

Notes on the Nesting Behavior of *Nycticorax caledonicus* (Ardeidae) on a Planted Forest

**REYNALDO TABABA, MAE FLOR POSADAS,
MARY ANN DAGUNAN**

*Central Philippine State University
Kabankalan City, Negros Occidental, Philippines*

ELY ALCALA*, ABNER BUCOL

alcala_ely@yahoo.com

Silliman University Angelo King

*Center for Research and Environmental Management
Dumaguete City, Philippines*

Abstract

Observations on the roosting and nesting behavior of the Rufous Night-Heron *Nycticorax caledonicus* was conducted over a period of eight years since the arrival of the first few individuals in the afforested campus of the Central Philippine State University in Kabankalan City, Negros Occidental, Philippines. About 100 individuals were found roosting and nesting on tall decades-old Mahogany (*Sweitenia macrophylla*) and other tree species. Nesting appears to occur at least twice a year with some nests repeatedly used by the original nesting individuals. Nest-guarding was usually participated by two individuals and becomes less intensive as the fledglings grow older. Preferred nesting trees are emergents which include exotic species like *Gmelina arborea*. The Mahogany-dominated habitat continuous to attract more individuals since the first pair established their nest in 2005.

Keywords: avifauna, nesting behavior, *Nycticorax caledonicus*, direct observation, Negros Island, Philippines

Introduction

Night-Herons of the genus *Nycticorax* (Family Ardeidae) are among the largest and ubiquitous wetland birds in Southeast Asia, with a distributional range from Java to New Guinea, Australia, New Zealand and southwest Pacific regions of Lesser Sundas, Moluccas, Sulawesi, Borneo, and the Philippines (Kennedy et al., 2000). Two races are found in the Philippines, *Nycticorax caledonicus* manillensis (resident) and *Nycticorax caledonicus* major (a country endemic), which includes Negros Island as its range but replaced by the former in Panay (Kennedy et al., 2000).

Although the biology of the Rufous Night-Heron is fairly well-known, records of the species inhabiting afforestation sites is not well documented. This paper describes the nesting behavior of *Nycticorax caledonicus* in an afforestation site located at the Central Philippine State University (CPSU) campus in Kabankalan City.

Description of the Study Site

The study was conducted in a 30-year old afforestation site (9°51'6.45"N, 122°53'17.43"E) planted primarily with Mahogany (*Sweitenia macrophylla*) and to a lesser extent with Bangkal trees (*Anthocephalus chinensis*). A few stand of native trees and some recently introduced fast-growing species like *Gmelina arborea* also grow in the area. The forest patch is bounded by the school ball field at the northeast, by croplands at the south, and by residential houses at the west and northwest portions of the forest (Fig. 1). The area inhabited by the Rufous Night-Heron is about 3.9ha, which is approximately three fourths of the afforestation site. Only this particular site was observed to be inhabited by the Rufous Night-Heron during the study period.



Fig. 1 Afforestation habitat (white perimeter line) of the Rufous Night-Heron at NSCA campus. Source: Google Earth 2012.

Materials and Methods

The species was identified as *Nycticorax caledonicus* major, based on live captures and descriptions provided by Kennedy et al. (2000) and Fisher and Hicks (2001). The roosting and nesting behavior of the species were randomly noted at an opportunity basis while counts on eggs and hatchlings were directly confirmed at close range. The nests were occasionally visited at least once a week by climbing over the trees and inspecting them at close range, until the eggs hatched (circa 4 weeks). Observations on nest guarding were done at a distance, either from another tree or directly below the tree using a pair of binoculars. Nest observation focused on 20 nests or nesting trees and was mostly done by the principal author, Reynaldo Tababa, from 2008-2012.

RESULTS AND DISCUSSION

Roosting and feeding behavior

The observations on the behavior of *N. caledonicus* majorly conform with Kennedy et al. (2000) accounts of the species roosting in large numbers in trees and foraging in the wetlands. It appears that the Rufous Night-Heron inhabit forest patches that provide protection against human disturbance. *N. caledonicus* and *N. nycticorax* have been observed to inhabit afforested areas in Nasidman Island off Ajuy, Iloilo (Bucol and Averia, pers. comm.). In 2011, the Wild Bird Club of the Philippines (WBCP) (Lu, pers. comm.) documented a similar colony of both species in the vicinity of the Manila Zoo. Five *N. caledonicus* individuals were also observed by one of the authors in the vicinity of the mangrove garden at the Silliman University Marine Laboratory on September 2011, about 100 kms east of CPSU. Moreover, about 50 individuals were also documented by Bucol et al. (2010) roosting in the mangrove reforestation site in Cavan, Pulpandan, Negros Occidental.

The birds in CPSU have been observed feeding in the nearby Ilog river (ca 3 kms from the campus habitat) and in the surrounding rice fields and streams in the campus. They leave their roosts around late afternoon, between 6:00 to 6:30 P.M. and return in the early morning at around 3:00 to 4:00 A.M. Their diet appear to comprise of swamp eels (*Synbranchus* sp.), freshwater eels (*Anguilla marmorata*), Nile Tilapia (*Oreochromis niloticus*), and mullets (Family Mugilidae), which are species commonly found in the nearby Ilog River. The authors found several of these species abandoned and partially eaten at the base of their roosting trees.

Nesting behavior

About 100 adult individuals were estimated to roost and nest in the area since a pair arrived and laid eggs in

2005. The increase in number has been attributed to the settlement of additional adult individuals coming from other places and individuals borne in the area. No less than 30 individuals were estimated to be borne in the area since the start of the observation in 2005.

The CPSU herons appear to nest year-round with some nests repeatedly used by the same breeding individuals. The authors observed several old eggshells under some nesting trees which were often occupied by hatchlings of different batches (Figs. 2a and 2b, Table 2).

A nesting female can lay one to three eggs but usually produces only a pair of hatchlings (Table 2). It is not apparent how long the fledglings stay with the parents, but on several occasions fledglings have been observed to hang around their nesting trees for several months (3-5 mos).



Fig. 2a & 2b Eggshells retrieved from one of the nesting sites (left) and photo of a young Rufous Night-Heron captured from the study site (right).

In addition to this, nest guarding was also observed. This was usually participated by 2-3 individuals simultaneously watching over or standing close to the nest (ie. about 1-3 meters from the egg or hatchling). Nest guarding becomes less participated as the fledgling grows older and in some instances is undertaken only by a single adult. It is however, not known whether the extra number of individual guarding the nest, during the early part of nest guarding, is a member of the family.

Nesting trees and nest characteristics

The nesting trees of the Rufous Night-Heron appear to stand out from the regular roosting trees. These were mostly tall Mahogany trees that have “emerged” over the other trees which are occupied by non-breeding roosting individuals. Other roosting and nesting trees include *Gmelina arborea*, *Samanea saman*, *Pterospermum equisitifolia*, and *Alstonia scholaris*. Some of these trees were located close to residential houses. A list of nesting trees and their descriptions are presented in Table 1.

Table 1 List and description of four species of trees (N=20) used by the herons for nesting.

Tree species	No. of trees observed	Approximate height of the tree from the ground(m)	Crown characteristics mounted by the nest
<i>Sweitenia macrophylla</i>	16	25-30	Dominant crown
<i>Pterospermum equisitifolia</i>	1	>30	Dominant crown
<i>Gmelina arborea</i>	2	circa 25	Dominant crown
<i>Alstonia scholaris</i>	1	circa 25	Dominant crown
N=20			

The nests were all built on the crown tops of tall trees (circa 25-30 m above ground) belonging to the Class 1 Dominant Tree Classification which have strong apical crown twigs and branches, and crown tops fully exposed to sunlight (refer to Kraft, 1884). The exposed tops of the trees appear to provide easy access to the nest while the strong apical branches help support the heavy nests.

The nest size average around 40 cm in diameter (at its widest brim) and 4 cm deep. They were made of loosely piled twigs, vine strands, and thin branches. The thin branches, which form the bulk of the nests, were observed to be sourced by nest-building individuals from pine trees (*Cassuarina equisitifolia*) growing in the area. Because of the loose arrangement of the nest materials, the contents of the nest can sometimes be seen partly from the ground with a pair of binoculars. Nest building can take from one

to two weeks to complete. Egg laying usually follows within the week.

A total of 34 nests were observed during the period 2005 up to early 2012 (Table 2). The total number of eggs observed was 64 while only 32 hatchlings were observed from the eggs produced. The total number of eggs observed did not correspond to the expected number of hatchlings for two reasons. One reason is the presence of sterile eggs which failed to develop. The authors suspect that the absence of hatchling in some nests containing broken eggs may be attributed to predation. Conversely, the first nest observed in 2005 produced hatchlings without prior detection of eggs in the nest. The hatchlings were traced from the nest based on the presence of fresh broken eggshells found under the nesting tree.

The authors estimate that the breeding period of the species can cover the early (February to April) and later months (September to December) of the year (Table 2). Mating has been observed during the months of February and September. The incubation period was also estimated between 27-29 days (Mean=28 days).

Table 2. Number of nests, eggs, and hatchlings observed from 2005-2012.

Date of Observation	No. of nest observed	No. of eggs observed	No. of hatchlings observed	Remarks
September 2005	1	Not detected	2	Did not see the eggs but observed the hatchlings
March 2008	3	7	none	No sign of hatchling despite presence of broken eggshells below the nesting trees. At least one egg was found sterile and devoid of embryo. One nest appears to be used more than once
March 2011	7	10	4	Only two of the five nests observed bore hatchlings
September 2011	11	22	20	Two of the eleven nests produced one hatchling each. Some nests bore signs of repeated use.
April 2012	12	25	6	Twenty five eggs were observed in twelve nests. Except for one nest containing three eggs, the rest had two eggs. Only six hatchlings were successfully hatched from three nests.
total	34	64	32	

Potential threat to the species

Although hunting has not been observed in the CPSU campus, the Rufous Night-Heron in CPSU may be subjected to hunting when they forage to other places. A wounded *N. caledonicus* was found by R. Tababa outside his house in February, 2012. Earlier to this, in September 2011, one juvenile and one adult skeletal remains were found below two separate trees in the roosting site. The authors suspect that both were victims of hunting.

Conclusion and Recommendations

The afforestation site beside in the CPSU campus is a potential habitat for the Rufous Night-Heron. The study documented the use of tall trees, including exotic species, by night herons for roosting and nesting. The high number of individuals nesting in this forest patch warrants the protection of the area and the monitoring of the population. Annual counts can be undertaken by the forestry students (as part of their subject) to determine change in population. In addition to this, there is a need to conduct IEC (information, education and communication) in the area so that local people, especially hunters, are informed and persuaded to conserve wildlife species and protect wildlife habitats in the area. The latter can be undertaken by the education and information technology students as part of their course activity.

Acknowledgements

We are thankful to Drs. Angel C. Alcala and Orencio Lachica (former Director and Asst. Directors of Silliman University-CHED Zonal Research Center, respectively) for facilitating the funding of the Campus Afforestation Project, which is administered by the Central Philippine Adventist College (CPAC), in collaboration with Silliman University in Dumaguete City and Central Philippine State University (CPSU).

References

- Bibby, C., M. Jones and S. Marsden (1998) *Expedition Field Techniques: Bird Surveys*. Royal Geographic Society, London.
- BirdLife International (2008) *Threatened Birds of the World*. CD-ROM.
- Bloem, A. (2007) Asian Waterbird Census, Brunei Darussalam. *Newsletter of the Asian Waterbird Census* No.13, June 2007.
- Brooks, T.M., T.D. Evans, G.C. Dutton, G.Q.A. Anderson, D.C. Asane, R.J. Timmins and A.G. Toledo (1992) *The conservation status of the birds of Negros, Philippines*. *Bird Conservation International* 2: 273–302.
- Bucol, A., L. Averia, R. Bacosa, S. Banggoy, C. Menes, J. Linaugo, & A. Dales (2010) An avifaunal survey in selected sites along Bago River, Negros Occidental, Philippines. *Silliman Journal*. 50 (2): 41 – 52.
- Ebreo, M.F. (1993) Biology of purple heron (*Ardea purpurea manillensis*) and the preservation of Samponong Bolo (Sara, Iloilo Province, Philippines) as its sanctuary. *Asia Life Sciences* 2 (2): 149 – 162.
- Fisher, T. & N. Hicks (2001) *A Photographic Guide to the Birds of the Philippines*. Ralph Curtis Publishing.
- Kennedy, R.S., P.C. Gonzales, E.C. Dickinson, H.C. Miranda, Jr. & T.H. Fisher (2000) *A Guide to the Birds of the Philippines*. Oxford University Press. 369p.
- Kraft, G.: *Zur Lehre von den Durchforstungen, Schlagstellungen und Lichtung-shieben*, Hannover, 1884[from Denger, 1944).