More resourceful scavenging by opportunistic Hooded Vultures *Necrosyrtes monachus* in coastal Gambia with photographic proof of tongue use when foraging for live food and blood.

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http://dx.doi.org/10.4314/vulnew.v83i1.1

Summary

We report on a combination of new and infrequently documented feeding behaviours for the Critically Endangered and opportunistic Hooded Vulture *Necrosyrtes monachus.* Observations were recorded in the Western Region of coastal Gambia from 2015 to 2020, where Hooded Vultures are living in high densities. We provide photographs and video footage to demonstrate the use of the grooved tongue for consuming live food items and when drinking blood. Attraction of large groups of Hooded Vultures to freshwater is also described.

Introduction

The Critically Endangered Hooded Vulture *Necrosyrtes monachus* demonstrates versatile foraging behaviour in our study area of Western Region, The Gambia, where commensalism with humans is pronounced (Barlow *et al.* 2021). It is a long-lived species with advanced learning abilities (Thompson *et al.* 2020). Based on roadside survey counts in 2013 and 2015, an estimated 7,000–10,500 Hooded Vultures inhabit an area of *ca*. 600 km^2 of coastal Gambia (Jallow *et al.* 2016). We have demonstrated the importance of ocean beaches and fish landing sites in south Gambia and in southern Senegal for scavenging by Hooded Vultures, while knowledge of coastal beach feeding is lacking elsewhere in the species' range (Barlow *et al.* 2021). We have also updated the evidence relating to the consumption of African Oil Palm *Elaeis guineensis* fruit by Hooded Vultures, another feeding habit which remains undocumented elsewhere (Barlow 2020).

Here we present records of new or little-known dietary items and feeding behaviours for Hooded Vultures feeding in various situations in Western Region, coastal Gambia between 2015 and 2020. Human tolerance towards Hooded Vultures when feeding near human habitation is well-known, and there is limited competition from any other avian scavengers in Western Region (Jallow *et al.* 2016). All observations described here, with the exception of those associated with alate termite emergences, are linked to the presence of humans and their associated activities. We also describe the attraction of large groups of Hooded Vultures to various freshwater sources in both the dry and wet seasons. The use of the Hooded Vultures' grooved tongue to consume live insects and liquid blood is

demonstrated for the first time with photographic evidence.

Methods

During feeding site surveys and roadside counts of Hooded Vultures in Western Region from 2015 to 2020, we recorded foraging behaviour to increase our knowledge about the diverse diet of the Hooded Vulture in the restricted coastal area of Western Region, The Gambia (Barlow 2004, Barlow 2020, Barlow *et al.* 2021). We made written notes and also entered data via the African Raptor DataBank smartphone app (now merged with the Global Raptor Impact Network smartphone app; https://globalraptors.org/grin-app). Whenever possible we made a photographic record of the foraging vultures and the items that they were feeding on, examples of which are shown in Figures 1–18. Coordinates of the locations mentioned in the text are provided in Table S1.

Observations

In the following paragraphs we describe our observations of newly documented or little-known feeding behaviours for Hooded Vultures, divided by dietary item or feeding event, and in the context of any previous records. All observations were made in Western Region, coastal Gambia from 2015 to 2020.

Cooked rice: Hooded Vultures were observed picking in discarded boiled rice on a few occasions during the study period. For example, on 20 December 2017, leftovers from a family function which included quantities of cooked rice were dumped on the verge of a quiet side road at Brusubi. Ten Hooded Vultures arrived and were photographed standing around the discarded food (the photographs are not available for publication). The waste was quickly removed by the vultures and no dogs were seen at the incident (Allen Holmes pers. comm.). Around human habitation waste food is often placed on the ground on a sheet of scrap cardboard or a flat stone (or similar) to feed domestic dogs, chickens and ducks, and Hooded Vultures have been watched feeding at this opportunity (CRB pers. obs.). Prospecting for any meat or fish morsels by Hooded Vultures in these rice-based leftovers is also a possibility. Hooded Vultures have been watched at the Gunjur fish landing site picking in basins that contain food remains, including cooked rice, at busy local restaurants frequented by fisher folk (Brendan Ringstead pers. comm.). Further study supplemented with photographs on these types of commensal feeding activities is required. A road-killed Hooded Vulture collected on the coastal highway at Kachumay, near Sanyang, on 21 January 2020, had plain cooked white rice grains present in the damaged digestive tract. Rice was also evident in the throat and mouth of the dead bird. This is our only photographic proof of the ingestion of cooked rice by a Hooded Vulture (Figure 1).

Picking epithelial tissue from cow hides left to dry out: Eight Hooded Vultures gathered at a quantity of fresh cow hides spread out on the ground to dry in the shade of mature Mango trees (*Mangifera indica*) away from the main buildings at the Abuko abattoir. The vultures were picking and eating moist epithelial tissue and turning over the edges of the hides to presumably investigate further feeding prospects beneath the skins. Birds were undisturbed by abattoir personnel frequently passing by. We made our first record of this behaviour during the early afternoon of 4 August 2019, when the total count of Hooded Vultures across the abattoir site was 183 birds (Figure 2).

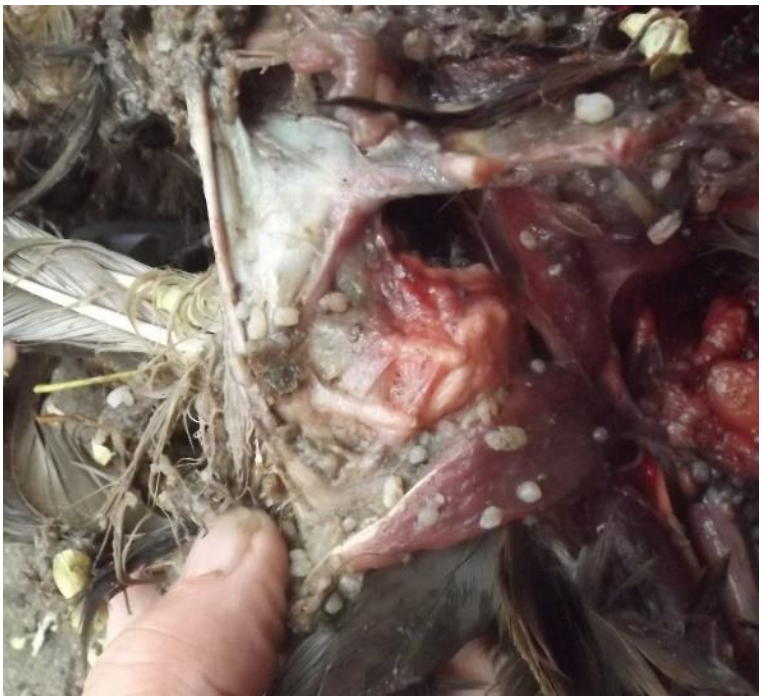

Figure 1: Boiled white rice grains from the crushed digestive tract of a road-killed Hooded Vulture. Rice was also evident in the mouth and throat, collected at Kachumay-Sanyang, 21 January 2020. (Photo: CRB & FM)

Figure 2: Eight Hooded Vultures of mixed age classes assembled to pick moist epithelial tissue from cow hides placed out to dry under trees in a quiet corner of Abuko Abattoir, 4 August 2019. (Photo: CRB)

Moving anthropogenic waste to gain access to arthropods: We watched a single Hooded Vulture move damp cloth rags to access hidden live insects on the Ghana Town dump, during late morning on 31 March 2020. The vulture then walked over to the disturbed area it had created and began feeding on the exposed invertebrates. This constitutes our first record of a Hooded Vulture purposefully shifting waste material to gain access to concealed live food (Figure 3). A Western Yellow Wagtail *Motacilla flava* exploited the circumstances and foraged in association with the vulture (Barlow & Mendy 2022). We have previously reported on a single Hooded Vulture probing into the burrow of a ghost crab *Ocypode* sp. near the tideline to extract fly larvae, and on several Hooded Vultures turning over decaying fishes near a fish landing site in the search for maggots (Barlow *et al.* 2021).

Tongue use whilst foraging for beetles and termites: Figure 4A shows the open mouth of a Hooded Vulture prior to its release after recovering from a power line collision (Coral Beach Hotel, Brusubi, 18 February 2020). We include the photograph to illustrate the morphology of the tongue, particularly the hard rostral surface and curved edges. We have observed and photographed Hooded Vultures capturing small live invertebrates using the tip of the grooved tongue rather than trapping the prey with the mandibles, possibly documenting this behaviour for the first time. Figure 4B illustrates a Hooded Vulture picking up a small beetle using its tongue tip at the Ghana Town dump area, 31 March 2020. Figure 4C shows an adult Hooded Vulture with a protruding tongue in readiness to catch insects whilst bill-sweeping in mixed refuse at Ghana Town, 12 April 2020. Figure 4D shows a first calendar year Hooded Vulture preparing to collect an emergent alate termite on bare earth on the roadside after the first coastal rains at Kotu, 30 June 2019. Other vultures of mixed ages were actively hunting termites nearby at the same incident. To further investigate the sensory and mechanical structure and function of Hooded Vulture tongues, we plan to conduct histological studies using tissue sourced from road-killed vultures or from dead captive specimens in Europe.

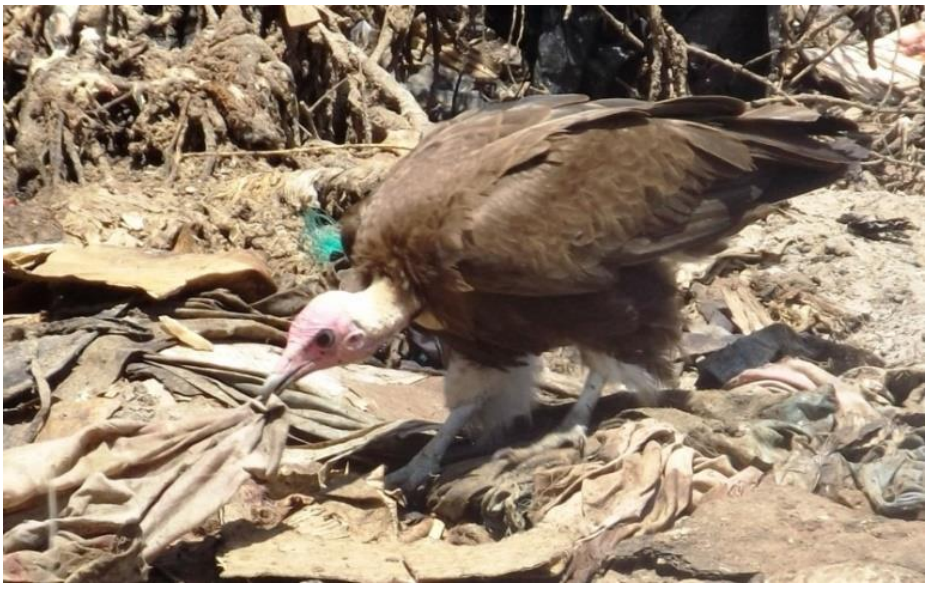

Figure 3: An adult Hooded Vulture tugs on cloth rags at Ghana Town dumpsite to expose and consume hidden live invertebrates, 31 March 2020 (Photo: CRB & FM).

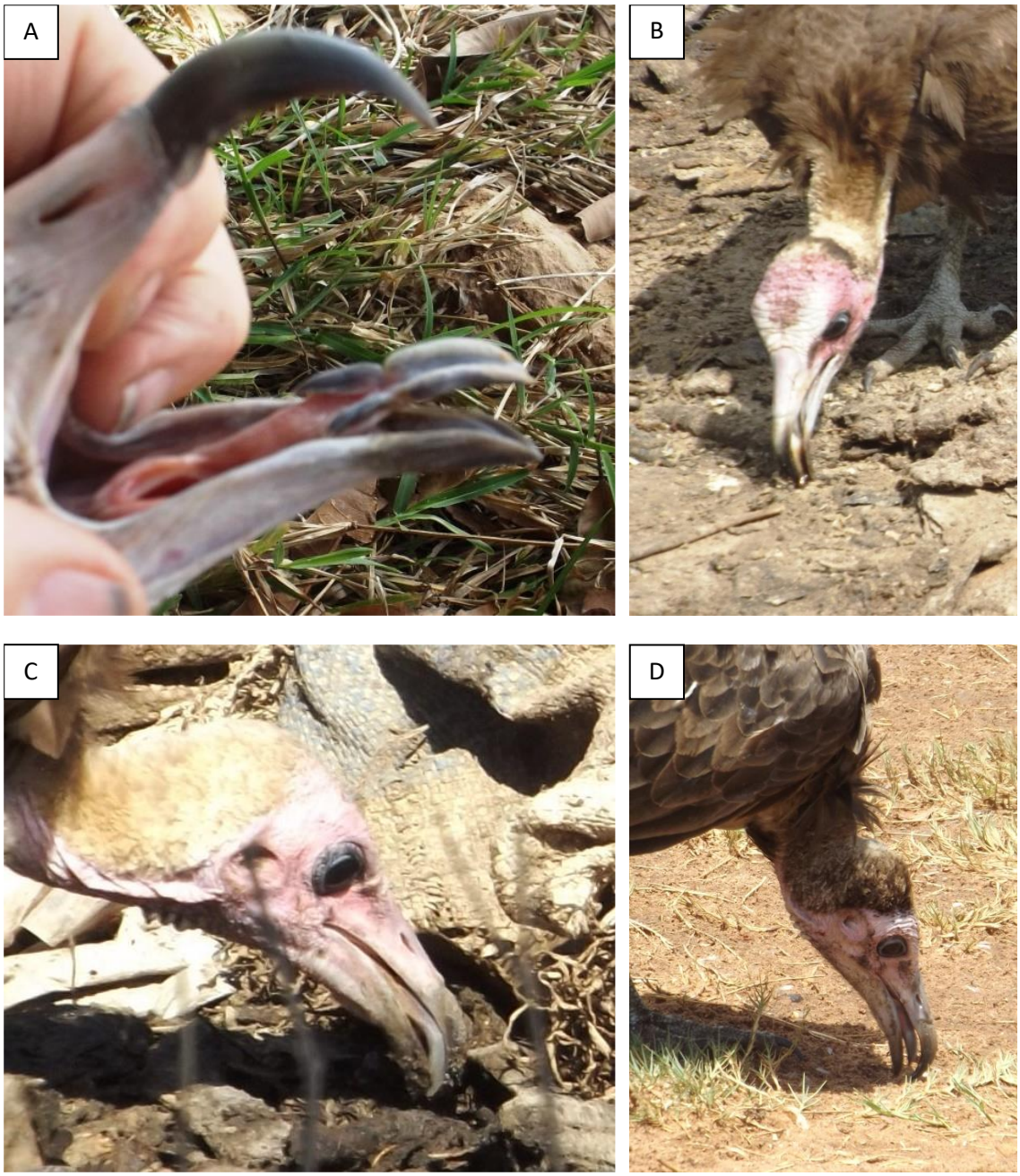

Figure 4: (A) The grooved tongue of a Hooded Vulture prior to its release after recovering from a power line collision, Brusubi, 18 February 2020 (Photo: CRB); (B) a sub-adult Hooded Vulture picks up a small beetle using its tongue, Ghana Town, 31 Mar 2020 (Photo CRB); (C) an adult Hooded Vulture with the tongue projected in readiness to trap insects, Ghana Town, 12 Apr 2020 (Photo CRB); (D) a juvenile Hooded Vulture with the tongue in position to secure an emergent winged termite, Kotu, 30 June 2019 (Photo: CRB & RC).

Foraging at ruminant stomach content dumps, including tongue use when foraging for fly larvae: As reported elsewhere (e.g. in Rwanda (Friedman 2021)), large piles of fresh ruminant stomach content dumped in the grounds of abattoirs and at smaller rural slaughter areas can attract large numbers of foraging Hooded Vultures (Figure 5). We have observed and photographed Hooded Vultures using open bills and tongue movements to forage for fly larvae fully or partly hidden in the recently dumped rumen content of slaughtered livestock (Figure 6). More fieldwork is needed to determine if other components of the part-digested plant material are sought by Hooded Vultures as an additional source of nutrients, which we suspect to be the case. The time interval for fly larvae to hatch and become available to Hooded Vultures in freshly-dumped rumen content also merits investigation. Hooded Vultures have been observed investigating dumped waste contents from the cleaned-out intestines of slaughtered domestic pigs (FM pers. obs.), and this is also in need of further study.

Figure 5: Large numbers of Hooded Vultures congregate and pick feed over a pile of fresh rumen content dumped earlier the same morning at Abuko Abbatoir, 5 July 2015 (top; photo: CRB); and a mixed-aged group of Hooded Vultures bill-sweep the surface then probe with open bills in to fresh rumen content at a small scale open-air slaughter area at Tanji,7 June 2019 (bottom; photo: GED).

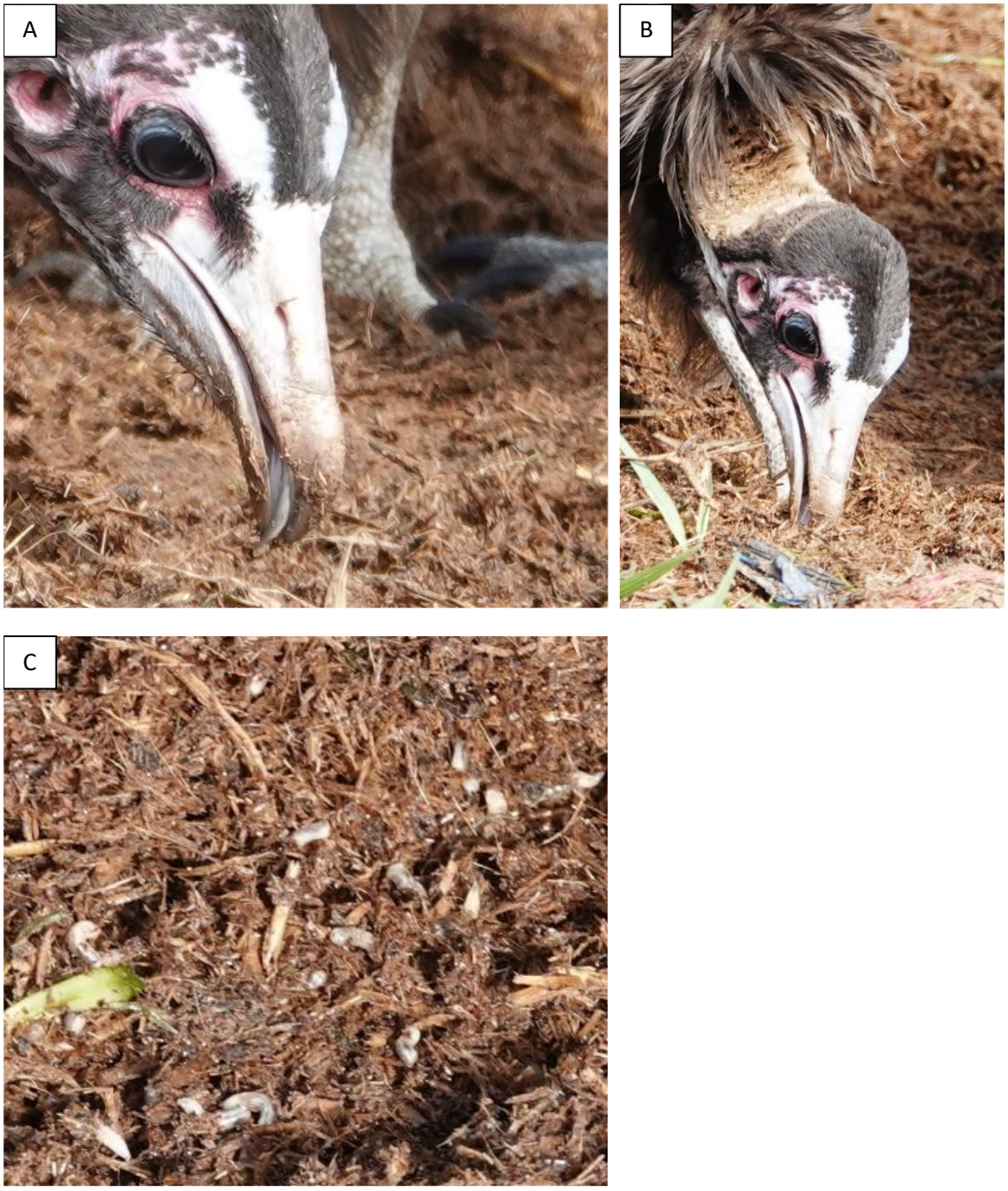

Figure 6: (A) Close up of the head and bill of a first calender year Hooded Vulture about to reinsert the part open bill into dumped ruminant stomach materials; (B) the part open bill and protruded tongue inserted into the rumen content; and (C) a sample of the fly larvae that were found in the rumen content after closer examination. This series of photographs was taken at a small-scale open-air slaughter area that supplies "Afra meat" stalls at Tanji, 7 June 2019. (Photos: GED)

Consuming liquid blood from butchery waste and gleaning dried blood from a paved road: Hooded Vultures have been observed feeding in groups on small quantities of liquid blood waste poured into a crude soak-away pit by butchers at the Brufut village slaughter site at the end of a morning's slaughtering operations (Figure 7). The vultures submerged their bills into the liquid and used their grooved tongues to lap up the blood to drink it (Figure 7; see Supporting Information, video link). Hooded Vultures also consume coagulated blood from slaughterhouse floors, as we observed when we shoveled coagulated blood out of a soak-away channel in order to attract and film Hooded Vultures exploiting this resource (abattoir staff had informed us that this occurs when they unblock the ducts). On that occasion Cattle Egrets *Bubulcus ibis* were also attracted to the blood (Figure 8), which they consumed in large quantities. Hooded Vultures also gather around open-topped blood storage tanks at abattoirs, perching on the edges and feed from the surface and on any overflow, with a risk of accidental drownings. On 2 July 2015, near Gunjur, we observed Hooded Vultures gleaning blood from a paved road immediately after we had dragged the intact carcass of a freshly-killed domestic dog *Canis familiaris* to the edge of nearby scrub to prevent vultures being struck by vehicles (Figure 9). Only after the blood had been consumed did the vultures turn their attention to the carcass.

Scavenging on roadkill: Road-killed domestic animals are now a regular occurrence on the paved roads of the modern highway network and on new housing developments in coastal Gambia. The majority of these roads have been constructed since 2000, prior to which unpaved or badly pot-holed surfaces predominated and roadkill was infrequent, presumably due to slower travel speeds (CRB pers. obs.). Observations include ten Hooded Vultures feeding on a domestic cat *Felis catus* killed by a vehicle on a peri-urban side-street an hour after first light on 9 June 2019 at Brusubi Gardens (Figure 10), with another thirteen Hooded Vultures perched on nearby rooftops. On coastal roads where denser and faster traffic occurs, larger scavenging groups assemble at road-killed carcasses of dogs, cats, sheep and goats, and occasionally larger farm animals such as N'Dama cattle, donkeys and pigs that are killed by heavy trucks. At mid-morning on 4 Aug 2019, we counted 42 Hooded Vultures at a domestic dog *Canis familiaris* carcass on the main coastal highway near Sanyang (Figure 10). The Gambian Pouched Rat *Cricetomys gambianus* is a large (up to 1.55 kg) nocturnal rodent (Kingdon 2013) frequently killed on roads in Western Region, usually attracting Hooded Vultures to the road shortly after first light. Pouched rats and domestic cats are also killed by guard dogs in the grounds of private compounds and this sometimes attracts groups of Hooded Vultures to enter relatively confined walled spaces to feed. Further inland we have witnessed Hooded Vulture groups feeding on carcasses of primates and small mammalian carnivore species (e.g. Patas Monkey *Erythrocebus patas* and White-tailed Mongoose *Ichneumia albicauda*) on paved roads and in roadside storm drains. Mixed groups of *Gyps* species have been observed scavenging on the new paved road in eastern Gambia, feeding on domestic livestock killed by road traffic, and Griffon Vultures *Gyps fulvus* have been hit and killed by vehicles in the area (CRB pers. obs.). Hooded Vultures are themselves occasional victims of traffic collisions when feeding amidst speeding traffic (Barlow *et al.* 2020).

Foraging around N'Dama cattle: At Tujering Beach on 16 November 2018, we observed a juvenile Hooded Vulture picking through the tuft hairs on the tail of a resting N'Dama bullock, possibly searching for insects (Figure 11). We also made two observations of a lone Hooded Vulture

Figure 7: Hooded Vultures gather at a livestock slaughter site to drink blood from a crude soak-away pit, Brufut, 27 July 2018. The zoomed location on the righthand photo is indicated by a black arrow on the lefthand photo. (Photos: CRB & RC)

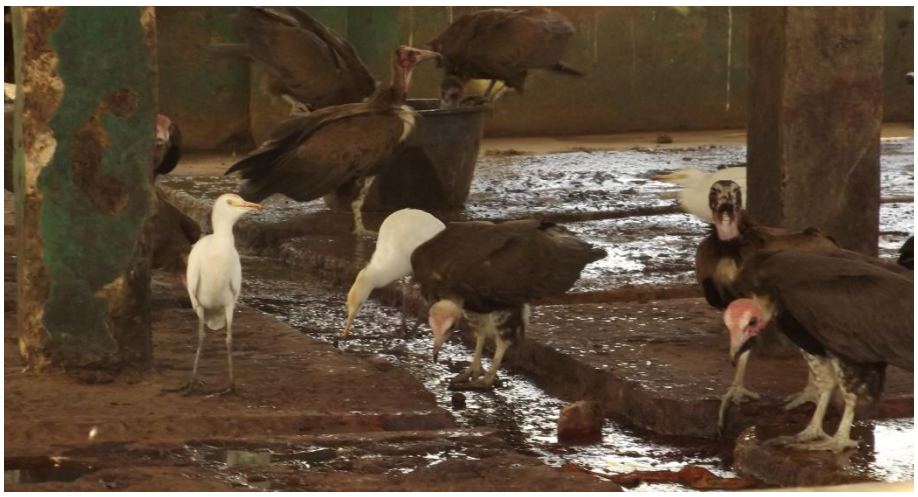

Figure 8: Hooded Vultures and Cattle Egrets consume coagulating blood at a soak-away channel at an open slaughterhouse, Brikama, 24 November 2018. (Photo: CRB & RC)

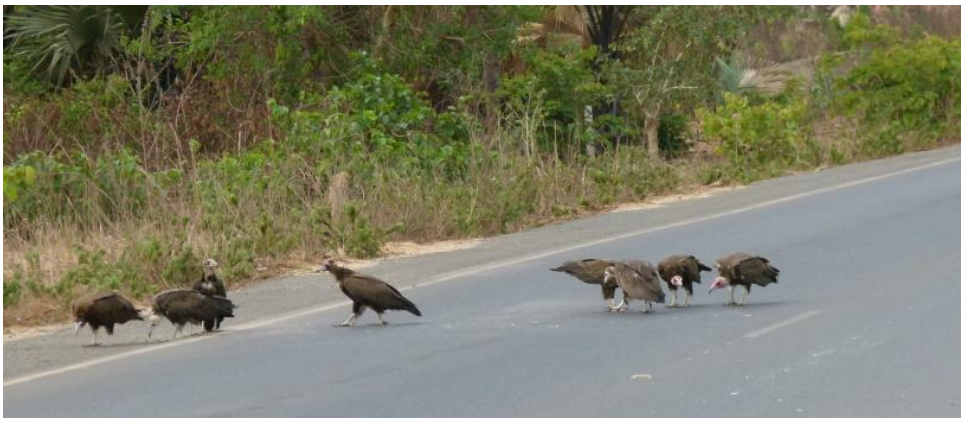

Figure 9: A group of Hooded Vultures return to the road to glean dried blood that had been discharged from the nose and mouth of a domestic dog carcass that we had just dragged to the verge, near Gunjur, 2 July 2015. (Photo: CRB)

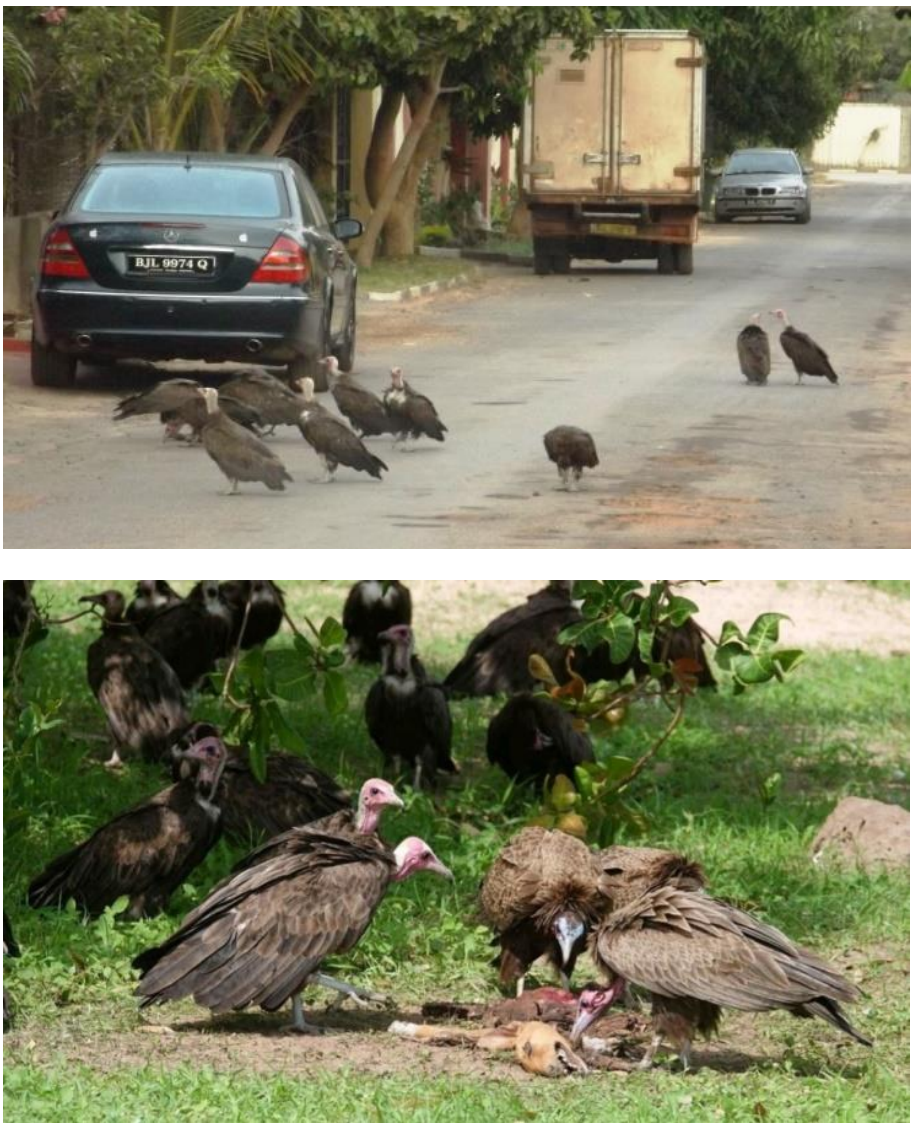

Figure 10: Top: Ten Hooded Vultures assembling and feeding on a domestic cat carcass on a peri-urban side street at Brusubi Gardens, with thirteen more birds perched on nearby rooftops, 07h30, 9 June 2019 (Photo: CRB). Bottom: A total of 42 Hooded Vultures were observed around a fresh and well-consumed road-killed domestic dog on the edge of the coastal highway near Sanyang, mid-morning, 4 Aug 2019. (Photo: GED)

turning over and poking in fresh moist cattle faeces at different sites (Tujering and Tujina), where beetles and their larvae could be expected as potential prey items (no photos were taken). On 26 January 2020 in the late morning near Kartong, we watched and videoed for up to 30 minutes seven Hooded Vultures turning and picking over dried cow dung at a cattle holding site while the cattle were away grazing. On closer inspection we found no invertebrate activity, and so searching for and the ingestion of partly-digested plant material in the dung cannot be ruled out. Further study is required to assess the frequency and identify drivers of Hooded Vulture foraging activity around cattle dung and tails, supported by conversations with cattle herders about their observations of Hooded Vultures feeding around their livestock.

Figure 11: A juvenile Hooded Vulture gleans through the tail hair of a resting N'Dama bullock closely watched by a second young bird on Tujering Beach, 16 November 2018. (Photo: CRB)

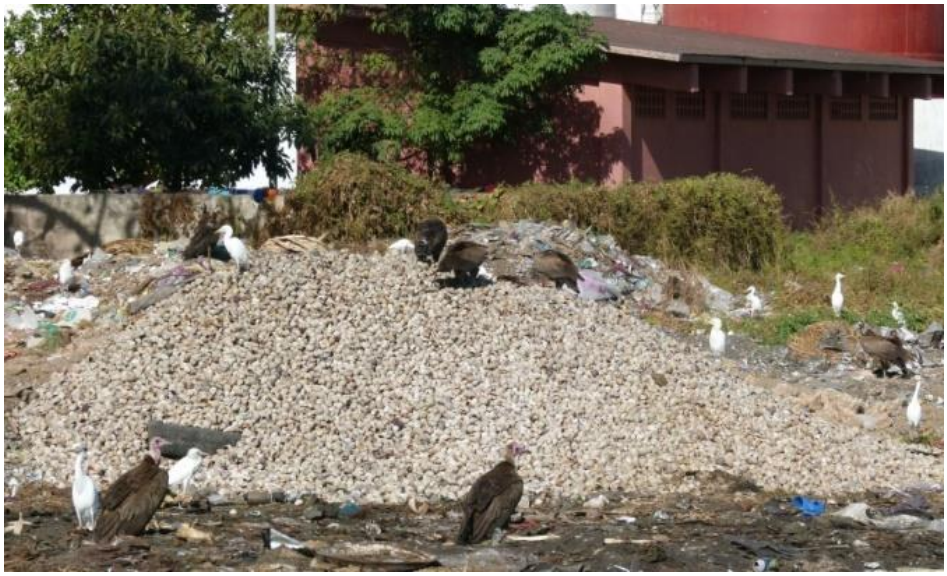

Figure 12: Hooded Vultures searching through a pile of discarded mollusc shells behind a fish processing factory, Gunjur, 3 September 2019. (Photo: CRB)

Feeding on discarded marine molluscs and rotting fish: At Gunjur on 3 September 2019 we watched a group of Hooded Vultures pick over heaps of unidentified marine molluscs discarded behind a fish processing factory (Figure 12). On other occasions we have observed single Hooded Vultures searching through mounds of discarded mangrove oyster shells *Ostrea* sp. at Tujina and along the Banjul Highway near Tanbi Wetland. Ingestion of shell fragments as a source of calcium is a possibility. On 22 September 2018, we observed 24 Hooded Vultures feeding on spilled herring scattered and partly hidden in roadside scrub, close to passing traffic at Faraba, ca. 45 km inland (the fish were likely being transported to an inland market). The vultures descended from

overhead and landed onto the roadside before walking a short distance through the vegetation to access the fish. It was this behaviour that attracted our attention, and we did not see the concealed fish until we inspected more closely (Figure 13).

Foraging in the vicinity of farming operations: On 3 September 2019, near Kotu, seven Hooded Vultures were watched with binoculars near an active farmer in a paddy field as he used a hand-held cultivation implement to turn over soil (Figure 14). Hooded Vultures appeared to be searching for live food such as invertebrate larvae and earthworms in the freshly turned over soil, as previously referred to (Brown *et al.* 1982). There are also reports of Hooded Vultures probing into decomposing watermelons lying out in open fields at Tujina after the rains in recent years (Ous Bah pers. comm.). Closer observations are needed to establish what specific food items are being sought from the rotting watermelons.

Figure 13. Part of a group of 24 Hooded Vultures feeding on discarded fish concealed in roadside vegetation near the main south bank highway, Faraba 22 September 2018. (Photo: GED)

Figure 14. Hooded Vultures search for live food near a farmers ploughing activities, Kotu rice fields, 3 Sept 2019. (Photo: GED)

Provisioning of food for Hooded Vultures by hotels and birdwatching groups: Since the early 1990s, during the main tourist season (November–April) kitchen scraps such as chicken skin, shrimp peelings, meat and fish trimmings are provided for Hooded Vultures in the late morning on the lawns of a major hotel at Bijolo (Figure 15). This is done as part of the tourist entertainment programme and over 200 Hooded Vultures are regularly present (CRB pers. obs.). Many birds remain through to the afternoon and make use of a small pond purposely provided for bathing and drinking. Another seasonal feeding show that is organised by the Gambia Bird Watchers Association is situated close to other hotels at the roadside at Kotu Creek. On 12 January 2020, 58 Hooded Vultures were present, with Yellow-billed Kites *Milvus aegyptius* attending in good numbers, and some Pied Crows *Corvus albus* (Figure 16).

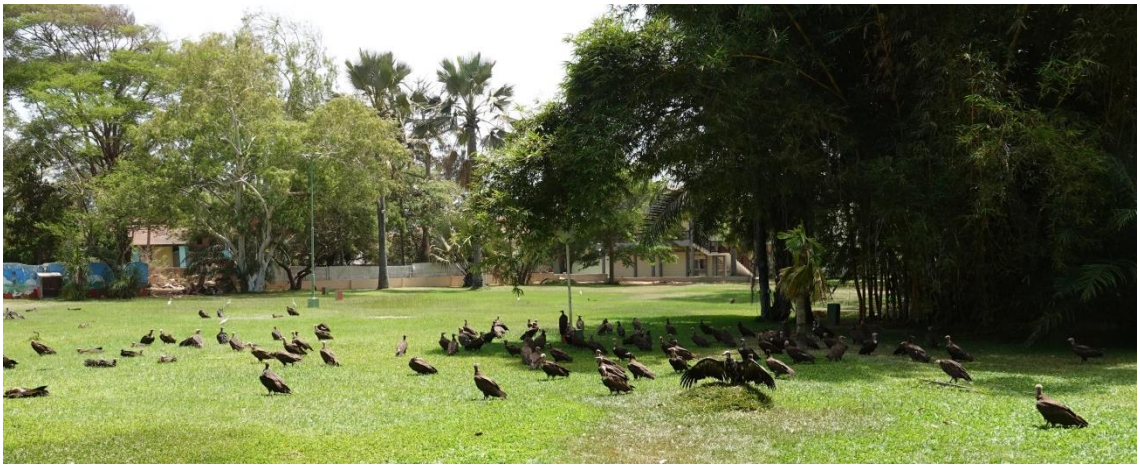

Figure 15. Often as many as 200 Hooded Vultures are attracted to the feeding display at the Senegambia Hotel, Bijolo, from November to April. Many birds stay on well into the afternoon to rest on the lawns. (Photo: GED)

Figure 16. An additional feeding show is conducted at Kotu Bridge during the tourist season, managed by the Gambia Bird Watchers Association. Yellow-billed Kite attend in good numbers with some Pied Crows. The photograph was taken on 12 January 2020. (Photo: GED)

Other miscellaneous observations of foraging activity: On 9 March 2019 we observed a single adult Hooded Vulture searching around on the ground near an uncovered wheelie bin, on the edge of a busy fuel station forecourt at Kotu. The Hooded Vulture flew up to perch on the edge of the waste bin, inspected the contents, and then dropped back to the tarmac. Hooded Vultures may forage around waste bins for fly larvae, as well as directly for waste food. On 30 April 2017, at Brusubi, we observed an adult Hooded Vulture feeding on the carcass of a White-billed Buffalo Weaver *Bubalornis albirostris.* After a few minutes of uninterrupted feeding, the vulture picked up remnants of the dead bird in its bill and flew up to the fronds of a low African Oil Palm, followed by two other Hooded Vultures. The feeding Hooded Vulture was then mobbed by Yellow-billed Kites. Apart from nest-associated observations, this is the only observation we have of a Hooded Vulture feeding while perched above the ground. During the study period, Hooded Vultures were observed regularly scavenging in proximity of domestic dogs, and interactions were generally non-confrontational. In most interactions that we witnessed on beaches, at slaughter sites and at waste dumps, the vultures generally re-settled after a brief chase and continued feeding.

Attraction to freshwater sources: Often large groups of Hooded Vultures are attracted to freshwater sources especially in the dry months. Examples of water sources include hotel lawn sprinklers, dripping taps and hosepipes, garden ponds, irrigation equipment at market garden projects and also to flooded ground in the rains (e.g. a football pitch at Yundum; Figure 17). At Tujering up to 80 Hooded Vultures assemble daily in the dry months at a small garden pond in the grounds of a private compound, where they drink and bathe, with some reaching such a waterlogged state that it causes a temporary inability to fly (Figure 18).

Discussion

We have reported on some new observations and expanded on other lesser-known foraging habits in a population of opportunistic Hooded Vultures living in high densities in south Gambia. We have illustrated for the first time the use of the grooved tongue to secure live insects and to feed on blood. With the exception of widespread alate termite emergences associated with the commencement of the annual rains, all observations discussed here have an association with anthropogenic activities. These include foraging around abattoirs, small scale village slaughtering operations, artisanal fish cleaning operations and commercial fish processing plants, local livestock management practices, at various dump sites and provisioned food at hotel ‘vulture shows’. The construction of paved roads and a vast increase of vehicle traffic over the last 20 years produce regular foraging opportunities involving road-killed domestic animals. As previously reported, much of the carrion presenting on Gambian beaches that is exploited by high numbers of Hooded Vultures is a result of by-catch produced by commercial fishing net operations (Barlow *et al.* 2021). A pan-African satellite tagging project which included four birds tagged in coastal Gambia and which transmitted for 24 to 54 months (David Barber pers. comm.), demonstrated immense variation in the home ranges of Hooded Vultures in western, eastern and southern Africa (Thompson *et al.* 2020). Human commensalism, pronounced in The Gambia, coupled with putative sub-speciation, is considered key in driving reduced home range sizes (Thompson *et al.* 2020). However, recent work supports the widely held opinion past and present that *N. monachus* is monotypic. This is based on the homogeneity of a wide-ranging set of morphometric measurements and a constancy of plumage characteristics across the entire range (Barlow *et al.* 2020, Mundy 2020). These studies

conclude that detectable variation in size (particularly wing length) across the western, eastern and southern populations is clinal and that the recognition of *N. m. pileatus* cannot be justified.

In our study area, an estimated population of 7,000–10,500 Hooded Vultures live in an area of *ca*. 600 km^2 or 4–5% of the currently estimated global population, an area that represents less than 0.0001% of the species' range (Jallow *et al.* 2016). Therefore, elevated competition for food due to high densities of conspecifics is a probable driver of the exploration and exploitation of such a varied list of food resources discussed here and previously (Barlow 2020, Barlow *et al.* 2021). We have shown that the study area presents a wide range of scavenging possibilities that are mostly created by anthropogenic activity. Human tolerance of Hooded Vultures, current low rates of persecution, negligible competition from other scavengers, and widely available large trees suitable for nesting are factors that, combined with their remarkable foraging capabilities, may explain the ongoing persistence and apparent success of the population of Hooded Vultures in coastal Gambia. This combination of factors is not apparent anywhere else in the species' range where it has been adequately studied, and where diet and food availability are discussed, such as in Uganda, Senegal and Nigeria (Ssemanda & Pomeroy 2010, Mullié *et al.* 2017, Nosazeogie *et al.* 2018).

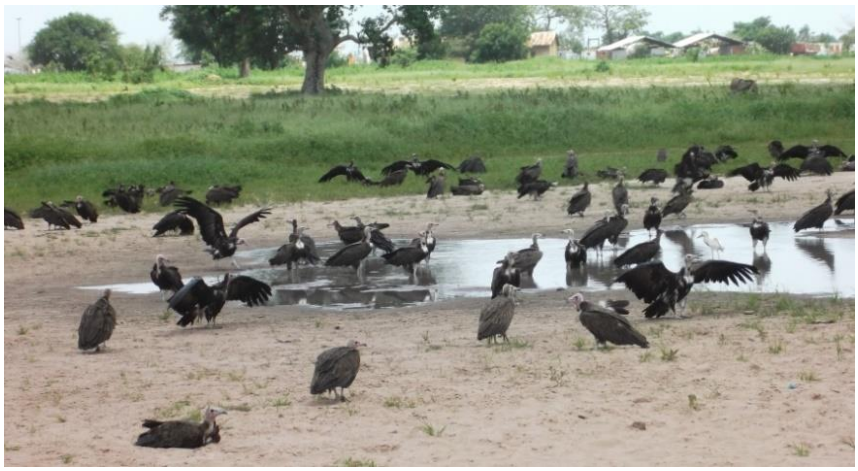

Figure 17: A large group of Hooded Vultures congregates to bathe at a flooded football pitch at Yundum during the peak rains, 27 August 2018. (Photo: CRB)

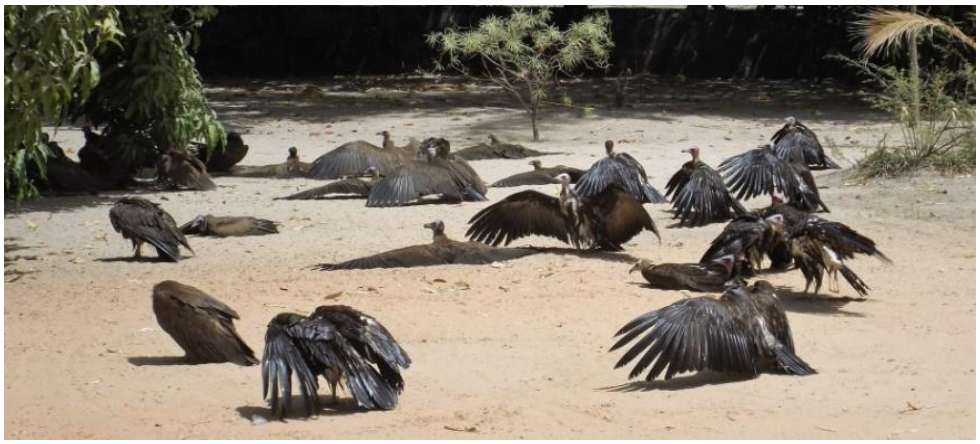

Figure 18: Up to 80 Hooded Vultures make a midday visit to a small garden pond to drink and bathe in the grounds of a quiet private compound in Tujering, 15 March 2020. Some become drenched to the point of being temporarily unable to fly. (Photo: CRB)

Acknowledgements

Lt. Col. Pierre John Mendy (deceased) kindly collected the road-killed Hooded Vulture which enabled us to photograph the first proof of the consumption of cooked rice. Nigel Carter invited us to his home to observe Hooded Vultures at the garden pond and with Omar Lowe provided generous hospitality. Lamin Dibba and Mawdo J. Jallow (DPWM) witnessed the dog's blood on the tarmac event. John Hamilton watched the cow's tail combing episode. We are grateful to Dr. A. Sonko and staff at Brikama for access to their Department of Livestock slaughterhouse area to monitor vultures and for sharing knowledge. Allen Holmes informed us of vultures eating rice on a Brusubi back street. Jason Waine discussed the anatomy of vulture tongues. David Barber at Hawk Mountain kindly provided satellite tagging information. Serkan Erdogan provided references. Derek Pomeroy, Angela Turner and Tim Wacher are thanked for ideas that improved an earlier draft. We are grateful for unhindered access to the Abuko abattoir, Brufut slaughterhouse and Ghana Town sites and other areas where we have studied Hooded Vultures over the decades.

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Supporting Information

Table S1. Geographic coordinates of sites in The Gambia mentioned in the text.

Named location	Geographic coordinates
Kachumay-Sanyang Highway	13°10'11.3"N 16° 45'38.2"W
Faraba Highway	13°23'72.9"N 16°50'59.9"W
Abuko Abattoir	13°40'01.7"N 16°65'21.7"W
Ghana Town dump	13°38'31.6"N 16°77'55.52"W
Tanji slaughter site	13°35'13.1"N 16°79'67.0"W
Brusubi Heights	13°39'13.9"N 16°76'03.3"W
Tujering	13°31'48.6"N 16°80'11.6"W
Kartong	13°05'30.1"N 16°45'40.7"W
Gunjur	13°14'98.5"N 16°77'70.6"W
Kotu Bridge	13°46'11.0"N 16°70'46.5"W
Brufut	13°39'79.6"N 16°74'54.5"W
Banjul Highway	13°46'80.42"N 16°62'46.4"W
Tujina	13°10'11.3"N 16° 45'38.2"W

Link to a video of Hooded Vultures drinking blood as shown in Figure 7:
https://youtu.be/GJa0YwCeFCs

Please contact the authors directly to seek permission to download and use the footage.

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