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Editorial

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With this issue the *Lanioturdus* is now back to being a journal with 4 issues per year and I would like to congratulate the members for your support to make this happen. Within this issue is a wide diversity of articles from all parts of the country. Again we have articles on "common" garden birds which are not common according to the books.

I would like to apologize to Rob Simmons and Penn Lloyd for forgetting to include a figure in their article, which appeared in Volume 35(3). It is included in this issue.

We have only had 4 write-ups on bird club outings in Volume 35 from 2002 and I would like to appeal to organizers and members to please send me a short note on the outing. This will enable other members, who did not attend, to see what the club has been doing and what birds were seen.

Included within this issue is an extra membership form. Please give one to a keen birder you know, who is not a member. You may not know it, but the Namibia Bird Club only has about 90 members which is a rather shocking low number considering all the people we know who have an interest in birding in the country. If you just consider the number of tour guides operating that is more than 90 people. That does not count the number of hunting guides, farmers, scientists, and government employees who also either observe birds or do studies on birds. In 3 of our neighbouring countries Botswana, Zambia and Zimbabwe their bird clubs/societies have 300-600 members and have far less individuals who are active in the tourism or outdoor avocations.

Cormorants and Pelicans

Large numbers of cormorants were still present on the islands where breeding was in full swing in January. A few nests remained on this survey and RB estimated 30 nests of White-breasted Cormorants and 230 nests of Cape Cormorants. Pelicans have bred successfully on the islands and 577 were recorded throughout the wetlands.

Terns and Gulls

Kelp Gulls dominated this group with 2452 birds present. The breeding cormorants (as food) and the access to the jackal-free islands (for breeding) probably attract them. Common Terns were low in number (470), with a smattering of Damara (54), Caspian with immatures (62), Swift (11) and Sandwich (34).

Other species

One Peregrine Falcon was evident chasing birds over the lagoon early one morning and using the high dunes nearby to scan for prey before heading off north. An adult and one juvenile Pale Chanting Goshawk were seen together indicating successful breeding.

Mammals: Dolphins, seals, and hyenas

A pod of at least 10 Bottle-nosed Dolphins were seen performing remarkable aerial acrobatics in the main lagoon. No Heaviside's Dolphins were seen. A freshly killed baby Bottle-nosed Dolphin was found washed up on the beach about 15 km north of Sandwich Harbour. It was about 1 m long and had huge bite marks in its belly; it was almost certainly taken by sharks. It was photographed and buried for further skeletal material. Seals were in abundance (not counted), and no fresh hyena tracks were seen. Jackals were plentiful.

Aircraft disturbance was once again present with about 70% of all planes flying out to sea as requested. However, aircraft ZS KWP flying 150 m over the water and V5 PIT flying at 100 m over the water committed violations of the 1000 m minimum height restrictions. (Other aircraft numbers could not be read in the low afternoon glare). The first is a South African registered plane, the latter a Namibian plane. The worst violation occurred from a helicopter no registration

number seen filming for the producers of a new I-max film on Namibia. He flew at about 100 m over our camp towards the flamingos on the southern flats, descended to about 50 m as the flocks of thousands of flamingos took wing and then flew south, apparently landing at Meob Bay. His permit was for flying over Sossuslvlei with no landing allowed. RB has since reported the incident to Aviation Authorities and confronted the pilot. This matter is being taken further.

Thanks once again to Rod for organising the boat and surveying the islands and to Mark Boorman, Christian Boix and Lucy Witts for expertly surveying the northern and lagoon-side wetlands.

Quelea breeding in north-east Namibia, April 1999

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INTRODUCTION and AIMS

The Redbilled Quelea (*Quelea quelea*) is a grain-eating bird that occurs in massive flocks throughout most non-forested areas of sub-Saharan Africa. Four subspecies are recognised, one in West Africa, one in northeast East Africa (Sudan and Ethiopia) an intermediate bird in East Africa and one in southern Africa (*Quelea quelea lathamii)* (Mundy & Jarvis 1989). It is possible that these subspecies occasionally overlap as exampled by a bird ringed in South Africa's Orange Free State, recovered in the Democratic Republic of Congo. The bird is renowned for its gregarious nature, gathering in large "swarms" to breed, feed, drink and roost. Indeed it is the archetypal arid zone species moving in to regions with good rains, breeding extremely fast and moving out to the next best regions with good grass cover (Jones 1989). It is found mainly in thorny vegetation in the *Acacia* savannas of Botswana, Namibia, South Africa and Zimbabwe. It is limited in the drier regions by access to water because it drinks twice daily (Mundy and

Herremans 1997). Populations and problems in Namibia are not as great as elsewhere and there is no published evidence of increasing problems or populations here (P. Jones in litt.). Queleas evolved to eat grass seed, but can be a pest when they find and consume seed crops such as Mahango and Sorghum.

Flocks can reach very large proportions numbering millions of birds and they are then among the most numerous and densely flocking birds in the world. It is possible that such swarms are an amalgamation of several sub populations from different areas of southern Africa, and the University of Edinburgh is investigating this possibility using genetic markers. Initial reports of the present "outbreak" gave fears that the swarm was of exceptional proportions covering 250 km^2 and numbering 100s of millions of birds.

The Ministry of Environment and Tourism (MET) was asked to assist with investigations of the large breeding flocks reported from the Grootfontein area. The investigations were initiated by Mr. B. Wohlleber, Extension Services of Ministry of Agriculture, Water and Rural Development (MAWRD), and were concerned about the environmental impacts of quelea control spraying. As ornithologist I was asked to investigate the size of the colonies and assist in reducing possible impacts of any quelea control programmes. To this end I measured the size of the colonies, estimated breeding success, determined if birds were causing damage to seed crops in the Grootfontein region and (here) make recommendations on control programmes and future monitoring of colonies.

METHODS

I spent 4 days (27 -30 April) travelling to and measuring colonies and talking to farmers in the Grootfontein area. MET staff in Etosha were also alerted and gave valuable input on locations of other colonies. I had discussion with Mr. Wohlleber regarding colony locations and he has kindly made his own report and investigations available to me. Martin Dallimer (Edinburgh University) who was blood sampling for future genetic analyses, joined me to assist in finding new colonies and re-visiting colonies in the Grootfontein region. Colony size (length and width) was measured using a Garmin 100 GPS. I did so by marking the furthest corner where active nests were found (inactive incomplete nests

often occurred up to 400 m beyond this), and walking on a north-south or east-west setting to the outer edge of the colony. Distance was then read from the GPS. (The Estimated Position Error (EPE) on the GPS was kept to a minimum by waiting for optimum satellite signals. The average EPE was 20-30 m). The alternative axis was then marked and read in a similar fashion. A maximum width and length was thus gauged and the colony was assumed to be rectangular in shape and the number of active nests/tree and the distance between trees were measured. Trees per hectare was calculated from 10 000/d^2, where d^2 = inter-tree distance squared. Colony size can then be calculated from the average number of nests/tree, the average number of trees/ha and the total number of hectares the colony covers. Only active nests (complete nests with young) were counted in nesting trees and the edge of each colony was taken from where the active nests finished (incomplete nests with no birds in attendance often occur beyond this). From this the number of adults was calculated from the number of nests x 2. Measurements of distances and areas are given with the standard error (= SD/ n).

RESULTS

Colonies found

Two colonies were located within Etosha National Park and five other colonies were visited in the Grootfontein area. In Etosha one was located 17 km north of Namutoni, and 6.3 km north of the Tsumcor artificial water hole. The second was reported to us by MET pilot Dr. C. Brain who had seen the Tsumcor colony from the air and knew of one other just south of the Rietfontein water hole. I did not have time to visit the latter colony. The Tsumcor colony was located 3 km up the fire break road to Mushara water hole (locations in Table 1).

Three 3 colonies on the farm Alwyn, north east of Grootfontein, were all in thick *Acacia mellifera* scrub on sandveld and calcrete substrate. Birds were very abundant in the omurumbas in the dune areas to the east of these farms but no colonies were seen or reported by the Agricultural Officer at the Sonop Research Station nearby. He did report possible colonies on Taranaki Farm but none were known by the farmer there (Susan van Wyk). Two more colonies were investigated on the farm Wilde (Mr. Pretorius), and the size of one colony on his farm was measured (the other was on the adjacent farm - Makalan - but was not accessible). Each colony was at the same stage - young were fledging from the nests and

many had already taken their first flight. This made it impossible to assess fledging success. However, average numbers of young per nest from B. Wohlleber's investigations (2.15 ± 0.67, n = 20) allowed an estimate of overall productivity (Table 1). This is very similar to estimates from Zimbabwe of 2.4 and 2.14 chicks/nest in different parts of the colony (Jarvis & Vernon 1989). Many broken and hatched eggshells were found below the nests but few feathered young were found below the nests (maximum 4 - 5 at the largest trees) suggesting good success past the nestling stage.

Few predators were seen in the colonies but they included one snake (Cape Cobra: M. Dallimer), 3 Pale Chanting Goshawks and several King Crickets in the nesting trees. Most predators appeared to be at waterholes used by the quelea, and for example 13 Tawny Eagles, 3 Lanner Falcons, 2 Secretary Birds, 1 Lappetfaced Vulture and 1 Gabar Goshawk were apparent at Tsumcor, Etosha. In some colonies predators are said to take a heavy toll of young (Mundy & Jarvis 1989) but this did not appear to be the case in the Grootfontein region.

Estimate of total numbers of birds

The Tsumcor (Etosha) colony with good grass cover and a mixture of Acacia and broadleaf trees was relatively dispersed at 24.5 ha and contained an estimated 577 500 adults and 620 827 chicks (Table 1). During mist netting we caught young birds that were not hatched at the colony and could not have bred there (M. Dallimer), so this is a minimum estimate of the total birds present.

The Grootfontein colonies (Alwyn and Wilde) were denser, and occurred in pure *Acacia mellifera* belts on farmland. The density of trees suggested that both areas had been over-grazed in the past. The total number of adults estimated from nest totals on Alwyn farm was 589 600 and on Wilde, the largest single colony, totaled 868 200 adults in a colony covering 52.3 ha. (Table 1). It was noticeable that the largest colonies occurred where grass cover was dense and complete (no cattle grazing) at Etosha and at the Wilde farm. The total number

Table 1. Location and sizes of quelea breeding colonies found in Etosha and Grootfontein areas in 1999

Locality (coordinates)	**Dimensions /Area of colony (length x breadth)**	**Mean (± 1 se.) No. Nests/Tree (max - min)**	**Distance (m) between trees[a] (max - min) trees/ha**	**Total breeding adults in colony and chicks produced***
Etosha (Tsumcor) 18° 39.51'S 16° 53.69'E	720 m x 340 m **= 24.5 ha**	**142 ± 23**, n=23 (34 – 520)	**11.0 ± 1.4**, n=23 (2 – 32) 83 ± 18 trees/ha	577, 514 adults 620, 827 chicks
Alwyn 1 (Grootfn) 19°17.92'S 18° 52.58'E	420 m x 220 m **= 9.2 ha**	**120 ± 20**, n=30 (3 - 400)	**14.6 ± 2.6**, n=30 (2 – 74) 47± 13 trees/ha	104, 227 adults 112, 044 chicks
Alwyn 2 19°19.49'S 18° 51.78'E	1640 m x 220 m **= 36.1 ha**	**96 ± 15**, n=35 (6 - 330)	**14.9 ± 2.7**, n=31 (2 – 70) 45 ± 13 trees/ha	309, 630 adults 332, 852 chicks
Alwyn 3 19°19.49'S 18°51.78'E	300 m x 400 m **= 12.0 ha**	**102 ± 22**, n=31 (5 - 700)	**11.8 ± 1.6**, n=36 (3 – 41) 72 ± 16 trees/ha	175, 738 adults 188, 918 chicks
Wilde 19°10.24'S 18°45.99'E	2010 m x 260 m **= 52.3 ha**	**166 ± 21**, n=40 (16 - 600)	**14.2 ± 1.6**, n=38 (3 – 45) 50 ± 10 trees/ha	868, 180 adults 933,294 chicks
MEANS /TOTAL	**134.1 ha**	**125.2 ± 13 nests/tree**	**59.4 ± 7.6 trees/ha**	**2, 035,289 adults 2,187,935 chicks**

* Estimated from average chicks/nest (2.15) x number of active nests. The total number of chicks and adults derived from the last column summed not from the average areas. nests/tree and trees/ha

[a] Trees with active nests only

of breeding adults in the Grootfontein colonies visited totaled 1, 457 800 birds and the number of chicks produced was estimated at 1 567 100 birds.

Total populations in Grootfontein

Given that colonies were known from 7 farms in this area (Wohlleber 1999) and the number of birds on two of those farms totaled 1 457 800 adults, we can estimate that 5 102 300 adults were present in the entire area. Similarly, if 1 576 100 chicks were produced on two of these farms, the entire seven farms would have produced 5 516 350 chicks, giving a total quelea population in the Grootfontein area of 10 618 650 birds.

Total populations in Etosha

Assuming the unvisited colony at Rietfontein Etosha was of similar proportions to the known colony near Tsumcor, the number of birds estimated in Etosha was 1 155 028 adults producing 1 241 654 chicks. Since quelea rarely rear a second brood in the same area (Jones 1989) the total Etosha quelea population would be about 2 396 682 birds. Combined, the Etosha and Grootfontein colonies would yield 13, 015 332 quelea.

Food and effect on local grain growers

Many males leave the colony before the chicks are completely grown and attempt to find the next areas where later rains have occurred or where receding (floodplain) waters leave seeding grasses. While the young stay around in the colonies for several weeks they will eventually disperse and often find their way to river valleys where food, water and late-seeding grasses are available. Late-harvest crops in these areas are theoretically prone to attack by young and adults alike, especially those near river valleys (Jones 1989). Since winter crops are harvested in mid-May as these young birds start to leave the area (Wohlleber 1999), it would seem unlikely that many problems would occur in the northern areas several hundred kilometres away.

Locally in every area, grass cover was very good, a result of good rains reported for March. For example 170 mm was recorded at Alwyn and 200 mm at Wilde in March, despite the overall rainfall being below average. Crops (Sorghum) were only grown on the latter farm in small quantities and some were being

harvested as we visited. While some damage had been sustained, no birds were seen on the crops, and all feeding birds were disturbed from natural grass areas. Both farmers with breeding colonies reported no similar swarms of birds in the last 44 years (Alwyn farm: Mr. W. Smit) and 16 years (Wilde farm: Mr. Pretorius). This breeding event was therefore unusual for this area and we can speculate it arose because of the good late rains.

Comparison of breeding colony size and sources of error

Few comparisons with published data on colony sizes are available. The largest known to me is one reported recently from Zimbabwe that measured 20 km long by 1 km wide (M. Dallimer and P. Jones pers comm). At the average densities recorded here for nests/tree (Table 1) such a colony may have held as many as 145 million nests! This is an overestimate since the tree densities were lower than recorded here (P. Jones pers comm).

In comparison with Wohlleber's (1999) studies at the same (Alwyn) colonies, the area of the colonies we measured (mean 19.1 ha see Table 1) and the mean number of trees per hectare we found (55 trees/ha: from Table 1) were considerably smaller than his measurements. He calculated colonies covering 4, 136 and 75 ha (mean, 72 ha) and the number of trees per hectare of 387, 195 and 156 (mean 246 trees/ha). His figures are thus four fold greater for the size of colonies and four fold greater for the number of trees per hectare. (The number of nests per tree was more similar at 106 (ours) and 66 (Wohlleber)). This inevitably resulted in population estimates a magnitude larger in Wohlleber's study. For example we estimated 589 600 adults and 633 814 chicks and Wohlleber estimated 5.0 million adults and 5.5 million chicks from Alwyn alone.

It is important that the number of quelea in Namibia is not over-estimated. When the number is over-estimated then government may go into action to enact control programmes, which may not be needed. For this year there were discrepancies in the estimated number of birds and we should look at the sources for these numbers.

First, the Wohlleber study was unable to use a GPS since the one loaned to them did not work. Thus estimates were based on car odometers, pacing and farmer's

estimates. The first recommendation thus is that a GPS be used since it measures straight-line distances relatively accurately given good satellite coverage. Car odometers cannot be relied on since most colonies were too dense to drive through. Second, complete nests with chicks must be differentiated from half built inactive nests. Inactive nests often occur at the edges because males begin nests and then abandon them to move closer to the centre of the colony.

Trees per hectare in this study were based on between 23 and 38 inter-tree distances and central and peripheral trees with active nests were deliberately chosen so as not to bias measurements towards the centre of the colony (where tree density appeared to be higher). This may explain the large difference between measurements of trees/ha in Wohlleber's study, in which sample sizes were restricted to 12 inter-tree distances. Ideally one transect through the middle of the colony should be used to measure inter-tree distances. (The alternative is a random sampling, which is too time-consuming).

Methodological recommendations

The following guidelines are recommended in measuring quelea colonies:

1: A GPS should be used to establish the maximum width and length of the colony
2: The colony should be walked from one side to the other and other people's estimates should be checked
3: *Active* nests only should be used to determine colony dimensions and the inter-tree distances
4: At least 25 inter-tree distances should be sampled
5: Ideally take one transect across the centre of the colony to determine inter-tree distances
6: Count nests in groups of 10 for large assemblages
7: Sample a minimum 30 nests for contents - count all eggs and chicks

Recommended Actions

Given that the number of quelea in the colonies sampled was not large by quelea standards and winter crops are apparently harvested early in areas in which nomadic birds may cause a problem, I suggested that little or no spraying of

Queleatox or similar avicide was required that year. Communities should, however, be alerted through agricultural extension officers in the north that birds might descend on any crops that have not been harvested. Scaring of birds or eliminating access to local water sources should be tried before spraying is attempted. It should also be noted that even when some varieties of Sorghum are available the seeds are too large and too hard to be taken by Quelea (Jarvis & Vernon 1989). These include *Sorghum verticilliflorum* and *S. versicolor.*

Weighing costs and benefits

All birds observed were feeding on wild grasses and the benefits of quelea flocks must be weighed against the costs. Benefits rarely mentioned include the dispersal of grass seeds and more importantly, the fertilization effect of millions of droppings of these birds in the veld. Concentrated faeces rich in nitrogen within colonies can cause accelerated grass growth but may also kill trees because of the high nitrogen content. In this case where trees were very dense and probably the result of over grazing, this could be seen as beneficial to the farmer, not detrimental. Spraying causes widespread mortality of non-target birds through secondary poisoning and various areas in South Africa and Kenya have experienced depletion of raptor population due to quelea spraying. (Thomsett 1987, Tarboton 1987). Such massive mortalities would not be necessary if farmers harvested their winter grains early or took preventative methods well before the queleas arrived (i.e. covered their crops or reduced access to water points). Abundant natural grasses remaining in the area would also be beneficial, as it is the preferred food type of quelea. Since quelea appear to be attracted to areas where over-grazing has increased tree density, it might be true to say that Quelea swarms are attracted to farms that have been mismanaged in the past (though not necessarily present day). Thus, educating farmers to better manage their farms may in the long term reduce the areas available for breeding and the need for poisons may be reduced.

Since large scale mortalities of fish are often attributed to the mismanagement of "left-over" pesticides, and the washing or even emptying of barrels into Namibia's northern rivers, I recommend a strict and closely policed policy on the storage or disposal of dangerous chemicals such as the Fenthion used for spraying quelea.

Future monitoring

Future breeding events of quelea should best be monitored by aircraft as colonies can be located from the air (C. Brain pers. comm.) and several may go unreported. Once located, local inhabitants could be invited to harvest the young birds, which are an excellent source of protein. In certain areas of Zimbabwe harvesting chicks destroys 90 % of the nests (Mundy & Jarvis 1989). In this way the breeding of Quelea in Namibia could be seen as beneficial, not detrimental and poisons would not be required.

In summary, it appears from these investigations that about 13 million adult and juvenile quelea occurred in northeastern Namibia in April 1999, far fewer than initially predicted. The late breeding, early harvest of winter crops and the birds' dependence on natural grasses, suggests that the need for spraying of these flocks is unlikely. Nevertheless communities in the northern regions that do have late cereal crops should be warned of quelea flocks. Preventative measures (early crop harvest and use of the chicks) should be encouraged.

Acknowledgments: Thanks are due to Berthold Wohlleber for his report and discussions, Peter Jones and Martin Dallimer for discussions and assistance in the field, MET staff in Namutoni for assistance, and the farmers for their cooperation and hospitality.

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Notes added

Chris Brown informed me of another Quelea colony west of Okaukuejo in the Bitterwater/Sonderkop area where he has seen many birds drinking and suspects a colony of 1 - 2 million birds. If so, this raises the estimates of the Etosha population from 2.4 million birds to about 4 million quelea. Etosha staff has been asked to investigate this colony.

NOTE 1 - Mark Boorman caught a juvenile Quelea in his garden late June 1999- unringed.

NOTE 2 - A ringed quelea from the Free State RSA (Ringed AE96938 on 4-Apr-98) was killed near Oshivelo on 15 May 1999 as reported by Chris Eyre. So some birds were coming as far as South Africa.

Longcrested Eagle in Windhoek District, Namibia

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I am employed by Wilderness Safaris and while driving on a safari, I had a sighting of a Longcrested eagle *Lophaetus occipitalis* in the Windhoek District, Namibia. The eagle is normally found in the higher rainfall areas of the country mainly from Rundu east into the Caprivi region, with a record from Owamboland (A. R. Jenkins, A. R., 1997. Longcrested Eagle. In: The Atlas of Southern African