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**UNDP/GEF PROJECT ENTITLED “REDUCING ENVIRONMENTAL STRESS IN THE  
YELLOW SEA LARGE MARINE ECOSYSTEM”**

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UNDP/GEF/YS/RSP.1/7b  
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**First Meeting of the Regional Scientific and Technical Panel  
for the UNDP/GEF Yellow Sea Project**  
*Dalian, China, 4-6 July 2005*

**Requirements of Regional Working Groups for Joint Cruises**

**1 BACKGROUND**

Following the approval of the Implementation Plan for the Project by the first meeting of the Project Steering Committee (PSC), and the discussions of the Regional Working Groups for the project component, the Project Manager discussed the relevant issues of the joint cruises with the relevant experts and organisations. There will be two joint cruises to be organised within the framework of the project.

**2 OBJECTIVES OF THE JOINT CRUISES**

The main objectives of the joint cruises are:

- (i) Based on the data and information gaps identified by the Regional Working Groups, to provide basin-wide data and information for the Yellow Sea covering all components identified in the Implementation plan of the project;
- (ii) The data and information collected by the joint cruise will be used, together with other existing data and information, in the preparation of Transboundary Diagnostic Analysis (TDA), in particular the data and information covering the entire Yellow Sea; and
- (iii) With all the data and information available to the project, to prepare necessary baselines of the environment status at beginning of the project implementation. The baseline information will be used in the later stage as one of the indicators for the evaluation of the project.

**3 GENERAL INFORMATION**

<i>Name of the research vessel:</i>	Bei Dou
<i>Owner of the research vessel:</i>	Yellow Sea Fisheries Research Institute, China
<i>Maximum number of Scientists:</i>	31
<i>Area to be surveyed:</i>	Entire Yellow Sea, but exclude the territory areas

*Dates of the first cruise:* 4-25 January 2006  
*Dates of the Second cruise:* April or May 2006 (details to be discussed)

#### **4 SPECIAL REQUIREMENTS FROM THE REGIONAL WORKING GROUPS**

At the time that this document was prepared, the Project Management Office only received the requirements from the Regional Working Groups for Fisheries and Ecosystem. The other two groups (pollution and biodiversity) have not submitted their requirements. While this document provides the summaries of the received information, the requirements of the other two groups will be added in due course.

##### **4.1 Requirements of Regional Working Group for Fisheries (RWG-F) (Preliminary)**

Parameters

- Pelagic (according to echogram) and bottom trawl (fixed stations) sampling
- Sorting species by stations
- Total number and weight of all catches by stations
- Number and weight by species by stations
- Continuing acoustic data

Numbers of experts to be on boat: 10 scientists.

Responsibilities of the experts: To be decided.

Equipment that necessary for the cruise, and where the equipment come from:

- Bottom trawl and pelagic trawl (will be purchased from Norway using the YSLME project budget)
- SIMRAD EK 500 Scientific Echo-sounding System

Other relevant issues: to be identified

##### **4.2 Requirements of Regional Working Group for Ecosystem (RWG-E)**

The variables are classified into two categories: musts and desirables. The items in brackets are desirables and all the others are musts.

Parameters:

- (i) oceanographic variables
  - CTD with PAR, beam-transmission, fluorescence
  - Nutrients (by Pollution Group)
- (ii) Phytoplankton
  - phytoplankton species counts
  - size-fractionated biomass (chl-a) and primary production
  - pico-phytoplankton cell counts and primary production
  - bio-optics (down-welling and upwelling spectral radiance, attenuation, HPLC, particulate absorption, pigment absorption, etc)

- (iii) zooplankton
  - Zooplankton species abundance
  - Meso-zooplankton biomass
  - Meso-zooplankton fecal pellet production
  - [Meso-zooplankton egg production]
  - [Vertical distribution of fecal pellets from water sample]
  - [Zooplankton vertical distribution, in selected station(s), using MOCNESS (or MPS)]
  
- (iv) benthos
  - grab sample for benthos species diversity, abundance, and biomass
  - [sediment coring sample (<1m length)]
  - grain size of the bottom sediment
  - sediment organic content
  - [bottom Temperature, Salinity, and Oxygen content]
  
- (v) Bacteria
  - Bacterial abundance & biodiversity
  - Heterotrophic bacterial production
  - [Limiting resources for bacterial growth (potential impact by yellow sand)]
  - [Heterotrophic bacterial respiration]
  
- (vi) Protozoa
  - Protistan (flagellate & ciliates, etc..) abundance and composition
  - [Protozoan grazing on the picoplankton]

**Number of experts to be on boat:**

Total

- Basic observation (2): common with other groups
  - phytoplankton (4)
  - zooplankton (3)
  - benthos (4)
  - bacteria (2)
  - protozoa (2)

**Responsibilities of the experts:**

- collecting phytoplankton samples
- measurement of chlorophyll-a, HPLC samples
- conducting primary production incubation
- conducting bio-optical measurements
- Collecting and sorting zooplankton sample using various nets
- Conducting on-board experiments of zooplankton vital rates
- Collecting macrobenthos and sediment for grain size analysis
- [Conducting sediment coring and on-board treatment of the samples]
- conducting incubation for bacterial secondary production measurement
- [conducting incubation for bacterial limiting resources assay]
- conducting incubation for protozoan grazing on picoplankton

- collecting water samples for analysis of bacterial abundance and diversity
- collecting water samples for analysis of protozoan abundance and composition
- [conducting incubation for bacterial respiration]

**Equipment that necessary for the cruise, and where the equipment comes from:**

- CTD with PAR, beam-transmissometer, fluourometer
- rosette sampler
- submersible radiometer
- PP incubation equipments
- Seawater filtering set
- Bogo net and flowmeter
- Temperature-controlled incubator
- Dissecting microscope
- Zooplankton incubating system
- [MOCNESS (or MPS)]
- van Veen grab (0.1m<sup>2</sup>)
- [Gravity sediment corer and saw for cutting the tubes]
- [clean water sampling for collecting metal-free seawater]
- Bacterial incubation system

**Other relevant issues:**

- Korea-China methodological inter-comparison required on
- primary production methods (14C (Korean) vs China (?))
  - phytoplankton sampling (mesh size)
  - zooplankton sampling (gear, mesh size, haul)
  - benthos (gear, size-fraction)