

2011 News Archives

In the News

December 11, 2011: RMRS Delivers Science to Indonesia

Ecologist **Matt Jolly** and Research Forester **Kevin Ryan**, Missoula, and South Dakota State University Professor **Mark Cochrane**, have returned from Indonesia where they met with representatives of the Indonesian Climate Change Center, the Australian Agency for International Development (AusAID), the US Agency for International Development (USAID), and the Forest Service's International Program. The purpose of this visit, at the invitation of AusAID, was to develop collaborative partnerships with local, regional and national Indonesian scientists and land managers, and to assist them in developing a peatland fire danger monitoring system. The team also visited the Kalimantan Forest and Climate Partnership's (KFCP) Ex-Mega Rice Project site in Central Kalimantan on the island of Borneo. The KFCP project focuses on reforestation and restoring wetland hydrology while retaining sustainable local agriculture and other local land use practices. A critical factor in these restoration plans is the development of a sustainable fire danger monitoring system and fire management plan for the region. Plans are proceeding for the RMRS Fire Sciences Lab to host Indonesian scientists and technicians, and for Lab personnel to conduct peat fire research on the KFCP site. The trip was funded by USAID through Forest Service International Programs.



Figure 1: Matt Jolly and Kevin Ryan, 5th and 6th from left, and an international group of scientists visit the Kalimantan Forest Carbon Protection site where logging, wetland drainage and burning have resulted in destruction of Orangutan Rain Forest habitat and a large flux in greenhouse gases.

December 11, 2011: Recognitions

Research Ecologist **Bob Keane**, Missoula, was recently named Outstanding Associate Editor for 2010 for the International Journal of Wildland Fire. This publication relies on the skill and insights of its associate editors to help ensure the relevance and high technical quality of papers published. Associate editors oversee the efficient review of manuscripts in discrete subject areas and comment both on the scientific quality and novelty of papers to aid the Editors in Chief in their decisions.

October 31, 2011: Keane to Serve on Advisory Board

Robert Keane, Supervisory Research Ecologist in Missoula, has been selected to serve on the American Forests Science Advisory Board. The Board informs and evaluates American Forests' forest restoration work and public policy initiatives, including helping develop new programs and projects. Board members represent a diversity of fields, geographic areas and work



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experiences to help address the myriad of issues facing America's rural and urban forests. Board members serve a minimum of 3 years.

October 31, 2011: Future Forests Webinar

The launch of the Future Forests Webinar Series on October 18th was a great success. Over 180 individuals tuned in to the presentations by Region 2 Fuels and Fire Ecology Branch Chief Paul Langowski and RMRS Fire Ecologists **Russ Parsons** and **Matt Jolly**, Missoula, about changes in fire risk and behavior following mountain pine beetle outbreak. Participants represented a wide cross-section of organizations, with half from the Forest Service and half from various federal, state, and local agencies, universities, industry, and non-governmental organizations. A staff member from Colorado Representative Mike Coffman's office also attended. The webinar was well received, with one participant commenting, "Thanks for the hard work and the easy-to-follow presentations. For us visual learners, the information on YouTube was awesome! I look forward to the upcoming webinar on vegetational responses to the outbreak at the beginning of December." Learn more about upcoming webinars at <http://www.fs.fed.us/rmrs/events/future-forests>.

October 31, 2011: Students Learn about Fire and Forests

Forty middle school students from Seeley Lake, Montana, explored an ecological and cultural treasure in their own mountain valley on October 12, with guidance from Ecologists **Helen Smith** and **Jane Kapler Smith**, Missoula. The students visited Girard Grove, a stand of western larch - some more than 300 years old. Jane explained the techniques used to learn about the fire history of the stand, and Helen described the study design and field work, effects of fire exclusion, and challenges of managing a place that is well known and treasured by ecologists and local residents alike. The students also got to hug "Gus", the largest tree in the stand, which is recorded in American Forest's National Register of Big Trees as the largest living western larch in the United States.

October 17, 2011: RMRS Team Conducts Fire Assessment

At the request of Colorado Senator Mark Udall, an RMRS science team, composed of Research Physical Scientist Jack Cohen, Research Foresters Dave Calkin and Mark Finney, Fire Spatial Analyst Chuck McHugh, and Research Forester and Team Leader Russ Graham, spent the past year conducting an assessment of Colorado's 2010 Fourmile Canyon Fire. The blaze burned more than 6,000 acres over 6 days near Boulder, Colorado, and is considered the most destructive fire in Colorado recorded history.

The preliminary assessment was announced by Senator Udall and representatives from federal, state and county land management agencies, at a public open house/news conference held October 14 in Boulder.

During a public meeting following Senator Udall's press conference, approximately 100 homeowners and others affected by the fire listened as the RMRS science team presented its findings, which include:



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- Wildfires like the Fourmile Canyon Fire can be expected to occur every two years along Colorado's Front Range, especially during high winds and low humidity.
- Boulder County's emergency response system provides an excellent infrastructure for dealing with these types of emergencies.
- Narrow-width fuel treatments were valued as safe routes for evacuating the fire area and as sites for fire suppression activities, but were not effective in changing the behavior of the fire during extreme burning conditions.
- Of the 168 homes destroyed, 83 percent were ignited by surface fire. Reducing fuels around homes can decrease the risk of property loss during a wildfire. Jack Cohen's video on creating a home ignition zone was shown during the meeting as an example of how homeowners can protect their property.

Station Director Sam Foster, who also attended the meeting, along with Assistant Station Director for Communications Nan Christianson and Public Affairs Specialist Cass Cairns, said that this assessment will be used to inform decision makers, land management agencies, and other interested stakeholders about lessons learned from the fire.

News coverage of the Boulder event can be viewed at:

- http://www.denverpost.com/news/ci_19117852
- <http://washingtonexaminer.com/news/2011/10/study-tree-thinning-didnt-slow-2010-boulder-fire>
- http://www.dailycamera.com/ci_19114557?source=most_viewed

September 29, 2011: Research Ecologist Robert Keane and Post-doc Research Ecologist Rachel Loehman, Missoula, are quoted in the University of Arizona News about a cooperative study on human-fire-climate interactions. Check it out at <http://uanews.org/node/42041>.

June 27, 2011: The Perfect Firestorm: Audubonmagazine.org recently carried a story about Research Physical Scientist Jack Cohen, Fire Technology Transfer Specialist Wayne Cook and Research Forester Mark Finney, Missoula, and their work at our Fire Sciences Laboratory. Read about it at <http://www.audubonmagazine.org/features1107/globalwarming.html>.

June 20, 2011: Retired Illustrator Visits Fire Lab

Retired RMRS Illustrator, Bryan Owen, recently stopped by the Missoula Fire Sciences Lab to visit with old friends and tour the facility with Research Physical Scientist, Pat Andrews. Owen worked at the Fire Lab from 1965 to 1991, during which time he designed the covers for many of the station's publications and painted portraits and other artwork still on display in the Lab. In addition, the August 1976 edition of *American Forests* featured a full-color spread of Owen's palette-knife painting "Wildfire - Untamed" as part of a series of original artwork by nine Forest Service illustrators portraying the role of forests in the Nation's past, present, and future. Owen and his daughter-in-law, Reina, are in the process of documenting his artwork and creating a





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retrospective of his career.

June 6, 2011: Fire Lab Hosts Greek Delegation

A three person delegation from the Greek Ministry of Citizen Protection visited Missoula, May 25-27 on the final leg of a two-week trip to various sites and facilities in the U.S. The study tour was part of an ongoing cooperative program between the U.S. Forest Service and the Government of Greece, which was initiated following the devastating 2007 wildfire season in Greece.

The program holistically addresses wildfire management, including prevention, suppression, and post-fire rehabilitation. Leadership within the Greek agency requested U.S.-based training on fire and disaster management to augment their ongoing efforts to improve fire mapping and prediction. The group was escorted by Jim Boukidis, a volunteer Program Facilitator for International Programs.

The group's visit to Missoula began with a tour of the Fire Sciences Laboratory, led by Deputy Program Manager Kristine Lee and Fire Technology Transfer Specialist Wayne Cook, followed by discussions on the LANDFIRE Program with Kristine and Ecologist Don Long. The group then learned about the National Fire Danger Rating System, Wildland Fire Assessment System, fire weather

observations, and new science with Research Physical Scientist Pat Andrews, Ecologist Matt Jolly, and Contractor Faith Ann Heinsch. An afternoon session was dedicated to the Wildland Fire Decision Support and associated components with Research Forester Mark Finney, and

Research Foresters Dave Calkin and Matt Thompson. Wildland Fire Management Research, Development and Application Program Manager Tom Zimmerman, along with Fire Management Specialist Lisa Elenz and Lead Fire Applications Specialist Kim Ernstrom spent an afternoon describing their program, the type of work performed and current activities. A special tour of the National Weather Service was graciously provided on Friday morning by Meteorologist-in charge Bruce Bauck. The group also visited the University of Montana's Lubrecht Experimental Forest (photo).



The Greek delegation gets a close look at terrestrial scanning LIDAR equipment used for three-dimensional mapping of fuel and vegetation, being demonstrated by Eric Rowell (right) of the National Center for Landscape Fire Analysis, University of Montana.

May 31, 2011: ALWRI Co-hosting Taiwanese Visitors: The Maureen and Mike Mansfield Center at the University of Montana and the Station's Aldo Leopold Wilderness Research Institute in Missoula are co-hosting Drs. Chin Yin Hwang and Chau Chin Lin (photo) of the Taiwan Forest Research Institute for two weeks. Chin Yin is a wood chemist and Chau Chin is a fire ecologist working on Long Term Ecological Research Networks in the East Asia region. While guests of Supervisory Research Chemist Wei Min Hao and Research Forester Kevin Ryan of the Fire Sciences Lab, they will be meeting with University faculty and students and presenting a seminar at the Forest Sciences Lab. They are also helping the Leopold Institute plan a science strategy to assist the Tao people of Orchid Island (between Taiwan and the



Philippines) to establish indigenous community conservation practices to protect their culture, their language, biodiversity, water and their relationship with the island they have occupied for many generations. While in Missoula, Research Social Scientist **Alan Watson** is assisting them in visiting a Salish tribal language school, seeking counsel from the Salish Cultural Committee, and talking with Confederated Salish and Kootenai Tribal Government land managers to understand how American Indians establish protection of their culture, language and landscape while meeting livelihood demands.

May 31, 2011: Landres to Lead Wilderness Fellows Program: Ecologist **Peter Landres**, Missoula, will lead a new program of Wilderness Fellows, funded by the US Department of Interior, Fish and Wildlife Service. The Fellows will be on-the-ground leads in developing and testing wilderness character monitoring in approximately 20 wildernesses located within the National Wildlife Refuge System, administered by the Fish and Wildlife Service. Hired through the Student Conservation System, they recently completed their Masters degrees in various natural resource fields. Peter says these Wilderness Fellows are well qualified and excited about working for a federal land management agency to improve wilderness stewardship.

May 31, 2011: Ford and Miller Selected for Climate Change Program: Research Ecologists **Paulette Ford**, (left photo) Albuquerque, and **Carol Miller** (right photo), Missoula, were selected to attend the Climate Change Leadership Fellowship Program at the Earthwatch Research Center in the heart of Brazil's remaining Atlantic Forest, July 10-16, 2011. This professional development opportunity was made available to alumni of the Forest Service's Middle Leaders Program, which Paulette and Carol completed in 2009, and is co-sponsored by Earthwatch and the Agency's International Programs unit, funded through a generous grant from the Borun Family Foundation. During their Earthwatch Expedition, they will contribute to cutting-edge forest research examining forest response to climate change, with a particular focus on helping develop management strategies that minimize the negative impacts of climate change on forest biodiversity. This competitive program was developed to engage Forest Service Middle Leaders Program alumni in building internal climate change awareness while providing an experience that will enhance their skills in thinking and communicating about climate change.

May 2, 2011: Geospatial Fire Behavior Analysis Training

RMRS Wildland Fire Management Research, Development and Application employees Morgan Pence, Kim Ernstrom, Mitch Burgard, Diane Rau, Tonja Opperman, Dan Mindar, Erin Noonan-Wright, Laurie Kurth, and Kathy Schon, along with Fire, Fuel and Smoke Science Program's **Chuck McHugh**, participated in the development and delivery of the third classroom session of S495 from April 18 - 22 in Tucson, Arizona. S495, Geospatial Fire Behavior Analysis, Interpretation, and Application, teaches fire behavior specialists about weather and climatology related to fire behavior analysis, and the use of deterministic and probabilistic fire spread models. Materials focus on FireFamilyPlus, FlamMap, FARSITE, FSPRO, and analysis tools in the Wildland Fire Decision Support System (WFSS) - all programs developed by RMRS scientists and widely used to inform land managers on predicted fire spread and behavior.

A substantial undertaking, the course begins annually in November with 120 hours of distance learning, and culminates in a 40-hour classroom session. Material development and delivery and logistical support involves multiple local, state and federal entities. Research Forester **Mark Finney** and Fire Technology Transfer Specialist **Wayne Cook**, Missoula, were instrumental in developing S495. Over three years, a total of 154 students have completed



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the course. For more information about the course, contact instructors Laurie Kurth (406-329-4947) or Tonja Opperman (406-461-0780). Online lessons are available to anyone with Internet access at: http://frames.nbii.gov/portal/server.pt/community/fire_behavior/212/s-495/2840.

May 2, 2011: Montana Forum Features "Red Stage" Studies

Research Ecologist Russ Parsons and Ecologist Matt Jolly, Missoula, presented invited talks at the recent Mountain Pine Beetle and Wildfire Forum in Helena, Montana. "The research we present is significant in its implications for how we think about beetle-kill fuels and fire," said Russ. "We demonstrate that 'red stage' foliage is substantially more flammable than green foliage. This finding, which is fairly intuitive when you think about it, contradicts recent high profile research which suggests that 'red stage' trees pose no additional fire hazard.

"We also discuss how the complexities of beetle-kill fuels represent a challenge for current operational fire behavior models, and how we are meeting that challenge in our current research with state of the art dynamic fire behavior models developed by our partners at Los Alamos National Lab and the National Institute of Standards and Technology," said Russ. He and Matt are featured in an Associated Press/KOTA News story about their research at http://fsweb.rmrs.fs.fed.us/newsclips/newsclips/11_05/110501-trees-ignite.php.

April 25, 2011: Simulating vegetation, fire, and climate dynamics in a northern Rocky Mountain landscape

On May 26, 1 PM MDT Robert Keane will present a webinar on the results of research using models to assess potential interacting effects of climate changes, pathogens, and wildfire on the distribution and density of whitebark pine in a high-elevation watershed in Glacier National Park, Montana, USA. Climate changes are projected to profoundly influence vegetation patterns and community compositions, either directly through increased species mortality and shifts in species distributions, or indirectly through disturbance dynamics such as increased wildfire activity and extent, shifting fire regimes, and pathogenesis. High-elevation landscapes have been shown to be particularly sensitive to climatic change, and are likely to experience significant impacts under predicted future climate change conditions. Whitebark pine (*Pinus albicaulis*), a high-elevation five-needle pine species that is important for snowpack retention, resource provision, and other ecosystem services in alpine environments in the northern Rocky Mountains, is particularly sensitive to an interacting complex of disturbances - climatic change, altered fire regimes, white-pine blister rust, and mountain pine beetles - that have already caused major changes in species distribution and density.

April 25, 2011: Northern Rockies Fire Science Network

Vita Wright, Science Application Specialist in Missoula, is leading a collaborative effort with the Missoula Fire Lab (Kris Lee and Wayne Cook), University of Montana, University of Idaho, Montana State University, and the Salish Kootenai College to assess needs for fire science delivery in the Northern Rockies. Funded by the Joint Fire Science Program (JFSP), the



assessment asks fire managers and decision makers about topical research needs, preferred methods of accessing/receiving research results, challenges to obtaining and using research, and activities the Fire Science Network can prioritize to assist with fire science delivery and application. Results will be used to help implement the Northern Rockies Fire Science Network, which will expand opportunities for interaction between managers and scientists, identify fire and fuels research needs, and improve access to knowledge and tools to serve management needs. If fully funded, the Northern Rockies Fire Science Network will become part of a national network of consortia established by the JFSP to accelerate the awareness, understanding, and adoption of wildland fire science by federal, tribal, state, and local stakeholders. For more information on the Northern Rockies Fire Science Network, or to join the Network's mailing list, go to <http://northernrockiesfirescience.org>. For more information on the JFSP network of regional consortia, go to http://www.firescience.gov/JFSP_Consortia.cfm.

Hot Off The Press

September 29, 2011: New GTR Summarizes Wildfire Risk

A new Station general technical report summarizes the state of wildfire risk and provides the scientific underpinnings for the National Cohesive Wildland Fire Management Strategy, according to co-editor and Research Forester Matt Thompson, Missoula. Titled "A Comparative Risk Assessment Framework for Wildland Fire Management: The 2010 Cohesive Strategy Science Report," RMRS-GTR-262, explores the general science available for a risk-based approach to fire and fuels management, and suggest analyses that may be applied at multiple scales to evaluate tradeoffs and decision options.

Matt explains that the Cohesive Strategy is a collaborative process with active involvement at all levels of government and non-governmental organizations, and the public, to seek national, all lands solutions to wildland fire management issues. Research Forester Dave Calkin, Missoula, and Matt were editors, along with Alan Ager of the Pacific Northwest Research Station. RMRS authors include Dave and Matt, as well as Research Forester Mark Finney, Fire Spatial Analyst Chuck McHugh and cooperators Karin Riley and Julie Gilbertson-Day, Missoula. The report is available at http://www.fs.fed.us/rm/pubs/rmrs_gtr262.html.

August 15, 2011: Report Highlights 5-Years of Biocontrol Work

The Station's biocontrol researchers have prepared a 5-year accomplishments report (FY07-11), to showcase their work (<http://www.fs.fed.us/rmrs/docs/home/weed-biocontrol-accomplishments.pdf>). Weed biocontrol scientists perform basic and applied research to help stem the invasion of exotic invasive plants in the Interior West. "During this 5-year period, the classical biocontrol program at our Bozeman lab has been greatly expanded; the augmentative biocontrol program at the Provo lab has grown; a biocontrol program in Albuquerque has been initiated; and ecological research in support of biocontrol has continued at the Missoula Forestry Sciences Laboratory" says Grassland, Shrubland and Desert Ecosystems Science Program Manager Deborah Finch. The report highlights an emphasis on the publication of first-rate science in respected peer-reviewed outlets, and second, and perhaps



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more importantly, an emphasis on the timely provision of weed biocontrol application information and tools to managers on the ground.

The research products and technology transfer activities are outlined in the report by the following scientists: George Markin (retired volunteer), Research Entomologists **Justin Runyon** and **Sharlene Sing**, Bozeman; Supervisory Ecologist **Jack Butler**, Rapid City; Research Ecologist **Dean Pearson** and Wildlife Biologist **Yvette Ortega**, Missoula; Research Ecologist **Susan Meyer**, Provo; and Research Plant Ecologist **Rosemary Pendleton**, Albuquerque.

August 8, 2011: Chuck McHugh and Mark Finney are featured in the June-July addition of Firehouse Magazine.

The 3 Part-- Web Exclusive "Wildfire Simulation Technology" was written by Mike Archer, Firehouse.com Contributor.

Part 2 Chuck discusses-- Software That Helps Fire Managers Predict Fire Growth and Hazards: Programs Available in the U.S., Canada and Australia.

Part 3 Mark addresses-- Searching for a Comprehensive Fire-Spread Model: The Science of Combustion and Spread, Theories, and Practical Applications.

The full article can be found at: <http://www.firehouse.com/topic/technology-and-communications>

May 31, 2011: Research Forester **Mark Finney**, Missoula, is featured in a recent story in the online *Ecosystem Marketplace* newsletter. The article, titled "Up In Smoke: Can Carbon Markets Help Reduce Forest Fires?" talks about Mark's fuel treatments research on reducing severe wildfire behavior. Check it out at http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=8348§ion=news_articles&eod=1.

May 23, 2011: Hot, or at least very warm, off the press from Springer is the new book, *The Landscape Ecology of Fire*. Co-edited by Don McKenzie of the Pacific Northwest Research Station, Research Ecologist **Carol Miller**, Missoula, and Don Falk of the University of Arizona, the 12-chapter volume explores fire as a contagious spatial process from numerous perspectives, including fundamental theory, fire-climate interactions, interactions with other ecological processes, and ecosystem management. Other contributing RMRS scientists were Research Landscape Ecologist **Sam Cushman**, Flagstaff, who co-authored a chapter, and Supervisory Research Ecologist **Bob Keane**, Missoula, who wrote the Foreword to the book.

May 9, 2011: *BehavePlus fire modeling system, version 5.0: Design and Features*. Heinsch, Faith Ann; Andrews, Patricia L. 2010. Gen. Tech. Rep. RMRS-GTR-249. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

The BehavePlus fire modeling system is a computer program that is based on mathematical models that describe wildland fire behavior and effects and the fire environment. It is a flexible system that produces tables, graphs, and simple diagrams. It can be used for a host of fire management applications, including projecting the behavior of an ongoing fire, planning



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prescribed fire, assessing fuel hazard, and training. This report documents the BehavePlus design and features to help users better understand the system and use it more effectively. It is not a "How To" guide. It is based in part on material in a series of self-study lessons that were developed to provide a detailed, step-by-step description of various aspects of BehavePlus. This report can be accessed at http://www.fs.fed.us/rm/pubs/rmrs_gtr249.html or a hardcopy can be ordered from <http://www.fs.fed.us/rm/publications>.

May 2, 2011: FireBGCv2 landscape fire and succession model

Keane, Robert E.; Loehman, Rachel A.; Holsinger, Lisa M. 2011. The FireBGCv2 landscape fire and succession model: a research simulation platform for exploring fire and vegetation dynamics. Gen. Tech. Rep. RMRS-GTR-255. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 137 p.

Fire management faces important emergent issues in the coming years such as climate change, fire exclusion impacts, and wildland-urban development, so new, innovative means are needed to address these challenges. Field studies, while preferable and reliable, will be problematic because of the large time and space scales involved. Therefore, landscape simulation modeling will have more of a role in wildland fire management as field studies become untenable. This report details the design and algorithms of a complex, spatially explicit landscape fire and vegetation model called FireBGCv2. FireBGCv2 is a C++ computer program that incorporates several types of stand dynamics models into a landscape simulation platform. FireBGCv2 is intended as a research tool. Descriptions of FireBGCv2 code, sample input files, and sample output are included in this report, but this report is not intended as a user's manual because the inherent complexity and wide scope of FireBGCv2 makes it unwieldy and difficult to use without extensive training. The primary purpose of this report is to document FireBGCv2 in adequate detail to interpret simulation results.

This is also online: http://www.fs.fed.us/rm/pubs/rmrs_gtr255.pdf

April 25, 2011: How to Generate and Interpret Fire Characteristics Charts for Surface and Crown Fire Behavior, General Technical Report RMRS-GTR-253, by Patricia Andrews, Faith Ann Heinsch and Luke Schelvan.

A fire characteristics chart is a graph that presents primary related fire behavior characteristics—rate of spread, flame length, fireline intensity, and heat per unit area. It helps communicate and interpret modeled or observed fire behavior. The Fire Characteristics Chart computer program plots either observed fire behavior or values that have been calculated by another computer program such as the BehavePlus fire modeling system. Program operation is described in this report, and its flexibility in format, color, and labeling is demonstrated for use in a variety of reports. A chart produced by the program is suitable for inclusion in briefings, reports, and presentations. Example applications are given for fire model understanding, observed crown fire behavior, ignition pattern effect on fire behavior, prescribed fire planning, briefings, and case studies. The mathematical foundation for the charts is also described. Separate charts are available for surface fire and crown fire because of differences in the flame length model used for each. Copies are available from Publications Distribution at 970-498-1392, or online at http://www.fs.fed.us/rm/pubs/rmrs_gtr253.html.



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