

# FIRST RECORD OF BLACK-CROWNED NIGHT-HERON *NYCTICORAX NYCTICORAX* BREEDING IN GALAPAGOS

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## SUMMARY

In early 2020 two pairs of Black-crowned Night-Herons *Nycticorax nycticorax* were observed breeding on a mangrove islet in Academy Bay, Santa Cruz Island, one with a nestling and the other with two dependent fledglings. An independent immature bird was also seen there. Another immature (or the same one) and a non-breeding (moulting) adult were also seen at Black Turtle Cove on the other side of the island, giving a total of nine or ten birds. This is the first time the species, previously regarded as a rare vagrant to Galapagos, has been recorded other than singly and nesting in the archipelago. The breeding night-herons were found within a colony of nesting Cattle Egrets *Bubulcus ibis*, a situation which may have afforded the night-herons (which typically nest colonially and often in mixed-species heronries) protection from predators and a reliable and steady food resource (egret eggs and chicks) for their offspring. As mangrove habitat is extensive in Galapagos and the Black-crowned Night-Heron has a varied diet, it seems likely that this new immigrant could become permanently established in the archipelago.

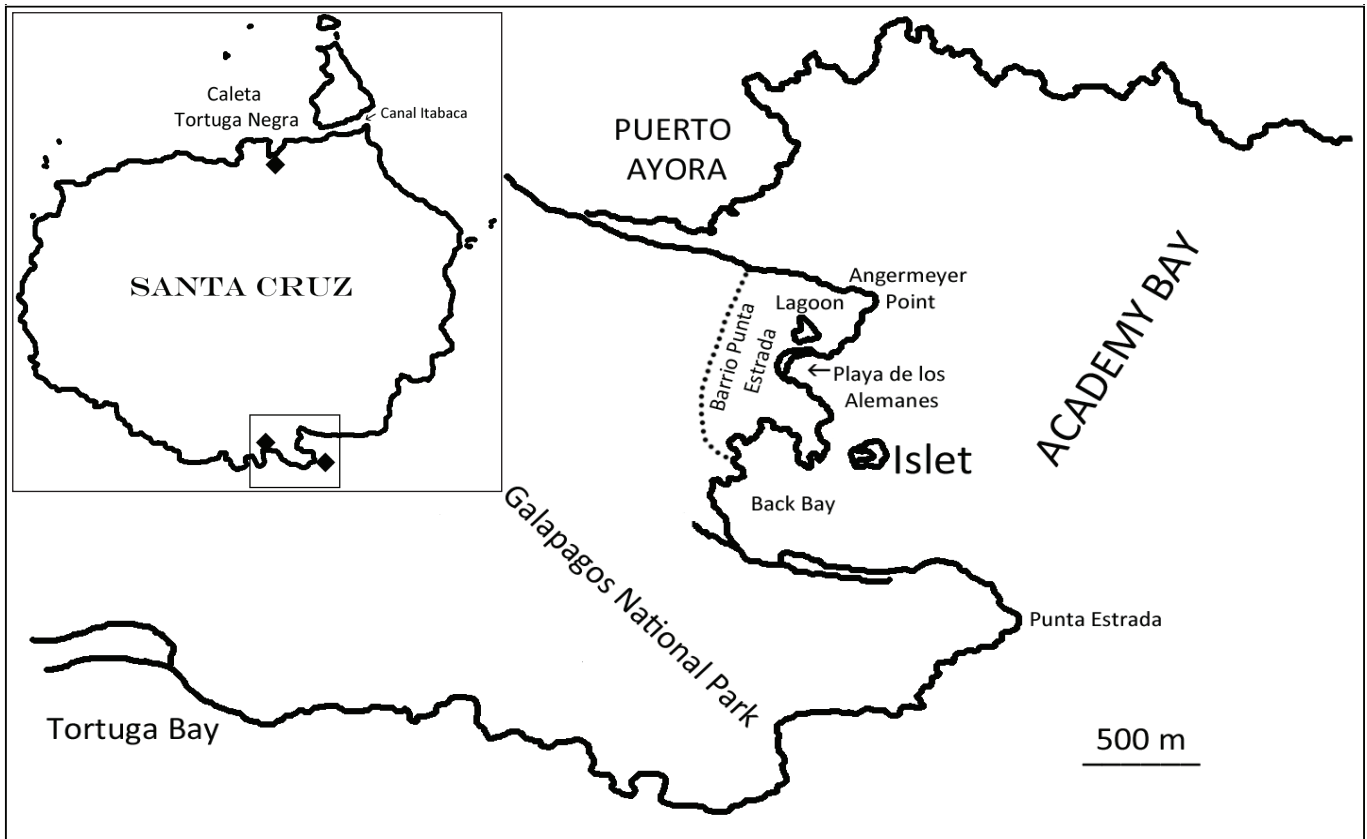
## RESUMEN

**Primer registro de la Garza nocturna coroninegra *Nycticorax nycticorax* anidando en Galápagos.** A inicios de 2020 se observaron dos parejas de Garza nocturna coroninegra *Nycticorax nycticorax* anidando en un islote de manglar en la Bahía Academia, isla Santa Cruz, una con un polluelo y la otra con dos volantones dependientes. Allí se observó además un inmaduro independiente. Otro inmaduro (o el mismo) y un adulto no reproductivo (en muda) también fueron avistados en la Caleta Tortuga Negra al otro lado de la isla, totalizando nueve o diez individuos. Hasta ahora esta especie había sido considerada una errante ocasional en Galápagos; es la primera vez que se ha registrado simultáneamente más de un individuo, y reproduciéndose, en el archipiélago. Las garzas nocturnas (que típicamente anidan en colonias, a menudo entre otras especies de garza) fueron encontradas anidando en medio de una colonia reproductora de Garza boyera *Bubulcus ibis*, una situación que podría proporcionar a las garzas nocturnas protección contra los predadores y una fuente alimenticia (huevos y polluelos de Garza boyera) confiable y continua para sus crías. Ya que el hábitat de manglar es extenso en Galápagos y la Garza nocturna coroninegra tiene una dieta amplia, es posible que este nuevo inmigrante pudiera establecerse permanentemente en el archipiélago.

## INTRODUCTION

Prior to 2020 there were only three reported sightings of Black-crowned Night-Herons *Nycticorax nycticorax* in the Galapagos. The first was a sub-adult observed at Tortuga Bay (Bahía Tortuga), Santa Cruz, on 1 Apr 1971 by H. van der Werff (Harris 1973, 1974, Castro & Phillips 1996) but as no photographs were taken nor descriptive details provided, and because young *N. nycticorax* can be confused with young Yellow-crowned Night-Herons *Nyctanassa violacea*, this record was regarded by Wiedenfeld (2006) as “hypothetical”. Almost 40 years later, an adult was photographed in Black Turtle Cove (Caleta Tortuga Negra), Santa Cruz, on 12 May 2010 by T. Sigler (reported by W. Stephens at <<https://ebird.org/checklist/S52166958>>, consulted 1 Apr 2020) and an adult (presumably a different individual) was photographed in the same place on 5 Oct 2019 by M. Plaza (confirmed by L.D. Dejean pers. comm.).

In early 2020 several sightings, representing more than one individual *N. nycticorax*, were reported, all on Santa Cruz (Fig. 1): C. Sievers (CS) photographed an adult on a tidal islet in Academy Bay on 18 Jan; G. Estes (GE), several tourists and I photographed a different adult (apparently in second pre-basic moult) in Black Turtle Cove on 30 Jan; P. Freire (pers. comm.) photographed an independent immature there on 19 and 27 Feb; GE photographed an immature (possibly the same as the previous individual) in the same place on 28 Feb (Fig. 2). These sightings represent two adults and at least one immature. Between 25 Feb and 17 Mar 2020 I observed a group of *N. nycticorax* in Academy Bay: these observations, made with binoculars during morning hours (6h00–9h00) and detailed below, provide the first evidence of this species breeding in Galapagos.



**Figure 1.** Inset: Santa Cruz Island showing Galapagos locations of *N. nycticorax* sightings (black diamonds). The area within the rectangle is expanded in the larger map, which shows the location of the breeding islet off Barrio Punta Estrada, Academy Bay, and other localities mentioned in the text. The dotted line indicates the approximate boundary between the Galapagos National Park and the Urban Zone of Barrio Punta Estrada.

## OBSERVATIONS

The group of *N. nycticorax* was found on the same tidal islet in Academy Bay where CS photographed the adult in January (Fig. 1). This small (c. 5000 m<sup>2</sup>) unnamed islet (0.755983°S, 90.308550°W), situated between Playa de los Alemanes and Back Bay (also known as Divine's Bay), administratively within the local authority "Urban Zone" of



**Figure 2.** Black-crowned Night-Herons *Nycticorax nycticorax* in Galapagos: left, an adult, Academy Bay, 18 Jan 2020 (photo: CS); centre, adult, Black Turtle Cove, 30 Jan 2020 (photo: KTG); right, immature, Black Turtle Cove, 28 Feb 2020 (photo: GE).

Barrio Punta Estrada, connects briefly to the main island of Santa Cruz at lowest tides (Fig. 3). It is characterised by two large thickets of White Mangrove *Laguncularia racemosa* which partially encircle a beach of shelly sand and sea urchin spines. Red Mangrove *Rhizophora mangle*, Button Mangrove *Conocarpus erectus*, Common Carpetweed *Sesuvium portulacastrum*, Galapagos Opuntia *Opuntia echios*, Leatherleaf *Maytenus octogona*, Desert Thorn *Lycium minimum* and Saltbush *Cryptocarpus pyriformis* also grow on the islet. Marine Iguanas *Amblyrhynchus cristatus* nest in the sand. The White Mangroves provide roosts and nesting sites for large flocks of Cattle Egret *Bubulcus ibis*, and the Red Mangroves on the southeast side of the islet provide the same for smaller numbers of Brown Pelicans *Pelecanus occidentalis*. Various shore birds, including Great Blue Heron *Ardea herodias*, Striated Heron *Butorides striatus* and Yellow-crowned Night-Heron *Nyctanassa violacea*, also feed on the islet.

On 25 Feb I observed two adult and one immature *N. nycticorax* on the northeast side of the islet. They were perched on top of a White Mangrove tree, surrounded by several adult and immature Cattle Egrets. On 26 Feb I found one adult and one immature *N. nycticorax* on the same mangrove tree; the immature flew a short distance into a dip in the canopy and out of sight, while the adult watched me intently without moving. Peering under the mangrove I saw c. 30 Cattle Egret nests among the branches, many containing eggs and nestlings. In a nest superficially identical to the Cattle Egret nests and relatively high up at c. 2 m was a heron nestling (Fig. 4a), whose brown dorsal feathers, dark grey down and greenish yellow legs (not visible in the photo) clearly identified it as a night-heron chick, and specifically of the Black-crowned and not the Yellow-crowned Night-Heron (whose nestling has longer, whiter and more scraggly down filaments giving the bird a greyer and more streaked appearance: Hothem *et al.* 2020, Watts 2020). No adult Yellow-crowned Night-Herons were seen on the islet that day nor any day over the next two weeks.

On 27 Feb 2020, four adult, one independent immature and two dependent fledgling (hereafter “juvenile”) *N. nycticorax* were present in the canopy of the same mangrove, surrounded by Cattle Egrets (Fig. 5). One of the juveniles, which appeared somewhat smaller and younger than the other, begged from an adult (Fig. 6). Upon detecting me, two adults and the immature quickly disappeared into the dip in the canopy. The juveniles remained in sight with the other two adults for several minutes before following.



**Figure 3.** The tidal islet in Academy Bay, Santa Cruz Island, at high tide (left) and low tide (centre and right), March 2020. The yellow arrow points downwards to the approximate location of the *N. nycticorax* nest (Photos: left and centre, KTG; right, GE)



**Figure 4.** Nestling *N. nycticorax* in its nest on the Academy Bay islet, 26 Feb 2020 (photo: KTG).



**Figure 5.** Adult *N. nycticorax* surrounded by Cattle Egrets *Bubulcus ibis* on the Academy Bay islet, 27 Feb 2020. (Photo: KTG).



**Figure 6.** Juvenile *N. nycticorax* begging from an adult on the Academy Bay islet, 27 Feb 2020. (Photo: KTG).



**Figure 7.** Adult *N. nycticorax* flying over Playa del los Alemanes, 2 Mar 2020 (photo: KTG).

It is possible that the immatures seen on the islet and at Black Turtle Cove were the same individual, as the two sites are only 28 km apart and short-distance (10–100 km) dispersal flights after fledging are common in *N. nycticorax* (Hancock & Kushlan 2005). In any case, the presence of an immature suggests that successful breeding occurred in Galapagos in 2019 as well as 2020, although the possible arrival of immatures with adults from elsewhere cannot be ruled out.

*Nycticorax nycticorax* nests on all continents except Antarctica and Australia. The relatively pale ventral plumage of the individuals in Galapagos indicates that they belong to the subspecies *N. n. hoactli*, which is widespread in North, Central and northern South America, and is also found in the Hawaiian Islands; *N. n. obscurus*, found in southern Peru, Chile and Argentina, and *N. n. falklandicus* from the Falkland Islands, typically have darker plumage. The northernmost breeding populations of *N. n. hoactli* migrate to Central America or the Caribbean for the non-breeding season. Populations in the tropics typically breed at the beginning of the rainy season, and undertake short post-breeding dispersal (Hancock & Kushlan 2005, Hothem *et al.* 2020). The Galapagos individuals could have arrived from North America, after deviating off course during a migration, as was most likely the case with the founders of the Hawaiian population (Pyle & Pyle 2017), but a South American origin is more likely, given that the prevailing winds entering Galapagos come from the southeast. The fact that the Galapagos individuals bred Dec–Jan is also consistent with a tropical population. The closest point of possible origin is the west coast of mainland Ecuador, where mangrove

During trips to the islet on 28 Feb and 1 Mar, an adult, an immature and one juvenile were observed, in the same mangrove tree. On 2 Mar the nest was empty, with the chick perched on a branch c. 3 m away. An immature was also observed in the tree.

On 13 Mar I observed, from the sea, an adult fly to the east side of the islet where a juvenile emerged from the canopy and started begging. It was unclear whether it was the nestling of 11 days earlier, or one of the older juveniles. On 14 and 17 Mar there were two juveniles, one appearing larger and older than the other, and an adult, again on the east side of the islet.

Between 29 Feb and 10 Mar, I also observed adult *N. nycticorax* elsewhere in Barrio Punta Estrada. On 29 Feb I watched an adult catch a mullet *Mugil* sp., from a mangrove perch at the edge of the Punta Estrada lagoon, c. 500 m from the islet (Fig. 1). On 2 Mar I saw an adult flying from this lagoon towards the islet. On 3 Mar I photographed an adult flying low over the Finch Bay Hotel (behind Playa de los Alemanes) and then out towards the islet (Fig. 7), and on 5, 8 and 10 Mar I saw an adult flying high from the direction of Tortuga Bay towards Angermeyer Point (Fig. 1).

## DISCUSSION

The *N. nycticorax* observed on the islet and elsewhere in Barrio Punta Estrada between 25 Feb and 17 Mar 2020 represent at least eight individuals (four adults in two breeding pairs, one immature, two juveniles and one nestling). Based on plumage, the nestling, whose pin feathers on the head indicated a minimum age of 12 days, was c. 2–3 weeks old when first observed on 26 Feb, and the juveniles the next day were c. 5–7 weeks old (McVaugh 1972, Hothem *et al.* 2020). The immature, with its grey and streaked plumage, was at least six months and probably closer to a year old. The incubation period of *N. nycticorax* is generally 21–26 days (Hancock & Kushlan 2005, Hothem *et al.* 2020), indicating that egg-laying occurred about the third week of Jan 2020 (nestling), in mid or late Dec 2019 (juveniles) and between Jan and Jun 2019 (immature).

forests in Manabí and Guayas provinces support populations of *N. nycticorax* that breed in mixed-species heronries (Ridgley & Greenfield 2001, Freile & Restall 2018).

There is no obvious reason why the species could not establish a resident breeding population in Galapagos. *N. nycticorax* has a varied diet of mainly fish, but also rodents, arthropods, reptiles, amphibians, bird chicks and crustaceans, all of which are found in the islands. There are relatively few mammalian and avian predators in Galapagos and few avian diseases, such as West Nile disease, to which *N. nycticorax* is particularly susceptible (Wheeler *et al.* 2009, Torres & Mena 2018). All sightings of *N. nycticorax* in Galapagos have been in mangroves, and there are over 3657 ha of mangrove forest in the archipelago, with c. 339 ha on Santa Cruz (Moity *et al.* 2019).

Furthermore, *N. nycticorax* frequently breeds in mixed-species heronries (Hothem *et al.* 2020), so the presence of many Cattle Egrets on Santa Cruz could also favour its establishment on this island. The Cattle Egret was first reported in Galapagos in the early 1960s (Lévêque *et al.* 1966), with nesting confirmed in 1986 (Harris 1973, Fitter *et al.* 2016). Numbers have grown dramatically since then, most noticeably this century, and almost certainly as a result of habitat modification by people and increased agriculture (Torres & Mena 2018). Recently, during the warm season months (which is also the breeding season), 3000–5000 Cattle Egrets have been counted flying from feeding grounds in the highlands of Santa Cruz to nocturnal roosts in the mangroves of Back Bay (M. Dvorak pers. comm., KTG and GE pers. obs.), and the species has other roosting sites elsewhere on the island (*e.g.* at Black Turtle Cove and at the western entrance to Canal Itabaca) so the total island population may be much larger. However, *N. nycticorax* does not always nest with other herons, so it need not be dependent on Cattle Egrets for its Galapagos breeding success.

In general, herons that nest together (whether in single species or multi-species colonies) often benefit from reduced nest predation (*e.g.* Burger & Hahn 1977). There is some evidence that dark-plumaged herons benefit from associating with white-plumaged herons because white is more conspicuous to predators (Caldwell 1986). There is also evidence that herons which feed on similar prey and nest together close to a high quality food source benefit from increased foraging success (*e.g.* Gibbs 1991). In Galapagos, *N. nycticorax* and *B. ibis* share potential nest predators (*e.g.* frigatebirds *Fregata* spp. and Great Blue Herons) but they have very different foraging strategies, diets and feeding habitat, with *B. ibis* feeding diurnally, mainly on arthropods in the highlands and *N. nycticorax* feeding nocturnally, presumably mainly on fish in the lowlands. Nonetheless, because *N. nycticorax* also eats bird eggs and nestlings, including those of *B. ibis* (Hothem *et al.* 2020), foraging could still be considered a potential benefit of *N. nycticorax* nesting with *B. ibis*. For a new arrival with limited local knowledge, the advantages of nesting in an existing heron colony are potentially strong.

*N. nycticorax* should be monitored to determine how it is adapting to life in the archipelago, whether it is dispersing to other islands, and how it is affecting the native fauna. This presents challenges since the species is nocturnal and elusive, hiding in trees during the day, and it can be very sensitive to human disturbance when breeding (Tremblay & Ellison 1979, Burger & Gochfeld 2016). Furthermore, potential habitat (mangrove forests, estuaries, lagoons and freshwater highland pools) is widespread in the archipelago. However, given *N. nycticorax*'s known association with Cattle Egrets, searches could initially be focussed on mangroves known to be used by the latter. Ecological studies of both species would be useful.

The Academy Bay islet is worth monitoring regularly, not only for *N. nycticorax* but also for other vagrant species. It is relatively undamaged, even though it lies outside the boundaries of the Galapagos National Park; it is separated from the mainland by a 100 m stretch of water during high and mid tides, and by very slippery intertidal rocks and pools at low tide, so it is relatively protected from cats and dogs (but not rats) and it is rarely visited by humans. Barrio Punta Estrada itself is sparsely developed with few residents, although tourist activities, including snorkelling and kayaking near the islet, have been increasing. I have occasionally seen other vagrant herons (Tricoloured Heron *Egretta tricolor*, Snowy Egret *E. thula* and Little Blue Heron *E. caerulea*) near the islet in past years, and on 23 Feb 2020 saw one Little Blue Heron fly to the islet with nesting material. I was unable to find a nest and suspect it was alone, but its behaviour demonstrates the attraction of the islet for colonially nesting herons.

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