## Contents

Foreword—1st Fire Behavior and Fuels Conference:Fuels Management
   How to Measure Success .................................................. 1
   *Patricia L. Andrews, Conference Chair*

### Fuels Management

Be a Change Agent and Change the Strategy .......................... 5
   *Jerry Williams*

U.S. Federal Fuel Management Programs: Reducing Risk to
   Communities and Increasing Ecosystem Resilience and Sustainability .......................... 9
   *Tim Sexton*

Canadian Wildland Fire Strategy: A Vision for an Innovative and
   Integrated Approach to Managing the Risks ........................ 13
   *Canadian Wildland Fire Strategy Project Management Team*

Fuel Management—An Integral Part of Fire Management:
   Trans-Tasman Perspective .............................................. 17
   *Jim Gould*

Forest Fuels Management in Europe .................................... 29
   *Gavriil Xanthopoulos, David Caballero, Miguel Galante, Daniel Alexandrian,
     Eric Rigolot, and Raffaella Marzano*

Wildland Fire Use — Challenges Associated With Program Management
   Across Multiple Ownerships and Land Use Situations ............. 47
   *Thomas Zimmerman, Michael Frary, Shelly Crook, Brett Fay,
     Patricia Koppenol, and Richard Lasko*

U.S. Policy Response to the Fuels Management Problem: An Analysis of
   the Public Debate About the Healthy Forests Initiative and the Healthy
   Forests Restoration Act .................................................. 59
   *Jayne Fingerman Johnson, David N. Bengston, David P. Fan, and Kristen C. Nelson*

Influences on USFS District Rangers’ Decision to Authorize Wildland Fire Use .................. 67
   *Martha A. Williamson*

### Modeling, Risk Assessment and Decision Support

Considerations in the Use of Models Available for Fuel Treatment Analysis .................. 81
   *Charles W. McHugh*
A Computational Method for Optimizing Fuel Treatment Locations .................. 107
  Mark A. Finney

Simulation of Long-Term Landscape-Level Fuel Treatment Effects on Large Wildfires ..................................................... 125
  Mark A. Finney, Rob C. Selig, Charles W. McHugh, Alan A. Ager,
  Bernhard Bahro, and James K. Agee

A Wildfire Risk Modeling System for Evaluating Landscape Fuel Treatment Strategies ................................................... 149
  Alan Ager, Mark Finney, and Andrew McManus

Automating the Fireshed Assessment Process with ArcGIS ...................... 163
  Alan Ager, Bernhard Bahro, and Klaus Barber

An Analytical Framework for Quantifying Wildland Fire Risk and Fuel Treatment Benefit ............................................. 169
  Joe H. Scott

Strategic Placement of Treatments (SPOTS): Maximizing the Effectiveness of Fuel and Vegetation Treatments on Problem Fire Behavior and Effects ................. 185
  Diane M. Gercke and Susan A. Stewart

Landfire: Landscape Fire and Resource Management Planning Tools Project ........ 193
  Kevin C. Ryan, Kristine M. Lee, Matthew G. Rollins, Zhiliang Zhu,
  James Smith, and Darren Johnson

Applying Fire Spread Simulators in New Zealand and Australia: Results from an International Seminar .................................. 201
  Tonja Opperman, Jim Gould, Mark Finney, and Cordy Tymstra

An Overview of FlamMap Fire Modeling Capabilities ........................... 213
  Mark A. Finney

Using Landscape-Based Decision Rules to Prioritize Locations of Fuel Treatments in the Boreal Mixedwood of Western Canada .......................... 221
  Marc-André Parisien, Dave R. Junor, and Victor G. Kalka

Fuel Characterization and Mapping

Fuels Products of the LANDFIRE Project ...................................... 239
  Matthew C. Reeves, Jay R. Kost, and Kevin C. Ryan

FUEL3-D: A Spatially Explicit Fractal Fuel Distribution Model .................. 253
  Russell A. Parsons

  Elizabeth Reinhardt, Duncan Lutes, and Joe Scott

Accuracy and Precision of Two Indirect Methods for Estimating Canopy Fuels ....................................................... 283
  Abran Steele-Feldman, Elizabeth Reinhardt, and Russell A. Parsons

Mapping Fuels on the Okanogan and Wenatchee National Forests ................ 293
  Crystal L. Raymond, Lara-Karena B. Kellogg, and Donald McKenzie

Fuel Type Classification and Fuel Loading in Central Interior, Korea: Uiseong-Gun ...................................... 305
  Myoung Soo Won, Kyo Sang Koo, Myung Bo Lee, and Si Young Lee
Understanding Ozark Forest Litter Variability Through a Synthesis of Accumulation Rates and Fire Events .................................................. 321
  Michael C. Stambaugh, Richard P. Guyette, Keith W. Grabner, and Jeremy Kolaks

Estimating Fuel Bed Loadings in Masticated Areas ....................... 333
  Sharon Hood and Ros Wu

Variability in Loading of Mechanically Masticated Fuel Beds in Northern California and Southwestern Oregon .......................... 341
  Jeffrey M. Kane, Eric E. Knapp, and J. Morgan Varner

Creating a Fuels Baseline and Establishing Fire Frequency Relationships to Develop a Landscape Management Strategy at the Savannah River Site .......... 351
  Bernard R. Parresol, Dan Shea, and Roger Ottmar

Variation in Surface and Crown Fire Hazard With Stand Age in Managed Coastal Western Hemlock Zone Forests in Southwestern British Columbia .................. 367
  Michael C. Feller and Stefanie L. Pollock

Evaluation of a Dynamic Load Transfer Function Using Grassland Curing Data ............. 381

Foliar Moisture Contents of North American Conifers .................... 395
  Christopher R. Keyes

Mapping the Relationship Between Wildfire and Poverty ................... 401
  Kathy Lynn and Wendy Gerlitz

Fuel Treatment and Prescribed Fire

Fire Severity and Intensity During Spring Burning in Natural and Masticated Mixed Shrub Woodlands ........................................ 419
  Tim Bradley, Jennifer Gibson, and Windy Bunn

Assessing Mitigation of Wildfire Severity by Fuel Treatments — An Example From the Coastal Plain of Mississippi ......................... 429
  Erik J. Martinson and Philip N. Omi

A Fuel Treatment Reduces Potential Fire Severity and Increases Suppression Efficiency in a Sierran Mixed Conifer Forest .................. 441
  Jason J. Moghaddas

The Use of Silviculture and Prescribed Fire to Manage Stand Structure and Fuel Profiles in a Multi-aged Lodgepole Pine Forest .................. 451
  Colin C. Hardy, Helen Y. Smith, and Ward McCaughey

Effectiveness of Prescribed Fire as a Fuel Treatment in Californian Coniferous Forests .......................................................... 465
  Nicole M. Vaillant, JoAnn Fites-Kaufman, Scott L. Stephens

Changes in Downed Wood and Forest Structure After Prescribed Fire in Ponderosa Pine Forests .............................................. 477
  Victoria Saab, Lisa Bate, John Lehmkuhl, Brett Dickson, Scott Story, Stephanie Jentsch, and William Block

Biomass Consumption During Prescribed Fires in Big Sagebrush Ecosystems ........ 489
  Clinton S. Wright and Susan J. Prichard
The Lick Creek Demonstration — Forest Renewal Through Partial Harvest and Fire ........ 501
Benjamin Zamora and Melinda Martin

Response of Fuelbed Characteristics to Restoration Treatments in Piñon-Juniper-Encroached Shrublands on the Shivwits Plateau, Arizona .............. 513
Helen Y. Smith, Sharon Hood, Matt Brooks, JR Matchett, and Curt Deuser

Effect of a Spaced Thinning in Mature Lodgepole Pine on Within-Stand Microclimate and Fine Fuel Moisture Content .................. 523

Predicting Ground Fire Ignition Potential in Aspen Communities .................. 537

Fire Ecology and Fire Effects

Integrating Fuel Treatments into Comprehensive Ecosystem Management ........ 549
Kevin Hyde, Greg Jones, Robin Silverstein, Keith Stockmann, and Dan Loeffler

Comparison of the Sensitivity of Landscape-Fire-Succession Models to Variation in Terrain, Fuel Pattern, Climate and Weather ........................ 563
Geoffrey J. Cary, Robert E. Keane, Robert H. Gardner, Sandra Lavorel, Mike D. Flannigan, Ian D. Davies, Chao Li, James M. Lenihan, T. Scott Rupp, and Florent Mouillot

Assessing Ecological Departure from Reference Conditions with the Fire Regime Condition Class (FRCC) Mapping Tool ................ 575
Stephen W. Barrett, Thomas DeMeo, Jeffrey L. Jones, J.D. Zeiler, and Lee C. Hutter

Predicting Post-Fire Severity Effects in Coast Redwood Forests Using FARSITE .......................... 587
Hugh Scanlon and Yana Valachovic

Measuring Ecological Effects of Prescribed Fire Using Birds as Indicators of Forest Conditions .......................... 593
Nathaniel E. Seavy, John D. Alexander

Monitoring Changes in Soil Quality from Post-fire Logging in the Inland Northwest ........................................ 605
Deborah Page-Dumroese, Martin Jurgensen, Ann Abbott, Tom Rice, Joanne Tirocke, Sue Farley, and Sharon DeHart

The Relation Between Forest Structure and Soil Burn Severity ............. 615
Theresa B. Jain, Russell T. Graham, and David S. Pilliod

Economics and Biomass Utilization

Design and Objectives of FTM–West Model ........................ 635
Peter J. Ince and Henry Spelter

FTM-West Model Results for Selected Fuel Treatment Scenarios .................. 647
Andrew D. Kramp and Peter J. Ince

Estimating Woody Biomass Supply From Thinning Treatments to Reduce Fire Hazard in the U.S. West ........................ 657
Kenneth E. Skog and R. James Barbour

Biomass Utilization Modeling on the Bitterroot National Forest .............. 673
Robin P. Silverstein, Dan Loeffler, J. Greg Jones, Dave E. Calkin, Hans R. Zuuring, and Martin Twer
Communication and Collaboration

A Collaborative Approach to Community Wildfire Hazard Reduction ........................................ 691
Marc Titus and Jennifer Hinderman

Organizational Characteristics that Contribute to Success in Engaging the Public to Accomplish Fuels Management at the Wilderness Non-Wilderness Interface .................................................. 703
Katie Knotek and Alan E. Watson

Communicating the Wildland Fire Message: Influences on Knowledge and Attitude Change in Two Case Studies ..................................................... 715
Eric Toman and Bruce Shindler

Reduction of Potential Fire Behavior in Wildland-urban Interface Communities in Southern California: A Collaborative Approach ........................................ 729
Christopher A. Dicus and Michael E. Scott

Fire Management in the Inter Galatic Interface or 30 Years of Fire Management at Merritt Island National Wildlife Refuge/Kennedy Space Center, Florida ......................................................... 739
Frederic W. Adrian

Measuring Success in Your Fuels Program: From the Report Card to Valuable Learning .................................................... 751
Paula Nasiatka and David Christenson

Fire Weather

Predicting Fire Season Severity in the Pacific Northwest ......................................................... 757
Paul Werth

Employing Numerical Weather Models to Enhance Fire Weather and Fire Behavior Predictions ..................................................... 769
Joseph J. Charney and Lesley A. Fusina

WindWizard: A New Tool for Fire Management Decision Support ........................................ 787
Bret W. Butler, Mark Finney, Larry Bradshaw, Jason Forthofer, Chuck McHugh, Rick Stratton, and Dan Jimenez

Appendix: Presentations for which papers were not submitted for these proceedings ........ 797
Author Index ................................................................. 807