ATTEMPTS AT COMMUNITY-BASED RESOURCE MANAGEMENT: THE DEVELOPMENT ACTION PROJECT IN THE BAIS BAY BASIN (AUGUST 1991 - DECEMBER 1993)

Betty C. Abregana

Silliman University had made earlier attempts at managing resources at the community level. For instance, the residents of Apo Island were mobilized to be directly involved in the protection of their marine sanctuary (White, 1988).In the rain forest of Balinsasayao, upland farmers were able to increase their household income by engaging in farming practices that banked on the proper combination of trees and crops (Cadeliña, 1985; Abregana, 1984). In both cases, however, the fact that the communities were more or less self-contained at the time of the project implementation made the development activities relatively easy to handle.

In the case of the Bais Bay Basin, complex interacting subsystems are evident. Activities in upland communities have impact on the lowland and coastal communities. Marginalized farming groups and fishing groups abound in upland and coastal areas, respectively. Lowland areas are generally owned by sugarcane planters and wealthy farmers. The task of managing resources in this bay region of distinct but interacting ecozones appears formidable.

In past years, studies were conducted in Bais Bay to monitor the effect on water quality of the waste management practices of a sugar mill (Lowrie, 1979). A socio-economic profile was also drawn of Dewey Island as baseline data for the identification of cooperative economic projects in the locality (Cadeliña, 1983).

Clearly, the area begs for an integrated development action program that has the participation of the local residents. The Development Action Program (DAP), a component of the Environment and Resource Management Project (ERMP) managed in the Philippines by the Institute of Environmental Science and Management, University of the Philippines at Los Baños and in Canada by the School for Resource and Environmental Studies at Dalhousie University, presented an opportunity to pursue developmental goals with those directly affected by the state of local environmental affairs. The ERMP is funded by the Canadian International Development Agency (CIDA).

How the Program Started

In a workshop, representatives from the local government, government agencies, socio-civic clubs, non-government organizations and people's organizations agreed that

there were critical issues that had to be addressed in the task of managing the resources in the Bais Bay region (Proceedings, 1991). Issues were identified and definite programmatic thrusts were suggested. The workshop participants presented worthwhile goals for the community and advanced possible courses of action:

GOALS	Ways to achieve the goal
1. To empower the people	- Social preparation in the community - Community organizing and community development - On-site/hands-on training - Information/education/communication drive
2. To have coordination in the conduct of development projects	- Organize a coordinating body
3. To improve the watershed	- Reforest watershed area and the river system - Properly manage existing water supply system - Control soil erosion - Reforest mangrove areas - Introduce appropriate farming practices
4. To attend to other environmental concerns	- Improve waste management - Rationalize housing project for the coastal residents - Monitor water quality
5. To establish an information system	- Have reliable socio-economic profile - Conduct inventory/assessment of stock/ natural resources
6. To improve household income	- Engage in appropriate livelihood activities

Team Composition and Function

Guided by the outcome of the August 1991 agroecosystems workshop, four components of the Bais development action program were identified. Each component of the DAP-Bais Bay Basin consciously attempted to meet the people's needs. Where adequate information was available on a given community issue, the validated information was treated as a developmental guideline. Where claims were unsubstantiated or elicited conflicting

In an activity that requires contiguous farming families to work together, direct participation of identified project cooperators appeared to be appropriate. This is the case among farmer-cooperators who plant along the stream banks tree species indigenous to the area. Where a tree nursery has to be set up, two or three neighboring farmer-cooperators join hands in establishing and maintaining the nursery.

Two contrasting approaches, both aiming at increasing the farmer's level of motivation, need closer scrutiny. In the productivity component, farmers engaged in project-related farming activities without a fee. In the watershed component, cooperators received an incentive fee over a period of 12 months for maintaining the trees planted along riparian areas and for working in the seedling nursery.

Community assemblies took any of the following forms: meetings, focused group discussions, seminars or workshops. On-site trainings and demonstrations were done for such activities as germination of seeds, sampling collection, planting of mangroves, or soil and water conservation (SWC) measures. Field visits to farms in Negros Oriental and Cebu were arranged for farmer-leaders.

Mangrove rehabilitation work was participatory, with the local college and the community involved in the establishment of a multispecies mangrove nursery and backyard reforestation efforts. Fisheries assessment was carried out by ten fish enumerators endorsed by their respective communities. Trained by Silliman University Marine Laboratory (SUML) personnel, the enumerators monitored daily fish catch at ten landing sites and identified the fishes. Water quality monitoring and nutrient analysis were mostly done by SUML personnel, as technical work was involved.

To attain a wider community reach, cooperation between institutions and local organizations was elicited. Working relations have been established with the city Department of Agriculture, Department of Environment and Natural Resources, Department of Interior and Local Government, Population Commission, Planning Office, Waterworks, Engineers' Office, School of Fisheries in Bais of Central Visayas Polytechnic College, Rotary Club, and existing barangay associations.

Activities and Results

Walaon na edya-edya
Ug sa kada miting motambong
Mopagula sa atong mga problema
Aron sa pagsulbad tambayayongan ta.

(Let us do away with self-oriented concerns.

In every meeting let us attend to
Our problems, let these be known.
Together we find solutions.)

This is the chorus of a song sung during the evaluation workshop among the upland farmers of Amalao in December 1993. This local composition was presented as the association's way of expressing appreciation for the assistance given by the DAP team.

Productivity Component. Amalao is one of the two original sites where the productivity component has implemented its action program in the uplands. The place is actually a resettlement sites for displaced sugar hacienda workers. The group, composed of 43 members, is closely knit and the level of involvement is high.

Tagpo, the other site, had reportedly been visited by elements of the political underground. As such, the military used to have operations in the area. Initially, the DAP team experienced some resistance in its entry to the community and residents' attendance in meetings was erratic.

Presently, two associations are in place: Amalao Landscapers Association, Inc. (ALAI) and Tagpo-Cambayongan-Maigsing Association (TACAMA). The project staff worked with the farmers in the planning, implementation, and problem-solving activities, and in the formative evaluation of the different agricultural productivity projects (Final Report, Agroecosystems Component, December 1993). Project support came in the form of assistance to the participants in obtaining needed materials and facilitating access to available resources.

Activities related to productivity and environmental concerns include dispersal of fruit trees; dispersal of pigs, goats, or cattle; introduction of individual gardening of tomatoes, eggplants, sitao, okra, sweet peppers, or melons; strengthening of the **alayon** system in planning and laying out a checkdam, contour canals, drainage canals, and soil traps; work on the community experimental/model vegetable farms; soil erosion monitoring for various land uses — sugarcane, corn, vegetable, and rootcrops using hedgerows, rockwalls, and other SWC structures; and demonstrating to the farmers the effect of such agroecosystem properties as water, temperature, and humidity on productivity.

Continuing education seminars centered on soil types, soil fertility, and crop protection concepts. Seminars on values, leadership skills, and gender roles were also conducted. Selected farmers made a cross-visit to Mag-uugmad Foundation project sites in Guba and Argao, Cebu, and other farmers made a visit to the Soil and Water Conservation Foundation farm sites in Manjuyod, Negros Oriental.

All the activities were outcomes of a negotiated process between the project participants and the project staff as a way of validating traditional knowledge, checking motivations, and effecting farming practices and behavior that are environmentally sound.

Watershed Component. The problem of water supply in Bais is attributed to denuded forest brought about by conversion of forest lands into sugarcane farms as well as to intensive water use for farm irrigation, sugarmills and prawn ponds. The local DENR has advocated watershed rehabilitation based on three strategies: (a) slowing of surface velocity to minimize silt/sediment deposit in downstream rivers and basin; (b) increasing height of water table by reforestation; and (c) increasing water absorption capacity of the tree species' root system and preventing soil fertility loss.

The watershed component of the DAP-Bais Bay Basin aimed to supplement present efforts at watershed rehabilitation. Its modest contribution to an awesome task was its emphasis on planting indigenous tree species in addition to fast-growing, introduced species like mahogany and gmelina. The DENR records show 222,019 trees and 17,000 wild sunflowers planted on flood plains covering about 288 hectares. With the current rate of reforestation utilizing exotic species. the original wildlife will be drastically altered and the indigenous tree species will eventually be crowded out. Replanting the riparian zones and flood plains with local tree species for biodiversity restoration and the popularizing of soil and water conservation strategies constituted the framework for the DAP watershed program (Terminal Report, Watershed Component, 1993).

Eight *sitios* — Banga-banga, Mala-iba, Amalao, Cambalag-as, Tinaan, Tagpo, Canlumbong, Panalaan — were selected as project sites, having been identified as critical watershed areas. Half of these *sitios* are located north of and the other half south of the Tamogong river, the central major river drainage which leads to Bais Bay.

Farmer cooperators were identified and invited to attend environmental awareness workshops and seminars held once or twice a month. Nursery establishments, seedling protection, techniques of planting, and SWC techniques were demonstrated, and hands-on participation elicited.

The project has distributed not less than 2,000 exotic and indigenous tree seedlings. Cooperators have also gone into construction of rockwalls or retaining walls as SWC structures to prevent flooding of their plants on the riparian zones.

Marine Component. The following discussion on the marine component is taken directly from Terminal Report, Year 2, Marine Component, December 1993.

From secondary data and results of consultation with the local people, Bais Bay appears: (a) heavily silted; (b) heavily exploited with illegal and destructive fishing methods; (c) polluted; and (d) to have its mangrove area diminished in size.

Identified data groups included: (a) the degree and rate of siltation; (b) fish catch; (c) maximum sustainable yield; and (d) water quality and nutrient content.

The first year of the project was mostly spent in gathering data on fishery stock assessment, water quality (siltation and pollution), and establishment of mangrove nursery.

Results of fisheries assessment and their implications follow.

1. A total of 3,077 fishers are recorded to be exploiting Bais Bay using 19 types of fishing gear and four fishing techniques. The average density, i.e. the number of fishers per square kilometer, of Bais Bay is 57. The most widely used fishing gear are **pukot** (gill net), followed by **bunsod** (fish corral), and **panggal** (crab pot).

2. Among the 19 types of fishing gear used in the Bay, **hulbot** (modified Danish seine), catches the most, with an average of 8.28 kg per trip, followed by **handok** (Muro Ami) which catches an average of 5.73 kg per trip. **Hulbot** and **sahid** are more efficient than **pukot** because the former use finer (1 cm) nets. Presidential Decree 704, Section 34 and Food and Agriculture Organization 155, Series of 1988 banned the use of nets with mesh size less than 3 cm. Additional restriction for **hulbot** or **hulahop** fishing is provided by Food and Agriculture Organization 164. The use of illegal mesh sized nets is widespread in Bais Bay. This threatens the fisheries resources.

3. The estimated annual harvest of Bais Bay fisherfolk is 951,581 kg. The annual extraction rate is 17.6 metric tons per square kilometer. However, the catch per unit of effort values are relatively lower compared with those obtained from other areas. This means that although Bais Bay is still productive, the fishers get only a small catch, further indicating that there are more users of fisheries resources than the fisheries can sustain.

4. The harvested food species include 159 species of fish, 13 species of crustaceans, 6 species of squids and octopus, and 32 species of seashells. These data may be underestimated because some seashells, and one species of sea cucumber, were reportedly found in areas which were not monitored. The most abundant species include **danggit** (siganids), **gisaw** (mullets), and **buga-ong** (terapons), while the most abundant nonfish are **lambay** (crabs), **pasayan** (shrimps), and **nocos** (squids). This indicates that the Bay is rich in food resources. Its sustainability depends on its wise use.

5. The most commonly caught and highest priced fish species in the Bay is *Siganus canaliculatus*, a moderately fast growing and highly exploited species even before sexually maturity, leading to overfishing. This can be mitigated by enforcing the ban on nets with mesh size of less than 3 cm, like beach seines, gill nets, modified Danish seine, fish net, and fish corral. Studies also indicated that catching spawners before these could spawn contributed to recruit overfishing. This can be mitigated by declaring fishing closed during the spawning season, which, for this species, peaks March-April and July-August.

Results of nutrient studies indicated significant differences in phospate-phosphorus and nitrate-nitrogen content in sediment samples taken from three sites, with Panamangan in South Bais Bay recording highest values. This could be the reason why this area is rich in shellfish. The presence of the Central Azucarera de Bais sugar mill has been implicated as a possible cause for high nutrient levels on this side of the bay.

Efforts at establishing and enriching the mangrove multispecies nursery have been quite successful, as have efforts at increasing the area planted with mangroves. The ten enumerators who serve as project "ambassadors" were tasked with influencing at least five neighbors to plant mangroves in their backyards. At the same time, research on germination, substrate suitabilities, and growth were undertaken. Among the five species germinated, not including *Rhizophora spp.*, *Brugiera gymnorrhiza* showed highest germination rates while *Ceriops spp.* showed lowest germination rates. Among the four species monitored for growth, *Rhizophora mucronata* showed highest growth, followed by *Brugiera gymnorrhiza* and *Rhisophora apiculata*, with *Ceriops* showing slowest rates. Highest growth rates for *Rhizophora mucronata* occurred in plants planted in the nursery area where the predominant substrate was fine sand.

Activities for the second year were geared towards summarizing and analyzing data gathered during the first year, training the fisheries enumerators to disseminate this information and take on the role of "ambassadors" of the project, and increasing efforts at mangrove rehabilitation.

Plans to make Talabong Mangrove Forest into a mangrove park have been concretized with assistance from the Bais City Government and the Department of Tourism. The overall plan is to make Bais Bay a site for ecotourism (Terminal Report Year 2, Marine Component, December 1993).

Human Resource Mobilization and Coordination. This component of the DAP-Bais Bay Basin Project functions in tandem with other components of the

project. Basically, it responds to special training needs and human resource requirements of the project. It also serves as the over-all coordinating structure of the program.

During the first year of operation the special training and human resource needs were in the form of gender sensitivity workshops with clientele groups in upland and lowland communities as well as facilitating community assemblies meant to orient participants to all aspects of the program, surfacing local expectations, communally working at resolving both perceived and real conflicts in the level of the target community and/or the project staff, or tapping local experts to handle specific skills training.

In the second year of operation, solicited seminars and workshops were mostly follow-up activities to strengthen skills, clarify values, or assess leadership capabilities at the grass roots. More discussions with women in the coastal barangays were held on such topics as water allocation and income-generating programs.

Its coordinating function allows for institutional linkages at the level of the specific project site, the barangay, the city, the participating entities (both government and non-government units), and up to the level of ERMP Central Management Committee. Overseeing the project finances is also a major task of this component.

In terms of mobilization and coordination, the two-year old development action program has attained some initial results:

- establishment of a DAP field office at the Human Settlement Building in Capiñahan, with provisions for light and water as well as security personnel, courtesy of the city government of Bais;
- stimulation of discussion among local government officials, including the legislative council, to arrive at an integrated development plan for Bais;
- the conduct of meetings, focused group discussions, seminars, or workshops with people in the community aimed at increasing the residents' level of awareness of the state of local environment and the need to do something about the situation;
- although difficulties are still encountered in getting the three mayors to talk to each other, the Bais Coordinating Council offers a ready venue for the mayors of the three political units (Manjuyod, Bais, Tanjay) to cross political boundaries in addressing developmental concerns in Bais Bay, which extends to Manjuyod towards the north and Tanjay to the south;

- the creation of the Bantay Tubig Federation, which consists of the Bantay Tubig Associations, participated in mostly by women, in the island barangays of Looc, Okiot, and Capiñahan; and,

- in the period that the total plan for development of Bais is being studied by a multisectoral committee, the mayor has referred to the SU-DAP team, for coordination, other groups of foundations that might enter the localities where DAP has already established its presence.

It must be noted that all the seminars and workshops that were conducted during the second year of operation had counterpart support, although sometimes minimal, from the participants and collaborating agencies or institutions.

The role of women in development is a special consideration in the implementation of the project. Where appropriate, gender sensitivity trainings were given to both men and women. In the uplands, men and women farmers from Tagpo and Amalao assessed the contribution of male and female household members, including children, to on-farm and off-farm work as well as to household chores. There was a realization that women spend more work hours when farm and house chores are combined. The women who work on the farm readily identified themselves as farmers rather than housekeepers. Some of these women suggested that they be assisted in setting up vegetable gardens nearer their homes. Assistance was given them in the purchase of basic garden tools and vegetable seeds. By December 1993, the women were able to harvest some carrots.

In the coastal communities of Capiñahan, Looc, and Okiot, members of the Bantay Tubig Federation also underwent gender sensitivity sessions. The women observed that water is essential to their household responsibilities such as cooking and washing clothes. Some men joined the federation, as they felt it is equally their concern to have a stable supply of water in the community. The group has pushed for a better system and requested that a water line separate from the adjoining barangays be installed in their area. With some assistance from the DAP, the City Engineer's office and the City Waterworks inspected the pipelines for leaks and replaced the broken or worn pipes. A reservoir was planned to be installed but new developments from the city government regarding the improvement of the entire city water system affected the plans of the local federation. Through the local federation, water users in the island communities were to be trained to manage their own water systems and be responsible for the collection of fees, maintenance and repair of the system, and in a cooperative arrangement, to deal with the City Waterworks for the overall payment of water charges. With the city's plan to have its water system under the Local Waterworks Utilities Administration (LWUA), the local federation has now two major options: to own up to the responsibility of managing the island communities' water system or to assign the responsibility back to the city government. The latter course now appears to more likely.

Some coastal women groups are proposing backyard livelihood projects like pig raising, duck raising, and fish processing. The DAP team is presently assessing the feasibility of these projects.

Lessons Learned/Insights

There is no one best way approach to community-based resource management. Due to diversity of people and experiences in the community, community entry and organizing strategies cannot be prescriptive and restricted.

Community development initiatives do not start from zero. In designing the development program for a given community, the resource users are the best ones to define, prioritize the issues according to their needs, and offer solutions.

There is a place for everybody in community development work. Existing initiatives should not be viewed as mutually exclusive. Rather, resource management should be inclusive and properly coordinated for coherence and integration.

Institutional linkages as well as personal contacts with government entities, non-government groups, people's organizations, and other units facilitate community entry and enhance development efforts in the area.

People's level of readiness to manage the resources in their community depends, to a large extent, on their willingness to assume the responsibility, which, in turn, is facilitated by the perception that the development program is within their personal agenda and will provide immediate personal benefits.

Several levels of participation are evident in the project area: contractual or paid participation; consultative, contractual, and bottom-up or grass-roots participation. Each level of participation meets specific needs and is influenced by local conditions.While we recognize the siginificance of each level of participation, a truly community-based approach to resource management must ultimately work towards the grass-roots level of participation.

Surfacing gender issues encourages men and women to consider options that will benefit the most, and to identify appropriate gender-sensitive development activities.

Farmers are their own best teachers. Demonstrations given by farmers themselves and visits to other farmers' fields were found effective learning strategies.

Future Plans

The Development Action Program in Bais Bay Basin has to move forward. In the past two years the program has taken small and tentative, although important, steps. Presently,

the program has to be nurtured to make it ready to take bigger steps. What could be a formula that would move more certainly towards the management of Bais Bay resources? Consistent with its landscape approach to resource management, the team proposes a minimum set of programmatic thrusts across ecozones.

In the uplands we have to expand the agroecosystems approach to farm production and nature preservation to other barrios or sitios. This means a merging of the Watershed and Productivity components. In the communities of Amalao and Tagpo, present activities will be strengthened. The DAP has to support the association members who expressed eagerness to participate in the training of farmers in nearby communities and to implement a consensually arrived at policy regarding the identification and management of forest areas which are sources of firewood. The issue of land tenure is another concern of these upland farmers.

In the coastal communities, efforts should now be geared towards mangrove rehabilitation, provision for animal and bird colonization, and increasing community backyard reforestation. To sustain the promotion of community awareness of Bay management, the local "ambassadors" must be continually involved either by forming them into a core group or soliciting their assistance in the Marine component. Institutional build-up of the local state college should be strengthened by expanding the mangrove reforestation to the campus, improving their fisheries curriculum, and getting the students more involved on hands-on research. The plan to make Bais Bay a site for ecotourism, with the Mangrove Park as the center of attraction, can also be supported (Marine Component Terminal Report, Year 2).

The mobilization and coordination component, in addition to its established activities in the first two years, may now systematically solicit the cooperation of the sugar planters, sugar mill administrators, government officials in the three municipalities, prawn pond owners, and other stakeholders in the management of North and South Bais Bay.

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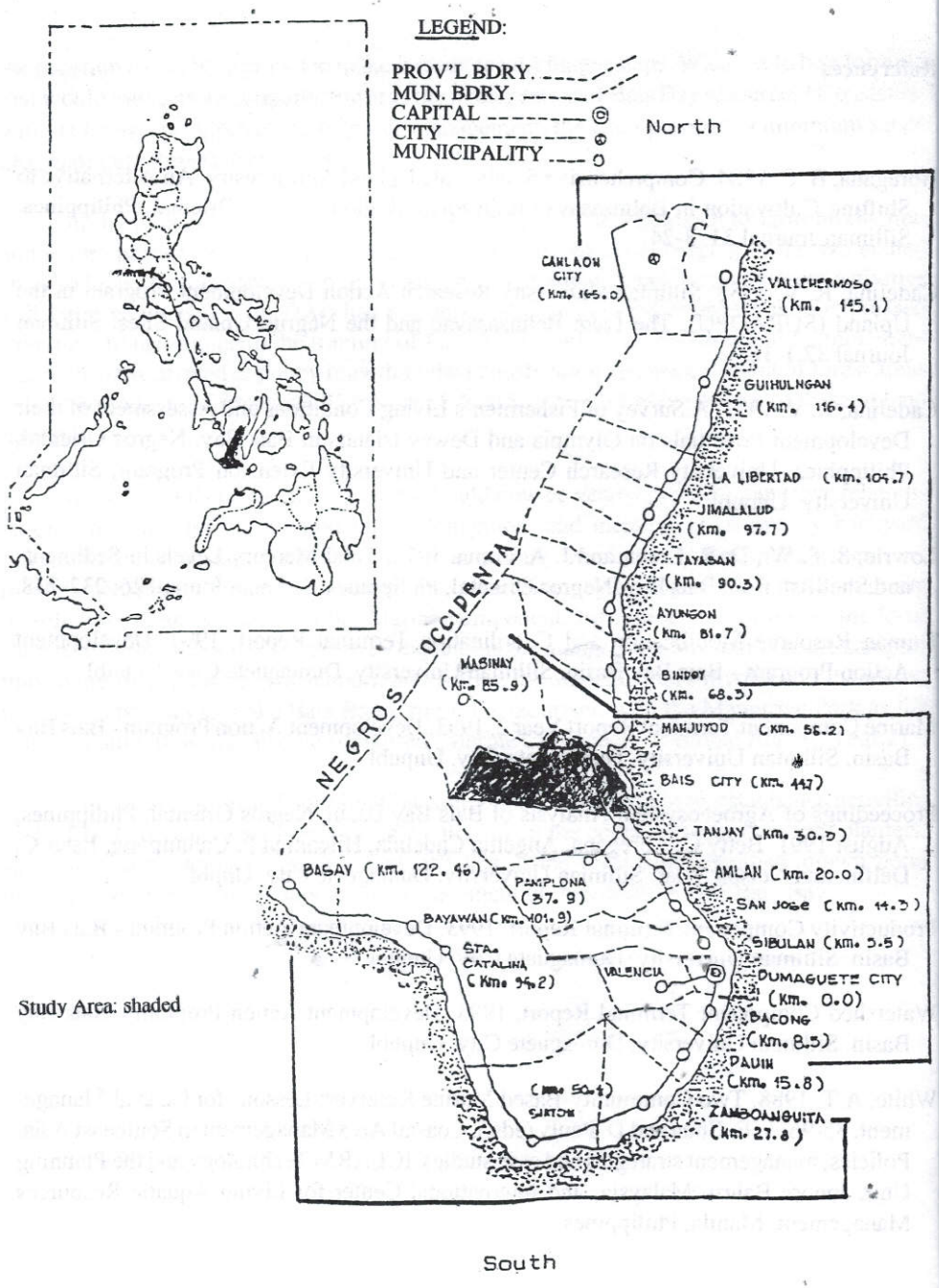

Figure 1. Map of Negros Oriental.

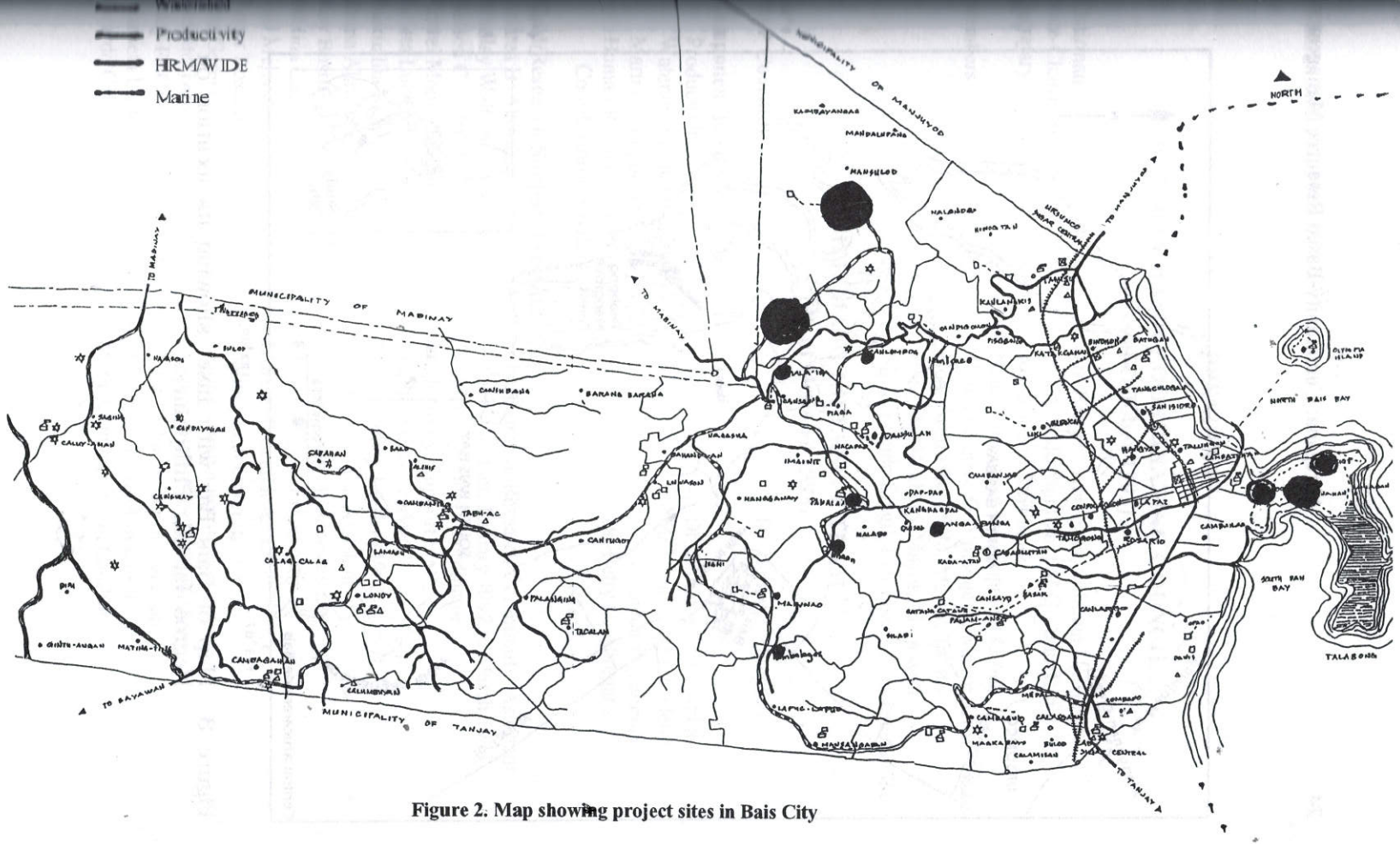

Figure 2. Map showing project sites in Bais City

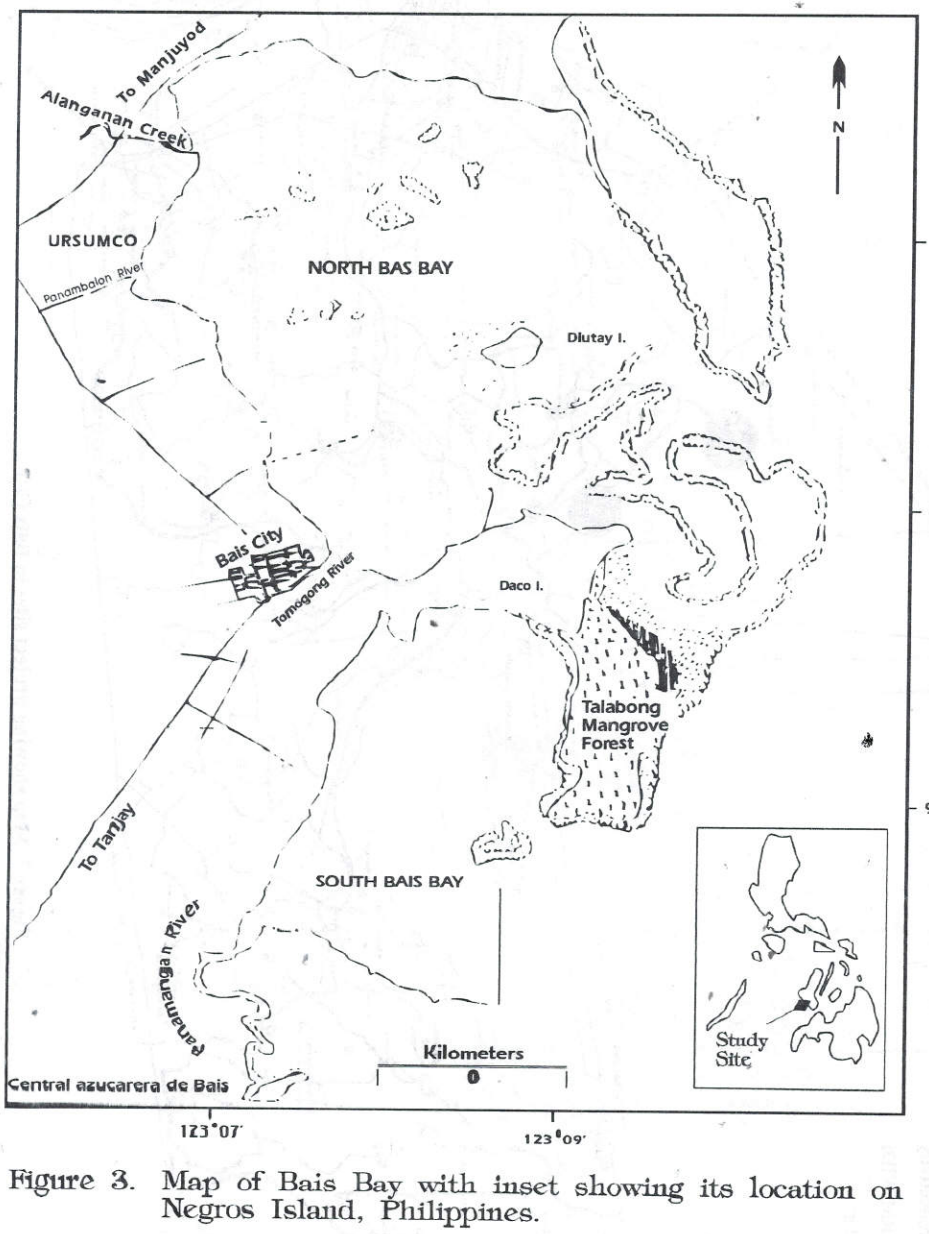

Figure 3. Map of Bais Bay with inset showing its location on Negros Island, Philippines.

APPENDIX 1

BAIS BAY BASIN COORDINATING COUNCIL
(As of October 1993)

Chairman	-	Dr. Betty C. Abregana, Silliman University
Vice-Chairman	-	Mr. Alfredo Maturan, DILG - Bais City
Secretary	-	Mr. Roberto Raymundo Negros Resource Development Group
Members	-	Hon. Francisco G. Villanueva, Mayor, City of Bais Hon. Arturo Regalado, Mayor, Tanjay Hon. Jose Baldado, Mayor, Manjuyod Mr. Fernando Eregil, Fishermen's Association of Bais

SILLIMAN UNIVERSITY TEAM
(As of October 1993)

DAP Coordinator	-	Dr. Betty C. Abregana
Component Leaders :		
Productivity	-	Dr. Christopher C. Ablan
Watershed Rehabilitation	-	Mrs. Angelita M. Cadeliña
Marine Component	-	Dr. Hilconida P. Calumpong
Human Resource Mobilization/ Coordination/WIDE	-	Dr. Betty C. Abregana

Field/Research/Support Personnel:

Andrea B. Alviola	-	Administrative/Research/Community Assistant
Bradley Walters	-	Project Assistant, January 1992 to March 1993
Nelson C. Vilar	-	Productivity, Field Coordinator
Ruwel Monte de Ramos	-	Productivity, Support Staff
Julieta Luchavez	-	Marine, Study Leader
Pascualita Sa-a	-	Marine, Study Leader (1992)
Bruna Abrencia	-	Marine, Research Assistant
Roy Bustillo	-	Marine, Research Assistant
Paulina Cadiz	-	Marine, Research Assistant
Joel Melendez	-	Marine, Research Assistant (1992)
Roger Rosanto	-	Marine, enumerator in Dawis
Lito Garcia	-	Marine, enumerator in Opao
Leonito Torres	-	Marine, enumerator in Capiñahan
Lucy Fe Cancio	-	Marine, enumerator in Sanlagan
Marrieta Lusterio	-	Marine, enumerator in Lag-it
Ricardo Cabio Jr.	-	Marine, enumerator in Canibol

Renato Opana	- Marine, enumerator in Tavera
Julieta Ardenia	- Marine, enumerator in Batugan
Josephine Ocat	- Marine, enumerator in Dunggu-an
Josephine Narciso	- Marine, enumerator in Campuyo
Eddie Visitacion	- Watershed, DA field technician Coopted
Ariston Cardaño	- Watershed, DENR field technician Coopted
Ester C. Delfin	- Women's concerns, resource person
Manuel Gloria	- Water project consultant
Daylinda Catacutan	- Popcom Officer, Bais City, Coopted

CONTACT PERSONS AT THE COMMUNITY LEVEL

Pulong Dako (Dewey Island):

Okiot	- Brgy. Capt. Godofredo Dy
Capiñahan	- Brgy. Capt. Florentino Ramirez
Lo-oc	- Brgy. Capt. Abraham Mascardo
President, Bantay Tubig Federation	- Lamberto Lopez
President Okiot Bantay Tubig Asso.	- Victoria Mayonado
President Capiñahan Bantay Tubig Asso.	- Lamberto Lopez
Community Facilitator, Women's Group in Capiñahan	- Eleuteria Dinglasa

Brgy. Tagpo (proper) :

President, Tagpo-Cambayongan-Maigsing Association (TACAMA)	- Christopher Lucero

Sitio Amalao:

President, Amalao Landscapers Association Inc. (ALAI)	- Wilson Tamayo
Women's Group in Amalao	- Lydia Rodriguez

Brgy. Cabanlutan:

Sitio Banga-Banga and Hunop	- Brgy. Capt. Ramon Baldosano

Brgy. Mabunao:

Sitio Cambalag-as	- Alfredo Dingal, farmer cooperator

Brgy. Panala-an:

Panala-an Proper	- Andres Jabonillo, farmer cooperator
Sitio Tina-an	- Rodulfo Cadavis, farmer cooperator
Sitio Mala-iba	- Andres Eb-Eb, farmer cooperator

Brgy. Manlipac:

Sitio Canlumbog	- Zosimo Cuevas, (farmer cooperator)