

Carood Watershed Resource Base Concerns and Agenda

The Carood Watershed, Bohol's fifth largest at 20,479 hectares and spanning six municipalities, is home to about 60,000 Boholanos (5.7% of the provincial population) living mostly on farming in the uplands and lowlands and fishing and aquaculture in the coastal areas.

In November 2002, a working group composed of LGU and people's organization (PO) representatives and technical personnel from the Bohol Environment Management Office (BEMO) and the Department of Environment and Natural Resources (DENR) started a series of meetings to discuss local environmental concerns and explore mechanisms to manage the area's resources through the watershed approach. The group meets almost monthly, identifying issues and concerns and defining the role of a proposed watershed management body. In September 2003, through Executive Order No. 30 of Gov. Erico B. Aumentado, the Carood Watershed Management Council (CWMC) was formed.

The CWMC is an inter-LGU, multi-agency management body composed of representatives of LGUs, POs, NGOs, government agencies, the academe and other stakeholders. The Council aims to harmonize development plans of the LGUs and resource management plans of communities and to integrate their implementation with the assistance and cooperation of all stakeholders to ensure the sustainable management of the watershed.

The Council has identified several pressing resource management concerns within the watershed as delineated on this spread, and is considering options involving both technical and social tools and participatory methods for addressing these.

Area : 20,479 hectares (5th largest in Bohol)

Land Use: Agricultural: 68.0% Sandbar: 1%
 Built-up: 0.3% No. of Municipalities: 6 (Ubay, Alicia, Candijay, Pilar Mabini, Guindulman)
 Forest: 0.3% No. of Barangays: 47 (10+15+14+3+3+2)
 Grasses/Scrub: 29.4% Estimated Population: 64,962 total population of the 47 barangays included
 Mangrove: 1.4% although only portions of some barangays are part of the watershed; NSO, 2000)

Land Classification: Alienable and Disposable: 69.4% Civil Reservation: 5.6% Community Forest: 0.6%
 Forest Land: 23.7% Forest Land for Fishpond Devt: 0.7%

1 FOREST PLANTATION FIRES (Area Affected: 716+ ha.)

In March 2003, more than 67% of the 1,064 ha. of developed CBFM areas of UFTPAI (San Pascual and Bongbong, Ubay), AFTPAI (Cambaol, Alicia) and MRAI (Abaca and San Roque, Mabini) were hit by fires, the most destructive so far in the areas' history, allegedly aggravated by the recent conflicts in Mabini. More than P7 million in project loan money, time and potential revenues were lost in the fires that gutted 4-year-old stands of mango, bamboo, mangium and some reforestation species.

- GOALS**
- Reduce incidence of plantation fires
 - Effectively build capacity of communities to manage fires to prevent losses to trees, property and other resources
 - Reduce community vulnerability to risks
 - Generate active support of LGUs for CBFM and POs

- STRATEGIES AND OPTIONS**
- ★ DENR to allow PO residents to till lands closer to the plantation areas for better monitoring and quicker response
 - ★ DENR to train composite fire brigades of PO members, barangay LGU tanods and volunteers in effective firefighting techniques in coordination with Bureau of Fire Protection and LGUs
 - ★ POs to establish fire lines/breaks and other fire-preventing structures and mechanisms
 - ★ DENR and LGUs to conduct awareness raising activities on responsible practices among cattle herders
 - ★ CWMC to organize and facilitate discussion among LGU (province, municipality, barangay), POs, DENR and military to agree on firefighting responses
 - ★ CWMC to conduct IEC activities on CBFM

2 UNREGULATED EXTRACTION OF SAND AND GRAVEL (Area Affected: 10 km along riverbanks)

Unregulated quarrying of sand and gravel by local residents and commercial operators along riverbanks in Cayacay, Cambaol and Cabatang in Alicia cause the destruction of embankments, aggravating siltation and flooding. Regulations exist but no monitoring is done on the volume extracted and areas quarried. Some residents complain but commercial operations backed by local politicians continue, while quarrying by low-income residents as subsistence livelihood or for household use is tolerated. The barangay LGUs are hesitant to enforce regulations as they also receive revenue share.

- GOALS**
- Maintain stability of riverbanks to prevent erosion and accidents
 - Regulate sand extraction for household consumption and small-scale construction needs preferably within the area only

- STRATEGIES AND OPTIONS**
- ★ Municipal LGU or adjacent barangay LGUs to pass an ordinance regulating quarrying operations in the area
 - ★ Strictly enforce existing relevant ordinances
 - ★ Apply for gratuitous permits to extract sand from the provincial government to dredge river beds the sand from which will be used within the barangay for household or for LGU consumption only
 - ★ Stabilize riverbanks by encouraging land owners/community residents to set up a 20-meter buffer zone on both sides of the river planted to bamboo or other fine-rooted species; planting materials to be provided by the DENR and LGUs

REFERENCES:

BASE MAP: National Mapping and Resource Information Authority, Topographic Map 1:50,000 Sheet Nos. 3849-1, 3849-2, 3849-3, 3849-4, 3850-2, 3850-3

VEGETATION MAP: Bureau of Soil and Water Management Central Visayas Present Land Use/Vegetation Map 1993 1:250,000

ESSC Watersheds of Bohol 1999

Bohol Environmental Management Office (BEMO) Natural Resources Database of Bohol 2000

DENR-CENRO Tagbilaran and Talibon CBFM data as of 2003

Candijay Municipal Base Map 1999

Alicia Municipal Base Map 2000

Mabini Municipal Base Map 2002

Ubay Municipal Base Map 2003

Concept Paper of the Proposed Carood Watershed Management Council 2003

Minutes of Carood Watershed Working Group Meetings, 2002 - 2003

EMPOWERMENT IN AREAS FOR COMMUNITY NATURAL RESOURCE MANAGEMENT AREAS (Area affected: 2,616 ha.)

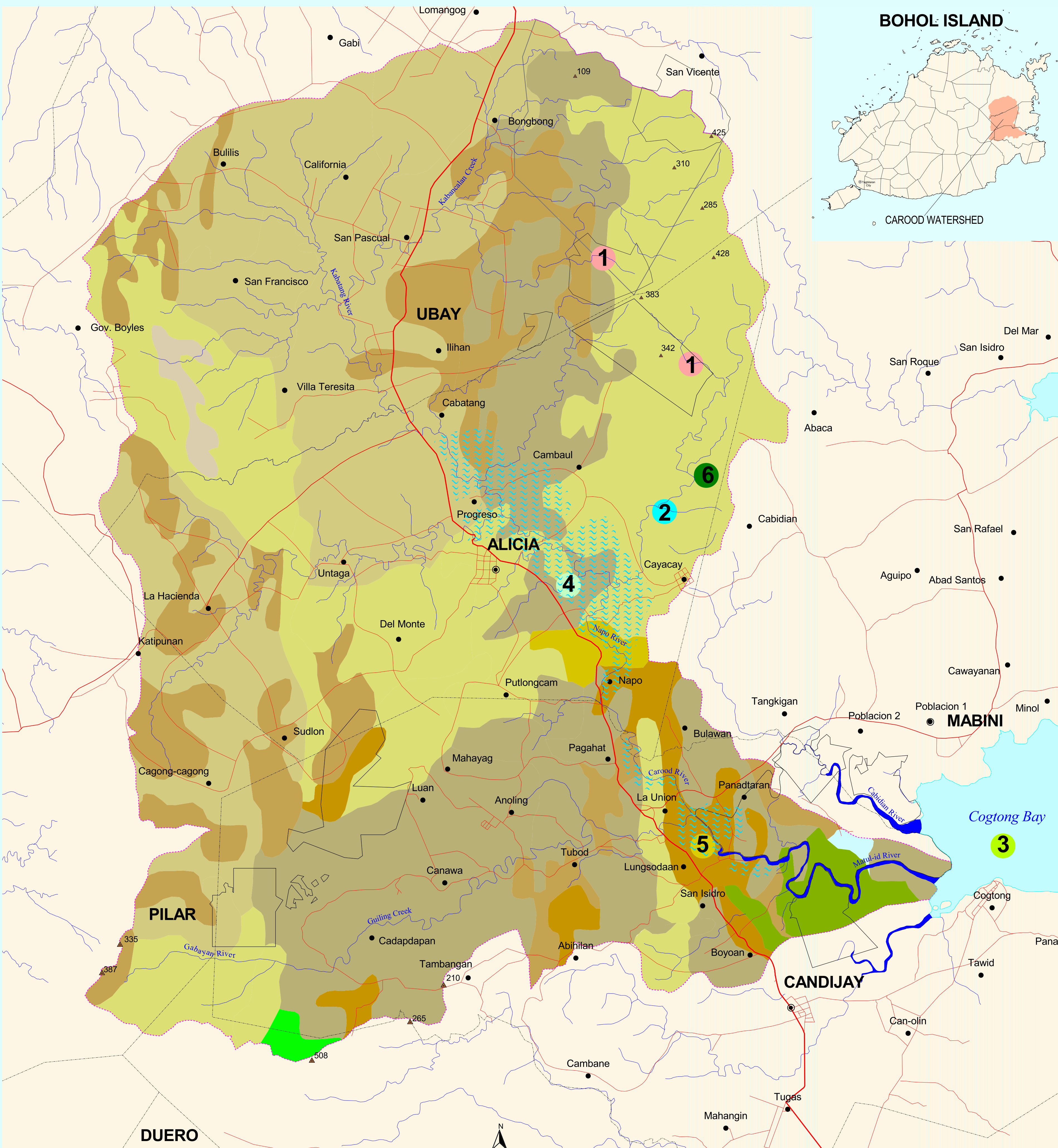
The people's organizations running the seven CBFM areas in Carood are dealing with concerns in area management, tenure, organizational capacity, participation, livelihood generation, marketing skills, and external support systems.

- GOALS**
- Increase environmental awareness and responsibility for ecological services of POs
 - Enhance POs' sense of responsibility in managing natural resources and build their capability to manage their community forests
 - Reduce community exposure to risk

- STRATEGIES AND OPTIONS**
- ★ Facilitate a forum for POs themselves to strategically assess the gains and setbacks of CBFM implementation in Bohol
 - ★ Create a network of POs and assisting agencies/organizations to support POs in their NRM work and livelihood development

RESOURCE BASE CONCERNS AND AGENDA

Carood Watershed, Bohol



LEGEND:

- SECONDARY FOREST (68 ha.)1987 DENR
- RICEFIELD (IRRIGATED) (695 ha.)1993 BSWM
- RICEFIELD (RAINFED) (2,834 ha.)
- CORN (134 ha.)
- CASSAVA (2,241 ha.)
- COCONUT (4,825 ha.)
- GRASSLAND/SCRUB (5,915 ha.)
- MANGROVE (290 ha.)
- SANDBAR (28 ha.)
- BUILT-UP AREAS (155 ha.)
- FLOODED AREA
- CBFM AREA (DENR- BOHOL 2002)
- CIVIL RESERVATION (DENR 2002)
- WATERSHED DIVIDE
- MUNICIPAL BOUNDARY
- NATIONAL ROAD
- PROVINCIAL ROAD
- MUNICIPAL/BARANGAY ROAD
- RIVER/CREEK
- COASTLINE
- 512 TRIG POINT
- MUNICIPALITY
- BARANGAY

EXTENSIVE UNPRODUCTIVE LAND USE

Large areas of land are not optimally used and properly managed. There is little amount of investment in labor and capital in many parts of the watershed. This could be linked to the lukewarm interest of external investors in using the area as well as to soil erosion given the lack of right vegetative cover.

- GOAL**
- Determine appropriate and optimal use of areas within the watershed and apply the appropriate land use
 - Identify the role of agribusiness in the area

- STRATEGIES AND OPTIONS**
- ★ Review biophysical features (topography, geology, hydrology, soils, elevation, climate, slopes, vegetative cover) and land use (actual and as reflected in the CLUPs)
 - ★ Research on the best use of land and other natural resources
 - ★ Review, harmonize and enhance CLUPs
 - ★ Conduct continuing IEC among constituents in the barangays for responsible resource use and conservation
 - ★ Engage the business sector in discussions

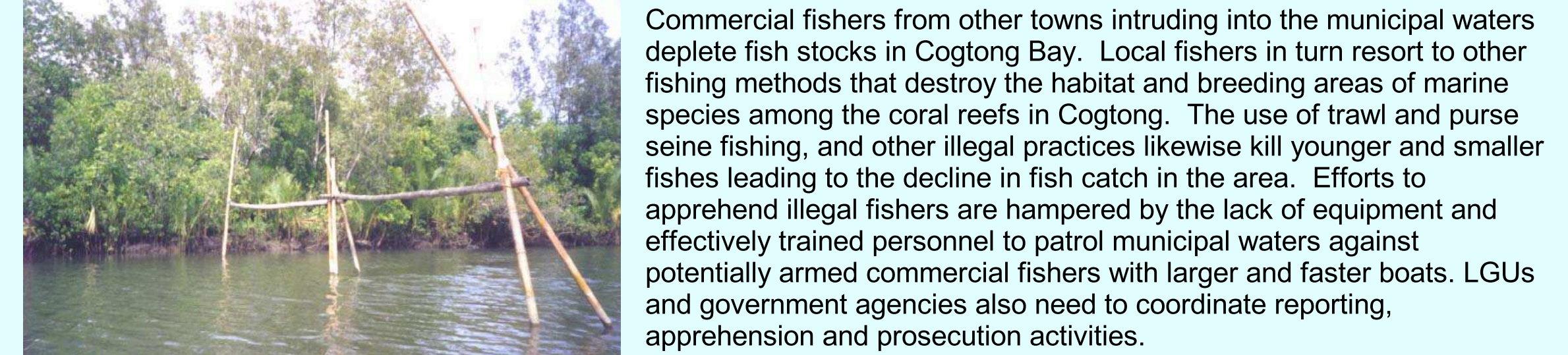
LAND USE DATA QUALITY

The present data on land use from the Bureau of Soils and Water Management for Carood municipalities are too generalized and do not relate to the actual land use in the watershed. Without appropriate and adequate information for management, CWMC will have difficulty in bringing about resolutions to socio-economic changes that are needed to respond to sustainable management.

- GOAL**
- Enhance accuracy of land use data for planning by classifying remote sensing images

- STRATEGIES AND OPTIONS**
- ★ Verify and update land use data for appropriate planning strategies
 - ★ Raise awareness of watershed stakeholders on the importance of data quality as basis for land use planning and natural resources management
 - ★ Hold joint planning workshops for integration and review of data in integrated management strategies

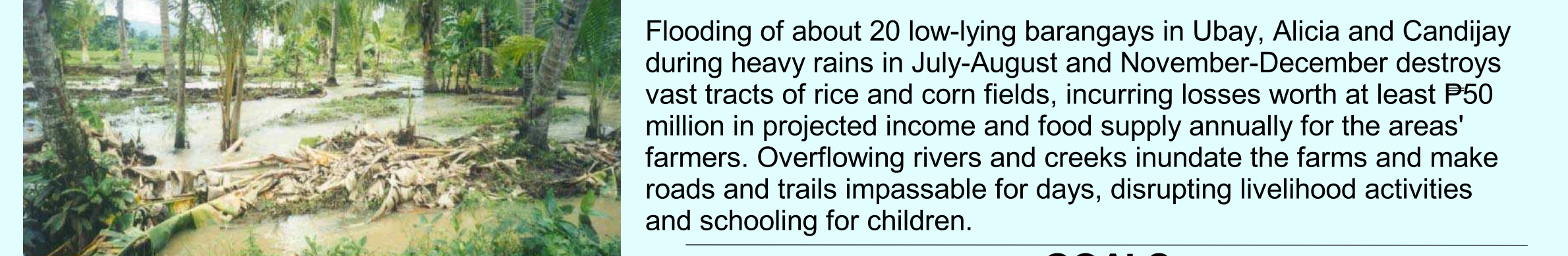
3 ILLEGAL FISHING PRACTICES (Area affected: 2,000 ha. of coral reefs in Cogtong Bay)



- GOAL**
- Increase fish stocks in Cogtong Bay for food supply and biodiversity

- STRATEGIES AND OPTIONS**
- ★ Strictly enforce applicable fishery laws (R.A. 8550)
 - ★ Harmonize and implement the Coastal Resource Management Plans of the coastal municipalities (Mabini, Candijay and Anda)
 - ★ Sustain the Coastal Law Enforcement Council and Bantay Dagat activities
 - ★ Conduct appropriate IEC activities among coastal communities
 - ★ Establish effective law enforcement mechanism (apprehension, prosecution, penalty) among government agencies with support from private groups

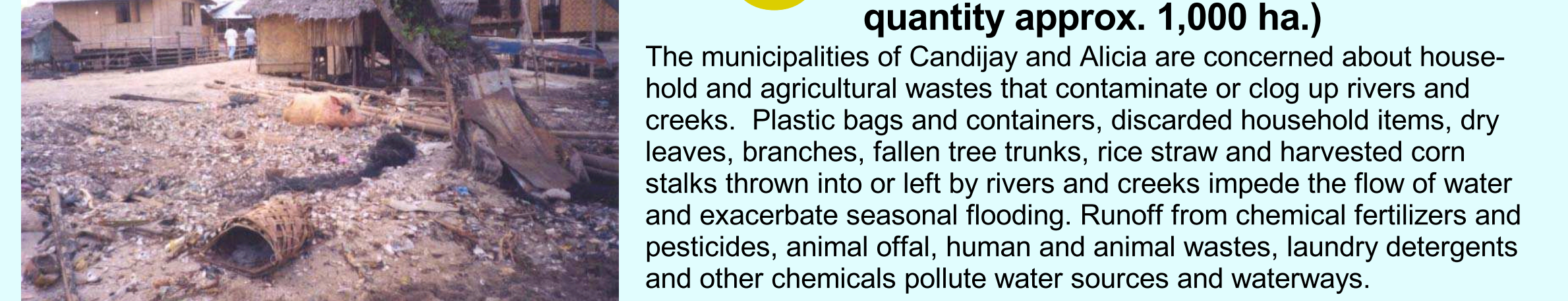
4 SEASONAL FLOODING (Area Affected: approx. 3,000 ha.)



- GOALS**
- Adopt appropriate land use for riverside areas according to flooding patterns
 - Consistently practice soil and water conservation measures and ecologically friendly solid waste management

- STRATEGIES AND OPTIONS**
- ★ Conduct river assessment with topo maps to come up with options (riverbank stabilization, dredging, or change of land use) Document land use changes in the area
 - ★ Conduct feasibility studies on appropriate crops to plant or land use to adopt
 - ★ Raise awareness of riverside communities on sustainable farming practices that prevent siltation and erosion and on solid waste management

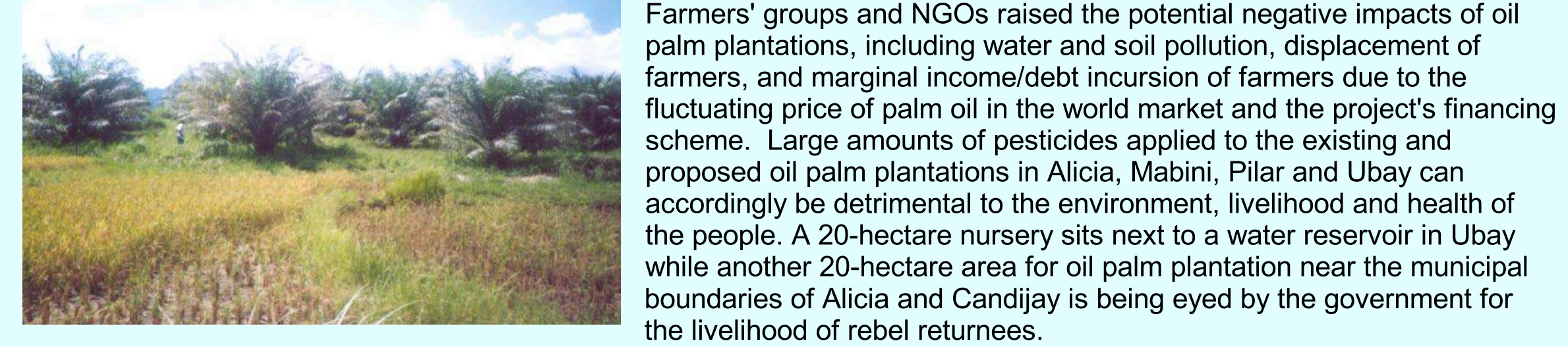
5 IMPROPER WASTE DISPOSAL (Area affected for water quality and quantity approx. 1,000 ha.)



- GOAL**
- Maintain quality of water for drinking, irrigation and other uses

- STRATEGIES AND OPTIONS**
- ★ Conduct IEC on proper waste management/disposal
 - ★ Implement RA 9003 (Ecological Solid Waste Management Act of 2000)
 - ★ Establish/improve municipal waste management system based on RA 9003
 - ★ Protect domestic water sources

6 OIL PALM PLANTATIONS (Area Affected: 50 ha.)



- GOAL**
- Determine the suitability of oil palm in the area for informed decision-making by watershed stakeholders

- STRATEGIES AND OPTIONS**
- ★ Research on the pros and cons of oil palm plantation, including relevant laws and experiences of oil palm plantations in other areas (coordinate with ESSC Agusan)
 - ★ Conduct a forum with proponents and opponents of oil palm, government agency representatives, watershed LGUs, POs and other stakeholders
 - ★ If warranted, conduct a dialogue between the CWMC and the provincial government promoting the planting of oil palm

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SOIL EROSION AND SILTATION

Rivers and creeks in Candijay and Alicia are getting silted. Poor vegetative cover and unsustainable farming practices in the upstream areas and overextraction of sand along river embankments are identified as major causes of siltation. With 31% of the watershed area having a slope of 18% and steeper, and erosion potential among the municipalities ranging from 13% slight to 18% severe, soil erosion that worsens seasonal flooding has to be addressed.

- GOAL**
- Conserve soil fertility and stability in farms for sustainable food production and economic improvement

- STRATEGIES AND OPTIONS**
- ★ Determine actual soil erosion figures by municipality and throughout the watershed
 - ★ Continue reforestation efforts of LGUs using appropriate species
 - ★ Conduct IEC among farmers on SWCM Pass a joint ordinance providing guidelines on SWCM