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# MEETINGS

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## Calendar

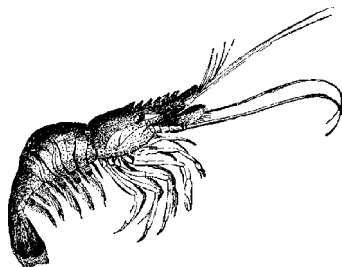
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### Wetland Stewardship: the 24th Annual Conference of the Society of Wetland Scientists

The theme for the Conference, to be held 8–13 June 2003 in New Orleans, Louisiana, is *Changing Landscapes and Interdisciplinary Challenges*. The conference will address interdisciplinary, innovative approaches and technologies that are currently being applied to sustaining wetlands across diverse environments and spatial scales of the world. Symposia and workshops should combine traditional and applied wetland sciences with ecological, physical, engineering, economic, or social sciences.

For detailed information, see the 2003 New Orleans meeting web site <<http://www.sws.org/neworleans/>> or contact:

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### Fourth North American Forest Ecology Workshop: "Ecosystems in Transition," Call for Papers

The workshop, cosponsored by ESA, will be held 16–20 June 2003, at Corvallis, Oregon. Its purpose is to bring researchers, academicians, and managers together to foster dialog and discussion of current issues related to basic and applied research in forested ecosystems of North America. Our appreciation of the dynamics of forest ecosystems has increased dramatically in recent years. Many forests are in transition from past climates, disturbance, and human activities. Increasing human influences on fire regimes, forest stand development, forest land use patterns, pathogens, and global ecosystem cycles are likely to accelerate rates of change. Our perceptions of forest ecosystems are changing as well. The emphasis on stability, equilibrium, and predictability in ecology has broadened to incorporate conceptual models based on nonequilibrium, chaos, complexity, and uncertainty. Researchers are struggling to find ways to understand the dynamism of ecosystems and to communicate insights to managers and the public. Managers are struggling to apply policies that may be based on unrealistic assumptions about ecosystem stability and predictability. The workshop will explore recent advances in the science and management of dynamic forests and human influences. Plenary Speakers are Dr. Kenneth Lertzman, Simon Fraser University, Burnaby, British Co-

lumbia, Canada; Dr. Nalini Nadkarni, Evergreen State College, Olympia, Washington; Dr. Robert Naiman, University of Washington, Seattle, Washington, and Dr. David Rizzo, University of California, Davis, California. The keynote speaker is Dr. Daniel Botkin, University of California, Santa Barbara. Field trips will be held on Thursday, 19 June, to several sites in Oregon and Washington.

Papers are being solicited for the following sessions:

- Silviculture for conservation, restoration, and/or intensified timber production
- Dynamics of natural and managed forests: implications for biodiversity
- Biotic influences: invasives, pathogens, and herbivory
- Riparian ecosystems and land-water interactions
- Strategies and indicators of ecologically sustainable forest management
- Hidden diversity and process: belowground systems and canopies
- Development of ecosystem cycles: baselines and anthropogenic change
- Inventory, monitoring, and change detection

*Abstracts, due 17 January 2003,* must be submitted electronically at <<http://outreach.cof.orst.edu/nafew/>>.



Insect trap, Gothic Mountain, Rocky Mountain Biological Lab, Crested Butte, Colorado. Photograph by David Inouye.

## **Ninth International Interdisciplinary Conference on the Environment**

The Conference will be held in London, England, 17-19 June 2003 at the Royal National Hotel. You may participate as session organizer, presenter of one or two papers, chair, moderator, discussant, or observer. *The early deadline for abstract submission and participation is 30 April 2003.* All papers will pass a peer review process for publication consideration in the Conference Proceedings. For more information, please contact Kevin L. Hickey or Demetri Kantarelis at the following address:

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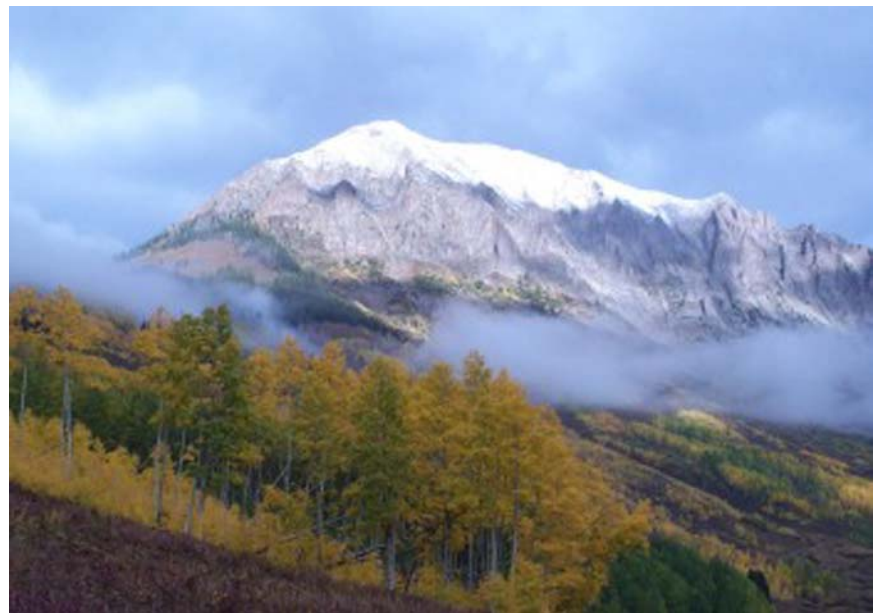
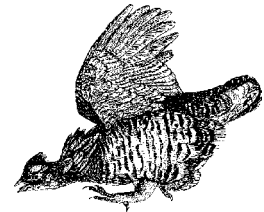
## **Rocky Mountain Biological Lab's 75th Anniversary Symposium, Crested Butte**

The Rocky Mountain Biological Lab (RMBL) will celebrate its 75th anniversary by hosting a symposium on 14-17 August 2003 to explore the value of conducting science in model ecosystems. We define a model eco-

system as a geographic area in which a wide range of research topics, from molecular to ecosystem processes, have been studied for a significant amount of time by a large number of independently working researchers. Although we expect that many talks will focus on the Gunnison Basin, home of the RMBL, we invite scientists with interests in or experience with model ecosystems from around the world to join us in exploring this theme. Sessions will be chaired by Dr. David Inouye (University of Maryland), Dr. Michael Kelrick (Truman State University), Dr. Ward Watt (Stanford University), Dr. John Harte (UC-Berkeley), and Dr. Michael Soulé (University of California, Santa Cruz). **Abstracts for talks are due 15 March 2003.**

For information, visit our website <[www.rmbll.org/modelecosystem/modelecosystems.html](http://www.rmbll.org/modelecosystem/modelecosystems.html)> or contact:

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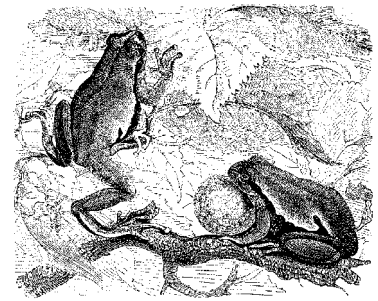


Autumn, Gothic Mountain, Rocky Mountain Biological Laboratory. Photograph (unattributed) used by permission of RMBL.

## ESA's 88th Annual Meeting 3–8 August, Savannah, Georgia

The 2003 Annual Meeting of the Ecological Society of America will be held jointly with the meeting of the North American Chapter of the International Society for Ecological Modeling, and will include symposia, contributed papers, poster sessions, workshops, discussions, special evening events, field trips, social gatherings, and business meetings. “Uplands to Lowlands: Coastal Processes in a Time of Global Change” is the theme, with the Savannah location providing a natural opportunity for exploring coastal ecosystems and their vulnerability to climate variability and land uses in the uplands. Although the theme provides a scientific and geographic context for the Annual Meeting, all topics and issues relevant to ecology are welcomed. Participants will include practitioners, managers, regulators, academic scientists, agency researchers, educators, and interested members of the public.

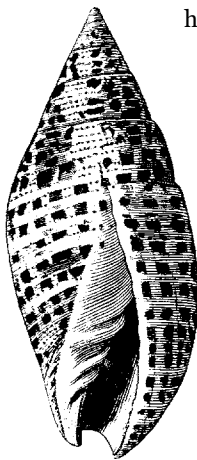
Deadlines for proposing symposia, discussions, and workshops have passed, but there is still time to apply to present posters and papers (*deadline 1 March 2003*); see “Call for Posters and Papers” in the Announcements section of this issue of the *Bulletin*, or visit the website <<http://www.esa.org/savannah/>>.



### CALENDAR

For a detailed listing of meetings and workshops in 2003 and 2004 that are of interest to ecologists and the general public, please see the announcements posted online by ESA's Public Affairs Office at <<http://www.esa.org/meetingcal.htm>>.

### Plan ahead for upcoming ESA Annual Meetings



#### ESA's 88th Annual Meeting,

held jointly with the International  
Society of Ecological Modeling,  
North American Chapter  
*Savannah, Georgia*

*3–8 August 2003*

“Uplands to Lowlands:

Coastal Processes in a Time  
of Global Change”

*Call for papers and posters*  
(*deadline 1 March*)

#### ESA's 89th Annual Meeting

*Portland, Oregon*

*1–6 August 2004*

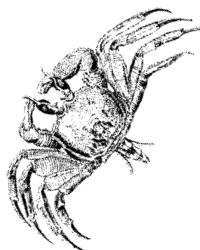
#### ESA's 90th Annual Meeting,

held jointly with INTECOL  
*Montreal, Ontario, Canada*  
*7–12 August 2005*

#### ESA's 91st Annual Meeting

*Memphis, Tennessee*  
*6–11 August 2006*

<<http://www.esa.org/savannah/>>



### Seventh International Conference on the Ecology and Management of Alien Plant Invasions

A conference and workshop on “Invasive Plants in Natural and Managed Systems: Linking Science and Management” will be held in conjunction with the seventh International Conference on the Ecology and Management of Alien Plant Invasions, 3–7 November 2003, in Fort Lauderdale, Florida. The conference will feature invited speakers, symposia, contributed posters, field trips, workshops, and panel discussions. Plenary and symposium speakers will include Secretary of The Interior Gale Norton; Secretary of Agriculture Ann Veneman; Ann Bartuska of The Nature Conservancy; Steve Dewey, Utah State University; Mark Lonsdale, CSIRO; Rod Randall, Western Australia Department of Agriculture; Marcel Rejmanek, University of California–Davis; and Dan Simberloff, University of Tennessee. Conference Co-Chairs are Carla D'Antonio (ESA) and Nelroy Jackson (Weed Science Society of America). For more information, see <<http://www.esa.org/ipinams-emapi7/>> or contact <[ipinams@esa.org](mailto:ipinams@esa.org)>.

# Meeting Reviews

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“MODIS Land Products,” a workshop held in Missoula, Montana, 16–18 July 2002. Sponsored by NASA, the Numerical Terradynamic Simulation Group, and the University of Montana. Presentations and posters from the meeting can be viewed at the meeting web site: <<http://www.forestry.umd.edu/ntsg/MODISCon/>>

MODIS (the Moderate Resolution Imaging Spectroradiometer) is the primary satellite-borne sensor in the NASA Earth Observing System for monitoring land surface characteristics and processes at the global scale. The sensor was launched in December 1999 aboard the Terra platform and is now fully operational. As part of an effort to create products from MODIS imagery that would be relevant to the field of Earth Systems Science, NASA funded a Land Science Team. This workshop focused on the current status of the Land Science Team products—notably, how they are produced and stored, how they are being validated, and how they are being used. The meeting was organized by Steve Running (University of Montana) and was attended by ~140 people.

Participants included representatives from all stages of MODIS data processing and use, including data storage and distribution, algorithm development, product validation, and new applications. Dr. Running commented, in his introduction to the workshop, that participants were fortunate in terms of their opportunity to participate in the testing and application of this qualitatively new scientific instrument. A special treat was the attendance of Charles David Keeling, a pioneer in the development of global monitoring instruments.

The first MODIS products discussed were the spectral vegetation indices (SVIs), including the familiar Normalized Difference Vegetation

Index (NDVI). SVIs are ratios of the reflectances of two or more wavelength bands, notably the red (absorbed by vegetation) and the near infrared (scattered or reflected by vegetation) bands. Although not directly linked to vegetation structure or function, the SVIs respond sensitively to vegetation changes and thus serve a role in monitoring annual and interannual patterns in vegetation phenology. The MODIS sensor achieves daily coverage at the 1-km resolution, but the SVI products are 8-day or 16-day maximum value composites that minimize the effects of clouds. Alfredo Huete (University of Arizona) described the Enhanced Vegetation Index, a variant of the NDVI that is less likely to saturate at high foliar biomass. Validation of the MODIS SVIs is achieved by comparisons at specific sites with SVIs from an airborne spectroradiometer. The airborne sensor data does not have the same issues with atmospheric correction that are associated with the satellite-borne instrument.

Leaf Area Index (LAI) and the fraction of incident photosynthetically active radiation absorbed by the vegetation (fPAR) are MODIS products that have a more direct biophysical meaning than the SVIs. fPAR is particularly important because it is a component in light use efficiency algorithms that are used to estimate spatial and temporal patterns in global net primary production. Ranga Myneni (Boston University) presented the two algorithms that are used in the MODIS LAI/fPAR products: one based on radiation transfer theory and the other on empirical relationships between LAI/fPAR and a spectral vegetation index. Validation of the LAI/fPAR products is occurring at various sites where LAI is measured directly (i.e., by allometry, clipping, or optical methods).

An important issue in doing LAI/fPAR product validation is bridging the gap in spatial scale between LAI observations made on the ground

over areas on the order of 1–100 m<sup>2</sup>, and the 10<sup>6</sup> m<sup>2</sup> size of one MODIS cell. Indeed, considering the issues of georegistration and spatial heterogeneity of the Earth’s surface, a validation area that covers multiple MODIS cells is desirable. An effective approach to scaling LAI over a 25 km<sup>2</sup> area was presented by Warren Cohen (USDA Forest Service). The approach of his multidisciplinary group (see <<http://www.fsl.orst.edu/larse/bigfoot/index.html>>) involves sampling of LAI at 100 points within a 25-km<sup>2</sup> validation area, developing empirical LAI/SVI relationships using imagery from the Landsat Enhanced Thematic Mapper sensor (30-m resolution), and mapping LAI with the reflectance data. Comparisons of this approach with the MODIS LAI products were shown for boreal forest, broadleaf forest, tallgrass prairie, and agricultural sites.

The “net photosynthesis” (PSN) and net primary production (NPP) products were discussed by Steve Running. The MODIS daily PSN algorithm first estimates gross primary production (GPP) based on a light use efficiency approach. Estimates of autotrophic respiration for leaf and fine root biomass are then subtracted, and the resulting values are summed over 8 days to yield the PSN product. At the end of the year, wood respiration is estimated and subtracted to give an annual NPP. Validation of the PSN product involves the same spatial issues as with LAI/fPAR but also a temporal issue, i.e., matching the 8-day interval of the PSN product. An additional constraint is that PSN can really only be estimated by measuring/modeling the processes of GPP and autotrophic respiration. The ground observations most relevant to the PSN product are the continuous measurements of net ecosystem exchange (NEE) made at eddy covariance flux towers. An estimate of daily GPP can be derived from the net ecosystem exchange (NEE) measurements by accounting for the contribution of eco-

system respiration to NEE during daylight periods. One approach to using flux tower data in the context of validating the MODIS PSN product is to compare tower GPP with GPP outputs from an ecosystem carbon cycle model parameterized for the tower site and driven by tower meteorological data. If there is good agreement, the model can then be applied in a spatially distributed mode over a validation footprint (~25 km<sup>2</sup>) around the flux tower, and model output can be compared to MODIS products. The application of this approach at the Harvard Forest flux tower site showed reasonable agreement between MODIS and ground-based PSN (see <<http://www.fsl.orst.edu/larse/bigfoot/index.html>> ). Bev Law (Oregon State University) provided an overview of the measurements relevant to MODIS validation being made at a network of flux tower sites (see <<http://daacl.esd.ornl.gov/FLUXNET/>>). Because of the dependency of the MODIS PSN/NPP products on multiple data sources upstream in the MODIS data processing scheme, it will be important to assess the relative contribution of each component of the algorithm to errors indicated by the ground measurements and modeling.

The global NPP product for 2001 had not been released at the time of the meeting because of problems in some locations with the near real time meteorological data provided by the NASA Data Assimilation Office (DAO) data stream. Reprocessing of the PSN/NPP product with corrected climate data is planned. Validation of the NPP

product will be challenging, not only because of difficulties in measuring above- and belowground production, but also because of the scaling issues previously alluded to. Dick Olson (Oak Ridge National Laboratory, ORNL) discussed an ORNL service to the validation community in which a database of MODIS products at a globally distributed set of core sites is being maintained (<<http://modarch.gsfc.nasa.gov/MODIS/LAND/VAL/>>). A database of ground measurements made by a variety of projects and field campaigns is also available (see <<http://mercury.ornl.gov/ornldaac/>>).

One of the great virtues of the MODIS product stream is its availability in near real time over the Internet via the U.S. Geological Survey EROS Data Center (<<http://edcwww.cr.usgs.gov/products/satellite/modis.html>>). Besides the Land Products, the available data includes the atmospherically corrected reflectances; thus researchers can develop their own algorithms for examining land surface characteristics and process rates. A complaint of early users of the EDC data was that the native projection of the MODIS products (Integerized Sinusoidal Projection) was difficult to work with. Fortunately, EDC has developed a reprojection tool that now transforms the data to more standard projection systems (albeit with some loss of georegistration accuracy). Besides the 1-km resolution products, the corrected reflectances include the visible and near infrared bands at 250-m and 500-m resolution. These may be particularly appropriate

for monitoring land use change because the scale of annual human disturbance is often at <1 km.

Because of the ready availability of the MODIS products and the daily coverage, there is great potential for use of MODIS data in a variety of applications. A vivid example presented at the workshop was the use of fire location data in day-to-day management of fires in the western United States. The MODIS snow cover product will also have immediate application for the specification of surface albedo in climate models.

Plans at NASA call for maintaining a MODIS-like sensor in orbit for the foreseeable future. The difficulties in getting the first MODIS instrument in orbit and operational made it comforting to hear that a second MODIS instrument, with an afternoon overpass time, was recently put in orbit. With these sensors, the capacity of the Earth Systems Science community to continuously monitor global land cover and the functioning of the biosphere is significantly increased. Considering the small size of the Earth relative to the burgeoning human influence on its surface and on the functioning of the biosphere, these steps toward effective global monitoring are welcome news.

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Images are courtesy of NASA's website, <<http://visibleearth.nasa.gov/Sensors/Terra/MODIS.html>>. Left, eruption of Mt. Etna, Sicily; center, snows in eastern United States; right, fires in Venezuela and Colombia.