

Status of the Vertebrate Fauna in Selected Sites of Pagatban River, Negros Oriental, Philippines

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An assessment on the status of the vertebrate fauna of Pagatban River in southwestern Negros Island was conducted from February to April and August to November 2010 using purposive sampling techniques. There were 82 species of birds, eight species of amphibians, 14 species of reptiles, and nine species of mammals observed. Data on the population estimates of the Endangered Limestone Frog *Platymantis spelaeus* is also presented. The Philippine Crocodile *Crocodylus mindorensis* is probably extinct in the area.

KEYWORDS: Negros Island, Pagatban River, status, vertebrates

INTRODUCTION

The Philippines is well known for its terrestrial vertebrate diversity and endemism (Heaney, 1998; Ong, Afuang, & Rosell-Ambal, 2002; Brown & Diesmos, 2009). Negros Island has a share of this rich biodiversity, and is home to several endemic species and subspecies of terrestrial vertebrates (Brown & Alcala, 1978, 1980; Brooks et al., 1992; Alcala, Alcala, & Dolino, 2004; Alcala & Alcala,

2005). However, there is only about 4% of forest left on Negros (Peterson, Ball, & Brady, 2000), and may continue to decline as most of the lowland forests have been cleared for various reasons including shifting agriculture and illegal timber poaching.

Brooks et al. (1992) summarized the studies on the land vertebrates done on Negros prior to 1991 (e.g. Alcala & Carumbana, 1980). Subsequent works include Paalan (1993) in Cuernos de Negros, Paguntalan et al. (2000) in various sites of Negros. Paguntalan et al. (2002) in Banban, Ayungon, and Paalan et al. (2004) in Cauayan, Negros Occidental. In the northern part of Negros, Turner et al. (2002, 2003) summarized the studies done in the area. Several birding trips have also been done, including Woods et al. (2003) and WBCP in 2007, listing the species in selected sites.

This report on the terrestrial vertebrates of Pagatban River in the southwestern Negros Island will contribute to the inventory of certain groups of animals associated with this river system. The inventory is presented to serve as a baseline for measuring future changes in faunal composition in the area. Other aspects of this project (i.e., socio-economic, physico-chemical, fishes and macrobenthos and riparian vegetation) will be reported separately.

METHODS AND MATERIALS

Description of the Survey Stations

Three survey locations were established, in the upper reaches (Cabigtian), middle segment (Aya-aya), and lower reaches (Pagatban-Actin area) of the river. These were designated as stations 1, 2, and 3, respectively (Figure 1).

The vegetation in Station 1 is predominantly composed of exotic trees used in reforestation projects in the area such as gmelina (*Gmelina arborea*), mahogany (*Swietenia macrophylla*), and mangium (*Acacia mangium*). About 300m from the river is an abandoned mining pond formerly owned by the Construction and Development Corporation of the Philippines (CDCP), a mining company. The surrounding area of the pond has been converted by the locals to rice paddies. Cutting of trees for charcoal production was also observed in the area.

Station 2 (Aya-aya) has steep karst topography. Most of the area is privately-owned and planted with mahogany, gmelina and coconuts, except in steep slopes where some karst-adapted trees like *Ficus*, alum

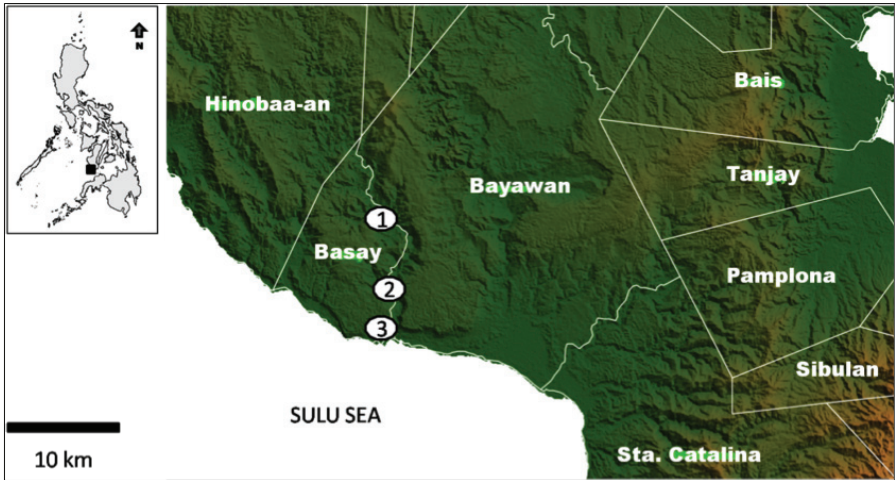


Figure 1. Map of Negros Oriental showing the locations of the sampling stations along the Pagatban River.

(*Macaranga tanarius*), and *Alstonia sp.* remain.

Station 3 is mainly of agricultural-plantation type. Coconuts and other fruit-bearing trees like mangoes (*Mangifera indica*) are also common. Some mangroves and associates such as *Nypa fruticans*, *Avicennia marina*, *A. officinalis*, *Pandanus tectoreus*, and *Terminalia catappa* (talisyay) were also noted near the mouth of the river.

Field Techniques

Birds were surveyed using transect walk method (MacKinnon & Philips 1993; Bibby, Jones, & Marsden, 1998) with the aid of binoculars for identification using the field guide *Birds of the Philippines* by Kennedy et al. (2000). In addition, calls of some birds were recorded either using a digital (Sony®) MP3 recorder or a TCM-Sanyo® microcassette recorder for verification and documentation purposes. List of birds follows the sequence in Kennedy et al. (2000).

Bats were surveyed using mist nets (same nets as utilized for bird surveys). Taxonomic identification followed Ingle and Heaney (1992) for bats while Heaney (1998) was used for both bats and non-volant mammals.

The reptiles and amphibians were surveyed mainly through cruising (as used by Alcalá et al., 2004; Alcalá & Alcalá, 2005). Identification of amphibians followed Alcalá and Brown (1998) while

that of reptiles follow Brown and Alcala (1978, 1980), Alcala (1986) and Herpwatch Philippines (HWP, 2008).

Surveys on the population density of the Negros Limestone (Cave) Frog *Platymantis spelaeus* in limestone forest patches were carried out in Stations 2 and 3 using plotting method (10m x 10m quadrats) during rainy nights.

Ethnobiological surveys

Reliable community members were also interviewed through informal oral interviews to supplement data obtained from the field.

RESULTS

Avifauna

A total of 82 species of birds (Table 1) were recorded from the three survey stations, two of which are currently recognized as threatened species by the International Union for the Conservation of Nature (IUCN), according to BirdLife International (2008). These species are the Philippine Duck *Anas luzonica* and the Visayan Flowerpecker *Dicaeum haematostictum*, both are currently categorized as Vulnerable. Majority of the species are country residents (49 species), the remaining species are migrants (16 species) and Philippine endemics (11 species).

Stations 1 and 2 had higher species (61 and 62, respectively) than Station 3 with only 52 species. The high species diversity in Station 1 could be attributed to the presence of an abandoned mining pond with surrounding reed beds which are favorable to waterbirds (ducks, moorhen, crakes, and rails). It should be noted that in Station 2, the majority of the species are forest birds.

Mammalian Fauna

Only nine species of mammals are known in the three survey stations, consisting of seven volant mammals (bats) and only two non-volant mammals (rodents) (Table 2). All nine species were observed in Station 3 while seven species were found in Station 1 and only five species in Station 2. The palm civet cat *Paradoxurus hermaphroditus* was also reported by local hunters in Stations 1 and 2. Insectivorous

Table 1.

Species of birds known from the three stations of Pagatban River. Note: Status follows Kennedy et al. (2000) and BirdLife International (2008); PE—Philippine endemic; R—resident; M—migrant; R/M—resident migrants; Vu—Vulnerable; (X)—present

Family	Species	Common Name	Station 1 (Cabig-tian)	Station 2 (Aya-aya)	Station 3 (Pagatban)
Anatidae	<i>Anas luzonica</i>	Philippine Duck	PE, Vu	X	
Ardeidae	<i>Ixobrychus sinensis</i>	Yellow Bittern	M	X	X
	<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron	M	X	
Sternidae	<i>Nycticorax caledonicus</i>	Rufous Night-Heron	R		X
	<i>Butorides striatus</i>	Striated Heron	R/M		X
	<i>Bubulcus ibis</i>	Cattle Egret	R/M	X	X
	<i>Egretta garzetta</i>	Little Egret	M	X	X
	<i>Chlidonias hybridus</i>	Whiskered Tern	M	X	X
Accipitridae	<i>Haliastur indus</i>	Brahminy Kite	R	X	X
Rallidae	<i>Gallirallus torquatus</i>	Barred Rail	R	X	X
	<i>Porzana cinerea</i>	White-browed Crane	R	X	X
Scolopacidae	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	R	X	X
	<i>Gallinula chloropus</i>	Common Moorhen	R/M	X	X
	<i>Actitis hypoleucos</i>	Common Sandpiper	M	X	
	<i>Gallinago megala</i>	Swinhoe's Snipe	R	X	
	<i>Turnix suscitator</i>	Barred Buttonquail	R	X	
Phasianidae	<i>Gallus gallus</i>	Red Junglefowl	R	X	X
Charadriidae	<i>Coturnix chinensis</i>	Blue-breasted Quail	R	X	
	<i>Charadrius dubius</i>	Little Ringed Plover	R/M	X	X
Columbidae	<i>Treron vernans</i>	Pink-necked Green Pigeon	R	X	X
	<i>Geopelia striata</i>	Zebra Dove	R	X	X
	<i>Streptopelia bitorquata</i>	Island Collared-dove	R	X	X
	<i>Streptopelia chinensis</i>	Spotted Dove	R	X	X

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Family	Species	Common Name	Station 1 (Cabig-tian)	Station 2 (Aya-aya)	Station 3 (Pagatban)
	<i>Chalcophaps indica</i>	Emerald Dove	R	X	X
	<i>Phapitreron leucotis</i>	White-eared Brown Dove	PE	X	X
	<i>Ptilinopus leclancheri</i>	Black-chinned Fruit Dove	PE		X
Cuculidae	<i>Cacomantis merulinus</i>	Plaintive Cuckoo	R		X
	<i>Cacomantis variolosus</i>	Brush Cuckoo	R		X
	<i>Cuculus fugax</i>	Hodgson's Hawk-Cuckoo	M		X
	<i>Centropus viridis</i>	Philippine Coucal	PE	X	X
	<i>Eudynamis scolopacea</i>	Common Koel	R	X	X
Strigidae	<i>Ninox philippensis</i>	Philippine Hawk-Owl	PE	X	X
Caprimulgidae	<i>Caprimulgus manillensis</i>	Philippine Nightjar	PE	X	X
Apodidae	<i>Collocalia esculenta</i>	Glossy Swiftlet	R	X	X
	<i>Collocalia troglodytes</i>	Pygmy Swiftlet	PE	X	X
	<i>Hirundapus celebensis</i>	Purple Needletail	M		X
Alcedinidae	<i>Halcyon chloris</i>	White-collared Kingfisher	R	X	X
	<i>Halcyon smyrnenis</i>	White-throated Kingfisher	M		X
	<i>Ceyx lepidus</i>	Variable Dwarf-Kingfisher	M		X
	<i>Alcedo atthis</i>	Common Kingfisher	M	X	X
Meropidae	<i>Merops philippinus</i>	Blue-tailed Bee-eater	R	X	X
	<i>Merops viridis</i>	Blue-throated Bee-eater	R	X	X
Capitonidae	<i>Megalaima haemacephala</i>	Coppersmith Barbet	R	X	X
Pittidae	<i>Pitta sordida</i>	Hooded Pitta	R	X	X
Sylviidae	<i>Gerygone sulphurea</i>	Golden-bellied Gerygone	R	X	X
	<i>Phylloscopus borealis</i>	Arctic Warbler	M		X

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Family	Species	Common Name	Station 1 (Cabig-tian)	Statio 2 (Aya-aya)	Station 3 (Pagatban)
	<i>Acrocephalus orientalis</i>	Oriental Reed-Warbler	M	X	
	<i>Megalurus palustris</i>	Striated Grassbird	R	X	X
	<i>Megalurus timoriensis</i>	Tawny Grassbird	R	X	
	<i>Locustella ochotensis</i>	Middendorff's Grasshopper-Warbler	M	X	
	<i>Orthotomus castaneiceps</i>	Philippine Tailorbird	PE	X	X
Artamidae	<i>Artamus leucorhynchus</i>	White-breasted Wood-swallow	R	X	X
	<i>Lalage nigra</i>	Pied Triller	R	X	X
Campephagidae	<i>Lanius cristatus</i>	Brown Shrike	M	X	X
Laniidae	<i>Lanius schach</i>	Long-tailed Shrike	R	X	
Oriolidae	<i>Oriolus chinensis</i>	Black-naped Oriole	R	X	X
Corvidae	<i>Corvus macrorhynchos</i>	Large-billed Crow	R	X	X
Dicruridae	<i>Dicrurus balicassius</i>	Balicassiao	PE	X	X
Motacillidae	<i>Anthus novaeseelandae</i>	Richard's Pipit	R	X	X
Monarchidae	<i>Hypothymis azurea</i>	Black-naped Monarch	R	X	X
Hirundinidae	<i>Hirundo tahitica</i>	Pacific Swallow	R	X	X
	<i>Hirundo rustica</i>	Barn Swallow	M	X	X
	<i>Hirundo daurica</i>	Red-rumped Swallow	M	X	
Gisticolidae	<i>Gisticola exilis</i>	Bright-capped Cisticola	R	X	
	<i>Gisticola juncoidis</i>	Zitting Cisticola	R	X	
Muscicapidae	<i>Muscicapa griseisicta</i>	Grey-streaked Flycatcher	M	X	X
	<i>Gyornis rufigastera</i>	Mangrove Blue Flycatcher	R	X	X
	<i>Rhipidura javanica</i>	Pied Fantail	R	X	X
Pycnonotidae	<i>Pycnonotus goiavier</i>	Yellow-vented Bulbul	R	X	X

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Family	Species	Common Name	Station 1 (Cabig-tian)	Station 2 (Aya-aya)	Station 3 (Pagatban)
Sturnidae	<i>Ixos philippinus</i>	Philippine Bulbul	PE		X
	<i>Aplonis panayensis</i>	Asian Glossy Starling	R	X	X
	<i>Sarcops calvus</i>	Coleto	R	X	X
Turdidae	<i>Copsychus saularis</i>	Oriental Magpie-Robin	R	X	X
	<i>Saxicola caprata</i>	Pied Bushchat	R	X	
Dicaeidae	<i>Dicaeum haematastictum</i>	Visayan Flowerpecker	PE, Vu		X
	<i>Dicaeum trigonostigma</i>	Orange-bellied Flowerpecker	R	X	X
Zosteropidae	<i>Zosterops nigrorum</i>	Yellowish White-eye	R	X	X
Nectariniidae	<i>Nectarinia jugularis</i>	Olive-backed Sunbird	R	X	X
	<i>Aethopyga siparaja</i>	Crimson Sunbird	R	X	
Ploceidae	<i>Passer montanus</i>	Eurasian Tree Sparrow	R	X	X
Estrildidae	<i>Lonchura malacca</i>	Chestnut Munia	R	X	X
38 Families	82 species			61 sp.	52 sp.

Table 2.

Mammals observed in three stations from March to November, 2010.

Note: En—Endangered; Vu—Vulnerable; X—present

Family	Species	Common Name	Station 1 (Cabig-tian)	Statio 2 (Aya-aya)	Station 3 (Pagatban)
Pteropodidae	<i>Cynopterus brachyotis</i>	Common Short-nosed Fruit Bat	X	X	X
	<i>Macroglossus minimus</i>	Dagger-toothed Flower Bat	X	X	X
	<i>Ptenochirus jagori</i>	Musky Fruit Bat	X	X	X
	<i>Eonycteris spelaea</i>	Common Nectar Bat		X	X
	<i>Rousettus amplexicaudatus</i>	Common Rousette	X		X
	<i>Pteropus pumilus</i> , Vu	Little Golden-mantled Flying Fox	X		X
	<i>Nyctimene rabori</i> , En	Tube-nosed Fruit Bat			X
Muridae	<i>Rattus tanezumi</i>	Oriental House Rat	X	X	X
Soricidae	<i>Suncus murinus</i>	Asian House Shrew	X		X
3 Families	9 species		7 sp.	5 sp.	9 sp.

bats were also seen at dusk (around 6:00 pm) in all stations but were not captured.

Two threatened species (based on IUCN 2010) of bats, *Nyctimene rabori* (Endangered) and *Pteropus pumilus* (Vulnerable) were caught with mist-nets during the dry season (March-April 2010) but were no longer captured during the wet season (August-September 2010). Five individuals of the Tube-nosed Fruit Bat *Nyctimene rabori* were captured near a fruiting “Aya/dalakit” tree (*Ficus baletae*) adjacent to the Pagatban River in Station 3.

Table 3.

Checklist of amphibians and reptiles observed in the three stations of Pagatban River. Note: En—Endangered

Family	Species	Common Name	Station 1 (Cabig-tian)	Statio 2 (Aya-aya)	Station 3 (Pagatban)
Bufo	<i>Rhinella marina</i>	Giant Marine Toad	X	X	X
Ceratobatrachidae	<i>Platymantis spelaeus</i> , En	Negros Cave Frog		X	X
	<i>Platymantis dorsalis</i>	Common Forest Frog	X		
Ranidae	<i>Rana erythraea</i>	Common Green Frog	X		
	<i>Fejervarya vittigera</i>	Luzon Wart Frog	X		
	<i>Fejervarya cancrivora</i>	Asian Brackish Water Frog			X
Racophoridae	<i>Polypedates leucomystax</i>	Common Tree Frog	X	X	
Microhylidae	<i>Kaloula conjuncta</i>	Truncate-digit Chorus Frog	X		X
Bataguridae	<i>Cuora amboinensis</i>	Malayan Fresh-water Turtle	X		X
Agamidae	<i>Hydrosaurus pustulatus</i>	Sailfin Water Lizard	X	X	X
	<i>Draco spilopterus</i>	Common Flying Lizard			X
Varanidae	<i>Varanus nuchalis</i>	Water Monitor Lizard	X	X	X
Gekkonidae	<i>Cosymbotus platyurus</i>	Flat-bodied House Gecko	X		X
	<i>Hemidactylus frenatus</i>	Common House Gecko	X		X
	<i>Gekko gekko</i>	Tokay Gecko	X	X	X
	<i>Gekko mindorensis</i>	Mindoro Narrow-disked Gecko			X

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Table 3. (Continued...)

Checklist of amphibians and reptiles observed in the three stations of Pagatban River.
 Note: En-Endangered

Family	Species	Common Name	Station 1 (Cabig-tian)	Statio 2 (Aya-aya)	Station 3 (Pagatban)
Scincidae	<i>Mabuya multifasciata</i>	Common mabouya	X	X	X
	<i>Lamprolepis smaragdina</i>	Common Tree Skink	X	X	X
Boidae	<i>Python reticulatus</i>	Reticulated Python	X		
Colubridae	<i>Dendrelaphis caudolineatus terrificus</i>	Striped Bronze Back	X	X	
	<i>Lycodon capucinus</i>	Wolf Snake	X		
	<i>Oxyrhabdium modestum</i>	Shrub Snake	X		
12 Families	22 species		18 spp.	9 spp.	13 spp.

Herpetofauna

There were 22 species of herpetofauna documented during the study (Table 3). Between stations, Cabigti-an (Station 1) had the highest number of species with 14 species followed by Station 3 with 13 species while Station 2 had the lowest number with only eight species. Of the 22 species, eight are amphibians including the Endangered Negros Limestone Forest Frog *Platymantis spelaeus*. The species was observed in the karst forest in Station 3 on a rainy night (95-100% humidity) of 17 April 2010 with an estimated density of 250-300 individuals per hectare based on the number of calling males heard. In August 2010, the species was heard consistently from 6:00pm to 9:00pm even in the absence of rain, probably coinciding with the species' mating season. The species was also heard in the fragmented karst forest in Station 2 during August and September surveys but of lower densities (ca. 200 individuals per hectare at 100% relative humidity). As far as can

be ascertained, the density of *P. spelaeus* at 100% relative humidity (based on the number of calling males) in the karst forest in station 3 was between 250-300 individuals per hectare. The current estimate is lower than as reported by Alcala et al. (2004) and Alcala and Alcala (2005). In Station 1, another frog species (*Platymantis dorsalis*) was consistently heard from August to November 2010. Juveniles of the ranid frog *Fejervarya vittigera* were also observed in the same station.

The remaining 14 species include one species of turtle (*Cuora amboinensis*), two agamids (*Hydrosaurus pustulatus* and *Draco spilopterus*), one monitor lizard (*Varanus nuchalis*), four gekkonids (including *Gekko mindorensis*), two skinks (*Mabuya multifasciata* and *Lamprolepis smaragdina*), and four snakes (e.g. *Dendrelaphis caudolineatus*). The Philippine Crocodile *Crocodylus mindorensis* which used to inhabit Pagatban River (Ross & Alcala, 1983) is probably extinct in the area.

DISCUSSION

Although the riparian vegetation in our study area is mainly degraded, the certain forest patches, especially on karst, still support a number of forest-dwelling species. It has been established that karst or limestone habitats support endemic vertebrate species (Clements et al., 2006; Siler et al., 2007, 2009, 2010). In this study, the Negros Limestone Frog *Platymantis spelaeus* was found only in the karst habitats while its congener *P. dorsalis* was found in a non-karst habitat. This pattern was also reported by Alcala et al. (2004).

Most of the bird species are known to thrive in degraded habitats such as agricultural forests, scrubs, and grassland (Kennedy et al., 2000). The threatened fruit bat *Nyctimene rabori* was captured in a degraded coastal forest in Station 1 probably while foraging on fruiting *Ficus baletae*. Contrary to our observation, Heaney and Peterson (1984) assumed that this fruit bat is "a relatively uncommon bat in upland dipterocarp forest and apparently absent outside of forested regions, and may be typically a high-canopy forest species."

The abandoned mining pond in Cabigtian is a habitat for some water birds, including the threatened Philippine Duck *Anas luzonica* and some migratory species (e.g. *Actitis hypoleucos*). The estuarine area also harbors migratory shorebirds such as Egrets (*Egretta garzetta*), Striated Heron (*Butorides striatus*), and plovers (*Charadrius spp.*). Except for *E. garzetta*, which has a population that may remain in the country after the northward migration season (Kennedy et al., 2000),

these migratory bird species were not observed during the months of May through July.

Human activities, particularly farming and charcoal production, are ongoing and therefore pose as a primary threat to the remaining habitats of vertebrates in the area.

SUMMARY AND CONCLUSION

Preliminary assessment on the vertebrate fauna of Pagatban River indicates that in three survey stations, there are 82 species of birds, nine species of mammals, and 22 species of herptiles (amphibians and reptiles). There were five threatened species observed, including two species of birds (*A. luzonica* and *D. haematostictum*), two species of mammals (*P. pumilus* and *N. rabori*), and one species of frog (*P. spelaeus*).

The Philippine Crocodile (*Crocodylus mindorensis*), however, was not encountered and is probably extinct in the area.

We hope that the presence of endemic and threatened species in the study area would eventually stimulate the concerned local government units and local non-government organizations to help preserve the species and their habitats.

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