Vol. 9 No. 1

ISSN 0917-415X

Sept. 1999



Symposium Nature and People in Borneo

Introduction. Hideo TAGAWA & Takashi KOHYAMA......1 Diversity of Tropical Rainforest Trees in Kalimantan. Eizi SUZUKI.... 5

Hydrological and Meteorological Environments of Inland Peat Swamp
Forest in Central Kalimantan, Indonesia with Special Reference to the
Effects of Forest Fire. Hidenori TAKAHASHI
Soils and Agriculture in Borneo. Katsutoshi SAKURAI
Dynamics of the People's Attitude Toward Eco-resources in Borneo.
Isamu YAMADA 41
Exceptional Droughts and Forest Fires in Eastern Part of Borneo Island.
Takeshi Тома
Kalimantan: A Region in Transition - From Timber Extraction Frontier
to Land Development Frontier. Hideyuki SASAKI

第9卷 第1号

熱帯研究

1999年9月

日本熱帯生態学会

目 次

公開シンポジウム「ボルネオの自然と人間」

田川日出夫,	甲山隆司	はじめに				• • •			• • •	•	1
鈴木英治	カリマンタン	における熱	林带多雨	林樹木の)多様性.						5
高橋英紀	カリマンタン	内陸泥炭湖	湿地の水	文気象環	環境—特は	こ森林火災	炎の影響に	こ注目し	τ—		17
櫻井克年	ボルネオの土	壌と農業							• • •		27
山田 勇	生態資源をめ	ぐる人々の)動態.							•	41
藤間 剛	ボルネオ島東	部の異常韓	た 燥と森	林火災 .					••••	•	55
佐々木英之	転換期にある										
										• '	73

編集・発行	日本熱帯生態学会編集委員会 堀田満(編集委員長)
	〒890-0065 鹿児島市郡元1丁目21-35
	鹿児島大学理学部地球環境科学科(気付け)
	Tel. 099-285-8166 Fax 099-285-8172
	E-mail: hotta@sci.kagoshima-u.ac.jp
印刷	斯文堂株式会社 鹿児島市南栄3丁目1 Tel. 099-268-8211
印刷・発行日	1999年9月10日印刷 1999年9月15日発行



The TROPICS is issued quarterly with one volume a year. It is open either to the results of original research, experimental or descriptive, or significant reviews of various aspects of tropical regions. The journal publishes papers in all aspects of ecology and/or other fields of science related to ecology. It aims 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 young ecologists/scientists of tropical nations especially in Southeast Asia. All the members of the society can contribute to TROPICS, and invited articles may be accepted at the request of editorial board. Special issues may be published on occasion by permission of editorial board, as monographs or reviews exceed approximately 100 pages in length.

Editor-in-Chief: Mitsuru HOTTA

(Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University)

Editorial Board

Instructions to authors Two copies of manuscript, preferably in English (or Japanese), to be sent to the editors, typewritten on one side of paper, double-spaced, and with a wide margin. Underlinings to indicate letter types should be left to the editors. In addition to type-script copies, authors using word processing equipments are requested to submit a diskette or floppy disk with their text file. Preference is files in Microsoft Word for Macintosh, on double-sided 3.5 inch (DD, HD) diskettes. For texts processed on MS-DOS computers (preferably in MS-Word or Word Perfect), please submit double-sided (DD or HD) 3.5 inch floppy disks with the text saved as ASCII file.

The editors may ask the opinion of one or two reviewers before accepting or refusing the manuscript that has been submitted.

Summary. Each paper should be provided with a summary.

- Citation of literature. In the text as follows: (Primack, 1991) or Ashton (1991). In the 'References' as follows:
 - Primack, R. B. & Hall P. 1991. Species diversity research in Bornean forests with implications for conservation biology and silviculture. *Tropics* 1: 91-111.
 - Jacobs, M. 1974. Botanical panorama of the Malesian archipelago. In UNESCO, Natural Resources of Humid Tropical Asia, 263-294. Paris.
- **Illustrations** should be professionally drawn and lettered, or laser printed on smooth white paper. Photographs and color slides are also acceptable, but the author(s) will be charged for printing them in color.

Reprints. For articles with one author 50 copies free.

Manuscripts and correspondence concerning editorial matters should be addressed to Editorial Office of the Japan Society of Tropical Ecology, ^c/o Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University, Korimoto 1-21-35, Kagoshima 890-0065, Japan. Phone: (099) 285-8166 Fax: (099) 285-8172 E-mail: hotta@sci.kagoshima-u.ac.jp

General Office of the Japan Society of Tropical Ecology addressed to ^c/o Dr. T. Yamakura, Faculty of Science, Osaka City University, Sumiyashi-ku, Osaka 558-0022, Japan. Phone: (06) 6605-2582 Fax: 6605-2522

Vol. 9 No. 2

ISSN 0917-415X

March 2000



pteridophytes diversity in small scales among different climatic regions in eastern Asia
H. SIMBOLON, T. YAMADA & E.SUZUKI Elateriospermum tapos Blume
(Euphorbiaceae) in west Kalimantan: Spatial distribution, survival and growth in a mixed dipterocarp forest
T. B. NISHIMURA & E. SUZUKI Spatial distributions of zinger species at tropical submontane forest floor
A. S. EDET, H. TAKAHASHI & T. SEKI Ecological role of micro- organisms on surface deterioration of Cross River basalt monoliths in
Nigeria
WAKATSUKI.Soil Quality Characterization in Relation to Tree Species
Diversity in Tropical Rain Forest, West Sumatra, Indonesia I. Comparison of two 1-ha plots
T. YUMOTO, K. MOMOSE & H. NAGAMASU -Short Communication -A new pollination syndrome - Squirrel pollination in a tropical rainforest in Lambir Hills National Park, Sarawak, Malaysia
T. Ichie, I. Ninomiya & K. Ogino Utilization and consumption of storage resources in viviparous seed of Bruguiera gymnorrhiza during early stage of shoot and root development

熱帯研究

第9卷 第2号

2000年3月

日本熱帯生態学会

目 次

佐藤利幸, Saw Leng Guan, 古川昭雄 東アジア地域の異なる気候帯における狭いスケールのシダ植 物多様性の定量比較. . ・ .
Herwint SIMBOLON,山田俊弘,鈴木英治 西カリマンタンのElateriospermum tapos Blume (トウダイ グサ科)のフタバガキ混交林での分布,生存,成長
西村貴司,鈴木英治 熱帯山地林の林床におけるショウガ科草本の空間分布特性 103-116
Abu S. Edet, 高橋英紀, 関太郎 ナイジェリア, クロス河流域の玄武岩石像群の表面劣化に及ぼす微 生物の影響 117-132
久保田大輔, 増永二之, Hermansah, 堀田満, 若月利之 西スマトラ熱帯多雨林の樹木種の多様性 を支える土壌環境 I. 2つの1haプロットでの比較
湯本貴和, 百瀬邦泰, 永益英敏 マレーシア国サラワク州ランビル国立公園で発見されたリス 媒
市榮智明,二宮生夫,荻野和彦 オヒルギBruguiera gymnorrhiza の実生の初期成長にともなう 胎生種子内貯蔵養分の利用消費

編集・発行	日本熱帯生態学会編集委員会 堀田満(編集委員長)
	〒890-0065 鹿児島市郡元1丁目21-35
	鹿児島大学理学部地球環境科学科(気付け)
	Tel. 099-285-8166 Fax 099-285-8172
	E-mail: hotta@sci.kagoshima-u.ac.jp
印刷	斯文堂株式会社 鹿児島市南栄3丁目1 Tel. 099-268-8211
印刷・発行日	2000年3月15日印刷 2000年3月20日発行



The TROPICS is issued quarterly with one volume a year. It is open either to the results of original research, experimental or descriptive, or significant reviews of various aspects of tropical regions. The journal publishes papers in all aspects of ecology and/or other fields of science related to ecology. It aims 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 young ecologists/scientists of tropical nations especially in Southeast Asia. All the members of the society can contribute to TROPICS, and invited articles may be accepted at the request of editorial board. Special issues may be published on occasion by permission of editorial board, as monographs or reviews exceed approximately 100 pages in length.

Editor-in-Chief: Mitsuru HOTTA

(Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University)

Editorial Board

Instructions to authors Two copies of manuscript, preferably in English (or Japanese), to be sent to the editors, typewritten on one side of paper, double-spaced, and with a wide margin. Underlinings to indicate letter types should be left to the editors. In addition to type-script copies, authors using word processing equipments are requested to submit a diskette or floppy disk with their text file. Preference is files in Microsoft Word for Macintosh, on doublesided 3.5 inch (DD, HD) diskettes. For texts processed on MS-DOS computers (preferably in MS-Word or Word Perfect), please submit double-sided (DD or HD) 3.5 inch floppy disks with the text saved as ASCII file.

The editors may ask the opinion of one or two reviewers before accepting or refusing the manuscript that has been submitted.

Summary. Each paper should be provided with a summary.

- Citation of literature. In the text as follows: (Primack, 1991) or Ashton (1991). In the 'References' as follows:
- Primack, R. B. & Hall P. 1991. Species diversity research in Bornean forests with implications for conservation biology and silviculture. Tropics 1: 91-111.
- Jacobs, M. 1974. Botanical panorama of the Malesian archipelago. In UNESCO, Natural Resources of Humid Tropical Asia, 263-294. Paris.
- Illustrations should be professionally drawn and lettered, or laser printed on smooth white paper. Photographs and color slides are also acceptable, but the author(s) will be charged for printing them in color.

Reprints. For articles with one author 50 copies free.

Manuscripts and correspondence concerning editorial matters should be addressed to Editorial Office of the Japan Society of Tropical Ecology, ^C/o Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University, Korimoto 1-21-35, Kagoshima 890-0065, Japan. Phone: (099) 285-8166 Fax: (099) 285-8172 E-mail: hotta@sci.kagoshima-u.ac.jp

General Office of the Japan Society of Tropical Ecology addressed to ^c/o Dr. T. Yamakura, Faculty of Science, Osaka City University, Sumiyashi-ku, Osaka 558-0022, Japan. Phone: (06) 6605-2582 Fax: 6605-2522

Vol. 9 No. 3

ISSN 0917-415X

March 2000



Symposium Functional Comparisons of Tropical and Temperate Ecosysytem

Edited by M. OHSAWA and T. HARA

M. OHSAWA Functional comparisons of tropical and temperate ecosystem
M. OKAZAKI Input and output of elements in tropical and temperate ecosystems
T. YONEDA General and regional properties of decomposition in a forest ecosystem
Y. MATSUMOTO, Y. MARUYAMA & L. H. ANG Maximum gas exchange rates and osmotic potential in sun leaves of tropical tree species 195-209
M. KANZAKI, K. SRI-NGERNYUANG, N. FUJII, T. MIZUNO, H. NOGUCHI,
T. YAMAKURA, M. HARA, P. SAHUNALU, P. DHANMANONDA, S.
BUNYAVEJCHEWIN & A. MATHAVARARUG Comparative community ecology of tropical montane and temperate lucidophyll forests:
Comparison of niche differentiation pattern
T. MATSUMOTO Variations in the fauna of xylophagous insects from
the tropics to temperate regions, and their status in ecosystems -In
the case of East Asia and Australia

熱帯研究

第9卷 第3号

2000年3月

日本熱帯生態学会

目 次

公開シンポジウム「熱帯と温帯の比較」

大沢雅彦, 原正利 編

大沢雅彦	熱帯と温帯の比較 ― 生態系の機能的側面―	167-168
岡崎正規	熱帯および温帯生態系における元素の流入と流出	169-177
米田 健	森林生態系における物質分解の地域性と普遍性.............	179-193
松本陽介,	丸山 温, Lai Hoe ANG 熱帯樹種陽葉における最大ガス交換速度および浸透が	ペテン
	シャルのスクリーニング.........................	195-209
神崎 護,	K. SRI-NGERNYUANG,藤井範次,水野貴司,野口英之,山倉拓夫,原正利,大久	保達弘,
	P. Sahunalu, P. Dhanmanonda, S. Bunyavejchewin, A. Mathavararu-	G
	熱帯山地林と温帯照葉樹林の比較群集論 ― ニッチ分割パターンの比較 ― .	211-228
松本忠夫	熱帯から温帯にかけての食材性昆虫群集の変異とそれらの生態系における地位	
	一東アジアとオーストラリアの場合—	229-236

編集・発行	日本熱帯生態学会編集委員会 堀田満(編集委員長)
	〒890-0065 鹿児島市郡元1丁目21-35
	鹿児島大学理学部地球環境科学科(気付け)
	Tel. 099-285-8166 Fax 099-285-8172
	E-mail: hotta@sci.kagoshima-u.ac.jp
印刷	斯文堂株式会社 鹿児島市南栄3丁目1 Tel. 099-268-8211
印刷・発行日	2000年3月20日印刷 2000年3月25日発行



The TROPICS is issued quarterly with one volume a year. It is open either to the results of original research, experimental or descriptive, or significant reviews of various aspects of tropical regions. The journal publishes papers in all aspects of ecology and/or other fields of science related to ecology. It aims 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 young ecologists/scientists of tropical nations especially in Southeast Asia. All the members of the society can contribute to TROPICS, and invited articles may be accepted at the request of editorial board. Special issues may be published on occasion by permission of editorial board, as monographs or reviews exceed approximately 100 pages in length.

Editor-in-Chief: Mitsuru HOTTA

(Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University)

Editorial Board

Takuya ABE (Kyoto University)	Yusho ARUGA (Tokyo University of Fisheries)
Akio FURUKAWA (National Institute for Environmental Studies)	Toshitaka Iwamoto (Miyazaki University)
Takashi KOHYAMA (Hokkaido University)	Naoki KOYAMA (Kyoto University)
Narifumi MAEDA (Kyoto University)	Misa MASUDA (Tsukuba University)
David W. ROUBIK (Smithsonian Tropical Research Institute)	Katsutoshi SAKURAI (Kochi University)
Yo-Ichiro SATO (Shizuoka University)	Eizi SUZUKI [*] (Kagoshima University)
Isamu YAMADA (Kyoto University)	Takuo YAMAKURA (Osaka City University)
Seiki YAMANE (Kagoshima University)	Tsuyoshi YONEDA [*] (Osaka Kyoiku University)
SEIKI TAMANE (Ragosinina Chitolohy)	* secretaries of editorial board

Instructions to authors Two copies of manuscript, preferably in English (or Japanese), to be sent to the editors, typewritten on one side of paper, double-spaced, and with a wide margin. Underlinings to indicate letter types should be left to the editors. In addition to type-script copies, authors using word processing equipments are requested to submit a diskette or floppy disk with their text file. Preference is files in Microsoft Word for Macintosh, on double-sided 3.5 inch (DD, HD) diskettes. For texts processed on MS-DOS computers (preferably in MS-Word or Word Perfect), please submit double-sided (DD or HD) 3.5 inch floppy disks with the text saved as ASCII file.

The editors may ask the opinion of one or two reviewers before accepting or refusing the manuscript that has been submitted.

Summary. Each paper should be provided with a summary.

- Citation of literature. In the text as follows: (Primack, 1991) or Ashton (1991). In the 'References' as follows:
 - Primack, R. B. & Hall P. 1991. Species diversity research in Bornean forests with implications for conservation biology and silviculture. *Tropics* 1: 91-111.
 - Jacobs, M. 1974. Botanical panorama of the Malesian archipelago. In UNESCO, Natural Resources of Humid Tropical Asia, 263-294. Paris.
- **Illustrations** should be professionally drawn and lettered, or laser printed on smooth white paper. Photographs and color slides are also acceptable, but the author(s) will be charged for printing them in color.

Reprints. For articles with one author 50 copies free.

Manuscripts and correspondence concerning editorial matters should be addressed to Editorial Office of the Japan Society of Tropical Ecology, ^C/o Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University, Korimoto 1-21-35, Kagoshima 890-0065, Japan. Phone: (099) 285-8166 Fax: (099) 285-8172 E-mail: hotta@sci.kagoshima-u.ac.jp

General Office of the Japan Society of Tropical Ecology addressed to ^c/o Dr. T. Yamakura, Faculty of Science, Osaka City University, Sumiyashi-ku, Osaka 558-0022, Japan. Phone: (06) 6605-2582 Fax: 6605-2522

Vol. 9 No. 4

ISSN 0917-415X

May 2000



Shinya NUMATA, Naoki KACHI, Toshinori OKUDA & N. MANOKARAN
Leaf damage and traits of dipterocarp seedlings in a lowland rain forest
in Peninsular Malaysia 237-243
Keiichi HAYASHI, Oluwarotimi O. FASHOLA, Tsugiyuki MASUNAGA &
Toshiyuki WAKATSUKI Indigenous soil knowledge for sustainable
agricultural development in the Sahel Zone of Niger, West Africa 1. Soil
quality characterization of a small inland valley watershed 245-258
Keiichi HAYASHI, Oluwarotimi O. FASHOLA, Tsugiyuki MASUNAGA &
Toshiyuki WAKATSUKI Indigenous soil knowledge for sustainable
agricultural development in the Sahel Zone of Niger, West Africa 2.
Indigenous soil classification system
Savent PAMPASIT, Soontorn KHAMYONG, Gerhard BREULMANN, Ikuo
NINOMIYA & Kazuhiko OGINO Mineral element accumulation in soils
and trees in tropical hill evergreen forest, Northern Thailand 275-286
Savent PAMPASIT, Soontorn KHAMYONG, Gerhard BREULMANN, Ikuo
NINOMIYA & Kazuhiko OGINO Elements concentrations in tree species
of tropical hill evergreen forest, Northern, Thailand
Masahiro OTSUKA Challenges to land use intensification under
commercialization of local farming systems: A case from West
Sumatra, Indonesia

熱帯研究

第9卷 第4号

2000年5月

日本熱帯生態学会

目 次

	公開シンポジウム「熱帯と温帯の比較」	編集 大沢雅彦,原正利
沼田真也,	可知直毅,奥田敏統,N. MANOKARAN 半島 ガキ科植物稚樹の葉の食害と防御特性	マレーシア低地熱帯林に生育するフタバ ・・・・・、・・・・・・ 237-243
林慶一,	Oluwarotimi O. FASHOLA, 増永二之, 若月利之 能な農業開発のための伝統的な土壌分類法1, 内陸	
林慶一,	Oluwarotimi O. FASHOLA, 増永二之, 若月利之 能な農業開発のための伝統的な土壌分類法 2. 農民	
Savent PA	MPASIT, Soontorn KHAMYONG, Gerhard BREULMA 山地常緑林における土壌および樹木の無機元素蓄積	
Savent PA	MPASIT, Soontorn KHAMYONG, Gerhard BREULMA 山地常緑林における樹木の元素濃度......	
大塚雅裕	地域農業システムの商業主義化と土地集約化への	

編集・発行	日本熱帯生態学会編集委員会 堀田満(編集委員長)
	〒890-0065 鹿児島市郡元1丁目21-35
	鹿児島大学理学部地球環境科学科(気付け)
	Tel. 099-285-8166 Fax 099-259-4270
	E-mail: hotta@sci.kagoshima-u.ac.jp
印刷	斯文堂株式会社 鹿児島市南栄3丁目1 Tel. 099-268-8211
印刷・発行日	2000年5月15日印刷 2000年5月20日発行



The TROPICS is issued quarterly with one volume a year. It is open either to the results of original research, experimental or descriptive, or significant reviews of various aspects of tropical regions. The journal publishes papers in all aspects of ecology and/or other fields of science related to ecology. It aims 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 young ecologists/scientists of tropical nations especially in Southeast Asia. All the members of the society can contribute to TROPICS, and invited articles may be accepted at the request of editorial board. Special issues may be published on occasion by permission of editorial board, as monographs or reviews exceed approximately 100 pages in length.

Editor-in-Chief: Mitsuru HOTTA

(Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University)

Editorial Board

Takuya ABE (Kyoto University)	Yusho ARUGA (Tokyo University of Fisheries)
Akio FURUKAWA (National Institute for Environmental Studies)	Toshitaka Iwaмото (Miyazaki University)
Takashi KOHYAMA (Hokkaido University)	Naoki KOYAMA (Kyoto University)
Narifumi MAEDA (Kyoto University)	Misa MASUDA (Tsukuba University)
David W. ROUBIK (Smithsonian Tropical Research Institute)	Katsutoshi SAKURAI (Kochi University)
Yo-Ichiro SATO (Shizuoka University)	Eizi SUZUKI [*] (Kagoshima University)
Isamu YAMADA (Kyoto University)	Takuo YAMAKURA (Osaka City University)
Seiki YAMANE (Kagoshima University)	Tsuyoshi YONEDA [*] (Osaka Kyoiku University)
	* secretaries of editorial board

Instructions to authors Two copies of manuscript, preferably in English (or Japanese), to be sent to the editors, typewritten on one side of paper, double-spaced, and with a wide margin. Underlinings to indicate letter types should be left to the editors. In addition to type-script copies, authors using word processing equipments are requested to submit a diskette or floppy disk with their text file. Preference is files in Microsoft Word for Macintosh, on double-sided 3.5 inch (DD, HD) diskettes. For texts processed on MS-DOS computers (preferably in MS-Word or Word Perfect), please submit double-sided (DD or HD) 3.5 inch floppy disks with the text saved as ASCII file.

The editors may ask the opinion of one or two reviewers before accepting or refusing the manuscript that has been submitted.

Summary. Each paper should be provided with a summary.

- Citation of literature. In the text as follows: (Primack, 1991) or Ashton (1991). In the 'References' as follows:
 - Primack, R. B. & Hall P. 1991. Species diversity research in Bornean forests with implications for conservation biology and silviculture. *Tropics* 1: 91-111.
 - Jacobs, M. 1974. Botanical panorama of the Malesian archipelago. In UNESCO, Natural Resources of Humid Tropical Asia, 263-294. Paris.
- **Illustrations** should be professionally drawn and lettered, or laser printed on smooth white paper. Photographs and color slides are also acceptable, but the author(s) will be charged for printing them in color.

Reprints. For articles with one author 50 copies free.

Manuscripts and correspondence concerning editorial matters should be addressed to Editorial Office of the Japan Society of Tropical Ecology, ^C/o Department of Earth and Environmental Sciences, Faculty of Science, Kagoshima University, Korimoto 1-21-35, Kagoshima 890-0065, Japan. Phone: + 91 - (0) 99 - 285 - 8166 Fax:+ 91 - (0) 99 - 259 - 4720 E-mail: hotta@sci.kagoshima-u.ac,jp

General Office of the Japan Society of Tropical Ecology addressed to ^C/o Dr. T. Yamakura, Faculty of Science, Osaka City University, Sumiyashi-ku, Osaka 558-0022, Japan. Phone: + 91 - (0) 6 - 6605-2582 Fax: 6605-2522