

POPULATION GENETICS OF FOREST TREES

FORESTRY SCIENCES

Volume 42

The titles published in this series are listed at the end of this volume.

Population Genetics of Forest Trees

*Proceedings of the International Symposium
on Population Genetics of Forest Trees
Corvallis, Oregon, U.S.A., July 31–August 2, 1990*

Edited by

W. T. ADAMS

Oregon State University

STEVEN H. STRAUSS

Oregon State University

DONALD L. COPES

USDA Forest Service, Pacific Northwest Research Station, Oregon

and

A. R. GRIFFIN

Shell International Petroleum Co., London

Reprinted from New Forest 6 (1–4)



SPRINGER SCIENCE+BUSINESS MEDIA, B.V.

Library of Congress Cataloging-in-Publication Data

International Symposium on Population Genetics of Forest Trees (1990 :
Corvallis, Or.)

Population genetics of forest trees : proceedings of the
International Symposium on Population Genetics of Forest Trees,
Corvallis, Oregon, U.S.A., July 31-August 2, 1990 / edited by W.T.
Adams ... [et al.].

p. cm. -- (Forestry sciences ; 42)

ISBN 978-94-010-5251-1 ISBN 978-94-011-2815-5 (eBook)

DOI 10.1007/978-94-011-2815-5

1. Forest genetics--Congresses. 2. Plant population genetics--
Congresses. 3. Biochemical markers--Congresses. I. Adams, W. T.
II. Title. III. Series.

SD399.5.I56 1990

634.9'56--dc20

92-18860

ISBN 978-94-010-5251-1

Printed on acid-free paper

All Rights Reserved

© 1992 Springer Science+Business Media Dordrecht

Originally published by Kluwer Academic Publishers in 1992

Softcover reprint of the hardcover 1st edition 1992

No part of the material protected by this copyright notice may be reproduced or
utilized in any form or by any means, electronic or mechanical,
including photocopying, recording or by any information storage and
retrieval system, without written permission from the copyright owner.

Contents

Introduction	1
Dedication	3
Keynote paper	
<i>Conkle, M.T.:</i> Genetic diversity – seeing the forest through the trees	5
Assessment of genetic diversity within and among species	
<i>Müller-Starck, G., Baradat, PH. and Bergmann, F.:</i> Genetic variation within European tree species	23
<i>Moran, G.F.:</i> Patterns of genetic diversity in Australian tree species	49
<i>Loveless, M.D.:</i> Isozyme variation in tropical trees: patterns of genetic organization	67
<i>Hamrick, J.L., Godt, M.J.W. and Sherman-Broyles, S.L.:</i> Factors influencing levels of genetic diversity in woody plant species	95
Biosystematics and adaptive significance of biochemical markers	
<i>Strauss, S.H., Bousquet, J., Hipkins, V.D. and Hong, Y.-P.:</i> Biochemical and molecular genetic markers in biosystematic studies of forest trees	125
<i>Hanover, J.W.:</i> Applications of terpene analysis in forest genetics	159
<i>Bush, R.M. and Smouse, P.E.:</i> Evidence for the adaptive significance of allozymes in forest trees	179
Mating systems, gene dispersal, and genetic structure within populations	
<i>Mitton, J.B.:</i> The dynamic mating systems of conifers	197
<i>Adams, W.T.:</i> Gene dispersal within forest tree populations	217

<i>Ellstrand, N.C.:</i> Gene flow among seed plant populations	241
<i>Epperson, B.K.:</i> Spatial structure of genetic variation within populations of forest trees	257
Application of biochemical markers in forest management	
<i>Westfall, R.D. and Conkle, M.T.:</i> Allozyme markers in breeding zone designation	279
<i>Wheeler, N.C. and Jech, K.S.:</i> The use of electrophoretic markers in seed orchard research	311
<i>Savolainen, O. and Kärkkäinen, K.:</i> Effect of forest management on gene pools	329
<i>Millar, C.I. and Westfall, R.D.:</i> Allozyme markers in forest genetic conservation	347
DNA as a biochemical marker	
<i>Wagner, D.B.:</i> Nuclear, chloroplast, and mitochondrial DNA polymorphisms as biochemical markers in population genetic analyses of forest trees	373
<i>Neale, D.B., Devey, M.E., Jermstad, K.D., Ahuja, M.R., Alosi, M.C. and Marshall, K.A.:</i> Use of DNA markers in forest tree improvement research	391
Commentary	
<i>Gregorius, H.-R. and Baradat, Ph.:</i> A commentary on current approaches to forest population genetics	409