



CRC 990 - EFForTS

NEWSLETTER

Issue 1 / August 2013



Note / Acknowledgement from the Speakers

Dear CRC colleagues,
 Finally we managed to start the CRC Newsletter series which we plan to publish quarterly on the website (www.uni-goettingen.de/de/310995.html). The Newsletter will provide a synopsis of science / activities of the collaborative research between Indonesia and Göttingen. The target group is the scientific staff of the CRC in Göttingen and in Indonesia, the administrations in research management (Indonesia and Göttingen) and the DFG sponsors.

The first issue is an interim report / status quo highlighting the progress achieved since the start of the project in January of 2012 to date.

We would like to thank all the ones contributing to this first issue of the Newsletter.

Enjoy reading.

*Stefan Scheu (Speaker of the CRC 990),
 Anas M. Fauzi (Speaker Indonesian University Consortium of the CRC 990)*

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I. Research Activities of Groups A, B, C, Z02, INF

FIELDS OF RESEARCH

- Environmental processes (group A)
- Biota and ecosystem services (group B)
- Human dimensions (group C)
- Central Scientific Support Unit (Z02)

GROUP COORDINATORS

- group A:

Alexander Knohl, Edzo Veldkamp (University of Göttingen, UGoe); Suria Darma Tarigan (Bogor Agricultural University, IPB); Ermadani (University of Jambi, UNJA)

- group B:

Uli Brose, Holger Kreft (UGoe); Letti Sundawati (IPB); Bambang Haryadi (UNJA)

- group C:

Meike Wollni, Heiko Faust (UGoe); Nunung Nuryartono (IPB); Rosyani (UNJA)

Group A

A01



TITLE: Prehistoric and historic rainforest transformations of the Jambi landscape

TEAM: Principle Investigators: Hermann Behling (UGoe); Supiandi Sabiham (IPB); Asmadi Saad, Yudhi Achnopa (UNJA)
Scientific staff: Siria Biagioni (PhD student)

AIM: Reconstructing past developments and dynamics of lowland rainforests in Jambi province

CURRENT STATUS:

- First field work campaign completed (three sediment cores have been taken and moved to University of Göttingen)
- The three cores have been described lithologically and tested for pollen and Testate amoebae contents
- First set of six samples selected for AMS radiocarbon analysis
- Second field work campaign ongoing (summer 2013): pollen traps installation in the joint CRC990 plots, coring of new

locations, installation of data loggers on peat domes in collaboration with Dr. Asmadi Saad

- Preparation "Tropical Palaeoecology and Palynology" workshop in UNJA

A02



TITLE: Tree and palm water use

TEAM: Principle Investigators: Dirk Hölscher (UGoe); Herdhata Agusta, Hendrayanto (IPB); Heri Junedi (UNJA)
Scientific staff: Alexander Roell, Andrea Hanf, Niu Furong, Afik Hardanto (PhD students)

- AIMS:**
- Determine water use rates of trees and palms (transpiration)
 - Assess soil water uptake depths (complementarity)

**CURRENT STATUS:**

- Water use rates: pre-study on rubber vs. other tree species on IPB campus
- 4 permanent monitoring plots running in the Bukit Duabelas landscape (BR3, BJ5, BF3, BO3)
- 12 of the remaining 28 plots measured
- Age-class measurements on oil palm currently running
- Soil water uptake: 7 plots in rubber and jungle rubber / Harapan research area have been sampled; currently waiting for the next dry season
- Workshops on Ecohydrology and sap flux (forthcoming) at IPB

A03**TITLE: Influence on local and regional climate**

TEAM: Principle Investigators: Alexander Knohl, Oleg Panferov (UGoe); Tania June (IPB); Pak Irianto, Heri Junedi (UNJA); Abdul Rauf (Palu, Universitas Tadulako – UNTAD); Dodo Gunawan (Badan Meteorologi Klimatologi, Dan Geofisika – BMKG)

Scientific staff: Mathias Herbst (Research Associate); Ana Meijide, Merja Tölle (Postdocs)

AIMS: - Quantify the water, energy and greenhouse gas balance over an oil palm plantation
 - Assess the impact of land transformations on feedbacks to regional climate (start in late 9/2013)

CURRENT STATUS:

- A small temporary tower has been built in a young oil palm plantation in Pompa Air (Harapan landscape) and it is running since the end of June 2013. Once a final location is confirmed the tower will be installed there
- Regional climate model installed at GWDG (UGoe) and DKRZ (Deutsches Klimarechenzentrum, Hamburg)

A04**TITLE: Stock, turnover and functions of carbon**

TEAM: Principle Investigators: Yakov Kuzyakov (UGoe); Kukuh Murtilaksono (IPB); Muhammad Damris (UNJA)

Scientific staff: Thomas Guillaume (PhD student)

AIMS: - Assessment of changes in stock, quality and stability of C
 - Mechanisms and processes of C sequestration in top and subsoil
 - Changes of functions of stored C for soil fertility

CURRENT STATUS:

- All soil samples taken
- Samples from HJ, HR, HO, BF exported
- Laboratory analysis started
- Installation of suction cups and export of remaining soil samples (May to July 2013)

First results:

- Soils between plots are not homogenous, there is an important variation of texture
- No sign of major erosion (isotope analysis)

A05



TITLE: Trace gas fluxes and soil N cycling under rainforest transformation systems

TEAM: Principle Investigators: Marife D. Corre, Edzo Veldkamp (UGoe); Iman Rusmana, Sri Rahayu Utami (IPB); M. Damris (UNJA)
Scientific staff: Kara Allen, Evelyn Preuß, S. Kurniawan (PhD students)

AIMS: - Quantify changes in soil trace gas fluxes (NO, N₂O, CH₄, CO₂) with land-use changes
 - Assess whether leaf axils of oil palms are sources or sinks of trace gases
 - Quantify land-use change effects on soil N-cycling rates
 - Assess changes in soil chemical and physical characteristics with land-use changes
 - Quantify nutrient leaching losses with land-use changes

CURRENT STATUS:

- soil NO, N₂O, CH₄, CO₂ fluxes: monthly measurements for 1 year in 4 subplots/site
 - N₂O, CH₄, CO₂: November 2012 to July 2013 is completed, analysis at UGoe in progress
 - NO: March 2013 to July 2013 is completed
- Oil-palm leaf axils trace gas fluxes: measurements for 1 year in the oil palm sites
 - N₂O, CH₄, CO₂: February to June 2013 is completed, analysis at UGoe in progress
- Gross rates of soil N cycling: 1x measurement in 2 subplots/site
 - 15N pool dilution in the field is completed, analysis at UGoe in progress
- Soil physical and chemical characteristics: 1x measurement in 5-10 subplots/site at depths: 0-0.1, 0.1-0.3, 0.3-0.5, 0.5-1.0, 1.0-1.5 and 1.5-2.0 m
 - Field sampling in progress
- Nutrient leaching losses: biweekly to monthly sampling for 1 year in 2 subplots/site
 - February 2013 to June 2013 is completed, analysis at UGoe starts in August 2013

Group B

B01



TITLE: Structure, stability and functioning of macro-invertebrate communities in rainforest transformation systems in Sumatra (Indonesia)

TEAM: Principle Investigators: Ulrich Brose (UGoe); Achmad Farajallah, Tri Heru Widarto, Noor Farikhah Haneda (IPB)
Scientific staff: Andrew Barnes, Malte Jochum (PhD students)

AIM: Investigation of changes in the invertebrate community of the litter layer following rainforest transformation to plantation agriculture

CURRENT STATUS:

- Animal sampling of all 32 plots completed
- Animals (8655 individuals) sorted into major groups and morphospecies
- Stable isotope and stoichiometry analyses: export permit not yet granted, food-web analyses delayed
- Import of dead leaves from German forests for experiments on ecosystem functioning is delayed; analyses of ecosystem functioning planned for next year



B02



TITLE: Impact of rainforest transformation on phylogenetic and functional diversity of soil prokaryotic communities in Sumatra (Indonesia)

TEAM: Principle Investigators: Rolf Daniel (UGoe); Nisa Mubarik, Anja Meryandini (IPB)
Scientific staff: Martin Engelhaupt (PhD student)

AIM: Investigation of changes in soil prokaryotic diversity associated with rainforest transformation to plantation

CURRENT STATUS:

- Soil sampling from all plantations (oil palm, rubber, jungle rubber) in the Harapan and Bukit Duabelas landscapes
- Reference sites sampled (Bukit Duabelas Rainforest) – 3 of the 4 plots, 1 plot flooded, samples still in Jambi, Export Permit in progress
- Reference sites (Harapan Rainforest) not sampled yet (postponed to fall 2013)
- Processing of soil samples (plantation samples) and DNA extraction, generation of 16S rRNA amplicons for Bacteria and Archaea

B03



TITLE: Plant genetic diversity in tropical lowland rainforest transformation systems

TEAM: Principle Investigators: Reiner Finkeldey (UGoe); Iskandar Z. Siregar (IPB); Sri Rahayu, Ulfah J Siregar, Utut Widyastuti, Hamzah, Zulkarnain, Bambang Irawan (UNJA)
Scientific staff: Natalie Breidenbach (PhD student)

AIM: To study the consequences of rainforest transformation at the level of intraspecific diversity and to assess intraspecific diversity in different transformation systems by the investigation of dominant vascular plant species with different taxonomic and phylogenetic positions and life history traits

CURRENT STATUS:

- 22 plots completed, 86 different species with 2200 samples
- Different AFLP primers are tested at the moment

B04

TITLE: Carbon sequestration, litter C input to the soil, and resource use-efficiency

TEAM: Principle Investigators: Dietrich Hertel, Christoph Leuschner (UGoe); Cecep Kusmana, Triadiati Antono, Elias (IPB)
Scientific staff: Bernhard Schuldt (Postdoc); Martyna Kotowska, Yasmin Abou Rajab (PhD students)

AIM: Comparison of the forest transformation systems: carbon pools in aboveground woody biomass supply of aboveground versus belowground litter to soil organic carbon, above- and belowground net primary production, vertical root segregation

CURRENT STATUS:

- Plot inventory aboveground structural data (done)
- Installation of field measurement equipment (done)
- Inventory of above- and belowground tree biomass data (ongoing)
- Monitoring of leaf litter production, tree growth, palm tree height and rubber as well as palm fruit yield (ongoing)
- Vertical root segregation (not started yet)

B05



TITLE: Methodological approaches to the assessment of all tree resources in transition systems in forested tropical landscapes

TEAM: Principle Investigators: Christoph Kleinn (UGoe); Nengah Surati Jaya, Tatang Tiryana (IPB); Mohd. Zuhdi (UNJA)
Scientific staff: Lutz Fehrmann (Research Associate); César Pérez-Cruzado, Dian Nuraini Melati (PhD students)

AIM: Develop, test and evaluate methodological approaches for the assessment of forest and tree resource by integrating field observations and remote sensing analysis

CURRENT STATUS:

- Ground check of land cover in the study area (Bukit Duabelas and Harapan landscapes)
- Remeasurement of inventory data of Harapan rainforest
- Satellite imageries processing and evaluation

COUNTERPART (IPB):

- Ground check, satellite imagery interpretation and measurement of some transformation systems
- Planning for next data collection

B06



TITLE: Plant diversity

TEAM: Principle Investigators: Holger Kreft (UGoe); Sri Sudarmiyati Tjitrosoedirdjo (IPB); Bambang Haryadi (UNJA)
Scientific staff: Katja Rembold (Postdoc)

AIM: Quantifying the effects of rainforest transformation on plant diversity and ecosystem functioning

CURRENT STATUS:

- First field phase completed (Feb to May 2013), focus on Bukit Duabelas landscape
- 30% of all core plots finished
- Currently, preparation of database and next field trip, data analyses
- Half of herbarium specimen were stuck at National Park Bukit Duabelas due to missing collecting permit – identification cannot start before December 2013

First Results:

- Approx. 3000 herbarium specimen from ca. 686 plant species were prepared for identification
- All trees within plots BR1-4, BO2-4, BF3-4 are measured (structure and position)
- All plants within all subplots in BR1-4, BO2-4, BF3-4 are counted and measured (height)

- About 20,000 plant pictures have been taken for online identification guide / field guides
- Data on epiphytes from forest, rubber, and oil palm plantations
- Data on arthropods associated with epiphytes in oil palm plantations

Final Thesis Projects: Bachelor thesis entitled "Diversität vaskulärer Epiphyten im Vergleich zwischen Tieflandregenwald und Kautschukplantagen auf Sumatra (Indonesien)" submitted July 2013 by Tim Böhnert

B07



TITLE: Functional diversity of mycorrhizal fungi along a tropical land-use gradient

TEAM: Principle Investigators: Andrea Polle (UGoe); Sri Wilarso Budi (IPB); Bambang Irawan (UNJA); Henry Barus (UNTAD)
Scientific staff: Nur Edy, Josephine Sahner (PhD students)

AIMS: - Characterization of soil and root fungal diversity in relation to root mineral nutrient

content and tree species diversity

- Short term mineral N uptake in relation to mycorrhizal diversity
- Long term organic N uptake in relation to mycorrhiza and forest type

CURRENT STATUS:

- Sampling in core plots of transformation systems in Harapan and Bukit Duabelas landscapes except BJ5), rainforest sides are missing
- UNJA: measurement of fresh/dry biomass of roots and water content of soil, root tip counting, freeze drying of samples
- Shipping of samples to UGoe
- UGoe: DNA extraction and preparation of Pyrosequencing; Sanger sequencing; preparation of samples for arbuscular mycorrhizal colonization rate measurements; C/N measurements of litter, soil and root samples; preparation of samples for nutrient analysis

First Results :

Water content of soil, residual water content of soil, fresh biomass of roots per soil core, fresh/dry biomass of roots, proportion of dead and alive (non-EcM and EM) root tips, C/N content of litter, soil and roots

B08

TITLE: Structure and functioning of the decomposer system in lowland rainforest transformation systems



TEAM: Principle Investigators: Stefan Scheu, Mark Maraun (UGoe); Rahayu Widyastuti (IPB); Wilyus Wilyus (UNJA)
Scientific staff: Bernhard Klarner, Valentyna Krashevskaya (Postdocs)

AIM: Investigate the structure and functioning of the belowground food web in tropical lowland rainforests and its transformation systems focusing on microorganisms and major microbial consumers, i.e. micro- and mesofauna

CURRENT STATUS:

- Sampling of all transformation sites in Harapan landscape and Bukit Duabelas is completed
- Litterbags for "Litter exchange experiment" and "Ant exclusion experiment" will be installed in October-November 2013
- Sampling of forest sites and export of samples pending

B09



TITLE: Aboveground patterns of biodiversity and associated ecosystem processes across tropical rainforest transformations

TEAM: Principle Investigators: Teja Tschardtke, Yann Clough (UGoe); Damayanti Buchori, Akhmad Rizale (IPB)
Scientific staff: Fuad Nurdiansyah, Kevin Darras, Lisa Denmead (PhD students)

AIMS: - Taxonomic and functional diversity responses of ants and birds to rainforest transformation
 - Ant and bird exclusion experiment
 - Ecosystem services and dis-services of oil palm epiphytes
 - Regional and landscape scale analyses

CURRENT STATUS:

- Bird diversity in core plots: sound recording of birds is being analyzed (in time and space)
- Ant diversity in core plots: second round of ant baiting and leaf litter samples is finished



- ished, species identifications is in progress
- Plant, herbivore and ant samples for isotope analysis need to be transported to UGoe
- Young and productive oil palm plantations in the Harapan landscape outside core plots are selected and prototype exclusion is ready
- Ant exclusion (all core plots) is planned from October 2013

- Review of ecosystem functions in oil palm plantations (work in progress)
- Toy-model of land-use change (work in progress)
- A Computable General Equilibrium (CGE) model of land-use change in Indonesia (work in progress)
- Manuscript on hydrological functions in oil palm plantations (Tarigan et al. in progress).

- hirta individuals in the plots (except for the forest plots)
- starting of the experiment and removing of the pistills of *Clidemia hirta* individuals
- first sampling of grasses in the oil palm, rubber and jungle rubber plots (Bukit Duabelas and Harapan)

COUNTERPART (IPB):

first sampling of the species *Chromolaena odorata* und *Asystasia gangetica*

B10

TITLE: Landscape-level assessment of ecological and socio-economic functions of rainforest transformation systems

TEAM: Principle Investigators: Kerstin Wiegand, Katrin Meyer, Jann Lay (UGoe); Surya Tarigan (IPB)

Scientific staff: Claudia Dislich (Postdoc); Elisabeth Hettig, Fuad Nurdiansyah (PhD students)

AIM: Integration of different ecological and socio-economic functions on different spatial scales to investigate trade-offs and synergies between functions

CURRENT STATUS:

- What drives households' land-use decision making processes? A conceptual review of micro-level studies in tropical regions (draft paper)

B12 (since Jan 2013)

TITLE: Reproductive strategies of flowering plants in tropical rainforest transformation systems



TEAM: Principle Investigators: Elvira Hörandl (UGoe); Sri Sudarmiyati Tjitrosoedirdjo (IPB and South East Regional Centre for Tropical Biology – BIOTROP), Sri Rahayu (Lembaga Ilmu Pengetahuan Indonesia – LIPI)

Scientific staff: Nicole Opfermann (PhD student)

AIM: What is the role of apomixis (= asexual reproduction via seed) in invasive weeds?

CURRENT STATUS:

- Ground check of land cover in the study area in Bukit Duabelas (BD) and Harapan landscape (except for the forest plots)
- first selection of the investigated *Clidemia*



Group C

C01



TITLE: Smallholder productivity, market access, and international linkages in rubber and palm oil production in Jambi Province

TEAM: Principle Investigators: Bernhard Brümmer (UGoe); Rina Oktaviani, Dedi Budiman Hakim (IPB); Zulkifli Alamsyah (UNJA)
Scientific staff: Anna Mareike Holtkamp, Thomas Kopp (PhD students)

AIMS: - Elucidate the differences in technical and environmental efficiency between smallholders
- Analyze rubber and palm oil value chains from domestic to international markets

CURRENT STATUS:

- Smallholder survey of 208 farmer in the 5 regions of the household survey (one third of the farmers)
- Collection of plant abundance data as well as identification of most of the species in a 5x5m square and soil samples on the main plot

- Linkage of the economic data to our biodiversity data
- Plant abundance data and the soil are analyzed together with A and B subgroups
- Survey with 335 local traders in the 5 regions of the household survey (around 80% of all active traders in the region) conducted
- Both buying and selling price data from five rubber producing factories collected

C02

TITLE: Historical and Current Patterns of Cultural Landscape Transformation in Jambi Province

TEAM: Principle Investigators: Heiko Faust, Christoph Dittrich (UGoe); Endriatmo Soetarto, Soeryo Adiwibowo (IPB); Rosyani (UNJA)
Scientific staff: Ivonne Kunz, Barbara Beckert, Jonas Hein (PhD students)

- AIM:**
- Identify conditions and drivers of present cultural landscape transformation
 - Analyse the impact of cultural landscape transformation on rural livelihoods
 - Identify local adaptation strategies to changing conditions.
 - Identifying impacts of international climate discourses on local forest protection policies and the on the valuation of natural resources.
 - Identifying actors, local negotiations and REDD (Reducing Emissions from Deforesta-

- tion and Degradation) demonstration activities
- Identifying early impacts on land use patterns

CURRENT STATUS:

- First field campaigns have been done and village profiles were compiled
- Interviews have been conducted, transcribed and partly analysed

C03



TITLE: Cultural diversity and culture-specific interactions with tropical lowland rainforests in transformation

TEAM: Principle Investigators: Brigitta Hauser-Schäublin (UGoe); Titik Sumarti, Ervival Amzu (IPB); Rosyani, Eko Setianto, Ningsih Susanti (UNJA)
Scientific staff: Stefanie Steinebach (Postdoc)

AIM: Identify impact of cultural diversity and cultural factors/drivers in land use transformation processes

CURRENT STATUS:

- Village surveys in the Harapan landscape
- Social and administrative organization of the villages
- Inventory of cultural groups and their distribution in the area / villages
- Social history of the region
- Migration and intercultural relations
- Access to land, land use systems and tenure
- Knowledge and practice of resource use / land laws / land rights
- House garden survey
- Knowledge and practice of plants and plant use
- Planning for next data collection

COUNTERPART (UNJA):

- Comparison of working- and land-lease contracts between smallholders and agro-industrial corporations
- Village survey in Singkawang

C04**TITLE: Long-Term Land Use, Poverty Dynamics and Emission Trade-Offs in Indonesia**

TEAM: Principle Investigators: Stephan Klasen, Jann Lay (UGoe); Nunung Nuryartono (IPB); Marhawati Mappatoba (UNTAD)
Scientific staff: Katharina Trapp, Rivayani Darmawan, Dewi Nur Asih (PhD students)

- AIMS:**
- Analyze the long-term drivers of poverty and vulnerability in transformed forested landscapes in Indonesia
 - Estimate the greenhouse gas (GHG) implications of households' production and consumption decisions and to analyze the determinants of these emissions on the production and consumption side
 - Identify possible trade-offs between poverty reduction and the carbon intensity of households' land-use, production and consumption decisions and to develop solutions to minimize these trade-offs

CURRENT STATUS:

- Complete research socialization, household survey (4th round) in the former STORMA/

- SFB 552 region in Central Sulawesi (Lore Lindu National Park)
- Data cleaning stage (double entry verification, data cleaning and setting up panel structure)

C06

Explanation of economical experiment to farmers in Jambi

TITLE: Farm-level optimization of land use systems in Indonesia under consideration of uncertainty and ecological effects

TEAM: Principle Investigators: Oliver Mußhoff (UGoe); Yusman Syaukat (IPB); Napitupulu Dompok, Denny Denmar (UNJA)
Scientific staff: Stefan Moser (PhD student)

- AIMS:**
- Measure and assess risk-behavior of small scale farmers
 - Assess the effectiveness of several policies to reduce the use of fertilizer with a business game

CURRENT STATUS:

- Data is collected and cleaned for 328 households in 29 villages
- First results for business game available



C07



TITLE: Determinants of land use change and impact on household welfare among smallholder farmers

TEAM: Principle Investigators: Matin Qaim, Stefan Schwarze (UGoe); Hermanto Siregar (IPB); Zaki Fathoni (UNJA)
Scientific staff: Vijesh Krishna (Postdoc); Michael Euler (PhD student)

AIM: - Understand the micro-level determinants of recent land use changes in lowland rainforest
 - Areas and to quantify their impacts on the welfare of smallholder farm households

CURRENT STATUS:

- Literature review and questionnaire development for farm survey completed
- Sampling strategy and generated list of all households from selected villages developed
- Data collection from 700 households from 5 kabupaten of Jambi completed
- Data entry and cleaning finished
- Preliminary data analysis started

C08

TITLE: Collective decision making and land allocation at the village level

TEAM: Principle Investigators: Meike Wollni, Marcela Ibanez (UGoe); Didik Surhajito, Bambang Juanda (IPB); Zakky Fathoni (UNJA)
Scientific staff: Marcel Gatto, Miriam Vorlauffer (PhD students)

AIM: - Analysis of village-level determinants of land-use change; analysis of contractual arrangements of oil palm contracts between private companies and smallholders/villages

CURRENT STATUS:

- Data collection completed in 98 villages: village survey, experimental economic games, village head questionnaire
- Data analysis and writing first paper on land-use change

Z02 Central Scientific Support Unit (CSSU)

The CSSU provides general support and data for scientific projects with respect to the organization and collection of background data on flora, fauna and climate.



TITLE: **Meteo stations**

TEAM: Principle Investigators: Alexander Knohl (UGoe); Tania June (IPB); Abdul Rauf, Pak Irianto, Heri



Junedi (UNJA); Dodo Gunawan (BMKG)
Scientific staff: Mathias Herbst (Research Associate); Ana Meijide, Merja Tölle (Postdocs)

AIM: Establishment of a meteorological station network to continuously collect data on environmental variables inside and outside the studied ecosystems

CURRENT STATUS:

- *Reference meteo stations*: 4 stations installed: 1 in UNJA, 1 in Harapan forest (REKI), 1 in Bukit Duabelas forest and 1 in Bukit Duabelas transformations systems. Station in UNJA running from April 2013 and the rest from June 2013
- *Plot meteo stations*: 1 installed in UNJA as test in April 2013. All 32 meteo stations from plots installed and running from June 2013

TITLE: **DNA barcoding of vascular plants**

TEAM: Principle Investigators: Reiner Finkeldey (UGoe); Iskandar Z. Siregar, Ulfaj J Siregar, Utut Widyastuti (IPB); Hamzah (UNJA); Sri Rahayu (LIPI)
Scientific staff: Fitri Yola Amandita (PhD student)

AIM: Establishment of a barcoding system for vascular plants of the study sites to support species identification and to assign fine roots to species

CURRENT STATUS:

- 9 plots (BR1, BR2, BR3, BR4, BO2, BO3, BO4, BF3, BF4) have been sampled and 1.230 leaf samples were collected between Feb – May 2013
- DNA has been extracted from 174 samples (100 species)
- PCR amplification has been carried out with 2 markers (rbcL and matK)
- 83 sequences has been edited and checked for identification

TITLE: **Monitoring aboveground animal biodiversity: canopy arthropods**

TEAM: Principle Investigators: Stefan Scheu (UGoe); Damayanti Buchori, Iskandar Z Siregar (IPB); Bambang Irawan (UNJA); Rosikhon Ubaidilah (LIPI)
Scientific staff: Jochen Drescher (Postdoc)

AIM: Measuring baseline biodiversity data as an indicator for ecosystem stability

CURRENT STATUS:

- All transformation system plots have been sampled and sampling in forest plots has begun
- Identification of canopy arthropods has begun in July at IPB
- First results: on average, ca. 2500 individuals per plot have been identified to order level (total of 19,916 individuals from 5 plots plus one of three replicates from a sixth plot, two plots from each transformation system)

Data Management and Data Sharing (INF Project)



Photo: Sander van der Wel: Young Toucans sharing food, CC-BY-SA, flickr.com

TEAM: **Principle Investigators:** Winfried Kurth, Joachim Saborowski, Heike Neuroth, Fabian Cremer, Thomas Fischer, Tim Ritter (UGoE); Heru Sukoco (IPB); Zakky Fathoni (UNJA); Golar Baso (UNTAD); Laksana Tri Handoko, Sandra Yuwana (LIPI)

AIMS: Providing information infrastructure, data base system, data management, curation and long term data preservation

CURRENT STATUS:

- The information system EFForTS-IS based on BExIS has been developed and launched
- Data Exchange Agreement has been finalized

Notes on data sharing

If you follow the latest discussions, guidelines or policies on sharing research data, you will be faced with what is listed as the huge benefits of sharing research data in general – like greater visibility, outreach and impact of your own work including potentially more reputation and citation; easier verification and replication of other people's data; showing integrity and trustworthiness in science; an improving economical and scientific efficiency; the fostering of collaborations and the possibilities for innovative reuse. But when it comes down to spread and share of the own research data, suddenly a bunch of formal, technical, ethical, legal, systemic and even emotional stumbling blocks appear, as one is realizing the great potentials of reuse come along with an equally wide range of potential misuses, including oneself.

By being a big, international, founded, interdisciplinary and collaborative research project with an ecologically, socially and economically relevant impact, we have a rich variety of interests and rights sitting along each other, vis-à-vis all the national and international laws and regulations.

The CRC 990 Data Exchange Agreement (DEA) is meant to cut into that jungle (not literally!) and to balance these rights and interest without sacrific-

ing one for the sake of another. This requires such a document to be as precise and understandable as possible in order to be applicable in the field (literally) while being broadly and open enough in order to fit the dynamic and heterogeneous nature of this project.

Regarding this wide scope of the rules and regulations of the DEA, it should first and foremost serve our CRC and all its members a common point of reference and a reliable base that should carry them around most of the stumbling blocks mentioned above. With the duet of DEA and the Information System EFForTS-IS our CRC has now a legal and technical framework in place which provides a solid cornerstone for the upcoming fruitful data sharing.



II. Integration of Ecological and Socioeconomic Research

Integration / integrative research activities across disciplines in the CRC is realized through

- the establishment of a joint enrichment planting experiment (B11)
- four thematic foci / overarching joint hypotheses.

B11



Protected forest (left) and oil palm plantation (right) at the site planned for the second B11 experiment

TITLE: Biodiversity enrichment in oil palm plantations: ecological and socio-economic impacts

TEAM: Principle Investigators: Holger Kreft, Ulrich Brose, Dirk Hoelscher, Yann Clough, Meike Wollni (UGoE); Hendrayanto, Leti Sundawati, Prijanto Pamoengkas (IPB); Bambang Irawan, Rosyani (UNJA); Aiyen (UNTAD)
Scientific staff: Miriam Teuscher, Anne Gérard, Miriam Vorlauffer (PhD students)

AIMS: Increasing the biodiversity within an oil palm plantation by planting trees inside gaps. The objective of the experiment is to find out how enrichment planting with different diversity levels of one, two, three and six tree species affects ecosystem functioning, plant and animal diversity and the productivity of oil palms. The main questions to be addressed are:

- Can biodiversity and associated ecosystem services (biological pest control, enhanced pollination) be restored by enrichment planting?
- Under which planting strategies do enhanced ecosystem services positively affect oil palm economics?

CURRENT STATUS:

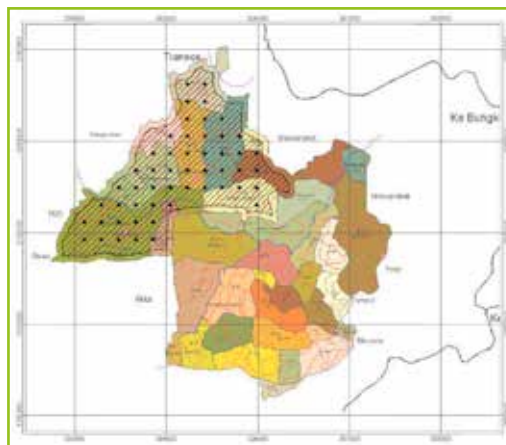


Figure 1. Location of the experimental plots on the plantation of Humusindo (black dots). The total size of the experimental area (shaded) is ca. 140 ha.

In October this year, plots of varying sizes will be established on an oil palm plantation (500 ha) owned by PT Humusindo, a company which is located near Bungku in the Batanghari region (Fig. 1). The plots will be systematically distributed within an oil palm plantation; diversity levels and the four different plot sizes will be randomly distributed (Fig 2).

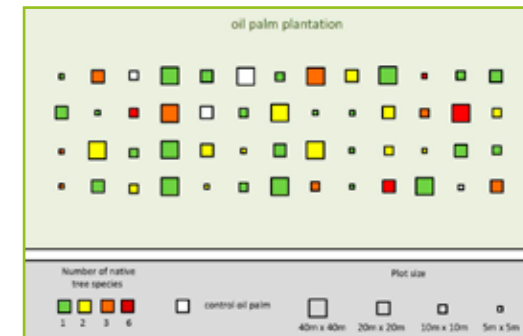


Figure 2. Experimental design at PT Humusindo

A second B11 experiment, varying forest distances and plot sizes, is planned at another location close to Jangga Baru, a village in the Batanghari region. The proposed plantation is intensively managed, ca. 4000 ha big and of medium age. Adjacent to the northern border of the plantation there is a small protected forest.



B11, C08 Preliminary study

TITLE: **How much is a bird? Bird diversity in smallholder oil palm plantations**

As a preliminary study of the B11 project we investigate the effect of enrichment plantings in smallholder oil palm plantations on bird diversity by combining economic with ecological data.

REPRESENTATIVES: Miriam Vorlaufer (C08) and Miriam Teuscher (B11)

AIMS: - Is there enrichment planting in smallholder oil palm plantations?

- How is bird diversity affected by enrichment plantings?
- Is oil palm profitability influenced by enrichment planting?
- How much is a bird?

CURRENT STATUS:

For our sampling (from February until April 2013), we chose two autochthon and two transmigrant villages in the Batanghari region and randomly selected 120 oil palm farmers within these four villages. By using a standardized questionnaire, plot specific data, such as plot characteristics, costs and



benefits of oil palm cultivation, abundance and use of tree species in oil palm plantations as well as perceived costs and benefits of enrichment planting, were collected.

Furthermore, farmers were asked about their willingness to accept compensation for planting trees in their oil palm plantation. Subsequent to the farmer survey, bird diversity and vegetation structure was assessed on each plot.

Based on these ecological and socio-economic data, the effectiveness of enrichment plantings will be evaluated. This study may thus contribute to the development of ecologically improved and socio-economically viable management concepts in oil palm landscapes.

Foci

Focus 1

TITLE: **Assessment of ecological and socio-economic functions across tropical transformation systems**

REPRESENTATIVES: Yann Clough, Oliver Mußhoff & Edzo Veldkamp

What are the synergies and trade-offs between ecological and socio-economic functions across different land-use systems in Indonesia (Sumatra)? This question is at the core of the focus area "Assessment

of ecological and socio-economic functions across tropical transformation systems".

This focus provides a conceptual umbrella which brings together scientists from different disciplines to facilitate joint analyses of the various dimensions of human welfare (profit, income, employment, income distribution, risk, poverty, food security, culture, gender) and core-plot level measures of biodiversity & ecosystem functioning.

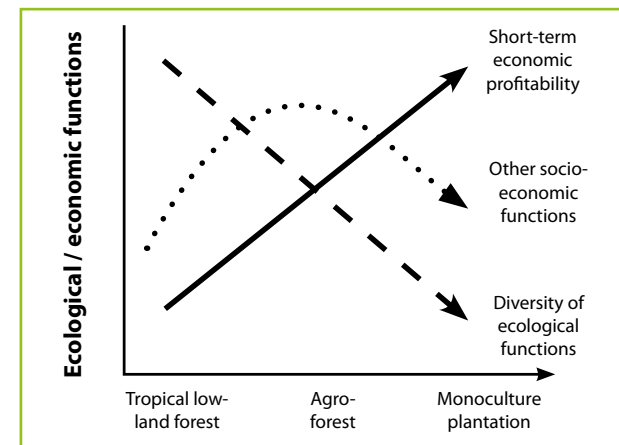


Figure 1: Sketch of the hypotheses regarding the ecological and socio-economic functions across tropical transformation systems in Jambi, Indonesia

In Focus 1 we aim at an integration of the different data sources for multiple ecological and socio-economic indicators into common models. One of the challenges in such an interdisciplinary enterprise is that assumptions and methods differ across all investigators and scientific disciplines to some degree, with divides likely to be obvious between ecology and social and economic sciences.

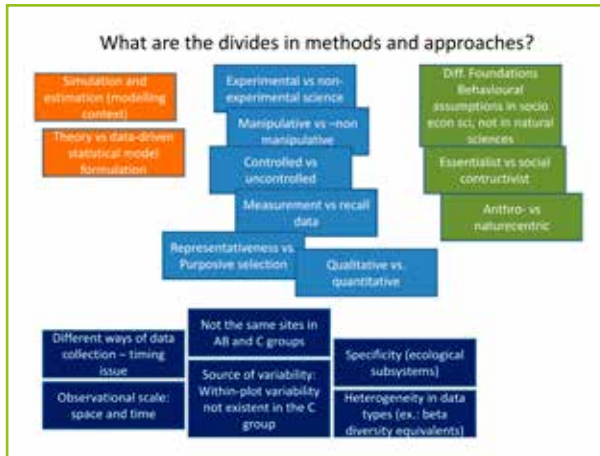


Figure 2: Result of participative assessment of divides in methods and approaches between and among ecological and socio-economic functions.

At focus was the question “Which divides need to be bridged (if any?) in order to bring together the various dimensions of human welfare and core-plot level measures of biodiversity and ecosystem functioning”? In order to progress towards higher levels of integration it emerged that the issues of disparity between sites sampled and the different scales at which data are recorded are those that will need concerted action and specific modeling solutions. Data from different areas can be brought together by:

- using the overlap (i.e., common information available from household data and core plot owner data, overlap of individual ABC datasets from beyond the core plots)
- by subsetting the C data to fit the core plot/core plot owner data

- in agent-based models, by relating an agent to the plot
- using geographic proximity to the core plot (and possibly other similarity information) to correlate core plot data with data from C groups.

The difference in usage of vocabulary in assumptions and philosophical foundations were not seen as a major obstacle.

A multiplicity of approaches with contrasting foundations is a plus rather than a problem. Disciplinary language barriers should be recognized and breached to enhance interdisciplinary communication.

Focus 2:

TITLE: Quantifying the effects of spatial and temporal variability on ecological and socioeconomic functions

REPRESENTATIVES: Holger Kreft & Stefan Schwarze

Understanding ecological and socio-economic functions in transformation systems requires information about the spatial and temporal variability that is inherent in the different systems. For instance, within transformation systems, we expect large differences in profitability, risk, biodiversity and ecological functions. Quantifying this variability is crucial for landscape-level assessments,

up-scaling (compare also focus 3) or to assess long-term temporal trends. Focus 2 aims at addressing such spatial and temporal variability.

Recent activities in this focus include a longer planning meeting on 05 March 2013 where 13 people representing all three project groups A-C participated. The main aim was to identify shortcomings in the pertinent literature and to evaluate the potential for collaborative synthesis papers. It was noted that previous studies almost exclusively quantified local-scale effects at the plot level without considering neither spatial nor temporal variability (e.g. Fitzherbert et al. 2008, Trends Ecol Evol). Another shortcoming identified is that previous studies have been based on rather patchy data sources. It thus appeared to be most promising and obvious to address first the spatial variability as longer time series would be needed to look into temporal aspects.

Thus, next steps towards a first synthesis paper under the working title “Quantifying the effects of spatial variability on ecological and socio-economic functions in rainforest transformation systems were planned”. It is the aim that all project groups can contribute data to such a paper and that it takes full advantage of the common CRC study design. Research group A would primarily deliver soil parameters such as carbon stocks, nutrient availability (N, P, Ca, Mg, K etc.) and pH that serve as indicators of the spatial variability in environmental conditions. Group B would contribute with a wealth of



biodiversity data for different taxonomic groups (incl. macro-invertebrates, prokaryotes, vascular plants, soil micro- and mesofauna, mycorrhizal fungi, epigeic fauna). Finally, C groups would quantify return-on-land. On 08 April 2013, a follow-up meeting took place that clarified issue on how to bring together differently scaled variables (e.g. nominal, continuous) and approaches (additive diversity partitioning vs. analysis of variance components) under a common framework and which statistical approach would be best suited for analysis.

Focus 3

TITLE: Scaling-up of ecological and socioeconomic functions from local to landscape and broader scales

REPRESENTATIVES: Stephan Klasen & Katrin Meyer

TASK FORCE: Barbara Beckert, Yann Clough, Claudia Dislich, Jonas Hein, Miriam Vorlauffer, Kerstin Wiegand

The overall aim of Focus 3 is to synthesize scale-related data, results and insights from the CRC. To reach this aim, data are required at different scales, such as at plot and landscape level.

However, scale-specific data and particularly landscape-level data will only be available later in the project. Thus, we decided to focus on investigating general approaches now, such as a conceptual

paper, and do the data-based synthesis (including modeling approaches such as in B10) once field data are available. Such a conceptual approach could also help to clarify the different perceptions of scaling-up and the different definitions of "large scale" (landscape, region, village) that currently prevail.

We have identified two promising topics for conceptual scale-related papers: First, we are currently investigating the potential mismatch of scales of ecological versus socio-economic processes in oil palm and rubber plantations (inspired by Sayre & Vittorio (2009) Scale. In Kitchin, Thrift (eds.) International Encyclopedia of Human Geography, 1: 19-28, Oxford). We anticipate that such a scale mismatch might generate new insights, but can also bias results. Second, we are currently exploring the hypothesis that biodiversity may be high at landscape and village level (e.g. in a mosaic of different land use types), but low at plot and household level (e.g. in an oil palm or rubber plantation); the implications for measures to support sustainable biodiversity conservation will be discussed.

We have discussed other topics with lower priority due to the current lack of comprehensive data: Linking local water quality to national health data (disease outbreaks at low water quality); Local carbon sequestration may be high in oil palm or rubber plantations, but low at large spatial and temporal scales (requires life cycle assessment data); Determinants of food security with special emphasis on crop diversity and the role of monocultures vs. diversified crop mix on household food quality

and security. For now, we focus on the scale mismatch topic (Katrin Meyer in charge) and the biodiversity topic (Miriam Vorlauffer in charge).

Our next meeting will be during the CRC-Workshop in Indonesia in October.

Focus 4

TITLE: Towards more sustainable land use in lowland tropical regions

REPRESENTATIVES:

Bernhard Brümmer & Teja Tscharntke

Focus 4 contributes to understanding and improving policies. Hypotheses tested in this focus will allow us to develop proposals for feasible policy measures that have the potential to integrate all dimensions of sustainability. Such measures may include variants of REDD (Reducing Emissions from Deforestation and Forest Degradation) or other payments for environmental services, but also more general policies and regulations related to property rights and institutional efficiency. Integrative papers addressing hypotheses of Focus 4 will depend very much on findings of the scientific projects and are therefore expected at a later stage of the current project phase.



III. News from Indonesia

DIKTI awards / BOPTN 2013

Under the program *Bantuan Operasional Perguruan Tinggi Negeri* (BOPTN, Operational Assistance for State Universities), the Ministry of National Education Direktorat Jenderal Pendidikan Tinggi (DIKTI) of Indonesia granted IPB about 80.000 USD as block grant for 10 research proposals:

Group A

1. Dr. Herdhata Agusta / A02: "Performances of several legumes for water conservation in oil palm with different slopes around Harapan Rainforest Jambi", IDR 90 Mio.
2. Dr. Tania June / A03: "Forest land transformation to oil palm: implications on micro-climate, evapotranspiration, and regional carbon budget", IDR 95 Mio.
3. Dr. Akhmad Faqih / A03: "Projection on the changes of diurnal and non-seasonal rainfall in Jambi based on climate change scenario of Representative Concentration Pathways (RCP)", IDR 48 Mio.

Group B

4. Dr. Dra. Nisa Rachmania, M.Si. / B02: "Review on diversity of fungal growth and pathogenicity inhibiting bacteria and their utilization as bio-fungicide in oil palm nursery", IDR 70 Mio.
5. Dr. Ulfah Juniarti / B03: "Status and Population Genetics of Two *Dyera* Species (Jelutung) in Jambi", IDR 90 Mio.
6. Prof. I Nengah Surati Jaya / B05: "Development of Geospatial method for intermediate resolution of biomass map based on terrestrial data and satellite image", IDR 90 Mio.
7. Dr. Yohana C. Sulisyarningsih / B06: "Analysis of secretory structure and phytochemistry of medicinal plants in jungle rubber around Bukit Duabelas National Park", IDR 48 Mio.
8. Dr. Ir. Pudjianto, M.Si. / B09: "Impact of habitat transformation on degradation of ecosystem services: Ant responses on land use change in Jambi", IDR 85 Mio.

Group C

9. Dr. Soeryo Adiwibowo / C02: "Collaborative natural resource management for agrarian conflict resolution", IDR 88 Mio.
10. Dr. Sofyan Sjaf / C03: "Study on gender responsive income accessibility and food availability in Suku Anak Dalam community around Harapan Rainforest Jambi", IDR 75 Mio.

The successful application for national research grants was supported by start-up funds of the CRC in 2012. In total 47 start-up initiatives have been funded; 29 initiatives at IPB (IDR 768 Mio.), 11 initiatives at UNJA (IDR 268 Mio.) and 7 initiatives at UNTAD (IDR 207 Mio.).

Management:

- IPB:
- Re-appointment of Prof. Dr. Anas M. Fauzi as Vice Rector for Research and Collaboration on May 24, 2013 by the Board of Trustees of IPB
 - Re-appointment of Prof. Dr. Iskandar Z. Siregar as Director for Research and Strategic Issues
 - Appointment of Dr. Edy Hartulistiyoso as Director Collaboration and International Programs
 - Appointment of Dr. Syarifah Iis Aisyah as Director Career Development and Alumni Relation
- UNJA:
- Appointment of Dr. Bambang Irawan as Head of the newly established Agribusiness Development Center and Integrated Laboratory of UNJA (*Pusat Pengembangan Agribisnis dan Laboratorium Terpadu = PPA/LT*) in January by the Rector of the University of Jambi



IV. News from Göttingen

CRC Colloquia and Group Meetings

Colloquium series and Group Meetings take place on a regular basis to exchange and discuss research results.

Research findings have – so far – been presented by C02, C03 and C07.

C02

TITLE: Science News from subproject C02

AUTHORS: Jonas Hein, Yvonne Kunz, Soeryo Adiwibowo, Barbara Beckert, Christoph Dittrich, Heiko Faust, Endriatmo Soetarto

The overall goal of the research conducted by subproject C02 is to analyze historical as well as current patterns of cultural landscape transformation in several villages in Jambi Province. Yvonne Kunz focuses on historical drivers of landscape transformation while Jonas Hein works on questions of land and resource access in the context of Indonesia's emerging "Reducing Emissions from Deforestation and Degradation" (REDD+) framework. The two PhD projects started in 2012 and are drawing on different qualitative research methods such as semi-structured interviews with land users and village heads, expert interviews with representatives of governmental and nongovernmental organiza-

tions, complemented by intensive literature and document review.

First results show that landscape transformation in Jambi Province is driven by actor groups regarded as external to local actors at the village level. Large scale development interventions like the initially World Bank supported transmigrant schemes and the global demand for cash crops, such as rubber and palm oil are the main causes for cultural landscape transformation. Due to these processes a large number of people from densely populated areas in Indonesia, mainly from Java, have been resettled to sparsely populated areas like Jambi Province. In all transmigrant villages investigated, co-operations with private companies determined land use change from diverse land use towards monoculture. Basically since the reform era (1999) the former transmigrant projects are replaced by so called spontaneous migration originating from other areas of Sumatra. Both migration streams lead to land scarcity and deforestation which in turn impacted food and cash crop cultivation patterns previously implemented.

For this reason, provincial and national REDD+ policies aim to create incentives for more climate and biodiversity friendly land-use practices. These land-use based climate change policies may ease the cultural landscape transformation, because it would be driven by the goal of reducing greenhouse gas emissions and achieving sustainable land use rather than by demands for cash crops. Jambi is one of Indonesia's REDD+ pilot provinces supported

by Norway. The province has recently published a province-wide action plan for the implementation for forest and land-use based mitigation activities. Additionally, the province hosts REDD+ pilot projects such as the Berbak Carbon Initiative and the Harapan Rainforest. However, the implementation of REDD+ on the ground is challenged by overlapping and competitive claims over forest land, diverging interests of stakeholders and large opportunity costs for high profit land-use practices such as oil palm cultivation.

Yvonne Kunz and Jonas Hein will continue field research in Jambi Province until October, 2013. The research activities are supported by Dr. Rosyani (UNJA), Prof. Dr. Endriatmo Soetarto (IPB) and Dr. Soeryo Adiwibowo (IPB).

C03

TITLE: Struggle for land bridges cultural difference

AUTHORS: Brigitta Hauser-Schäublin, Stefanie Steinebach and Rosyani

The research team (three teams, each of two people) of the anthropological project (C03) carried out the first series of fieldwork in three different villages (Bungku, Markanding and Marga Mulya) of the Harapan region in 2012. The goal was to investigate to what extent cultural diversity and cultural factors have an impact on people's decision-making with regard to land use. Nowadays, the Harapan lowland



transformation system consists mainly of privately- and state-owned oil palm plantations (including processing plants), jungle rubber and plantation rubber, as well as a forest concession of PT. REKI (*PT. Restorasi Ekosistem Indonesia or Ecosystem Restoration Indonesia*) or Harapan Rainforest concession area. Previously, in the 1970s, almost the entire Harapan lowland rainforest was farmed out as logging concessions. Moreover, the whole area has also served as a region for Indonesian government transmigration schemes; more than 80,000 transmigrants, mostly from Java, were transported there within the framework of clear-cut agricultural programmes with the allocation of small plots to families. Thus, from a legal perspective, there is almost no “free” or private land left. As a consequence, the land use of individuals and groups is largely predetermined by the land contracts of the Indonesian government and the production systems of the contractors that are geared to the world market.

In sum, the Harapan region is nowadays a renowned profitable development area especially for concession holders and the state. It is for this reason that there is also a continuous influx of migrants who hope to benefit from the “booming” cash crops, mainly oil palm fruit and rubber.

According to the policy of the Suharto regime (1965-1998), the customary land rights of the autochthonous or indigenous inhabitants of the area, Batin Sembilan, who had been living in and with the forest for many generations if not centuries, have never been acknowledged nor have they benefited from the profit the government and companies made. These communities and their claims

for the restitution of their customary land are currently supported by national and international NGOs. The struggle to gain access to land and have customary land rights acknowledged by the state has given rise to many conflicts. Different forms of cultural knowledge and practices or ethnicity are not, therefore, decisive factors with regard to the nature of land use. The difficulty of gaining access to land and/or labour (for example, as a plantation or factory worker) bridges cultural or religious differences and leads to new alliances and strategies, that range from strategic marriages of immigrants with indigenous people and the reselling of undocumented land plots, to occupation of concession land.

C07

TITLE: Land use changes among smallholder farmers of Jambi

PROVINCE: Initial insights from the household survey

AUTHORS: Vijesh Krishna, Michael Euler, Herman-to Siregar, Zakky Fathoni, Stefan Schwarze, Matin Qaim

The household survey under sub-project C07 was successfully completed by December 2012. The overall goal was to understand the micro-level factors determinants behind the recent land use changes in lowland rainforest areas of Jambi, and also to quantify their impacts on the welfare of smallholder farm households. For the survey, five regencies of Jambi

were selected purposively: Sarolangun, Batanghari, Muaro Jambi, Bungo and Tebo. These regencies comprise most of the lowland transformation systems of the province. A stratified sampling approach was employed for household selection. Households from 40 randomly and 5 purposively selected villages form the sample (Figure 1).

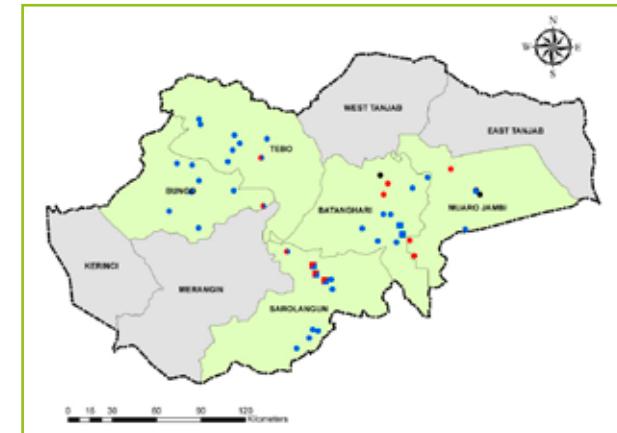


Figure1: Blue dots / squares indicate that $\geq 50\%$ of sample households cultivate rubber. Red ones indicate similar dominance of oil palm. Black dots show that neither oil palm nor rubber is cultivated by $>50\%$ of households. Dots are the villages selected randomly, and squares are those selected purposively (coreplots).

Following the village selection, a complete list of households, from each of the selected villages, was collected from the village/dusun/neighborhood heads. Significant diversity was found across the selected villages with respect to a number of socio-economic characteristics, especially ethnicity and number of households residing in the village. The available secondary data (e.g., the Village Potential Statistics or PODES) support this observation.



Due to the significant variation in village population, sampling a constant number of farmer households per village would critically under-represent the households from bigger villages and over-represents those from smaller villages. To reduce the severity of this problem, we divided the randomly selected villages into four quarters based on the population size. Only 6 households were selected from each of the 10 villages that came in the lowest quartile with respect to village size, 12 per village from the second quartile, 18 per village from the third and 24 per village from the largest quartile. This procedure generated a sample of 603 randomly selected households from randomly selected villages, 82 randomly selected households from non-random (core-plot) villages and 18 households which are purposively selected (core-plot owners). Households who had engaged in cultivation of any crop in the last 5 years were included in the survey as potential respondents. Hence, the factors contributing to dis-adoption of certain cropping systems could also be examined. The questionnaire was pre-tested several times to ensure consistency and accuracy, and was translated to Bahasa Indonesia using the service of a professional translating agency from Jambi. This questionnaire was explained to the enumerators in a workshop conducted at UNJA, with the help of the Indonesian counterpart. Currently, about 36% of farmer households in the study area are found cultivating oil palm and 82% cultivating rubber. Food crop production (e.g., rice) is carried out only in a marginal scale. Oil palm expansion is gaining momentum in the recent years. Although the rubber plots are rarely converted in

to oil palm, both these crops are competing for fallow and degraded forest lands for expansion. The average scale of operation is comparable across rubber and oil palm growing households. The first smallholders to cultivate oil palm were associated with the transmigrant programs, while non-assisted migrants and local population adopted oil palm after a time lag. Compared to the previous decades, the smallholder plantations are developed less frequently through deforestation and land acquisition through market is frequently observed in recent years. Contract farming in oil palm, which is found often associated with transmigrant programmes, is not widely followed at present. In the past, smallholder contracts were very complex and diverse across the study area and had mixed livelihood outcomes. The study, analyzing the farm-level data, is expected to reveal both direct and indirect determinants and impacts of recent land use changes in the Jambi province.

RISE Research Internships in Science and Engineering / a DAAD-DFG Cooperation
(<https://www.daad.de/rise/en/index.html>)

Doctoral students have the opportunity to offer summer internships / research internships to undergraduate students from the United States, Canada and the UK in the fields of natural sciences and engineering.

Funds are made available from both DAAD and the CRC/DFG.

A research internship proposed by Thomas Kopp – Doctoral student of the subproject C01 – on “*Impact of Agro Fuel Production on Food Security and Welfare*” has been positively confirmed; in July and August of this year Stephanie Eisner, a third year undergraduate student from the University of Texas, Austin, will join Tom at UGoe

- Stephanie was attracted to the project because of its global relevance and its research-based approach to economic development of least developed countries
- During her stay at UGoe Stephanie works in a project that concentrates on the impact of biofuel production on food security and welfare. Specifically, she will investigate palm oil policies, particularly those of the EU, and how these policies affect a group of 20 nations’ agricultural sectors. Focus is on both the macro and micro effects of energy policy as well as the effects between countries that both export and import palm oil and other agricultural goods
- At the University of Texas Stephanie’s majors are public health and international development; she has worked previously as an intern at the Grameen Bank, as a research assistant at the International Centre for Diarrheal Disease Research, Bangladesh, and as a journalist and political cartoonist for the Daily Texan Newspaper.

V. Cooperation & Administration



The Foreign Research Permit Team (FRP) of the Indonesian Ministry of Research and Technology (MENRISTEK), which is in charge for issuing research permits for foreigners doing research in Indonesia, has invited the CRC 990 to present the progress of the project on May 01, 2013. It has been one year ago since the first research permits for EFForTS researchers have been applied for. Main goal of the invitation was to see the involvement in and the benefit for the Indonesian side of the research collaboration EFForTS. Reports of research activities of CRC 990 and associated researchers have been handed over to the FRP team of MENRISTEK. In a presentation given by Dr. M. Agil the project development has been summarized:

- Offices and field hubs have been established involving 10 local staff taking care for approximately 150 researchers involved, in total about 90 local

assistants (mainly students or alumni from partner universities) have been hired by short term contracts to support field research activities.

- For transportation in the field a vehicle park consisting of 3 cars and 22 motorbikes is available. Further, a central power generator for the laboratory at UNJA has been installed and additional complementary laboratory equipment has been purchased.
- Laboratory cooperation between IPB, UNJA and UNTAD as well as establishment of a herbarium at UNJA has been initiated.
- Several scientific and technical trainings and guest lectures were given in Indonesia. Also, researchers from Indonesia visited the University of Göttingen for scientific exchange or training.
- Almost 50 scientists from partner universities in Indonesia used the chance of start-up funding by the CRC to develop their own complementary research ideas in the framework of the CRC 990. Ten of these research initiatives successfully applied for national research funds from DIKTI (BOPTN).
- For scientific data a joint database management procedure has been developed, a central database will be hosted on a mirror server at LIPI Data Centre. The planned joint database was highly valued by MENRISTEK seeing the CRC 990 as good practice project.

The large size of the CRC 990 / EFForTS research collaboration and its broad range of research activities pose challenges for management and coordination by the Indonesian partners (Consortium). In addition to the quarterly reports the FRP advised the Indonesian CRC 990 / EFForTS consortium to hand in annual reports.

Permit issues – general

The large size of the research collaboration also poses a challenge for authorities involved in the permit process. Every single permit application has to pass a number of granting authorities. For the CRC 990 the International Cooperation Office (ICO) at IPB in Bogor is in charge for permits. It works closely together with national authorities. Most complex are export permits for biological material. In Indonesia the use and export of genetic material has become an issue of highest national importance. On May 08, 2013 the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* came into force in Indonesia with Law No 11 / 2013. This law provides the legal basis for Indonesia to protect its genetic resources and to share benefits. This also affects scientific collaboration in the framework of the CRC 990 / EFForTS. The Nagoya Protocol (Article 8) differentiates between commercial and non-commercial research purpose and encourages national states to develop regulations to facilitate access for non-commercial research purposes. In fact, however, the Nagoya Protocol has led to an increase in obstacles in many



countries – in some countries export of scientific biological material has become impossible. Indonesia pays special attention to non-commercial research and intends to develop regulations for facilitated access. After the Nagoyoa Protocol has been enforced in Indonesia, the government intends to implement further regulations. The Ministry of Environment, coordinating the legal drafting process, has invited universities in Indonesia to participate in developing these regulations. On July 18, 2013 IPB hosted a discussion forum for fostering research facing the Nagoya Protocol.

<http://greentv.ipb.ac.id/videos/diskusi-penguatan-ri-set-melalui-implementasi-protokol-nagoya-akses-dan-pembagian-manfaat/>

Status of agreements of the CRC 990:

Signed:

MoU /MoA	IPB – UNJA – UNTAD (Consortium of Indonesian Partners of CRC 990)
MoU	IPB – UNTAD – UGoe and UNJA – UGoe
MoA	UGoe – Consortium of Indonesian Partners of CRC 990
MoA	IPB - PT REKI, UNJA - PT REKI, UNJA – PT Humusindo
MoA	IPB – Yayasan Burung Indonesia
MoA	Consortium of Indonesian Partners of CRC 990/EFForTS Indonesia – Direktorat Jenderal PHKA, Kemenhut

Forthcoming:

MoA	Nationalpark Bukit Duabelas (BD) – UNJA
MoA	Consortium of Indonesian Partners of CRC 990 – Perusahaan Perkebunan (PTPN VI)

Under preparation:

MoA	Consortium of Indonesian Partners of CRC 990 – BMKG
MoA	Consortium of Indonesian Partners of CRC 990 – LIPI

MoA: Memorandum of Agreement

MoU: Memorandum of Understanding



VI. International Conferences / Presentations

The Association for Tropical Biology and Conservation (ATBC) Asia-Pacific Chapter annual meeting 2013 took place at Banda Aceh, Sumatra, from 18-23 March.

B06

TITLE: Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems (Sumatra, Indonesia)

Katja Rembold

Around the world, the expansion of agriculture and the extraction of natural resources are increasingly competing with natural ecosystems. In many tropical areas, rainforests are cleared in order to exploit timber and other forest products as well as plant crops for food, feed, and fuel use. Surprisingly, the determinants of different patterns of deforestation and the roles of resulting transformation systems of tropical rainforests for conserving biodiversity as well as ecological and socioeconomic functions have received little attention in scientific research so far.

The EForTS Project is an international, interdisciplinary research program which aims at providing knowledge-based guidelines on how to protect

and enhance the ecological functions and services of tropical forests and agricultural transformation systems, while improving human welfare at the same time. The results are expected to contribute to the development of strategies for sustainable management of forest reserves and major rainforest transformation systems of the lowland tropics of Southeast Asia.

Here, we would like to introduce this new project which will be carried out in Jambi Province in Sumatra, one of the regions with the fastest and most complete transformation of tropical lowland rainforest worldwide.

B09

TITLE: Avian diversity, function and services in rainforest transformation systems of Jambi, Sumatra

Kevin Darras

Automated sound recording methods allow us to sample birds and other sonant animals in many locations for extended periods of time. The wealth of data that we collect about birds can be analyzed on collaborative expert platforms, citizen science projects, as well as with automated computer methods to uncover the dynamics, abundance and diversity of their communities. Additionally, using a range of methods like exclosures, feeding experiments, and participative market surveys, we can reveal the magnitude of bird ecological functions and services

across different landscapes spanning the Sumatran province. The latter will allow us to gain an understanding of the large-scale processes affecting biodiversity in transformed landscapes, guiding future conservation plans and aiding in the management of animal populations.

B09

TITLE: Does biodiversity loss from oil palm and rubber plantations impact production?

Lisa Denmead

To investigate the relationship between taxonomic and functional diversity and the resulting ecosystem services full factorial treatment combinations of ant and bird exclusion will be established in four oil palm and four rubber plantations in lowland ecosystems in Jambi Province, Sumatra. Manipulation of ant and bird access will allow testing of predictions about the impact of these groups on plants, above- and belowground animal communities and related ecosystem processes in agroecosystems. Additionally it will determine the impact these groups have on oil palm and rubber yield. In all experimental plots we will quantify ecosystem processes such as herbivory, predation, decomposition and pollination. Farmers will also be asked to provide accurate crop yield measurements. Animal communities will be periodically surveyed, with a focus on the taxonomical and functional richness and composition of plant-associated arthropod communities, and the density of decomposer and



predatory invertebrates. We predict the exclusion of ants and birds will cause significant changes in food-webs and have a negative impact on yield and related ecosystem processes in rubber and oil palm plantations. This will further support the need to encourage farming practices that promote biodiversity in production landscapes.

The 11th INTECOL Congress, Ecology: *Into the next 100 years* will be held in London from 18-23 August 2013 as part of the centenary celebrations of the British Ecological Society. The theme of the Congress is advancing ecology and making it count.

A05

TITLE: Soil nitrogen cycling in heavily weathered soils under rainforest transformation systems in Jambi, Indonesia

Kara Allen

Tropical lowland forests are typically characterized by high nitrogen (N) pools with high N cycling rates, which allow these systems to accumulate and recycle large amounts of N. However, tropical lowland rainforests are being reduced by agricultural conversion worldwide. Plantation agricultural development is replacing areas of tropical lowland forest at an alarming rate. Transformation of these forests can have profound effects on soil nutrient

cycling. Land use changes can lead to lower soil N cycling rates, which in turn can lead to higher emissions of climate relevant trace gases such as nitric oxide (NO) and nitrous oxide (N₂O). The aim of this study is to assess changes in soil N cycling rates with land-use change. Four transformation systems were examined—tropical lowland rainforest, jungle rubber (representing agroforestry system), rubber plantation and oil palm plantation. Sites were located across Jambi Province in central Sumatra, Indonesia—an area that was once heavily forested, but has been experiencing high forest conversion over the past several decades. Gross rates of N transformation processes (i.e. N mineralization, nitrification, and microbial N assimilation) were measured using the ¹⁵N pool dilution technique across the transformation gradient. Lowland tropical rainforest displayed high N cycling rates. With the lowest N cycling rates found in the plantation agricultural systems (rubber and oil palm). Jungle rubber, or the agroforestry system, displayed similar N cycling rates to lowland tropical forests, most likely due to the presence of nitrogen fixing leguminous tree species present at the sites. Linked together with ongoing trace gas analysis, information regarding the overall N cycle in these systems is critical to explain changes in NO and N₂O fluxes with land use change. Increasing diversity in plantation agricultural systems could be a solution to maintaining nutrient stocks, which could potentially reduce trace gas emissions and mitigate the effect certain agricultural practices have on climate change.

B01

TITLE: Tropical rainforest decomposer food webs along a land-use intensity gradient in Sumatra

Malte Jochum

The consequences of land-use change in Sumatra, Indonesia, are being investigated by 27 workgroups from Göttingen University. Environmental processes, biota, ecosystem services, and human dimensions are surveyed. In tropical lowland forest, jungle rubber, rubber, and oil palm I will examine structure, stability, and functioning of soil-litter macro-invertebrate communities. For my PhD, I will concentrate on the decomposer food webs of these systems. The difference in stoichiometry between the leaf-litter as the basal resource, the decomposers, and the predators will be one key aspect of my research. Using stable isotope analysis, I will further examine the vertical and lateral trophic structure of these communities in order to derive complex food-web models. With these models I will identify the mechanisms underpinning stability and persistence, thus allowing me to predict functional consequences of land-use intensification in tropical rainforests. Together with my colleagues who will focus on functional traits, diversity patterns, and species-area relationships, I will contribute to the overall examination of the ecological consequences of tropical deforestation and land-use change. Finally, the tropical decomposer communities will be compared to those of temperate European forests



in order to explain global-scale patterns in community assembly and species diversity of forest ecosystems.

B09

TITLE: Does biodiversity loss from oil palm and rubber plantations impact production?

Lisa Denmead

To investigate the relationship between taxonomic and functional diversity and the resulting ecosystem services full factorial treatment combinations of ant and bird exclusion will be established in four oil palm and four rubber plantations in lowland ecosystems in Jambi Province, Sumatra. Manipulation of ant and bird access will allow testing of predictions about the impact of these groups on plants, above- and belowground animal communities and related ecosystem processes in agroecosystems. Additionally it will determine the impact these groups have on oil palm and rubber yield. In all experimental plots we will quantify ecosystem processes such as herbivory, predation, decomposition and pollination. Farmers will also be asked to provide accurate crop yield measurements. Animal communities will be periodically surveyed, with a focus on the taxonomical and functional richness and composition of plant-associated arthropod communities, and the density of decomposer and predatory invertebrates. We predict the exclusion of ants and birds will cause significant changes in food-webs and have a negative impact on yield and related ecosys-

tem processes in rubber and oil palm plantations. This will further support the need to encourage farming practices that promote biodiversity in production landscapes.

B10

TITLE: Ecosystem functioning in oil palm plantations

Claudia Dislich

Land-use change is a main contributor to global change and affects various ecosystem functions on different spatial and temporal scales. Here, we aim to assess the impact of land-use change on ecosystem functions by taking the example of oil palm plantations. Southeast Asia has experienced a rapid expansion of oil palm plantations over the last decades. The role of oil palm expansion for the global carbon cycle and biodiversity loss have received increasing attention over the last years. However, other ecosystem functions such as hydrological or soil-related functions might also be affected by conversion of primary or secondary forests into oil palm plantations. To our knowledge there is not yet a comprehensive overview of ecosystem functions provided by oil palm plantations. In this paper we review scientific knowledge on ecosystem functioning in oil palm plantations at different spatial and temporal scales. We compare different types of land-use systems and natural ecosystems in terms of their consequences for ecosystem functioning and identify knowledge gaps. We use the

list of ecosystem functions suggested by de Groot et al. 2002 which are subdivided into regulation, habitat, production and information functions. We highlight selected ecosystem functions provided by oil palm plantations. The impact of oil palm on the global carbon cycle depends strongly on initial conditions before planting and on soil type (mineral or peat). On local to regional scales, the management of oil palm plantations can affect ground-level ozone concentration with potentially negative effects for human health and crop yield. Pollination and biological control are two examples for functions which have so far only been studied from the perspective of oil palm as a receiver and not as a provider of these functions. These functions will thus need to receive more attention in the future to obtain a balanced view of ecosystem functions provided by this ecosystem.

REFERENCE: De Groot, R.S., Wilson, M.A., Boumans, R.M.J. (2002) A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics* 41, 393–408

The 9th International Flora Malesiana Symposium (<http://www.fm9.biologi.lipi.go.id/>) takes place August 27-31, 2013 in Bogor. Topic: *"Contributions of Flora Malesiana to the Welfare of People in Asia"*. The symposium is organized by LIPI, Research Center for Biology (Chairperson Dr. Joeni S. Rahajoe).



IPB

TITLE: CRC 990: Ecological and Socioeconomic Functions of Tropical Lowland Rainforest Transformation Systems (Sumatra, Indonesia)

Dr. Damayanti Buchori etc.

The overall CRC project will be presented and introduced by Dr. Damayanti Buchori, Dept. of Pest and Plant Disease, IPB.

A01

TITLE: Long-term vegetation dynamics of mountain rainforests in Central Sulawesi (Indonesia)

Siria Biagioni

In order to obtain a deeper understanding of future environment/ecosystem interactions in tropical ecosystems a long-term perspective of the interaction between vegetation dynamics, climate change and human impact in the past is needed.

Due to the complexity of tropical ecosystems and site-specific differences on the sedimentary process, it is very important to have data from multiple sites in order to better identify the dynamics and vegetation community responses under different conditions (e.g. human land use change, climate change).

We present the results of pollen, charcoal and di-

atoms analyses of three sediment cores located about 30 km apart, close to the north-eastern border of the protected area of the Lore Lindu National Park. The park is situated in Central Sulawesi and has been a UNESCO "Man and Biosphere Reserve" since 1977.

The vegetation of the study region consists of species-rich tropical montane forest. The vegetation gradient ranges from lowland rainforests below 1000 m dominated by Fagaceae, to upper montane above 2000 m a.s.l. where conifers are well represented. The climate of the area is best described by rainfall pattern with humidity increasing towards higher elevation. The interannual conditions are influenced by the occurrence of El Niño event which can lead to severe reduction in rainfall.

The coring sites are located at different altitudes: 1) Rore Katimbu (1°16'44"S, 120°18'34"E) situated at about 2400 m a.s.l. within the upper montane forest, 2) Lake Kalimpa (1°19'35"S, 120°18'32"E) at 1700 m a.s.l., within the mid-montane forest and 3) Lake Lindu (1°19'16"S, 120°04'36"E) at 1000 m a.s.l. surrounded by sub-montane forest. The three sites differ in level of human impact and the records span through the Holocene with similar temporal resolution.

The multi-sites palaeoecological study allows us to test the following hypotheses: I) The response of the vegetation communities to climate change and ENSO events were different along the altitudinal and moisture gradients; II) The montane rainforest was impacted by human activities in the area only in recent times.

The comparative study will lead to a better under-

standing of sensitivity/resilience of the LLNP vegetation towards long term stressed as a consequence of human activities and climate variability.

B03

TITLE: Plant genetic diversity in tropical lowland transformation systems

Natalie Breidenbach

Tropical rainforests are converted to other types of land use throughout the globe. The transformation of natural ecosystems to managed systems frequently results in a loss of species diversity. In Jambi Province, Sumatera (Indonesia) tropical lowland rainforests are transformed into oil palm plantations, rubber plantations and 'jungle rubber'. This project explores intraspecific genetic diversity of vascular plants in reference forests and the three mentioned transformation systems. In 32 plots (50x50m) of these four different ecosystems, 10 individuals of 10 dominant species are sampled. Based on anonymous AFLP markers we aim to assess the consequences of land use changes on the genetic diversity of plants caused by the different species composition in each system.

B04

TITLE: Hydraulic architecture of tree species in cacao agroforests: Aboveground growth performance and xylem anatomic properties



Martyna Kotowska / Yasmin Abou Rajab

Wood density and xylem anatomical properties are usually regarded as core functional traits of tree aboveground growth performance. Since vessel size affects sapwood-specific conductivity to the fourth power, a strong positive correlation to plant growth is to be expected.

Here we examined hydraulic properties of branch, root and stem tissue of *T. cacao* and five common shading tree species (*Leucaena leucocephala*, *Gliricidia sepium*, *Gnetum gnemon*, *Erythrina subumbrans*, *Durio zibethinus*) from an agroforestry system in Sulawesi, Indonesia. Our results show that there are significant differences in specific hydraulic conductivity and hydraulically weighted vessel diameter between species as well as between the root, branch and stem xylem within a given species. Distinct patterns due to the biogeographical origin of the species are visible. Contrary to recently published results from primary forests in the same region, wood density showed a negative relationship to hydraulic conductivity. On the other hand across all investigated species basal stem increment was positively correlated with hydraulic conductivity underlining the importance of hydraulic conductivity for tree growth performance.

We conclude that (i) growth performance is strongly dependant on hydraulic conductivity; (ii) xylem anatomical patterns reflect species biogeographical origin and seem not to be modified due to habitat adaptation.

B06

TITLE: Vascular epiphyte diversity in different transformation systems in Sumatra, Indonesia

Katja Rembold

The worldwide loss and degradation of tropical rainforests caused by deforestation and transformation into agricultural land also affects epiphyte communities. Due to their arboreal habitat, epiphytes are very sensitive towards changes in microclimatic conditions, making them an excellent model group to study the consequences of land cover change. Therefore, we investigated the consequences of transformation from lowland rainforest into monocultures for vascular epiphyte diversity in Jambi Province (Sumatra, Indonesia). In total 90 study plots (20x20 m) were established in Bukit Duabelas National Park and surrounding oil palm and rubber plantations (30 plots per transformation system). Each plot contained one main phorophyte which was investigated for vascular epiphytes. Additionally all vascular epiphytes growing within a 2m zone above the base of each tree within the plot were recorded. We found a total of 54 epiphyte species belonging to 18 different families. While oil palm plantations contain the highest number of individuals (1806 individuals, 80%), forest plots had a much higher species diversity (45 species, 83%) compared to oil palm and rubber plantations. Further, epiphyte communities in plantations showed higher rates of generalists while forest epiphyte

communities are rather composed by specialists. Thus, even if epiphytes are very abundant in oil palm plantations, forest transformation clearly causes a loss of epiphyte diversity.

Z02

TITLE: DNA barcoding of vascular plants in Jambi, Indonesia

Fitri Yola Amandita

DNA barcoding aims at providing a fast, accurate, and easily accessible species identification system. The use of DNA barcoding is of particular relevance for the identification of plants in highly diverse but endangered tropical systems such as in the forests of Indonesia which are facing great threats. This research is taking place in Jambi Province (Sumatra, Indonesia), where most of the original forest cover has been converted into oil palm and rubber plantations. We aim to sequence the DNA barcodes of vascular plant species in logged-over old growth forest and three different transformation systems (jungle rubber, rubber and oil palm plantations) and then combine it with classic morphological species identification to establish a barcoding system for vascular plants in the region and to make the data available for the scientific community via DNA barcoding databases. Together with specimen data and high quality photographs of fresh and dried plant material this information should speed up plant research in tropical transformation systems.



VII. Announcements

EFForTS Discussion Paper Series launched

to share concepts, methodological issues and results. The paper series is published on the document server for online access (GOEDOC) of the State and University Library of Göttingen (<http://www.sub.uni-goettingen.de/en/electronic-publishing/publishing/goedoc/>).

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Circulars and Infosheets / Templates

Circulars and Infosheets are regularly published on the CRC SharePoint (https://sharepoint.uni-goettingen.de/projects/sfbindo/guidelines/_layouts/15/start.aspx#/default.aspx)

Overview Infosheets and Templates:

ADMINISTRATION INDONESIA

- Office Structure Indonesia
- Reimbursement through the Coordination Office in Jambi
- Indonesian Public Holidays 2013
- Transport and Accommodation in Jakarta

DATA EXCHANGE / DATABASE

- CRC 990 – Data Exchange Agreement (DEA)
- CRC 990 DEA Introduction
- EForTS-IS Getting Started

EXPORT AND IMPORT OF SAMPLES

- MTA (Material Transfer Agreement)
- Collection Permit Indonesia

- Import of Soil Samples to Germany
- Letter of Authority to Import Soil Samples (Template)
- Richtlinie 2008_61_EG
- Richtlinie 2000_29_EG
- Richtlinie 2008_61_EG-Umgang Quarantäne Schadorganismen

FINANCIAL ADMINISTRATION & MANAGEMENT (TRAVEL AND CONSUMABLES)

- Financial Transfer Agreement
- Settlement of expense claims / consumables via the Financial SharePoint
- Barcodes / Barcode labeling of documents
- Template Eigenbeleg / Self Receipt
- Finanzabwicklung Indonesien by Central Administration (Zentralverwaltung, UGoe)
- Workflow Sachmittel-Abrechnungen über den SharePoint Sekretariate SFB 990

BUSINESS TRAVEL AND TRAVEL EXPENSE ACCOUNTING

- Travel authorization – Travel expenses – Travel expense claims
- Template "Antrag auf Genehmigung einer Dienstreise" / Application Business Trip
- Template Verzichtserklärung / Waiver
- Template "Reisekostenabrechnung"
- Template "Reisekostenabrechnung" (English, including explanations & instructions)
- Template Antrag Abschlagszahlung Reisekosten / Form Advance Payments
- Template Antrag Auslagenerstattung /



Form Reimbursement Expenses

- Template Travel Expenses CRC 990
- Template Travel Plan Specific Locations
- Workflow Dienstreise (DR) & Reisekostenabrechnung (RKA) Sekretariate SFB 990

GENDER EQUALITY FUNDS

- Gender Equality
- Gleichstellungsmittel

HEALTH INSURANCE

- Reimbursement Foreign Health Insurance
- Beratungsblatt Complete Light (BGR)
- Servicekarte BGR 134_08.07
- Tarif EK Leistungsübersicht deutsch-englisch
- Template Anmeldung HiWi bei AKV durch Institut (German, for secretariats)
- Anmeldung und Finanzierung Auslands-krankenversicherung (AKV) bei der Halle-schen Versicherung (German, for secretari-ats)

LAB AT UNJA

- Integrated Laboratory of UNJA (PPA/LT)
- List of equipment

PLOT GUIDELINES

- Guidelines for the use of the EFForTS research plots
- Petunjuk Penggunaan Plot Penelitian EFForTS

RECRUITMENT OF STAFF

- Master Students
- Student Assistants (HiWi's)
- Field Assistants and Local Helpers/Park Guides
- Short Term Contract of Employment / Re-search Assistant (Undergraduate)
- Hiring local assistants: contract and agree-ment requirements
- Work certificate / Evidence of employment
- Local assistants

RESEARCH PERMIT INDONESIA

- Application for Research Permit
- Template Cover Letter Research Application
- Template Letter Recommendation Supervi-sor
- Template Letter Support Counterpart
- Template Proposal Application Research Permit
- Extension of Research Permit
- Template Application Research Permit Ex-tension
- Template Counterpart Recommendation Letter Extension
- Template RISTEK Preliminary Final Report
- Quarterly report to RISTEK
- Template RISTEK Progress Report

BYLAWS / SATZUNG

- Bylaws CRC 990 / Satzung SFB 990
- Members and Associates according to By-laws

VEHICLES

- Project cars
- Directive Motorcycle Usage
- Vehicle Rental in Jambi
- Template Car Application / Car Use Report Form

VISA APPLICATION

- Visa application "Research Visa, type 315"
- Visa Sosial Budaya
- Template Support Letter Supervisor Social Budaya
- Visa Application Form Germany / Visa-Antrag Hamburg, Germany.

New Staff

IPB: - Ms Stephanie Wessling,
secretariat CRC 990 office Bogor

UGoe: - Dr. Merja Tölle as Postdoc in A03,
Merja will investigate the feedback of land transformation on local and regional cli-mate using a regional climate model

- Ms Anne Gérard as doctoral student in B11,
Anne will investigate biodiversity enrich-ment in oil palm plantations: ecological and socio-economic impacts

- Ms Ivonne Hein,
secretariat CRC Göttingen



VIII. Outlook / Up-coming Events

September 2013	Exhibition about “Biodiversity Research and the Role of DFG” <ul style="list-style-type: none"> • The exhibition will start in September 2013 at the head office of DFG in Bonn • Research consortia/research groups will provide insight into research and development of biodiversity research • CRC 990 will contribute posters and ideas for other exhibitions
October 7 & 8	Joint Management Board (JMB) Meeting Bogor
October 10 & 11	CRC 990 Status Workshop Bogor and Jambi
November 15	Third Retreat Göttingen



Georg-August-Universität Göttingen (UGoe)



Institut Pertanian Bogor (IPB)



Universitas Jambi (UNJA)



Universitas Tadulako Palu (UNTAD)

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