

**NOTE: THIS IS AN UNSOLICITED CONTRIBUTION. IT HAS NOT BEEN VETTED BY THE FISH PROJECT NOR DOES IT REFLECT THE VIEWS OF THE FISH PROJECT, USAID OR DA-BFAR.**

## EXISTING AND POTENTIAL ECOTOURISM MANGROVE DESTINATIONS IN BOHOL

BY CALIXTO E. YAO

### I. Background

Bohol has the biggest mangrove area (natural and plantation) in the whole Visayas with only two coastal towns, out of 28 city and municipalities have no mangroves. The province has also the richest biodiversity in Central Visayas and probably the whole country (Primavera, 2000). The 1,400ha mangroves of Cogtong Bay, Candijay has 33 mangroves species (Yao,1999). No wonder it has five Mangrove Ecotourism Destinations run by either LGUs or Peoples Organization assisted by DENR/ NGOs. The Province has some rich historical background on community based management in mangroves: 1) with Banacon Island as the first awardees of Certificate of Steward Contract (CSC) in Mangroves in 1980s, the tenorial instrument given by DENR to farmers in timberland areas and to fishermen dependent on mangroves in order to protect and conserve the forest; 2) Talibon, the first Co-Management Project in Mangroves in the country. This is an agreement between DENR and LGU, where the latter is mandated to lead in the development and protection of the natural resources within the municipality. The agreement was facilitated by the Ecological Governance (Eco-Gov) Project, a USAID assisted project in 2004; 3) Banacon, the first large scale community-based mangrove afforestation sans assistance from government or NGOs. Banacon is also one of the 11 CBFMA (Community Based Forest Management Agreement) holders in Bohol issued by DENR and facilitated by CRMP; and 4) Calapi, the first to showcase the protective value of mangrove plantation in effectively protecting the Pangangan causeway. The plantation was initiated by Mr Ytac assisted by students/Boy and Girl Scouts (Yao, undated)

Unfortunately, most of these mangrove tourist destinations are not sustainable due to serious lack of mangrove interpretive components. Visitors where just ushered along lengthy boardwalks (500-1000m) with very few specie (5-7 species, some with wrong tag) with limited information on the importance of mangroves or the socio-cultural uniqueness of the localities/community. With the above scenarios, visitors are hardly satisfied, not to mention the tiresome walk on rickety bamboo slats that are high risk for visitors, especially foreigners.

Most of the POs where not trained on Mangrove Interpretation in order for them to articulate what is Mangrove Ecosystem, scientifically, like; how mangroves thrives under saline water, how to explain to visitors the presence of salt on the surface of bungalon leaves? What are the different kinds of prop roots, what is viviparous seed? Why is there a strong clamor for mangrove rehabilitation worldwide? How can one mangrove leaf feed one fish while still in the mangrove area, before that fish goes out to the open seas upon maturity? Or explain why fiddler crabs keeps on waving his colorful, extra big claw? And demonstrate what happens to bakauan propagules if it drops at low tide, during high tide. These are some of the information/activities that visitors would be glad to know/experience.

These notes were done to improve the sad state of existing mangrove ecotourism destination in Bohol in view of the increasing tourist in the province and to promote the importance of mangroves as carbon sink, which all LGUs must recognized/appreciate by preparing their respective Mangrove Profile and make use of the DENR's latest mangrove delineation by municipality.

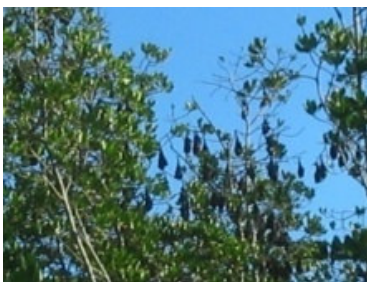
Below are some of the Mangrove Ecotourism site visited: 1) Banacon,Getafi, 2)Talibon, 3)Panadtaran,Candijaty, 4)San Vicente, Maribojoc, and 5)Cabilao Island, Loon, and potential ecotourism sites

### II. Mangrove Ecotourism Sites

## A. Existing Sites

1. Banacon Island – is the oldest mangrove based ecotourism site and one of the two destinations featured in Bohol Travel Guide. But the PO (BAFMAPA) running the tour operation has very little to share on mangrove ecosystem. From the interview with the PO president and other members last December 9, 2009, on the flow of the tour, visitors were merely brought to Paden's Pass/Banacon Highway after a briefing on their PO profile, when and how Nong Dencio started planting bakauan, his multi awards: Likas Yaman from DENR, Best Farmer from the King of Thailand and FAO-World Food Day (Yao, undated), an update on their CBFMA, existing livelihood of the islanders. Not much on the characteristics of mangroves: viviparous seeds, salt secretion, prop roots, zonation pattern; demonstration on how bakauan regenerates and amatong harvest. The PO also failed to include bat watching, which is very close to Paden's Pass (pic.1); blue crab catching during the incoming high tide (pic.2), and presentation of the Ditriral Food Chain – DFC ( fig.1) the fate of a mangrove leaf that feeds a fish/shrimp while still in the mangrove area, before they goes out to the open seas. The importance of mangroves in fishery w is the main reason why the world is interested in mangrove restoration.

The unfinished boardwalk (pic.3), one meter wide of bamboo slats on concrete post was vandalized – the nylons that secured the slats were cut



Pic.1 Fruit bat colony



Pic.2. Blue crabs caught by hands



Pic.3 Board walk

Harvesting/poaching of bakauan plantation – Banacon has been on headlines, recently because of the poaching (pic.4) that appeared in the Youtube. The LGU and DENR have hired forest guards to conduct forest protection patrol and replanting on harvested areas. However, all plantings have a very high mortality rate due to the methane build up from the rotting roots/barks. In Malaysia, the conduct replanting on logged over-areas after two years (Chan,1996) Replanting should be done a year after harvest. Moreover, the propagules used in replanting were mostly immature as indicated by their curving/twisted forms. Uprooted dead propagules have developed fewer roots but not leaves (pic.5), due to the insufficient stored food of the unripe fruit. Another observation is the very close spacing (10-20cm), which is completely wrong as the area is free from strong waves/winds, being within the plantation. Wider spacing of 2m x 2m is more appropriate for faster growth and wider canopy for more carbon capture



Pic.4 Replanting on  
harvested plantation



Pic.5 immature propagules

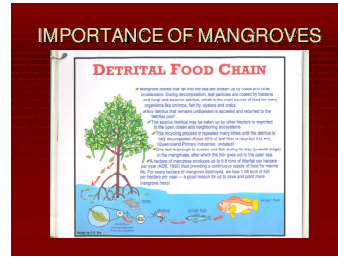


Fig.1 Detrital Food Chain

### Recommendation

- For the PO to undergo training on Mangrove Interpretation and developed local Mangrove Specialist (dendrologist, mangrove ecosystem)
- Brief discussion/presentation on:
  - Where Banacon got its name
  - Danahon Double Bank Reef, Banacon being on Calituban Reef, the inner reef of the double bank
  - Why bakauan plantation is very successful in the island
  - Takla and manla tracking, takla-gobi fish association
  - Fiddler crabs courtship
  - Illegal cutting of bakauan due to big demand for post for sea weed farms
  - Buy and sell of bakauan plantations
  - Studies/researches conducted in the island by DENR, UPLB, others
  - Certificate of Stewardship Contract (CSC), the first in the mangrove area
  - How the PO was awarded with CBFMA
  - Socio-economic profile of the islanders, being in business with Cebu City than Tagbilaran City
- Demonstration on:
  - amatong harvest , an indigenous fish capture
  - bakauan regeneration – when bakaun propagules drops at low tide, survival is assured because the viviparous seeds are so designed to fall upright on muddy substrates. But what happen when bakauan propagules drops during high tide? – the propagules floats in horizontal position and gradually inclined until it assume a vertical position or nearly so in 10 days, when the lower tip of the propagules scraping the substrates and develop roots (Davis, 1940).
  - Bird/Bat watching - large flock of tarik in Po Gamay
- Handouts/Leaflets on:
  - PO and the top five “must see” in the island
  - Publications on Banacon
  - research result done by DENR, UPLB and Masteral Thesis/Dissertations (DENR/LGU/NGO to assist PO on the above recommendation)

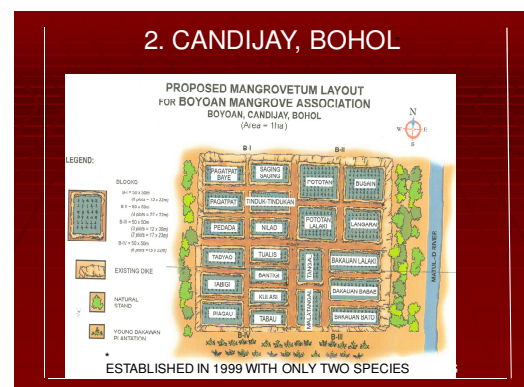
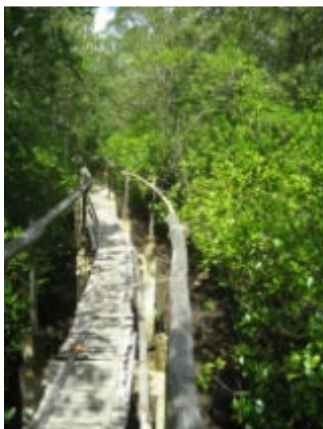
## 2. Talibon Mangrove Co-Management Area

This site has a peculiar feature as a mangrove tour destination because the area is under co-management between DENR and Talibon LGU, the first of its kind in the country, with objective of closing “open access” on the remaining unallocated mangrove forest to ensure forest protection/conservation and rehabilitation of the area. One of its accomplishments is the legalization of illegal fishponds through issuance of sub-agreement to the operators by the LGU. As such, fishpond operators are now paying taxes to the LGU. The LGU is now planning to expand the co-management coverage in the western part of the municipality

The LGU has constructed a kilometer boardwalk to accommodate visitors but unfortunately, the tour guides have limited information to share with the visitors, just like in Banacon. The team running the tour has not undergone training on Mangrove Interpretation to be able to articulate the importance/uniqueness of the Mangrove Ecosystems. The main activities during the mangrove tour are: Walk among the dense natural mangroves dominated by bakauan lalaki, nilad, api-api, bungalon, malatungal and few pototan lalaki on a kilometer narrow boardwalk made of bamboo slats on concrete post, brief on the co-management agreement, the extent of mangrove areas, monkey watching, livelihoods in the mangroves, etc. But nothing on mangrove ecology, DFC, bakauan regeneration, which is surefire attraction, so with takla and manla tracking demo.

The boardwalk is now rotting (pic.6) as the bamboos are wet most of the time due to the limited sunlight. The boardwalk gets only an hour of sunlight at high noon because of dense mangrove stands. The LGU has not repair same due to the big cost, considering the length of the boardwalk. The absence of visitors could be another reason for abandoning the project.

Apparently, the LGU failed to implement some of the recommendations of EcoGov like: developing Local Mangrove Specialist who will interpret what Mangrove Ecosystems is all about: the importance of mangroves to the fishing industries, its protective value to the shoreline/infrastructures, the role of the different flora and fauna in maintaining the integrity of the mangroves, the establishment of a mangrovetum (fig.2) – a plantation of mangrove species planted in blocks by family/genus for easy growth monitoring and species identification. Mangrovetum (Yao,1994) is for research studies, seed production and for ecotourism, where one can see the three bakauan, four Bruguierras, three Sonneratias, side by side.



Pic.6. Rotting boardwalk

Fig.2 Mangrovetum Layout

Co-Management Highlight – aside from expounding on what is co-management, which have legalized illegal fishponds, which have generated revenue to the LGU and intent to close more” open access” areas, takla, which abounds in the area but not given much attention, is now commercialized in Talibon market at P120.00/kg(pic.7) . This is probably an offshoot on the aggressive promotion of the crunchy crustacean during the preparation of the Co-Management project

- Briefed Forester Tony Lupe of CENRO Talibon and Kagawad Ebarido, Chairman of Environment, separately, on my findings on the boardwalk and takla, plus my recommendations. Also gave them a copy of the proposal on the Mangrove Strips along Calituban Reef (attached). During the second visit to Talibon, briefed CENRO Estopa on the need of LGU tour operator and DENR Mangrove Specialist for training on Mangrove Interpretation, which he readily agreed, adding that the LGU has is still budget from EcoGov Project and CENRO counterpart for the said training.

#### Recommendations

- Developed a local mangrove specialist who will discuss/explain to visitors what is mangrove ecosystems, scientifically, both the different flora and fauna in the area, including takla/snapping shrimps, the crunchy crustacean and its close association with gobi fish, who act as their guard. and the mystique manla/mud lobster, the land builder, whose meat makes one thirsty and after drinking, the water has a sweet aftertaste.
- Introduced other species on gaps along the boardwalk to increase biodiversity
- Use bamboo raft, flat boat, or banca in transporting visitor across the river, instead of the concrete bridge (pic.8) that is not in harmony with the pristine mangroves. Aside from the costly bridge, visitors will enjoy more riding on raft, an added adventure
- Establish a Mangrovetum on an abandoned fishpond
- A fun fishing amenities on an existing fishpond
- Reduce length of boardwalk to save time for visitors and maintenance cost
- Copy recommendation for Banacon for whatever is applicable in the co-management area.
- Introduced native products along tour routes like baskets made of sig-id vines (pic.9)



Pic.7. Takla, upper pan



Pic.8 Concrete bridge



Pic.9 Sig-id vine baskets

### 3. PAMAS, Panadtaran, Candijay, Bohol

PAMAS (Panadtaran Mangrove Association) is one of the two mangrove ecotour destination that has been included in the recent Bohol Travel Guide publication, together with Banacon. Newcomers in the league like Talibon and San Vicente Mangrove Association (SAVIMA), a PROCESS-B ohol assisted PO have visited

PAMAS for some learning. PAMAS is one of the PO assisted by CRMP as Mangrove Ecotourism destination with training on Mangrove Interpretation, together with that of Cambuhat , Buenavesta, Bohol, which specializes on river cruise adventure and cultural presentation.

Although both newcomers have positive comments on how PAMAS conducted the tour, it still needs more activities/interpretation to ensure revisits by a particular group or group from the same place that has been encouraged.

One of the biggest problems of PAMAS is also the high cost of boardwalk maintenance. But even with the rotting boardwalk, some foreigner from the nearby Bitoon Beach Resort still frequents the area because of its rich biodiversity, the cutting edge of Panadtaran. And because of this there were several foreigners that have conducted their Masteral Thesis and Dissertations.

### Recommendation

Aside from the same recommendation for Banacon and Talibon, PAMAS could expand to non-mangrove activities like demonstration on how to extract fiber from a bark anilao tree( pic.10), and make them into ropes/baskets and tapping resin from piling liitan (*Canarium luzonicum*) tree to make a torch. Said species are found along the tour route.

The PO could even expand this kind of demonstration by establishing an arboretum – a plantation of trees planted in blocks by economic uses: medicinal tree, bast fibers gums and resins, wildlife food, ornamental/flowering trees, rare/special species (mangkono, Philippine Ebony, and *Cinnamomum cebuense*)



Pic.10 Anilao Tree,



fruits



and bark

### 3. SAVIMA (San Vicente Mangrove Association), San Vicente, Maribojoc

SAVIMA's slogan is "commune with nature" with about a kilometer narrow boardwalk made of bamboo slats with wooden poles. Like that of Talibon, the boardwalk cut across a dense natural stands but this time a pure stands of bakauan lalaki and bakauan bato. Along the boardwalk are solitary pagatpat, bakauan babae, and malatangal. The presence of bakauan babae indicates lower salinity of the area attributed to spring water (pic.11) on the shore near the PO's cottage (pic.12). This also means that many species could be introduced in the area/along the boardwalk to increase biodiversity.



Pic.11 Natural spring



Pic.12 PO cottage with tour guides

Among the major activities of the PO are demonstrations of: takla tracking, imbao gleaning, and nipa shingle making

Boardwalk is too long for comfort, with very limited species. The reason for the kilometer boardwalk is to reach the island for a better view of Maribojoc Bay, but there is not much to do/see for the visitors in the island, not really worth the long walk on rickety boardwalk. Incidentally, the Mayor of Maribojoc has the same observation, according to Nita, one of the tour guides.

#### Recommendation

- Undergo Mangrove Interpretation Training to develop Local Mangrove Specialist
- Shorten the boardwalk
- Additional demonstration on:
  - bakuan regeneration
  - Tabigi fruit as puzzle – at the end of the boardwalk is a big malapiagau (*Xylocarpus rumphii*), a cousin of tabigi, but with much smaller fruits.
  - Nipa tapping for wine and vinegar
- Discussion on:
  - the detrital food chain (DFC)
  - tangal in the bahalina industry (present fresh specimens of tangal leaves, flower, propagules and bark) better yet to transplant plant big tangal saplings
  - Mangrove characteristics
  - Tamilok delicacy as aphrodisiac (show sample)
  - Fiddler crab courtship- the male waving its colorful extra big right claw until assured of his effort, afterwhich, he goes into the borrow, followed by his partner
  - Why fiddler crab? – the crab use the smaller right claw in eating from the ground to mouth, which synchronized with its left claw. The movement resembles that of playing violin([www.fiddlercrab.info](http://www.fiddlercrab.info)).
  - Salt excretion on bungalon/saging-saging leaves
  - How did Manila got its name and
  - Bakauan lalaki ?
- Establishment of mangrovetum and arboretum in the island
- Introduced new species along the boardwalk to increase biodiversity

## B. Potential Sites

1. Cabilao Island, this island has a unique features: Liniao Lake – a fresh water lake, about 13ha, is reamed with dense mangroves (50m width), dominated by bungalon, kulasi, pototan lalaki and few tualis, nilad (the species, which Manila was named after - Pasig river used to abound with nilad/Scyphiphora hydrophyllacea that whenever one, going to the river, is asked where is he/she is going, the answer in “doon sa may nilad”). and butabuta (pic.13). The first three species have abundant wildlings that could be collected for reforestation. The limited species is due to the absences of dispersal of other species, the lake, having no inlet from the sea. However, the presence of bungalon puti and langarai was reported by Peddy Caet and Forester Raul Paler, respectively.

The area also has Bantulinao/Philippine Ebony (*Diospyrus ferrea*) – one of the four rare/especial species in the Philippines, including Mangkono, balsa, and Teak. Some saplings where sited in the eastern side of the lake. The species, which is considered a mangrove associates, is priced for bonsai

The boardwalk to the kiosk is now damaged (pic.14). But accordingly, the LGU is repairing the infrastructure.

Pahina – adjacent to the lake, western side, is another body of water, about ¼ hectare, which was developed into fishpond and then abandoned (pic.15). The inlet is underground, located south of the pond. The area is surrounded with rocks and mangroves dominated by busain and nilad.

The lake could be an additional ecotourism destination, if properly packaged because of the presence of beach resorts near the lake frequented by foreigners. The island can be reached from Tagbilaran or Tubigon Port.



Pic.13 Liniao Lake



Pic.14 Kiosk and boardwalk



Pic. 15 Pahina at low tide

### Recommendation

- Conduct the following
  - Limnology study to determine the physico-chemical properties and flora and fauna of the lake
  - inventory of flora and fauna
  - enrichment planting to increase biodiversity
- Explore possibility of bird watching, considering the presence of wild duck and pigeons.
- Established fish cage for fun fishing
- Provide Kayaking facilities
- Establishment of Mangrovetum in the two bodies of water

- Locate bungalow puti soonest for propagation in other mangrove areas in Bohol
- Review all publication on the lake

## 2. Proposed Banacon-Calituban Mangrove Strips

This proposal will connect Banacon island, Getafe and Calituban Island, Talibon with bakauan strips as additional mangrove ecotourism destination (attachment 1). The site is very close to an existing beach resort in Mahaba Island, Talibon. The 100m wide by 7 km mangrove strips will be a big spectacle from the air that plane passengers will be inspired to see them up close and personal and have the following options:

- Kayaking,
- gleaning,
- picnic/mangrove dive,
- sulo – catching fish/crabs/shrimps at night when they are most vulnerable,
- catching blue crabs – during incoming high tide when they are out for food. As a filter feeder, they face the incoming tide for the planktons. Blue crabs are easy to catch as they borrow on sand with their back, visible. You only have to press the back and pick them with your thumb and index finger at the back to avoid being bitten.

The mangrove strip is actually a broken one, with 50m gaps along line and 50m displacement between adjacent strips to minimize sea current disruption.

### III. General recommendations

- With regards to the proposed training on Mangrove Interpretation. Forester Lolo Laurente of Bohol Environmental Management Office (BEMO) has also signified fund availability for the said training. One option is to revive the Mangrove Provincial Training Team for the training after some orientation.
- For DENR Regional Office to assist BEMO Bohol in the conduct of the training.
- DENR to be included in the training as local Mangrove Specialist and be part of any of the mangrove tour. The presence of DENR personnel during lakbay-aral could readily answer environmental issues.
- DENR to assist LGUs in the preparation of Municipal Mangrove Profile, especially with the copy of the recently delineated mangrove areas
- DENR/LGU/NGO to assist POs in preparing handouts/leaflets. These handouts will serve as IEC materials that may encourage others to revisit the site with other groups, a kind of "balik-baklik" syndrome of Palawan – where fully satisfied visitors have narrated their happy experience to officemates/coworkers/friends, who in turn visited Palawan

### IV. Reference

Chan, H.T., 1996. Mangrove Restoration in Peninsular Malaysia: a case study on Matang in Restoration of Mangrove Ecosystems, 1996. International Tropical Timber Organization and The International Society for Mangrove Ecosystems

Davis, H.J., 1940. The Ecology and Ecologic Role of Mangroves in Florida. Papers from Tortugas Vol. 32.

Primavera, J.H., 2000. Philippines Mangroves: Status, Threats and Sustainable Development. Asia-Pacific Cooperation on Research and Conservation of Mangroves. Proceedings, International Workshop, 26-30 March, 2000, Okinawa, Japan

Yao,C.E.,1999. Mangroves of Cogtong, Canopy International, 1999

Yao,C.E., 1994. Mangrovetum for Ecotourism Destination, The Philippine Lumberman, May-June, 1994

Yao, C.E.,200. Mangrove Strips Along Calituban Reef, Canopy International, May-June, 2000

Yao,C.E., undated. Nong Dencion, Bakauan Guardian of Banacon, Coastal Alert, <http://www.oneocean.org>

Yao, C.E., undated, Saving the Pangangan Highway, Coastal Alert/ <http://www.oneocean.org>

WWW. Fiddlercrab.info