

A Study of Human Subsistence Ecosystems in Arab Societies: To Combat Livelihood Degradation for the Post-oil Era

This project examines life support mechanisms and self-sufficient modes of production among Arab peoples who have survived in dryland environments for more than a millennium. Using the research results, we will propose a scientific framework to strengthen subsistence productivity and combat livelihood degradation in local Arab communities in preparation for the post-oil era.



Project Leader
NAWATA Hiroshi
RIHN

Hiroshi NAWATA received his Ph.D. in Human and Environmental Studies (Cultural Anthropology) at Kyoto University (2003). He was assistant professor at Division of Comprehensive Measures to Combat Desertification, Arid Land Research Center, Tottori University (2004-2007). His major fields of interests are camel pastoral systems, Muslim trading networks, and indigenous (traditional) knowledge for rural development in the Middle East and Africa.

Core Members

- KOBORI Iwao**
- KAWATOKO Mutsuo**
- SUGIMOTO Yukihiko**
- MIYAMOTO Chiharu**
- SAKATA Takashi**
- YOSHIKAWA Ken**
- HOSHINO Buhe**
- ONUMA Hiroyasu**
- ABDEL GABAR E. T. Babiker**
- ABDALLA M. A. Abu Sin**
- ABDEL BAGI M. A.**
- ABDEL HADI A. W. M.**
- LAUREANO, Pietro**
- BENKHALIFA, Abdrahmane**

- United Nations University
- Research Institute for Islamic Archaeology and Culture
- Graduate School of Agricultural Science, Kobe University
- Action for Mangrove Reforestation
- Faculty of Science and Engineering, Ishinomaki Senshu University
- Graduate School of Environmental Science, Okayama University
- Faculty of Environment Systems, Rakuno Gakuen University)
- Appropriate Agriculture International Co.
- Sudan University of Science and Technology
- Gezira University
- Agricultural Research Cooperation, Sudan
- Agricultural Research Cooperation, Sudan
- Traditional Knowledge, World Bank
- Centre National de Développement des Ressources Biologiques, Algeria

Background and Objectives

Japan and the oil-rich countries of the Middle East have put excessive pressures on the Earth's energy, water, and food resources. In prioritizing economic prosperity for their own benefit, these countries have exploited irreplaceable resources, such as fossil fuel and fossil water. Schemes to plant alien species have placed additional stress on local ecosystems. In the Middle East, these practices have widened social differences at a time when it faces a turning point in the modern oil-based civilization. Fossil fuel-based interdependencies must be replaced by new forms of exchange that support viable future societies.

Our project focuses on human subsistence ecosystems; the traditional life support mechanisms and self-sufficient modes of production of the region, such as hunting, gathering, fishing, herding, farming, and forestry, that involve low energy resource consumption. Our analysis of traditional livelihoods will allow us to re-examine the costs and benefits of advanced technology and economic development, and to suggest compre-

hensive measures to combat immediate environmental problems, such as desertification. Based on our research results, we will propose a scientific framework for strengthening subsistence productivity and enhancing daily life in Arab societies in the post-oil era.

Research Areas, Approaches, and Methods

We will develop and implement our study of human subsistence ecosystems around three main areas: 1) comprehensive measures to control the alien invasive species mesquite; 2) assessment of the environmental effects of development programs in coastal zones of the arid tropics; and 3) sharing of research results to support local decision making.

Our research method combines two main approaches: (1) analysis of subsistence ecosystems, focusing on keystone species such as camels, date palm, dugong, mangrove, and coral reefs; and (2) examination of the sustainability and fragility of Arab societies, focusing on the ecotones wadi beds, riverbanks, mountainsides, and seashores.



Figure 1 Area of field surveys

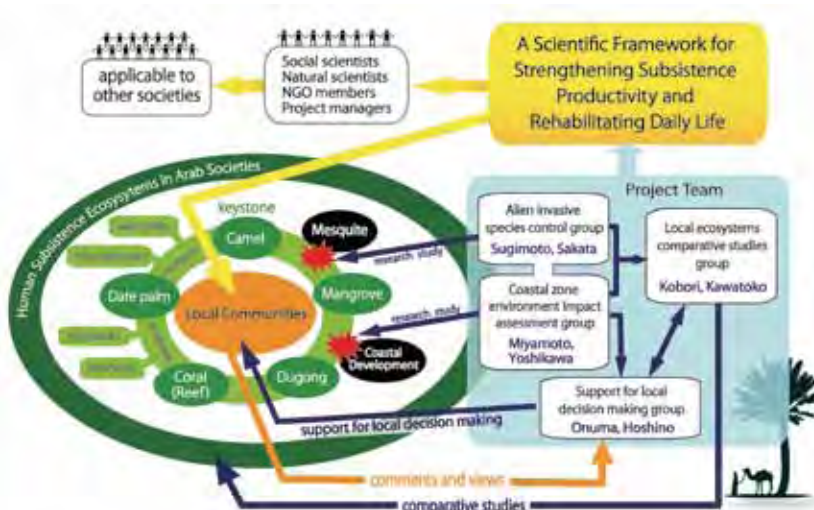


Figure 2 Research Methods, Approaches, and Organization

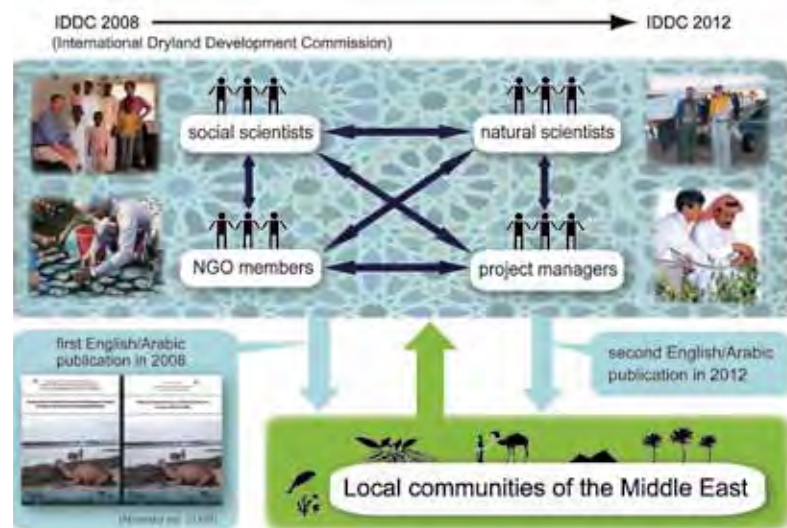


Figure 3 Research communication and exchange

Field surveys will be conducted in semi-arid lands between the Nile River and the Red Sea in Sudan, with the Red Sea coast, Butana area, and Nile River areas as the main survey areas (Figure 1). Additional surveys will be conducted at the Sinai Peninsula in Egypt, Red Sea coast in Saudi Arabia, and a Saharan oasis in Algeria. We will compare keystone species, ecotones, and traditional knowledge and examine differences in the sustainability of subsistence economies under site-specific conditions.

Project Organization

The members of this project include social and natural scientists, members of local NGOs and project managers, who are divided into four study groups (2).

- 1) Alien invasive species control group
- 2) Coastal zone environmental impact assessment group
- 3) Support for local decision making group
- 4) Local ecosystems comparative studies group

Achievements

Field Survey in Sudan

Sudan is the top-priority country for the field survey. Project members from RIHN and the Sudan University

of Science and Technology (SUST) met on 27 November, 2008, and agreed to a joint Memorandum of Understanding and Implementation Agreement. The main objective of this collaboration is to develop comprehensive measures for controlling the alien invasive species mesquite (*Prosopis* spp.).

Publications in Arabic and English

We published a leaflet and an edited volume in Arabic and English. The leaflet describes the overall research project. The volume, entitled "A Study of Human Subsistence Ecosystems with Mangrove in Drylands: To Prevent a New Outbreak of Environmental Problems" (Figure 3), relates to mangrove afforestation in drylands, and features several notable studies undertaken by Japanese research groups. The volume emphasizes connections between scientific evidence and practical observations, and so demonstrates the compatibility of scientific and local knowledge, and facilitates the exchange of information with other researchers and local people in the study region.

Distribution the Publications among International Conference and Quantitative/Qualitative Responses to the Project

We distributed the leaflet and volume to 188 participants of the ninth conference of the International Dryland Development Commission (IDDC), in Alexandria, Egypt, 7–10 November, 2008. When handing out our publications, we had opportunity to discuss our project with IDDC participants face-to-face. They asked a number of questions, including which types of livestock can eat mangrove foliage and whether mangrove can be used as a bio-fuel. Egyptian students were particularly interested in our research because the brochure and booklet were printed in Arabic. We consider such engaged responses to our publications to be an indication of the impact of the project in its first year. We plan to incorporate local

peoples' opinions in our project targets and activities, and encourage continued communication between project researchers and local communities by publishing a revised version of the edited volume on the project's completion.

Further Issues

In the first year of Full Research we intend:

To initiate full-scale field surveys in each research area in order to collect positive observed/measured data.

To install the physiological and ecological measuring equipment for alien invasive species in Sudan and physiological measuring equipment for mangrove trees in Saudi Arabia.

To hold an international symposium on control of alien invasive species at Sudan University of Science and Technology.

To present the results of our comparative studies of local ecosystems at the 16th World Congress of International Union of Anthropological and Ethnological Science s (IUAES) in Kunming, China.

To adopt MOU and IAs with appropriate research institutions in Saudi Arabia, Egypt, and Algeria.