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Pacific Southwest Research Station Programs

Air Pollution and Global Change Impacts on Western Forest Ecosystems

Center for Urban Forest Research

Chemical Ecology and Management of Forest Insects

Cumulative Effects of Forest Management on Hillslope Processes, Fishery Resources, and Downstream Environments

Ecology and Management of Western Forests Influenced by Mediterranean Climate

Institute of Forest Genetics

Institute of Pacific islands Forestry

Prescribed Fire and Fire Effects

Research Natural Areas

Sierra Nevada Research Center

Sudden Oak Death Research

Timber Management/Wildlife Habitat Interactions

Wildland Fire Management Research, Development, and Application

Wildland Recreation and Urban Cultures

Pacific Southwest Research Station
Publications List

June 1, 2008–June 30, 2009

Contents

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The Pacific Southwest Research Station

The Pacific Southwest Research Station represents the research and development branch of the USDA Forest Service in the states of California and Hawaii and the U.S.-affiliated Pacific Islands. Our primary work occurs in California (the most populous state with the fifth largest economy in the world) and Hawaii (a strategic location in the Pacific Rim economies and tourism). We develop and deliver science-based information, technologies, and applications to help people make well-informed decisions about natural resource management, conservation, and environmental protection.

The Pacific Southwest Research Station has eight primary sites in California and Hawaii.

1. Redwood Sciences Laboratory, Arcata

2. Silviculture Laboratory, Redding

3. Institute of Forest Genetics (Historic), Placerville

4. Research Facilities, Davis

5. Sciences Laboratory and Station Headquarters, Albany

6. Forest Sciences Laboratory, Fresno

7. Forest Fire Laboratory, Riverside

8. Institute of Pacific Islands Forestry, Hilo

For more information, please visit us on the Web at: http://www.fs.fed.us/psw/

USDA

New PSW Series Publications

Second international fire symposium proceedings

Order 1

Proceedings of the second international symposium on fire economics, planning, and policy: a global view. González-Cabán, Armando, tech. coord. 2008. Gen. Tech. Rep. PSW-GTR-208. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 720 p. 1 CD [English and Spanish versions included]

These proceedings summarize the results of a symposium designed to address current issues of agencies with wildland fire protection responsibility at the federal and state levels in the United States as well as agencies in the international community. The topics discussed at the symposium included fire economics, theoretical and methodological approaches to strategic fire planning, wildland fires and sustainable forest management, incorporation of market and nonmarket economic evaluation techniques into fire management planning, public policies and wildland fires, tradeoffs between fuel treatment and suppression activities, and global and regional vision of the wildland fire problem.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr208en/

Fire and social science

Order 2

Fire social science research from the Pacific Southwest Research Station: Studies supported by national fire plan funds. Chavez, Deborah J.; Absher, James D.; Winter, Patricia L. 2008. Gen. Tech. Rep. PSW GTR-209. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 251 p.

Fire events often have a large impact on recreation and tourism, yet these issues have not been addressed from a social science perspective. The Wildland Recreation and Urban Cultures Research Work Unit (RWU) of the Pacific Southwest Research Station acquired funding through the National Fire Plan within the community assistance topic area, and developed some distinct lines of research to address the research objectives identified when acquiring the funding: examine values/attitudes and behaviors of recreation residence owners and year-round residents in the wildland-urban interface, examine recreationists' perceptions about fire suppression and postfire forest health issues, and examine perceptions and beliefs about recreation activities and impacts to fire-prone ecosystems in the wildland-urban interface.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr209/

Recreation visitors: Studies in diversity

Order 3

Recreation visitor research: Studies of diversity. Chavez, Deborah J.; Winter, Patricia L.; Absher, James D., eds. 2008. Gen. Tech. Rep. PSW-GTR-210. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 216 p.

In 1987, the Pacific Southwest Research Station (PSW) of the U.S. Department of Agriculture Forest Service (USFS) chartered a research work unit to examine outdoor recreation in the wildland-urban interface. The new work unit was established to address the needs of the increasingly diverse recreation visitors to National Forests.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr210/

Koa forests: Restoration and management

Order 4

Koa (*Acacia koa*) ecology and silviculture. Baker, Patrick J.; Scowcroft, Paul G.; Ewel, John J. 2009. Gen. Tech. Rep. PSW-GTR-211. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 129 p.

Koa (*Acacia koa*) is a tree species endemic to Hawaii that is of immense ecological and economic importance. This species has been mined from local forests for its wood for more than 100 years, and extensive areas of koa-dominated forests have been converted to grazing lands. Today, in recognition of the great importance and value of koa and the forests in which it is found, there is substantial interest in restoration and management of koa forests. This report brings together knowledge on the biogeography, physiology, ecology, and silviculture of koa in an effort to assist landowners and resource stewards in making sound decisions about restoring and managing koa forests.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr211//

Turbidity threshold sampling

Order 5

Implementation guide for turbidity threshold sampling: principles, procedures, and analysis. Lewis, Jack; Eads, Rand. 2008. Gen. Tech. Rep. PSW-GTR-212. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 86 p.

Turbidity Threshold Sampling uses real-time turbidity and river stage information to automatically collect water quality samples for estimating suspended sediment loads. The system uses a programmable data logger in conjunction with a stage measurement device, a turbidity sensor, and a pumping sampler. Specialized software enables the user to control the sampling process, plot and correct the data, and estimate suspended loads. This implementation guide describes the entire process, including instrumentation, installation, field procedures, software usage, data collection, laboratory methods, data interpretation, data reduction, and analysis.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr212/

Historical growth plots

Order 6

Historical growth plots in the Pacific Southwest. Rabin, Lawrence A.; Oliver, William W.; Powers, Robert F.; Ritchie, Martin W.; Busse, Matt, D.; Knapp, Eric E. 2009. Gen. Tech. Rep. PSW-GTR-213. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 83 p.

In the past, researchers from the Pacific Southwest Research Station (PSW) undertook forest growth studies to evaluate how best to manage timber resources. However, historical and future data collected at PSW growth plots also have the potential to increase our understanding of the ecological processes occurring in our forests and shed light on national issues of importance. This report provides information on the history, geography, plant species studied, installation, and measurement interval of each plot along with a list of publications arising from data gathered at these plots. This will enable current and future researchers to reidentify these plots and continue research at these locations.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr213/

Tropical community tree guide

Order 7

Tropical community tree guide: benefits, costs, and strategic planting. Vargas, Kelaine E.; McPherson, E. Gregory; Simpson, James R.; Peper, Paula J.; Gardner, Shelley L.; Xiao, Qingfu. 2008. Gen. Tech. Rep. PSW-GTR-216. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 109 p.

Even as they increase the beauty of our surroundings, trees provide us with a great many ecosystem services, including air quality improvement, energy conservation, stormwater interception, and atmospheric carbon dioxide reduction. These benefits must be weighed against the costs of maintaining trees, including planting, pruning, irrigation, administration, pest control, liability, cleanup, and removal. We present benefits and costs for representative small, medium, and large trees in the Tropical region derived from models based on indepth research carried out in Honolulu, Hawaii. Two hypothetical examples of planting projects are described to illustrate how the data in this guide can be adapted to local uses. Guidelines for maximizing benefits and reducing costs are also given.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr216/

California oak symposium proceedings

Order 8

Proceedings of the sixth California oak symposium: today's challenges, tomorrow's opportunities. Merenlender, Adina; McCreary, Douglas; Purcell, Kathryn L., tech. eds. 2008. Gen. Tech. Rep. PSW-GTR-217. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 677 p

The Sixth Oak Symposium provided a forum for current research and outstanding case studies on oak woodland science and sustainability in California. The proceedings from this conference series represent the most comprehensive source of scientific and management information on a wide range of subjects including oak ecology, hardwood rangeland management, oak restoration and conservation, woodland land-use change and planning.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr217/

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Lower Midwest community tree guide

Order 9

Lower Midwest community tree guide: benefits, costs, and strategic planting. Peper, Paula J.; McPherson, E. Gregory; Simpson, James R.; Vargas, Kelaine E.; Xiao, Qingfu. 2009. Gen. Tech. Rep. PSW-GTR-219. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 115 p.

Even as they increase the beauty of our surroundings, trees provide us with a great many ecosystem services, including air quality improvement, energy conservation, storm-water interception, and atmospheric carbon dioxide reduction. These benefits must be weighed against the costs of maintaining trees, including planting, pruning, irrigation, administration, pest control, liability, cleanup, and removal. We present benefits and costs for representative small, medium, and large deciduous trees in the Lower Midwest region derived from models based on indepth research carried out in Indianapolis, Indiana.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr219/

Sierran mixed-conifer forests

Order 10

An ecosystem management strategy for Sierran mixed-conifer forests. North, Malcolm; Stine, Peter; O'Hara, Kevin; Zielinski, William; Stephens, Scott. 2009. Gen. Tech. Rep. PSW-GTR-220. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 49 p.

Current Sierra Nevada forest management is often focused on strategically reducing fuels without an explicit strategy for ecological restoration across the landscape matrix. Summarizing recent scientific literature, we suggest managers produce different stand structures and densities across the landscape using topographic variables (i.e., slope shape, aspect, and slope position) as a guide for varying treatments. Collectively, our management recommendations emphasize the ecological role of fire, changing climate conditions, sensitive wildlife habitat, and the importance of forest structure heterogeneity.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr220/

Phytophthoras: IUFRO proceedings:

Order 11

Proceedings of the fourth meeting of the International Union of Forest Research Organizations (IUFRO) Working Party S07.02.09: Phytophthoras in forests and natural ecosystems. Goheen, E.M.; Frankel, S.J., tech. coords. 2009. Gen. Tech. Rep. PSW-GTR-221. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 334 p

This meeting provided a forum for current research on Phytophthora species worldwide. Seventy-eight submissions described recent developments in Phytophthora diseases of trees and natural ecosystems in Europe, Australasia, and the Americas. Research topics covered Phytophthora biodiversity, ecology, epidemiology, management, and hostpathogen interactions.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr221/

Resource guide: National Forest visitors

Order 12

Serving culturally diverse visitors to forests in California: a resource guide. Roberts, Nina S.; Chavez, Deborah J.; Lara, Benjamin M.; Sheffield, Emilyn A. 2009. Gen. Tech. Rep. PSW-GTR-222. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 76 p.

The national forests of California are experiencing an increase in new visitors yet, in some areas, a continued lack of ethnic diversity persists. In addition, changing demographics has led to a need for keeping up with trends while also being aware of constraints to visitor use. Knowing how to serve culturally diverse visitors in ways that are innovative and inclusive entails broadening the base of support. This resource guide was compiled from comprehensive research reports, statewide program and services documents, outreach and civic engagement plans, and Internet searches of other applicable resources. Numerous materials are provided, best practices are noted, and tips on practical application ("tips worth trying") are offered. Highlights of research findings are included, along with strategies and possible management options relating to communication, services and facilities, developing partnerships, and ideas for community engagement and outreach.

Online: http://www.fs.fed.us/psw/publications/documents/psw_gtr222/

Fire-prone ecosystem: A case study

Order 13

The experience of community residents in a fire-prone ecosystem: a case study on the San Bernardino National Forest. Cvetkovich, George T.; Winter, Patricia L. 2008. Res. Pap. PSW-RP-257. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 42 p

This report presents results from a study of San Bernardino National Forest community residents' experiences with and perceptions of fire, fire management, and the Forest Service. Using self-administered surveys and focus group discussions, we found that participants had personal experiences with fire, were concerned about fire, and felt knowledgeable about effective fire management. Consideration of future consequences, a measure of time orientation, was not found to be related to beliefs about and reactions to wildfire. Trust in the Forest Service was related to a number of fire-associated attitudes. Findings help shed light on the experiences of residents living in fire-prone communities and highlight the importance of trust in understanding public perceptions about fire management.

Online: http://www.fs.fed.us/psw/publications/documents/psw_rp257/

Fire decision modeling

Order 14

Decision modeling for analyzing fire action outcomes. MacGregor, Donald G.; González-Cabán, Armando. 2008. Res. Pap. PSW-RP-258; Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 67 p.

A methodology for incident decomposition and reconstruction is developed based on the concept of an "event-frame model." The event-frame model characterizes a fire incident in terms of (a) environmental events that pertain to the fire and the fire context (e.g., fire behavior, weather, fuels) and (b) management events that represent responses to the fire environment. The model defines a sequential set of event frames according to temporal and contextual factors (e.g., management processes) that yield a visual representation of an incident decomposition. Our analysis reaffirms that although fire is a continuous, exponential process that changes seamlessly, if abruptly at times, management is a discrete process that changes linearly and in discontinuous stages with the intention of avoiding a purely reactionary management response. However, this fundamental incompatibility between fire as a nonlinear, continuous process and management as a linear and discontinuous one means that discontinuities in management processes may impede management performance.

Online: http://www.fs.fed.us/psw/publications/documents/psw_rp258/

HFire spatial modeling

Order 15

Using HFire for spatial modeling of fire in shrublands. Peterson, Seth H.; Morais, Marco E.; Carlson, Jean M.; Dennison, Philip E.; Roberts, Dar A.; Moritz, Max A.; Weise, David R. 2009. Res. Pap. PSW-RP-259. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 44 p.

An efficient raster fire-spread model named HFire is introduced. HFire can simulate single-fire events or long-term fire regimes, using the same fire-spread algorithm. This paper describes the HFire algorithm, benchmarks the model using a standard set of tests developed for FARSITE, and compares historical and predicted fire spread perimeters for three southern California fires. HFire is available for download at http://firecenter.berkeley.edu/hfire.

Online: http://www.fs.fed.us/psw/publications/documents/psw_rp259/

Miscellaneous Publications

Climate change

Order 16

Mapping new terrain: Climate change and America's West. Report of the Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT),. CIRMOUNT Committee. 2006. Misc. Pub. PSW-MISC-77. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 29 p.

Online: http://www.fs.fed.us/psw/publications/documents/psw_misc077/psw_misc077.pdf

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Science Perspectives

Managing urban treescapes

Order 17

Greener cities: U.S. Forest Service software package helps cities manage their urban treescape. Kling, Jim; McPherson, Greg. 2008. Science Perspective PSW-SP-011. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 6 p.

Urban forests don't get the recognition that natural forests do. They don't encompass sweeping vistas and magnificent views and they don't provide critical habitat to endangered species. Nevertheless, they are vital. More than 90 percent of all Californians live, work, and play in urban forests. Trees in the urban landscape provide vital ecosystem services, including reducing rainwater runoff, cooling urban heat islands, shading nearby buildings, and controlling air pollution.

Online: http://www.fs.fed.us/psw/publications/documents/psw_sp011/

Forest recreation

Order 18

The changing faces of forest recreation. Chavez, Deborah. 2009. Science Perspective PSW-SP-012. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 6 p.

Description: Management of national forest recreation has long focused on the needs and habits of White visitors because this traditionally has been the largest group. That is changing all over the country, but nowhere more than in southern California. Here, social scientists are studying the needs and recreation patterns of Latino visitors to better understand this rapidly growing user group.

Online: http://www.fs.fed.us/psw/publications/documents/psw_sp012/

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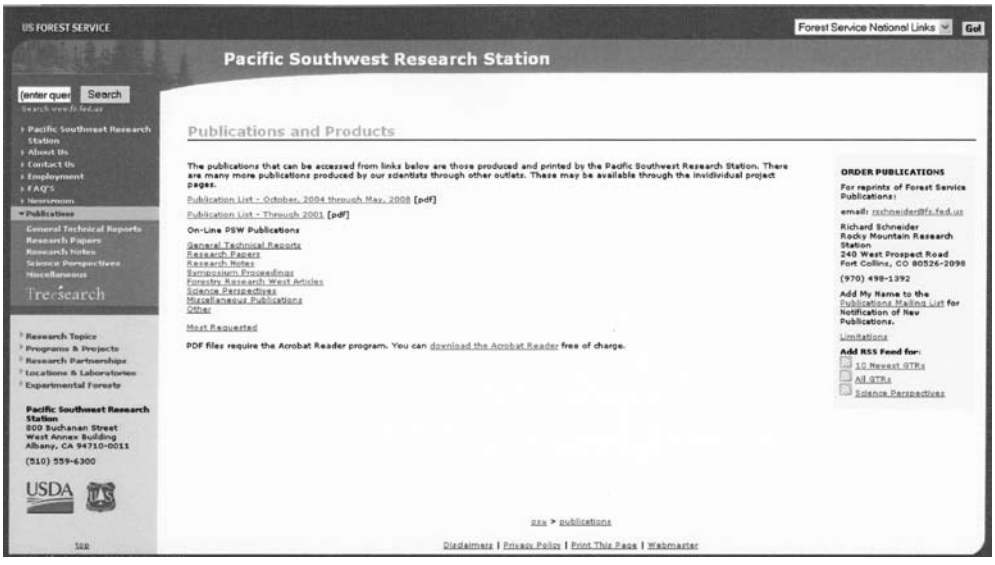

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