

Community-based bathymetric survey to identify position of sea mounts, reefs and other fishing locations

Information Sheet #1, November 2008
Bathymetry Survey



Rebuilding Traditional Knowledge



When the tsunami hit Banda Aceh, it killed 186,000 people. Of those 186,000 approximately 40,000 were fishermen. One of the consequences of so many lives lost, was that much of the fishing knowledge of the area was also lost, e.g. the location of navigational hazards, underwater sea mounts, where the fish are, etc. To help rebuild the knowledge, the Community-based bathymetric Survey (CBBS) are using the GPS sounders with data logging devices to record where the fishermen are going, i.e. depth, sea surface temperature, range, efficiency i.e., how much effort they are putting into getting the fish they catch.

The strategy is to build the capacity of the fishermen's association **Panglima Laot** to collect and record the type of data they need to manage themselves in the future. One of the first steps is to start collecting and managing their information. With that goal in mind, they have created a small Access database in Acehnese. In this database, the fishermen record data related to boats under the authority of the Panglima Laot. For example, data is being collected with respect to which species of fish the fishermen are catching, the amounts they are catching of each species.

Primary Goals of the project

- Replacing lost knowledge with respect to fishing in the area;
- Document obstructions and hazards to navigation (natural hazards; reefs; post-tsunami debris; marine wrecks);
- Prevent loss of income to fishermen by reducing the incidence of nets being damaged due to underwater obstructions.
- Capacity building; e.g. training fishermen to use marine charts and GPS navigational equipment.



Secondary Goals

- Record of fishing locations, species information and catch size;
- Document and record location of changes in sea temperature and ocean currents.

Project Beneficiaries

A number of clear project beneficiaries can be identified, these include:

- **Local fishing Community:** Vessel owner, captain and crew, fish traders and their respective families.
- **Government:** Support for developing natural resource co-management strategies, coastal monitoring, productive partnerships with local stakeholders.
- **Scientific Community:** Researchers on ocean current information, species information, catch data, fishing efficiency, Acehnese common names and data on commercial species



Navigation classes for the fishermen

One of the strategies we are pursuing to build their capacity is to train the fishermen in how to use GPS as well as traditional navigation and giving them access to existing navigational charts. The thought is that if the



fishermen know where they are and where they need to go, they can cruise more efficiently, saving money. That if they experience an emergency, they can radio their position, and this will help to save lives. (this has already proven true; see Empat Sudara incident Oct, 2007)

In teaching navigation, we are building their capacity to expand their fishing range. The thought is that if they feel safer and know exactly where they are, they will fish further offshore. From a production perspective this would relieve the pressure on the near-shore young fish stocks and perhaps give them the opportunity to reach a more sustainable population size. So far, 134 captains have taken the course.



Technology transfer



The technical approach is to mount depth sounders with data-loggers on a number of the fishing boats. These units record a location, depth and sea-surface temperature every time the boat moves thirty meters. The data is collected every week and compiled into a centralized spatial system at the AGDC office housed within the Governor's office.

CBBS are currently in the process of collecting data from 74 boats in three different locations; Banda Aceh, Lhokseumawe, and Calang. The units are installed on fishing boats of different sizes and classes engaged in the various types of fishing that occur throughout Aceh.

Preliminary results:

So far the CBBS project has identified three previously unmapped seamounts. Figure 1 shows Melati and her two sisters. Melati is 120 km off the coast of Calang and rises from a depth of 1800 meters to within 7 meters of the surface. Other seamounts include Nurami located 146 km northwest of Melati, and as yet one unnamed mount north of Pulau Aceh.

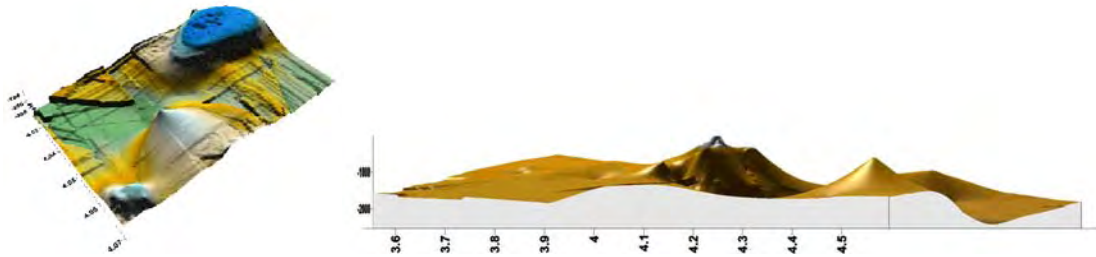


Figure 1 One previously unmapped sea mount 120 km off the coast

Vessel Tracks for Fishers acquired to 10-August 2008

During the first two months of the project, CBBS collected over four million depth readings;. The tracks of these fishing vessels are given in Figure 1. In exchange for receiving the sounding equipment and the navigation training the fishermen have agreed to provide daily catch data from each of the boats participating in the project



Figure 2 vessel tracks (10Aug. 08)



Figure 3 Banda Aceh data



Figure 4. Draft data of ocean currents and fishing locations