



## In steep decline

*Conditions around the lake do not augur well for Naivasha's buzzards, writes **Munir Virani.***

**K**ikuyu people believe that if you see the white chest of an Augur Buzzard (*Mwewe*), *Buteo augur*, first thing in the morning, then your day will be a successful one.

Augur Buzzards are medium-sized hawks with short, stout bodies, broad wings, and striking, brick red tails. Until recently, their presence over much of Kenya's central highlands – including moorland, forest verges, rock outcrops, and cultivated areas – could easily be taken for granted. An Augur Buzzard circling overhead was simply part of the *mise en scène* of daily rural life, as was its characteristic squawking call.

The species appears to have adapted very well to human settlement, agricultural expansion, and exotic plantation forest. A 'Not threatened' conservation status, then, has always seemed assured. Indeed, some field guides declare the Augur Buzzard to

be among the most frequently seen of all East African birds of prey.

My own research on Augur Buzzards – beginning with a four-year study (1995–1999) conducted at three sites around Lake Naivasha in Kenya – has revealed, not only that such a complacent attitude is foolhardy and reckless, having no basis at all in science, but also that it is *downright irresponsible*.

Why study a common species like the Augur Buzzard? And why in the Lake Naivasha area, of all places?

The effects of rapid habitat change on an ecosystem are perhaps best gauged through studying the behaviour, not of a highly specialised 'niche' inhabitant, but instead of a commonly seen and adaptable species. Among such species, an aerial 'apex' predator – like the Augur Buzzard, which operates near the top of the food chain – is often the most instructive barometer of

an area's general ecological health. This is because the health of its 'umbrella' population generally mirrors that of other species at the lower trophic levels. As such, there is a correlation between a flourishing raptor population and a healthy and biodiverse environment.

The Naivasha area has – as we all know – been subjected to a period of accelerated habitat change with the expansion along its shores of Kenya's burgeoning cut flower industry, buoyed by access to plentiful 'free' water from the lake, cheap labour, and proximity to the Kenyan capital, Nairobi.

The lake's enormous economic importance is reflected in the fact that 75 % of all the cut flowers produced in Kenya (now Europe's third largest supplier, after Holland and Israel) are grown on its shores. Between 1978 and 1998 Kenyan exports of cut flowers increased ten-fold (from 3,000 tonnes to 30,000 tonnes). Since then, the industry has continued to expand apace, raising questions over the sustainability of uncontrolled water extraction from Lake Naivasha, destruction of riparian habitats, pesticide run-off, influxes of labour, the resulting proliferation of lakeside settlements, and so on ...

The implications are understandably dire for Lake Naivasha's *ecological* status as one of Africa's – and the world's – most important wetland areas. As home to more than 350 bird species, the lake is ranked among the top bird watching destinations on earth. Its shores provide essential corridors for wild ungulates. Incredibly (in view of what is going on there), the lake is also a Ramsar Site (that is, a wetland recognised, according to criteria adopted at a milestone conservation convention in Ramsar, Iran, in 1971, as being of global importance on the strength of the water birds and other wild species it supports, as well as for its scientific, cultural, and recreational value to people).

A scientific understanding of the environmental consequences for Lake Naivasha of the horticultural industry's runaway growth, not to mention a host of other problems (notably those arising from the introduction of a succession of invasive species, from the Louisiana Freshwater Crayfish to the Water Hyacinth), is crucial if this important lake – and with it, the well being of a large riparian human population – is to prosper. A study of the Augur Buzzard's behaviour and ecology around Lake Naivasha, then, might be expected to provide some answers.

To this end, I geared my research to finding out how different aspects of

riparian land-use were affecting Augur Buzzard ecology and behaviour. I made daily observations of the buzzards in 40 identifiable territories spanning the Hell's Gate National Park (HGNP), the various commercial horticultural establishments (mainly flower farms) located between the park and the southern lakeshore, and Mundui, a privately owned expanse of *Acacia* woodland.

I found that Augur Buzzards within the HGNP preferred to nest on cliffs, whereas at Mundui and in the horticultural fields they chose trees. Male Augur Buzzards in the HGNP spent significantly more time incubating and attending to chicks than did their counterparts outside the park. This may have been because there are more predators – such as baboons, other eagles, and crows – to contend with in the park. In the HGNP, the larger, more aggressive female Augur Buzzards were kept busy defending nests, leaving the males to look after the eggs and chicks, or risk breeding failure. (Size differences between the sexes in raptors – an evolutionary phenomenon known as reversed sexual dimorphism – may help to reduce competition between males and females, while also enabling pairs to exploit both large and small prey species within an occupied territory.)

**A**ugur Buzzards in the HGNP were feeding on a variety of prey: from flushes of dung beetles during the long rains, to birds, reptiles, and small mammals. Buzzards in the commercial horticultural areas fed almost exclusively on mole rats, and occasionally field mice. Mole-rat populations have boomed in the volcanic soils of the horticultural areas, presumably in the absence of mole snakes and other natural predators that were extirpated with the introduction of agricultural mechanisation.

In the privately owned woodland of Mundui, tall and mature *Acacia* trees combined with good grass cover and abundant prey produced a significantly higher number of chicks per year (1.3 annually, on average) than the other habitat types. Although the HGNP is a protected area, Augur Buzzard pairs there produced only one chick every two years, a reflection maybe of the high predation pressure from baboons and other nest raiders, as well as fiercer competition with rival predators.

Overgrazing by huge populations of ungulates has changed the characteristics of the grass cover in the HGNP, which in turn has negatively affected prey abundance and availability. Hunting success



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rates for Augur Buzzards were lower inside the HGNP than in the horticultural fields and at Mundui.

Did this mean Augur Buzzards in the prey-rich horticultural areas raised more chicks? Certainly not! When mole-rat numbers peaked in June, soon after the long rains, many of the farms would deliberately seek to eliminate them, either through direct poisoning or by employing casual workers to kill them, thus depriving growing chicks of food.

Although Augur Buzzards were present in good numbers at all three Naivasha sites, I collected 15 dead adult birds over the four-year period. Annual adult mortality on the horticultural farms I estimated at 13 %. This suggested that the area might be acting as a 'population sink' – meaning that, while Augur Buzzards may have been dying rapidly, they were being replaced by a 'floating' population of birds waiting to occupy territories.

Persecution by humans and electrocution through contact with overhead transmission lines were the major causes of adult mortality in the horticultural areas. Other causes of death included poisoning (direct and indirect) and drowning in cattle water troughs.

The findings of my 1995–1999 study have contributed to a more thorough scientific understanding of Augur Buzzard ecology and behaviour. Perhaps more significantly, however, this study has yielded valuable baseline data from which it is now possible to assess the impact of commercial horticulture's subsequent expansion around Lake Naivasha.

Over a two-week period in October 2005, I revisited all 40 Augur Buzzard territories I had observed and monitored between 1995 and 1999. In particular, I wanted to find out what effect continuing expansion of Lake Naivasha's horticultural and related riparian developments were having on the species' food supply and ability to nest ...

I considered a territory to be occupied where I could see either one or a pair of Augur Buzzards soaring above it, or where a previously documented Augur Buzzard's nest showed signs of breeding activity or recent use. In 20 % of all cases, I could recognise individual buzzards from rings, or from known markings (distinctive colour morphs or facial patterning). I considered a territory to be unused, defunct, or abandoned where I saw no Augur Buzzards at all over a period of at least three consecutive days.

Preliminary results show that Augur Buzzard territories around Lake Naivasha have declined by between 33 % and 57 % in all habitat types.

Predictably, the steepest decline in the number of territories has occurred on, or near, flower farms, and in areas accommodating large, and rapidly growing, human populations. Loss of previous foraging grounds (now invariably replaced by flowers), destruction of nesting sites, increased human persecution, and a greater likelihood of electrocution are clearly some of the principal reasons behind the alarming decline I observed in the number of Augur Buzzard territories around Lake Naivasha.

A decline of 50 %, or more, in the population of any commonly seen bird of prey is almost imperceptible to casual observers. (In the early 1990s, when it was proposed that the conservation status of three South Asian *Gyps* vulture species be up-listed to the 'Endangered' category, there was laughter all around the conference hall – until, that is, a team of researchers presented irrefutable scientific data showing how the species' respective populations had, in reality, fallen by as much as 90 %!)

Similarly, from Leslie Brown's pioneering studies in the early 1970s, we know that Lake Naivasha's population of another 'common' species – the African Fish Eagle, *Haliaeetus vocifer* – has fallen by more than 50 % over the past 35 years. Again, as with the Augur Buzzard, this decline has *not* been readily apparent, as African Fish Eagles are still commonly seen (and heard) on the lake, where their population may even be said to have stabilised in the past couple of years – albeit on the back of an explosion, post-*El Niño*, in Lake Naivasha's population of that most recent of alien invaders: the carp. Any short-term stabilisation, then, while encouraging, must be viewed in the wider context of the species' worryingly low overall population base.

So, while I am not suggesting any up-listing in the conservation status of the Augur Buzzard (or, indeed, in that of the African Fish Eagle), I can state categorically that a population decline of between 33 % and 57 % within six years in the prevalence of a species that is as resilient and versatile as the Augur Buzzard does not augur well for the ecological health of the Naivasha area. And that is putting it very mildly!

Adaptability in a species may reach a threshold beyond which that species simply can no longer go on adjusting its behaviour and ecology. Lake Naivasha's Augur Buzzards appear, alas, to have reached this critical point – of no return.



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