OCULAR PATHOLOGY IN THE FLIGHTLESS CORMORANT *NANNOPTERUM HARRISI*

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ABSTRACT

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Ocular pathological conditions affecting the cornea, iris, conjunctiva, and third eyelid in each of four Flightless Cormorants *Nannopterum harrisi* were observed on Fernandina Island, Galápagos, in September 2014. Observations over many years, 2009–2023 (n = 313 cormorants inspected), suggest that the infection noted in 2014 was rare.

Key words: diagnostic, eyes, Galápagos, symptomology, vision

Unusual pathology of the cornea, iris, conjunctiva, and third eyelid were observed in four adult female Flightless Cormorants *Nannopterum harrisi* at the Valle Colony (0°15′36″S, 91°27′30″W), Fernandina Island, Galápagos, in September 2014 (Fig. 1). Purulent discharge was observed in all individuals. In one 12-year-old that was marked with a passive integrated transponder (PIT) (053-624-086) and had one egg in its nest, the condition consisted of extensive opacity affecting the cornea, iris, conjunctiva, and third eyelid in both eyes. The second individual, a two-year-old non-breeder (PIT 9810981043-09383), exhibited corneal ulcers, with flaps of exfoliating corneal epithelium, opacity in the iris and conjunctiva, and slight opacity in the third eyelid in both

Fig. 1. Flightless Cormorants *Nannopterum harrisi* eyes showing ocular pathological conditions, Fernandina Island, September 2014. Top-left: Bird 053-624-086 right eye. Top-right: Bird 9810981043-09383 right eye. Bottom-left: Bird 9810981043-09022 right eye. Bottom-right: Bird 9810981029-33979 left eye.

eyes. The third individual, another two-year-old non-breeder (PIT 9810981043-09022), exhibited opacity affecting the cornea, iris, and conjunctiva in both eyes and the third eyelid in the right eye only, as well as flaps of exfoliating corneal epithelium in the right eye. The fourth bird, a five-year-old non-breeder (PIT 9810981029-33979), had opacity and severe ulcers in the left eye affecting the cornea, iris, and conjunctiva. Photographs were sent to Erika Crook (zoo veterinarian) and Amy Knollinger (veterinary ophthalmologist), who advised that a full ophthalmological examination, including a slit lamp evaluation, would be needed to diagnose the nature and cause of the condition. Further diagnostics, unfortunately, were not feasible.

The causes of ocular pathology in birds may be physical (an external object, exposure to caustic substances or trauma leading to lacerations, ulcerations, or swelling), infectious (bacterial, viral, parasitic, or fungal, generally leading to purulent discharges, usually bilateral), nutritional-physiological (e.g., hypovitaminosis A or uric acid deposits in the eyelid), or genetic (malformation, dysplasia, or neurologic lesions) (Bauck 1994, Dumonceaux & Harrison 1994, Gerlach 1994, Greiner & Ritchie 1994, Macwhirter 1994, Williams 1994, Kern 1997).

An earlier disease survey of Flightless Cormorants detected microfilaria and antibodies to adenovirus Type 1 and *Chlamydia psittaci* but detected no ocular problems (Travis *et al.* 2006, Aaziz *et al*. 2023). I monitored the colony (27 times) and nearby colonies from 2009 to 2023. In 2015, a year later than the observation described above, Bird 053-624-086, brooding a chick, was recaptured and found to be healthy, without visible eye problems. Apart from that sighting, the cormorants described above have not been seen again.

Although no definitive diagnosis could be made in the cases presented here, it is probable that a disease only present sporadically would be consistent with the small number of affected individuals that were found in 2014, in one place and at one time. The purulent ocular discharge in the four individuals suggests that it was an infection. Ocular pathological conditions appear to be rare in this species, as only the individuals reported here, out of 313 cormorants over 15 years, exhibited these conditions.

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REFERENCES

AAZIZ, R, VINUEZA, R.L., VORIMORE, F., ET AL. 2023. Avian *Chlamydia abortus* strains detected in Galapagos Waved albatross (*Phoebastria irrorata*). *Journal Wildlife Diseases* 59: 143–148. doi:10.7589/JWD-D-21-00163

BAUCK, L. 1994. Mycoses. In: RITCHIE, B.W. HARRISON, G.J. & HARRISON, L.R. (Eds.) *Avian Medicine: Principles and Application*. Delray Beach, USA: HDB International.

DUMONCEAUX, G. & HARRISON G.J. 1994. Toxins. In: RITCHIE, B.W. HARRISON, G.J. & HARRISON, L.R. (Eds.) *Avian Medicine: Principles and Application*. Delray Beach, USA: HDB International.

GERLACH, H. 1994. Bacteria. In: RITCHIE, B.W. HARRISON, G.J. & HARRISON, L.R. (Eds.) *Avian Medicine: Principles and Application*. Delray Beach, USA: HDB International.

GREINER, E.C. & RITCHIE, B.W. 1994. Parasites. In: RITCHIE, B.W. HARRISON, G.J. & HARRISON, L.R. (Eds.) *Avian Medicine: Principles and Application*. Delray Beach, USA: HDB International.

KERN, T.J. 1994. Disorders of the special senses. In: ALTMAN, R.B., CLUBB, S.L., DORRESTEIN, G.M. & QUESENBERRY, K. (Eds.). *Avian Medicine and Surgery*. Philadelphia, USA: W.B. Saunders.

MACWHIRTER, P. 1994. Malnutrition. In: RITCHIE, B.W. HARRISON, G.J. & HARRISON, L.R. (Eds.) *Avian Medicine: Principles and Application*. Delray Beach, USA: HDB International.

WILLIAMS, D. 1994. Ophthalmology. In: RITCHIE, B.W. HARRISON, G.J. & HARRISON, L.R. (Eds.) *Avian Medicine: Principles and Application*. Delray Beach, USA: HDB International.

TRAVIS, E.K., VARGAS, F.H., MERKEL, J., GOTTDENKER, N., MILLER, R.E. & PARKER, P.G. 2006. Hematology, plasma chemistry, and serology of the Flightless Cormorant (*Phalacrocorax harrisi*) in the Galápagos Islands, Ecuador. *Journal of Wildlife Diseases* 42: 133–141.