne is a struggle for the ponderous hoatzin, which seldom attempts to fly far

shaped tail used to maintain balance while scrambling around in vegetation. The black, russet and cream plumage has a hint of the Georgian gentleman.

But the elegance stops there. Hoatzins are awkward birds who spend most of their time scrambling round on bushes surrounding South American waterways. Their flight is laboured, with many a comical crash-landing, and their flouncing gait probably gave rise to one of their local Brazilian names: *cigana*, meaning gypsy.

Hoatzins have intrigued and befuddled scientists ever since they were first described by German zoologist Statius Müller in 1776. Taxonomists have spent decades deciding how to categorise these unusual birds, originally placing them with pheasants, then moving them around ▷

Hoatzins have intrigued and befuddled scientists for centuries

A CANNY ESCAPE Hoatzin chicks have a cunning way of escaping danger



Jump

Predators such as the Great Black Hawk (*Buteogallus urubitinga*) sometimes attack hoatzin colonies. While the adults squawk and flutter to distract the hawk, the chicks jump out of the nest and into the water below.



Paddle

The scrawny-looking chick flaps and paddles underwater until it has reached a safe distance from the colony. It needs to remain alert, as the water is full of other threats, including cayman and snakes.



Climb

The chick uses its wing claws to haul itself out of the water and onto a tree branch. Once it reaches adulthood it will lose this adaptation and use its fully grown wings to aid its climbing instead.



Blundering inelegantly through the foliage, the hoatzin has the air of someone who has just been rudely awoken

▷ the avian family tree from pigeons to cuckoos and rails to turacos. The use of DNA analysis seems to have made things more, rather than less, complicated – while it has ruled out some relationships, scientists still cannot identify a close relative. Today, the hoatzin genome is part-way through being sequenced and in the meantime it has been given its own family, *Opisthocomidae* (from the Greek for ‘those with long hair behind’).

The hoatzin split from other bird groups a long time ago, though precisely how and when remains unclear since there is only one undisputed related fossil – part of a skull that was found in Magdalena Valley, Colombia, and described in 1953. This has not stopped scientists from speculating on the bird’s primitive status, with one describing the hoatzin as long ago as 1898 as “living evidence of the transition between reptiles and birds.” The claim was largely due to the wing claws of young

hoatzins, which they use to help scramble out of the water and in the trees before their adult wings are fully developed. It is now thought that this trait evolved separately in hoatzins, rather than being inherited directly from *Archaeopteryx* and other early birds.

Branching out

Whatever the truth about the hoatzins’ past, their diet makes them unique. They are the only birds known to possess a foregut fermentation system. This highly specialised arrangement equips them to process the huge quantity of foliage they need to provide enough energy to survive, since the leaves that form the bulk of their diet are low in nutrients.

The hoatzins’ oesophagus and enlarged crop serve as fermentation chambers. Inside are anaerobic bacteria that secrete enzymes able to break down the otherwise indigestible cellulose present in plant

tissue. The birds ‘chew’ the leaves before swallowing, and ridges inside their crops help to break down the leaf bulk further so it can be processed more easily. In digestive matters, hoatzins have more in common with cattle and sheep than with their feathered relatives.

Hoatzins digest their food very, very slowly. A meal can take as long as 45 hours to pass from bill to cloaca. This is why these birds loaf around for up to 80 per cent of their time – they are effectively chewing the cud.

There is a downside to having such a supersized crop. Hoatzins only have enough space left inside their bodies for a simple, reduced sternum (breast bone) and puny flight muscles. Small wonder then that they are such weak flyers. I have seen birds so engorged that they can’t take off and simply sit for hours, beaks gaping and wings drooping, until they have at last processed their meal.

Besides their reputed odour and their cow-like eating habits, hoatzins are endowed with another typically bovine characteristic: they are highly social. The birds form family flocks of up to a dozen or so individuals. Colonies of 40 or more



Hoatzins sit for hours digesting the leaves that form the bulk of their diet

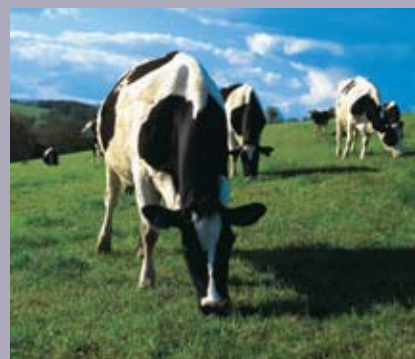
Hoatzins loaf around for up to 80 per cent of their time chewing the cud

DIGESTIVE MAGIC How does the hoatzin do it?



Typical bird

Most birds, such as this starling, have a crop that allows them to gobble far more food than their stomachs can hold before darting back to safety. The crop stores the excess food and passes it into the two-chambered stomach as needed. The first chamber holds acid to break the food down. The second, the gizzard, has powerful muscles, and holds swallowed grit and small stones for grinding.



Cow

Cows have four enlarged stomach chambers containing anaerobic microbes and enzymes to break down plant matter. The fermentation and digestion process begins in the rumen. When the rumen contracts, its contents either move on for next-step processing or return to the mouth. ‘Chewing the cud’ adds more saliva and breaks food down further before it advances through the system.



Hoatzin

Like cows, the hoatzin needs to digest large amounts of plant matter – in particular, the cellulose cell walls of leaves. It is the only bird known to have a fully functional foregut fermentation system, in the form of an unusually large crop, folded into two chambers, and a large, multi-chambered lower oesophagus. Its stomach chamber and gizzard are much smaller than in other birds and it takes many hours to digest.

birds have been recorded – and they are noisy. An entire family may engage in a cacophony of grunts, squawks and hisses, often delivered in unison. The birds are usually set off by one particularly enthusiastic individual, who leads the rest of the ensemble in a bizarre chorus.

Tourist threat

Because their meat is generally regarded as unpalatable, hoatzins are rarely hunted and the principal threat to them comes from disturbance and habitat destruction. They are often tame and seemingly tolerant of humans, but research in tourist areas has indicated a more worrying picture. In 2004, researchers placed microphones in hoatzin nests at Cuyabeno in Ecuador both in tourist areas and undisturbed nesting sites. They discovered that in the tourist sites the heart rates and stress levels of the juvenile birds soared, their body mass was up to 50 per cent lower, and mortality was significantly higher. Repeated visits from tourists may therefore adversely affect hoatzin populations near lodges and camps.

Hoatzins are an icon of tropical lowland rainforest and don’t do well in captivity. The first birds were brought to London Zoo in 1931, but died soon after arrival. More recently the Bronx Zoo housed a small group in the 1990s, feeding them

on locally grown vegetation and even successfully hatching chicks, but the birds did not survive.

In contrast to jaguars, toucans and macaws, hoatzins are somewhat unconventional icons of the Amazon jungle. For the record, I couldn’t detect any smell from the birds I saw during my trip, but I found all the other specialised characteristics of this remarkable bird exactly as promised. Rest assured, this avian enigma will continue to defy the norms of the natural world. ☐

[A version of this article first appeared in *BBC Wildlife Magazine*]



James Parry is a British wildlife journalist and author of a number of books on natural history, including *Rainforest Safari* (Carlton Books, 2008)

FIND OUT MORE

► <http://biology-web.nmsu.edu/houde/hoatzin.htm>
The status of the Hoatzin Genome Project

► **BBC** www.bbc.co.uk/programmes/p00bm2c7
An extract from the BBC’s *Life of Birds* showing how a hoatzin chick uses its wing claws to escape danger



Our expeditions get you closer. Our film-makers take you deeper. Don’t miss spectacular natural history programs from BBC Earth on BBC America.
MEET YOUR PLANET: www.bbcearth.com

FACTSHEET



OPISTHOCOMUS HOAZIN

LATIN NAME: *Opisthocomus hoazin*

COMMON NAME: Hoatzin (aka ‘stink bird’)

SIZE: length 62-70cm (24-28in), weight 700-900g (25-32oz).

DIET: Hoatzins eat leaves and buds of over 50 species of plants, including several toxic to other birds. A 1996 study in Venezuela found their diet consisted of 82 per cent leaves, 10 per cent flowers and 8 per cent fruit.

BREEDING: They breed during the rainy season, often with several pairs nesting in close proximity. The female lays two to four eggs on a simple twig platform in a tree overhanging water; usually only one chick fledges about 60 days after hatching. A co-operative breeder, up to six ‘helpers’, including the previous years’ offspring, may help breeding pairs to rear their young.

LONGEVITY: Up to about 10 years in the wild.

HABITAT AND RANGE: Waterside mangroves and other trees and bushes beside lakes, rivers and swamps.

MAIN THREATS: Loss of habitat and disturbance by humans, particularly tourists getting too close.

CONSERVATION STATUS: Common, but with a patchy distribution across its range.

