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Gene pool workshop for the UNDP/GEF Yellow Sea Project
Busan, ROK, 14-15th May 2007

Introduction to the Yellow Sea gene pool workshop

The Yellow Sea is a semi-enclosed sea bordered by the Peoples Republic of China (China) to the west and the Republic of Korea (ROK) and Democratic Peoples Republic of Korea (DPRK) to the east. Almost 10% of the world's population lives within the watershed including major urbanizations such as the Shanghai, Qingdao, Tianjin, Dalian, Seoul and Pyongyang. The surrounding population is dependent on the Yellow Sea for many services such as nutrition, trade, transport, waste disposal, recreation and tourism (UNDP/GEF 2000). The exploitation of these services has resulted in the Yellow Sea being one of the most heavily impacted seas in the world.

Most organisms in the Yellow Sea are facing abrupt environmental changes due to rapid economic growth and increased human activities in neighboring countries, compounded by global climatic shifts. These environmental changes are directly impacting biodiversity in the Yellow Sea. Although many of these impacts on biodiversity, from the factors identified in the causal chain analysis (Kang, 2007; Chen et al, 2007) such as pollution, habitat loss or conversion and over-exploitation, are not clear, at least not on an ecosystem scale.

While there is little data to quantify and support the theories, experts generally agree that there is genetic degradation occurring in the Yellow Sea.

The Convention on Biological Diversity (UNEP) identifies the protection of biodiversity as one of the “Focal Areas”. The three goals are:

Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes

Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.

Target 1.2: Areas of particular importance to biodiversity protected

Goal 2. Promote the conservation of species diversity

Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups

Target 2.2: Status of threatened species improved.

Goal 3. Promote the conservation of genetic diversity

Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.

In the text of the convention (Article 8) a number of *in situ* measures (Article 8) are proposed including: sustainable use of resources; environmentally sound development; eradication of introduced species; preservation of ecosystems and important habitats; protected areas and rehabilitation of degraded areas. Article 9 relates to the *ex situ* conservation of components of biological diversity and includes the establishment and maintenance of facilities for ex-situ conservation of and research on plants, animals and micro- organisms, preferably in the country of origin of genetic resources. These measures may include the formation of a gene bank as well as research on the status and trends in genetic diversity.

A comprehensive understanding of genetic diversity is essential if we are to fully grasp the concept of biodiversity. Gene pool analysis is a powerful tool to identify the genetic diversity with a population. Unfortunately, our understanding and knowledge of the genetic diversity in the Yellow Sea is very poor and limited to a few species. Thus, it is necessary for us to recognize the status of and to develop gene pool activities and research related to biodiversity in the Yellow Sea.

Objectives

- To identify why genetic diversity is important in the Yellow Sea;
- To identify whether genetic diversity is under stress in the Yellow Sea. If so, what are the major elements to be considered (the genetic separation of stocks of exploited species, the transport of genetically different stocks from one area to another for culture);
- To find the current status of gene-pool information and research activities of both countries;
- To identify what management measures are needed to sustain the role of genetic diversity in the Yellow Sea. This may include the setting up of a Yellow Sea gene- or germoplasm bank, data base of Yellow Sea genetic information (gene sequences); essential areas/communities/species for gene pool analysis;
- To identify problems and gaps of understandings and knowledge in two countries; and
- To discuss and suggest activities of gene-pool preparation in the participating countries.

Target

- To aid in the identification of the ecosystem quality objectives (EcoQO's) or regional targets for genetic diversity.
- Evaluation of need and requirements of a gene pool database/gene bank for the Yellow Sea

References

Chen, S., Wang, Q., Peng, Y., Liu, J., Li, R., Liu, P., Wang, Z. and Zhu, M. (2007) Biodiversity report for Peoples Republic of China. UNDP/GEF Yellow Sea Large Marine Ecosystem Project. 91p

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