

Program for Advancing Strategic International Networks to Accelerate the Circulation of Talented Researchers
Japan-ASEAN Collaboration Research Program on Innovative Humansphere in Southeast Asia:
In Search of Wisdom toward Compatibility Growth and Community in the World

Dispatch Report

Year: 2014-2015

Place of fieldwork: Indonesia and Malaysia

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- Research background

Wetlands are special ecosystems which are flooded for a long period of time or with great frequency during the year. Organisms that grow in wetlands adapt to this special environment. In Southeast Asia, the natural wetland ecosystems are aligned in order of mangrove forests, brackish water wetland forests, freshwater swamp forests and peat swamp forests from coastal to inland areas [Corlett 2009]. These wetlands are established under a sensitive balance of many kinds of organisms involving plants, animals and microorganisms. The ecosystems are very fragile and the effect of environmental change can result in catastrophic damage. Mangrove and peat swamp forests are the dominant wetland ecosystems in this region. However, forest degradation by development is found in many parts of wetlands and is no longer negligible.

Peat swamp forests function as carbon stocks and as a cradle of biodiversity. However, the function of peat swamp forests has become degraded and huge amounts of carbon emissions have begun during the past two decades. This has now become a worldwide issue. In particular, frequent peat fires, which occur in the dry season, destroy the forest ecosystems and cause extensive damage to human health by air pollution to the local areas and native countries. On the other hand, mangrove forests, which once covered most of the coastal areas of the Southeast Asia region, have been cut down to construct prawn ponds or produce charcoal. In this study, I will identify the effects of human activities on these ecosystems using insights from ecology.

- Research purpose and aim

- Results and achievements by fieldwork

The objects of my research are to clarify the effects of and recovery from human induced disturbance in wetlands. I conducted my research in degraded peatlands in Riau Province, Sumatra Island, Indonesia. In the after-burnt grasslands, I checked the distribution of grassland vegetation and identified their community types, comparing them with soil water and nutrient conditions. I also analyzed the possibility of recovery of vegetation. I discussed the paper with my collaborators in the Indonesian Institute of Science and Malaysia Sains University and prepared a draft of the paper during the stay.

In addition, to understand the current situation of deforestation in this region and examine methods sustainable forest use, we need to recognize the characteristics of each country and region, and the environmental factors of ecosystems and soils. I therefore collected data at the library of the Malaysia Sains University and carried out research on these matters.



Matang Mangrove Forest Reserve,
Malaysia



Specific roots in the mangrove forests



Smoke damage (haze)
in Sumatra, Indonesia



Presentation for environmental
issues in peatlands

- Implications and impacts on future research

During this trip, I completed the data collection and analysis of the research on peat fire sites in the Riau region. I have already begun discussions with my Indonesian counterparts to submit the paper to an international journal. I will collect a similar dataset for other peatlands in Indonesia in the future. During this program, I stayed in Indonesia and Malaysia for my research and also visited various forests in Southeast Asia. I intend to continue the data collection and research on the current condition of forests in Southeast Asia and will prepare some papers on this subject as the achievements for this project. At the same time, I am currently writing some papers about peatlands in Indonesia and Malaysia. I will try to keep in touch with co-researchers in each country in order to maintain the research collaboration that has been built up during this project.

References

Richard T. Corlett, 2014, *The Ecology of Tropical East Asia*, OUP Oxford



Field course 1



Field course 2