Modelling community-based sustainable bird monitoring and avitourism as a conservation tool against bird poaching at Bunyala Rice Scheme, Western Kenya

By

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Introduction

Poisoning birds for human consumption in Kenya likely evolved in the 1970s with introduction of deadly Carbofuran pesticide, Furadan particularly for use in rice plantations.

In 2007-2008, we (Odino & Ogada 2008a) documented how poachers took advantage of birds congregating in rice plantations and easy access to Furadan, decimating local populations.

During 2009 with Rufford Foundation's 1st grant, we modelled deliberate bird poisoning at Bunyala (Odino 2011) sharing the bird poisoning data with Kenyan pesticides regulation, manufacturing and wildlife management authorities requesting their intervention. A concurrent anti-poisoning campaign by WildlifeDirect led to Furadan's withdrawal from Kenya and east Africa by the then giant manufacturer Farm Machinery and Chemicals company-FMC.

Bird poisoning however continued in the years that followed with poisons labelled as Furadan 5G and manufactured by FMC, still occurring in the Kenyan market, particularly in Bunyala as recent as 2013 despite the 'withdrawn' status by FMC (M. Odino pers. obs.). The credibility of these products was hard to determine in the field with the only evidence left behind being pieces of torn away, weather-beaten labels from the poisons' packages as well as characteristic purple Furadan's colour on the residual poison-laden bird food baits (M. Odino pers. obs.).

During September 2012 - December 2013, we initiated a community monitoring programme that reduced poisoning incidences from nearly daily to just about 30 in a year (http://stopwildllifepoisoning.wildlifedirect.org/). This project improved on the mentioned initiative by equipping local scouts with tools and knowledge for monitoring and bird guiding for the sustainability of the program in an attempt to end poisoning and general bird poaching.

Aim:

To promote effective community involvement against deliberate bird poisoning and poaching.

Specific objectives

1. To train the scouting team on equipment use and educate them on the ecological and health implications of poisoning and consuming poisoned birds

2. To engage locals in systematic field monitoring of birds and their threats

3. To advocate for and market Bunyala as a birdwatching and other tourism destination.

Methodology

Study site and study area

The Bunyala Rice Irrigation Scheme (approximate central coordinates 00°05.797´N, 034°03.658´E) is shared along the border-line of Busia and Siaya counties in western Kenya just north east of Lk. Victoria (see **Figure 1a**). The study site constitutes a dynamic man-made wetland; seasonally flooded at cultivation time and seasonally dry at harvesting time until the next period of cultivation. The study site spanned approximately 2000 hectares of the main farmland as well as disjointed, smaller satellite farmlands comprising over another 2000 hectares. Additionally, our study area extended 37 kilometres east of the irrigation plantation constituting our road survey routes for birds of prey (see **Figure 1b**).

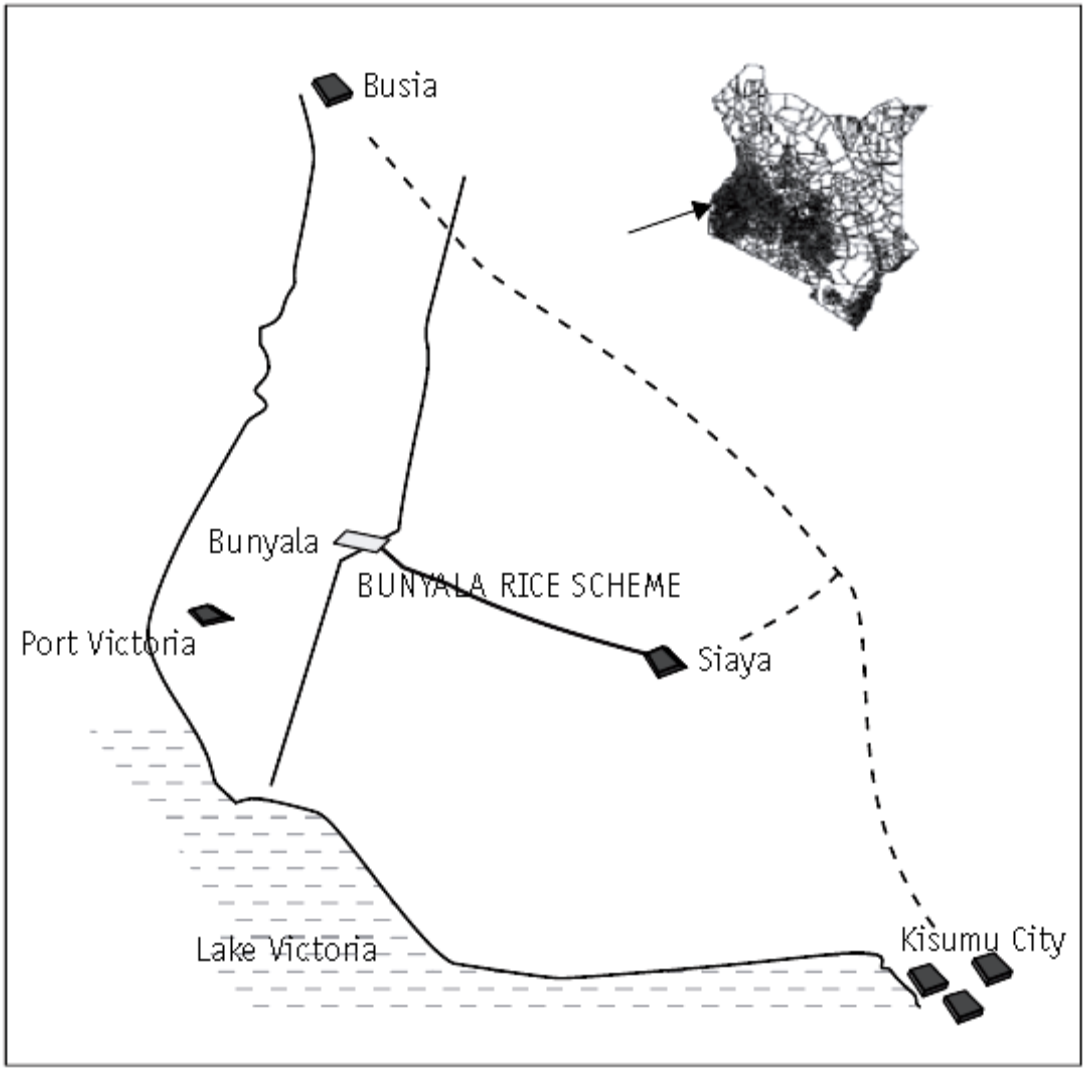

Figure 1a. Bunyala Rice Scheme Study site

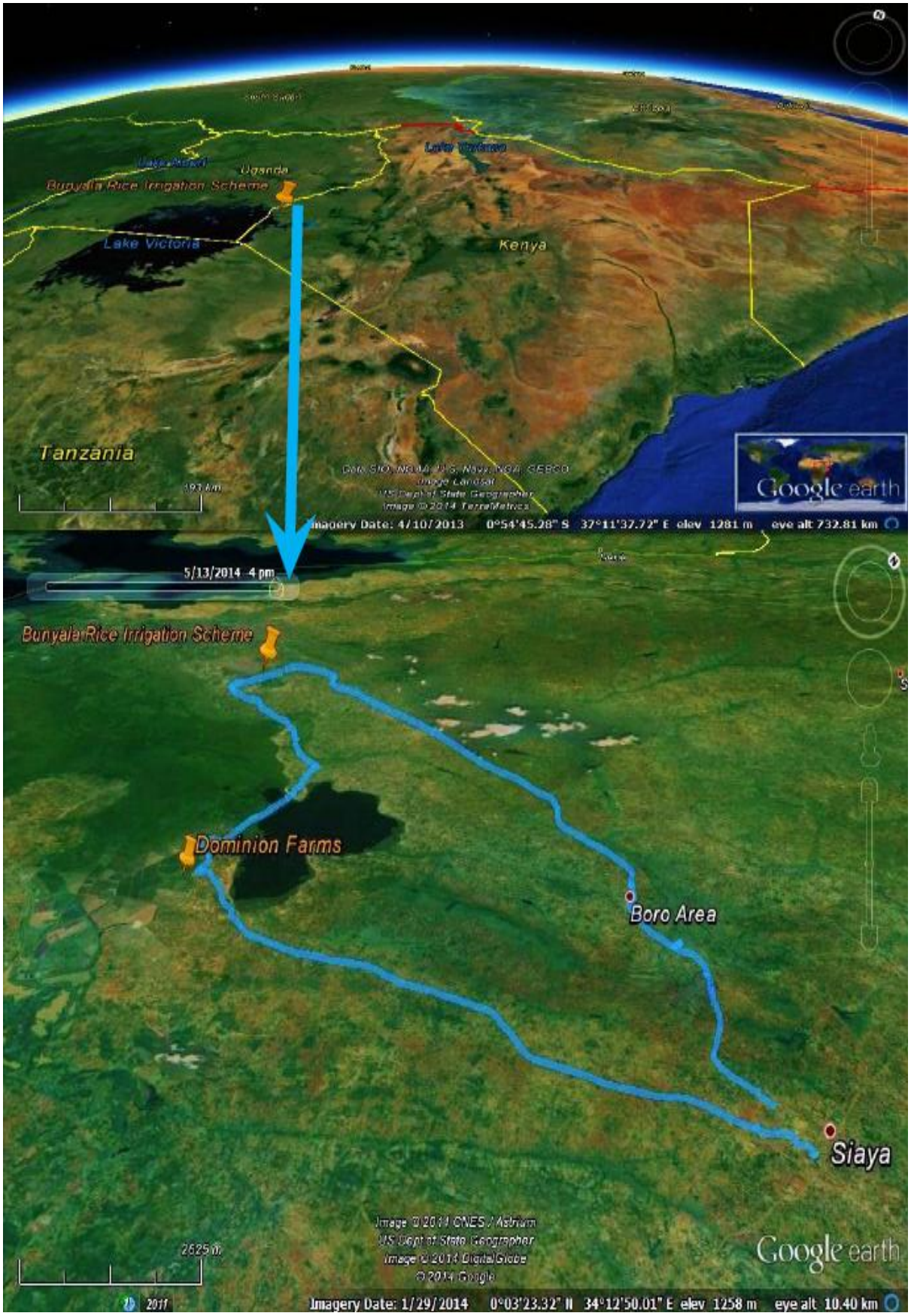

Figure 1b: Study area showing Raptor Road survey routes

Methods

1. Hands-on training and education: The lead local assistant J. Achieno and the PI trained the other 9 scouts on using binoculars and a telescope to observe birds as well as a GPS unit for mapping bird and poisoning observations. The PI then engaged them actual observations of the birds with the equipment. Training aids constituted bird guides - Birds of Kenya and Northern Tanzania - and Nature Kenya's Avitourism Training Manual print-outs for bird identification and tour guiding etiquette, respectively. The scouts were also educated about pesticide and other chemical poisonings and their dire effects using local and overseas illustrations. These included Kenya's lion and vulture carbofuran poisonings, Diclofenac poisoning of Indian Vultures' and historical poisoning by DDT that affected Peregrines and Bald Eagles. Some photographs of the training and education exercises were taken for documentation.

2. Foot surveys and Raptor Road Surveys: Foot surveys were conducted on weekly basis between 0600h and 1500h during February-December 2014. These are fairly discrete and thorough and favourable for detection of bird poisoning. The scouts aligned themselves side by side separated by about 100meters from each other and walked through the area. Observed poisoning incidences and carcasses were noted down before burning the latter.

   Raptor Road Surveys were conducted twice every month for the period of February-December 2014. These commenced at 0600h and were conducted on 2 motorcycles each with a rider and an observer surveying one of the two routes, respectively and barely stopping unless in confirming observations. Two nearly parallel routes from Bunyala to Siaya town were surveyed concurrently so that 2 sets of data were obtained for each survey and would compare raptor variety and abundance at the two routes. The southerly route runs from Bunyala Rice Plantation through Dominion Farms which are characterized by heavy pesticide availability and use and known for intensive bird poisoning. The northerly route through Boro market whose data acted as the control traverses mostly human settlements and small scale subsistence farms with little or no pesticide use therefore presumably with minimal or no low bird poisoning incidences. The PI obtained some photos of these surveys.

3. Publications, radio interview and presentations: Articles about this project were written and published in local conservation organizations' newsletters and magazines. The issue was also highlighted in an Australian newspaper. Besides, the PI was interviewed on radio in overseas about this project other than giving presentations locally as well as abroad

Results

Ten local scouts selected by PI were taught about bird identification aided by bird guide books while emphasizing their aesthetic value for tourism gains. 8 of these remain actively engaged in the monitoring surveys. Following the training, they have become competent in using binoculars and a GPS unit for observing and mapping, respectively. Further, trainees are aware of the need for maintenance and how to take care of the provided equipment.

Figure 2. Some trainees attempting to ma 1

Overall, we observed and compiled a species list of 208 birds (see **Appendix i**) of which 30 were raptors from our foot and raptor road surveys around Bunyala. Unfortunately, we also encountered 13 poisoning incidences during our monitoring surveys during February to December 2014. The following bird species and numbers were found to have been poisoned at the rice plantation: 58 African Openbills, *Anastomous lamelligerus*; 31 of 4 different species of doves and pigeon; 23 Fulvous Whistling Ducks, *Dendrocygna bicolor;* 12 Wood Sandpipers, *Tringa glareola* and 1 each for Marsh Sandpiper, *Tringa stagnatilis* and Yellow-backed Weaver, *Ploceus melanocephalus.*

Table 1. Poisoned birds during 2014

Common name	Occurrence status	no. poisoned
Fulvous Whistling Duck	AF-Afrotropical Migrant (entirely)	31
African Openbill	am-afrotropical migrant (partially)	58
Marsh Sandpiper	Palaearctic Migrant (entirely)	1
Wood Sandpiper	Palaearctic Migrant (entirely)	12
Speckled Pigeon	Resident	4
African Mourning Dove	Resident	2
Ring-necked Dove	Resident	16
Laughing Dove	Resident	1
Yellow-backed Weaver	Resident	1

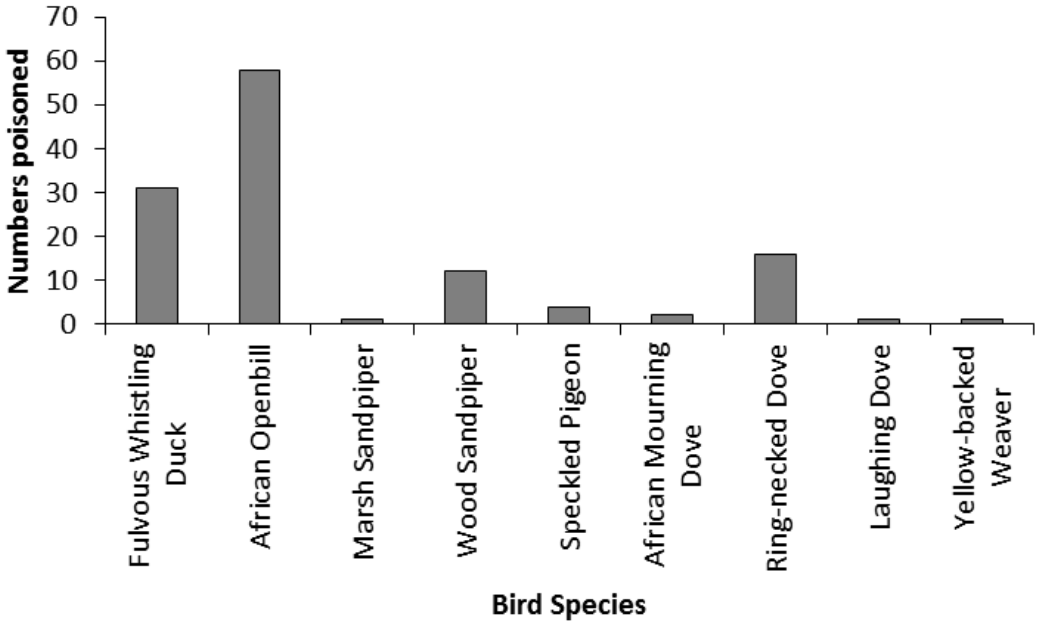

Figure 3: Poisoned species and numbers

Implemented advocacy and marketing efforts during 2014 (see **Appendix ii**) included 2 articles about the project each published in Nature Kenya's annual issue of KENYA BIRDING magazine in 2014 and East African Wildlife Society's quarterly newsletter for June - September 2014. In addition, 2 articles about this work were published in Australia's Leeton Shire's newspaper, *The Irrigator* on 16th September 2014 and 23rd September 2014. Still, the PI gave 2 presentations at a locals' forum in Bunyala on 5th April 2014 and at the East African Wildlife Society's Conservation Forum in Nairobi on 3rd July 2014. Also, 2 other international presentations were administered, one at a vultures and other wildlife anti-poisoning workshop in Spain at Ronda & Malaga on 8-11 April 2014 and the other to the members of the Murrumbidgee Field Naturalists in Leeton, NSW in Australia on 16th September 2014 with a five minutes live radio interview broadcasted by the Australian Broadcasting Corporation on 17th September 2014.

Discussion

This project intended for 10 scouts to be engaged in its activities but has so far managed to retain 8 members. Joseph Achieno (may he R.I.P) who is 1 of the other 2 scouts, and who was key to this project since its initiation in 2009 funded by Rufford Foundation's 1st grant passed on in July 2014 due to Liver Cancer. The other (Kevin Omollo) has been ailing since December 2015 but once he recovers he should re-join the team. Nonetheless, the team has managed to effectively conduct monitoring surveys at Bunyala and its environs. The regular surveys have promoted the scouts' bird identification skills that are crucial in effecting sustainable bird guiding following invigorated avitourism in the area. Still importantly, the surveys have as intended significantly contributed to declines in bird poisoning incidences.

Bird poisoning is however yet to be eliminated in Bunyala and 13 poisoning incidences were documented during our surveys in 2014. African Openbills that were the most poisoned species as found by our earlier study in 2009 (Odino 2011) were still the most poisoned during 2014 followed by Fulvous Whistling Ducks. Presumably for these two, their big size and flocking tendency predisposes them as key targets for poisoning for consumption. The Whistling Ducks were not documented as poisoned during 2009 and have been found not to turn up regularly at the rice plantation and are entirely an afro-tropical migratory sub-population. Their occurrence in Bunyala seems to be determined by the presence of flooding waters at the paddy fields just prior to planting which may not idealy coincide with the time that they are in the region. Palaearctic migrants were likewise affected with Wood Sandpipers suffering the highest mortality. Although these are not as big as Openbills and whistling ducks, their flocking tendency predisposes them as favourable targets for poisoning. However, these deliberate poisoning-related mortalities are still significantly low and cumulative, only 126 birds were observed to have been killed in 2014 compared to 3186 poisoned in 2009 (Odino 2011) during the same duration of observation time (February to December). Overall, the 13 incidences of deliberate poisoning encountered in 2014 reflect a significant decline from the 34 incidences observed during 2013 and 30 incidences in 2012, between September-December when this approach was first tested (M. Odino pers. obs.). Before that, poisoning was a nearly daily affair (M. Odino pers. obs.).

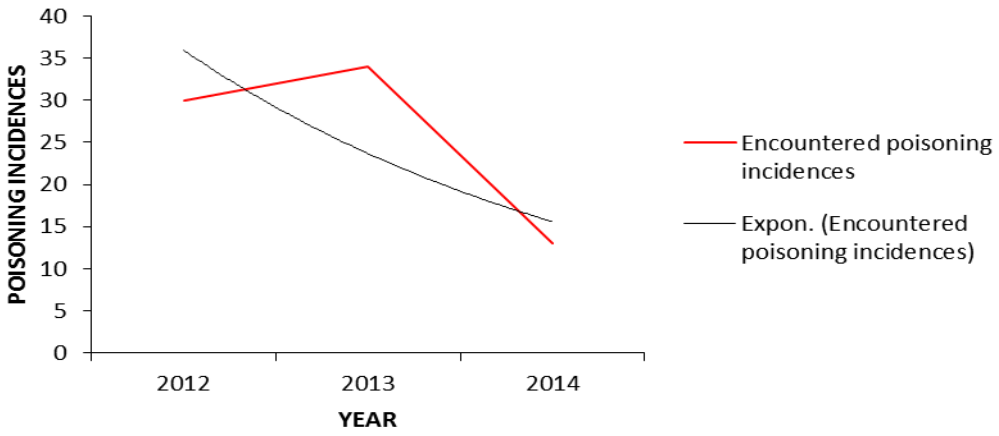

Figure 4. Observed trend of poisoning incidences in 3 years

Furthermore, no raptor snaring or trapping was encountered at the rice plantation during 2014 very likely because of our heightened vigilance during our foot surveys. The Raptor Road Surveys focusing on monitoring of the birds of prey was integrated in the monitoring surveys in Bunyala so that their data would provide a sort of parallel warning system against poisoning likewise didn't encounter any obvious threat to the birds of prey.

Figure 5. The two teams meet at the end of one of our Raptor Road Surveys in 2014. Photo by Ken

But this data can only become useful after many years – ideally over 10 years – after we have a holistic understanding of the raptor guild and their abundance in the area following such observations as we are conducting. Nonetheless The Raptor Surveys data between the two routes crudely reflects on the variety and abundance of raptors where there is high pesticide

poisoning of birds (southerly route) and raptor variety and abundance where there is minimal or no bird poisoning (northerly route).

Figure 6. One of the trainee scouts (Eric) on survey taking coordinates of a Black-shouldered Kite

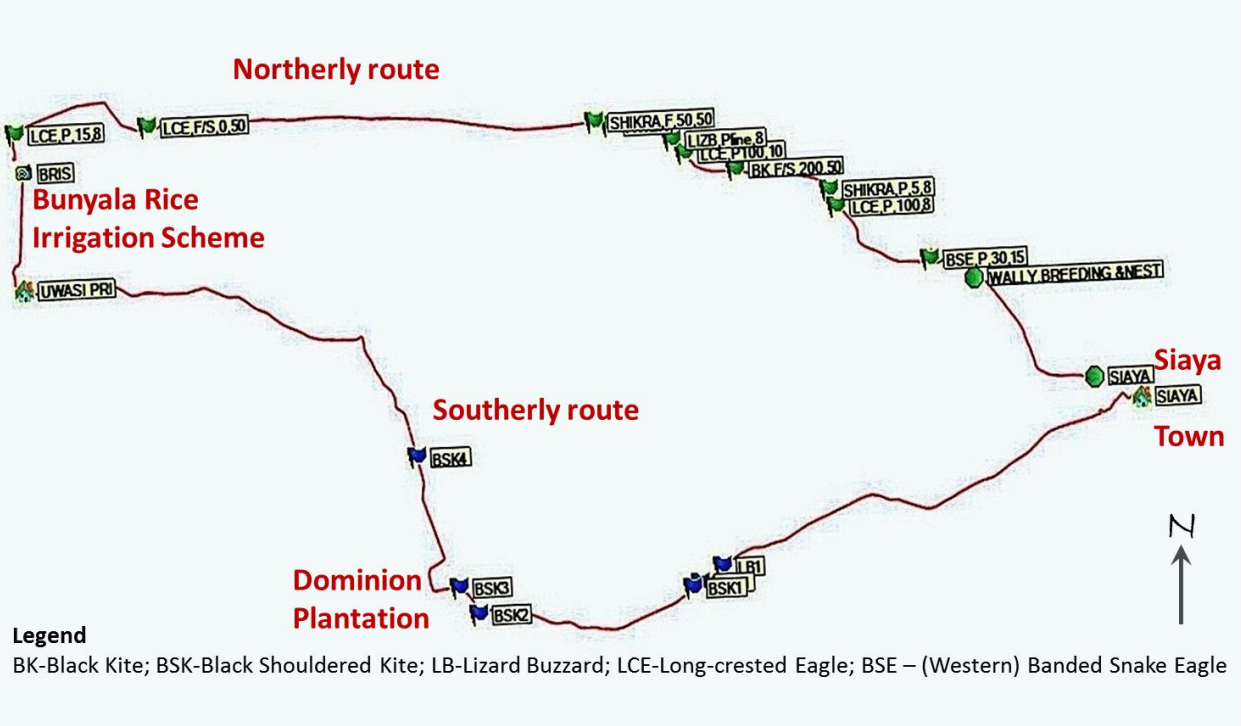

Figure 7. A sample of mapped raptor road survey data during May 2014

Over time, the general trend of raptors if declining would point to an underlying threat leading to investigation. The hypothesis in this case would be that the decline is due to poisoning which is known from the area (Odino 2011) and raptors are vulnerable to and apt indicators of poisoning in the ecosystem (D. Ogada pers. comm.). A consoling observation at present is that in our surveys around Bunyala in 2014, we did not encounter poisoned Endangered Hooded Vulture, *Necrosyrtes monachus* and the Vulnerable Beaudouin's Snake Eagle, *Circaetus beaudouini* both in their current threat categories in part due to poisoning (Birdlife International 2014).

Modest advocacy and general creation of publicity for our work was emphasized during 2014 at both local and international levels. The efforts included presenting a workshop I was invited to attend at Ronda and Malaga in Spain against poisoning of vultures. I gave a talk on a model successful anti-poisoning intervention strategy titled *Positive economic reinforcement against poisoning. The Bunyala model*. I was also invited to present in Australia about the project by the Murrumbidgee Field Naturalists and Birding New South Wales Inc. where I presented about the project thus appealing to the club members who constitute potential tourists that could visit our site and witness the incredible birdlife at the site and consequently recommend the site to other tourists. This would contribute towards ensuring the sustenance of the scouts' activities against poisoning at Bunyala Rice Plantation.

The anticipated climax of this project was to engage the scouts in practical guiding at the project site in the period from January 2015 to April 2015. However this has not been attained yet since during 2014 Kenya suffered countless al-shabaab terror attacks and imminent political upheavals arising from political rivalry. The result was that travel bans were imposed by potential overseas countries whose tourists come to Kenya on their citizens not to visit Kenya. Ideally, safari sales ought to be optimally booked in the preceding year but that was unsuccessful under the prevalent conditions of insecurity that repelled would-be interested tourists. Currently however, the security situation in the country has improved and tourism is slowly recovering. We therefore believe that we should be able to have some successful marketing breakthroughs availing the opportunity to effect bird guiding at Bunyala.

Conclusion

Successful capacity-building and engagement of locals has been achieved on site with the start-up team constituted of 8 reliable scouts. The vigilant surveying has also been demonstrated as effective against bird poisoning from the resultant fewer poisoning incidences during 2014 that suggest a decline of nearly 60% from about 30 incidences 3 years ago to just 13. In the event that these incidences are a false depiction following the effectiveness of the poachers, we are confident that data from continued surveys particularly the raptor road survey data will provide alarming declining data for birds of prey that will prompt investigations aimed at checking the responsible threat that could possibly be or include poisoning. Sustainable exploitation of the birdlife at Bunyala ideally through bird guiding still remains key to eliminating deliberate bird poisoning and while this was challenged by the insecurity in Kenya in 2014 as was the entire tourism sector, our presentations highlighting on the birds of Bunyala and surroundings generated a lot of interest. Still, road infrastructure serving Bunyala has been a main challenge but currently a road serving remote Bunyala and connecting to the major Kisumu-Busia highway is being constructed and will be completed soon. This coupled with continued marketing should open up doorways for tour guiding in Bunyala.

Recommendations

1. There is need to better equip the Raptor Road Survey team idealy with a vehicle so that the surveys can be conducted in this crucial area more comfortably even in the characteristic harsh and extreme sunshine as well as protection from rainfall that sometimes catches up with us before the end of the surveys. Still, Bunyala lies on Kenya's westerly migratory flyway that is little documented on and that could benefit from extension of the monitoring activities of the team at Bunyala. Other equipment includes a solar-charged refrigerator for collected sample storage. These can then be tested to address the problem of the still widely available array of poisons that poachers are still able to procure.

2. An alternative stable scheme should be thought out to compliment avitourism even if the latter sets off that will not be adversely affected by insecurity in the country.

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Appendices:

Appendix I: Bunyala birds' checklist

1. Three Banded Plover
2. Common Ringed Plover
3. Ruff
4. Common Sandpiper
5. Wood Sandpiper
6. Green Sandpiper
7. Common Greenshank
8. Marsh Sandpiper
9. Spotted Redshank
10. Little Stint
11. Broad-billed Sandpiper
12. Curlew Sandpiper
13. Black-tailed Godwit
14. Lesser Yellowlegs (Vagrant record)
15. Whimbrel
16. Black-winged Stilt
17. Greater Painted Snipe
18. Common Snipe
19. African Snipe
20. Gull-billed Tern
21. White-winged Black Tern
22. Whiskered Tern
23. Collared Pratincole
24. Madagascar Pratincole (a flock of vagrants)
25. Spur-winged Plover
26. Long-toed Plover
27. Great White Pelican (in transit)
28. Long-tailed/Reed Cormorant
29. Dwarf Bittern
30. Black-crowned Night-Heron
31. Common Squacco Heron
32. Madagascar Squacco Heron
33. Striated Heron
34. Rufous-bellied Heron
35. Cattle Egret
36. Little Egret
37. Black Egret
38. Intermediate Egret
39. Great Egret
40. Purple Heron
41. Grey Heron
42. Black-headed Heron
43. Hamerkop
44. White Stork
45. Yellow-billed Stork
46. Marabou Stork
47. Abdim's Stork
48. African Openbill
49. Sacred Ibis
50. Hadada Ibis
51. African Spoonbill
52. Lesser Flamingoes (overflying)
53. Egyptian Goose
54. Spur-winged Goose
55. Knob-billed Duck
56. White-faced Whistling Duck
57. Fulvous Whistling Duck
58. Black Crake
59. African Jacana
60. Grey Crowned Crane
61. Osprey
62. African Fish Eagle
63. Black (Yellow-billed & migratory) Kite
64. Black-shouldered Kite
65. Hooded Vultures (soaring past)
66. Black-chested Snake Eagle
67. Beaudouin's Snake Eagle
68. Banded Snake Eagle
69. African Marsh Harrier
70. Western/Eurasian Marsh Harrier
71. Gabar Goshawk
72. Lizard Buzzard
73. Little Sparrowhawk
74. Great Sparrowhawk
75. African Harrier Hawk
76. Tawny Eagle
77. African Hawk-Eagle
78. Ayres's Hawk-Eagle
79. Booted Eagle
80. Long-crested Eagle
81. Common Kestrel
82. Lesser Kestrel
83. Grey Kestrel
84. Red-necked Falcon
85. Lanner Falcon
86. Peregrine Falcon
87. Verreaux's Eagle Owl
88. Crested Francolin
89. Harlequin Quail
90. Temminck's Courser
91. Senegal Plover
92. African Green Pigeon
93. Speckled Pigeon
94. Blue-spotted Wood Dove
95. Ring-necked Dove
96. Red-eyed Dove
97. African Mourning Dove
98. Laughing Dove
99. Dusky Turtle Dove
100. Brown Parrot
101. Fischer's Lovebird
102. Eastern Grey Plantain-eater
103. Levaillant's Cuckoo
104. Red-chested Cuckoo
105. Diederik Cuckoo
106. White-browed Coucal
107. Blue-headed Coucal
108. Slender-tailed Nightjar
109. Long-tailed Nightjar
110. Little Swift
111. Horus Swift
112. African Palm Swift
113. Banded Martin
114. Plain Martin
115. Rock Martin
116. Red-rumped Swallow
117. Mosque Swallow
118. Rufous-chested Swallow
119. Lesser Striped Swallow
120. Barn Swallow
121. Wire-tailed Swallow
122. Angola Swallow
123. Black Saw-wing
124. White-headed Saw-wing
125. Speckled Mousebird
126. Pied Kingfisher
127. Striped Kingfisher
128. Grey-headed Kingfisher
129. Woodland Kingfisher
130. Malachite Kingfisher
131. African Pygmy Kingfisher
132. Little Bee-eater
133. European Bee-eater
134. Blue-cheeked Bee-eater
135. Madagascar Bee-eater
136. Broad-billed Roller
137. Green Wood Hoopoe
138. African Grey Hornbill
139. Black & White Casqued Hornbill
140. Southern Ground Hornbill
141. Yellow-fronted Tinkerbird
142. Spot-flanked Barbet
143. Black-billed Barbet
144. Double-toothed Barbet
145. Nubian Woodpecker
146. Grey Woodpecker
147. African Pied Wagtail
148. Yellow Wagtail
149. Yellow-throated Longclaw
150. Grassland Pipit
151. Plain-backed Pipit
152. Tree Pipit
153. Red-throated Pipit
154. Black Cuckoo-Shrike
155. Common Bulbul
156. Yellow-throated Leaf-love
157. White-browed Robin-Chat
158. African Thrush
159. Whinchat
160. Northern Wheatear
161. Isabeline Wheatear
162. Little Rush Warbler
163. Willow Warbler
164. Winding Cisticola
165. Black-backed Cisticola
166. African Grey Flycatcher
167. Common Wattle-eye
168. African Paradise Flycatcher
169. African Blue-flycatcher
170. Arrow-marked Babbler
171. Black-lored Babbler
172. Yellow White-eye
173. Beautiful Sunbird
174. Grey-backed Fiscal
175. Black-headed Gonolek
176. Marsh Tchagra
177. Common Drongo
178. Pied Crow
179. Red-billed Ox-pecker
180. Long-tailed Starling
181. Grey-headed Sparrow
182. Black-headed Weaver
183. Lesser Masked Weaver
184. Spectacled Weaver
185. Baglafecht Weaver
186. Slender-billed Weaver
187. Golden-backed Weaver
188. Yellow-backed Weaver
189. Vieillot's Black Weaver
190. Red-headed Quelea
191. Red-billed Quelea
192. Fan-tailed Widowbird
193. Southern red Bishop
194. Black-winged Red Bishop
195. Brown Twinspot
196. Red-cheeked Cordon-bleu
197. Red-billed Firefinch
198. Bar-breasted Firefinch
199. Common Waxbill
200. Crimson-rumped Waxbill
201. Black-rumped Waxbill
202. Black-faced Waxbill
203. Zebra Waxbill
204. Bronze Mannikin
205. Pin-tailed Whydah
206. Village Indigobird
207. Brimstone Canary
208. African Citril

Appendix II

Advocacy & publicity