

## Record Breaking African birds

*Over 2,300 species of bird are found in Africa – almost a quarter of all those on the planet. To survive, they have evolved an impressive variety of specialist adaptations, from bizarre bills and natty nests to canny hunting tricks. Mike Unwin introduces some well-known avian quirks – and a few which may surprise you.*



### FEATHERED FINERY: DECODING THE MESSAGES BROADCAST BY A BIRD'S PLUMAGE.

It is the plumage of African birds that grabs the attention of first-time visitors to the continent, and no safari is complete without a chorus of gasps at the first lilac-breasted roller or superb glossy starling. From the fluorescent red of bishop-birds to the dazzling iridescence of sunbirds, bright colours send out attractive signals to potential mates. Generally, it's the male who takes the lead and is the more flamboyantly attired. But there are exceptions: the painted snipe and African jacana are two examples of 'polyandrous' birds – species in which it is the more colourful female that struts her

stuff, while the duller male is left rearing the chicks.

While spectacular plumes may catch the eye, they can also be a hindrance. The extravagant tail of the male long-tailed widow, especially when sodden with morning dew, can hamper the bird so severely that children in South Africa have learned to catch this bird by hand. The plumes are shed immediately after the breeding season, allowing the male the safety of a drab but practical non-breeding outfit.

But colour isn't just about sex. There is even evidence that species boldly marked in black and white, including the pied kingfisher and mourning chat, are less palatable than plainer ones, suggesting that their markings – like those of poisonous frogs and insects – serve as a deterrent to predators.

### NO PLACE LIKE HOME: NEST-BUILDING AS SURVIVAL STRATEGY

African birds also have a few surprises when it comes to home building. Approaches range from the cunning of the Cape penduline tit, which incorporates a false entrance in order to fool predators, to the minimalism of the palm swift, which simply glues its eggs to the inside of a palm frond using its own saliva. Others are more concerned about the location: the water dikkop, for instance, sites its nest near that of a crocodile, whose massive jaws give any would-be egg thief pause for thought.

For sheer scale, no avian abode can match the immense thatched apartment block of the sparrow-sized sociable weaver, whose nest may house over 400 birds in up to 100 individual chambers. Each chamber has a narrow entrance tunnel, which is lined with spiky grass stalks to help repel marauding snakes. The dense insulating thatch keeps the temperature inside up to 10°C cooler than the baking midday sun and 10°C warmer than the cool winter nights, shielding the bird from the worst extremes of the Kalahari climate.

The double-banded courser, another Kalahari species, digs its feeble scrape of a nest in the full glare

of the sun. With daytime surface temperatures exceeding 50°C, the only thing that stands between the eggs and a fry-up is the body of the incubating adult. But this frail-looking bird is one of nature's toughest customers – able to allow its body temperature to rise by several degrees, before exchanging incubation duties with its partner and then cooling off in the nearest shade.

Cuckoos, famously, avoid all parental duties by offloading their eggs on another bird's nest. But they are not the only African bird family to practise brood parasitism (as this is technically known). Others include the whydahs, each of which exploits a particular waxbill species as its host.

The shaft-tailed whydah, for instance, chooses the violet-eared waxbill, while the pin-tailed whydah prefers the common waxbill. In each case, the whydah's eggs perfectly mimic its host's, and the nestlings have exactly the right arrangement of gape spots inside their bills to dupe their foster parents into feeding them.

#### GRABBING A BITE: HIGHLY ADAPTED BILLS AND FEET

The way to a bird's stomach is through its bill, so it is hardly surprising that this appendage has evolved an amazing variety of form and function. The ground hornbill uses a massive hatchet to smash a tortoise from its shell; the nectar-guzzling Cape sugarbird inserts a delicate probe to extract nectar from a protea; and the flamingo swings a crooked sieve through the water to filter out its precious algae.

But the most bizarre bill must surely belong to the African skimmer. This relative of the terns has a lower mandible longer than the upper, with which it slices through the water's surface while flying methodically back and forth above. Any hapless fish that get in the way are snapped up and tossed down its throat.

Feet are also vital tools in pursuit of a meal. Designs range from the ludicrously long toes of the African jacana, which allow it to walk across floating vegetation, to the dextrous digits of parrots, whose 'zygodactyl' arrangement (two toes forward and two back) allows them to clamber acrobatically through the forest canopy and clasp food for their bill to demolish.

The feet of most raptors are essentially killing meat hooks. But a few species have customised the basic design. The secretary bird, a grassland hunter of reptiles and rodents, has padded soles to strengthen the blows with which it despatches its prey. The osprey, a plunge diver for fish, has a coating of spines on the underside of its toes in order to better grip its slippery catch. And the harrier hawk, which raids weaver nests for their fledglings, even has double-jointed legs, which allow it to winkle them out from any angle.

Of course feet can't carry water, which – in arid lands – is the first requirement for survival. Sandgrouse have overcome this problem with another bizarre adaptation. These fast-flying, pigeon-sized birds usually nest far from water, which their chicks need daily in order to survive. So adults commute daily to bring water back to their young – often flying over 50 kilometres each way. The males have a fine down fringing the base of their belly feathers, which absorbs water like a sponge. At their regular watering hole, a male shuffles in belly-deep, soaking his feathers. He then returns to the nest, where the chicks sip the precious cargo from his plumage.

#### TRICKS OF THE TRADE: INGENIOUS BIRD BEHAVIOUR

Ingenious bills and feet are of little use without technique, and African birds have perfected some impressive tricks in order to grab a meal. The black egret, for instance, makes an umbrella of its wings to cast a shadow on the water; fish are lured into the shade, and thus into range of its stabbing bill. Its

relative, the diminutive green-backed heron, will even bait the water's surface with a dead insect in order to attract fish within spearing range.

Some members of the vulture family also show surprising ingenuity. Egyptian vultures in Tanzania's Ngorongoro Crater have learned how to break into ostrich eggs by hurling stones at them. The lammergeyer, a mountain-dwelling species that feeds on bone marrow, lets gravity do the work: it carries bones aloft and then drops them onto the rocks below, where they shatter into more manageable pieces.

Other birds use teamwork. A group of white pelicans, for instance, works together in a semi-circular flotilla, corralling fish into the shallows and then scooping them up in a synchronised lunge. Black eagles, by contrast, hunt hyraxes in pairs: one bird sweeps low across the hillside, scattering the prey, and then – as the curious animals re-emerge to watch the retreating raptor – its mate swoops in from behind. Gotcha!

#### A LITTLE HELP FROM YOUR FRIENDS: IT PAYS TO COOPERATE WITH OTHER SPECIES

Many African birds enlist the help of other animals. The carmine bee-eater, for instance, will sometimes hitch a ride on the back of the huge kori bustard, darting out to snatch insects disturbed at the giant bird's feet. The greater honeyguide has perfected an even more extraordinary trick: it uses its chattering call to lead a honey badger to a bees' nest, then, once this pugnacious little animal has broken in and had its fill, swoops down to take its own share. Honeyguides also perform this service for people, though African folklore warns that you must leave something for your guide, or next time the disgruntled bird may lead you to a black mamba.

The best-known exponent of mutualism – a two-way relationship benefiting both parties – is surely the oxpecker. This starling-sized bird spends much of its life on the back of large grazing mammals, such as antelope or buffalo, where it finds food, rest, nest material (hair) and even mates. The host, in turn, receives an onboard personal grooming service as the oxpecker removes ticks and other skin parasites – although the bird's habit of probing sores is rather less welcome.

#### SMART THINKING: ARE BIRDS AS CLEVER AS THEY LOOK?

Smart birds avoid doing all the work themselves. The fish eagle, for instance, though an expert fish catcher, will happily pirate food from an unwary osprey or goliath heron. And the ever-resourceful fork-tailed drongo has added deception to robbery: it has learned to mimic the alarm calls of meerkats, which dupes the little carnivores into bolting for cover, allowing the bird to snatch up their hastily abandoned catch.

The jury is out on whether such ingenuity constitutes true intelligence or is simply finely-honed instinct. But there is no doubt that some African birds are smart, with none brainier than the African grey parrot. A famous study at the University of Arizona with a captive individual named Alex has demonstrated that parrots, far from being mindless mimics, have the communicative ability of a two-year old child. Alex has a functional vocabulary of over 100 words, can count, identify shapes and colours, understand the concepts of 'same' and 'different', and even orders lab assistants to rearrange his room.

#### MAKING THEMSELVES HEARD: HOW BIRDS SEND AUDIBLE SIGNALS

Without its famous gift of the gab, of course, we would have little insight into the brain of a parrot. And the voices of African birds have drawn as many admirers as their plumage: from the ringing cry of the fish eagle to the quavering whistle of a fiery-necked nightjar, many are celebrated as supremely evocative of the continent.

As a general rule, the most gifted songsters are the least impressive to look at, having evolved by the maxim that beauty is in the ear of the beholder. A good example is the drab little marsh warbler, a migrant from Europe, whose amazing talent for mimicry allows it to incorporate phrases from at least 70 other African and European species into its own song.

Some birds vary their song in order to stay one step ahead of the competition. If rivals start to copy the sweet melody of the white-browed robin chat, he literally changes his tune, improvising a new one with which to wow the neighbourhood females. And once a partner is secured, call is vital for staying in touch. Certain bush-shrikes, such as the tropical boubou, sing in duet – the male's bell-like whistle and the female's guttural growl being so precisely synchronised that they sound like the call of a single bird.

When voice alone doesn't get the message across, some birds generate noise by other means. The flappet lark, for instance, applauds itself with short audible volleys of wingbeats as it circles invisibly high during its display flight.

#### A PLACE IN THE HISTORY BOOKS: HOW TO DISCOVER A NEW SPECIES

Many more avian wonders doubtless remain to be discovered. In fact, nearly 50 new species have been identified in the last half-century. If you want to discover one for yourself, then remote forest areas are probably your best bet. For instance, the Udzungwa range in south-western Tanzania yielded the Udzungwa forest partridge in 1991, while the Congo bay owl, known only from a single specimen collected in 1951, was rediscovered in the Itombwe region of eastern Congo in 1996. But perhaps the strangest tale is that of the Congo peacock. This sole African member of the Asian peafowl family first revealed itself to science through a feather in the cap of a local villager in 1913, but was not formally identified until 1936, when two mounted specimens were discovered in a Congolese museum and a Belgian explorer confessed to having eaten one.