

Equatorial Biomass Society

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Planted Forests in Equatorial Southeast Asia:

Human-nature Interactions in High Biomass Society



Reports from Project Members

An Overview of Anap-Muput Forest Management Unit

Hiromitsu Samejima
(CSEAS, Kyoto University)

East Malaysia (Sabah and Sarawak) can be divided into following land categories in general:

1. Government land
 - 1.1 Natural reserves such as national parks
 - 1.2 Concessions (the lease of commercial exploitation rights) managed by private companies
 - 1.2.1 Logging management in natural forests (selective logging)
 - 1.2.2 Industrial tree plantation (Plantations of fast-growing trees species (ex. *Acacia mangium*))
 - 1.2.3 Oil palm plantations
2. Private property mainly employing the shifting cultivation system of hill padi

In sparsely populated East Malaysia, the major part of the land is occupied by the concessions of private companies (1.2) and their economic activities in these areas have been playing a crucial role in the state's economy. Therefore, studies on the managements of

these concessions and their interactions with the environment and local societies are one of the major parts of our project.

In Sarawak, the most of the concessions had been for selective logging of natural forest (1.2.1). The situation has changed as the volume of standing trees has dwindled in recent decades due to the repetition of selective logging. This has led to the rapid expansion of oil palm (1.2.3) and industrial tree plantations (1.2.2). In Bintulu Division, almost all forest areas except Anap-Muput Forest Management Unit, are licensed to be turned into acacia and oil palm plantations.

The public view on the selective logging in natural forests has changed dramatically in recent decades. It was the main object of criticism when the movement of tropical rainforest conservation prevailed during 1980s and 1990s. In those years, it was even insisted that any logging operation in tropical rainforest would incur irreversible collapse of the

¹ There is some land that is earmarked for other use, but the area is small.

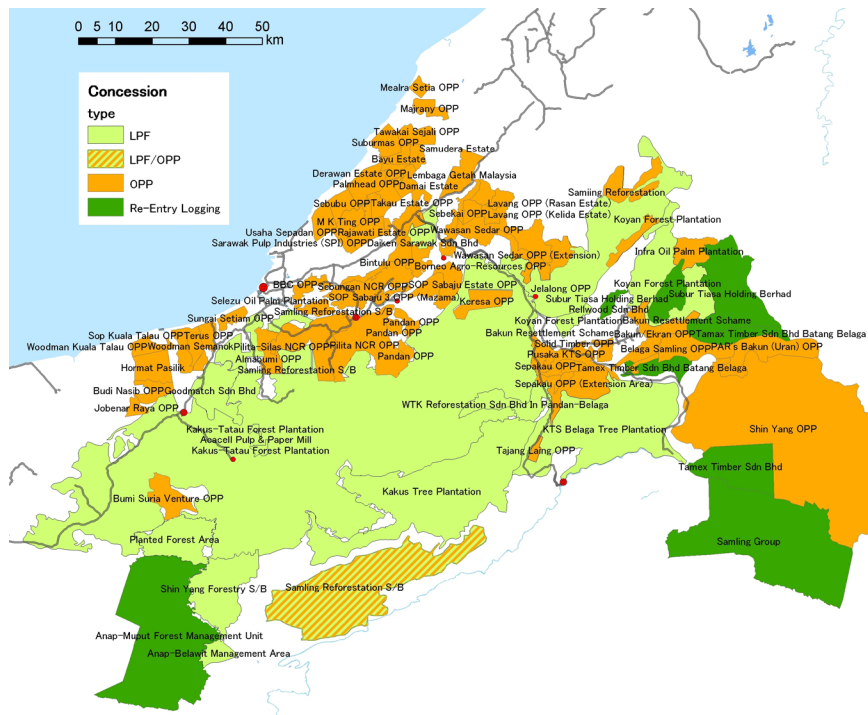


Fig.1
Distribution map of the concessions in Bintulu Division

Green: selective logging in natural forests

Light green: industrial tree plantation

Orange: oil palm plantations

Each concession area includes the private land of local residents. Most local residents live along rivers and the many boundaries between that resident land and concessions are not clear. This map is based on the map of the Natural Resource and Environmental Board.

ecosystems. Today, however, the impact of this selective logging has been reevaluated as less harmful to the environment and local communities compared to acacia and oil palm plantations if the logging is sustainably managed. The importance of sustainable forest management of natural forest became recognized in the process of creating the Framework Convention on Climate Change and the Convention on Biological Diversity. To this end, economic incentives such as forest certification and the REDD+ (Reducing Emissions from Deforestation and Degradation) program have now been developed.

The Anap-Muput Forest Management Unit (FMU) is a concession where selective logging is performed in natural forest. It is under the management of Zedtee sdn bhd, a logging company that belongs to the Shin Yang group, one of the six largest lumber business groups in Sarawak. Most of the timbers are brought to their factory near Tatau town, processed into plywood and shipped overseas. During the 80s-90s, the ITTO (International Tropical Timber Organization) conducted inspections in Sarawak and selected Anap-Muput as a model site for sustainable forest management and since then, sustainable forest management have been developed and implemented in this concession. The FMU is divided into 25 areas called "Coupes". Only one Coupe is logged each year on a 25-year cycle. In this area, RIL (Reduced-Impact Logging) is practiced; all target trees have to be mapped and all skid trails have to be designed before harvesting. As the result, Anap-Muput FMU is certificated as sustainably managed from the Malaysian Timber Certification Council in 2004 and it remains the only certified forest in Sarawak to this day. In Tatau, Zedtee's plywood factory also obtained the CoC (chain of custody) certification so the company can produce certified products. However, because Zedtee exports approximately 90% of its products to Japan where the demand for certified plywood is still not high, the company does not sell their product as certified.

In order to manage natural forests sustainably, ecological and social High Conservation Value (HCV) of each concession must be recognized, various measures to conserve them must be implied, and the effects of those measures must be measurable, reportable and verifiable (MRV). These processes are demanded for forest certification.

One member of this project, Mr. Jason Hon (News Letter No. 1) has installed camera-traps at natural salt licks in the Anap-Muput FMU since August 2010. He has been working to understand the importance of the salt licks to the local fauna and the spatial scale of the effect. The "natural salt lick" is a site where water containing potassium or sodium is leached from the ground. It was suggested that the nutrients play a crucial role for the fauna of tropical forests where the minerals are difficult to obtain. Although it is not addressed in this article, H. Samejima also has set camera-traps throughout the FMU to reveal the spatial distribution of fauna and attempts to assess the performance of sustain-

² The plan was to turn selected concessions into industrial tree plantation and oil palm plantations. The future of the 25-year-cycle is unclear.

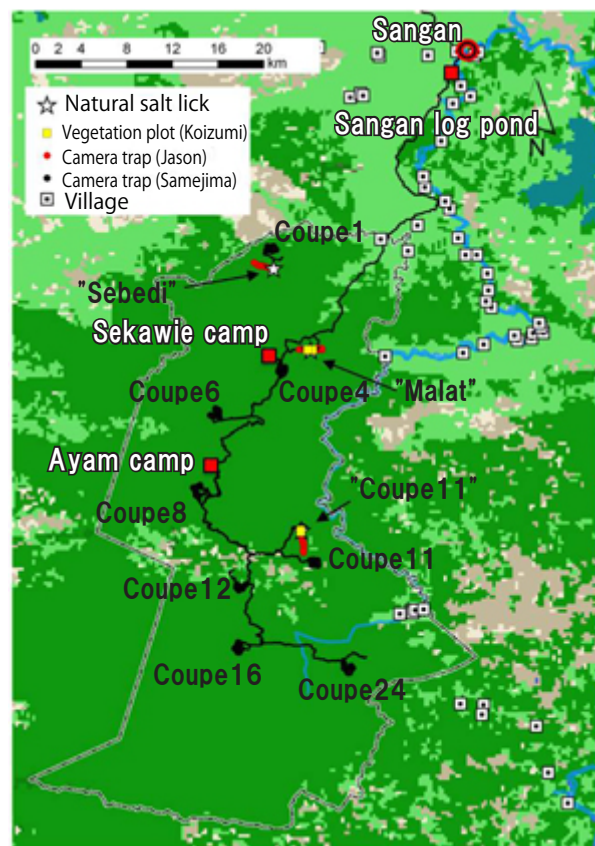


Figure2. Map of the Anap-Muput Forest Management Unit with research sites of Kaoizumi, Hon and Samejima.

able forest management. Meanwhile, Dr. Koizumi has been working to develop a simple method to assess tree diversities in logging concession.

For further research activities in the Anap-Muput FMU and other company's concessions, I also asked Dr. Fujita, who has been working on ornithological researches in acacia plantations in Sumatra, to share her experience working with private company. Conducting research in a concession managed by a private company is different in many aspects from researches conducted in national parks or local villages. Many companies have their own regulations and we have to adjust our research plan to them. On the other hand, if researchers can persuade the companies to understand the benefit from their studies, they can access to companies' records of past managements which contribute deeply understanding the situation. It also may provides a great opportunity for the researchers to observe the companies' process and interests in decision-making or how do the companies manage their reputation and relationship with the government.

This article is reprinted from the 5th issue of Japanese newsletter of this project

Developing a plant-survey method at Anap-Muput Forest Management Unit

Miyako Koizumi

(Research Institute for Humanity and Nature)

There is global concern over sustainable development and mechanisms to provide incentives for the sustainable use of forests. There are two major problems in the development of such mechanisms. One is the economical problem of who and how to share costs and benefits. The other is the biological problem of how to evaluate ecosystems. The latter is considered highly challenging in tropical rainforests, where biodiversity is very high.

Biodiversity studies in tropical rainforests have been conducted by specialists, sometimes with the help of para-taxonomists. Their study sites are relatively small, usually less than 1 km², because the number of specialists is limited and their objectives are to study biological or ecological processes. For the management of forests, however, a rapid and cost effective method to evaluate biodiversity is required. With such a practical method, users of the forests can make appropriate plans for the sustainable use of the forests.

The scope of my study in the project is to develop such type of practical method for the survey and evaluation of plant diversity in tropical rainforests of Sarawak. There are four steps in the study. **1)** To develop a plot setting and sampling method that can cover a large area. **2)** To develop a sorting-identification system. **3)** To develop indicators of plant diversity. **4)** To scale up the ground data using satellite images. The study site is the Anap-Muput Forest Management Unit, where sustainable forest management is pursued.

I made a first visit to the Anap-Muput Forest Management Unit from 8th to 19th March 2011. The purpose of the visit was to get a first-hand understanding of the site and conduct a preliminary plot survey before launching a full-scale one. The activities in this period were related to the first step mentioned above.

I made seven small plots and collected samples with the help of Zedtee staff. Each plot was a circle with a radius of 15 m (0.0702 ha). Within the circle, trees of 10 cm or above in diameter at breast height (DBH) were tagged. For each tagged tree, DBH was measured, leaves were collected (usually by shooting small stones at the trees), and the bark and leaves were photographed. The Zedtee staff were used to plot work, and the survey was conducted smoothly.

There were 36 – 56 trees surveyed in a plot. As far as I could check, sampling error of leaves by the staff occurred only for 0 – 1 tree/plot. Sampling of leaves was impossible (unless by climbing a tree) for 0 – 2 trees/plot. This time it took 3.5 – 4 hours to finish a plot because of my double checking of the samples.



Photo1: Making a plot (photo by Koizumi)



Photo2: Tagging a tree (photo by Kenin)

It would probably take less than 3 hours by two staff members without any such double checking.

Vegetation types were clearly reflected in the data from this simple survey. In agricultural fallows, several species dominated, and the tree size distribution was limited. In old forests, more species of various families were found, and there were larger size distributions. The problem is, however, that different types of vegetation exist in small patches. The arrangement of plots and careful use of satellite images will be the key in scaling up the result.



Photo3: Collecting leaf samples (photo by Kenin)



Photo4: A surveyed tree (photo by Kenin)



Photo5: Zedtee's regular survey before logging
- measuring diameter (photo by Koizumi)



Photo6: Zedtee's regular survey before logging
- marking a tree not for logging (photo by Koizumi)

This article is reprinted from the 5th issue of Japanese newsletter of this project

The article was written in March 2011.
The author's affiliation is at the time of writing.
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Report on the Preliminary Research in Sarawak, Malaysia

Motoko Fujita

(CSEAS, Kyoto University)

Among the information I collected during this field trip, I discovered two facts about swiftlets that were particularly fascinating. One concerns the ecology of the bird and the other concerns human interaction with swiftlets that I witnessed during my stay.

Two species of swiftlet produce edible birds' nests, which is known as Chinese delicacy: the Edible-nest Swiftlet (*Aerodramus fuciphagus* hereinafter referred as to *A. fuciphagus*) and the Black-nest Swiftlet (*Aerodramus maximus*, hereinafter referred as to *A. maximus*.) In general, *A. fuciphagus* lives close to coastlines and dwells in bird farm houses*, in which people try to attract birds to make nests. *A. maximus* is more likely to be seen in mountain caves and seldom builds nests in bird farm houses. Indeed, I heard that people had wasted money building bird farm houses around Bau where *A. maximus* is abundant; the birds failed to build their nests in their bird farm houses.

A. fuciphagus seems to have a number of subspecies. One of them live in bird farm houses, while others live in caves. The subspecies of *A. fuciphagus* that has been increasing in number in Sarawak was brought in from Java. Some say they originally mi-

grated from Indonesia (Kalimantan) over to Malaysia (Sarawak), when a large fire broke out and burned down the bird farm houses in Kalimantan. It is true that the Indonesian part of the island of Borneo is renowned for forest fires but this story requires careful scrutiny.

Assuming that it is this subspecies that dwells in the ever-increasing bird farm houses in Sarawak, what makes them dominant in this area? Even if it was humans who brought them into this area at an early stage, this subspecies could not have prevailed if they lack the ability to adapt to a new environment. Most bird farm houses are located in city areas, but where do the swiftlets find food and on what do they feed? Do they find their food in the city or do they need to commute to a nearby / distant feeding ground? Do the urban swiftlets feed on something different from other swiftlets inhabiting food-abundant areas? What type of feeding sites do they have in urban areas? Why does *A. maximus* shy away from bird farm houses?

Another point I'd like to focus on is the comparison with the swiftlets in Indonesia. The bird's behavior which I witnessed in Sumatra seemed to be somewhat against that in Sarawak. For example, in a town called Batu Raja in Sumatera Selatan located at the foot of the Barisan Range, I saw bird farm houses even though the town is about 100km from a coastal area or peat land. However, I have not yet identified the species in the bird farm houses in this town. Although



Photo1: A bird farm house



Photo2: Walk into a cave at Bukit Sarang to observe swiftlets' nesting place
(Photo by Shinji Otake)

the credibility is questionable, some Internet-based information indicates *A. maximus* also adapts to life in bird farm houses in Indonesia. If there is an ethological difference of birds living in different places, identifying the reasons for such difference would be significant.

The uniqueness of the study on swiftlets is that the ecological interest in the species often explains human behavior. For centuries, swiftlets have taken shelter in caves in this area and only a few local people hold the rights to collect the birds' nests. The rights have been handed down for generations according to the local customs (adat) and gradually have taken on the nature of something akin to real estate. The human behavior associated with these rights is also very intriguing. The latest example is the advent of bird farm houses in Sarawak. People have started to build bird farm houses or remodel houses into bird farm houses as if they are competing with each other with the hope of hitting the jackpot. An extreme example is an entire hotel was converted into a bird farm house in Sarawak. Clearly swiftlets seem to be better hotel guests than humans. Certainly, if things go well, a bird farm house could make as much as two million yen profit a month. Not surprisingly, the state government of Sarawak sees a bright future for the business and advocates its support. Are humans cashing in on the birds



(photo by Joanes Unggang)



Photo3: The nest of a swiftlet (center) and many signs of old nests on the cave wall

or are the birds taking advantage of us?

The bird nest business looks promising as it has the large population of the Chinese and ethnic Chinese as potential customers. However, each industry has its light and shadow. Ecologically speaking, swiftlets feed on various flying insects hence they play the role of biological control as predators. But from another viewpoint, the fast-growing number of swiftlets may cause a severe competition with other native species or subspecies. It is necessary for bird house owners to pay extra attention to the human health issue as well; they let the birds to build their nests in enclosed spaces, generating a massive amount of droppings which are affected by pathogens. The relationship between the human and swiftlets will continue into the foreseeable future without a doubt. I would like to continue my study on this relationship with interest.

* Bird farm houses are grower barns made for swiftlets to lure them and collect their edible nests. There is a variation in the types of the bird farm houses from a house of one to three-story or commercial longhouses. In some cases old hotels are turned into bird farm houses in urban areas.

This article is reprinted from the 3rd issue of Japanese newsletter of this project

Events and Activities

Zedtee sdn. bhd. Seminar
by Mr. Wong Ing Yung
March 22, 2012 at CSEAS, Kyoto University

Anap-Muput Forest Management Unit is one of the research sites of our project. In this area, forest management began in 1977 and is now managed by Zedtee sdn. bhd. Today about 20% of the area is allocated for planted forest with a 60-year license term and the planting of fast-growing trees such as *Albizia* is underway. In the remaining area, natural forest management is conducted with reduced-impact logging technique and 25 years cutting rotation. Anap-Muput is the only logging concession in Sarawak certified by the Malaysian Timber Certification Council (MTCC) as sustainably managed.

We invited Mr. Wong Ing Yung, the president of Zedtee sdn. bhd., to the Center for Southeast Asian Studies, Kyoto University on March 22, 2012. Mr. Wong gave us a lecture about management of Anap-Muput, titled “ASDU (Anap-Muput Sustainable Development Unit): Innovative Rainforest Conservation & Management in Sarawak.”

Mr. Wong’s talk focused more on how to build good relations with villages inside and around the company’s concession area. Mr. Wong emphasized the importance of involvement of local communities into

the decision making process and discussed what type of aid is preferred to local communities.

(Written by H. Samejima)



Photo2: The seminar gave a great opportunity to have a detailed picture of logging operation in Sarawak



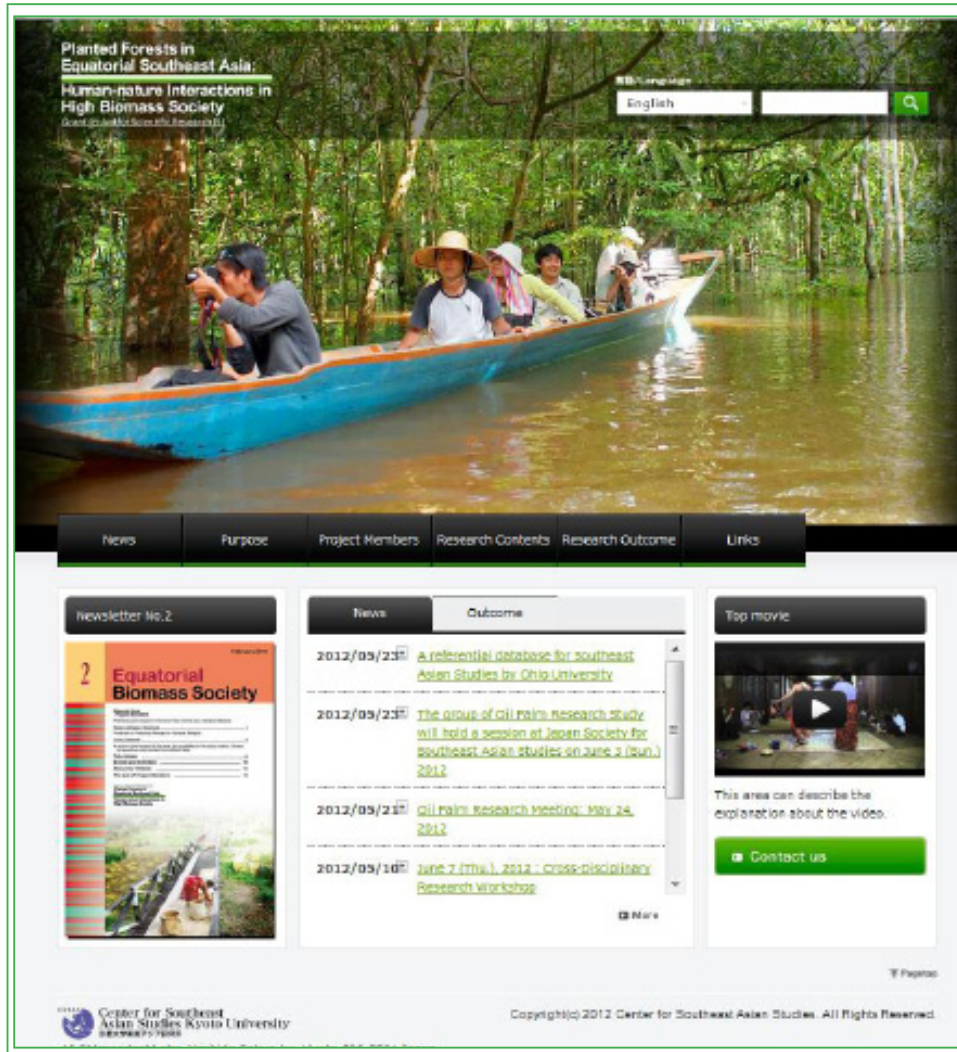
Photo1: Mr. Wong shared his view of forest management from the perspective of a logging company with project members.



(Photos by Hideki Nakane)

Please visit our website

<http://biomassociety.org/en/>



Our project, “Planted Forests in Equatorial Southeast Asia: Human-nature Interactions in High Biomass Society” has its own website.

It covers articles, event information, videos, research outcomes newsletters and much more.

Please visit our website and keep up with our latest activities.

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Kosuke Mizuno	Agricultural Economics	Center for Southeast Asian Studies, Kyoto University
Naoko Tokuchi	Forest Ecosystem Ecology	Field Science Education and Research Center, Kyoto University
Motomitsu Uchibori	Cultural Anthropology	Faculty of Liberal Arts, The Open University of Japan
Hiroimitsu Samejima	Ecology	Center for Southeast Asian Studies, Kyoto University
Motoko Fujita	Bird Ecology	Center for Southeast Asian Studies, Kyoto University
Osamu Kozan	Hydrology	Center for Southeast Asian Studies, Kyoto University
Keitaro Fukushima	Forest Ecosystem Ecology	Field Science Education and Research Center, Kyoto University
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Katsumi Okuno	Cultural Anthropology	College of Liberal Arts, J.F.Oberlin University
Masahiro Ichikawa	Southeast Asian Area Study	Faculty of Agriculture, Kochi University
Miyako Koizumi	Ecological Anthropology	Graduate School of Agriculture, Kyoto University
Fumikazu Ubukata	Natural Resource Economics	Graduate School of Environmental Science, Okayama University
Tetsu Ichikawa	Cultural Anthropology	The Asian Institute for Intellectual Collaboration, Rikkyo University
Yucho Sadamichi	Life Cycle Assessment	The National Institute of Advanced Industrial Science and Technology
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