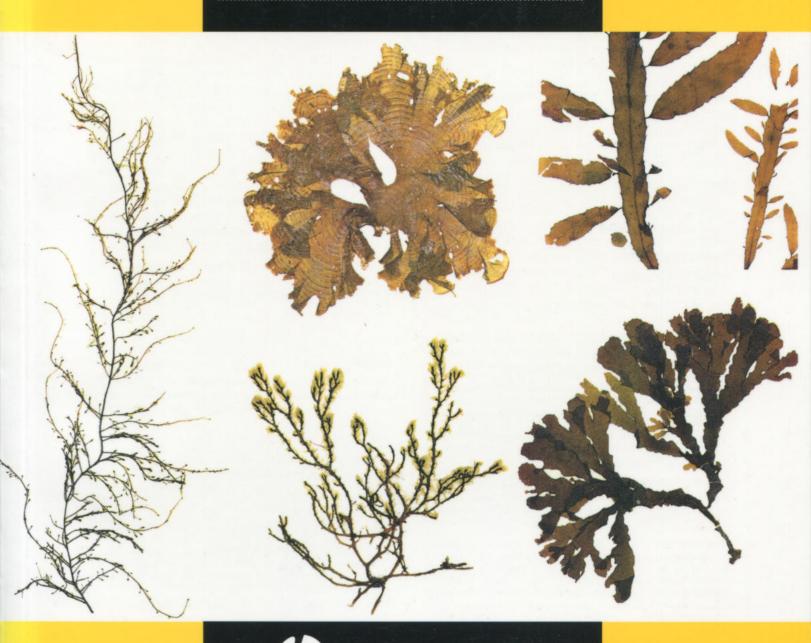
Phycological Research

Volume 51 · Issue 3 · September 2003

ISSN 1322-0829



Blackwell Publishing

The Japanese Society of Phycology

Phycological Research

EDITOR-IN-CHIEF

Kazuo Okuda

Kochi University, Kochi, Japan

ASSOCIATE EDITORS

Antonio Flores-Moya Faculty of Science University of Málaga Spain

Daisuke Fujita
Department of Aquatic
Biosciences
Tokyo University of
Fisheries
Japan

Gert Hansen Botanical Institute University of Copenhagen Denmark Ken-ichiro Ishida Faculty of Science Kanazawa University Japan Ulf Karsten Institute of Aquatic Ecology - Applied Ecology - University of Rostock Germany

Christos Katsaros Faculty of Biology University of Athens Greece

Jeong Ha Kim Department of Biological Sciences Sungkyunkwan University Korea Gwang Hoon Kim Department of Biology Kongju National University Korea Kazuhiro Kogame Graduate School of Science Hokkaido University Japan John W. La Claire II Section of Molecular Cell and Developmental Biology University of Texas at Austin USA

Ichiro Mine Faculty of Science Kochi University Japan

Taizo Motomura Field Science Center for Northern Biosphere Hokkaido University Japan Orlando Necchi Jr. Zoology and Botany Department São Paulo State Universtiy Brazil

Hisayoshi Nozaki Graduate School of Science University of Tokyo Japan John West School of Botany University of Melbourne Australia

Giuseppe C. Zuccarello National Herbarium Netherlands University of Leiden The Netherlands

EDITORIAL ADVISORY BOARD

Yuji Fujita *Nagasaki, Japan* Terumitsu Hori *Tsukuba, Japan* Takeo Horiguchi *Hokkaido, Japan* Ichiro Imai *Kyoto, Japan* Hironao Kataoka *Sendai, Japan* Hiroshi Kawai *Kobe, Japan* Dieter G. Müller *Konstanz, Germany* Masao Ohno *Kochi, Japan* Megumi Okazaki *Tokyo, Japan* Robert Sheath *Guelph, Canada* Makoto M. Watanabe *Tsukuba, Japan* Yasutsugu Yokohama *Shizugawa, Japan* Isao Inouye *Tsukuba, Japan*

PRODUCTION EDITOR

Rose Williams rose.williams@blackwellpublishingasia.com

This journal is also published online at www.blackwell-synergy.com

AIMS AND SCOPE Phycological Research is published by the Japanese Society of Phycology and complements the Japanese Journal of Phycology. The journal publishes international, peer-reviewed research dealing with all aspects of phycology to facilitate the international exchange of results. All articles are peer-reviewed by at least two researchers expert in the field of the submitted paper. Phycological Research has been credited by the International Association for Plant Taxonomy for the purpose of registration of new non-vascular plant names (including fossils). For further information see http://bgbm3.bgbm.fu-berlin.de/iapt/registration/journals/htm.

ABSTRACTING AND INDEXING SERVICES The journal is indexed by BIOSIS Database, Cambridge Scientific Abstracts, Chemical Abstracts Service, Ecological Abstracts, EMBASE/Excerpta Medica, GEOBASE, UnCover, University Microfilms and Zoological Record.

THE JAPANESE SOCIETY OF PHYCOLOGY We invite anyone who is interested in any aspect of phycology to become a member of the Society. As a member you will receive *Phycological Research* and the *Japanese Journal of Phycology* free of charge. The annual membership fee for individuals ¥8000. (Members who reside outside Japan will receive only the English language journal *Phycological Research* and the annual membership fee is ¥7000 (standard), ¥5000 (student).)

Those who wish to join the Society should send the application form (at the back of each issue of the journal), together with

payment, to the Membership Secretary: Dr Ichiro Mine, at the address given on the form. Members who wish to claim for missing or damaged issues should contact the Membership Secretary.

ADDRESS FOR EDITORIAL CORRESPONDENCE Kazuo Okuda, Department of Natural Environmental Science, Faculty of Science, Kochi University, Kochi 780-8520, Japan (email okuda@cc.kochi-u.ac.jp).

DISCLAIMER The Publisher, Society and Editors cannot be held responsible for errors or any consequences arising from the use of information contained in this journal; the views and opinions expressed do not necessarily reflect those of the Publisher, Society and Editors, neither does the publication of advertisements constitute any endorsement by the Publisher, Society and Editors of the products advertised.

This journal is printed on acid-free paper.

© 2003 Japanese Society of Phycology.

Publication of *Phycological Research* has been supported by a Grant-in-Aid for Publication of Scientific Research Results from the Japan Society for the Promotion of Science.

Cover Brown algae from the Hawaiian Islands. Clockwise from left: Sporochnus moorei Harvey, Padina moffittiana Abbott et Huisman, sp. nov., Desmarestia ligulata (Lightfoot) Lamouroux, Spatoglossum macrodontum J. Agardh, Nereia intricata Yamada. See Abbott & Huisman in this issue.

For submission instructions, subscription and all other information visit www.blackwellpublishing.com/journals/pre

ISSN 1322-0829 (Print) ISSN 1440-183 (Online)

The Japanese Society of Phycology

Officers for 2003-2004

President: Yoshiaki Hara, Faculty of Science, Yamagata University, Yamagata 990-8560, Japan Secretary: Tasuku Hishinuma, Faculty of Science,

Secretary: Tasuku Hishinuma, Faculty of Science, Yamagata University, Yamagata 990-8560, Japan Membership secretary: Ichiro Mine, Faculty of Science, Kochi University, Kochi 780-8520, Japan Treasurer: Akiko Yokoyama, Faculty of Science, Yamagata University, Yamagata 990-8560, Japan.

Members of Executive Council 2003-2004

Hideomi Amano Mie University
Daisuke Fujita Toyama Prefectural Government
Yuji Fujita Nagasaki University
Ichiro Imai Kyoto University
Isao Inoue University of Tsukuba
Hironao Kataoka Tohoku University
Shigeo Kawaguchi Kyushu University
Miyuki Maegawa Mie University
Shigeki Mayama Tokyo Gakugei University
Taizo Motomura Hokkaido University

Hiroyuki Nakahara Kyoto University
Kazuo Okuda Kochi University
Naotsune Saga Hokkaido University
Jiro Tanaka Tokyo University of Fisheries
Toshinobu Terawaki National Research Institute of
Fisheries and Environment of Inland Sea
Yasutsugu Yokohama Shizugawa Nature Center
Makoto Yoshizaki Toho University
Makoto M. Watanabe National Institute for
Environmental Studies

JOIN THE JAPANESE SOCIETY OF PHYCOLOGY AND RECEIVE FOUR ISSUES OF PHYCOLOGICAL RESEARCH PER YEAR FREE OF CHARGE

The Japanese Society of Phycology, founded in 1952, currently has 760 members (including 105 overseas members). The Society is open to anyone who is interested in pure or applied aspects of phycology.

Application for membership (Please type or write in block letters) Membership starts from 2003 (Given name and initials) Name in full: (Family name) Mailing address: _____ (Postal code) (Country) Telephone: Fax:____ Interests: E-mail: Date: The annual fee for individual members is ¥8000 (¥7000 for members who reside outside Japan, ¥5000 for students who submit a verifying statement signed by their Chairperson or Head of Department) ☐ Visa ☐ MasterCard ☐ American Express Payment by: Card number: ______ Expiry date: _____ Signature: ☐ International giro postal transfer (Postal Account No.: 01320-4-48748) ☐ International postal money order Send application form to: Dr Ichiro Mine Faculty of Science

Faculty of Science Kochi University 2-5-1 Akebono-cho, Kochi 780-8520, Japan

Fax: +81 88 844 8356; email:jsphycol@anet.ne.jp

Phycological Research

Volume 51 • Issue 3 • September 2003	
Shinichi Miyamura, Terumitsu Hori and Tamotsu Nagumo Research note: Eyespot behavior during the fertilization of gametes in Ulva arasakii Chihara (Ulvophyceae, Chlorophyta)	143
Marinela I. Anderca, Takuya Furuichi and Shoshi Muto Mitochondrial NDP kinase from Dunaliella tertiolecta (Chlorophyceae, Chlorophyta)	147
Teruwo Morita, Akira Kurashima and Miyuki Maegawa Temperature requirements for the growth and maturation of the gametophytes of Undaria pinnatifida and U. undarioides (Laminariales, Phaeophyceae)	154
Masanori Hiraoka, Satoshi Shimada, Yukihiko Serisawa, Masao Ohno and Hiroki Ebata Two different genetic strains of stalked-Ulva (Ulvales, Chlorophyta) grow on intertidal rocky shores in Ebisujima, central Japan	161
Yasuhiro Kashino and Sakae Kudoh Concerted response of xanthophyll-cycle pigments in a marine diatom, Chaetoceros gracilis, to shifts in light condition	168
Isabella A. Abbott and John M. Huisman New species, observations, and a list of new records of brown algae (Phaeophyceae) from the Hawaiian Islands	173
Tetsu Hirata, Jiro Tanaka, Tetsuo Iwami, Takashi Ohmi, Akihiro Dazai, Masakazu Aoki, Hajime Ueda, Yasutaka Tsuchiya, Toshihiko Sato and Yasutsugu Yokohama Ecological studies on the community of drifting seaweeds in the south-eastern coastal waters of Izu Peninsula, central Japan. II: Seasonal changes in plants showing maximum stipe length in drifting seaweed communities	186
Hideaki Sasaki, Sandra C. Lindstrom, J. Robert Waaland and Hiroshi Kawai Occurrence of the gametophyte of Agarum clathratum (Laminariales, Phaeophyceae) as an endophyte in Orculifilum denticulatum (Gigartinales, Rhodophyceae)	192
Shinji Handa, Miho Nakahara, Hiromi Tsubota, Hironori Deguchi and Taketo Nakano A new aerial alga, Stichococcus ampulliformis sp. nov. (Trebouxiophyceae, Chlorophyta) from Japan	203
Sandra C. Lindstrom and Suzanne Fredericq rbcL gene sequences reveal relationships among north-east Pacific species of Porphyra (Bangiales, Rhodophyta) and a new species, P. aestivalis	211

