

Kyoto University

# Global COE Program

In Search of Sustainable Humanosphere in Asia and Africa  
生存基盤持続型の発展を目指す地域研究拠点



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Institute of Sustainability Science  
Graduate School of Agriculture  
Institute for Research in Humanities  
Graduate School of Engineering

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A Message from the Publications Committee

With gratitude to your cooperation and support, we are happy to dispatch this 5th Newsletter of the GCOE Program, "In Search of Sustainable Humanosphere in Asia and Africa".

This issue features two recent activities: the 3rd International Conference in December 2009; and, our joint project on the Riau Biosphere Reserve.

I hope that through this issue, you will gain a sense of the width and depth of our research activities, some of which is gaining shape, now at the end of the third year.

日頃のご協力に感謝しつつ、私どものGCOEプログラム『生存基盤持続型の発展を目指す地域研究拠点』ニュースレター第5号をお届けいたします。本号は二つの特集を中心に編集いたしました。

第一は昨年12月に開催しました第三回国際シンポジウム、第二はインドネシア・リアウのバイオスフィア・リザーブをめぐる活動です。

これらを通じて、三年目を終えて充実しつつある本プログラムの成果の一端をご覧いただければと存じます。

2010年3月

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Cover Picture (Photo: Taro Yamamoto) (Caption: Ryoji Soda)

The picture shows a fishway constructed beside an erosion control dam in Shiretoko, Hokkaido. Since the amendment of River Act in 1997 'environment-conscious river work' has been popular, we can see many varieties of fishways in every region in Japan. This huge fishway looks ineffective for fish-homing, but there is a report that a carcass of trout was found above the dam. What is 'environment-conscious' river improvement work? How should 'nature' be restored? Discussion has not matured.

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表紙写真 (撮影: 山本 太郎) (キャプション: 祖田 亮次)

北海道知床ベレケ川の砂防ダムに併設された階段式の魚道。1997年の河川法改正によって環境配慮型の川づくりが進められ、写真のような巨大な魚道も各地で見られるようになった。視覚的には効果のほどが疑われるが、ダムの上流でカラフトマスの死骸を見たという話もある。生態系や環境に配慮した川づくりとはどうあるべきか、何をもち「自然に近い川」と判断しうるのか、議論は尽くされていない。

12月14日(月) December 14, 2009

## 滋賀里山フィールドトリップ Field Trip to Satoyama (Shiga Prefecture)

針江にて川端(かばた)湧水を利用した水循環システム観察

志賀里山にて土地利用観察

案内: 深町 加津枝 Katsue Fukumachi (京都大学大学院地球環境学堂 Graduate School of Global Environmental Studies, Kyoto University)

奥 敬一 Hirokazu Oki (森林総合研究所 Forestry and Forest Products Research Institute)

12月15日(火) December 15, 2009

京都大学 相違財団記念館

キーノート・スピーチ Keynote Speech: 石川 登 Noboru Ishikawa (東南アジア研究所 CSEAS, Kyoto University)

## Session 1: 人為攪乱の再考: Rethinking Human Disturbance

序論: 藤田 素子 (東南アジア研究所), 橋澤 雅之 (地域研究統合情報センター), クスマニンテヤス・レトノ (生存圏研究所)

Introduction: Motoko Fujita (CSEAS, Kyoto University), Masayuki Yanagisawa (CIAS, Kyoto University) and Kusumaningtyas

Retno (RISH, Kyoto University)

板田 亮次 Ryōji Itada (大阪市立大学 Osaka City University) "River Improvement History in Japan: Rethinking Human-nature Interactions"

深町加津枝 Katsue Fukumachi "The Role of Sustainable Management of Traditional Satoyama Landscape Elements: A Case Study from

the Ecological Viewpoint"

Sara Cousins (ストックホルム大学 Stockholm University) "Slow Species in Fast Landscapes"

Eben Kirksey (ピッツバーグ大学 University of Pittsburgh) "The Natural Cultural History of Palo Verde, Costa Rica"

Short Film 上映: Eben Kirksey "The Multispecies Salon"

## Session 2: 大陸を超えるつながり: Cross-Continental Connections

序論: 石川 登, 清水 眞 (東南アジア研究所), 角田 邦夫 (生存圏研究所)

Introduction: Noboru Ishikawa, Hiromu Shimizu (CSEAS) and Kunio Tsunoda (RISH)

Heather Swanson (カリフォルニア大学 University of California, Santa Cruz) "Patterns of Nature-Cultures: The Spatial Redistribution of Pacific Salmon"

Eric Tagliacozzo (コーネル大学 Cornell University) "A Sino-Southeast Asian Circuit: Ethno-histories of the Marine Goods Trade"

Anna L. Tsing (カリフォルニア大学 University of California, Santa Cruz) "Blasted Landscapes (and the gentle arts of mushroom picking)"

小池 文人 Fumito Koike (横浜国立大学大学院環境情報研究院 Yokohama National University) "Biological Invasions as a Cause of Irreversible

Change"

12月16日(水) December 16, 2009

## Session 3: 社会変化の駆動力としての水資源: Water Resources as a Driving Force of Social Change

序論: 甲山 治 (東南アジア研究所), 津田 敏隆 (生存圏研究所), 河野 泰之 (東南アジア研究所)

Introduction: Osamu Kozan (CSEAS), Toshitaka Tsuda (RISH) and Yasuyuki Kono (CSEAS)

Kenneth Pomerantz (カリフォルニア大学 University of California, Irvine) "Drought, Climate Change, and the Political Economy of

Himalayan Dam-Building"

藤 信次郎 Shinjiro Fujii (東京工業大学 Tokyo Institute of Technology) "A State-of-the-Art-Global Water Resources Assessment and its

Future Extension for Sustainability"

相垣 文明 Fumiaki Aihara (慶應義塾大学 Keio University) "The Water Management of Central Asia in Transformation"

James Warren (マードック大学 Murdoch University) "Climate Change and the Impact of Drought on Human Affairs and Human History

in the Philippines, 1582 to 2009"

12月17日(木) December 17, 2009

## Session 4: 解析手法におけるスケールとスコープの再検討: Redefining the Scale and Scope of Enquiry

序論: 木村 周平 (東南アジア研究所), 寛木 茂 (大学院アジア・アフリカ地域研究研究科), 藤原 真哉 (生存圏研究所)

Introduction: Shuhei Kimura (CSEAS), Shigeru Araki (ASAFAS, Kyoto University) and Naoki Shinohara (RISEI)

Anthony Reid (東南アジア研究所) "Seismology and Human Settlement: Global Contexts for Local (Sumatra) Patterns"

小泉 都 Miyako Koizumi (総合地球環境学研究所 Research Institute for Humanity and Nature) "Objective and Methodology of Natural Science and

Its Limitations to Deal with Environmental Problems"

Sanga-Ngoie Kazadi (立命館アジア太平洋大学 Ritsumeikan Asia Pacific University) "GIS and Remote Sensing for Wildlife Monitoring and

Management in Eastern Africa"

Sing Chew (フンボルト州立大学 Humboldt University) "Nature - Culture Relations over World History: Globalization, Crises, and Time"

総合討論 司会: 石川 登, 河野 泰之 General Discussion Chair: Noboru Ishikawa, Yasuyuki Kono

閉会挨拶: 石川 登 Closing Remarks: Noboru Ishikawa

## Changing Nature of "Nature":

## New Perspectives from Transdisciplinary Field Science

Noboru Ishikawa CSEAS Associate Professor

Social and natural sciences have long engaged in the study of connections. From community, region, nation-state, to empire -- or from patch to landscape -- we have scaled and rescaled the units of analysis in time and space to comprehend how constituent parts of a system are related, and distant places linked.

Such engagements in the study and theorization of connections, however, have usually been pursued without connecting their thoughts to other attempts, and a common ground for the confluence between geo/biospheric and humanospheric systems has not been fully investigated. While the science of nature and technology deals with the material flows such as water, gases, and minerals through physical and biological processes, social science looks into commodity chains and levels of socio-cultural, economic, and political integration and disintegration.

The distinction between a social and a natural domain continues to make communication between researchers in these two categories an uneasy task. However, the current global confluence of geo-, bio-, and humanospheres is too important to be addressed in any way other than a transdisciplinary approach. We can no longer afford to be in isolation and separation in the task of understanding the connections between natural and social systems.

This workshop is a sequel to the previous Global

COE International Conference "In Search of Sustainable Humanosphere in Asia and Africa: Biosphere as a Global Force of Change" (2008) which challenged conventional anthropocentric perspectives for the understanding of the modern world. Specifically looking at the interfaces between nature and non-nature as a crucial field for investigation, the workshop brings participants out of their own comfort zones by posing the following questions.

We ask anthropologists, historians, and political scientists to identify agents of social change in the natural world with their own logics of reproduction and evolution. Ecologists, environmental and material scientists are, in turn, asked to situate non-human agency and its working in sociocultural fields of humanosphere.

Workshop participants examine the multi-dimensional driving forces of change generated at nature non-nature thresholds at micro, meso, and macro-levels. The integration of the three levels of analysis leads us to new understandings of the changing nature of nature in a globalizing world. The obligation now falls on us to take a holistic look at nature as a social process as well as society as a natural process, and to consider how arguments about the past and the present are applied for the understanding of the future.

## 現代社会における「自然」概念を問う:

## 文理融合的フィールド科学からのアプローチ

石川 登 東南アジア研究所 准教授

自然と社会の関係論の多くは、従来細分化された学問分野のなかで行われてきた。人文・社会科学ならびに自然科学を融合したアプローチを模索する必要が叫ばれて久しいが、その方法論を正面から論じる機会はなかった。本国際集会は現代社会における「自然」「非自然」の境界生成と可塑性に注目し、その歴史・地域限定的な背景要因とこれに起因する動態理解の方法論を、パッチ、ランドスケープ、コミュニティ、領域国家など様々な分析スケールから検討した。

論文発表者は、生態学、人文地理学、自然地理学、文化人類学、歴史学、国際関係論、水文学、植物学、地球物理学、社会学、地域研究などの専門家からなり、自然科学と人文・社会科学を架橋し、「攪乱」、「コネク

ション」、「スケール」などを鍵概念としながら、社会システムと自然システムの接合動態の検討の方法論を模索した。

各セッションでは、生命圏 (biosphere) における商品連鎖、水害に代表される地球圏 (geosphere) による在地コミュニティに対する攪乱、政治経済的な力学要因としての水資源、ポスト産業造林社会の里山観、植物分類体系の地域比較、人為攪乱下での生物多様性、地震や干ばつなど大規模自然災害のもとでの在地社会の歴史動態、さらには自然と社会の関係理解のための時間的 / 空間的分析単位に関する方法論的議論など分野横断的な議論が交わされた。

Rethinking Human Disturbance

Motoko Fujita CSEAS G-COE Researcher

In this session, we focused on "Human Disturbance" which changes an undisturbed ecosystem into an altered ecosystem. A different perception of nature will change institutions and management, which will then additionally change the ways of human disturbance and thus make a different altered ecosystem. We have raised two questions towards thinking about human disturbances. They are: how do environmental differences relate to the perception of nature; and, how does the traditional way of management differ from modern and intensive management? Dr. Ryoji Soda presented a history of river improvement in Japan, where the communities used to accept floods as inevitable natural disturbance and developed a riverine culture so as to live/deal with floods. Problems arose when the Japanese river administration introduced a modern European system which failed to take into consideration the different environments between the two regions. This case study shows that management should be pursued based on the human-nature relationship in the region. Dr. Katsue Fukamachi reviewed land-use change in the

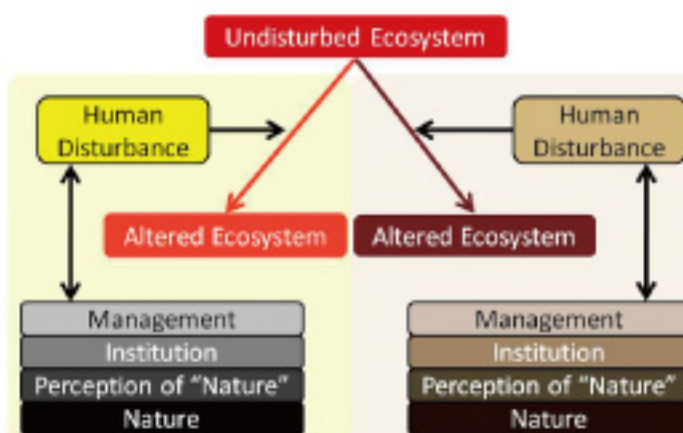
Satoyama landscape in Japan and insisted that the traditional management style has a higher plant biodiversity compared to that of modern management. On the other hand, Dr. Sara Cousins showed changes in grassland land-use in Sweden, from low-intensive management with high biodiversity to intensive agriculture with low biodiversity. Both of the two cases indicated that for biodiversity conservation, an appropriate disturbance is necessary rather than leaving the ecosystem as it is without utilization. In other words, a novel way of management should be developed, as traditional management is difficult to continue in a modern society. Dr. Eben Kirksey then followed up with a look at changes in land-use in Costa Rica, from cattle ranch to national park, where, as a result, the unintended flourishing of certain plants has prevented huge amount of organisms from surviving. In conclusion, to think of organisms as an agent in human disturbance might be a key issue in evaluating the human-nature relationship, whether it is traditional or modern management.

人為攪乱の再考

藤田 素子 東南アジア研究所 G-COE 特定研究員

このセッションでは生態系を改変する力としての人為攪乱に着目した。異なる自然の観方をもつ地域では、制度や管理方法も異なり、生態系への攪乱のありかたも変わる。そこで、自然環境の違いはどのように自然の観方と関連しているのか、伝統的な管理方法は近代集約的な管理方法とどう異なるのか、という点から人為攪乱を再考した。祖田 亮次氏は日本の河川行政に着目し、地域の人々が洪水を受け入れ、ともに生きる文化を育んできた歴史を紹介した。その後ヨーロッパの近代的な河川改修システムを取り入れる際、日欧の環境の違いを考慮しなかったことを問題点とし、地域固有の人と自然の関係に基づいた管理が必要であると述べた。深町 加津枝氏は日本の里山景観における土地利用変化を紹介し、近代的な管理方法に比べ、伝統的な管理方法のほうが高い植物多様性を持つことを示した。一方サラ・カズンス氏が示したスウェーデンにおける草原の土地利用変化においても、非集約的な管理のほうが集約的な管理よりも高い多様性を保つことを紹介した。異なる環境をもつ二地域の事例からは、生物多様性保全のためには生態系を放置するよりも、適度な攪乱が必要であることが示唆された。しかし現代社会において、伝統的な管理の継承が難しいことから、集約的でない新たな管理方法を見

Nature-Human Relationship: Disturbance



つけるべきだろう。エベン・カークセイ氏はコスタリカの国立公園で、意図せずして特定の植物が繁茂し、牧場だった時期には生息していた多くの生物を排除する結果に至ったことを報告した。人と自然の関係を評価するにあたって、管理が伝統的か近代的であるかによらず、人為攪乱のエージェントとしての生物種に着目することが鍵となることが結論づけられた。

Cross-Continental Connections

Noboru Ishikawa

What are the points of articulation between material cycles and socio-economic movements of capital, human, technology, and institutions? What are the consequences of connections, not only at the local but also at the cross-continental and global scales? How do we locate linkages among non-adjacent and seemingly disconnected locations in nature and society? Looking at spatial configurations of natural resource commodity chains and non-indigenous species across continents, session 2 examined the nature of human and nonhuman relationships in the making of global landscapes and the dynamics of the spatial interconnections of nature as history and process.

Prof. Anna L. Tsing's paper compared the disturbance histories that produce *matsutake* forests in four world areas (Japan, southwest China, the U.S. Pacific Northwest, and Finland), all of which have joined a Japan-centered *matsutake* commodity chain. The comparison addressed the role of continent-crossing commodity chains in gleaning wealth from radical disturbance. Dr. Eric Tagliacozzo then looked at Overseas Chinese networks through one window: the historical and contemporary trade in marine produce, which linked China and the many countries of Southeast Asia in an economic embrace for hundreds of years. Tracing the overall

redistribution of salmon in the North Pacific over the course of the past 200 years, Ms. Heather Swanson made visible the patterned ways in which processes such as frontier encounters and the displacement of indigenous peoples, the rise of the global canned salmon trade, the development of new hatchery technologies, and the territorialization of ocean waters have impacted the people and fish of the North Pacific. Prof. Fumito Koike took up the issue of non-indigenous species found across continents induced by the expansion of global commodity chains. The paper specifically looked into the intentional introduction of non-indigenous species (erosion control, horticulture, zoo, etc.) and examined the cause and effect of biological invasion into wilderness areas.



大陸を超えるつながり

石川 登

第2セッションの主な目的は、地球圏、生物圏、そして人間圏の空間的な接合を学問分野横断的な視点から考察することにある。具体的には、地球圏と生物圏における「物質循環」と人間圏における「労働」「商品」「資本」「技術」「制度」などの空間移動の接合様式、ならびに接合の誘因と結果をローカルからグローバルにいたる重層的な分析ニッチのもとで検討した。自然界のリン、窒素、水などの物質循環、異なるランドスケープを結合する河川や

海、移入種の移動などを社会変化のエージェントとして捉え、これらが人間圏における資本や商品、そして技術や制度などの伝播とどのような関係性を維持しながら、ローカルかつグローバルな関係性を形成しているのか——本セッションでは、「攪乱の歴史」、「偶発性と資本主義」、「自然界の近代世界システム」、「国家領域化と生態系」、「地理的および制度的スケール」など様々な討議ポイントが提出された。

## Water Resource as a Driving Force of Social Change

Osamu Kozan CSEAS Associate Professor

Session 3 discussed the impact of water resources on human society and social change. All four speakers examined the connections between water resources and “humanosphere” in their research target areas.

The first speaker Prof. Kenneth Pomerantz from University of California, Irvine, a modern historian of China, explained the unbalanced spatial distribution of water resources in China and India. He looked at the interlocking forces behind planned and actual Himalayan mega-projects, with special attention to China, which is the most important single actor in this critical situation.

The second speaker Dr. Shinjiro Kanae from Tokyo Institute of Technology, a hydrologist, discussed the sustainability of global water resources using advanced hydrological modeling. He assessed the sufficiency of global water resources by calculating the ratio between water withdrawal and water availability throughout the world. He concluded that criteria for evaluating sustainability remain an unsolved issue, partly because

we should consider the ethical aspects such as how much is the minimum amount of water to satisfy human needs.

The third presenter Dr. Fumiaki Inagaki, from Keio University, Tokyo, a political scientist of Central Asia, focused on the transition of water distribution framework in the Aral Sea Basin since 1960s. He showed the mechanisms of the water disputes through an analysis of the water management policy of Central Asia from the perspective of “path-dependency.”

The last presenter Prof. James Warren, from Murdoch University, Perth, a historian of Southeast Asia, examined the causes and consequences of food shortages and famine with respect to the relationship between climatic factors, namely El Niño events, drought and disease, food scarcity, regional characteristics and social structure. He focused on the structural links between food shortages, Filipino peasant societies and the weather factor.



## 社会変化の駆動力としての水資源

甲山 治 東南アジア研究所 准教授

第3セッションは、水資源が、人間社会およびその変化に及ぼす影響に関して、4名の発表が行われ、各々の研究対象地域における水資源と人間圏の関係性に関して考察がなされた。最初の発表者は中国近代史家のケネス・ポメランツ氏 (UCアーバイン) で、中国とインドにおける水資源のアンバランスな分布に関して解説した。計画中および現在ヒマラヤで実施されている巨大プロジェクトの背景にある複合的な影響力に注目し、この状況でもっとも重要な役割を果たしている中国への懸念を述べた。2番目の発表者は水文学者の那 信次郎氏 (東京工業大学) で、最新の水文モデルを用いて地球規模の水資源の持続性に関する議論を行った。世界の水資源の取水量と賦存量の割合を計算することで、水資源の充足具合を評価

した。持続可能性評価の基準は未だ不十分であり、人間にとって最低限必要な水の量に関する議論などといった、倫理的な側面を考慮する必要があると結論付けた。3番目の発表者は中央アジア政治学者の稲垣 文昭氏 (慶應大学) で、1960年代以降の中央アジアの水配分体制の変遷に注目した。径路依存性の観点から中央アジアの水管理政策の解析を行い、水紛争のメカニズムを示した。そして最後に東南アジア史家のジェームス・ウォレン氏 (マドック大) が、食糧不足と飢饉の原因と結果に関して、気候的な要因、エルニーニョ、干ばつと疫病、食糧不足、地域的な特徴、社会的な構造といった側面から説明を行った。なかでも、食糧不足と農村社会、気象要因の構造的な関連に注目した発表を行った。

## Redefining the Scale and Scope of Enquiry

Shuhei Kimura CSEAS G-COE Assistant Professor

Session 4 aimed to re-examine our disciplinary-bound scale and scope of enquiry and create a scientific approach to “humanosphere” in the broad sense through an intensive dialogue among disciplines. All four speakers challenged the limitations of a disciplinary-bound scale and scope, to suggest new perspectives on their respective topics. The first speaker Prof. Anthony Reid from Kyoto University and Australia National University, a historian of Southeast Asia, attempted to re-describe the social history of the region by incorporating research findings on long-term geospheric cyclic movements, which sometimes escape from the historian’s attention. The second speaker Dr. Miyako Koizumi from the Research Institute of Humanity and Nature, Kyoto, brought out the logic of natural science through comparing Linnaean biological taxonomy with indigenous ethnobiological knowledge. Her argument heads toward creating a common language to speak about environmental problems for both natural

and social scientists and citizens. The third presenter Prof. Sanga-Ngoie Kazadi from Ritsumeikan Asia Pacific University, Oita, focused on wildebeests as a key species for both the local ecosystem and people of eastern Africa, and provided a prediction of their migration routes by integrating multiple data on the remote sensing map. This is an ambitious approach to coordinate the logics of three spheres, from our point of view. The last presenter Prof. Sing Chew from Humboldt State University, dealt with an extraordinarily long time span for a social scientist. He analyzed the dark ages as “system crises” and reconfigured the history of the world system in terms of a long-term interaction between nature and culture. In the discussion part, we tried to discuss research strategies that make it meaningful to move between different scales of enquiry, in terms of time and space, considering what things were made visible and invisible in their attempts.



## 解析手法におけるスケールとスコープの再検討

木村 周平 東南アジア研究所 G-COE 特任助教

第4セッションは、学問横断的な対話を通じ専門性によって規定された問題のスケールとスコープを再検討することを目指した。最初の発表者である東南アジア史の大家アンソニー・リード氏 (東南研客員、オーストラリア国立大学) は、従来の歴史学の語りにも地球圏の長期的な周期運動としての津波についての知見を取り入れ、スマトラ島の人口分布の偏りという謎に対し新しい解釈を示した。次に、小泉 都氏 (総合地球環境学研究所) がリンネの分類法とカリマンタン島の先住民プナンの民族生物分類の比較を通じて自然科学の営みの特徴と問題点を明らかにし、環境問題のような領域横断的な問題に取り組むためには社会科学が自然科学と市民をつなぎ、協働を可能にすることが重要であると主張した。3番目にサンガ・

ンゴイ・カザディ氏 (立命館アジア太平洋大学) が、リモートセンシングから得られた降水量や植生などのデータを重ね合わせて分析することで、東アフリカのヌーの移動を予測する研究について報告した。そして最後にシン・チュウ氏 (フンボルト州大) が、世界史上の暗黒時代を、自然と文化の相互作用としてのシステムの危機として分析した。このように発表者はいずれも、専門分野によって規定されたスケールとスコープの限界に挑戦し、新しい視野を提示した。討論部では、それぞれの報告が新しく開いた視座と同時に、それによって見えなくなっているものを検討しながら、多様なスケールとスコープを意義ある仕方で行き来するための研究方法について議論した。

Comments from the International Advisory Board

International Advisory Board Meeting, composed by the invited scholars, was held just after finishing the International Conference. What follows are some of the comments and suggestions that were provided in the meeting:

1. The G-COE program theme and its originality
  - The integration of disciplines at such a large scale as you have done is definitely original and will provide important methodological tools for multidisciplinary programs.
  - Posing the question of Nature of "Nature" turned out to be a useful mode of stimulating interdisciplinary dialogue.
2. Approaches to the issues and questions
  - I felt that, through this program, I was able to learn about a variety of approaches to integrating the natural and social sciences in order to study environmental and human problems.
  - I don't know if it was the particular theme of the conference this time but I got the feeling that there were less natural science researchers in this conference compared to the previous time.
3. Project scheme and structure
  - Both the intellectual structure and logistical structure of this conference were excellent.
4. Cluster sub-themes (Initiative 1-4)
  - I thought these were excellent as they allowed us to focus on more specific topics within the broader G-COE program theme. I also liked that the clusters were largely organized by up-and-coming scholars. This allowed them to express and develop their own theoretical ideas within the framework of the program.
5. Educational outcome and impact on up-and-coming researchers.
  - The well integrated atmosphere that you have created is an excellent platform for young researchers. However I think it is important that the researchers are encouraged to keep up with their work also within their different disciplines.
  - I am very grateful that I was able to have such an opportunity so early in my career.
6. Suggestion on the cooperation with other institutions
  - I think a good way to do this is to send out students/post docs for short visits (3-6 months) to work in other countries.
7. Regarding the development of paradigm shift from production to reproduction/livelihood/humanosphere
  - It seems to me that this shift is absolutely essential as it allows us to integrate diverse disciplines and theoretical approaches in new ways.
  - This is interesting and could really have potential but should be carefully used as it could be regarded as slightly 'soft' or fuzzy scientifically.
8. Regarding the development paradigm shift "from template zone-centered to tropic zone-centered"
  - Particularly important as many of the decisions and demands for goods come from the temperate zone which is causing much of the depletion in the tropical zone! Important examples are that of biofuels and carbon trade.
9. Others
  - The fieldtrip to the *Satoyama* landscapes was also a very original and essential part of the conference, and it provided a literal ground for the rest of the program.

Most of the comments were favorable to our research activities and administration. All of the comments and suggestions from the International Advisory Board have been uploaded to our Web site.

(Takahiro Sato CSEAS G-COE Researcher)



国際アドバイザーボードからのコメント

12月17日の国際シンポジウム終了直後、海外から招聘した研究者を主たるメンバーとする、国際アドバイザーボードを開催した。シンポジウムの議論や当プログラムに対する評価、今後の期待などについて率直な意見を伺った。

1. 研究テーマ
  - このような多岐にわたる専門分野を統合した学際研究は、他に類を見ないものであり、今後の学際研究の進展に多大な貢献をするものと思われる。
  - 「Nature of "Nature"」というテーマ設定は、専門分野を超えた会話を促進するのにとても有意義だった。
2. 論点・疑問点に対するアプローチ
  - 人と環境の関わり方について研究するために必要な、自然科学と社会科学の統合に様々な方法があることを学ぶことができ、大変有意義だった。
  - 前回の会議に比べて、自然科学者の参加が少なかったのではないかと？
3. 各イニシアティブにおける研究テーマ・研究活動について
  - 特定分野での研究を通じて、G-COE全体の目指すパラダイム形成を固めようとしている点を評価する。
  - 活動をより若手主体の体制に移行すべきではないか
4. 新進研究者に与える効果について
  - 大学院学生や若手研究者に、学際研究を行う場を作り出していることは評価するが、個々の専門分野におけるアピールもキャリア形成のためには不可欠である。
5. 他の研究組織との連携について
  - 学際研究を行っている諸外国の研究機関に若手研究者を短期派遣するプログラムを行ってはどうか。
6. 「生産から再生産へ」というパラダイムシフトについて
  - 多様な専門分野を統合するには、非常に重要なパラダイムと思われる。
  - 興味深い観点だが、自然科学者の立場から見ると表現の曖昧さが気になる。
7. 「温帯中心主義から熱帯中心主義へ」というパラダイムシフトについて
  - バイオ燃料や排出権取引のような温帯諸国からの需要や決定が、熱帯生態系に大きな影響を与えていることを考えると非常に興味深い。
8. その他
  - シンポジウム開始前の里山フィールドトリップは、シンポジウムでの議論を活性化するためにも非常に有意義だった。

国際アドバイザーボードへの参加者からの反応は、上記の通り、おおむね好意的であった。上述した意見を含め、頂いたコメントの全ては、G-COEプログラムのHPに掲載中である。今後はこれらの意見を踏まえ、「持続型生存基盤パラダイム」の構築に向けて、より精選してゆくことが必要であろう。

(文責 佐藤 孝宏 東南アジア研究所 G-COE 特定研究員)

G-COE Young Scholars Network

Go Yonezawa

Center for Coordination, Promotion and Communication,  
Research Institute for Humanity and Nature Assistant Professor  
Dr. Yonezawa was a CSEAS Researcher until October 2009

My job is to organize and maintain the research information systematically required for the global environmental studies. We don't have any partitions, no separated area inside the institution. It enables us to get together easily, communicate with each other, and have some discussion freely regardless of our professional affiliation or study area. One thing I wonder is why there are so many parasols...what are they for?

米澤 颯

総合地球環境学研究所 研究推進戦略センター 助教  
2009年10月まで東南アジア研究所 研究員

地球研での仕事は様々な地球環境問題に関する研究情報の体系的な整理や保管、時空間情報のアーカイブ開発と運用です。地球研には部屋を区切る壁がありません。様々な分野の研究者が一堂に集まって自由に議論できるためだそうです。でもなぜ室内にパラソルがいっぱいあるのでしょうか？



## Kabata and Satoyama Field Trip

Shinya Ishizaka CSEAS Junior Research Fellow

We made a field trip to the eastern side of the Biwa Lake in Shiga Prefecture on the first day of the international conference, 14th December, 2009. The purpose of the trip was to observe how the people of the area were managing the systems of the sustainable use of water, which was named *Kabata* and of forest, *Satoyama*. We hired a medium-sized bus in order to conduct the tour, in which twenty-eight of the conference's participants traveled.

*Kabata* is a system for water circulation and management. Spring water is used for washing vegetables or dishes in the upper sinks, and the waste water flows out to the river after being purified in the lower sinks by large carps, which eat food scraps. At Harie in Takashima city, a community-level organization, the "Shozu-no-Sato (Home of Water Springs) Committee" takes the responsibility for the proper conservation and sustainable management of the system. We could feel their pride in their *Kabata* culture through the interviews with the volunteer guides and local residents and they were really making great efforts in order to preserve this culture. We had lunch there and all of the ingredients were from the locality. The fresh carp was in particular amazingly

heavenly.

At Hourai city in Otsu city, we journeyed to the *Satoyama* landscape. The guides were Dr. Katsue Fukamachi (Kyoto University) and Dr. Hirokazu Oku (Forestry and Forest Products Research Institute). The forest in the area is in a critical condition due to a number of reasons: the decline of forestry due to lack of hands, tree felling for the production of pylon used in high-voltage cables, the mismanagement of the plantation project by the Reforestation Corporation and so on. However, at the same time, there were some attempts to renovate the distinct systems for forest/water managements, which were different in each hamlet. Furthermore, some native residents and new comers to the communities jointly started projects for recovering the *Satoyama* landscape.

I was also impressed by the fact that these projects to restore the *Kabata* culture and the *Satoyama* landscape were proceeding within an emerging atmosphere that reminds people of the spirit of respect for water and forests, and also with the parents' efforts to preserve a space in which their children can play.



Crystal clear water in the stream, in which large carps are swimming, comes from *Kabata*.  
川端から流れ出た排水は澄みきっていて、ここにも大きな鯉が悠々と泳いでいる。



*Kabata*. These carps in *Kabata* are members of the family.  
川端の様子。ここで泳ぐ鯉は家族の一員だという。

## 川端・里山フィールドトリップ

石坂 晋哉 東南アジア研究所 非常勤研究員

国際シンポジウムの初日、2009年12月14日(月)に、滋賀県・湖西地域の「川端」と「里山」を訪れるフィールドトリップを実施した。琵琶湖畔に住む人びとが培ってきた水や森の持続的利用法が現在どのように運営されているかを見学するためである。中型バスを借り切って、総勢28名でのツアーであった。

「川端(かばた)」とは、湧水を炊事等に利用したうえで畑などに残飯処理させ川・湖に戻すシステムのことである。今回訪れた高島市針江地区では「生水の郷(しょうずのさと)委員会」という組織が作られ、地区全体の川端の保全・運営がはかられている。案内役のボランティアの



"Yume no mori (Forest of dream)", the site for regenerating *Satoyama*.  
里山再生の現場、「夢の森」

方や訪問先のご家庭の方とお話を通じて、川端の文化を大切にしようとする地元の人びとの努力と誇りが感じられた。なおわたしたち参加者は昼食に、新鮮な鯉の洗いをはじめとする地元の食材をいただき、舌鼓を打った。

大津市蓬萊地区では、深町 加津枝氏(京都大学)と奥敬一氏(森林総合研究所)にご案内いただき、里山を視察した。林業の衰退や高圧線建設による伐採問題、造林公社問題など、森林をめぐる危機的状況をご説明いただいた一方、集落ごとに異なる森と水の管理システムを活かそうとする試みや、地元の人びととニューカマーとが協同で里山を再生させようとするプロジェクトがあることもご紹介くださった。

筆者にとっては、川端や里山を再生させようとするプロジェクトが、水や森を尊ぶ心を思い起こそうとする機運や、子どもたちが楽しく遊べる場を確保しようとする努力と一体となって進行していた点なども印象的だった。



## G-COE Young Scholars Network

## Takahisa Furuichi

Tokyo University of Agriculture and Technology  
Center for Leaders in Environmental Sectors Associate Professor  
Dr. Furuichi was an ASAFAS assistant professor until August 2009

I have been working since last September for an education program to develop/educate leaders in environmental sectors in Asia and Africa at the Tokyo University of Agriculture and Technology, known as 'the campus in the forest'. We have been frameworking the program in this first year, hoping that it will be attractive to students. Challenges are found in keeping balance with research, as always.

## 古市 剛久

東京農工大学 環境リーダー育成センター 特任准教授  
2009年8月まで ASAFAS 特任助教

昨年9月より、「森のキャンパス」という東京農工大学で始まったアジア・アフリカの環境リーダーを育てる教育プログラムに参画しています。初年度ですのでプログラムの枠組み作りに忙殺されていますが、学生に魅力的になるよう工夫を心がけています。今後とも自らの研究とのバランスを忘れずに励みたいと思います。



Our Study on the Giam Siak Kecil-Bukit Batu Biosphere Reserve of Indonesia

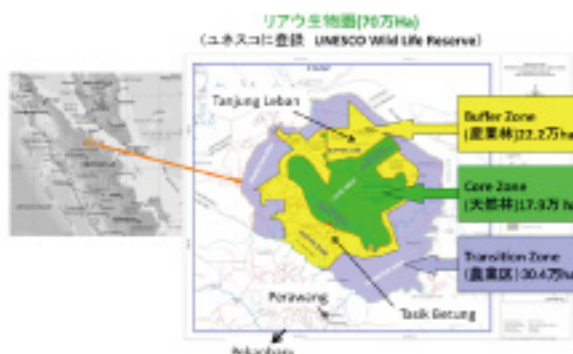
Takahisa Hayashi RISH Associate Professor



UNESCO with MAB (Man And Biosphere) committee designated the Giam Siak Kecil-Bukit Batu Biosphere Reserve of Riau in Sumatra as a sustainable biosphere reserve in 2009. The core reserve zone (179,000 ha) consists of natural forests and a peat lake where there are at least 195 species of plants (of which 173 are species of

woody plants), 162 species of moths, 150 species of birds, 30 species of fish, 10 species of mammals, and 8 species of reptiles. The buffer zone (222,000 ha) around this core zone is composed of acacia and eucalyptus trees for use in the pulp & paper industry. Outside the buffer zone is a transition zone (304,000 ha) composed of mainly oil palm plantations. Although the core zone is surrounded by both the buffer and transition zones, forest degradation and wildfires in the peat forests continue to occur in the reserve due to the high level of human migration within the reserve and an accompanying lack of law enforcement.

We are attempting to take a practical, interdisciplinary approach, in which natural scientists work together with social and human scientists in handling the problems of the Giam Siak Kecil-Bukit Batu Biosphere Reserve. This collaborative effort has been organized through Initiative 3 of the Kyoto University G-COE (Global Center of Excellence) program "In search of sustainable humanosphere in Asia and Africa," and is supported by the Japan Society for the Promotion of Science. The aim of this study is to foster discussion utilizing different perspectives and disciplines, in an effort to determine whether it is possible to reevaluate and/or reconstruct the paradigm of a sustainable humanosphere using the reserve in Indonesia as a model.



リアウバイオスフェアにおける研究

林 隆久 生存圏研究所 准教授

ギアムシアクーブキバツ生物圏保護区 (GSK-BB Biosphere Reserve) は、2009年にインドネシアスマトラ島リアウ州の約70.5万ヘクタールの地域を対象としてユネスコに登録されました。ワイルドライフ保護区として生物圏における人と自然の関係を持続的なものにする願いが込められています。自然林からなる保護区コアゾーン (17.9万ヘクタール) には、173種の樹木を含む195種の植物、162種の蛾、150種の鳥、30種の魚、10種の哺乳類、8種の爬虫類が棲息します。その自然林コアゾーンを囲む緩衝ゾーン (22.2万ヘクタール) には紙・パルプ産業のためのアカシアやユーカリが植林されています。緩衝ゾーンの更に外側を囲むように、オイルパーム植栽を中心とした遷移ゾーン (30.4万ヘクタール) が存在します。全70.5万ヘクタールのこの地域は、わが国の2~3府県を合わせた面積に匹敵します。保護区としてユネスコに登録されたにもかかわらず、外部からの人間活動が絶えないため、違法な森林破壊の進行は止まりません。

このG-COEプログラムでは、文理融合の研究を進めて新しい科学の創出を試みます。イニシアティブ3では、自

然科学研究者と社会・人文科学研究者が、インドネシアスマトラ島のリアウ生物圏保護区で、一緒に実践的な共同研究をしています。現場の具体的な問題を考えながら、実学的な共同研究を通して人類の生存基盤に関するパラダイムの再構築を行うものです。さあ、研究室を出てリアウに行きましょう。



Geospheric Aspects of the Riau Biosphere Reserve

Osamu Kozan

The coastline of Indonesia stretches some 54,716km, making it the second longest coastline in the world. The tropical forests of Indonesia represent one of the most biologically diverse regions on Earth, as well as a significant terrestrial reservoir for atmospheric carbon. Since 1990, about 24% of the total forest and 31% of the primary forest have been cleared, and plantation area has increased from 2.2 million to 3.4 million hectares over a 15 year period (data is derived from the FAO). WWF reported that the fastest rate of deforestation in Indonesia is occurring in central Sumatra's Riau Province, where some 4.2 million hectares (65%) of its tropical forests and peat swamps have been cleared for industrial plantations in the past 25 years. The major causes of fragmentation include illegal logging and the conversion of primary forest into logging concessions and oil palm plantations.

Large scale land use and land cover changes could

lead to irreversible changes. This is especially the case for the many islands of Indonesia and their shallow surrounding seas which provide a large scale environment that is neither purely oceanic nor terrestrial, and has been termed the Maritime Continent. The Maritime Continent lies at the heart of the Indian and Pacific Warm Pool, whose strong convective heating plays a dominant role in driving the atmospheric circulation over the entire tropical Indian and Pacific Oceans and has a significant influence on extra tropical circulation. Over this geospheric complex system, the land surface process is the key factor in our discussion of sustainability in this region. We have commenced multi disciplinary research into areas including atmospheric, hydrological and carbon cycles.



地球圏から見たリアウバイオスフェアリザーブ

甲山 治

インドネシアの総海岸線は54,719kmであり、世界で2番目に長い海岸線を有する国である。インドネシアの熱帯雨林は地球上で有数の生物多様性をもつとともに、陸域における大気中の炭素の貯蔵庫としても重要な地域である。FAO (国際連合食糧農業機関) のデータによると、1990年以降、森林面積の24%、自然林の31%が消失した一方、プランテーション面積が220万ヘクタールから340万ヘクタールへと増大した。森林減少がもっとも顕著なのがリアウであり、WWF (世界自然保護基金) の報告によると過去25年間に、熱帯雨林と泥炭湿地の65%にあたる420万ヘクタールが産業造林のために失われた。これらは違法伐採と、自然林から産業造林地区およびオイルパームプランテーションへの変更によるものが主である。

これほど大規模な土地利用および地表面の改変は、不可逆的な変化を引き起こす可能性がある。しかもインドネシアの多くの島と、それらを取り囲む浅い海は、海洋的とも大陸的ともいえない独特な自然環境を形成しており、海洋大陸と称される。海洋大陸はインド洋と太平洋の湿かい海洋上に位置しており、その地域の強い対流加熱がインド洋と太平洋をまたがる地域の大気循環において重要な役割を果たすほか、熱帯におけるそのほかの循環に関しても一定の影響を与えている地域である。このような地球圏の複雑なシステムにおいて、陸域におけるプロセスはこの地域のサステナビリティを議論するうえで重要であり、大気・水・炭素循環などを含む分野横断的な研究を開始している。





## Villagers and Oil Palm as New Crop

Kazuya Masuda CSEAS Project Researcher

In the past, the boundary between villages was an elephant's path (*jalan gajah*). An old villager told me this when I visited a village in the Giam Siak Kecil area. Elephants usually move along the same trail on hills, and thus its trail becomes a path for man. At that time, the forest was so dense, and only a few of the Malays lived there.

Later, commercial logging and the industrial reforestation scheme have led to extensive use of the forest. In addition, recent years have seen many people flow into this area for the purpose of opening oil palm cultivation sites. Most of the migration comes from the neighboring province, and those who come have knowledge and experience of oil palm cultivation. The native villagers began to cultivate oil palm themselves, following the lead of the newcomers.

Without full care which includes tasks such as weeding and adequate fertilizing, oil palm produces a poor

output. Yet, in a Malay village in another part of Riau, villagers don't pursue cultivation in such a way. Villagers there do plant oil palm on their site but they seldom give it adequate weeding and fertilizer. Their livelihood is not solely made through the oil palm crop, it is based on several activities such as tapping rubber, fishing, collecting rattan in the forest, and so on, and they select the best or combine some of them in response to the season and market price. In short, it could be said that they have taken on the new crop of oil palm and adapted its cultivation to their own ways, preferring not to become plantation laborers.

The Malay villagers in the Giam Siak Kecil area have just begun oil palm cultivation. How they will construct their livelihood in a period of rapid social change, is a subject which I will examine further through field research.



A new oil palm site opened by a migrant  
移入者によって拓かれたばかりのアブラヤシ園



## 村の暮らしと油ヤシ

増田 和也 東南アジア研究所 特任研究員

昔、村と村の境界は「ゾウの道 (*jalan gajah*)」だった。ギアムーシアック・クチル周辺の村を訪れたとき、古者が教えてくれた。ゾウは緩やかな丘の稜線上を毎度同じルートで移動するために、その跡は一定幅で草木が倒されて人間の道ともなる。当時はそれほどに森は深く、マレー人がわずかに暮らすだけであった。

その後、商業伐採や産業造林のために森は拓かれ、さらに近年は周辺地域から油ヤシの栽培用地を求めて大量の人口が流入し、村のまわりは次々と拓かれている。こうした移民は油ヤシの栽培に慣れた隣州の出身者が多いが、昔からの村びとも彼らにならって油ヤシ栽培を始めている。

油ヤシは除草や施肥などの管理を怠ると、収穫は減少

する。しかし、同じリアウの別地域のマレー人村で例であるが、彼らの油ヤシ栽培は、ある意味でいい加減だった。自分の土地に植えた油ヤシには除草も施肥もお金に余裕があればおこなう程度で、ゴム栽培、漁、森での藤採集などを組み合わせて、季節に適した生計活動を選び、油ヤシプランテーションでの労働者にならうとはしなかった。彼らは油ヤシという新しい作物を彼らなりの方法でたたくに取り込んでいた。

ギアムーシアック・クチル周辺のマレー人も油ヤシ栽培を取り入れたばかりだ。ここでは、どんなふうに彼らなりの生計スタイルが作り出されていくのだろうか。村の暮らしに寄り添いながら、じっくりと見ていきたい。

## Giam Siak Kecil-Bukit Batu Biosphere Reserve, Province of Riau, Indonesia

Endang Sukara Chairperson  
Yohanes Purwanto Researcher  
MAB - UNESCO Program Indonesia Indonesian Institute of Sciences (LIPI)

Giam Siak Kecil-Bukit Batu Biosphere Reserve is a landscape of tropical peat swamp forest, part of the Sumatran Peat Swamp Forest Eco-region. This area has a unique habitat and sustains populations of rare, threatened and endemic species. The biosphere reserve is an ideal tool to develop a model for sustainable development in Riau Province. For this purpose, intensive research is urgently required to ensure the stability of eco-hydrology and to develop the peat swamp forest biodiversity so as to provide an example for the development of ecotourism industries based on the beauties and uniqueness of an area's natural and cultural heritage whilst improving the welfare of the community. This area has great ecotourism potential, as it is both unique and close to the tourist markets of Malaysia and Singapore. It not only offers the uniqueness of the peat swamp forest ecosystem landscape

but also offers a variety of traditional culture, for example the possibility of visiting the Siak Sri Indrapura Palace. Ecotourism opportunities will develop based on solid market research that identifies user preferences.



Endang Sukara



Yohanes Purwanto

## Giam Siak Kecil-Bukit Batu, Riau, Indonesia: The First Biosphere Reserve in the World Nominated and Co-Managed by a Private Company

Canecio P. Munoz Director  
Haris Surono Wardi Atmodjo General Manager  
Department of Environment and Stakeholder Relations Sinar Mas Forestry

We believe that environmental sustainability is critical for ongoing business success. This is because the sustainability of business relies on the synergy between an environmentally friendly operation and the conservation of biodiversity and its ecosystem. To provide a continuous wood supply for our customers, we are committed to sustainable plantation forest management which preserves the surrounding ecosystems. That is what drove us to propose the development of Giam Siak Kecil-Bukit Batu Biosphere Reserve (GSK-BB Biosphere Reserve) to the Government of Indonesia. Sinar Mas Forestry and its partners are forest concession holders in Indonesia that manage pulpwood plantations and are exclusive fiber suppliers to Asia Pulp and Paper (APP).

The Biosphere Reserve management is based on UNESCO's Man and Biosphere concept in which multiple stakeholders manage the area collaboratively and include collaborative research activities. In the case of GSK-BB Biosphere Reserve the key stakeholders include the Ministry of Forestry, LIPI, the Local Government bodies, the private companies, academics and environmental experts, and the local communities. Better information about these collaborative research activities includes the Letter of Agreement between LIPI and Riau University and G-COE

Program of Kyoto University concerning the Study of GSK-BB Biosphere Reserve which each respective party has been signing.

The approval of the GSK-BB Biosphere Reserve by the MAB-UNESCO Program is not the end goal, but only one step of many that still need to be carried out in order to conserve biodiversity for further sustainable development in Indonesia. Nevertheless, its inception has gained worldwide appreciation for Indonesia's commitment, determination and innovation in environmental management. We are hoping that the initiative will be sustained and become an example for other companies, and encourage them to become more involved in biodiversity conservation.



Canecio P. Munoz & Haris Surono Wardi Atmodjo

## Tasik and Pristine Peat Swamp Forest in Riau's Biosphere

Haris Gunawan ASAFAS Doctoral Student

The Giam Siak Kecil Bukit Batu Biosphere Reserve known as Riau's Biosphere is located within the Siak and Bengkalis Districts and Dumai City, Riau Province, Sumatra Indonesia, covering a total area of 701.984 ha. Most of this area is covered by a peat swamp ecosystem consisting of natural lakes (*tasik*) and natural peat swamp forest with different forest formations. The names of the lakes, from down to up stream, of the Bukit Batu river are Tasik Luka, Tasik Bongsu, Tasik Niru, Tasik Menyan, Tasik Danauwan, Tasik Terentang, Tasik Anggun, Tasik Rantau Panjang, Tasik Sembilan, Tasik Pangkalan Bunut, and the last one Tasik Bekusut. The natural lake in the peat swamp ecosystem plays a vital role in the water balance through its functions as a water catchment and reservoir. Lakes on peat land have a huge capacity for water absorption and retention, representing a considerable water store. With this ability, water stored during wet periods is released gradually in dry periods.

Inside the forest during the dry season less water is to be found, leading wild animals such as Sumatran Tiger, Wild Pig, and Deer to go out in order to look for water along the sides of the river. This is such a spectacular sight. Whereas during the rainy season water within a million m<sup>3</sup> fills up the natural lakes. From this season local fishery yields a great number of fish, one of the biggest fish which lives in the natural lakes of Riau's Biosphere is the Tapah Fish (*Wallago* sp.) (Fig. 1). These fish can reach a weight of 30kg.

The other natural sites of the Riau's Biosphere are within the peat swamp forest. Riau's Biosphere still maintains large natural forest remnants but the remaining

forests are of varying condition and quality. Parts of the forest are still in pristine condition, while other areas have been degraded. One of such unique pristine peat swamp forest remnants is the Bintangur Forest Formation (Palaquium Forest Formation) (Fig. 2).

The uniqueness of natural peat swamp ecosystem remnants in Riau's Biosphere is meaningless if there aren't serious efforts to keep them or to improve the management practices. This would include efforts such as stopping illegal logging activities in core area, seeking alternative sources of economic income for the local people which can be pursued without changing the characteristics of the peat swamp ecosystem, conducting restoration programs of biodiversity in degraded peat swamp forest, and continuously working to minimize the negative effects of oil palm plantation and industrial pulp wood estates in the buffer and transition areas. This can be done through periodically monitoring, with the results of the monitoring activities accessible to all stakeholders. Some of these factors should be selected in order to achieve the best management practices in this biosphere.



Fig. 1 Tapah Fish (*Wallago* sp.) lives in the lakes of Riau's Biosphere.



Fig. 2 Bintangur Forest Formation

## On Attending the Humanosphere Science School in Riau Noa Nishimoto ASAFAS Doctoral Student

Attending the science school in Riau provided me with a wider perspective of the possibilities to exponentially expand my scientific research. Moreover, the entire experience enthralled me greatly and I thoroughly enjoyed it.

My major was Field Linguistics, which deals with relatively less-documented languages or minority languages that do not have a dictionary or grammatical system; even if a dictionary or grammatical system exists, they would only serve to describe certain areas of language systematically by analyzing the linguistic data collected from field research.

My PhD dissertation is devoted to describing the Malagasy language. Madagascar has a population that dates back to the fifth century, when immigrants started making the 6000-kilometre journey across the sea to this

island from Southeast Asia.

Because Malagasy has a close historical connection to Indonesian languages, I was quite excited when preparing my lecture as the intended audience was composed of Indonesian scholars and students.

On the other hand, I felt slightly apprehensive at the thought of presenting my study before a group of natural science specialists, where most scholars belonged to the fields of forest science or molecular biology.

As a young student and aspiring future researcher, however, it reminded me of the importance of intelligible and clear-cut explanations that can offer a vivid representation of the main ideas to be of interest for everybody regardless of their specialty, which is a basic thing, but sometimes tends to be ignored. Finally, I am pleased to have received a number of comments and suggestions from participants; I hope that I have made myself fully understood as well as sparking interest in my study.

I still stay in touch with the students of Riau University, and moreover, Professor Hayashi called on me at the Research Center of Indian Ocean Study in Paris, where I have been a visiting researcher since November 2009. I would like to close by thanking all of the organizers and participants at the science school, and I wish you a happy, healthy, and prosperous New Year.

(1.1.2010, Paris, France)



Group photo with students of Riau University  
RiauHss 学生と一緒に

## リアウ Humanosphere Science School に参加して

西本 希呼 アジア・アフリカ地域研究研究科 博士課程

スクールへの参加は、問題意識を何層にも広げ、私の研究を将来様々な分野に対応するための視野を広げた。そして、何よりも、多に楽しんだ。

私は、現地調査に基づく資料をもとに、辞書や文法書が存在しない未知の言語や、少数言語を分析し、体系的に記述を行うフィールド言語学といわれる領域を専攻している。マダガスカル語の記述研究が私の博士論文のテーマである。マダガスカルは、5世紀以後に、6000 km以上も離れた東南アジア諸国から海を越えて移動してきた人々が先住民となった土地であり、現在もアジア起源の文化を維持している。

それ故、マダガスカル語と密接な歴史的連続性をもつインドネシアの諸言語話者と直接交流し、研究発表を行うこと、彼らからの率直な感想を得ることに、出国前からわくわくしていた。その一方で、森林科学や分子生物学といった自然科学の専門家の中で、研究発表をすることに、戸惑いを隠せなかった。しかし、将来研究者になるには、理系・文系にかかわらず、誰にとっても、わかりやすく、そして鮮やかに、説明することが大切であるという基本的なことを再認識した。結果的に、私の発表に多くのコメントや

賛をいただいたのは、他分野の方々が私の研究内容を理解し、関心を持ってくれたからだと思う。

リアウ大学の学生とは今も尚、頻繁なメールのやり取りが続き、林先生は現在研修先のフランス国立東洋言語文化研究所インド洋地域研究センターの研究室まで赴いてくださった。最後に、開催者の皆様の支援・厚情に感謝の念をここに示し、謹んで新年のお慶び申し上げます。

(平成 22 年 1 月 1 日パリにて)



Japanese Chorus リアウ合唱

## Smallholder Rubber Gardens for Livelihood, Biodiversity and Climate

Department of Biology, Faculty of Mathematics and Natural Sciences, Riau University Lecturer

Ahmad Muhammad

Smallholder rubber gardens (SRG) are diverse farming systems that are widespread in Kalimantan and Sumatra. These systems emerged not long after the introduction of rubber (*Hevea brasiliensis*) as an industrial crop around the turn of the 19th century or in the beginning of the 20th century. Starting to become aware of the economic value of rubber trees, farmers began to integrate rubber seedlings in their swidden lands, marking a radical change in the swidden agricultural systems that had been practiced for generations. The creation of rubber stands on the former swidden lands has led to the establishment of permanent gardens.

I have been interested in studying smallholder rubber gardens since 1996. My first encounter with rubber gardens was in the Bukit Tugapuluh area of Riau in eastern Sumatra, Indonesia. At that time, I studied the relationship between vegetation types and the distribution of species and abundance of butterflies. One of the types of vegetation I frequently came across in the area was rubber gardens. I was particularly interested in the structure of this system. Physiognomically and floristically, the gardens were quite similar to secondary forests, another vegetation type I surveyed. The proportion of non-rubber tree species in rubber gardens could be as much as 60% of the total trees that I came across on my survey plots. There were also wild fruit and nut trees, such as wild rambutan (*Nephelium* spp.), wild mangos (*Mangifera* spp.), wild mangosteen (*Garcinia* spp.), wild cempedak (*Artocarpus* spp.), wild salak (*Salacca* sp.), all relatives to the already domesticated fruit tree species. Some fruits were used by villagers as spices or complementary foods. There were several species of rattans (e.g. *Calamus* spp. and *Dendrocalamus* spp.) and bamboos (e.g. *Bambusa* spp. and

*Gigantochloa* spp.), sugar and sago palms (*Arenga pinnata* and *Metroxylon sagu*, respectively) too that were regularly exploited by villagers to manufacture household utensils. Some of the systems supported two macaque monkeys (*Macaca fascicularis* and *M. nemestrina*), two leaf monkeys (*Presbytis femoralis*, *Trachypithecus auratus*), two gibbons (*Hylobates syndactylus*, *H. agilis*), all regularly tended rubber gardens. Tiger (*Panthera tigris sumatrae*) and clouded leopard (*Neofelis nebulosa*) also sometimes tended rubber gardens situated close to the remaining forests, foraging for wildpigs (*Sus scrofa* and *S. barbatus*), deer (*Muntiacus muntjak*, *Cervus unicolor*), monkeys (especially *M. fascicularis*), and mousedeer (*Tragulus napu*, *T. javanicus*).

My study of rubber gardens in Giam Siak Kecil-Bukit Batu area concerns three aspects of these systems. The first aspect is their potential as a livelihood supporting system in rural areas. The second aspect regards SRGs and their potentials in the conservation of soil, water, peat and biodiversity. Whilst the third is concerned with SRGs as a vegetation system that could potentially contribute to the mitigation of climate change through carbon sequestration and storage. During the last second half of the year 2009, I have surveyed more than 120 gardens consisting of two types of SRG ('gardens' and 'forest gardens') in this area. They are standing on land with minerals as well as peat soil. The objectives of this study are: (1) to describe the variations of SRGs and the management practiced by farmers in the area; (2) to assess the actual productivity of SRGs and their contribution to rural livelihoods; (3) to assess the contribution of SRGs in the conservation of soils and water and biodiversity; and (4) to assess the potentials of SRG in the mitigation of climate change.

Smallholders in my study area consist mainly of the Malays or "Orang Melayu", who constitute the native population, and the Javanese migrants or "Orang Jawa". The Malays and Javanese inhabiting the coastal areas apparently did not develop SRGs as a part of swidden cultivation (even at this time, as forested land is still abundantly available). They cut down forests and cleared the lands and started agricultural practices and planted rubber seedlings. In contrast to this, Malays inhabiting the inland areas practiced swidden agriculture, before they began to integrate rubber seedling into their swidden farms.

I am collaborating with Prof. Yasuyuki Kono of CSEAS who has kindly provided some funds as well as shared ideas and made some constructive suggestions to this study. This study is at present still far from complete. There is still much to be done in the near future.



The author with Prof. Yasuyuki Kono, CSEAS on the way back to Pekanbaru after spending five days in the field (Bukit Batu area).

## An *Acacia crassicarpa* Plantation in a Peatland Area

Rumi Kaida RISH Researcher

In August 2009, we visited the Bukit Batu Biosphere Reserve of Riau in Indonesia. During this visit, I found myself particularly impressed with the peat land. It was a unique and valuable experience to walk on its snow-like surface and see my shoes become nearly buried in the ground with every step. This extensive and soft land was made from wood which had been carbonized over a long period without experiencing corrosion. I asked Haris Gunawan at what depth the underground water level existed. In reply, he began to dig a hole in the ground with a dead branch. Although it was the dry season, we could see moist soil at only 50 cm below the surface. He told me that the overall carbon content of the soil was in the 60 to 70% range.

The peat land area was designated as a "buffer zone"

in the Riau Biosphere, and the PT Mapala Rabda company runs a plantation of *Acacia crassicarpa* there. This species of tree is capable of growing even in a relatively barren zone, such as an area of peat land. Workers seed these trees in seed trays, select seedlings that root well, and then plant them in the fields. There are wide distributions of peat lands that have been uncared for in Indonesia. These areas were used for agricultural purposes after the natural forests had been cut down. It is truly unbelievable that we produce various species of trees that can grow in such devastated lands. It is my hope to develop much more robust species of trees, such as a Super *Acacia crassicarpa* using biotechnology. Walking on the peat land, I could appreciate its beauty, due largely to the healthily growing *Acacia crassicarpa*.



Seeding of *Acacia crassicarpa*  
アカシアクラシカルバの種播き



All members of the tour  
in front of the PT Mapala Rabda company  
集合写真

## 泥炭湿地のアカシアプランテーション

海田 るみ 生存圏研究所 研究員

リアウバイオスフェアリザーブを訪問し、何よりも一番楽しかったことは、泥炭湿地の上を実際に歩くという貴重な体験ができたことです。それは、新雪の上を歩く感触に似ていました。片足に体重をかけて踏み込むと、靴が土の中に埋もれます。雪のように地面そのものが非常にソフトなのです。広大な柔らかい大地は、長い年月をかけ、樹木が腐食せずに炭化してできあがったものだと思います。私が「地下水位はどのくらいなのか。」とハリスさんに尋ねたところ、ハリスさんはその辺りに落ちていた枝を拾い、穴を掘ってくれました。枯れ枝を土に突き刺すだけで簡単に深い穴が掘れました。50 cm ほど掘ると、湿った土が見えてきました。その時は乾季でした。土の炭素含量は 60 から 70% 程度ということでした。

この泥炭湿地は Riau Biosphere の Buffer Zone に当たる地区の一部 (PT Mapala Rabda 社 (SinarMas 関連会社) が経営するアカシアプランテーション) です。貧栄養である泥炭湿地でも生育できる樹種アカシアクラシカルバが植林されていました。種子から発根性の良い苗を選び植林します。インドネシアには木が伐採され、農地として利用された後、放置されてしまった泥炭湿地が広く分布します。荒廃してしまった土地でも生育できるような樹種を作り出すことができないだろうか。スーパー樹木をバイオテクノロジーにより作り出せないであろうかと考えました。地面が柔らかくて踏みと楽しいと感じることができたのは、健康的なアカシアクラシカルバの緑が美しかったからです。

## International Workshop on Sustainable Forest Tree Plantation in the Giam Siak Kecil-Bukit Batu Biosphere Reserve of Riau in Indonesia

Retno Kusumaningtyas RISH Researcher

On February 4, 2010, an international workshop on the Giam Siak Kecil-Bukit Batu Biosphere Reserve was held at the Inamori Foundation Memorial Hall, CSEAS, Kyoto University. The workshop was co-organized by CSEAS and the Research Institute for Sustainable Humanosphere (RISH) as part of Initiative 3 of the Kyoto University G-COE program "In search of sustainable humanosphere in Asia and Africa," and was supported by the Japan Society for the Promotion of Science.

The aim of the workshop was to reevaluate research activities towards the development of the paradigm of a sustainable humanosphere in light of the recent designation of an extensive area in Riau Province, Sumatra, Indonesia, to an UNESCO Man and Biosphere Reserve. The workshop brought together social and natural scientists of Kyoto University and their counterparts from the University of Riau (UNRI), as well as representatives of commercial and governmental interests in the area.

The Giam Siak Kecil-Bukit Batu area was elevated to an UNESCO Man and Biosphere Reserve in 2009 and covers some 78,000 hectares. The core area of the reserve is formed by two protected areas of natural forests, which are connected by a corridor to allow for the migration of animals. The biosphere further incorporates a buffer zone cradling these natural forests which is largely made up of timber plantations, and a transition zone in which oil palm cultivation is predominant.

In addition to scholars from Japan and Indonesia, the workshop included presenters from Sinar Mas Forestry, which holds the majority of timber plantation concessions in the area, and the Indonesian Institute of Sciences (LIPI). In 3 sessions presenters outlined various perspectives on possible management implementation scenarios for the biosphere reserve, as well as progress in research activities and future development and research plans.

Topics included management, rehabilitation and implementation challenges in peat swamp areas, preliminary results of a study on water fluctuation in peat swamp areas, community-biosphere relationships, natural resource management practices of local communities, biodiversity, and prospective genetic improvement of tropical timber species. Further presentations highlighted strategy and future value of Biosphere Reserves in Indonesia, and the potential for future implementation of such concepts as CDM programs and REDD.

G-COE workshop gave its participants an excellent opportunity to strengthen the collaboration between the research partners, and gain a deeper understanding of the background and objectives of each going forward. The workshop confirmed a shared sense of significance for the biosphere reserve, and greatly aided in cementing future collaboration efforts.

## G-COE Young Scholars Network

### Tamaki Endo

Saitama University, Faculty of Economics Lecturer  
Dr. Endo was a G-COE researcher until March 2008

I teach Asian Economy and Thai Studies at Faculty of Economics, Saitama University. Saitama University has strong links with many universities in Asia and various activities are going on. For example, students of Thai Studies hold a joint seminar with Chulalongkorn University every year. I hope that I can introduce the appeal of Asia through both research and education.

### 遠藤 環

埼玉大学経済学部 専任講師  
2008年3月までG-COE 特定研究員

埼玉大学経済学部にて、アジア経済論やタイ事情を担当しています。埼玉大学はチュラロンコン大学（タイ）やその他のアジアの大学との交流が盛んで、タイ人、中国人を初め、留学生が多くいます。また、タイ事情の学生は、毎年チュラロンコン大学の学生と合同セミナーを行います。研究のみならず、教育を通じて、東南アジアの面白さをより伝えていければと思っています。



## 新刊紹介

著者：西真如（単著）

『現代アフリカの公共性—エチオピア社会にみるコミュニティ・開発・政治実践』

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アフリカが抱えている問題が解決されないのは、アフリカの政府や人びとに何か「欠けている」ものがあるからだという議論がある。例えばそこには、寛容な政治指導者や、合理的な行政組織、協力的な市民が「欠けている」とされる。しかしこのような議論は、そこに「ない」ものにとらわれるあまり、そこに「ある」問題、つまりアフリカで生活する人びとが実際に直面している問題をとらえることができない。私たちは、どのようにして「欠如の論理」を乗り越え、アフリカの人びとが直面する格差と対立の問題に目を向けられるようになるのだろうか。このことが本書の出发点となる問いである。

本書は、「理論編」と「事例編」のふたつの部分からなる。理論編は、経済的な格差や価値の対立を乗り越えて民主的な社会をつくってゆくための理論的な枠組みを踏まえた上で（第2章）、マムド・マムダニの議論にもとづき、「市民」と「エスニシティ」というふたつの領域に分断されたアフリカの社会を修復することが、現代アフリカの公共性を考える上で重要な課題であることを示す（第3章）。

事例編では、おもに住民組織活動の経験に焦点をあてながら、エチオピア社会のコミュニティ、開発および政治実践について検討する。第6章および第7章で取り上げるグラゲ道路建設協会は、エチオピア南部グラゲ県の農村から首都アジスアベバに移住した人びとが、故郷の村に道路や学校を建設する目的で、1962年に設立した住民組織である。同協会の活動は、格差を生み出す社会構造に対抗して、新たな再配分の回路を切り開いてゆく政治実践であったと考えることができる。このほか事例編では、エチオピア連邦政府が推進する民族自治と結びついた地方分権政策の問題や（第5章）、アジスアベバ市民による葬儀儀礼（死者を葬ることを目的とする住民組織）の活動が作り出す「配慮する共同体」についても検討している（第8章）。

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