

• Terrestrial Fauna of Tinago Falls

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I Introduction

Wetland areas like rivers, marshes and lakes have an international significance as winking and feeding sites of many species of birds like waders, herons and other forms of wildlife. About 14 kilometers northwest of Iligan City, Tinago Falls can be found (Fig 1.). Tinago means "hidden," i.e., Tinago Falls cannot be seen easily because in its location it is not visible from the banks of the Linamon River, of which it is part, but it is considered one of the most beautiful tourist destinations of the city.

Residents nearby have told the researcher that in the area there are species of birds which they could not identify and which come only in the months of October to November and remain there until February or March. In fact at a meeting with the Iligan City Tourism personnel, the researcher was told that no recording of the flora and fauna of the said falls has yet been made. It may be mentioned in this connection that there is an on-going construction of a resort in the area, which could disturb the wildlife and their habitat. For these reasons, this study was conducted.

II Importance of the Study

This study is considered timely in view of the fact that some of the faunal species in the country are in the brink of extinction. Many others have gone forever and are a permanent loss to our natural heritage. Furthermore, our tourism office has no record yet of the different faunal species and their distribution in the area. Finally, knowledge derived from this undertaking is essential to paving the way for the conservation of the faunal species in Tinago Falls.

III Objectives

1. To identify the various faunal species existing in Tinago Falls;
2. To observe and study its ecology; and
3. To provide data for further studies.

Methodology

Faunal inventory of Tinago Falls under study was conducted with the use of a standard mist netting/trapping (Fig. 2), direct observations or sightings and ethnobiological interviews (Fig. 2A).

All the needed data were meticulously collected during the day and night of fieldwork from November 28, 1994 to December 8, 1994. It was done within four (4) Sampling Stations established on the study area covering both sides of Linamon River. At Station #1, the topography of the area was generally rolling, with presence of rocks and a coconut plantation. Station #2 was hilly terrain, with dense vegetation, some big trees at the cliff of the river, boulders and stones and rattan species with coconut and corn plantation. At Station #3, the terrain was planted with coconut and corn, with bamboos and Station #4 was planted with corn, coconuts and fruit-bearing trees.

Procedure

After the establishment of the different sampling sites or stations during the study period, collection of data began. At each sampling site, lines of mist nets and traps were set at intervals of 30 meters from one net to another (Fig. 2). Furthermore, the investigator together with his two Field Assistants made additional observations. To obtain a reliable census of faunal species in the area, the residents of the place or perimeter were also interviewed in order to gather more information as to what animals they have seen at the time of their stay in the place.



Fig. 1 Mounting of Traps and Nets

Mist Netting/Trapping

Avifaunal species were sampled by mist nets. The nets used measured 2.5 meters x 6 meters with 36 mm mesh size. Samples of rodent species were taken by the use of traps. The traps measured 9 cm x 30 cm with 10-mm mesh size.

A 500-meter transect line was drawn along an existing trail inside each sampling/netting site. Mist nets were set up or positioned for each transect zone with regular spacing within a net line. Some nets were placed end to end in a straight line, while other adjacent nets were mounted at 30-meter intervals.

The bottom edge of the lowest net panel of some nets were set attached to the ground, one meter above the ground and four to five meters above the ground, respectively, to ensure efficient catching of air and ground dweller birds.

In the November 28 to December 3, 1994 fieldwork, eight mist nets were used, while in the December 4 to December 8, 1994 fieldwork, six mist nets and eighteen rat traps were made to operate for three continuous netting and trapping days. All operational nets and traps were left open for 24 hours to catch diurnal and nocturnal species of birds and mammals. All mist nets and traps were checked at least once in every 45 minutes or one hour. Sometimes the gaps between each checking time was made closer during daytime.

Animals captured were identified and the number of individuals captured per species was recorded. Individual birds captured were marked by clipping their tail feathers, while bats were marked by banding with the use of a notebook spring to their right hind foot. This marking procedure was done similarly on rats to avoid repeated recording of species in case of recapture.

Immediately after the identification and recording, all captured species were released. However, species that could not be identified in the field were brought to the MSU Natural Science Museum for verification and were released after identification and recording.

Observation Methods

Actual observations of birds, mammals, reptiles and amphibians were made in addition to the mist netting and trapping. These were carried out from 4:30 a.m. to 10:00 a.m. and 1:30 p.m. to 5:00 p.m. at daytime and from 5:30 p.m. to 9:00 p.m. The 500-meter transect line drawn for mist netting was utilized for this purpose. These observations were carried out within 500 meters from both sides of the transect line and another 500 meters from both ends of the line. All birds, mammals, reptiles and amphibians seen during the study period were identified and recorded. In addition, birds heard singing or calling in each habitat were also identified and recorded and their abundance qualified.

To qualify the information gathered, "abundance measures" used by Goodman and Gonzales (1990) and the semi-quantitative scaling technique of Stiled (1985), as cited and used by Paalan (1996), were adopted in this survey. The following "abundance measures" were used in this survey:

0 =absent, not encountered

1 = very rare – seen or heard once for the duration of the study period for sampling station.

2 = rare – seen or heard once or twice for the duration of stay per field visit.

3 = uncommon – seen or heard every two days per sampling station per field visit.

4 = common – seen or heard once or twice each day per sampling site singly or in pairs per field visit.

5 = abundant – seen or heard many times each day, but in groups of less than 10 individuals and more than two individuals per field visit

6 = very abundant – birds seen or heard many times each day and in groups of 10 or more individuals per field visit.

Faunal species were identified with the aid of 7 x 50 pair of binoculars and by the naked eye or avian vocalization (songs and calls). To facilitate the identification of each bird species, an illustrated (with colored plate) book on Philippine birds by Gonzales et.al. (1988) was brought to the field site during each trip.

Interview Method

Aside from the personal observations of the researcher and in order to get more information, an ethnobiological survey of Tinago Falls was carried out through interviews of the people residing in the area. Information was taken about birds, mammals, reptiles and amphibians present, including local names, frequency observed and its economic and sociological importance.



Fig. 1A Ethnobiological Interviews
Brgy. Tay-tay, Ditucalan side of Tinago

Results and Discussions

Table I presents the avian species found at Stations #1, #2, #3, and #4. At Station #1, they consisted of seventeen Avian Species, as follows: *Amauornis phoenicuros*, *Aplonis panayensis panayensis*, *Bubulcus ibis coromandus*, *Centropus bengalensis*, *Collocalia troglodytes*, *Dicaeum australe*, *Geopelia striata*, *Halcyon chloris collaris*, *Haliastur Indus intermedius*, *Hysipetes philippinus*, *Lanius cristatus*, *Lonchura malacca*, *Nectarinia sperata*, *Oriolus chinensis*, *Passer montanus*, *Pycnonotus goiavier* and *Rhiphidura javanica*.

At Station #2, there were seventeen avian species observed and recorded. These were: *Aplonis panayensis panayensis*, *Artamus leucorhynchus*, *Bubulcus ibis coromandus*, *Caprimulgus macrurus*, *Centropus bengalensis*, *Collocalia troglodytes*, *Corvus macrorhynchus*, *Dicaeum australe*, *Geopelia striata*, *Halcyon chloris collaris*, *Hysipetes philippinus*, *Lanius cristatus*, *Lonchura malacca*, *Oriolus chinensis*, *Passer montanus*, *Pycnonotus goiavier* and *Sarcops calvus melanogaster*.

At Station #3, there were fifteen avian species recorded: *Amauornis phoenicuros*, *Aplonis panayensis panayensis*, *Artamus leucorhynchus*, *Centropus bengalensis*, *Dicaeum australe*, *Glareola protincola*, *Halcyon chloris collaris*, *Hysipetes philippinus*, *Merops philippinus*, *Oriolus chinensis*, *Pycnonotus goiavier*, *Rallus torquatus*, *Rhiphidura javanica* and *Sarcops calvus melanogaster*.

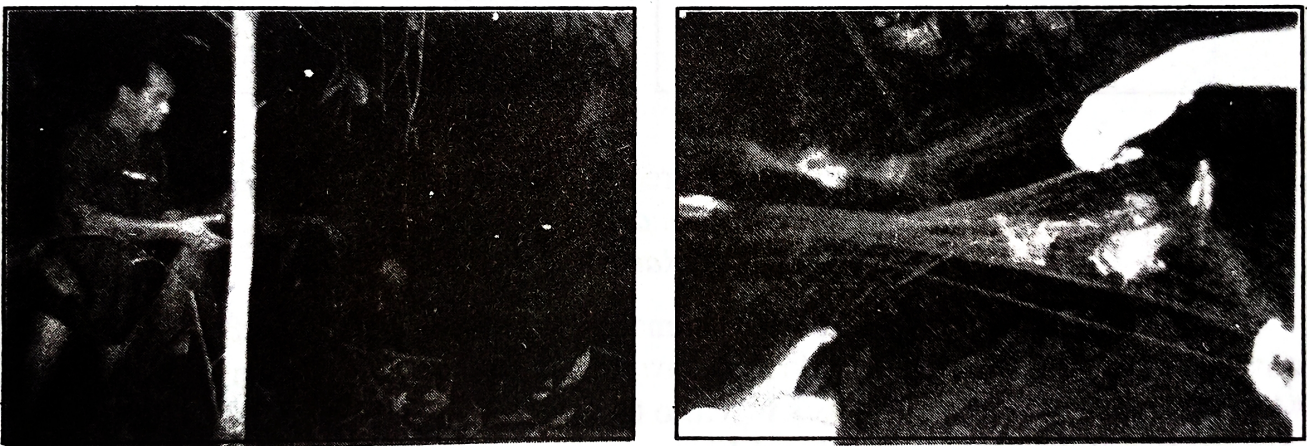


Fig. 2 Captured Faunal Species

At Station #4, there were fifteen avian species found. These were: *Aplonis panayensis panayensis*, *Artamus leucorhynchus*, *Bubulcus ibis coromandus*, *Centropus bengalensis*, *Collocalia troglodytes*, *Corvus macrorhynchus*, *Halcyon chloris collaris*, *Hysipetes philippinus*, *Lonchura Malacca*, *Nectarinia sperata*, *Oriolus chinensis*, *Passer montanus*, *Pitta erythrogaster erythrogaster*, *Pycnonotus goiavier*, and *Rhipidura javanica*.

Table 2 shows the reptilian species listing. Starting from Station #1, there were four species recorded: *Draco volans*, *Gehyra mutilata*, *Hydrosaurus pustulus* and *Sphenomorphus sp.*

At Station #2, six reptilian species were recorded: *Draco volans*, *Gehyra mutilata*, *Gecko gecko*, *Sphenomorphus sp.*, *Trimeresurus sp.* and *Varanus salvator*. At

Station #3, only one species known as *Hydrosaurus postulosus* was recorded while at Station #4, there were three reptilian species observed and recorded. These were *Draco volans*, *Hydrosaurus postulosus* and *Sphenomorphus sp.*

There were three reptilian species noted, based on resident-informants at Stations #1, #2, #3, and #4. These were the *Naja naja philippinensis*, *Python reticulatus* and *Tortoise sp.*

Table 3 introduces the amphibian species listing. *Bufo marinus* had been observed at Stations #1 and #2. On the other hand, *Rana magna* was seen at all stations except Station #2. However, *Philautus membrantus* was also observed at Stations #1 and #3. Likewise, *Polypedates leucomystor* had been found at almost all stations save Station #3.



Fig. 3 Captured Specimens:

Left: *Amaurornis phoenicuro*

Right: *Rausettus amplexicaudatus*

Finally, Table 4 presents the Mammalian species listing. *Macaca philippinensis* was found only at Station #2, while *Paradoxurus philippinensis* was seen only at Station #4; *Ptenochirus vampyrus lanensis* was also observed at Station #1 and #4. Two species identified as *Rattus mendanensis* and *Viverra tangalunga* were seen only at Station #2. Lastly, *Rousettus amplexicaudatus* was the lone mammalian species found at Station #3.

Considering the adopted scale on "Abundance measure" among the birds species surveyed, five species were found to be very rare as indicated in Table 1. These were:

Caprimulgus macrurus

Glareola protincola

Haliastur Indus intermedius

Pitta erythrogaster

Rallus torquatus

The only species found to be rare was identified as:

Merops philippinus

Four species found were considered uncommon, as follows:

Amaurornis phoenicuros

Geopelia striata

Rhipidura javanica

Sarcops calvus melanogaster

Two species found were considered common. These are:

Corvus macrorhynchus

Nectarinia sperata

Three species were considered abundant. These were:

Artamus leucorhynchus

Centropus bengalensis

Lanius cristatus

Ten species were found to be very abundant. These were:

Aplonis panayensis panayensis

Bubulcus ibis coromandus

Collocalia troglodytes

Dicaeum australe

Halcyon chloris collaris

Hysipetes philippinus

Lonchura malacca

Oriolus chinensis

Passer montanus

Pycnonotus goiavier

In Table 2, there were three species of reptiles found to be very rare, which were:

Gecko gecko

Trimeresurus sp.

Varamus salvator



Fig. 4 Captured Reptilian Species

Above: *Tremeresurus sp.*

Right: *Hydrosaurus pustulosus*

None of the species were found to be rare and uncommon. However, only one species was considered common and was identified as *Sphenomorphus sp.*

There were two species found to be abundant in the area. They were:

Gehyra mutilata

Hydrosaurus pustulosus

Only species known to be very abundant was found:

Draco volans

Only one species was found to be uncommon (Table 3). It is known as *Bufo marinus* while the common one was the *Rana magna*.

Two species of amphibians found were known to be abundant. These were:

Philautus membrantus

Polypedates leucomystax

None of the species had been considered as very rare, rare and very abundant in the area of study.

Of the mammalian species in the area, two species were found to be very rare (Table 4). These were:

Paradoxurus philippinensis

Viverra zangalunga

Two species were considered rare. These were:

Macaca philippinensis

Ratus mindanensis

One species considered as uncommon was the *Rousettus amplexicaudatus*

Only one species classified as very abundant was identified as:

Ptenochirus vampyrus lanensis

Table 1. Avian Species Listing (Summary) and Census

Ref. No.	Species	Stations				Total
		1	2	3	4	
1	<i>Amaurornis phoenicuros</i>	1	0	2	0	3
2	<i>Aplonis panayensis</i>	2	4	2	3	11
3	<i>Artamus leucorhynchus</i>	0	1	2	2	5
4	<i>Bubulcus ibis coromandus</i>	6	3	0	4	13
5	<i>Caprimulgus macrurus</i>	0	1	0	0	1
6	<i>Centropus bengalensis</i>	1	2	1	2	6
7	<i>Collocalia troglodytes</i>	2	3	0	3	8
8	<i>Corvus macrorhynchus</i>	0	2	0	2	4
9	<i>Dicaeum australe</i>	2	3	3	0	8
10	<i>Geopelia striata</i>	1	2	0	0	3
11	<i>Glareola protincola</i>	0	0	1	0	1
12	<i>Halcyon chloris collaris</i>	1	6	2	3	12
13	<i>Haliastur Indus intermedius</i>	1	0	0	0	1
14	<i>Hypsipetes philippinus</i>	2	2	4	6	14
15	<i>Lanius striatus</i>	1	3	1	0	5
16	<i>Lonchura malacca</i>	21	3	0	33	57
17	<i>Merops philippinus</i>	0	0	2	0	2
18	<i>Nectarinia sperata</i>	2	0	0	2	4
19	<i>Oriolus chinensis</i>	1	3	2	3	9
20	<i>Passer montanus</i>	5	7	0	1	13
21	<i>Pitta erythrogaster erythrogaster</i>	0	0	0	1	1
22	<i>Pycnonotus goiavier</i>	2	1	6	2	11
23	<i>Rallus torquatus</i>	0	0	1	0	1
24	<i>Rhiphidura javanica</i>	1	0	1	1	3

25	<i>Sarcops calvus melanogaster</i>	0	2	1	0	3
Total		52	48	31	67	199

Table 1. Reptilian Species Listing (Summary) and Census

Ref. No.	Species	Stations				
		1	2	3	4	Total
1	<i>Draco volans</i>	4	6	0	7	17
2	<i>Gehyra mutilata</i>	2	3	0	0	5
3	<i>Gecko gecko</i>	0	1	0	0	1
4	<i>Hydrosaurus postulosus</i>	2	0	3	1	6
5	<i>Naja naja philippinensis</i>	As informed by the residents				
6	<i>Python reticularis</i>	As informed by the residents				
7	<i>Sphenomorphus sp.</i>	1	2	0	1	4
8	<i>Tremeresurus sp.</i>	0	1	0	0	1
9	<i>Tortoise sp.</i>	As informed by the residents				
10	<i>Varanus salvator</i>	0	1	0	0	1
Total		9	14	3	9	35

Table 1. Amphibian Species Listing (Summary) and Census

Ref. No.	Species	Stations				
		1	2	3	4	Total
1	<i>Bufo marinus</i>	1	2	0	0	3
2	<i>Rana magna</i>	2	0	1	1	4
3	<i>Philautus emembrantus</i>	5	0	1	0	6
4	<i>Polypedates leucomystax</i>	1	3	0	1	5
Total		9	5	2	2	18

Table 1. Mammalian Species Listing (Summary) and Census

Ref.	Species	Stations
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No.		1	2	3	4	Total
1	<i>Macaca philippinensis</i>	0	2	0	0	2
2	<i>Paradoxurus philippinensis</i>	0	0	0	1	1
3	<i>Ptenochirus vampyrus lanensis</i>	11	0	0	4	15
4	<i>Rattus mindanensis</i>	0	2	0	0	2
5	<i>Rousettus amplexicaudatus</i>	0	0	3	0	3
6	<i>Iiverra tangalunga</i>	0	1	0	0	1
Total		11	5	3	5	24

To determine the relative density, relative dominance, relative frequency, importance value and rank of the faunal species at Tinago Falls, the researcher adopted the methods used by Rainfed Resources Development, as indicated in the *Manual on Vegetational Analysis for Grassland and Forest Ecosystems*, (1987).

The following are the formulas:

$$\text{Relative density} = \frac{\text{No. of individuals of a species}}{\text{Total no. of individuals}} \times 100$$

$$\text{Relative dominance} = \frac{\text{dominance of a species}}{\text{dominance of all species}} \times 100$$

$$\text{Relative frequency} = \frac{\text{frequency of a species}}{\text{frequency of all species}} \times 100$$

$$\text{Importance value} = \text{relative density} + \text{relative dominance} + \text{relative frequency}$$

Table 1.1 presents the relative density, relative dominance, relative frequency, importance value and rank of the avian species observed in the area of study. It shows that the greatest number is 28.64 which is interpreted as the greatest relative density for the avian species, *Lonchura Malacca*. The least is .50 interpreted as the least relative density for the following species: *Caprimulgus macrurus*, *Glareola protincola*, *Haliastur Indus intermedius*, *Pitta erythrogaster* and *Rallus torquatus*.

As to relative dominance, out of 25 Avian species, the greatest number is 48.21 known to be dominant and identified as *Lonchura Malacca*. This coincides with its highest total number, 57. The least relative dominance of the avian species are: *Caprimulgus macrurus*, *Glareola protincola*, *Haliastur Indus intermedius*, *Pitta erythrogaster erythrogaster*, *Rallus torquatus* and *Merops philippinus* having a rating of .13.

As to relative frequency, the same table (T. 1.1) shows that the greatest number is 2.01 which is interpreted as the highest relative frequency for the following avian species: *Aplonis panayensis*, *Centropus bengalensis*, *Halcyon chloris collaris*, *Hysipetes philippinus*, *Oriolus chinensis* and *Rallus torquatus*. As to importance value, the greatest number is 78.36 for the *Lonchura malacca* species, which is interpreted as the highest importance value, while the least number is 1.13 for the following species: *Caprimulgus macrurus*, *Glareola protincola*, *Haliastur Indus intermedius*, *Pitta erythrogaster erythrogaster* and *Rallus torquatus*.

As to the rank of the avian species, *Lonchura Malacca* was found to be number one. This implies that species belonging to the highest in the different areas such as relative density, relative dominance, relative frequency and importance value will also emerge as first in rank. It is followed by *Hysipetes philippinus*; *Passer montanus*; *Bubulcus ibis coromandus*; *Halcyon chloris collaris*; *Aplonis paneyensis*; *Pycnonotus goiavier*; *Oriolus chinensis*; *Collocalis troglodytes*, *Dicaeum australe*; *Centropus bengalensis*; *Artamus leucorrhynchus*; *Nectarinia sperata*; *Corvus macrorynchus*; *Rhipidura javanica*; *Amaurornis phoenicuros*; *Geopelia striata*; *Sarcops calvus melanogaster*; *Glareola protincola*; *Haliastur Indus intermedius* and *Pitta erythrogaster erythrogaster*.

Table 1.1 Avian Species Listing

Ref. No.	Species	Relative Density	Relative Dom.	Relative Freq.	Import. Value	Rank
1	<i>Amaurornis phoenicuros</i>	1.508	0.6	1.01	3.12	13.5
2	<i>Aplonis panayensis</i>	5.53	4.04	2.01	11.58	6.5
3	<i>Artamus leucorrhynchus</i>	2.51	1.1	1.51	5.12	10.5
4	<i>Bubulcus ibis coromandus</i>	6.53	7.48	1.51	15.52	4
5	<i>Caprimulgus macrurus</i>	0.5	0.13	0.5	1.13	15.5
6	<i>Centropus bengalensis</i>	3.02	1.2	2.01	6.23	9
7	<i>Collocalia troglodytes</i>	4.02	2.84	1.51	8.37	8.5
8	<i>Corvus marcorynchus</i>	2.01	1.07	1.01	4.09	11.5
9	<i>Dicaeum australe</i>	4.02	2.84	1.51	8.37	8.5

10	<i>Geopelia striata</i>	1.51	0.6	1.01	3.12	13.5
11	<i>Glareola protincola</i>	0.5	0.13	0.5	1.13	15.5
12	<i>Halcyon chloris collaris</i>	6.03	4.81	2.01	12.85	5
13	<i>Haliastur intermedius</i> Indus	0.5	0.13	0.5	1.13	15.5
14	<i>Hypsipetes philippinus</i>	7.04	6.55	2.01	15.6	2
15	<i>Lanius striatus</i>	2.51	1.1	1.51	5.12	5
16	<i>Lonchura Malacca</i>	28.64	48.21	1.51	78.36	1
17	<i>Merops philippinus</i>	1.01	0.54	0.5	2.05	14
18	<i>Nectarinia sperata</i>	2.01	1.07	1.01	4.09	11.5
19	<i>Oriolus chinensis</i>	4.52	2.71	2.01	9.24	7
20	<i>Passer montanus</i>	6.53	7.52	1.51	15.56	3
21	<i>Pitta erythrogaster</i> erythrogaster	0.5	0.13	0.5	1.13	15.5
22	<i>Pycnonotus goiavier</i>	5.53	4.04	2.01	11.58	6.5
23	<i>Rallus torquatus</i>	0.5	0.13	0.5	1.13	15.5
24	<i>Rhiphidura javanica</i>	1.51	0.4	1.51	3.42	12
25	<i>Sarcops calvus</i> melanogaster	1.51	0.6	1.01	3.12	13.5
Total		99.998	99.97	32.19	232.16	

Table 2.1 Reptilian Species Listing

Ref. No.	Species	Relative Density	Relative Dom.	Relative Freq.	Import. Value	Rank
1	<i>Draco volans</i>	48.57	82.25	8.57	139.39	1
2	<i>Gehyra mutilata</i>	14.29	10.36	5.71	30.36	2
3	<i>Gecko gecko</i>	2.86	0.89	2.86	6.61	4.5
4	<i>Hydrosaurus pustulosus</i>	17.14	3.55	8.57	23.55	3
5	<i>Naja naja philippinensis</i>	-	-	-	-	-
6	<i>Python reticularis</i>	-	-	-	-	-

7	<i>Sphenomorphus sp.</i>	14.43	1.18	8.57	9.75	8.5
8	<i>Trimeresurus sp.</i>	2.86	0.89	2.86	6.61	4.5
9	<i>Tortoise sp.</i>	-	-	-	-	-
10	<i>Varanus salvator</i>	2.86	0.89	2.86	6.61	4.5
Total		97.29	98.23	34.28	209.66	

Table 2.1 presents the relative density, relative dominance, relative frequency, importance value and rank of reptilian species observed in Tinago Falls. It shows that the greatest relative density is 48.57, identified as *Draco volans* which was also known to be as very abundant species, while the least relative density is 2.86. These reptilian species are: *Gecko gecko*, *Trimeresurus sp.* and *Varanus salvator* and also classified as very rare species.

As to the relative dominance, the greatest number is 82.25 for *Draco volans*, while the least number is .89 for the following species: *Gecko gecko*, *Trimeresurus sp.* and *Varanus salvator*, which were also classified as very rare species.

As to the relative frequency of the reptilian species, the greatest number is 8.57, interpreted as the highest relative frequency for *Draco volans*, *Sphenomorphus sp.* and *Hydrosaurus postulosus*, while the least relative frequency having a figure of 2.86 are the *Gecko gecko*, *Trimeresurus sp.* and *Varanus salvator*.

As to the importance value, *Draco volans* got the greatest number of 139.39. This is interpreted as the highest importance value, while the least is 6.61 for *Gecko gecko*, *Trimeresurus sp.* and *Varanus salvator*.

Table 3.1 Amphibian Species Listing

Ref. No.	Species	Relative Density	Relative Dom.	Relative Freq.	Import. Value	Rank
1	<i>Bufo marinus</i>	16.67	25.77	11.11	53.55	3
2	<i>Rana magna</i>	22.22	6.19	16.67	45.08	4
3	<i>Philatus emembrantus</i>	33.33	52.58	11.11	97.02	1
4	<i>Polypedates leucomystor</i>	27.78	15.46	16.67	59.91	2
Total		100	100	55.56	255.56	

Table 3.1 presents the relative density, relative dominance, relative frequency, importance value and of amphibian species found in the place of study. The greatest

number of relative density is 33.33, identified as *Philautus membrantus*, which is interpreted as the highest relative density, while the least is 16.67 for *Bufo marinus*.

As to relative dominance, the greatest number is 52.58 for *Philautus membrantus*, also interpreted as the highest relative dominance, while the least relative dominance is 6.19 for *Rana magna*.

As to relative frequency, the highest relative frequency is 16.67 for *rana magna* and *Polypedates leucomystax* and the least relative frequency is 11.11 for *Bufo marinus* and *Philautus membrantus*.

As to the importance value, the highest number is 97.02 for *Philautus membrantus*, interpreted as the highest importance value, while the least is 53.55 for *Bufo marinus* species.

As to the rank, the first is the *Philautus membrantus* and the least is the *Rana magna*.

Table 4 presents the relative density, relative dominance, relative frequency, importance value and rank of the mammalian species identified in the area.

As to relative density, the greatest density is 62.5 for *Ptenochirus vampyrus lanensis*, while the least relative density is 4.17 for *Paradoxurus philippinensis* and *Viverra tangalunga*.

Regarding the relative dominance, the greatest number of 74.68 for *Ptenochirus vampyrus lanensis*, while the least is 1.28 for *Paradoxurus philippinensis* and *Viverra tangalunga*.

As to relative frequency, the greatest number is 8.33, which is interpreted as the highest relative frequency for *Ptenochirus vampyrus lanensis* and *Rattus mindanensis*, while the least is 9.62, otherwise known as the least relative frequency for *Paradoxurus philippinensis* and *Viverra tangalunga*.

As to importance value, the greatest figure is 145.51 for *Ptenochirus vampyrus lanensis*, interpreted as the highest importance value, while the least is 9.62 for *Paradoxurus philippinensis* and *Viverra tangalunga*.

As to ranking of the mammalian species, *Ptenochirus vampyrus lanensis* rank as the first, considering all the areas measured, while *Viverra tangalunga* and *Paradoxurus philippinensis* rank the least.

Table 4.1 Mammalian Species Listing

Ref. No.	Species	Relative Density	Relative Dom.	Relative Freq.	Import. Value	Rank
1	<i>Macaca philippinensis</i>	8.33	5.13	4.17	17.63	4
2	<i>Paradoxurus philippinensis</i>	4.17	1.28	4.17	9.62	5.5

3	<i>Ptenochirus vampyrus lanensis</i>	62.5	74.68	8.33	145.51	1
4	<i>Rattus mindanensis</i>	8.33	5.13	8.33	21.79	3
5	<i>Rousettus amplexicaudatus</i>	12.5	12.5	4.17	29.17	2
6	<i>Viverra zangalla</i>	4.17	1.28	4.17	9.62	5.5
Total		100	100	33.34	233.34	

Conclusion

From the findings of the study, it can be gleaned that the faunal species of Tinago Falls were found to be abundant, particularly the Aves, since they have the greatest number of species compared to the Amphibian, reptilian and Mammalian species observed and recorded. However, majority of the individuals per species were few. It could possibly happen because of the disturbances or destruction made by man to their ecology or natural habitat. Furthermore, some people were collecting or hunting several of the faunal species for food or other purposes. Hence, the existing environmental conditions of the area is threatening to some faunal species.

Recommendations

1. It is recommended that similar studies be conducted so as to validate the findings of this study.
2. Detailed study of the biology of every terrestrial faunal species of the area is highly recommended, including the study of fishes and other invertebrates as well.

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Rabor, Dioscoro S. *Philippine Birds and Mammals*. UP Science Education Center, Quezon City, 1977.

Rainfed Resources Development. *Manual on Vegetational Analysis for Grasslands and Forest Ecosystems*. Philippines, 1987.

Author	Title	Year	Location	Notes
Rabor, Dioscoro S.	<i>Philippine Birds and Mammals</i>	1977	UP Science Education Center, Quezon City	
Rainfed Resources Development	<i>Manual on Vegetational Analysis for Grasslands and Forest Ecosystems</i>	1987	Philippines	

APPENDICES

Table 5. Faunal Species in Station #1

Ref. No.	Species name And Author	Local Name	Family	Economic Value	Social Value	Ecological Value
Class Aves						
1	<i>Amaurornis phoenicuro</i> Gonzales (1988)	White Breasted swampen or waterhen; Tikugas (Maranao)	Rallidae	As food (adobo with cocomilk)	As pet	Pollination Seed dispersal
2	<i>Aplonis panayensis panayensis</i> D.S. Rabor (1977)	Philippine Glossy Starling; Galanciang (Bisaya)	Sturnidae	As food	As pet	Control the population of harmful insects, Seed dispersal
3	<i>Bubulcus ibis coromandus</i> D.S. Rabor (1977)	Cattle egret; Talawong (Maranao)	Ardeidae	As food	As pet	Controls insect Arachnids population
4	<i>Centropus bengalensis</i> Gonzales (1988)	Gagosuk (Mar.)	Cocolidae	As food	As pet	Pollination
5	<i>Collocalia troglodytes</i> D.S. Rabor (1977)	Pygmy Swiftlet; Kalogay (Mar.)	Apolidae	As food	As pet	Control the population of harmful insects, seed dispersal
6	<i>Dicaeum australe</i> D.S. Rabor (1977)	Philippine Flower Picker	Dicaeidae	As food (adobo, fried, randang)	As pet	Pollination
7	<i>Geopelia striata</i> Gonzales, et/ al. (1988)	Zebra Dove; Pagapak (Mar.)	Columbidae	As food	As pet	Seed dispersal
8	<i>Halcyon chloris collaris</i> D.S. Rabor (1977)	White collared kingfisher Laasan (Mar.)	Alcedinidae	As food	As pet	Control the population of harmful insects

9	<i>Haliastur Indus intermedius</i> D.S. Rabor (1977)	Brahminy kite Banog (Mar.)	Accipitridae	As food	As pet	Control the population of insects
10	<i>Hypsipetes philippinus</i> Gonzales (1988)	Philippine Bulbul	Pynonotidae	As food (adobo, fried)	As pet	Seed dispersal
11	<i>Lanius cristatus</i> D.S. Rabor (1977)	Shrike; Tibaras	Laniidae		As pet	Control insect pests
12	<i>Lonchura malacca</i> Gonzales, et. al. (1988)	Scarly-breasted Munia; Ogona (Mar.)	Ploceidae	As food	As pet	Seed dispersal
13	<i>Nectarinia sperata</i> Gonzales, et. al. (1988)	Purple-throated sun bird	Nectariniidae		As pet	Control insect pests
14	<i>Oriolus chinensis</i> D.S. Rabor (1977)	Black-naped oriole Tiolaw (Mar.)	Oriolidae	As food	As pet	Control insect pests
15	<i>Passer montanus</i> Gonzales, et. al. (1988)	Tree sparrow; Manga-walay (Mar.)	Placeidae	As food	As pet	Control insect pests
16	<i>Pycnonotus goiavier</i> Gonzales, et. al. (1988)	Yellow-vented Bulbul	Pynonotidae	As food	As pet	Seed dispersal and control of insect pests
17	<i>Rhipidura javanica</i> D.S. Rabor (1977)	Black and White Fantail; Managawalay (Mar.)	Huscicapidae	As food	As pet	Control insect pests
Class Reptilia						
18	<i>Draco volans</i> A. Alcalá (1986)	Flying lizard Tabagang (Mar.)	Agamidae	Medicinal	Exhibit for tourists	Control insect population
19	<i>Gehyra mutilata</i> A. Alcalá (1976)	Common house lizard; Tagetek (Mar.)	Gekkonidae		Exhibit for tourists	Control insect population
20	<i>Hydrosaurus pustulosus</i>	Water lizard; Parangan	Agamidae	As food	Exhibit for tourists; as	Control insect

	A. Alcalá (1976)	(Mar.)			pet	population
21	<i>Sphenomorphus</i> <i>sp.</i> A. Alcalá (1976)	Skink/Tabalik (Mar.)	Scincidae		As pet	Control insect population
Class Amphibia						
22	<i>Bufo marinus</i> A. Alcalá (1976)	Toad	Bufoidea			Control insect population
23	<i>Rana magna</i> A. Alcalá (1976)	Phil. Bull Frog Babak (Mar.)	Ranidae	As food	For experimental & instructional purposes	Control insect population
24	<i>Philautus</i> <i>emembrantus</i> A. Alcalá (1976)		Phacophoridae	As food		Control insect population
25	<i>Polypedates</i> <i>leucomystax</i> A. Alcalá (1976)		Phacophoridae	As food		Control insect population
Class Mammalia						
26	<i>Ptenochirus</i> <i>vampyrus lanensis</i> Rabor (1986)	Common Philippine true flying fox; Paniki	Pteropidae	As food	As pet	Seed dispersal

Table 6. Faunal Species in Station #2

Ref. No.	Species name And Author	Local Name	Family	Economic Value	Social Value	Ecological Value
Class Aves						
1	<i>Aplonis</i> <i>panayensis</i> <i>panayensis</i> D.S. Rabor (1977)	Philippine Glossy Starling; Galanciang (Bisaya)	Sturnidae	As food	As pet	Control the population of harmful insects, Seed dispersal
2	<i>Artamus</i> <i>leucorrhynchus</i> <i>leucorrhynchus</i> D.S. Rabor (1977)	White-breasted wood swallow; Gitgit		As food	As pet	Control the population of harmful insects, Seed dispersal
3	<i>Bubulcus</i> <i>ibis</i> <i>coromandus</i>	Cattle Egret;	Ardeidae	As food	As pet	Controls insect

	D.S. Rabor (1977)	Talawong (Mar.)				Arachnids population
4	<i>Caprimulgus macurus</i> Gonzales (1988)	Large-tailed Nightjar	Caprimulgidae	As food	As pet	Control the population of harmful insects
5	<i>Centropus bengalensis</i> Gonzales (1988)	Gagosuk (Mar.)	Cocolidae	As food	As pet	Pollination
6	<i>Collocalia troglodytes</i> D.S. Rabor (1977)	Pygmy Swiftlet; Kalogay (Mar.)	Apolidae	As food (Adobo with cocomilk)	As pet	Pollination Control the population of harmful insects
7	<i>Corvus macrorhynchus philippinus</i> D.S. Rabor (1977)	Large-billed crow; Uwak		As food	As pet	Pollination
8	<i>Dicaeum australe</i> D.S. Rabor (1977)	Philippine Flower Picker	Dicaeidae	As food (adobo, fired, randang)	As pet	Pollination
9	<i>Geopelia striata</i> Gonzales, et. al. (1988)	Zebra Dove; Pagapak (Mar.)	Columbidae	As food	As pet	Seed dispersal
10	<i>Halcyon chloris collaris</i> D.S. Rabor (1977)	White-collared kingfisher; Laasan (Mar.)	Alcedinidae	As food	As pet	Control the population of harmful insects
11	<i>Hepsipetes philippinus</i> Gonzales (1988)	Philippine Bulbul	Pynonotidae	As food (Adobo, fried)	As pet	Seed dispersal
12	<i>Lanius cristatus</i> D.S. Rabor (1977)	Shrike; Tibaras	Laniidae		As pet	Control insect pests
13	<i>Lonchura Malacca</i> Gonzales, et. al. (1988)	Scarly-breasted Munia; Ogona (Mar.)	Ploceidae	As food	As pet	Seed dispersal
14	<i>Oriolus chinensis</i> D.S. Rabor (1977)	Black-naped oriole; Antoliaw (Mar.)	Oriolidae	As food	As pet	Seed dispersal
15	<i>Passer montanus</i> Gonzales, et. al.	Tree-sparrow; Manga-walay	Placeidae	As food	As pet	Control insect pests

	(1988)	(Mar.)				
16	<i>Pyncnonotus goiavier</i> Gonzales, et. al. (1988)	Yellow-vented bulbul	Pynonotidae	As food	As pet	Seed dispersal and control of insect pests
17	<i>Sarcops calvus melanogaster</i> Gonzales, et.al. 91988)	Coletto Saling (Bis.)	Sturnidae	As food	As pet	Seed dispersal
Class Reptilia						
18	<i>Draco volans</i> A. Alcalá (1976)	Flying lizard; Tabagang (Mar.)	Agamidae	Medicinal	Exhibit for tourists	Control insect population
19	<i>Gecko gecko</i> A. Alcalá (1976)	Common house lizard; Toko	Gekkonidae		Exhibit for tourists	Control insect population
20	<i>Gehyra mutilata</i> A. Alcalá (1976)	Common house lizard; Tagetek (Mar.)	Gekkonidae	Medicinal	Exhibit for tourists	Control insect population
21	<i>Sphenomorphus sp.</i> A. Alcalá (1976)	Skink; Tabalik (Mar.)	Scincidae		As pet	Control insect population
22	<i>Trimeresurus spp.</i> A. Alcalá (1976)	Pit vipers			Tourist attraction	Control rat population
23	<i>Varanus salvator</i> A. Alcalá (1976)	Monitor lizard		As food		Control insect population
Class Amphibia						
24	<i>Bufo marinus</i> A. Alcalá (1976)	Toad	Bufoidea	As food		Control insect population
25	<i>Polypedates leucomystax</i> A. Alcalá (1976)		Phacophoridae	As food		Control insect population
Class Mammalia						
26	<i>Macaca philippinensis</i> Rabor (1986)	Phil. Macaque; Amo (Mar.)	Cercopithecidae	Source of medicine; as food	As pet	Seed dispersal
27	<i>Rattus mindanensis</i> Rabor (1986)			As food	As pet; Used for experi	Seed dispersal

					mental purposes	
28	<i>Viverra tangalunga</i> Rabor (1986)	Malay civet; Tingalong	Viverridae	As food	As pet	Control insect population

Table 7. Faunal Species in Station #3

Ref. No.	Species name and Author	Local Name	Family	Economic Value	Social Value	Ecological Value
Class Aves						
1	<i>Amaurornis phoenicuros</i> Gonzales (1986)	White-breasted Swampen or waterhen; Tikugas (Mar.)	Rallidae	As food (adobo with cocomilk)	As pet	Pollination
2	<i>Aplonis panayensis panayensis</i> D.S. Rabor 91977)	Philippine Glossy Starling; Galanciang (Bis.)	Sturnidae	As food	As pet	Control the population of harmful insects, Seed dispersal
3	<i>Artamus leucorhynchus leucorhynchus</i> D.A. Rabor (1977)	White-breasted wood swallow; Gitgit		As food	As pet	Control the population of harmful insects, Seed dispersal
4	<i>Centropus bengalensis</i> Gonzales (1988)	Gagosuk (Mar.)	Cocolidae	As food	As pet	Control insect pests
5	<i>Dicaeum australe</i> D.A. Rabor (1977)	Philippine Flower Picker	Dicaeidae	As food (adobo, fried, randang)	As pet	Pollination
6	<i>Glareola protincola</i> Larousse Encyclopedia of Animal Life (1976)	Pratincole; Solit (mar.)	Glariolidae	As food	As pet	Control the population of harmful insects
7	<i>Halcyon chloris</i>	White	Alcedinidae	As food	As pet	Control

	<i>collaris</i> D.S. Rabor (1977)	collared kingfisher, Laasan (Mar.)				the population of harmful insects
8	<i>Hypsipetes philippinus</i> Gonzales (1988)	Philippine Bulbul	Pynonotidae	As food (adobo, fried)	As pet	Seed dispersal
9	<i>Lanius cristatus</i> D.S. Rabor (1977)	Shrike; Tabaras	Laniidae		As pet	Control insect pests
10	<i>Oriolus chinensis</i> D.S. Rabor (1977)	Black-naped oriole; Antiolaw (Mar.)	Oriolidae	As food	As pet	Seed dispersal
11	<i>Pycnonotus goiavier</i> Gonzales, et. al. (1988)	Yellow-vented bulbul	Pynonotidae	As food	As pet	Seed dispersal and control insect pests
12	<i>Rhipidura javanica</i> D.S. Rabor (1977)	Black and White Fantail; Managawalay (Mar.)	Huscicapidae	As food	As pet	Control insect pests
Class Reptilia						
13	<i>Hydrosaurus pustulosus</i> A. Alcalá (1976)	Water lizard; Parangan (Mar.)	Agamidae	As food	Exhibit for tourists; as pet	Control insect population
Class Amphibia						
14	<i>Rana magna</i> A. Alcalá (1976)	Phil. Bull Frog; Babak (Mar.)	Ranidae	As food	For experimental & instructional purposes	Control insect population
15	<i>Philautus emembrantus</i> A. Alcalá (1976)	Tree frog	Phacophoridae	As food	Exhibit for tourists	Control insect population
Class Mammalia						
16	<i>Rousettus amplexicaudatus</i> Rabor (1977)	Geoffroy's rousette	Pteropidae	As food	As pet	Seed dispersal

Table 8. Faunal Species in Station #4

Ref. No.	Species name And Author	Local Name	Family	Economic Value	Social Value	Ecological Value
Class Aves						
1	<i>Aplonis panayensis panayensis</i> D.S. Rabor (1977)	Philippine Glossy Starling; Galanciang (Bis.)	Sturnidae	As food	As pet	Control the population of harmful insects, Seed dispersal
2	<i>Artamus leucorhynchus leucorhynchus</i> D.S. Rabor (1977)	White-breasted wood swallow; Gitgit		As food	As pet	Control the population of harmful insects, Seed dispersal
3	<i>Bubulcus ibis coromandus</i> D.S. Rabor (1977)	Cattle egret; Talawong (Mar.)	Ardeidae	As food	As pet	Control insect Arachnids population
4	<i>Centropus bengalensis</i> Gonzales (1988)	Gagosuk (Mar.)	Cocolidae	As food	As pet	Control insect population
5	<i>Collocalia troglodytes</i> D.S. Rabor (1977)	Pygmy Swiftlet; Kalogay (Mar.)	Apolidae	As food (adobo with cocomilk)	As pet	Control insect population
6	<i>Corvus macrorhynchus philippinus</i> D.S. Rabor (1977)	Large-billed crow; Uwak		As food	As pet	Pollination
7	<i>Halcyon chloris collaris</i> D.S. Rabor (1977)	White collared kingfisher; Laasan (Mar.)	Alcedinidae	As food	As pet	Control the population of harmful insects
8	<i>Hypsipetes philippinensis</i> Gonzales, et. al. (1988)	Phil. Bulbul	Pynonotidae	As food	As pet	Seed dispersal
9	<i>Lonchura malacca</i> Gonzales, et. al. (1988)	Scarly-breasted Munia;	Plocidae	As food	As pet	Seed dispersal

		Ogona (Mar.)				
10	<i>Nectarinia sperata</i> Gonzales, et. al. (1988)	Purple-throated sun bird	Nectariniidae		As pet	Seed dispersal
11	<i>Oriolus chinensis</i> D.S. Rabor (1977)	Black-naped oriole; Antiolaw (Mar.)	Oriolidae	As food	As pet	Seed dispersal
12	<i>Passer montanus</i> Gonzales, et. al. (1988)	Tree-sparrow; Manga-walay (Mar.)	Ploceidae	As food	As pet	Seed dispersal
13	<i>Pitta erythrogaster erythrogaster</i> Gonzales, et. al. (1988)	Red breasted pitta; Yokong	Pittidae	As food	As pet	Seed dispersal
14	<i>Pycnonotus goiavier</i> Gonzales, et. al. (1988)	Yellow-vented bulbul	Pycnonotidae	As food	As pet	Seed dispersal
15	<i>Rhipidura javanica</i> D.S. Rabor (1977)	Black and White Fantail; Managawalay (Mar.)	Huscicapidae	As food	As pet	Control insect pests
Class Reptilia						
16	<i>Draco volans</i> A. Alcalá (1976)	Flying lizard; Tabagang (Mar.)	Agamidae	Medicinal	Exhibit for tourists	Control insect population
17	<i>Hydrosaurus pustulosus</i> A. Alcalá (1976)	Water lizard; Parangan (Mar.)	Gekkonidae	As food	Exhibit for tourists; as pet	Control insect population
18	<i>Sphenomorphus sp.</i> A. Alcalá (1976)	Skink: Tabalik (Mar.)	Scincidae		As pet	Control insect population
Class Amphibia						
19	<i>Rana magna</i> A. Alcalá (1976)	Phil. Bull Frog; Babak (Mar.)	Ranidae	As food	For experimental & instructional purposes	Control insect population
20	<i>Polypedates leucomystax</i>		Phacophoridae	As food		Control insect

	A. Alcalá (1976)					population
Class Mammalia						
21	<i>Paradoxurus philippinensis</i> Rabor (1986)	Phil. Palm civet; Melo (Bis.) Lako (Mar.)	Viverridae	As food	As pet	Control rat population
22	<i>Ptenochirus vampyrus lanensis</i> Rabor (186)	Common Philippine true flying fox; Paniki	Pteropidae	As food	As pet	Seed dispersal