On the mangrove assessment in New Agutaya, San Vicente Palawan
A Component Study of the

“COASTAL ENVIRONMENT ASSESSMENT FOR TOURISM OF SAN VICENTE, PALAWAN.”

By:

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August 2013
Acknowledgment

This component study was made possible through the efforts of the Conservation International (CI) University Mentoring Program under a grant provided by the USAID Coral Triangle Support Partnership (CTSP).
San Vicente, Palawan

- Established in January 2, 1972
- Total land area of 1,462.94 km² or 165,797.65 hectares characterized by rugged terrains.
- North-western side of the main island of Palawan with coordinates of 10°32’ N and 119°17’E
- 186 kilometers away from PPCity
- 10 barangays with a total population of 30,919 (NSO, CY 2010)
- Emerging as a prime tourist destination
According to the State of the Environment Report 2009 Update and published in 2010 by the Palawan Council for Sustainable Development – the mangroves of the municipality of San Vicente had a total area of 904.7 hectares or 1.25% of its total land cover from a total of 995 hectares or 1.36% in 1992 – a slight decrease of 0.11%.
Objectives

The study as a component is intended to find out:

- the mangrove abundance and diversity in New Agutaya, San Vicente, Palawan.
- direct human activities that influence their survival in the area of study through site observations and interviews.
Expected Outputs

- Description of the status of mangrove abundance and diversity and direct human activities that influence their survival
- Integrated with the main investigation on coastal environment assessment for tourism of San Vicente, Palawan particularly at 14 km long beach.
Mangroves are predominantly tropical plants with an elaborate root system that inhabit intertidal (between land and sea) zones of sheltered tropical shores, islands, and estuaries (Deguit, EM, et. al. 2004).

Mangroves serve many purposes such as: basis of marine food chain; species habitat; nursery ground; wave buffering; flood control; sediment filtering and water quality improvement; and carbon fixation.
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- habitat; nursery ground; wave buffering; flood control; sediment filtering and water quality improvement; and carbon fixation.
- Human have benefitted from mangroves through clean water, as a source of food such as fish, shells, mollusks, etc., medicines, wood for fuel and construction, honey, alcohol, tannins, protection from waves, tsunami, etc., and tourism and recreation (Deguit, EM. Et. al. 2004)
Palawan Mangroves

- Palawan has an estimated 26,086 hectares of mangroves which is more or less 35% of the total mangroves reserves of the country (Cabahug, DM Jr, et. al. 2005). It became a protected area when Presidential Proclamation 2152 dated December 29, 1981 entitled "Declaring the entire Province of Palawan and Certain Parcels of the Public Domain and or parts of the Country as Mangrove Swamp Forest Preserves" was promulgated.
This law prohibits the indiscriminate cutting of mangroves. As a supplement to this law – a government ban (Department of Environment and Natural Resources Administrative Order No 15) on further conversion of mangroves to fish ponds in 1990 was also issued. Only small-scale utilization of mangrove products is allowed. However - the exploitation and conversion of the mangrove forests continue at an alarming rate.
These include informal settlements, man-made erosion through real estate developments, illegal logging, degradation of watersheds, tourism, port and harbor developments and reclamation, illegal fish and shrimps ponds construction, agriculture, charcoal making, other beach developments, effluent and public discharges, oil pollution and negative public perception about mangroves and their disregard to their environment in favor of short economic gain (Bennagen, E.C. and D.M. Cabahug Jr. 1991; Cabahug DM Jr, et. al. 2005).
As San Vicente gears toward increased tourism activities to boost its economy, it is only appropriate that regular monitoring and rapid assessments and in-depth studies of mangrove growths especially be sustained by proper authorities to get a clear and updated picture of the mangrove vegetation condition in the area which could help them in their future decision-making with regard to its proper utilization, conservation, exploitation and management.
Methodology

Location

The investigation on mangroves was conducted in New Agutaya, San Vicente from May 1-5 and May 25 to June 02, 2013 periods.
Sampling Procedure

Pre-survey of the area

- Activity Orientation
- Transect Method
- Regeneration Plots
- Identification of the mangrove species
- Counting all the individuals within the quadrat
- Data gathering and documentation
- Identification of mangrove associates
- Photodocumentation
- Informal survey
Classifying of Mangroves

Within each transect, mangrove were classified into:

- Mature or Timber size trees (greater than 15 cm DBH/DAB)
- Pole size trees (greater than 5 cm but not more than 15 cm DBH/DAB)
- Regeneration (saplings and seedlings)
  - Saplings (5 cm DBH/DAB and 2 m in height)
  - Seedlings (height below 2 m)
Data Processing and Analysis

- Abundance (no. of trees per transect)
- Height in meters
- Circumference or girth in cm./3.1415 or (DBH)
- Crown Diameter in meters
- Basal Area
- Stand Volume
- Importance Value
- Frequency
- Shannon Diversity Index
  - Fernando Diversity Scale
Within the vicinities of the 14-km long beach encompassing four barangays - only New Agutaya had still good mangrove stands in terms of abundance and volume.

It is evident that the community is trying its effort in bringing back lost trees through concerned groups.
Cuttings were present in almost all the sites be it mature or poles and these sites were fenced with wooden and/or concrete posts which is a sign of private ownership and in turn contrary to Presidential Decree 2152 declaring mangroves areas as protected forest preserves.
That *B. sexangula*, *R. apiculata* and *R. mucronata* were the three woody mangrove species observed during the investigation. Of these three, *B. sexangula* was the most abundant in terms of the number of individuals and the most frequently documented in all the transects.

However *R. apiculata* showed relative dominance of the overall mangrove growths in New Agutaya.
The Shannon Diversity values indicated a very low index according to the Fernando Diversity Scale at .307. Transect nos. 6 and 7 were even zero as only one species namely *B. sexangula* had been recorded.

<table>
<thead>
<tr>
<th>Date of Survey</th>
<th>Transect No. and number of Quadrats</th>
<th>No. of Trees</th>
<th>Shannon’s Diversity Index, $H'$:</th>
<th>Rating (Based on Fernando Diversity Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 3, 2013</td>
<td>T1 and Q1-5</td>
<td>39</td>
<td>0.653</td>
<td>Very low</td>
</tr>
<tr>
<td>May 27, 2013</td>
<td>T2 and Q1-5</td>
<td>73</td>
<td>0.489</td>
<td>Very low</td>
</tr>
<tr>
<td>May 28, 2013</td>
<td>T3 and Q1-3</td>
<td>145</td>
<td>0.233</td>
<td>Very low</td>
</tr>
<tr>
<td>May 29, 2013</td>
<td>T4 and Q1-5</td>
<td>45</td>
<td>0.107</td>
<td>Very low</td>
</tr>
<tr>
<td>May 29, 2013</td>
<td>T5 and Q1-5</td>
<td>69</td>
<td>0.669</td>
<td>Very low</td>
</tr>
<tr>
<td>May 31, 2013</td>
<td>T6 and Q1-5</td>
<td>37</td>
<td>0.00</td>
<td>Only one species observed</td>
</tr>
<tr>
<td>May 31, 2013</td>
<td>T7 and Q1-4</td>
<td>29</td>
<td>0.00</td>
<td>Only one species observed</td>
</tr>
<tr>
<td></td>
<td>7Ts and 32Qs</td>
<td>437</td>
<td>0.307</td>
<td>Very low</td>
</tr>
</tbody>
</table>
Other mangrove species abound even in thousand individuals in all the survey sites but they were not included in the investigation because they were not of the woody types. Such were the mangrove ferns species *Acanthus spp,* (known also as mangrove fern), *Acrostichium sp* commonly called logolo, and *Nypa fruticans* (nipa or sasa).
Of the 437 individuals that were surveyed, the greatest number of trees that were recorded was at Transect 3 with 145 at 33% but these were all poles and saplings. The least number of trees was only 29 individuals which belonged to Transect 7 at 7%. Only 68 trees (15%) from the total of 437 surveyed were classified as mature or timber-sized trees.
These mature trees were observed in Transects 1, 2, 4, 5 and 7. Transect No. 5 had the most number of mature trees but Transect No. 1 had the bigger ones. Some were at least more than 50 years old according to our guide which make the area critical and should be protected from prospecting illegal loggers. Poles and saplings trees dominated the survey sites at 32% and 53% respectively. No mature trees were recorded at Transect Nos. 3 and 6.
Mangroves of New Agutaya had an average stand volume average of 268.56 m$^3$ per hectare. This is more than the overall average stand volume of 31 m$^3$ per hectare in a report made by Cabahug, D.M. et. al. in 2005 from values set forth by DENR and FAO for San Vicente, Palawan.
The average stocking volume per tree for the transects was .197 square meters and the average stocking density per hectare for a standard stocking number of trees at 500 was 99.55 or 100 trees. These trees were mostly poles and saplings. Overall B. sexangula was noted to be the most important mangrove species of New Agutaya, San Vicente, Palawan.
References


- Rotaquio, Jr E. L., et. al. (2007) *Species Composition of Mangrove Forests in Aurora, Philippines- A Special Reference to the Presence of Kandela candel (L) Druce- A Paper presented by E.L. Rotaquio Jr. a Graduate Student in collaboration with Prof. Nobukazu Nakagoshi and Roaldo L. Rotaquio of PENRO, Baler Philippines*
- **San Vicente Palawan Municipal Profile**
- **Palawan Council for Sustainable Development (PCSDS)**
- **Presidential Proclamation No. 2152**
- **DENR Administrative Order No. 15**
- **National Statistics Office**
- **www.Google Earth.com**
- **Wikipedia Encyclopedia**
Thank you.