

## External Parasites of Black Vulture (*Gyps africanus*)

<sup>1,2</sup>Ahaotu, E. O., <sup>3</sup> P. de los Ríos-Escalante and <sup>4</sup>Simeon-Ahaotu, V. C.

<sup>1</sup>Department of Animal Science, University of Agriculture and Environmental Sciences, Umuagwo, Imo State, Nigeria.

<sup>2</sup>Department of Animal Production and Health Technology, Imo State Polytechnic Omuma, Nigeria.

<sup>3</sup>Universidad Católica de Temuco, Facultad de Recursos Naturales, Departamento de Ciencias Biológicas y Químicas, Casilla 15-D, Temuco, Chile.

<sup>4</sup>Department of Microbiology, Gregory University, Uturu, Abia State, Nigeria.

Corresponding Author E-mail: [emmanuel.ahaotu@uaes.edu.ng](mailto:emmanuel.ahaotu@uaes.edu.ng); <http://orcid.org/0000-0002-1272-6437>

Received 20 January 2024; Accepted 26 October 2024; Published 16 April 2025

**ABSTRACT:** The review was aimed at recording ectoparasites of African Black Vulture (*Gyps africanus*). The physical examination resulted in collection of several mites and ticks. High quality images of the mites and ticks were accustomed to capture its identification through the aid of three dimensional (3D) microscopy. Further confirmations of the mites and ticks taxonomy were achieved through mites and tick research site: ([www.tickspotters.org](http://www.tickspotters.org)). The nymphal stage of Lone star tick (*Amblyomma americanum*) and mites (*Estrilda astrild*) were confirmed during the study. For endoparasites, a faecal sample was collected to spot eggs and larvae through the direct smear method. Coproscopy revealed a variety of Ascarid eggs, eggs of the Strongyle group and blood smear made for blood protozoa. Ectoparasite the nymphal stage of Lone star tick (*Amblyomma americanum*) and endoparasite Ascarid eggs and eggs of the Strongyle group found in direct smear but no protozoa was found in a blood smear.

**Keywords:** African vulture (*Gyps africanus*), Ectoparasites and Endoparasites, Blood Smear.

Citation: Ahaotu, E. O., P. de los Ríos-Escalante, and Simeon-Ahaotu, V. C. (2025) External Parasites of Black Vulture (*Gyps africanus*). Direct Research Journal of Veterinary Medicine and Animal Science. Vol. 10(1), Pp. 18-21. <https://doi.org/10.26765/DRJVMAS689321450>. This article is published under the terms of the Creative Commons Attribution License 4.0

### INTRODUCTION

The white-backed vulture is in the family *Accipitridae*, which also includes eagles, kites, buzzards and hawks. It is the most common vulture species in the continent of Africa. Birds constitute a very vital element of virtually every ecosystem and wild birds are available throughout the globe. Among wild birds, vultures are the most important and highest-flying raptors. These large birds do not explore for food, but will very occasionally attack wounded and dying animals (Khursheed *et al.*, 2014). An outsized number of untamed birds are thought to be blamed for the spread of emerging infectious diseases worldwide. Parasitic infestations significantly threaten avian populations, causing severe infections, mortality, and diminished productivity, particularly in heavily parasitized regions (Patricio *et al.*, 2024; Mullen and Durden, 2009; Troughton and Levin, 2007). Ectoparasites, including mites, lice, ticks, and flies, target birds' skin and feathers, with some invading deeper tissues, leading to irritation, blood loss, and disease transmission. Notably,

ticks spread various zoonotic pathogens responsible for conditions like rickettsiosis, ehrlichiosis, theileriosis, and tularemia. Endoparasites, such as nematodes, protozoans, trematodes, cestodes, acanthocephalans, and pentastomids, are particularly prevalent in prey species, with nematodes being highly pathogenic and economically impactful. This review examines ectoparasites and endoparasites retrieved from an African black vulture captured in open markets, underscoring the urgent need for targeted research and improved management strategies against parasitic infestations in birds.

### History and Observations

African vulture (*Gyps africanus*) was found within the jungle of the Chittagong region in emaciated condition admitted for treatment when an additional physical and clinical examination was performed. A faecal sample was



Figure 1: **Some species of West Africa vultures:** (1) Palmnut vulture; (2) White-headed vulture; (3) Egyptian vulture; (4) Egyptian vulture; (5) Hooded vulture; (6) White-backed vulture; (7) Eurasian griffon vulture (original pictures by di Vittorio *et al.*, 2018.).



Figure 2: Black Vultures.

collected for Coproscopy, blood from wing vein and ectoparasite was collected manually from the vulture.

### Examination of faecal sample

Several forms of qualitative and quantitative techniques are available to analyse the faecal samples. The direct smear, floatation, sedimentation method and also the McMaster technique are the foremost common methods to detect and quantify the number of eggs, ova or cyst in faecal samples. The direct smear method of faecal examination was performed and several other smears were prepared for an immediate smear. Parasitic eggs were identified by morphological features.

### Direct smear

This is the foremost common and easiest way to detect the presence of helminthes eggs. A tiny low amount of fresh faecal sample was taken within the glass slide. Few drops

of the physiological isotonic solution were placed on the glass slide. At least three smears were prepared for a sample. A coverslip was placed on the transparent liquid and examined systematically under lower magnification with the assistance of a lightweight microscope and eggs were identified on the basis of their morphological features as described by (Khan, 2013).

### Tick collection

Visual examination in which the ectoparasites were collected from host birds by controlling the legs and beak recommended (Khurshheed *et al.*, 2014).

### Tick identification

The ticks were preserved with 70% formalin and viewed by a lightweight microscope. Further measurement and morphological analyses were aided by a 3D microscopy (Entovision®, USA) to watch the tick. Confirmation of tick

species was achieved by sending pictures to the worldwide resource of tick researchers named Tick Spotters ([www.tickspotters.org](http://www.tickspotters.org)) who are voluntary contributors and help to spot ticks round the globe. Tick Spotters is an organizational site that helps to spot tick after submitting the photograph and relevant information recommended (Apanaskevich and Apanaskevich, 2016).

### Blood smear

Blood samples were collected from wing vein in an anticoagulant tube containing ethylene-diaminetetra acetic acid (EDTA). One drop blood sample was taken then thin blood smears prepared. The smears were fixed in methanol for 5 minutes and stained with Giemsa solution for 45 minutes and examined under the immersion objective recommended (Reed *et al.*, 2003). Morphological investigation was done for identification of collected sample of Lone star tick (*Amblyomma americanum*).

## RESULT and DISCUSSION

Vultures were grabbed which was fallen down in emaciated condition. Ectoparasite (tick) and a faecal sample were collected for endoparasite (*Amblyomma americanum*). Within the faecal sample, Strongyle type eggs and Ascarid type eggs were found by the direct smear method but with blood smear, no blood protozoa found. Parasitic findings were possibly the results of the feeding habits of African vulture (*Gyps africanus*). Detailed morphological investigation revealed that the collected sample was Lone star tick (*Amblyomma americanum*) under the *Ixodidae* family. The recorded tick was at the nymphal stage of the lone star tick. The length of the nymph was recorded as 1.71mm, width 1.53mm, and has six legs recommended (Hossain *et al.*, 2011). The result of gel electrophoresis was presented with samples having molecular weight of 475bp. This product size has already been reported for Simulium species by Hassan *et al.*, (2015). The African vulture (*Gyps africanus*) could be a critical species per the IUCN red list since 2002 because the population is much declined. Ascarid type toxocara eggs are originated from stray dogs, cats and wild feline and canine animals (Mallory *et al.*, 2010). Strongyle type eggs are more frequent in sheep fecal samples (Lars, 2019).

### Conclusion

It is concluded that each one of the eggs of the parasite is originated from animals where the vulture is fed. Larval, nymphal and adults all stages of ticks suck blood in vulture often from a special host. Individuals remain attached to hosts for as long as two days (Özmen, 2009). Most ticks are ambush parasites found in litter and soil that attach to passing hosts. There are two varieties of ticks found in Avian. Those are soft ticks (*Argasidae* — *Argas* and *Ornithodoros*) and few hard ticks (*Ixodidae* — *Ixodids*)

sleep in nests and burrows. Ticks transmit *spirochetosis* in birds and zoonotic disease and act as a vector for various anemia causing diseases. Some species of ticks produce toxin in their saliva that incites paralysis. The present review found nymphal stage of Lone star tick (*Amblyomma americanum*) from an African vulture (*Gyps africanus*). Wild turkey populations are a standard host and should contribute to tick expansion by providing additional hosts for immature stages (Kostelić *et al.*, 2005). Lone star ticks are mainly three-host ticks but feeding on different hosts during the larval, nymphal and adult stages. The ticks have unique piercing sucking mouthparts with chelicerae that pierce through the skin of the host. Attachment is facilitated by the tubular hypostome and a secreted cement- or latex-like compound that attaches ("glues") the tick to the host until feeding is complete (Adams *et al.*, 2003). The nymph of lone star ticks which parameter was 1.71mm long, 1.53 mm broad and have 6 legs. Nymphs can survive up to six to eight months without feeding on a number. Once a number is found they feed for 3 to eight days, drop off the host and molt into the adult stage within a 5 to six week period (Yadav *et al.*, 2015; Yadav *et al.*, 2021). As ticks are mobile, they breach their host range easily. The lone star tick is extremely aggressive and non-specific when seeking hosts (Guglielmone and Nava, 2017). The lone star tick is found in multiples host like as humans, domesticated animals (large ruminants, dogs, equine and small ruminants), ground-dwelling birds (quail and wild turkeys), micro livestock (squirrels, opossums and hares) and massive (primarily deer and coyotes) wild mammals (Kostelić *et al.*, 2005). With the exception of untamed turkeys, adult lone star ticks infrequently take advantage of birds (Kostelić *et al.*, 2005). Tick borne diseases are common occurrences in both the medical and veterinary sectors (Goddard and Varela, 2009). Lone star ticks do not transmit zoonotic disease but they transmit some nesting germs. Within the present review, blood protozoa could be noticed however, some researcher mentioned blood protozoa carry by tick (Lee *et al.*, 2014).

### Acknowledgements

The authors hereby further thank people who are involved in the conservation of vulture and the International Union for Conservation of Nature.

### Conflict of Interest

There is no conflict of interest with me or any of my co-authors with regard to this review article.

### REFERENCES

- Adams D.R, Anderson B.E, Ammirati C.T and Helm K.F (2003). Identification and diseases of common US ticks. Internet J. Dermatol., 2(1). <http://ispub.com/IJD/2/1/7515>
- Apanaskevich DA and Apanaskevich MA (2016). Description of two new species of Dermacentor Koch, 1844 (Acari: Ixodidae) from Oriental Di Vittorio, M, Hema, E.M, Dendi, D, Akani, G.C, Cortone, G, López-

- López, P. Amadi, N, Hoinsoudé Ségniagbeto, G, Battisti, C and Luiselli, L (2018). The conservation status of West African vultures: An updated review and a strategy for conservation. *Vie et milieu - Life and environment*. 68 (1): 33-43
- Goddard J and Varela-Stokes AS (2009). Role of the lone star tick, *Amblyomma americanum* (L.), inhuman and animal diseases. *Veterinary parasitology*, 160(1-2):1-2. <https://doi.org/10.1016/j.vetpar.2008.10.089>
- Guglielmo AA and Nava S (2017). Birds and hard ticks (Acari: Ixodidae), with discussions about hypotheses on tick evolution. *Revista FAVE – Sección Ciencias Veterinarias* 16 (2017) 13-29. <https://doi.org/10.1093/jmedent/44.5.732>
- Hossain MM, Paul S, Rahman MM, Hossain FM, Hossain MT and Islam MR (2011). Prevalence and economic significance of caprine fascioliasis at Sylhet district of Bangladesh. *Pak Vet J.*, 31(2): 113-6.
- Khan MM (2013). Population, breeding and threats to the White-rumped Vulture *Gyps bengalensis* in Bangladesh. *Forktail*, 29:52-6.
- Khurshid A, Sial N, Malik S and Lashari ML (2014). Parasitic infestation in Peafowl of Bahawalpur Zoo, Punjab, Pakistan. *Standard Sci Res Essays*. 2(9): 401-405.
- Kostelić A, Dagny Stojčević R, Rupić V, Karolyi D, Salajpal K, Barać Z, Kiš G and Beck R (2005). Sheep internal parasites on Rab and Pag. *Italian journal of animal science*. 4(sup3): 178-80.
- Lars E (2019). Vector competence studies with hard ticks and *Borrelia burgdorferi* sensu lato spirochetes: a review. *Ticks and Tick-borne Diseases*. 14:101359. <https://doi.org/10.1016/j.ttbdis.2019.101359>
- Lee RM, Moore LB, Bottazzi ME and Hotez PJ (2014). Toxocariasis in North America: a systematic review. *PLoS neglected tropical diseases*. 2014 Aug;8(8). <https://doi.org/10.1371/journal.pntd.0003116>
- Mallory ML, Robinson SA, Hebert CE and Forbes MR (2010). Seabirds as indicators of aquatic ecosystem conditions: a case for gathering
- Marietto-Gonçalves GA, Martins TF, de Lima ET, de Souza Lopes R and Andreatti Filho RL (2009). Prevalência de endoparasitas em amostras fecais de aves silvestres e exóticas examinadas no Laboratório de Ornitopatologia e no Laboratório de Enfermidades Parasitárias da FMVZUNESP/Botucatu-SP. *Ciência Animal Brasileira*, 10(1): 349-54.
- Mullen GR and Durden LA (2009). *Medical and veterinary entomology*. Academic press; 2009 Apr 22. <https://www.elsevier.com/books-andjournals>
- Özmen, O, Haligur M and Adanir R (2009). Identification of different protozoa species from a common buzzard (*Buteo buteo*). *Turkish Journal of Veterinary and Animal Sciences*. 33(3): 257-60. <http://journals.tubitak.gov.tr/veterinary/issues/vet-09-33-3/vet-33-3-14>.
- Patricio R. De los Ríos-Escalante, Pedro Jara-Seguel and Emmanuel O. Ahaotu (2024). Oribatid mites (*Acariformes* : *Sarcoptiformes*) in Sub-Antarctic Islands and Antarctica: A Track Analysis. *Ukrainian Antarctic Journal*, 22 (1) : 82–94. <https://doi.org/10.33275/1727-7485.1.2024.729>.
- Reed KD, Meece JK, Henkel JS and Shukla SK (2003). Birds, migration and emerging zoonoses: West Nile virus, Lyme disease, influenza A and enteropathogens. *Clinical medicine & research*. 1(1): 5-12. <https://doi.org/10.3121/cmr.1.1.5>
- Troughton DR and Levin ML (2007). Life cycles of seven ixodid tick species (Acari: Ixodidae) under standardized laboratory conditions. *Journal of Medical Entomology*. 44(5): 732-40. <https://doi.org/10.1093/jmedent/44.5.732>
- Yadav SK, Ahaduzzaman M, Sarker S, Sayeed MA and Hoque MA (2015). Epidemiological survey of fascioliasis in cattle, buffalo and goat in Mahottari and Dhanusha, Nepal. *J. Adv. Parasitol.* 2(3): 51-6. <http://dx.doi.org/10.14737/journal.jap/2015/2.3.52.56>
- Yadav SK, Nath C and Siddiki AZ (2021). Ectoparasites and endoparasites from Indian Vulture (*Gyps Indicus*) - Case report. *J. Vet. Res. Adv.*, 03(01): 46-50.