

TROPICS

ISSN 0917-415X

Vol. 22 No. 1 June 2013



The Japan Society of Tropical Ecology

日本熱帯生態学会

CONTENTS

ORIGINAL ARTICLES

Makruf Nurudin, Seiichi Ohta, Eko Bhakti Hardiyanto, Daniel Mendham, Agus Wicaksono, Joko Heriyanto, Makiko Watanabe
Relationships between soil characteristics and productivity of *Acacia mangium* in South Sumatra 1

Taiki Mori, Seiichi Ohta, Shigehiro Ishizuka, Ryota Konda, Agus Wicaksono, Joko Heriyanto, Arisman Hardjono
Effects of phosphorus application on CH₄ fluxes in an *Acacia mangium* plantation with and without root exclusion13

Dai Hirose, Shoko Sakai, Takao Itioka, Takashi Osono
Microfungi associated with a myrmecophyte *Macaranga bancana*19

Akira Nakanishi, Witchaphart Sungpalee, Kriangsak Sri-ngernyuang, Mamoru Kanzaki
Determination of epiphyte biomass composition and distribution with a three-dimensional mapping method in a tropical montane forest in northern Thailand27

Cover illustration courtesy of the International Children's Painting Competition on Environment supported by the Foundation for Global Peace and Environment and the UNEP

Published by the Japan Society of Tropical Ecology

Editor-in-Chief: Dr. Misa Masuda

Faculty School of Life and Environmental Sciences, University of Tsukuba, 305-8572 Japan

Phone 81-29-8537251, Fax 81-29-8534761, E-mail: tropics.jaste@gmail.com

Printed by Soubun Printing Co., Ltd.

Publication date: June 1, 2013.



TROPICS

TROPICS is issued quarterly with one volume per year by the Japan Society of Tropical Ecology, and publishes papers covering all aspects of ecology and ecology-related science. The journal is open to the results of original research, experimental or descriptive, and to significant reviews of aspects of the ecology of tropical regions. Its aim is not only to act as a valued means of communication between Japanese ecologists and other field scientists, but also to stimulate the research activities of ecologists and scientists of tropical regions. Those interested in contributing to **TROPICS** are highly encouraged to submit their work. Special issues of monographs or reviews may be published on occasion by decision of the editorial board.

Editor-in-Chief: Misa Masuda (Tsukuba Univ.)

Vice Editor-in-Chief: Takuro Shinano (NARO/TARC) Ryuichi Tabuchi (JIRCAS)

Editorial Board:

Kenichi Abe (RIHN)
Masahiro Ichikawa (Kochi Univ.)
Koichi Kamiya (Ehime Univ.)
Shumpei Kitamura (MNHAH)
Tsugiyuki Masunaga (Shimane Univ.)
Hisashi Matsubayashi (Tokyo Univ. Agric.)
Yukino Ochiai (Kagoshima Univ.)
Tamotsu Sato (FFPRI)
Takeshi Toma (FFPRI)

Advisory Board:

Ahmad Makmom Abdullah (Univ. Putra Malaysia)	Nobuhiro Kaneko (Yokohama Univ.)
Prodyut Bhattacharya (GGs Indraprastha Univ.)	Roengsak Katawatn (Khon Kaen Univ.)
Bounthong Bouahom (NAFRI)	Supamard Panichsakpatana (Kasetsart Univ.)
Wil de Jong (Kyoto Univ.)	Xie Ping (Chinese Academy of Sciences)
Jingyun Fang (Peking University)	Supiandi Sabiham (Bogor Agric. Univ.)
Haruo Fukuhara (Niigata Univ.)	Yo-Ichiro Sato (RIHN)
Ko Harada (Ehime Univ.)	Herwint Simbolon (LIPI)
Niro Higuchi (INPA)	Ryunosuke Tateno (Kagoshima Univ.)
Takashi Hirano (Hokkaido Univ.)	Tran Duc Vien (Hanoi Univ. of Agric.)
Mitsuo Ichikawa (Kyoto Univ.)	Seiki Yamane (Kagoshima Univ.)
Makoto Inoue (Tokyo Univ.)	

FFPRI: Forest and Forest Products Research Institute, Japan; INPA: The National Institute of Amazonian Research, Brazil; JIRCAS: Japan International Research Center for Agricultural Science; JWRC: Japan Wildlife Research Center; LIPI: Indonesian Institute of Sciences; MNHAH: The Museum of Nature and Human Activities, Hyogo, Japan; NAFRI: National Agriculture and Forestry Research Institute, Lao PDR; NARO/TARC: National Agricultural and Food Research Organization Tohoku Agricultural Research Center, Japan; RIHN: Research Institute for Humanity and Nature, Japan

The Japan Society of Tropical Ecology

<http://www.gakkai.ac/jaste/>

Editorial Office

Dr. Misa Masuda (Editor-in-Chief of **TROPICS**)
Faculty of Life and Environmental Sciences
University of Tsukuba
Tsukuba, Ibaraki 305-8572, Japan
Phone: 81 29 8537251 Fax: 81 29 8534761
E-mail: tropics.jaste@gmail.com

General Office

Dr. Akira Itoh (Director-General)
Graduate School of Science
Osaka City University
Osaka 558-8585, Japan
Phone: 81 6 66053167 Fax: 81 6 66053167
E-mail: jaste.adm@gmail.com

TROPICS

ISSN 0917-415X

Vol. 22 No. 2 September 2013



The Japan Society of Tropical Ecology

日本熱帯生態学会

CONTENTS

ORIGINAL ARTICLES

Augustin T. B. Orou Matilo, Yoshiko Iida, Takashi S. Kohyama
Tree species composition and stand structure of woody savanna in Dahomey Gap39

Tomohiro Fujita
Brachystegia boehmii and *Brachystegia floribunda* facilitate the establishment of montane forest trees in miombo woodland in northern Malawi59

Mayumi Sugimoto, Seiichi Ohta, Saiffidin Ansori, Hardjiono Arisman
Nutrient dynamics via litterfall and litter decomposition on the forest floor of an *Acacia mangium* Willd. stand in Sumatra67

Taiki Mori, Seiichi Ohta, Shigehiro Ishizuka, Ryota Konda, Agus Wicaksono, Joko Heriyanto, Arisman Hardjono
Effects of phosphorus and nitrogen addition on heterotrophic respiration in an *Acacia mangium* plantation soil in South Sumatra, Indonesia83

Cover illustration courtesy of the International Children's Painting Competition on Environment supported by the Foundation for Global Peace and Environment and the UNEP



Published by the Japan Society of Tropical Ecology

Editor-in-Chief: Dr. Misa Masuda

Faculty School of Life and Environmental Sciences, University of Tsukuba, 305-8572 Japan

Phone 81-29-8537251, Fax 81-29-8534761, E-mail: tropics.jaste@gmail.com

Printed by Soubun Printing Co., Ltd.

Publication date: September 1, 2013.

TROPICS

TROPICS is issued quarterly with one volume per year by the Japan Society of Tropical Ecology, and publishes papers covering all aspects of ecology and ecology-related science. The journal is open to the results of original research, experimental or descriptive, and to significant reviews of aspects of the ecology of tropical regions. Its aim is not only to act as a valued means of communication between Japanese ecologists and other field scientists, but also to stimulate the research activities of ecologists and scientists of tropical regions. Those interested in contributing to TROPICS are highly encouraged to submit their work. Special issues of monographs or reviews may be published on occasion by decision of the editorial board.

Editor-in-Chief: Misa Masuda (Tsukuba Univ.)

Vice Editor-in-Chief: Ryuichi Tabuchi (FFPRI)

Editorial Board:

Kenichi Abe (RIHN)
Naoyuki Furuya (FFPRI)
Masahiro Ichikawa (Kochi Univ.)
Koichi Kamiya (Ehime Univ.)
Shumpei Kitamura (Ishikawa Pref. Univ.)
Tsugiyuki Masunaga (Shimane Univ.)
Hisashi Matsubayashi (Tokyo Univ. Agric.)
Kazuma Matsumoto (FFPRI)
Yukino Ochiai (Kagoshima Univ.)
Tamotsu Sato (FFPRI)
Takeshi Toma (FFPRI)

Advisory Board:

Ahmad Makmom Abdullah (Univ. Putra Malaysia)	Roengsak Katawatina (Khon Kaen Univ.)
Prodyut Bhattacharya (GGS Indraprastha Univ.)	Supamard Panichsakpatana (Kasetsart Univ.)
Bounthong Bouahom (NAFRI)	Noboru Matsushima (JWRC)
Jingyun Fang (Peking University)	Hidetoshi Nagamasu (Kyoto Univ.)
Haruo Fukuhara (Niigata Univ.)	Koji Nakamura (Kanazawa Univ.)
Ko Harada (Ehime Univ.)	Xie Ping (Chinese Academy of Sciences)
Niro Higuchi (INPA)	Supiandi Sabiham (Bogor Agric. Univ.)
Takashi Hirano (Hokkaido Univ.)	Yo-Ichiro Sato (RIHN)
Mitsuo Ichikawa (Kyoto Univ.)	Ryunosuke Tateno (Kagoshima Univ.)
Makoto Inoue (Tokyo Univ.)	Tran Duc Vien (Hanoi Univ. of Agric.)
Wil de Jong (Kyoto Univ.)	Seiki Yamane (Kagoshima Univ.)
Nobuhiro Kaneko (Yokohama Univ.)	Tsuyoshi Yoneda (Kagoshima Univ.)

FFPRI: Forest and Forest Products Research Institute, Japan; INPA: The National Institute of Amazonian Research, Brazil;
JWRC: Japan Wildlife Research Center; NAFRI: National Agriculture and Forestry Research Institute, Lao PDR;
RIHN: Research Institute for Humanity and Nature, Japan

The Japan Society of Tropical Ecology

<http://www.gakkai.ac/jaste/>

Editorial Office

Dr. Misa Masuda (Editor-in-Chief of TROPICS)
Faculty of Life and Environmental Sciences
University of Tsukuba
Tsukuba, Ibaraki 305-8572, Japan
Phone: 81 29 8537251 Fax: 81 29 8534761
E-mail: tropics.jaste@gmail.com

General Office

Dr. Akira Itoh (Director-General)
Graduate School of Science
Osaka City University
Osaka 558-8585, Japan
Phone: 81 6 66053167 Fax: 81 6 66053167
E-mail: jaste.adm@gmail.com

TROPICS

ISSN 0917-415X

Vol. 22 No. 3 December 2013



The Japan Society of Tropical Ecology

日本熱帯生態学会

CONTENTS

ORIGINAL ARTICLES

Tomoya Inada, Widiyatno Ano, Suryo Hardiwinoto, Ronggo Sadono, Priyo Eko Setyanto, Saminto, Mamoru Kanzaki
Effects of logging and line planting treatment on canopy openness in logged-over forests in Bornean lowland dipterocarp forest89

Sota Tanaka, Kenji Nakamoto, Katstoshi Sakurai, Suwido H. Limin
Characteristics of the contrasting soils on Kahayan River banks in Central Kalimantan, Indonesia99

Taiki Mori, Seiichi Ohta, Shigehiro Ishizuka, Ryota Konda, Agus Wicaksono, Joko Heriyanto, Arisman Hardjono
Effects of phosphorus application on root respiration and heterotrophic microbial respiration in *Acacia mangium* plantation soil113

Seiji Iwanaga, Misa Masuda
Shift in raw materials for the wood processing industry in Java Island, Indonesia: A perspective from the post natural forest era119

Cover illustration courtesy of the International Children's Painting Competition on Environment supported by the Foundation for Global Peace and Environment and the UNEP

Published by the Japan Society of Tropical Ecology

Editor-in-Chief: Dr. Misa Masuda

Faculty School of Life and Environmental Sciences, University of Tsukuba, 305-8572 Japan

Phone 81-29-8537251, Fax 81-29-8534761, E-mail: tropics.jaste@gmail.com

Printed by Soubun Printing Co., Ltd.

Publication date: December 1, 2013.



TROPICS

TROPICS is issued quarterly with one volume per year by the Japan Society of Tropical Ecology, and publishes papers covering all aspects of ecology and ecology-related science. The journal is open to the results of original research, experimental or descriptive, and to significant reviews of aspects of the ecology of tropical regions. Its aim is not only to act as a valued means of communication between Japanese ecologists and other field scientists, but also to stimulate the research activities of ecologists and scientists of tropical regions. Those interested in contributing to **TROPICS** are highly encouraged to submit their work. Special issues of monographs or reviews may be published on occasion by decision of the editorial board.

Editor-in-Chief: Misa Masuda (Tsukuba Univ.)

Vice Editor-in-Chief: Ryuichi Tabuchi (FFPRI)

Editorial Board:

Kenichi Abe (RIHN)
Naoyuki Furuya (FFPRI)
Masahiro Ichikawa (Kochi Univ.)
Koichi Kamiya (Ehime Univ.)
Shumpei Kitamura (Ishikawa Pref. Univ.)
Tsugiyuki Masunaga (Shimane Univ.)
Hisashi Matsubayashi (Tokyo Univ. Agric.)
Kazuma Matsumoto (FFPRI)
Yukino Ochiai (Kagoshima Univ.)
Tamotsu Sato (FFPRI)
Takeshi Toma (FFPRI)

Advisory Board:

Ahmad Makmom Abdullah (Univ. Putra Malaysia)
Prodyut Bhattacharya (GGS Indraprastha Univ.)
Bounthong Bouahom (NAFRI)
Jingyun Fang (Peking University)
Haruo Fukuhara (Niigata Univ.)
Ko Harada (Ehime Univ.)
Niro Higuchi (INPA)
Takashi Hirano (Hokkaido Univ.)
Mitsuo Ichikawa (Kyoto Univ.)
Makoto Inoue (Tokyo Univ.)
Wil de Jong (Kyoto Univ.)
Nobuhiro Kaneko (Yokohama Univ.)

Roengsak Katawat (Khon Kaen Univ.)
Supamard Panichsakpatana (Kasetsart Univ.)
Noboru Matsushima (JWRC)
Hidetoshi Nagamasu (Kyoto Univ.)
Koji Nakamura (Kanazawa Univ.)
Xie Ping (Chinese Academy of Sciences)
Supiandi Sabiham (Bogor Agric. Univ.)
Yo-Ichiro Sato (RIHN)
Ryunosuke Tateno (Kagoshima Univ.)
Tran Duc Vien (Hanoi Univ. of Agric.)
Seiki Yamane (Kagoshima Univ.)
Tsuyoshi Yoneda (Kagoshima Univ.)

FFPRI: Forest and Forest Products Research Institute, Japan; INPA: The National Institute of Amazonian Research, Brazil;
JWRC: Japan Wildlife Research Center; NAFRI: National Agriculture and Forestry Research Institute, Lao PDR;
RIHN: Research Institute for Humanity and Nature, Japan

The Japan Society of Tropical Ecology

<http://www.gakkai.ac/jaste/>

Editorial Office

Dr. Misa Masuda (Editor-in-Chief of TROPICS)
Faculty of Life and Environmental Sciences
University of Tsukuba
Tsukuba, Ibaraki 305-8572, Japan
Phone: 81 29 8537251 Fax: 81 29 8534761
E-mail: tropics.jaste@gmail.com

General Office

Dr. Akira Itoh (Director-General)
Graduate School of Science
Osaka City University
Osaka 558-8585, Japan
Phone: 81 6 66053167 Fax: 81 6 66053167
E-mail: jaste.adm@gmail.com

TROPICS

ISSN 0917-415X

Vol. 22 No. 4 March 2014



The Japan Society of Tropical Ecology
日本熱帯生態学会

CONTENTS

REVIEW ARTICLE

- Satoshi Yokoyama, Isao Hirota, Sota Tanaka, Yukino Ochiai, Eiji Nawata, Yasuyuki Kono
A review of studies on swidden agriculture in Japan: cropping system and disappearing process131

ORIGINAL ARTICLES

- Tika D. Atikah, Joeni S. Rahajoe, Takashi S. Kohyama
Differentiation in architectural properties and functional traits of forest-floor saplings among heath, peat swamp, and mixed dipterocarp forests.....157

- Susumu S. Abe, Toshiyuki Wakatsuki
The influence of the mound-building termite (*Macrotermes bellicosus*) on soil clay mineralogy.....169

FIELD NOTE

- Hideyuki Noguchi, Cacilda Adélia Sampaio de Souza, Rosiane Oliveira da Silva, Rempei Suwa, Takuya Kajimoto, Moriyoshi Ishizuka, Gabriel Henrique Pires de Mello Ribeiro, Adriano José Nogueira Lima, Roseana Pereira da Silva, Joaquim dos Santos, Niro Higuchi
Fine root biomass in a tropical moist forest in the upper Negro River basin, Brazilian Amazon.....179

Cover illustration courtesy of the International Children's Painting Competition on Environment supported by the Foundation for Global Peace and Environment and the UNEP

Published by the Japan Society of Tropical Ecology

Editor-in-Chief: Dr. Misa Masuda

Faculty of Life and Environmental Sciences, University of Tsukuba, 305-8572 Japan

Phone 81-29-8537251, Fax 81-29-8534761, E-mail: tropics.jaste@gmail.com

Printed by Soubun Printing Co., Ltd.

Publication date: March 1, 2014.



TROPICS

TROPICS is issued quarterly with one volume per year by the Japan Society of Tropical Ecology, and publishes papers covering all aspects of ecology and ecology-related science. The journal is open to the results of original research, experimental or descriptive, and to significant reviews of aspects of the ecology of tropical regions. Its aim is not only to act as a valued means of communication between Japanese ecologists and other field scientists, but also to stimulate the research activities of ecologists and scientists of tropical regions. Those interested in contributing to TROPICS are highly encouraged to submit their work. Special issues of monographs or reviews may be published on occasion by decision of the editorial board.

Editor-in-Chief: Misa Masuda (Tsukuba Univ.)

Vice Editor-in-Chief: Ryuichi Tabuchi (FFPRI)

Editorial Board:

Kenichi Abe (RIHN)
Naoyuki Furuya (FFPRI)
Masahiro Ichikawa (Kochi Univ.)
Koichi Kamiya (Ehime Univ.)
Shumpei Kitamura (Ishikawa Pref. Univ.)
Tsugiyuki Masunaga (Shimane Univ.)
Hisashi Matsubayashi (Tokyo Univ. Agric.)
Kazuma Matsumoto (FFPRI)
Yukino Ochiai (Kagoshima Univ.)
Tamotsu Sato (FFPRI)
Takeshi Toma (FFPRI)

Advisory Board:

Ahmad Makmom Abdullah (Univ. Putra Malaysia)	Roengsak Katawatn (Khon Kaen Univ.)
Prodyut Bhattacharya (GGS Indraprastha Univ.)	Supamard Panichsakpatana (Kasetsart Univ.)
Bounthong Bouahom (NAFRI)	Noboru Matsushima (JWRC)
Jingyun Fang (Peking University)	Hidetoshi Nagamasu (Kyoto Univ.)
Haruo Fukuhara (Niigata Univ.)	Koji Nakamura (Kanazawa Univ.)
Ko Harada (Ehime Univ.)	Xie Ping (Chinese Academy of Sciences)
Niro Higuchi (INPA)	Supiandi Sabiham (Bogor Agric. Univ.)
Takashi Hirano (Hokkaido Univ.)	Yo-Ichiro Sato (RIHN)
Mitsuo Ichikawa (Kyoto Univ.)	Ryunosuke Tateno (Kagoshima Univ.)
Makoto Inoue (Tokyo Univ.)	Tran Duc Vien (Hanoi Univ. of Agric.)
Wil de Jong (Kyoto Univ.)	Seiki Yamane (Kagoshima Univ.)
Nobuhiro Kaneko (Yokohama Univ.)	Tsuyoshi Yoneda (Kagoshima Univ.)

FFPRI: Forest and Forest Products Research Institute, Japan; INPA: The National Institute of Amazonian Research, Brazil;
JWRC: Japan Wildlife Research Center; NAFRI: National Agriculture and Forestry Research Institute, Lao PDR;
RIHN: Research Institute for Humanity and Nature, Japan

The Japan Society of Tropical Ecology

<http://www.gakkai.ac/jaste/>

Editorial Office

Dr. Misa Masuda (Editor-in-Chief of TROPICS)
Faculty of Life and Environmental Sciences
University of Tsukuba
Tsukuba, Ibaraki 305-8572, Japan
Phone: 81 29 8537251 Fax: 81 29 8534761
E-mail: tropics.jaste@gmail.com

General Office

Dr. Akira Itoh (Director-General)
Graduate School of Science
Osaka City University
Osaka 558-8585, Japan
Phone: 81 6 66053167 Fax: 81 6 66053167
E-mail: jaste.adm@gmail.com

日本熱帯生態学会 The Japan Society of Tropical Ecology

日本熱帯生態学会は熱帯研究の生態学的研究の進歩と研究成果の交流と普及に努めます。熱帯地域の生態学的研究といっても、熱帯生態学という確立した学問分野があるわけではありません。それぞれの研究者がそれぞれの研究方法によって熱帯地域の理解を深めていけばよいのですが、急速な開発の進行を考えると、熱帯地域の自然と人間生活をどのようにして持続的なものとして維持し発展させるかという視点が重要になってきます。生物過程が主体となった自然生態系に注目するだけでなく、自然と共存する社会的なしくみにも留意する必要があります。これからの熱帯研究はより広い視野をもとめられるだけでなく、幅の広いさまざまな研究の成果の研究交流が重要です。さらに研究成果は学界が独占すべきものではありません。広く社会に還元し、熱帯地域に生じている社会と自然をめぐる諸問題が正しく理解され、解決されるよう努力する必要があります。

編集委員長： 増田 美砂（筑波大）
副編集委員長： 田淵 隆一（森林総研）

編集委員：

阿部 健一（地球研）	上谷 浩一（愛媛大）	藤間 剛（森林総研）	松林 尚志（東京農大）
市川 昌広（高知大）	北村 俊平（石川県立大）	古家 直行（森林総研北海道）	松本 和馬（森林総研東北）
落合 雪野（鹿児島大）	佐藤 保（森林総研）	増永 二之（島根大）	

諮問委員：

Ahmad Makmom Abdullah	Supiandi Sabiham	Prodyut Battacharya	方 精雲
市川 光雄	館野 隆之輔	Supamard Panichsakpatana	Bounthong Bouahom
井上 真	Tran Duc Vien	原田 光	福原 晴夫
Roengsak Katawatin	Wil de Jong	Niro Higuchi	松島 昇
金子 信博	中村 浩二	平野 高司	山根 正気
佐藤 洋一郎	永益 英敏	謝 平	米田 健

著作権の帰属

本学会発行の出版物に掲載される論文等の著作権（著作権法第21条から第28条までに規定するすべての権利を含む）は原則として、本学会に帰属する。

著作権利用の許諾

本学会に帰属する著作権を利用する場合は本学会の許諾を必要とする。また、本学会は学術目的のために、著作権の一部を第三者に行使させる権利を有する。これら、著作権の利用・行使にともない、本学会に対価の支払があった場合には、本学会会計に繰り入れるものとする。ただし、本学会出版物の著者は、著作者個人あるいは著作者所属組織などのウェブサイトなどにおいて、自らの著作物を本学会刊行物である旨の出典を明記して自由に掲載できるものとする。また、著者は自らの掲載論文中的図表等を他の出版物に自由に転載できるが、転載内容を学会事務局に報告するものとする。

上記著作権には、著作権法で定められている下記の全ての権利を含むものとする。

複製権（第21条）、上演権及び演奏権（第22条）、上映権（第22条の2）、公衆送信権等（第23条）、口述権（第24条）、展示権（第25条）、頒布権（第26条）、譲渡権（第26条の2）、貸与権（第26条の3）、翻訳権、翻案権（第27条）、二次的著作物の利用に関する原著作者の権利（第28条）。