



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

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Date: 13 October 2005
English only

**Technical Meeting for the Co-operative Study Cruises
In the Yellow Sea Marine Basin
For the UNDP/GEF Yellow Sea Project
Qingdao, China, 17-18 October 2005**

**Consideration of the Observation and Sampling requirements
of the Fishery Component**

The following is a detailed description of the observation and sampling considerations for the Fishery Component during winter (January 4th – 24th, 2006) cooperative study cruise as submitted by China (The Korean contribution follows separately).

**Plan on the Joint Cruise in Winter
Fisheries Working Group**

1. Objective of the cruise

Winter is the fish over-wintering time, most fish are distributed in the central to southern part of the Yellow Sea, where is relatively deep area. The fish are denser and is a better season for the stock assessment, particularly by acoustic method. In order to finish tasks of the project, the survey is important to the fisheries working group. The main objectives of the co-operative study cruises are:

- to provide basin-wide, data and information of fisheries resources for the Yellow Sea in the Implementation Plan of the project, and to fill up the data and information gaps identified by the Regional Working Group;
- to provide data and information that will be used, together with other existing data and information, in the preparation of the Transboundary Diagnostic Analysis (TDA), in particular the data and information covering the entire Yellow Sea; and
- to prepare necessary baselines of the status of the Yellow Sea fisheries resources at start of the project implementation, when combined with all data and information

available to the project. The baseline information will be used in the later stage as one of the indicators for the evaluation of the project.

2. Materials Sampling methods

Following the discussion and agreements of the regional working group and the RSTP, the parameter to be observed and sampled during the co-operative study cruise are following:

1) Sampling stations

- 52 stations for bottom trawl sampling
- 15 stations for pelagic trawl based on acoustic echogram, and not dependent on the fixed stations.

2) working contents

- Fishery biology: species composition and distribution
- Fishery acoustics: biomass estimation
- Ichthyoplankton: egg and larvae composition and distribution

3) Methods

- Bottom trawl sampling at predetermined stations
- Adaptive pelagic and/or bottom trawl sampling at selected site based on acoustic observations
- Sorting species by stations
- Total number and weight of all catches by station
- Number and weight by species by station
- Continuous acoustic data along transects
- Ichthyoplankton by horizontal netting during trawling at each station.

a. Persons and responsibilities

Chinese scientists

Responsible person: Xianshi Jin

- i. Fishery biology & Ichthyoplankton: Xianshi Jin, Fangqun Dai, Jianming Sun, Ruisheng Chen, Qun Lin
- ii. Fishery acoustics: Xianyong Zhao
- iii. Ichthyoplankton: Ruijing Wan

Korean scientists

- iv. Fishery biology & Ichthyoplankton: two persons?
 - v. Fishery acoustics: one person?
- b. Follow-up work to analyse samples
- Fish biology: length and weight measurement by individual by species, identification of sex and maturation, fullness of stomach etc.
 - Aging and analysis of stomach contents
 - Fishery acoustics: data processing of acoustic data
 - Identification of egg and larvae
- c. Brief workplan
- March: completion of fish biology measurement, and identification of egg and larvae, pre-process of acoustic data
 - April: completion of acoustic data processing, completion of egg and larvae identification.
 - May: completion of aging and analysis of stomach contents aging for major species.
- d. Budget (to be decided during meeting)
- costs of equipments,
 - travels,
 - personnel stipends,
 - any other costs

The following is a detailed description of the observation and sampling considerations for the Fishery Component during winter (January 4th – 24th, 2006) cooperative study cruise as submitted by Korea.

Korean Fisheries Scientists' Suggestions for the Co-operative Study Cruises for YSLME

1. Observation Area/route, Transect and Sampling Stations

- For winter cruise: Refer Figure 1 (43 stations), Table 1
 - For Spring: Refer Figure 2 (89 stations), Table 2 and 3
- Black spots indicate: Firstly considered survey stations
Red spots indicate: Secondly considered survey stations

*Survey stations which are shallower than 20 m are only for acoustic survey.

Why?

According to the data and information gaps, and limited time and fund, it is necessary to consider purpose of the survey as follows:

- Firstly consider to survey in the areas where China and Korea don't have the data
- Secondly consider to survey in the areas where China or Korea doesn't have the data
- Thirdly consider to survey in the areas where the both countries have the data

* Korea has the survey data in its EEZ. (Except acoustic)

2. Observation and Sampling Requirements for the Fisheries

- Bottom trawl sampling, Adaptive pelagic and/or bottom trawl sampling at selected site based on acoustic observation
- Acoustic sampling
- Ichthyoplankton sampling
- Water temperature and salinity by depth
- Food (Chlorophyll, Zoo plankton)

3. Scientists on-board and Their Responsibilities

- Korean scientists for fisheries
 - 5 scientists : 1 for acoustic observation
2 for trawl sampling
2 for ichthyoplankton, condition of fishing ground

4. Transportation of Equipment and Personal

- Air line from Incheon or Pusan, Korea to Qingdao, China

Figure 1. Map showing the bottom topography and sampling stations for the winter season survey in the Yellow Sea.

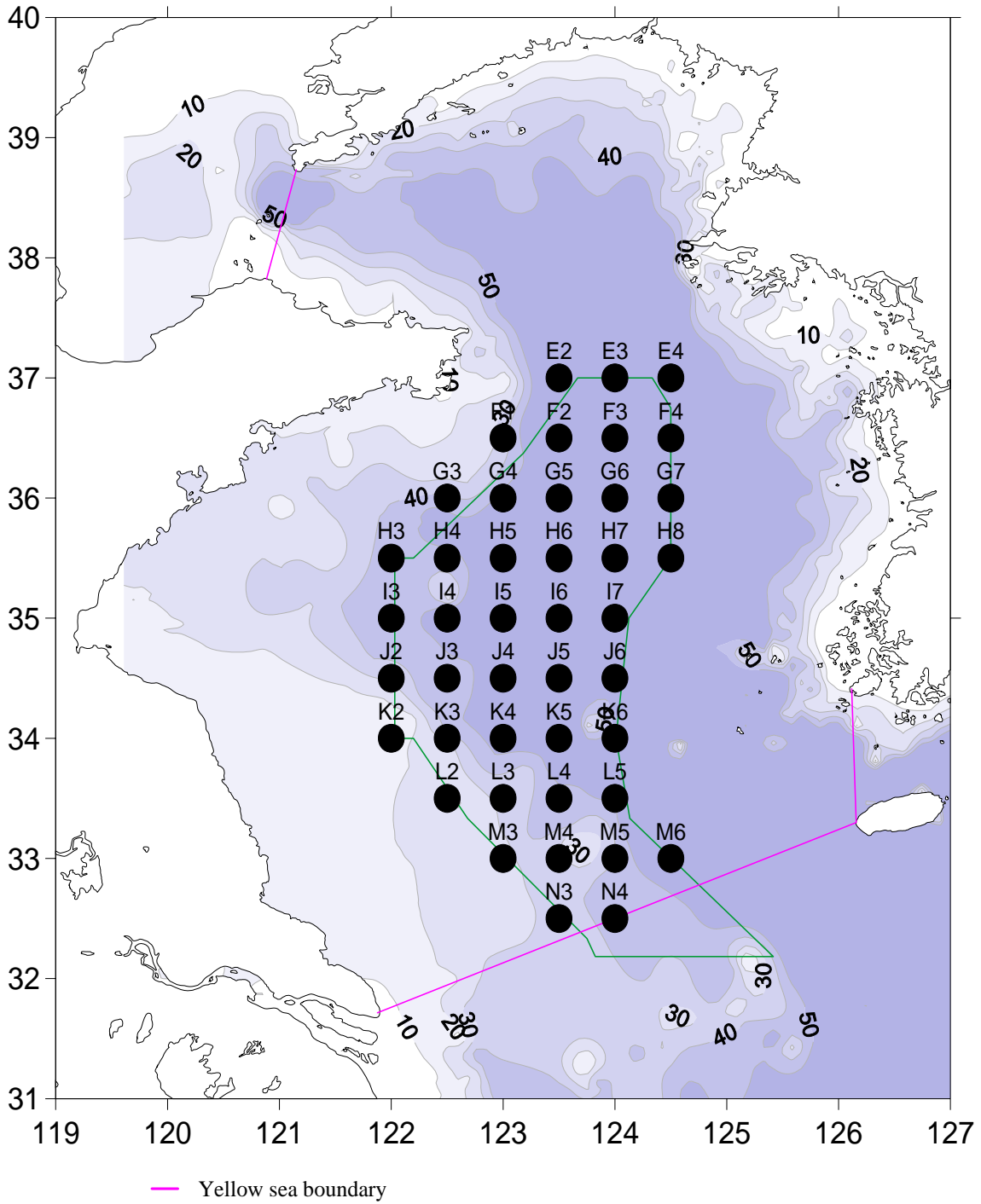


Table 1. Sampling stations for the winter season survey

Station no.	Longitude	Latitude
E2	123° 30'	37° 00'
E3	124° 00'	37° 00'
E4	124° 30'	37° 00'
F1	123° 00'	36° 30'
F2	123° 30'	36° 30'
F3	124° 00'	36° 30'
F4	124° 30'	36° 30'
G3	122° 30'	36° 00'
G4	123° 00'	36° 00'
G5	123° 30'	36° 00'
G6	124° 00'	36° 00'
G7	124° 30'	36° 00'
H3	122° 00'	35° 30'
H4	122° 30'	35° 30'
H5	123° 00'	35° 30'
H6	123° 30'	35° 30'
H7	124° 00'	35° 30'
H8	124° 30'	35° 30'
I3	122° 00'	35° 00'
I4	122° 30'	35° 00'
I5	123° 00'	35° 00'
I6	123° 30'	35° 00'
I7	124° 00'	35° 00'

Station no.	Longitude	Latitude
J2	122° 00'	34° 30'
J3	122° 30'	34° 30'
J4	123° 00'	34° 30'
J5	123° 30'	34° 30'
J6	124° 00'	34° 30'
K2	122° 00'	34° 00'
K3	122° 30'	34° 00'
K4	123° 00'	34° 00'
K5	123° 30'	34° 00'
K6	124° 00'	34° 00'
L2	122° 30'	33° 30'
L3	123° 00'	33° 30'
L4	123° 30'	33° 30'
L5	124° 00'	33° 30'
M3	123° 00'	33° 00'
M4	123° 30'	33° 00'
M5	124° 00'	33° 00'
M6	124° 30'	33° 00'
N3	123° 30'	32° 30'
N4	124° 00'	32° 30'

Figure 2. Map showing the bottom topography and sampling stations for the spring season survey in the Yellow Sea.

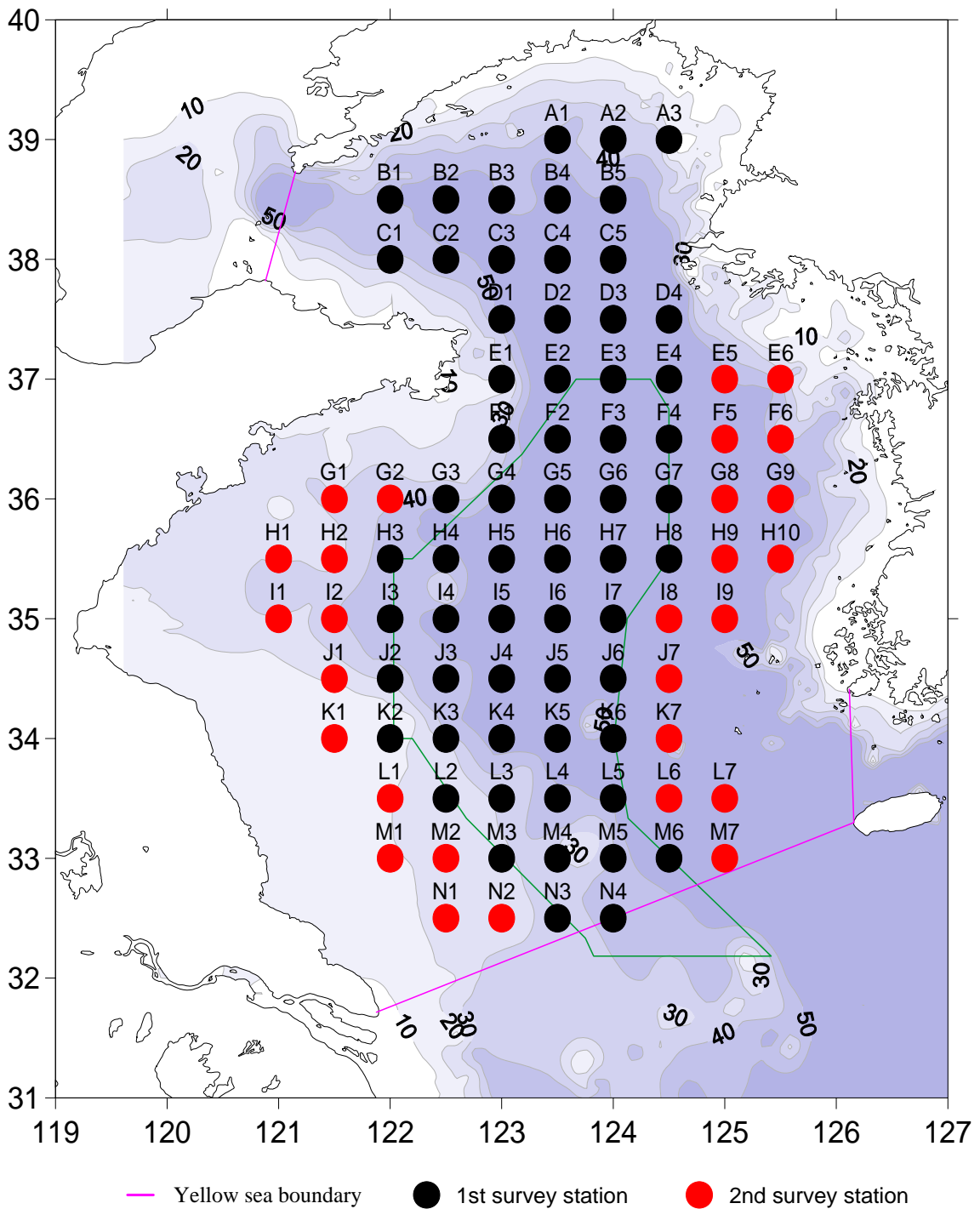


Table 2. Sampling stations of the firstly considered survey for spring season

Station no.	Longitude	Latitude	Station no.	Longitude	Latitude
A1	123° 30'	39° 00'	H4	122° 30'	35° 30'
A2	124° 00'	39° 00'	H5	123° 00'	35° 30'
A3	124° 30'	39° 00'	H6	123° 30'	35° 30'
B1	122° 00'	38° 30'	H7	124° 00'	35° 30'
B2	122° 30'	38° 30'	H8	124° 30'	35° 30'
B3	123° 00'	38° 30'	I3	122° 00'	35° 00'
B4	123° 30'	38° 30'	I4	122° 30'	35° 00'
B5	124° 00'	38° 30'	I5	123° 00'	35° 00'
C1	122° 00'	38° 00'	I6	123° 30'	35° 00'
C2	122° 30'	38° 00'	I7	124° 00'	35° 00'
C3	123° 00'	38° 00'	J2	122° 00'	34° 30'
C4	123° 30'	38° 00'	J3	122° 30'	34° 30'
C5	124° 00'	38° 00'	J4	123° 00'	34° 30'
D1	123° 00'	37° 30'	J5	123° 30'	34° 30'
D2	123° 30'	37° 30'	J6	124° 00'	34° 30'
D3	124° 00'	37° 30'	K2	122° 00'	34° 00'
D4	124° 30'	37° 30'	K3	122° 30'	34° 00'
E1	123° 00'	37° 00'	K4	123° 00'	34° 00'
E2	123° 30'	37° 00'	K5	123° 30'	34° 00'
E3	124° 00'	37° 00'	K6	124° 00'	34° 00'
E4	124° 30'	37° 00'	L2	122° 30'	33° 30'
F1	123° 00'	36° 30'	L3	123° 00'	33° 30'
F2	123° 30'	36° 30'	L4	123° 30'	33° 30'
F3	124° 00'	36° 30'	L5	124° 00'	33° 30'
F4	124° 30'	36° 30'	M3	123° 00'	33° 00'
G3	122° 30'	36° 00'	M4	123° 30'	33° 00'
G4	123° 00'	36° 00'	M5	124° 00'	33° 00'
G5	123° 30'	36° 00'	M6	124° 30'	33° 00'
G6	124° 00'	36° 00'	N3	123° 30'	32° 30'
G7	124° 30'	36° 00'	N4	124° 00'	32° 30'
H3	122° 00'	35° 30'			

Table 3. Sampling stations of the secondly considered survey for spring season

In Korean EEZ			In Chinese EEZ		
Station no.	Longitude	Latitude	Station no.	Longitude	Latitude
E5	125° 00'	37° 00'	G1	121° 30'	36° 00'
E6	125° 30'	37° 00'	G2	122° 00'	36° 00'
F5	125° 00'	36° 30'	H1	121° 00'	35° 30'
F6	125° 30'	36° 30'	H2	121° 30'	35° 30'
G8	125° 00'	36° 00'	I1	121° 00'	35° 00'
G9	125° 30'	36° 00'	I2	121° 30'	35° 00'
H9	125° 00'	35° 30'	J1	121° 30'	34° 30'
H10	125° 30'	35° 30'	K1	121° 30'	34° 00'
I8	124° 30'	35° 00'	L1	122° 00'	33° 30'
I9	125° 00'	35° 00'	M1	122° 00'	33° 00'
J7	124° 30'	34° 30'	M2	122° 30'	33° 00'
K7	124° 30'	34° 00'	N1	122° 30'	32° 30'
L6	124° 30'	33° 30'	N2	123° 00'	32° 30'
L7	125° 00'	33° 30'			
M7	125° 00'	33° 00'			