Road counts of Hooded Vultures *Necrosyrtes monachus* over seven months in and around Banjul, coastal Gambia, in 2005

by Clive R. BARLOW[1] & Tony FULFORD[2]

[1]Birds of The Gambia, Brusubi Gardens, The Gambia
<birdsofthegambia@hotmail.com>
[2]Medical Research Council, Keneba Field Station, Kiang West, The Gambia

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Summary

Results from a seven-month study to count Hooded Vultures *Necrosyrtes monachus* in and around Banjul, The Gambia, are presented, as a preliminary step towards establishing a population trend in The Gambia for this species. A daily log was kept of Hooded Vultures observed during a 10.1 km car journey over the same stretch of coastal road on 162 days between 5 June and 24 December 2005. All counts took place between 14h00 and 16h00 with an average observation time of 25 minutes. Daily counts of Hooded Vultures ranged from 0 to 116 birds, mean 29.4, 95 % confidence interval 25.6–34.0, corresponding to 2.91 vultures per km. The Hooded Vulture remains comparatively abundant in coastal areas of The Gambia.

Résumé

Comptages routiers de Vautours Charognard *Necrosyrtes monachus* pendant sept mois dans et autour de Banjul, Gambie côtière, en 2005. Les résultats d'une étude menée pendant sept mois pour compter les Vautours Charognard *Necrosyrtes monachus* dans et autour de Banjul, Gambie, sont présentés, étape préliminaire en vue d'apprécier l'évolution de la population de cette espèce en Gambie. Un journal quotidien a été tenu des Vautours Charognard observés durant un parcours en voiture de 10.1 km sur la même partie d'une route côtière pendant 162 jours entre le 5 juin et le 24 décembre 2005. Tous les comptages ont été effectués entre 14h00 et 16h00, avec un temps moyen d'observation de 25 minutes. Le nombre de Vautours Charognard comptés par jour a varié de 0 à 116 oiseaux, avec une moyenne de 29.4, un intervalle de confiance de 95 % entre 25.6 et 34.0, correspondant à 2.91 vautours par km. Le Vautour Charognard demeure relativement abondant sur les zones côtières de Gambie.

Introduction

The Hooded Vulture *Necrosyrtes monachus* is widely commensal with humans in West Africa (Mundy *et al*. 1992) and is a non-specialised and versatile scavenger (Barlow 2004). In The Gambia, the Hooded Vulture is common to locally abundant, especially in coastal Western Division and Upper River Division (Barlow *et al.* 1997, K. Roy pers. comm.). Historically, it has also been considered abundant in other parts of the country and Bannerman (1930) notes it to be ubiquitous and "the most abundant of its Family on the coast", and 150 birds circled over a Common Warthog *Phacochoerus africanus* within 10 minutes of it being shot in Jakally, Central River Division in May 1976 (Gore 1990). Outside The Gambia, in a study area encompassing Burkina Faso, Mali and Niger in 1970, the Hooded Vulture was found to be very common with a mean abundance index of 0.84 birds per km (Rondeau & Thiollay 2004). However by 2004 this was reduced by 45 % in rural areas (Rondeau & Thiollay 2004), and it has been recommended that Hooded Vulture be reclassified as Endangered under the IUCN Red List criteria (Ogada & Buij 2011). There is insufficient information to establish a population trend in The Gambia, so, in the light of present global concern for all vulture species, we present data collected in The Gambia which confirm that it is currently locally abundant. This provides a benchmark for monitoring future changes using a repeatable method.

Study area and methods

Hooded Vultures may be observed on the wing in The Gambia in all seasons, in all daylight hours throughout the year, and they soar into the late afternoon (pers. obs.). The area surveyed was a 10.1 km stretch of high-grade tarred road between the capital, Banjul, and the western periphery of Serrekunda, in Kombo St Mary Division (KSMD), in coastal Gambia. This is the most heavily populated region in The Gambia. The transect monitored (see Fig. 1) was a vehicle journey along the Banjul–Serrekunda Highway from Point 1 (Radio SYD, Bund Road Junction Banjul, 13°27′50″N, 16°35′42″W), via a right turn after 8.9 km at Point 2 (Westfield Junction 13°26′43″N, 16°40′32″W) a further 1.2 km to Point 3 (the Serrekunda General Post Office on Kairaba Avenue, 13°27′15″N, 16°40′58″W).

Road transects were driven on 162 days between 5 June and 24 December 2005. This period covered a complete rainy season: the first measurable rain and the last storm registered in Banjul during 2005 were 28 June and 24 October, respectively. All journeys were made between 14h00 and 16h00. The journey time averaged 25 minutes, with duration largely determined by traffic conditions: a slightly quicker journey of 20 minutes was made when traffic was reduced, *e.g*. at weekends.

Surveillance was made by CRB from the front passenger seat of a moving, high-seated car using 10 x 40 binoculars and the naked eye. Hooded Vultures were counted

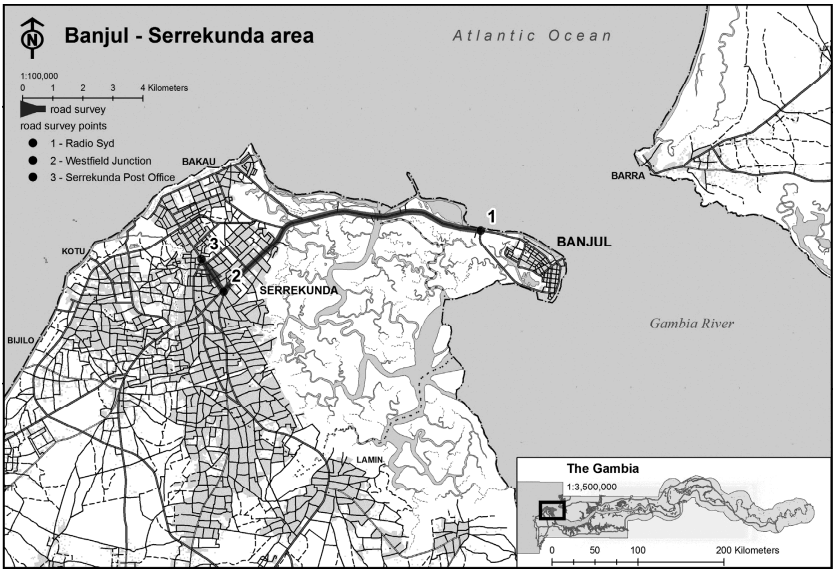

Figure 1. Study area with transect showing Points 1 (start), 2 and 3 (finish).

by direct observation through all windows of the vehicle and all individuals seen perched or flying on either side of the road were counted. It is reasonable to suppose that some perched and hidden Hooded Vultures were overlooked. Hooded Vultures were seen soaring, perched, foraging and on a few occasions "sun-bathing" on a beach area near Point 1. CRB identified the birds and entered the data.

The distance was measured using the vehicle odometer and GPS references were established using a Garmin 12XL GPS receiver. Habitat and land use features encountered along the first half of the route included the Banjul Municipal Council rubbish dump which borders an extensive *Avicennia* mangrove system (the Tanbi Wetland Complex), the State Central Prisons, a thin belt of coastal scrub with some large baobabs *Adansonia digitata*, tidal lagoons, beaches, a bridge, and a seasonal patch of wetland used for rice and small-scale vegetable production. The second half, beginning at Old Jeshwang and including Kanifing West, consisted of peri-urban sprawl dominated by long established human settlements, light industry, a modern housing lay-out, shops and supermarkets, with fish cleaning and small scale slaughtering of domestic pigs activities in this area. There is a fish landing site near to the Manjargo village of Old Jeshwang where fish offal and by-catch are dumped. The slaughterhouses (mostly in the compounds of small-scale pig farmers) operated late on Friday evenings and early on Saturday mornings and the meat was then immediately on sale. At weekends there were fewer vehicles on the roads, with consequently less disturbance of vultures, than on weekdays.

The variability between the daily counts was clearly greater than predicted by the Poisson distribution, *i.e*. clustered or over-dispersed. Therefore, statistical analysis of the number of vultures per transect employed multiple negative binomial regression of the number of counts on month and day of week, both as categorical variables. Three models were fitted, to generate means and their 95 % confidence intervals of (1) the daily counts for each month, (2) the daily counts by day of the week and (3) the counts at weekends compared with those on weekdays, with models (2) and (3) controlled for (*i.e*. also fitting) the month-to-month variation. The models were fitted and graphs drawn using Stata12 (Stata Corp.). The assumption that the negative binomial would provide an adequate description of the distribution of counts is supported by the approximate proportionality between the monthly means and their standard deviations.

Results

In total, 4774 vultures were counted over all 162 transects. The mean count per transect was 29.4 with maximum-likelihood base 95 % confidence interval (CI) 25.6–34.0. This value correspond to an average count of 2.91 (CI 2.53–3.37) per km. Counts ranged from zero (generally on rainy days or after heavy downpours during the previous night) to a maximum of 116 birds on 22 Dec, a hazy day with low cloud. Congregations of 40 birds soaring over Old Jeshwang were regular. The daily counts with additional notes may be obtained from the authors or downloaded from the "*Malimbus* Supplements" section of the WAOS website <http://malimbus.free.fr/suppindex.htm>.

The variation between months in average number of Hooded Vultures counted per transect was considerably more than would be expected by chance ($P < 0.00005$). The trend between June and December is generally increasing, with the number of birds observed in December approximately four times that seen in June (Fig. 2).

Although there are reasons to suppose that the number of vultures seen would vary with the day of the week, the evidence for this is not strong (Fig. 3). Comparing weekends with weekdays shows a 33 % increase at weekends ($P = 0.04$ when controlling for the monthly pattern) but its CI is wide, allowing values for the percentage increase over the average weekday value anywhere between 1 % and 73 %. The weekend peaks may be related to the lighter traffic and to the pig slaughtering in Old Jeshwang: assemblages of soaring vultures were regularly observed over this area at the weekends.

Discussion

Until the 1990s, Hooded Vulture was considered abundant in The Gambia (Bannerman 1930, Gore 1990, Barlow *et al.* 1997), although no quantitative data were

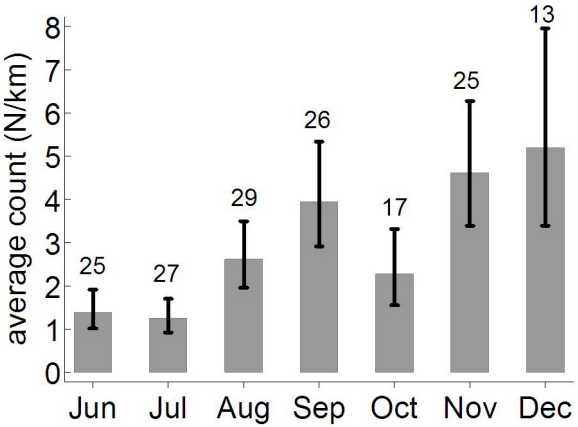

Figure 2. Pattern of counts of Hooded Vultures by month. Error bars represent the 95 % confidence interval for the mean; number of days surveyed indicated above each bar.

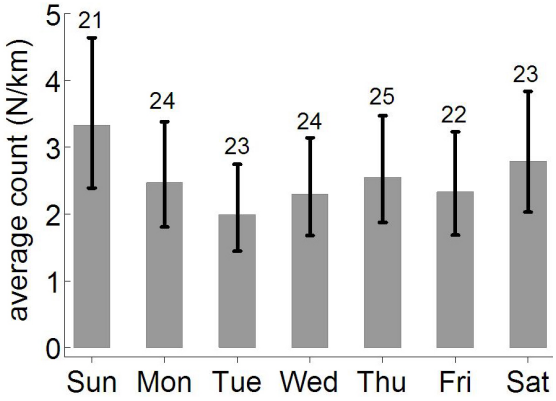

Figure 3. Pattern of counts of Hooded Vultures by day of week. Error bars represent the 95 % confidence interval for the mean; number of days surveyed indicated above each bar.

available. This study has established a baseline of Hooded Vulture observation rates over a standard and easily replicated route for a six-month period in 2005. This method may be applied to any of the eight vulture species recorded in The Gambia. Inspired by Ogada & Buij (2011), in February 2012 a project was inaugurated to

monitor Hooded Vulture numbers in villages and towns in all regions of the country (Barlow 2012), to evaluate its population trend in The Gambia.

Reasons for Hooded Vulture declines in other countries include direct persecution for body parts used in witchcraft and traditional medicine and as smoked meat for human consumption, collisions with power lines, indiscriminate poisoning, and reduced availability of scraps at slaughter sites and abattoirs due to changing practices: *e.g.* horns, blood and viscera are now collected and processed for fertilizers (Rondeau & Thiollay 2004). At present none of these factors would appear to be significant in The Gambia, although their potential threats are manifest, and neither is Diclofenac, responsible for the rapid recent decline of vultures elsewhere (Green *et al.* 2004), used as a veterinary drug in the country (M. Meyer pers. comm.). Vulture parts were not on open sale for traditional practices in any of the major markets investigated in The Gambia in November 2012 (F. Mendy pers. comm.). However, this does occur close by in Dakar, Senegal (M. Dia & W. Mullie *in litt.*) and even more so in local markets in Bamako, Mali (pers. obs.) and elsewhere in West Africa (Cocker 2000).

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References

BANNERMAN, D.A. (1930) *The Birds of Tropical West Africa*, vol. 1. Crown Agents, London.

BARLOW, C.R. (2004) The utilization of oil-palm kernel by *Necrosyrtes monachus* in The Gambia. *Vulture News* 51: 60–62.

BARLOW, C.R. (2012) An investigation commences to establish the present status and distribution of Hooded Vulture *Necrosyrtes monachus* in The Gambia, West Africa: February 2012. *Vulture News* 62: 51–56.

BARLOW, C., WACHER, T. & DISLEY, T. (1997) *A Field Guide to Birds of The Gambia and Senegal*. Pica Press, Robertsbridge.

COCKER, M. (2000) African birds in traditional magico-medicinal use — a preliminary study. *Bull. Afr. Bird Club* 7: 60–65.

GORE, M.E.J. (1990) *Birds of The Gambia*. Checklist 3, 2nd ed., British Ornithologists' Union, Tring.

GREEN, R.E. NEWTON, I., SHULTZ, S., CUNNINGHAM, A.A., GILBERT, M., PAIN, D.J. & PRAKASH, V. (2004) Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent. *J. Appl. Ecol*. 41: 793–800.

MUNDY, P., BUTCHART, D., LEDGER, J. & PIPER, S. (1992) *The Vultures of Africa*. Acorn, Randburg.

OGADA, D.L. & BUIJ, R. (2011) Large declines of the Hooded Vulture *Necrosyrtes monachus* across its African range. *Ostrich* 82: 101–133.

RONDEAU, R. & THIOLLAY, J-M. (2004) West African vulture decline. *Vulture News* 51: 13–31.