

Flora of North America

Contributors to Volume 12

William R. Anderson†
W. Scott Armbruster
Peter W. Ball
Paul E. Berry
David E. Boufford
Joshua M. Brokaw
N. Ivalú Cacho
Bijan Dehgan
J. Arturo De-Nova
Craig C. Freeman
Dmitry V. Geltman
Lynn J. Gillespie
W. John Hayden
James Henrickson
Petra Hoffmann
Larry D. Hufford
Michael J. Huft
Donald H. Les

Geoffrey A. Levin
Jin-shuang Ma
Mark Mayfield
Ronald L. Mcgregor†
Michael O. Moore†
Jeffery J. Morawetz
Nancy R. Morin
Zack E. Murrell
Guy L. Nesom
Daniel L. Nickrent
Christopher F. Nixon†
Tracy J. Park
Jess A. Peirson
Derick B. Poindexter
Duncan M. Porter
Yocupitzia Ramírez-Amezcu
Hamid Razifard
Ricarda Riina

Dayle E. Saar
John O. Sawyer†
John J. Schenk
Clifford L. Schmidt†
Beryl B. Simpson
Victor W. Steinmann
Gordon C. Tucker
Roberto J. Urtecho
Benjamin W. van Ee
Michael A. Vincent
Maria S. Vorontsova
Alan S. Weakley
Jun Wen
R. David Whetstone
Dieter H. Wilken
Kenneth J. Wurdack
Ya Yang

Editors for Volume 12

David E. Boufford
Taxon Editor for Cervantesiaceae,
Comandraceae, Santalaceae,
Schoepfiaceae, Thesiaceae,
Viscaceae, and Ximeniaceae, and
Co-Taxon Editor for Celastraceae

Luc Brouillet
Taxon Editor for Chrysobalanaceae

Kanchi Gandhi
Nomenclatural Editor

David E. Giblin
Taxon Editor for Linaceae

Lynn Gillespie
Co-Lead Editor, Taxon Editor for
Phyllanthaceae, Picrodendraceae,
Putranjivaceae, Rhizophoraceae,
and Vitaceae, and Co-Taxon Editor
for Euphorbiaceae

Cassandra L. Howard
Assisting Technical Editor

Robert W. Kiger
Bibliographic Editor and Taxon
Editor for Elatinaceae

Geoffrey A. Levin
Co-Lead Editor, Taxon Editor
for Cornaceae, Eucommiaceae,
Garryaceae, Loasaceae,
Malpighiaceae, Nyssaceae,
Simmondsiaceae, and
Zygophyllaceae, and Co-Taxon
Editor for Euphorbiaceae

Jackie M. Poole
Taxon Editor for Krameriaceae

Andrew C. Pryor
Technical Editor

Richard K. Rabeler
Taxon Editor for Hydrangeaceae

Heidi H. Schmidt
Managing Editor

John L. Strother
Reviewing Editor

Debra K. Trock
Taxon Editor for Rhamnaceae

Gordon C. Tucker
Taxon Editor for Oxalidaceae

Grady L. Webster†
Preliminary Taxon Editor for
Euphorbiaceae, Phyllanthaceae,
Picrodendraceae, and
Putranjivaceae

Elizabeth F. Wells
Co-Taxon Editor for Celastraceae

James L. Zarucchi
Editorial Director

Volume 12 Composition

Kristin Pierce
Compositor and Editorial Assistant

Heidi H. Schmidt
Production Coordinator and
Managing Editor

Flora of North America
North of Mexico

Edited by FLORA OF NORTH AMERICA EDITORIAL COMMITTEE

VOLUME 12

Magnoliophyta: Vitaceae to Garryaceae

Oxford University Press is a department of the University of Oxford.
It furthers the University's objective of excellence in research,
scholarship, and education by publishing worldwide.

Oxford New York
Auckland Cape Town Dar es Salaam Hong Kong Karachi Kuala Lumpur
Madrid Melbourne Mexico City Nairobi New Delhi Shanghai Taipei Toronto

With offices in
Argentina Austria Brazil Chile Czech Republic France Greece Guatemala Hungary Italy
Japan Poland Portugal Singapore South Korea Switzerland Thailand Turkey Ukraine Vietnam

Oxford is a registered trademark of Oxford University Press in the UK and certain other countries.

Published by Oxford University Press, Inc.
198 Madison Avenue, New York, New York 10016
www.oup.com

Copyright © 2016 by Flora of North America Association
Frontispiece art *Euphorbia marginata* by Barbara Alongi © 5/01/2016 all rights reserved
Vitaceae illustrations copyright © 2016 by Smithsonian Institution
Malpighiaceae illustrations copyright © 2016 by University of Michigan Herbarium

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior written permission of the Flora of North America Association, or as expressly permitted by law, by license, or under terms agreed with the appropriate reproduction rights organization. Inquiries concerning reproduction outside the scope of the above should be sent to the Flora of North America Association.

You must not circulate this work in any other form and you must impose this same condition on any acquirer.

Library of Congress Cataloging-in-Publication Data
(Revised for Volume 12)
Flora of North America North of Mexico
edited by Flora of North America Editorial Committee.
Includes bibliographical references and indexes.
Contents: v. 1. Introduction—v. 2. Pteridophytes and gymnosperms—
v. 3. Magnoliophyta: Magnoliidae and Hamamelidae—
v. 22. Magnoliophyta: Alismatidae, Arecidae, Commelinidae (in part), and Zingiberidae—
v. 26. Magnoliophyta: Liliidae: Liliales and Orchidales—
v. 23. Magnoliophyta: Commelinidae (in part): Cyperaceae—
v. 25. Magnoliophyta: Commelinidae (in part): Poaceae, part 2—
v. 4. Magnoliophyta: Caryophyllidae (in part): part 1—
v. 5. Magnoliophyta: Caryophyllidae (in part): part 2—
v. 19, 20, 21. Magnoliophyta: Asteridae (in part): Asteraceae, parts 1–3—
v. 24. Magnoliophyta: Commelinidae (in part): Poaceae, part 1—
v. 27. Bryophyta, part 1—
v. 8. Magnoliophyta: Paeoniaceae to Ericaceae—
v. 7. Magnoliophyta: Salicaceae to Brassicaceae—
v. 28. Bryophyta, part 2—
v. 9. Magnoliophyta: Picramniaceae to Rosaceae—
v. 6. Magnoliophyta: Cucurbitaceae to Droseraceae—
v. 12. Magnoliophyta: Vitaceae to Garryaceae

ISBN: 978-0-19-064372-0 (v. 12)
1. Botany—North America.
2. Botany—United States.
3. Botany—Canada.

I. Flora of North America Editorial Committee.
QK110.F55 2002 581.97 92-30459

1 2 3 4 5 6 7 8 9
Printed in the United States of America on acid-free paper

Contents

<i>Dedication</i>	vii
<i>Founding Member Institutions</i>	viii
<i>Donors</i>	ix
<i>Art Sponsorship</i>	x
<i>Editorial Committee</i>	xi
<i>Project Staff</i>	xii
<i>Contributors</i>	xiii
<i>Taxonomic Reviewers</i>	xv
<i>Regional Reviewers</i>	xv
<i>Preface</i>	xviii
<i>Introduction</i>	xix

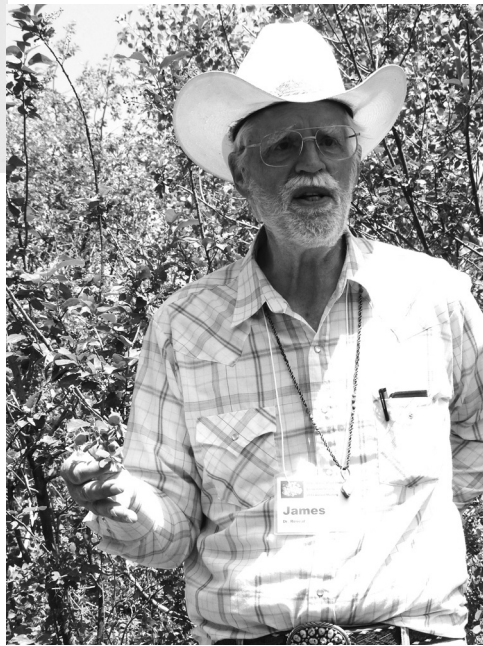
Vitaceae	3
Krameriaceae	24
Zygophyllaceae	28
Rhamnaceae	43
Celastraceae	111
Oxalidaceae	133
Rhizophoraceae	154
Euphorbiaceae	156
Picrodendraceae	325
Phyllanthaceae	328
Elatinaceae	348
Malpighiaceae	354
Chrysobalanaceae	365
Putranjivaceae	368
Linaceae	371
Ximeniaceae	404
Schoepfiaceae	406
Comandraceae	408
Thesiaceae	413
Cervantesiaceae	417
Santalaceae	419
Viscaceae	422
Simmondsiaceae	441
Cornaceae	443
Nyssaceae	458
Hydrangeaceae	462
Loasaceae	491
Eucommiaceae	546
Garryaceae	548

Literature Cited 555

Index 584



Courtesy of Hunt Institute for Botanical Documentation,
Carnegie Mellon University, Pittsburgh, Pennsylvania.
Photograph by Walter Henricks Hodge.



Courtesy of Hunt Institute for Botanical Documentation,
Carnegie Mellon University, Pittsburgh, Pennsylvania.
Photograph by Loraine Yeatts.

This volume is dedicated to the memory of our friend
and esteemed colleague
James Lauritz Reveal
1941 – 2015
eminent student of North American botany
and major contributor to the
Flora of North America project.

FOUNDING MEMBER INSTITUTIONS

Flora of North America Association

Agriculture and Agri-Food Canada <i>Ottawa, Ontario</i>	Kansas State University <i>Manhattan, Kansas</i>	University of Idaho <i>Moscow, Idaho</i>
Arnold Arboretum <i>Jamaica Plain, Massachusetts</i>	Missouri Botanical Garden <i>St. Louis, Missouri</i>	University of Illinois <i>Urbana-Champaign, Illinois</i>
Canadian Museum of Nature <i>Ottawa, Ontario</i>	New Mexico State University <i>Las Cruces, New Mexico</i>	University of Iowa <i>Iowa City, Iowa</i>
Carnegie Museum of Natural History <i>Pittsburgh, Pennsylvania</i>	The New York Botanical Garden <i>Bronx, New York</i>	The University of Kansas <i>Lawrence, Kansas</i>
Field Museum of Natural History <i>Chicago, Illinois</i>	New York State Museum <i>Albany, New York</i>	University of Michigan <i>Ann Arbor, Michigan</i>
Fish and Wildlife Service United States Department of the Interior <i>Washington, D.C.</i>	Northern Kentucky University <i>Highland Heights, Kentucky</i>	University of Oklahoma <i>Norman, Oklahoma</i>
Harvard University Herbaria <i>Cambridge, Massachusetts</i>	Université de Montréal <i>Montréal, Québec</i>	University of Ottawa <i>Ottawa, Ontario</i>
Hunt Institute for Botanical Documentation Carnegie Mellon University <i>Pittsburgh, Pennsylvania</i>	University of Alaska <i>Fairbanks, Alaska</i>	University of Southwestern Louisiana <i>Lafayette, Louisiana</i>
Jacksonville State University <i>Jacksonville, Alabama</i>	University of Alberta <i>Edmonton, Alberta</i>	The University of Texas <i>Austin, Texas</i>
Jardin Botanique de Montréal <i>Montréal, Québec</i>	The University of British Columbia <i>Vancouver, British Columbia</i>	University of Western Ontario <i>London, Ontario</i>
	University of California <i>Berkeley, California</i>	University of Wyoming <i>Laramie, Wyoming</i>
	University of California <i>Davis, California</i>	Utah State University <i>Logan, Utah</i>

*For their support of the preparation of this volume,
we gratefully acknowledge and thank:*

Franklinia Foundation

The Philecology Foundation

The Andrew W. Mellon Foundation

The David and Lucile Packard Foundation

an anonymous foundation

Chanticleer Foundation

The Stanley Smith Horticultural Trust

Hall Family Charitable Fund

WEM Foundation

William T. Kemper Foundation

*For sponsorship of illustrations included in this volume,
we express sincere appreciation to:*

Erick M. Adams, Olympia, Washington
Cornus canadensis, Cornaceae

Mac Alford, Hattiesburg, Mississippi
Berchemia scandens, Rhamnaceae – in honor of E. Earl Alford and M. Pauline Alford

Arizona Native Plant Society
Jamesia americana, Hydrangeaceae

Richard Carter, Valdosta, Georgia
Lepuropetalon spathulatum, Celastraceae – in memory of Angus Kemp Gholson, Jr.
Licania michauxii, Chrysobalanaceae – in memory of Wayne Reynolds Faircloth
Cornus florida, Cornaceae – in memory of Jim Ella Wells Aden
Stillingia sylvatica, Euphorbiaceae – in memory of Oneita Wells Keith
Hydrangea quercifolia, Hydrangeaceae – in memory of Bessie May Wells

Christopher Davidson and Sharon Christoph, Botanical Research Foundation of Idaho, Boise
Mortonia scabrella, Celastraceae
Parnassia palustris, Celastraceae
Paxistima canbyi, Celastraceae
Pyrolaria pubera, Cervantesiaceae
Cornus sericea, Cornaceae
Comandra umbellata, Comandraceae
Eucnide urens, Loasaceae
Petalonyx nitidus, Loasaceae
Simmondsia chinensis, Simmondsiaceae
Buckleya distichophylla, Thesiaceae

David Giblin, Seattle, Washington
Linum lewisii, Linaceae

Huntington Botanical Garden, San Marino, California
Euphorbia, Euphorbiaceae
Volume 12 Frontispiece, *Euphorbia marginata*, Euphorbiaceae

Geoffrey A. Levin, Champaign, Illinois
Acalypha californica, Euphorbiaceae
Acalypha ostryifolia, Euphorbiaceae
Acalypha rhomboidea, Euphorbiaceae
Phyllanthus abnormis, Phyllanthaceae
Phyllanthus caroliniensis, Phyllanthaceae
Phyllanthus polygonoides, Phyllanthaceae

Naples Botanical Garden, Naples, Florida
Hippocratea volubilis, Celastraceae

Nevada Native Plant Society, Reno, Nevada
Mentzelia laevicaulis, Loasaceae

Smithsonian Institution, National Museum of Natural History, Botany Department
Vitaceae

University of Michigan Herbarium, Ann Arbor
Malpighiaceae

Christopher Woods, Benicia, California
Carpenteria californica, Hydrangeaceae

VASCULAR PLANTS

Kerry A. Barringer
Taxon Editor
Jersey City, New Jersey

David E. Boufford
*Taxon Editor and Regional
Coordinator,*
Northeastern United States
Harvard University Herbaria
Cambridge, Massachusetts

Luc Brouillet
*Taxon Editor and Regional
Coordinator,*
Eastern Canada and Greenland
Institut de recherche en biologie
végétale
Université de Montréal
Montréal, Québec

Wayne J. Elisens
University of Oklahoma
Norman, Oklahoma

Bruce A. Ford
*Taxon Editor and Regional
Coordinator,*
Western Canada
University of Manitoba
Winnipeg, Manitoba

Craig C. Freeman
*Taxon Editor and Regional
Coordinator,*
North Central United States
R. L. McGregor Herbarium
The University of Kansas
Lawrence, Kansas

Kanchi Gandhi
Nomenclatural Editor
Harvard University Herbaria
Cambridge, Massachusetts

David E. Giblin
Taxon Editor
University of Washington
Seattle, Washington

Lynn Gillespie
Taxon Editor
Canadian Museum of Nature
Ottawa, Ontario

Michael J. Huft
Taxon Editor
Valparaiso, Indiana

Steffi M. Ickert-Bond
Regional Coordinator,
Alaska and Yukon
University of Alaska,
Museum of the North
Fairbanks, Alaska

Robert W. Kiger
Bibliographic and Taxon Editor
Hunt Institute for Botanical
Documentation
Carnegie Mellon University
Pittsburgh, Pennsylvania

Alexander Krings
Taxon Editor
North Carolina State University
Raleigh, North Carolina

Thomas G. Lammers
Taxon Editor
University of Wisconsin
Oshkosh
Oshkosh, Wisconsin

Geoffrey A. Levin
Taxon Editor
Illinois Natural History Survey
Champaign, Illinois

Barney L. Lipscomb
*Botanical Research Institute of
Texas*
Fort Worth, Texas

James A. Macklin
*Agriculture and Agri-Food
Canada*
Ottawa, Ontario

Gerry Moore
Liason to Governmental Agencies
United States Department of
Agriculture
Greensboro, North Carolina

Nancy R. Morin
*Taxon Editor and Regional
Coordinator,*
Southwestern United States
Point Arena, California

Mare Nazaire
Taxon Editor
Rancho Santa Ana Botanic
Garden
Claremont, California

Jackie M. Poole
*Taxon Editor and Regional
Coordinator,*
South Central United States
University of Texas at Austin
Austin, Texas

Richard K. Rabeler
Taxon Editor
University of Michigan
Ann Arbor, Michigan

Yury Roskov
Illinois Natural History Survey
Champaign, Illinois

Heidi H. Schmidt
Managing Editor
Missouri Botanical Garden
St. Louis, Missouri

John L. Strother
Reviewing and Taxon Editor
University of California
Berkeley, California

Janet R. Sullivan
Taxon Editor
University of New Hampshire
Durham, New Hampshire

Gordon C. Tucker
Taxon Editor
Eastern Illinois University
Charleston, Illinois

Michael A. Vincent
Taxon Editor
Miami University
Oxford, Ohio

Alan S. Weakley
*Taxon Editor and Regional
Coordinator,*
Southeastern United States
University of North Carolina
Chapel Hill, North Carolina

George Yatskievych
Taxon Editor
The University of Texas at
Austin
Austin, Texas

James L. Zarucchi
Editorial Director
Missouri Botanical Garden
St. Louis, Missouri

BRYOPHYTES

Terry T. McIntosh
Taxon Editor
University of British Columbia
Vancouver, British Columbia

Dale H. Vitt
Taxon Editor
Southern Illinois University
Carbondale, Illinois

David H. Wagner
Taxon Editor
Northwest Botanical Institute
Eugene, Oregon

Alan T. Whittemore
Taxon Editor
United States National
Arboretum
Washington, DC

Richard H. Zander
*Bryophyte Coordinator and
Taxon Editor*
Missouri Botanical Garden
St. Louis, Missouri

Emeritus/a Members of the Editorial Committee

George W. Argus
Merrickville, Ontario

Mary E. Barkworth
Logan, Utah

Marshall R. Crosby
St. Louis, Missouri

Claudio Delgadillo M.
Mexico City, Mexico

Marie L. Hicks
Moab, Utah

Marshall C. Johnston
Austin, Texas

Aaron I. Liston
Corvallis, Oregon

John McNeill
Edinburgh, Scotland

Barbara M. Murray
Fairbanks, Alaska

David F. Murray
Fairbanks, Alaska

J. Scott Peterson
Baton Rouge, Louisiana

Alan R. Smith
Berkeley, California

Richard W. Spellenberg
Las Cruces, New Mexico

Lloyd R. Stark
Las Vegas, Nevada

Barbara M. Thiers
Bronx, New York

Rahmona A. Thompson
Ada, Oklahoma

Frederick H. Utech
Pittsburgh, Pennsylvania

*Project Staff — past and present
involved with the preparation of Volume 12*

Barbara Alongi, *Illustrator*
Burgund Bassüner, *Information Coordinator*
Ariel S. Buback, *Editorial Assistant*
Trisha K. Distler, *GIS Analyst*
Karin Douthit, *Illustrator*
Pat Harris, *Editorial Assistant*
Linny Heagy, *Illustrator*
Cassandra L. Howard, *Assisting Technical Editor*
Ruth T. King, *Editorial Assistant*
Marjorie C. Leggitt, *Illustrator*
John Myers, *Illustrator and Illustration Composer*
Kristin Pierce, *Editorial Assistant and Composer*
Andrew C. Pryor, *Technical Editor*
Hong Song, *Programmer*
Alice Tangerini, *Illustrator*
Yevonn Wilson-Ramsey, *Illustrator*

Contributors to Volume 12

William R. Anderson†
University of Michigan
Ann Arbor, Michigan

W. Scott Armbruster
University of Portsmouth
Portsmouth, England

Peter W. Ball
University of Toronto
Mississauga, Ontario

Paul E. Berry
University of Michigan
Ann Arbor, Michigan

David E. Boufford
Harvard University Herbaria
Cambridge, Massachusetts

Joshua M. Brokaw
Abilene Christian University
Abilene, Texas

N. Ivalú Cacho
University of California, Davis
Davis, California

Bijan Dehgan
University of Florida
Gainesville, Florida

J. Arturo De-Nova
Universidad Nacional Autónoma
de México
Mexico City, Mexico

Craig C. Freeman
The University of Kansas
Lawrence, Kansas

Dmitry V. Geltman
V. L. Komarov Botanical Institute
St. Petersburg, Russia

Lynn J. Gillespie
Canadian Museum of Nature
Ottawa, Ontario

W. John Hayden
University of Richmond
Richmond, Virginia

James Henrickson
The University of Texas at Austin
Austin, Texas

Petra Hoffmann
Royal Botanic Gardens
Kew, Richmond, Surrey, England

Larry D. Hufford
Washington State University
Pullman, Washington

Michael J. Huft
Valparaiso, Indiana

Donald H. Les
University of Connecticut
Storrs, Connecticut

Geoffrey A. Levin
Illinois Natural History Survey
Champaign, Illinois

Jin-shuang Ma
Shanghai Chenshan Botanical
Garden
Shanghai, People's Republic of
China

Mark Mayfield
Kansas State University
Manhattan, Kansas

Ronald L. McGregor†
The University of Kansas
Lawrence, Kansas

Michael O. Moore†
University of Georgia
Athens, Georgia

Jeffery J. Morawetz
Rancho Ana Botanic Garden
Claremont, California

Nancy R. Morin
Point Arena, California

Zack E. Murrell
Appalachian State University
Boone, North Carolina

Guy L. Nesom
Fort Worth, Texas

Daniel L. Nickrent
*Southern Illinois University-
Carbondale*
Carbondale, Illinois

Christopher F. Nixon†
*Anniston Museum of Natural
History*
Anniston, Alabama

Tracy J. Park
Eastern Illinois University
Charleston, Illinois

Jess A. Peirson
University of Michigan
Ann Arbor, Michigan

Derick B. Poindexter
*The University of North Carolina
at Chapel Hill*
Chapel Hill, North Carolina

Duncan M. Porter
*Virginia Polytechnic Institute and
State University*
Blacksburg, Virginia

Yocupitzia Ramírez-Amezcu
Instituto de Ecología
Pátzcuaro, Michoacán, Mexico

Hamid Razifard
University of Connecticut
Storrs, Connecticut

Ricarda Riina
Real Jardín Botánico de Madrid
Madrid, Spain

Dayle E. Saar
Murray State University
Murray, Kentucky

John O. Sawyer†
Humboldt State University
Arcata, California

John J. Schenk
Georgia Southern University
Statesboro, Georgia

Clifford L. Schmidt†
Salem, Oregon

Beryl B. Simpson
The University of Texas at Austin
Austin, Texas

Victor W. Steinmann
Instituto de Ecología
Pátzcuaro, Michoacán, Mexico

Gordon C. Tucker
Eastern Illinois University
Charleston, Illinois

Roberto J. Urtecho
College of the Sequoias
Visalia, California

Benjamin W. van Ee
*University of Puerto Rico-
Mayagüez*
Mayagüez, Puerto Rico

Michael A. Vincent
Miami University
Oxford, Ohio

Maria S. Vorontsova
Royal Botanic Gardens
Kew, Richmond, Surrey, England

Alan S. Weakley
*The University of North Carolina
at Chapel Hill*
Chapel Hill, North Carolina

Jun Wen
*National Museum of Natural
History*
Smithsonian Institution
Washington, DC

R. David Whetstone
Jacksonville State University
Jacksonville, Alabama

Dieter H. Wilken
Santa Barbara Botanic Garden
Santa Barbara, California

Kenneth J. Wurdack
*National Museum of Natural
History*
Smithsonian Institution
Washington, DC

Ya Yang
University of Michigan
Ann Arbor, Michigan

Taxonomic Reviewers

W. John Hayden
University of Richmond
Richmond, Virginia

James Henrickson
The University of Texas at Austin
Austin, Texas

Larry D. Hufford
Washington State University
Pullman, Washington

Michael J. Huft
Valparaiso, Indiana

Alison J. Miller
Saint Louis University
St. Louis, Missouri

Amy Pool
Missouri Botanical Garden
St. Louis, Missouri

Kenneth J. Wurdack
National Museum of Natural
History
Smithsonian Institution
Washington, DC

Regional Reviewers

ALASKA / YUKON

Bruce Bennett
Yukon Department of
Environment
Whitehorse, Yukon

Robert Lipkin
Alaska Natural Heritage Program
University of Alaska
Anchorage, Alaska

David F. Murray
University of Alaska
Museum of the North
University of Alaska Fairbanks
Fairbanks, Alaska

Carolyn Parker
University of Alaska
Museum of the North
University of Alaska Fairbanks
Fairbanks, Alaska

Mary Stensvold
U.S.D.A. Forest Service
Sitka, Alaska

PACIFIC NORTHWEST

Edward R. Alverson
The Nature Conservancy
Eugene, Oregon

Adolf Ceska
British Columbia Conservation
Data Centre
Victoria, British Columbia

Richard R. Halse
Oregon State University
Corvallis, Oregon

Eugene N. Kozloff
Shannon Point Marine Center
Anacortes, Washington

Jim Pojar
British Columbia Forest Service
Smithers, British Columbia

Cindy Roché
Talent, Oregon

Peter F. Zika
University of Washington
Seattle, Washington

SOUTHWESTERN UNITED STATES

Tina J. Ayers
Northern Arizona University
Flagstaff, Arizona

Walter Fertig
Arizona State University
Tempe, Arizona

G. Frederic Hrusa
California Department of Food
and Agriculture,
Sacramento, California

Max Licher
Northern Arizona University
Flagstaff, Arizona

James D. Morefield
Nevada Natural Heritage Program
Carson City, Nevada

Donald J. Pinkava
Arizona State University
Tempe, Arizona

Jon P. Rebman
San Diego Natural History
Museum
San Diego, California

Glenn Rink
Northern Arizona University
Flagstaff, Arizona

Gary D. Wallace
Rancho Santa Ana Botanic Garden
Claremont, California

WESTERN CANADA

William J. Cody†
Agriculture and Agri-Food Canada
Ottawa, Ontario

Lynn Gillespie
Canadian Museum of Nature
Ottawa, Ontario

A. Joyce Gould
Alberta Tourism, Parks and
Recreation
Edmonton, Alberta

Vernon L. Harms
University of Saskatchewan
Saskatoon, Saskatchewan

Elizabeth Punter
University of Manitoba
Winnipeg, Manitoba

ROCKY MOUNTAINS

Curtis R. Björk
University of Idaho
Moscow, Idaho

Bonnie Heidel
University of Wyoming
Laramie, Wyoming

B. E. Nelson
University of Wyoming
Laramie, Wyoming

NORTH CENTRAL UNITED STATES

Anita F. Cholewa
University of Minnesota
St. Paul, Minnesota

Neil A. Harriman
University of Wisconsin Oshkosh
Oshkosh, Wisconsin

Bruce W. Hoagland
University of Oklahoma
Norman, Oklahoma

Robert B. Kaul
University of Nebraska
Lincoln, Nebraska

Deborah Q. Lewis
Iowa State University
Ames, Iowa

Ronald L. McGregor†
The University of Kansas
Lawrence, Kansas

Lawrence R. Stritch
U.S.D.A. Forest Service
Washington, DC

George Yatskievych
The University of Texas at Austin
Austin, Texas

SOUTH CENTRAL UNITED STATES

David E. Lemke
Southwest Texas State University
San Marcos, Texas

Robert C. Sivinski
University of New Mexico
Albuquerque, New Mexico

EASTERN CANADA

Sean Blaney
Atlantic Canada Conservation
Data Centre
Sackville, New Brunswick

Jacques Cayouette
Agriculture and Agri-Food Canada
Ottawa, Ontario

Frédéric Coursol
Mirabel, Québec

William J. Crins
Ontario Ministry of Natural
Resources
Peterborough, Ontario

John K. Morton†
University of Waterloo
Waterloo, Ontario

Marian Munro
Nova Scotia Museum of Natural
History
Halifax, Nova Scotia

Michael J. Oldham
Natural Heritage Information
Centre
Peterborough, Ontario

GREENLAND

Geoffrey Halliday
University of Lancaster
Lancaster, England

NORTHEASTERN UNITED STATES

Ray Angelo
New England Botanical Club
Cambridge, Massachusetts

Tom S. Cooperrider
Kent State University
Kent, Ohio

Arthur Haines
Bowdoin, Maine

Michael A. Homoya
Indiana Department of Natural
Resources
Indianapolis, Indiana

Robert F. C. Naczi
The New York Botanical Garden
Bronx, New York

Anton A. Reznicek
University of Michigan
Ann Arbor, Michigan

Edward G. Voss†
University of Michigan
Ann Arbor, Michigan

Kay Yatskievych
Missouri Botanical Garden
St. Louis, Missouri

SOUTHEASTERN UNITED STATES

Mac H. Alford
University of Southern Mississippi
Hattiesburg, Mississippi

J. Richard Carter Jr.
Valdosta State University
Valdosta, Georgia

L. Dwayne Estes
Austin Peay State University
Clarksville, Tennessee

Paul J. Harmon
West Virginia Natural Heritage
Program
Charleston, West Virginia

W. John Hayden
University of Richmond
Richmond, Virginia

John B. Nelson
University of South Carolina
Columbia, South Carolina

Bruce A. Sorrie
University of North Carolina
Chapel Hill, North Carolina

R. Dale Thomas
Seymour, Tennessee

Lowell E. Urbatsch
Louisiana State University
Baton Rouge, Louisiana

Thomas F. Wieboldt
Virginia Polytechnic Institute and
State University
Blacksburg, Virginia

B. Eugene Wofford
University of Tennessee
Knoxville, Tennessee

FLORIDA

Loran C. Anderson
Florida State University
Tallahassee, Florida

Bruce F. Hansen
University of South Florida
Tampa, Florida

Richard P. Wunderlin
University of South Florida
Tampa, Florida