Mozambique Annex XIV. Inshore Oceanographic Monitoring Plan

25th August 2010

1. ***Confirmation of the lead institution, as proposed at the Reunion meeting, and full postal and physical addresses***

As proposed during the Reunion meeting, the lead institution for the inshore monitoring program is the Instituto Nacional de Investigacao Pesqueira (IIP), the fisheries research institute in Mozambique. The institute full addresses follows:

Av. Mao Tse Tung 389
C.P. 4603
Maputo, Mozambique
Tel: +258 21 490307/490536
Fax: +258 21 492112

2. ***Confirmation of the name of the lead person for inshore monitoring***

Emidio Raul Andre, ASCLME cruise coordinator for Mozambique and head of the Department of Aquatic Environment is the lead person for the inshore monitoring program.

3. ***plan of action for initial use of the equipment during 2010***

The IIP is currently running several marine coastal monitoring programs as part of fisheries research in support of management of the fisheries: i) The Maputo Bay monitoring program, ii) the Sofala Bank monitoring of oceanographic condition; iii) the Pemba Bay monitoring; iv) nearshore monitoring of environmental conditions in the small scale fishing and landing areas; and v) the environmental study of the Bilene Lagoon.

Maputo bay
Formerly run by the IIP headquarters but now taken over by the Maputo delegation is the pioneering inshore monitoring program in the country. The objective of the program is to monitor the hydrographic conditions of the Maputo Bay in support of the semi-industrial shrimp fisheries within this bay. The goal is to try to assess which environmental parameters are important in influencing shrimp catches and its biomass. Sampling program is structured such that data collection campaigns are carried out once every two months.

Sofala Bank monitoring of oceanographic condition
The Sofala Bank environmental monitoring takes place in the central region of the country, targeting the industrial shrimp fishery fishing area the so called Sofala Bank within latitudes 16 and 22 S and between 10 to 60 m depths. The objectives are to monitor the evolution of

the hydrographic conditions and how they influence catches and shrimp biomass and its distribution, in relation to the fact that shrimp production seems to be influenced by discharge of fresh water from the Zambezi River. Sampling takes place once a year usually between December and January, during the shrimp biomass assessment surveys. Data collected are usually CTD profiles of temperature and conductivity on every shrimp trawl station plus standard hydrographic stations.

Pemba Bay Monitoring

Pemba Bay was recently (2006) a subject of a comprehensive environmental study, which was driven by the need to assess the carrying capacity of the bay for the development of the mariculture industry within the bay. During this study physical, chemical and biological studies were carried out. Lack of the permanent staff in this northern location, soon as the study was completed no further environmental sampling was carried out.

With recent establishment of the IIP delegation in Pemba and the starting of operation of the CEPAM allowed minimal conditions to exist for the establishment of an environmental monitoring program of the Pemba Bay. At the moment rolling of minimal equipment and staff is taking place and the start of such a program is planned for next year, but initial field trials and training of personnel is planned to take place in September 2010.

Environmental monitoring of the artisanal fisheries fishing and landing sites

This is a recent program which when full implementation is reached most of the artisanal fisheries fishing/landing areas of the whole coast of Mozambique will be subject to regular monitoring of its nearshore environmental conditions. Within this program targeted areas are the very nearshore areas, within 2 to3 nm from the shoreline - the small scale fisheries domain. Within these areas using simple instruments such as multiparameterYSI probes, some basic environmental parameter are taken monthly. At the moment only two provinces are covered, the Sofala and Zambezia provinces, but there are plans to expand to Nampula province until the of this year and eventually to whole country within 3 years.

The Bilene laggon environmental study

The Bilene lagoon environmental study was also very recently (July) started with the aim to assess its trofic status in light of apparent environmental degradation due lack of appropriate management measures of this water body and its surrounding catchments. Algal blooms and fish kills are starting to occur here and the communities are worried.

The program in planned to last at least 12 months with main effort on the hidrodynamics, where temperature and salinity structures and possibly water circulation will be studied. In addition other parameter such as nutrients, water clarity and oxygen will be also monitored. Quantitative and qualitative analyses of the phytoplankton community have not started but are considered to be included. Sampling will be monthly

Monitoring program within framework of the ASCLME

As stated earlier, because the ASCLME is only going to provide equipment, but no other resources e.g. financial, human resources, etc. the monitoring program for the ASCLME is going to be integrated within the national ongoing coastal monitoring programs.Our plan is to have two phases. The first phase wil be the trial phase, were field trials will be conducted and during this we plan to deploy the equipment within the the Bilene Laggon environmental study for approximately 9-10 month period. This is due to fact that the area studied suits the type of equipment provided, as the lagoon is a shallow nearshore system and is near Maputo, the base of the IIP. Operation costs are minimal and water sampling is a requirement of the study.

Objectives:

Within this phase the as already stated above, the study of the hydrodynamics its nutrient regime and phytoplacton community throughout the year will be the focus.

Parameters to be measured:

Hydrographic; temperature, salinity,
Nutrients; phosphate, nitrate, ammonia, nitrite
Phytoplankton community: composition and abundance

Field sampling

Sampling started July 2010 and sampling will continue with one sampling campaign every month for a 12 months period. Dates of the sampling campaigns are not available as they are defined within 30 days of the actual sampling.

Equipment to be used

YSI CTD equipped with temperature, conductivity oxygen and pressure sensors
YSI 100 m cable
Small Boat
Niskin Sampling bottle and messenger
100 m rope
Laptop
Sample flasks
Fridge
cooler box
Vacum pump
GF Filters
Filtering manifold
Inverted microscope
Sedimentation chambers

Data

As the Bilene study is under the responsibility of the IIP, the data produced within the framework of the Bilene environmental study will be initially subjected to some restriction on free access until the final report is produced. However, the metadata set will be made

available to the Data Center. As soon as the restriction on the data expires the actual data can also be made available to the Data Center.