Short Note

The potential of Tinorian River as an eco-tourism spot in the Province of Iloilo, Philippines


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Abstract

Tinorian River of Barotac Nuevo, Iloilo Philippines is teeming with natural life. Various avifauna species were seen including those that are common and non-migrating. The predominant species are the little egret, *Egretta garzetta* and the maritime kingfishers, *Todiramphus chloris* whose sizes are remarkably bigger compared to its inland counterparts. This maybe attributed to the rich source of riverine food primarily crustaceans and fishes. Outwards towards the sea, in mangrove studded islet, a small population of the huge *Egretta alba* could be found roosting. The mangrove bounded-river starts in a snake-like contour until it widens into a vast area surrounding islets of varying sizes in its midst. A tourist can devote his time leisurely kayaking in a banca or taking a ride in a motorized boat to explore the aesthetic beauty of this river all throughout its length. The small but very few family to single nipa huts can be seen in its banks as well as modified shelters of fishermen on floating rafts. This river is also a good source of fresh oysters and green mussels. Coupled with the silence of the milieu and the coolness of the air, once fully developed in an ecologically friendly manner, this could be a potential ecotourism spot.

Key words: Ecotourism spot, avifauna, mangroves, commodity

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INTRODUCTION

The Philippines has some interesting types of river resorts. Some provide leisurely cruises along its length while observing wildlife and riverine landscapes. Others offer water sports activities. Still others have been or are being developed into ecotourism destinations for observing and photographing flora and fauna. Loboc River in the island of Bohol boasts of a river cruise with a floating restaurant and accompanying musical band (Bohol Philippines travel guide). North Riverside Resort and Leisure Park, located at the bank of the Meycauyan River makes this place relaxing and worthwhile to visit (The North Riverside Resort). About 50 kilometers north of the city of Puerto Princesa, Palawan, the Subterranean River National Park can be found. It is an underground river with a navigable length of 8.2 km within a vast cave with various chambers. It has numerous formations of stalactites and stalagmites with a clear lagoon at its mouth. This underground river has topped the latest ranking of nominees for the “New 7 Wonders of Nature” title (Puerto Princesa Resorts.com).

In Panay Island, a number of river resorts have been documented by the Department of Tourism, Region VI (DOT R.VI, Western Visayas Guidebook, Special Edition, (2007). This includes the Libacao Wild River in Aklan that caters to kayaking, bamboo rafting and other types of water sports. This is also considered as the longest “wild river” in the Philippines. The Tibiao Whitewater river found in the province of Antique is also recreationally utilized for kayaking and wild river rafting. This is where the first Philippine Whitewater Kayaking Competition was held in 1998 with participants coming from as far as the United States and Australia. The Bugang River of Antique is part of the Bugang River Cultural Nature and Adventure Tour. Tourists can
witness the presentation of rituals, demonstrations of buri and bariw weaving aside from enjoying a boat ride along the river.

The Tinorian River (Figure 1) is located in the town of Barotac Nuevo of the province of Iloilo, Panay Island, Philippines. The river is 45 km away from Iloilo or about 45 minutes by car. The river passes through Barangay Tinorian, the northeast coastal barangay of Barotac Nuevo and empties at Barangay Pantalan in the adjacent municipality of Anilao. Previously, this river was used to transport and trade agricultural and fishery products via big boats from other islands such as Negros. The river has an approximate length of 5.5 km and contributes to the productivity and livelihood of the people in the surrounding community. This river may be a potential ecotourism spot.

Figure 1 - A Sketch of the Tinorian River (From BBBRMC brochure)

Eco-tourism is a purposeful or responsible travel to natural areas to understand the culture and natural history of the environment, taking care not to alter the integrity of the ecosystem while producing economic opportunities that make the conservation of natural resources beneficial to the people (www.mahdzan.com/papers/mangrove/02.asp). It is expected that people who take part in the ecotourism excursion are very responsible people who love the natural environment and would like to contribute towards its conservation. They want to minimize impact to wildlife, soil, vegetation, water and air quality, and emphasize respect for the cultural traditions and activities of local people. The environment benefits from visitors because they help conserve the environment; they in turn benefit from their non-consumptive use of the resource (which economists refer to as use value) as they increase their knowledge about the site visited; and this raises their utility level. The local community too should benefit from both the resource (which has been sustaining their life) and the visitors who bring them new source of income. There is therefore a symbiotic relationship among the three entities involved in ecotourism.

The objective of this study was to determine the potential of the Tinorian River as an eco-tourism spot. The significance of this study was to analyze whether the prevailing ecosystem and wetland avifauna of the Tinorian River could support a viable ecotourism.

MATERIALS AND METHODS
Three surveys were done: in January, May and July 2011. The first survey was undertaken to observe and document bird species residing in the areas along the Tinorian River. The length of the river from the Tinorian Bridge to the mouth of the river was traversed by pumpboats. Photographs of bird species were taken and identified. Species that could not be photographed were identified by their common or local names and recorded. Riparian vegetation was identified, photographed and their over-all health determined.

Using the bridge as base, stations were set up in strategic areas along the river. Basic physical characteristics (salinity, temperature and turbidity) were measured. Water samples were taken and the planktons present were determined in the lab. Fisherfolks living within the vicinity were also interviewed.

RESULTS AND DISCUSSION
The first survey left an impression of the richness of the avifauna roosting among the riparian trees and yellow flowering vines or flying across the river. The birds that were conspicuous were Rhidipura javanica, Nectarinia jugularis, Aplonis payanensis, Geopelia striata, Todirhampus chloris (Ocon, 2009), Lonchura mallaca, Pycnonotus goiavier, Hirundo sp., Egretta garzetta, Egretta alba (Strange, 2000), and other unidentified species. The common sandpiper was spotted running along the water’s edge. Nests of Nectarinia jugularis, Geopelia striata and Lonchura mallaca were located in the mid to upper canopies of the mangrove trees while grass nests with a roundish entry of small pale-brown warbler-looking species favored the low spreading mangrove branches that reach out towards the river. Out of the 21 avifauna species reported foraging in the neighboring coastal areas of Barangays Palasyauan, Lanas and Tiwi of Barotac Nuevo by CENRO-Barotac Nuevo, 14 were known as wetland species, those that are not strictly shore birds. These are Tachybaptus ruficollis, Isorbrychus sinensis, Isorbrychus cinnamonus, Butorides striatus, Egretta garzetta, Egretta alba, Egretta intermedia, Gallirallus sp., Pluvialis squatarola, Himantopus himantopus, Charadrius alexandrinus, Tringa totanus, Sterna sumatrana and Todirhampus chloris.

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The other species in this list may also be found in the areas around the Tinorian River and vicinity but were not observed during the survey.

Tinorian river has 5 islets and these are all populated by mangrove trees. The islets vary in size and one that is located downstream near the sea is the home of a flock of *Egretta alba*. They can be observed flying around and roosting in the mangrove trees. The mangroves in the area look very healthy and their robust spreading branches offer a scenic view for travelers along the river. Mangrove trees with their remarkably strong roots protect these islets and the river banks from erosion even during excessive high tides or floods.

Edible fishes like tilapia, mullets and catfish as well as bivalves like *Perna viridis* and the common edible oyster are naturally present or cultured along the river.

The river was divided into stations starting from the upper tributaries until an area towards the river’s mouth. Water samples were taken from each station for analysis of the physico-biological characteristics (Table 1). Water temperature ranges from 26 to 30 °C while salinity ranges from 0 to 30 ppt. Turbidity was determined by Secchi disc measurements. It was found to be greater along the upper tributaries which represent the starting point of the river decreasing towards the lower portions of the river towards the sea.

**Table 1** Some physico-biological characteristics of the Tinorian River

<table>
<thead>
<tr>
<th>Station</th>
<th>Station 1</th>
<th>Station 2</th>
<th>Station 3</th>
<th>Station 4</th>
<th>Station 5</th>
<th>Station 6</th>
<th>Station 7</th>
<th>Station 8</th>
<th>Station 9</th>
<th>Station 10</th>
<th>Station 11</th>
<th>Station 12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>upper portion of the river - tributary branch A</td>
<td>upper portion of the river-tributary branch B</td>
<td>below the bridge (500m away)</td>
<td>(700m away from base)</td>
<td>(900m away from base)</td>
<td>(100m away)</td>
<td>(1200m away)</td>
<td>(1500m away)</td>
<td>(1900m away)</td>
<td>(2100m away)</td>
<td>(3100m away)</td>
<td>(3500m away)</td>
</tr>
<tr>
<td>Salinity</td>
<td>zero</td>
<td>zero</td>
<td>zero</td>
<td>zero</td>
<td>zero</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Temperature °C</td>
<td>27</td>
<td>28</td>
<td>26</td>
<td>28</td>
<td>28</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Turbidity</td>
<td>very turbid</td>
<td>less turbid</td>
<td>less</td>
<td>less</td>
<td>least</td>
<td>least</td>
<td>clear</td>
<td>clear</td>
<td>clear</td>
<td>clear</td>
<td>very clear</td>
<td>very clear</td>
</tr>
<tr>
<td>Secchi Disc Measurements (cm)</td>
<td>20</td>
<td>32</td>
<td>35</td>
<td>47</td>
<td>42</td>
<td>36</td>
<td>33</td>
<td>36</td>
<td>40</td>
<td>43</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Planktons Present</td>
<td>Navicula sp.</td>
<td>Nitzchia longissima</td>
<td>Chlorella sp.</td>
<td>Pleurosigma sp.</td>
<td>Nitzchia sigma</td>
<td>Thallasiosira subtilis</td>
<td>Chromulina sp.</td>
<td>Skeletonema costatum</td>
<td>Nitzchia longissima</td>
<td>Tintinnid lorica</td>
<td>Thalassionema nitzchioides</td>
<td>Thallasiosira subtilis</td>
</tr>
<tr>
<td></td>
<td>Nitzchia longissima</td>
<td>Navicula sp.</td>
<td>Pleurosigma sp.</td>
<td>Nitzchia sigma</td>
<td>Skeletonema costatum</td>
<td>Nitzchia longissima</td>
<td>Navicula sp.</td>
<td>Pleurosigma sp.</td>
<td>Nitzchia sigma</td>
<td>Skeletonema costatum</td>
<td>Nitzchia longissima</td>
<td>Navicula sp.</td>
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<tr>
<td></td>
<td>Nitzchia longissima</td>
<td>Skeletonema costatum</td>
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<td>Skeletonema costatum</td>
<td>Nitzchia longissima</td>
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</tr>
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</table>

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Various species of planktons (Newell and Newell, 1966) were identified in each station. *Nitzchia* and *Skeletonema* were present in almost all samples taken. A total of 12 plankton species were identified. More species were present in the upper reaches of the river where the water is more turbid compared to the lower reaches where the water is clear. The physico-chemical factors bolster the bottom levels of the food chain. Zooplankton graze on the rich phytoplanktons and the former provide carbon and other nutrients to the secondary/tertiary consumers in the food chain (Chesapeake Bay Program Office). Zooplanktons are the source of food for almost all fish larvae as they metamorphose from yolk sacs to external feeding. Fish larval development is dependent on the density and distribution of planktons (Wikipedia, 2011).

The presence of numerous avifauna along the river together with other aquatic animals, some of which are commercially important like fishes, crustaceans and mollusks suggest that the area supports a robust riverine food web. Three mangrove species, namely *Rhizophora sp.*, *Avicennia sp.*, and *Sonneratia sp.* dominate the river banks. The latter are also used by burrowing crustaceans as their homes. The number of birds in situ is dependent on the availability of food brought by tides. This is the reason why certain bird species were not observed during some surveys. Furthermore, some birds are solitary feeders while others like the heron, egret and sandpiper share single feeding posts.

The people residing in the vicinity of the Tinorian River have attended various lectures, trainings and meetings in coastal resource management sponsored by government agencies like the Department of Environment and Natural Resources (DENR), Department of Agriculture (DA), the Bureau of Fisheries and Aquatic Resources (BFAR) and the Municipal and Barangay Councils as well as non-government organizations like the Banate-Barotac Bay Resource Management Council (BBBRMC) and volunteer groups. These trainings and lectures were conducted to increase awareness on the conservation, protection as well as sustaining the resources found along the river which are important not only for the continuity of a healthy ecosystem but also as a livelihood. The researchers interviewed the fisherfolk in order to know to what extent these lectures, trainings and workshops were realized or applied in relation to the establishment of the Tinorian River as an ecotourism spot. Most of the respondents now practice the planting of mangroves, do coastal clean up, refrain from using fine mesh nets and observe the open and closed season in catching certain fish species and practice proper garbage disposal.

Having this healthy ecosystem in place, there is no doubt that the Tinorian River could make a good ecotourism destination. With the environmental laws and ordinances in place, all that is needed is strict implementation of these laws and establishment of infrastructure for boating, piers and shelters to accommodate sightseers and tourists.

Acknowledgements

We would like to acknowledge the BBBRMC and the Department of Tourism Region VI for the brochures and other references that were shared to us.

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Tinorian River’s Ecotourism Attraction, a Brochure of BBBRMCI (Banate- Barotac Bay Resource Management Council Incorporated)


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