

## WORK GROUP *Highlight*

### Conservation Biological Control Work Group Sponsors FABulous Tour, Reaps Fruits of Collaborative Efforts

By Gwendolyn Ellen, Oregon State University

On July 21st, in Oregon's Willamette Valley, the Western IPM Center-funded Conservation Biological Control (CBC) Work Group will conduct its first hands-on, interactive field course/tour on the role of biodiversity in conservation biological control. The tour, titled "Biodiversity That Works!" targets western agricultural decision- and policy-makers, their assistants, industry food safety personnel, funders, and local political figures and activists. The overall goal of the event is to highlight the importance of biodiversity as a biological pest management tool for western small farmers, emphasizing its important role in mitigating the effects of climate change and environmental degradation while also highlighting how it contributes to farm economic stability, resilience, energy efficiency, and sustainability. We hope that after their participation in the tour, the more-informed target audience will partner with us in advancing a regional CBC agenda in the future.

Visits facilitated by CBC work group experts to four stellar farms will demonstrate the extensive landscape diversity and habitat enhancement practiced in two different annual vegetable systems on the Willamette River and in a perennial orchard and vineyard system situated on two local creeks that eventually converge into the Willamette River. We will conclude the day with an on-farm organic dinner, a tour, and an exciting, rare night walk at an organic vegetable farm that wraps around the Marys River. The tour will be an exceptional



*Hedgerows on Kenagy Family Farm, the first stop on the FAB tour.*

Gwendolyn Ellen

opportunity to observe how different elements in the complex web of biodiversity and crop production interact.

In May, 2007, the CBC work group set its mission to foster collaborative approaches that further CBC in the western region. Three years later we are harvesting the fruits of our collaborative efforts. In addition to producing the tour, we have refined a survey document from two pilot needs assessment surveys conducted last summer on farms in Oregon. This year, work group members will conduct CBC needs assessment surveys throughout the region at diverse events. We hope to create a

shared work site on our server where we can all view, compare, compile, and display our survey results. Work group members have secured a collaborative two-year grant award to research habitat and predacious ground beetles on farms in Oregon and Washington. We have enhanced cooperative efforts among field consultants, researchers, Natural Resources Conservation Service (NRCS) personnel, and conservationists. We have collaboratively created demonstration habitat. We have also scheduled a cooperative field day for farmers who wish to learn how to propagate and use native plants in on-farm habitats in Oregon. Cooperators for this event include the NRCS Plant Materials Center, the Xerces Society for Invertebrate Conservation, and the Farmscaping for Beneficials program at Oregon State University.

Through our collaborations, we have realized that our work represents more than just biological pest management. In response to this realization we have changed our name to the Functional Agricultural Biodiversity (FAB) Work Group to encompass all the ecological services and synergisms (e.g., stable, enhanced populations of native pollinators, beneficial insects, amphibians, mammals, birds, and soil microbes) that can exist in biodiverse, ecological agricultural systems.

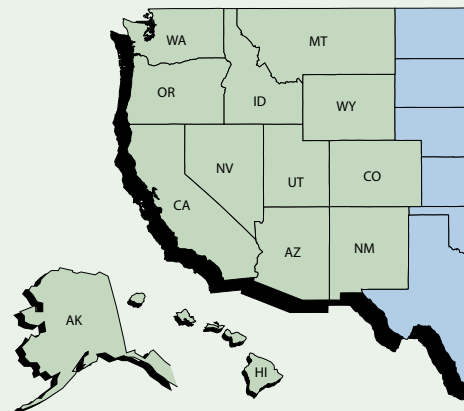
*Gwendolyn Ellen, Integrated Plant Protection Center, Oregon State University, can be reached at [gwendolyn@science.oregonstate.edu](mailto:gwendolyn@science.oregonstate.edu).*

## What's Inside

Director's Comments .....	2
Work Group Highlight: Snails and Slugs ...	2
UC IPM Update .....	2
Work Group Highlight: Urban Ants .....	3
Work Group Highlight: Invasive Plants .....	4
PMSP Update.....	4
Profile: Sherry Glick .....	5
Work Group Highlight: Weather Systems...	6
Bugwood Network .....	7
Work Group Highlight: Orchard Spray Application Efficiency .....	8
Mark Your Calendar .....	8

## Center Scope

The Western IPM Center enhances communication between federal and state IPM programs in the western United States: Alaska, Arizona, California, Colorado, Hawaii and the Pacific territories, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. It serves as an IPM information network, designed to quickly respond to information needs of the public and private sectors.



# Director's Comments

I don't know of any university program that has not been affected by funding issues. Whether it is state, federal, or other sources, money is tight. IPM has been particularly hard hit. State Cooperative Extension dollars are being reduced almost universally. Federal IPM Smith-Lever 3(d) funding is now competitive. Our FY09 funding was recently approved by Congress, but our 2009 operating budget is from FY08 allocations. The President's FY10 budget, recently released, includes level funding for the Regional IPM Centers, as well as for most other pest management programs in USDA.

The IPM Centers manage the Regional IPM Grants program for CSREES by developing regional priorities and convening the relevancy and technical review panels. Recommendations for funding are sent to USDA for concurrence and contracting. These grants serve the regions well by addressing local research and extension priorities. The research and extension funds come from two different federal sources. There is a move afoot to take the extension dollars from these regional pools to add to the EIPM funding for the IPM state competitive grants. This would amount to a \$155,000 reduction for each Regional IPM Grants program. These funds have enabled some very good projects to combine research with extension or to fund extension-only projects. If this funding is

moved, the Western Region IPM Grants program will be reduced to a research-only program with a pool of about \$500,000.

Look for other changes at USDA by October, as CSREES will no longer exist. The National Institute of Food and Agriculture will be created. All current authorities administered by CSREES will be transferred to the new Institute, which will be led by a presidentially-appointed director. State programs should see a seamless transition under the Institute.

The WIPMC is planning the release of our RFAs for "Addressing Western IPM Issues" and "Work Groups" in June. Expanded emphasis areas include IPM research and extension in agriculture and in urban and natural settings. Information networks will no longer be supported.

A regional IPM and Water Quality conference is being planned for 2010. IPM and Water Quality coordinators have formed a program committee. Look for details in future newsletters.

This issue of *The Western Front* highlights the activities of some of our work groups. Our work groups have achieved remarkable outcomes with support from the WIPMC. Please take a few minutes to read about some of their accomplishments.

*Rick Melnicoe*

## Highlight WORK GROUP

### Snails and Slugs in Ornamental Production—Setting Research Priorities in the Western United States

*By Cheryl Wilen, University of California*

Approximately 40 people representing growers, manufacturers, regulators, and researchers met in Portland, Oregon, on March 26 to discuss snail and slug issues in ornamental crop production in the western United States, including the Pacific Islands. The meeting was organized by Cheryl Wilen, PI of the Western IPM Center-funded Snail and Slug Management in Ornamental Crop Production Work Group, and Robin Rosetta (Oregon State University), a key cooperater in the work group. The meeting was held immediately following the International IPM Symposium. Representatives attended from California, Hawaii, Oregon, and Washington. Because of the high interest in these pests, they also had attendees from Florida, Kentucky, and Ohio. David G. Robinson, Malacology

Identification Specialist for USDA's Animal and Plant Health Inspection Service-Plant Protection and Quarantine (APHIS-PPQ), gave an overview of snails and slugs he has identified in the western United States and reported on others that could become major pests if they were found. Other topics included snail and slug updates from Oregon, Hawaii, and California and regulatory issues related to shipments to and from the U.S. mainland and islands. Nursery and floriculture industry speakers provided the audience with an update on their research needs concerning snail and slug management, and this was followed by manufacturers' overview of their products and how they could participate in research. Finally, current research projects from California and Hawaii were presented to the group. The presentations were followed by a lively discussion of research needs and goals for the western region, including new positions, IR-4 funding, and collaborative efforts to enhance communication. Lonza, manufacturer of metaldehyde (active ingredient in most snail and slug control products), and Neudorff, manufacturer of iron phosphate (another active ingredient, with organic uses), were additional sponsors of this meeting.

Cheryl Wilen can be reached at [cawilen@ucdavis.edu](mailto:cawilen@ucdavis.edu).



*Brown garden snail.*

### UC IPM Update—Moving Beyond Pesticides

The UC Statewide IPM Program has developed an online training course designed for retail and garden center employees and others who advise consumers about the best tools and products for solving pest problems. It gives a basic introduction to the principles of IPM, including information about pest identification, changing conditions that favor pests, and combining various least-toxic methods for



*A free, online pesticide training course can help garden center staff advise their customers about pesticides and alternative options for managing pests.*

the best long-term management of pests. It is available for free at [www.ipm.ucdavis.edu/IPMPROJECT/beyondpesticides.html](http://www.ipm.ucdavis.edu/IPMPROJECT/beyondpesticides.html).

The course takes about 1 hour to complete, and because it is broken into six sections, it can be completed over several sessions. The course is narrated, with video embedded to present scenarios that a retail nursery employee might encounter. Knowledge acquisition is surveyed through quizzes the user must pass before moving on to the next section. Users can repeat quizzes until they pass. A certificate of completion is provided when all six sections are successfully completed.

This is the second installment of the retail nursery IPM training course, following "Introduction to Pesticides" ([www.ipm.ucdavis.edu/IPMPROJECT/retailtraining.html](http://www.ipm.ucdavis.edu/IPMPROJECT/retailtraining.html)).



## Integrated Pest Management of Ants of Urban Importance in the Western Region

In August 2008, a group of 15 regional stakeholders who work in ant integrated pest management (IPM), including extension specialists, researchers, and pest management professionals from California, Washington, Arizona, and Hawaii, met for a two-day workshop on the campus of the University of California, Riverside. The overall objective was to identify the research and extension priorities for ants of urban importance throughout the western region. The following action points, developed at the meeting, were incorporated into a comprehensive research proposal that focused on developing IPM strategies that reduce the amount of insecticide used to control pest ants in urban environments, thereby reducing or eliminating potential insecticide runoff into watersheds and adverse effects on nontarget animals and other organisms.

### 1. Development and documentation of the efficacy of pest management strategies that reduce the amount of insecticide applied around structures to control pest ants.

Specific approaches to reducing the amount of insecticides applied include the use of baits and the use of low-volume and site-specific applications. The use of ant baits may reduce the amount of insecticide applied to control ants by more than 100 fold. A second approach is precision applications along ant trails and around potential nesting sites. Active ingredients that provide slow knockdown activity, delayed toxicity, and potential for horizontal transfer will be evaluated in these studies.



Doug-Hwan Choe, UCR Riverside

Odorous house ants.

### 2. Development of strategies that reduce the frequency of insecticide applications.

Many pest management professionals (PMPs) market pest control services in which they routinely apply insecticides according to specific calendar timing rather than on an as-needed basis. To decrease the frequency of insecticide applications, strategies that emphasizes inspections, monitoring, and treating active infestations will be emphasized. Insecticides will be applied only when ants are present or troublesome. The reduced spray treatments and baits will be evaluated in this approach and the amounts of insecticide applied will be compared to traditional service. These IPM strategies must be economically

viable for PMPs and acceptable to homeowners and customers.

### 3. Development of strategies that will reduce potential insecticide runoff into urban watersheds.

Sprays and granules for ant control are routinely applied around structures without concern for their potential runoff into storm drains after irrigation or rain events. With the detection of insecticides in urban water runoff, this issue has gained increasing attention and concern. Changes in irrigation practices as well as application practice may have dramatic effects on reducing pesticide runoff. To examine the impact of these changes, water runoff samples will be tested for insecticides. Studies will focus on those application techniques that reduce or eliminate insecticide runoff.

### 4. Demonstration of cost-effective control measures to control ants utilizing low-impact IPM programs.

The acceptance and adoption of low-impact IPM strategies to control ants will depend upon the researchers demonstrating that these strategies are economically feasible. With the help of pest management professionals, these strategies will be compared to conventional services. Customer satisfaction and economic considerations will be determined for each treatment.

Contact Mike Rust, [michael.rust@ucr.edu](mailto:michael.rust@ucr.edu), or John Klotz, [john.klotz@ucr.edu](mailto:john.klotz@ucr.edu), University of California, Riverside.

## State Brief

### UTAH PESTS Holds In-Service Training

The UTAH PESTS in-service training highlighted turf and ornamental diagnostics and pest management February 3 and 4 in Provo. The event featured 12 presentations by Utah State University faculty, Extension agents, and keynote speaker Dr. Whitney Cranshaw. Dr. Cranshaw, professor and Extension entomologist at Colorado State University, is a renowned insect photographer and author of five books and numerous Extension publications. He captivated the audience of 45 with topics from butterfly gardening to thousand cankers diseases to insect scatology (identifying insects based on excrement). All presentations are available on the UTAH PESTS Web site, <http://utahpests.usu.edu/ipm/htm/publications/slideshows>. The in-service training concluded with a "dueling diagnostics" segment that challenged everyone and was rated a favorite by the audience, which included agents, public garden horticulturists, golf course managers, and members of the green industry.

Contact Erin Hodgson, Utah State University, at [erin@biology.usu.edu](mailto:erin@biology.usu.edu).

### Surge of Black Pineleaf Scale in Northern Utah

Arborists and Utah State University (USU) Extension agents have noticed an upsurge in the incidence of black pineleaf scale in the last 3 to 5 years on Scotch, Austrian, and ponderosa pines in northern Utah. The black pineleaf scale (*Nuculaspis californica*) is an armored scale, concealing its body under a removable, waxy covering. It feeds

only on needles, and most pine species are susceptible, as well as Douglas-fir. Considered to be a native insect occurring throughout North America, black pineleaf scale is primarily a pest of economic importance in the western United States. This scale is kept in check by two wasp parasitoids (*Prospatella* sp. and *Physcus varicornis*) that have three or more generations during the scale's single one. Pineleaf scale is sensitive to sudden cold temperatures, and early fall frosts can also prevent outbreaks. The current outbreak in Utah was probably triggered by a combination of factors, including mild fall weather, dust (which encourages scale and discourages predators), and urban stressors such as prolonged moisture deficit, soil compaction, and root injury. Use of pesticides that inadvertently killed the parasitoid wasps could also have played a role.

Managers should take an IPM approach in controlling black pineleaf scale, which includes a combination of maintaining tree health, promoting the wasp parasitoids, and foliar or systemic insecticides for severe infestations. USU Extension will continue to work with city managers and arborists to bring the epidemic to a manageable level. A balance must be found among the wasp predators and the scale, which may take several years of treatment. In the meantime, an early fall frost can result in significant mortality, speeding up the process.

Contact Marion Murray, Utah State University, at [marion.murray@usu.edu](mailto:marion.murray@usu.edu).

## State Brief

### Economic, Environmental, and Health Benefits of Arizona Pest Management Center IPM Programs

The Arizona Pest Management Center (APMC), at the University of Arizona, recently initiated an effort to garner increased stakeholder support for Arizona integrated pest management (IPM) programs. Given the deep budget cuts and hard choices being made by the University of Arizona, we felt it was important to highlight for our stakeholders some of the major economic, environmental, and health benefits of our IPM programs. These are some of the numbers we shared:

- **0:** the number of sprays made by Arizona's cotton growers in 2008 for the pink bollworm, a devastating pest that previously required sprays every year, costing growers millions of dollars since 1965.
- **44%:** the reduction in insecticide use by lettuce growers since 1996, including a 3-fold reduction in the use of broadly toxic insecticides. Growers continued to deliver high quality and safe produce to consumers.
- **69%:** the reduction in cotton insecticide sprays, also reaching an all-time low in costs for growers (2007).
- **99%:** the amount of pesticide reduction in Phoenix city facilities participating in a recent IPM pilot project.
- **303,600:** the number of school children enjoying improved indoor air quality in Arizona's K-12 schools that subscribe to

our IPM programs reducing cockroach-related asthma triggers, pesticide use by 71%, pest complaints by 78%, and costs by 31%.

- **1.7 million:** the pounds eliminated annually of cotton insecticides applied compared to a three-decade high set in 1995.
- **\$201,599,681:** the money saved in insect control costs and increased yield by cotton growers cumulatively since 1996.
- **10-fold:** the amount of funding for each federal dollar invested that the APMC has brought to Arizona through successfully competing for regional and federal grants that help support our IPM programs.

Measuring and documenting the impact of IPM remains a high priority for all of us, especially during these tough economic times. All of these numbers reflect the APMC's general commitment to and focus on IPM assessment. Some of the numbers come directly out of the WIPMC-funded Crop Pest Losses and Impact Assessment Work Group, including some first-ever longer-term assessments that have been made possible with the data collected by this group. These kinds of numbers help to demonstrate the relevancy of our research and extension programs and justify continued investment in IPM.

For further information, contact Al Fournier, [fournier@cals.arizona.edu](mailto:fournier@cals.arizona.edu).

## Highlight

## WORK GROUP

### Invasive Plants in Natural Areas: Connecting Regional Centers across the United States

By Janet Clark, Montana State University

Last fall the Center for Invasive Plant Management (CIPM, [www.weedcenter.org](http://www.weedcenter.org)), located on the campus of Montana State University, Bozeman, was awarded a \$10,000 grant by the Western IPM Center to convene the first face-to-face meeting of regional invasive plant centers across the United States and to form a national network. Six centers were represented at the two-day meeting in January, held in Indianapolis: CIPM, the Midwest Invasive Plant Network (Purdue), the Invasive Plant Atlas of New England

(University of Connecticut), the Center for Aquatic Invasive Plants (University of Florida), the Center for Invasive Species and Ecosystem Health (University of Georgia), and the California Invasive Plant Council (in Berkeley, California).

Partners explored ideas about pooling resources to build an efficient information-sharing network. The group concluded that the new National Network of Invasive Plant Centers (NNIPC) would serve primarily to aggregate and synthesize regional information in order to provide a national perspective and resources for natural resource managers, researchers, policy-makers, and educators, focusing particularly on topics that warrant national discussion and coordination.

As an outcome of the WIPMC-funded meeting, NNIPC now has launched a Web site ([www.invasiveplantcenters.org](http://www.invasiveplantcenters.org)) that includes the first-ever national map of community-led Cooperative Weed Management Areas. Network partners hold monthly conference calls and have collaborated on grant proposals to conduct national projects and to build network capacity.

Janet Clark, Assistant Director for Policy, Center for Invasive Plant Management, Montana State University, can be reached at [janet.clark@montana.edu](mailto:janet.clark@montana.edu).



Representatives of six regional centers met in January to form the National Network of Invasive Plant Centers.

## PMSP Update

### Ongoing:

- **Christmas Trees (Oregon and Washington):** In final editing
- **Caneberry (Oregon and Washington):** In final editing
- **Coffee (Hawaii):** In final review
- **Pear (California):** Being Updated (workshop held in March)
- **Citrus (California)**
- **Winegrape (California)**
- **Desert Turf (Arizona, Nevada, and Southeastern California)**
- **Turf (Hawaii)**
- **Low Desert Cotton (Arizona and Southeastern California)**
- **Grass Seed (Idaho, Oregon, and Washington)**

See completed PMSPs on the National IPM Center's Web site at <http://pestdata.ncsu.edu/pmsp/>.



# PROFILE

## Sherry Glick

*National Pesticides and Schools Coordinator, U.S. Environmental Protection Agency*

Sherry Glick has served on the Western IPM Center's Advisory and Steering Committees since 2006. Sherry is enthusiastic about representing US EPA on these committees. She says, "I think US EPA being part of the Center's Advisory and Steering Committees is a perfect fit. We promote similar programs and have the same goals to promote IPM. It gives us a chance to talk about grants and helps us work better together." Sherry also serves on the advisory and steering committees of the National IPM in Schools Work Group, as well as on a national committee that promotes collaboration among the Regional Centers, USDA, and US EPA, with Rick Melnicoe and Linda Herbst. More than just a career, Sherry feels that IPM is part of her life.

Born in Trenton, Michigan (a suburb of Detroit), Sherry grew up in the northwest part of Detroit. She loves animals and had initially wanted to be a veterinarian, but because of severe allergies, she had to choose something else. She graduated in 1979 from Michigan State University with a B.S. in chemistry. Sherry began her career in Ann Arbor, Michigan, with EPA's Motor Vehicle Emissions Program. She has been employed with US EPA for 29 years.

In the mid-1980's, Sherry moved to Washington, D.C., to work at EPA's headquarters, in the Office of Administration and Resource Management. She worked there as an Environmental Specialist with the Environmental Health and Safety Division during the time when there were indoor air issues in the offices at headquarters with off-gassing of carpets and ventilation problems.

In 1989, Sherry was offered a promotion, becoming part of the team within the Office of Pesticide Programs. Soon after that, she was accepted into the prestigious Greater Leadership Opportunity Program (GLO), where she shadowed EPA Administrator Carol Browner and served as a specialist at the Chesapeake Bay Program Office in Annapolis, Maryland. Then Sherry was invited to join the staff in the Biological and Economics Analysis Division of the Office of Pesticide Programs to initiate a risk-reduction initiative introduced by the Administrator of EPA that was later named the Pesticide Environmental Stewardship Program (PESP).

Sherry has been working on PESP-related activities since the early 1990's. During this time, she has worked tirelessly to develop programs within PESP, including working on membership growth and liaison development. Sherry initiated a risk-reduction newsletter called PESTSMART. That newsy bulletin has evolved into what is now known as the PESP Wire, which is sent out electronically.

In the late 1990's, Sherry stepped forward at EPA to take on a challenge that the Agency wanted to address. The subject was school IPM, and Sherry quickly aligned that initiative with PESP and grew both of the programs simultaneously. In the past few years, the School IPM Program has grown exponentially, and Sherry has



*Sherry Glick*

---

***Sherry says her perfect day at work is "when I am making things happen—using my position at EPA to promote better human health and environmental changes for the better."***

---

been part of that movement. Her manager says, "School IPM and Sherry Glick are synonymous."

During her career, Sherry has earned a number of prestigious honor awards. Besides being accepted into the GLO Program, Sherry was presented with the Al Gore Hammer Award for her work with voluntary programs within the Agency. She, along with several other colleagues, was presented a Silver Medal from EPA's Honor Awards (1995) for working together to create the Pesticide Environmental Stewardship Program.

Sherry has been with the Biopesticides and Pollution Prevention Division (BPPD) in the Office of Pesticide Programs since its beginning. During the last four years, however, Sherry physically works out of EPA's Office of Radiation and Indoor Environments National Laboratory, located in Las Vegas, Nevada. Even though Sherry sits in their office space, she still works for the Environmental Stewardship Branch in BPPD in EPA's Office of Pesticide Programs, as the National Pesticides and Schools Coordinator. Sherry wears other hats as well, promoting and building partnerships within PESP and promoting environmental stewardship through many other work groups within EPA. Sherry says her perfect day at work is "when I am making things happen—using my position at EPA to promote better human health and environmental changes for the better."

Most recently, Sherry served as the International Awards Chair for the 6th Annual International IPM Symposium, held in March in Portland. Despite hard economic times, the Symposium was attended by more than 700 people and had representation from 29 countries. "Chairing this event was one of the most rewarding opportunities in my career. Not only did I lead a group of fabulous individuals who gave much of their time in evaluating and selecting the awardees, but I was personally given the chance to recognize incredible folks with insurmountable challenges who still are implementing IPM practices throughout the world."

Asked about the future, Sherry said, "I will not be retiring at 55. I am going to work to see the 'School IPM 2015' Pest Management Strategic Plan to completion. I will work until we can implement

the entire plan."

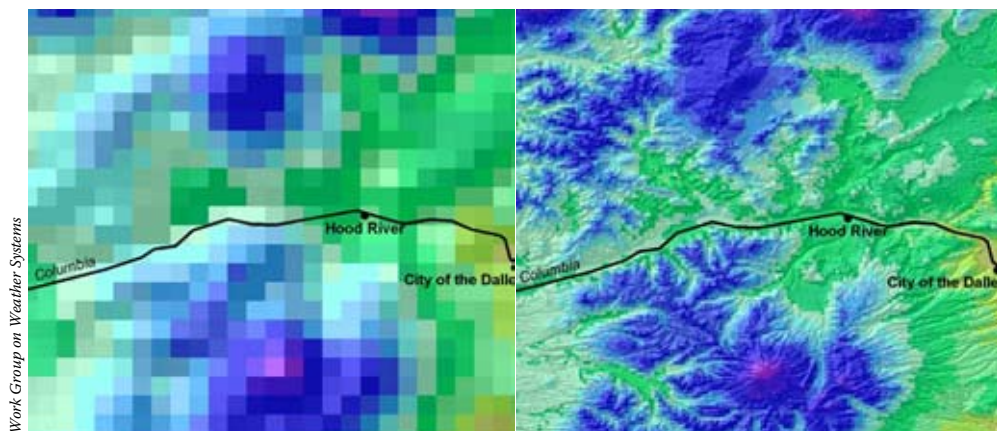
Despite her allergies, Sherry loves the outdoors. She enjoys the National Parks, including Yosemite, Zion, and Great Basin, which are almost in her backyard. She is looking forward to a trip this summer to Yellowstone, where she will stay at the Old Faithful Inn. She loves to travel and has been to Europe and Africa and spent a year in Israel in her younger days, studying Hebrew and working on a kibbutz. Sherry is married to husband, Dale. Her son, David, is 18 and will be attending the University of Maryland this fall.

Contact Sherry Glick at [glick.sherry@epamail.epa.gov](mailto:glick.sherry@epamail.epa.gov).

## Work Group on Weather Systems

The Western IPM Center-funded Work Group on Weather Systems has become recognized as a leader in the interpolation and delivery of weather, forecast, and pest model data. Collaborative research that was a direct result of work group meetings has resulted in the implementation of interpolated weather forecasts (e.g., [http://pnwpest.org/cgi-bin/risk\\_model/risk\\_models](http://pnwpest.org/cgi-bin/risk_model/risk_models)), including an initial prototype “virtual weather station” (VWS) system that uses interpolated public data. The VWS system, with a resolution of 2km, was developed by Fox Weather, LLC, and the Integrated Plant Protection Center (IPPC) at Oregon State University, and is being ground-truthed. Improvements made to Fox Weather weather analysis and forecast models as a result of this work group’s activities now allow direct down-scaling of coastal effects to 800m resolution. The improved models are being delivered operationally in California and were used to develop fire weather forecasts in 2008. A PRISM-based climate-informed forecast system, with a resolution of 800m, has been developed and is being evaluated on an experimental basis. Uncertainty analyses are under way with the various weather analysis and forecasting systems. The use of PRISM climatological-aided interpolation was demonstrated to reduce errors compared to temporal interpolation of missing data. Threshold-based pest models appear to be more susceptible to errors in interpolation of weather data than simulation-type models.

During 2008, the work group was invited to organize and present a symposium at the Pacific Division of the American Phytopathological society on the methods and their utility for disease forecasting. The work group helped others form the North Central



*These images show a 4km (left) and 800m (right) scaling of temperature for the Mount Hood area of Oregon, a cherry and pear production region. 4 km is fine for most of the United States, but it is not suitable for management decisions in the complex terrain of the West.*

Region Weather Work Group and was invited to participate in their inaugural meeting. The group developed and submitted four research proposals and received more than \$130,000 in funding for research and implementation activities. Since the group’s inception, members have secured more than \$1 million in funding. The group held numerous conference calls and two face-to-face meetings. They restructured membership into two groups, principal and associate members, to be able to involve more people in the group while accommodating a limited budget. Several members have acquired funding for part or all of their travel expenses to work group meetings, and all conference calling expenses are covered by USDA-Agricultural Research Service. Thus, the Western IPM Center funds are being supplemented with more than \$5,000 from other sources for group meetings.

The National Plant Diagnostic Network (NDPN) epidemiologist is currently evaluating the use of these tools for monitoring and prediction of plant, animal, and human disease outbreaks. This information has already yielded useful information concerning soybean rust, using the degree day maps and eight generic disease models.

Contact Walter Mahaffee, USDA-ARS and Oregon State University, [walt.mahaffee@ars.usda.gov](mailto:walt.mahaffee@ars.usda.gov); Carla Thomas, NPDN, UC Davis, [cthomas@ucdavis.edu](mailto:cthomas@ucdavis.edu); Alan Fox, FoxWeather, LLC, [alan@foxweather.com](mailto:alan@foxweather.com); Len Coop, Oregon State University, [coopl@science.oregonstate.edu](mailto:coopl@science.oregonstate.edu); or Chris Daly, PRISM Group, [daly@nacse.org](mailto:daly@nacse.org).

## State Brief

### Yearly Increase in Pyrethroid Illnesses and Injuries since 2001

The Washington State Department of Health (WDOH) runs a pesticide illness monitoring and prevention program that collects information when cases are reported. Reports usually happen through physicians, Poison Control Centers, or complaint investigations. The WDOH program noticed a trend: pyrethroid illnesses and injuries have increased every year since 2001. The primary culprits are bug bombs used in residential settings by homeowners or apartment managers. In a two-year study of exposure data, WDOH identified common problems that led to exposures: 1) users did not follow the package instructions, 2) they used more foggers than needed for their applications, 3) the restricted-entry interval was not followed, 4) cans malfunctioned and released their material before the user was safely away, and 5) cans did not have a mechanism to shut the aerosol off once it began. More interestingly, 15

out of 22 people who became ill had used the same product. This may simply have been because the trade name has high brand recognition and the company has a large market share. Investigators were concerned, however, that the product had a relatively high active ingredient concentration and came in a small container. Both factors could contribute to residential overuse. WDOH notified EPA of its concerns, provided the data, and started a public awareness campaign (<http://www.doh.wa.gov/ehp/pest/fogger.htm>).

The reason illnesses have increased since 2001? Pyrethrins became the predominant ingredient in bug bombs after the phaseouts of chlorpyrifos and diazinon. Unlike with chlorpyrifos and diazinon, there seems to be a sub-population that is particularly sensitive to pyrethrins. People in this population suffer more serious reactions during exposure, particularly if they have asthma or other respiratory conditions.

For further information, contact Catherine Daniels, [cdaniels@wsu.edu](mailto:cdaniels@wsu.edu).



# The Center for Invasive Species and Ecosystem Health—Bugwood Network

Chances are you have heard of the Bugwood Network ([www.bugwood.org](http://www.bugwood.org)), and perhaps you have used one of their free images in a publication or presentation. The Bugwood Network—which officially became the Center for Invasive Species and Ecosystem Health in February 2008, and is housed at the University of Georgia, Tifton (180 miles south of Atlanta)—has an Image Database System with more than 102,000 high-quality, high-resolution images from 1,579 photographers covering more than 12,680 subjects from 111

The Bugwood Network began in 1994 when entomologist Keith Douce and silviculturist David Moorehead, both professors at the University of Georgia, joined forces. The two now co-direct the Center for Invasive Species and Ecosystem Health, and their mission is far-reaching. With the goal of becoming a clearing house for information, applied research, and training and a preeminent national and international public service and outreach center, they seek to serve a lead role in the development, consolidation, and dissemination

of information and programs focused on invasive species, forest health, and natural resource and agricultural management. They do this through technology development, program implementation, training, applied research, and public awareness. And they aim to accomplish all of this at state, regional, national, and international levels. The Center's scope is ecosystem-wide

BugwoodWiki is a content management system with customized features and capabilities. The site is currently maintaining 606 articles. Authorship and editing are limited to "BugwoodWiki Scholars," people who have experience, education, or training specific to the articles they plan to write or edit and who apply for and are given authorship privileges. BugwoodWiki users have full access to the Bugwood Image Database System. Topic areas for articles include Invasive Species, Crop Management, Forestry, Household and Structural, and many more. Visit BugwoodWiki at [http://wiki.bugwood.org/Main\\_Page](http://wiki.bugwood.org/Main_Page).

The Center offers a wide array of services that integrate science-based resources with information technology applications and graphic design tools. A few examples of these services include educational Internet application development and hosting; development of educational resources



Go to <http://bugwood.org> to access high-quality, high-resolution images from around the world, and much more.

countries. This fully searchable, taxonomically-based collection of images encompasses 16 different Web sites and receives 15 million hits each month (more than 1.4 million unique users per month). All the images are available at no cost for educational use, as long as they are properly cited (photographer, organization, bugwood.org). Bugwood images have typically been used in Web pages, PowerPoint presentations, newsletters, newspaper articles, posters, magazines, diagnostic keys, journals, and text books.

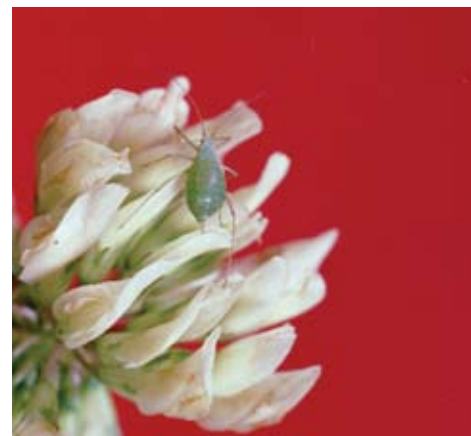
and multidisciplinary. They focus heavily on outreach and collaborate with a broad base of groups. And they seek funding from and cooperation with a broad array of agencies.

The Bugwood Image Database System is just one of three proprietary products the Center has developed to facilitate their work and to provide the backbone for their Web applications and services. In 2005 they started the Early Detection and Distribution Mapping System (EDDMapS), providing a "picture" of the distribution of invasive species across the

United States. This Web-based system, which cooperates with and aggregates data from other invasive species mapping projects, facilitates early detection and rapid response implementation with online data entry forms, email alerts, and a network of expert verifiers. Visit EDDMapS at <http://www.eddmaps.org/>.

They started a third product, BugwoodWiki, in 2007, as a USDA-CSREES Capstone Project. Based on Wikipedia's MediaWiki,

Pea aphid (*Acyrtosiphon pisum* [Harris]).

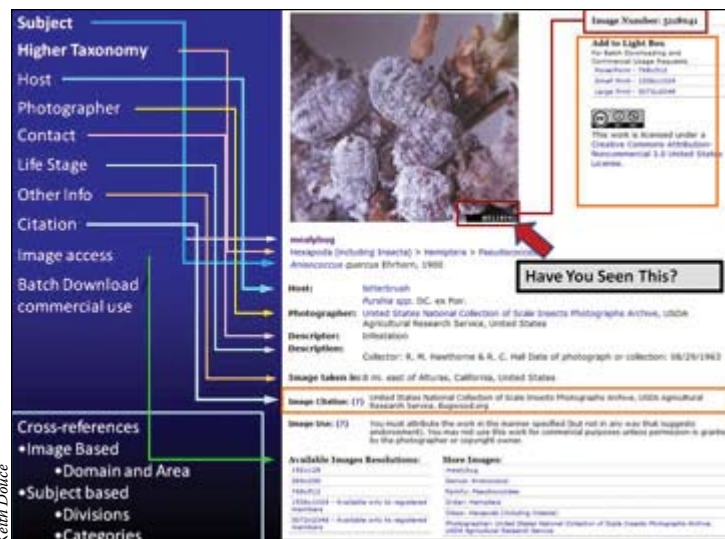


Clemson University—USDA Cooperative Extension Slide Series, Bugwood.org

including bulletins, publications, posters, CD-ROMs, and presentations; providing training and support for landowners, natural resource professionals and managers, and the general public; interactive CD-ROM and DVD-ROM development; and full-color publication design and layout. Visit the Web site, <http://www.bugwood.org>, to see the Center's full range of services. The Center is always actively accepting image submissions to the Bugwood Image Archive. Guidelines for submission can be found on the Web site.

The Center receives funding from and cooperates with USDA-CSREES, the U.S. Forest Service, USDA-APHIS, The Nature Conservancy, the Southern IPM Center, the Center for Invasive Plant Management, the National Park Service, the U.S. Fish and Wildlife Service, the International Society of Arboriculture, and the American Phytopathological Society, among others.

For further information, visit the Web site, <http://www.bugwood.org>, or contact Keith Douce, [kdouce@uga.edu](mailto:kdouce@uga.edu), or David Moorehead, [moorhead@uga.edu](mailto:moorhead@uga.edu).



The Bugwood Image Database System is not just a gallery of images. Images are selected, edited, tagged, identified, credited, databased (and therefore searchable), referenced, archived, downloadable, and usable.

## Mark Your Calendar

### 2009

#### July

- International Society of Arboriculture Annual Meeting, July 24–29, Providence, Rhode Island. <http://www.isa-arbor.com/conference/>
- Mycological Society of America and Botanical Society of America Annual Conference, July 25–30, Snowbird, Utah. <http://www.botanyconference.org/>

#### August

- APS Annual Meeting in conjunction with APS Pacific Division Meeting, July 30–August 6, Portland, Oregon. <http://meeting.apsnet.org/default.cfm>
- Pest and Disease Diagnostics for International Trade and Food Security, August 10–21, Wooster, Ohio. <http://plantpath.osu.edu/extension/international/>
- North American Pesticide Applicator Certification & Safety Education Workshop, August 10–13, Charleston, South Carolina.
- Society for Invertebrate Pathology, August 16–20, Park City, Utah. <http://www.sipweb.org/meeting.cfm>

#### September

- 5th National Small Farms Conference, September 15–19, Springfield, Illinois. <http://www.conferences.uiuc.edu/conferences/conferenceviewer2/view.cfm?conf=20033>
- IR-4 Food Use Workshop, September 15–16, Cleveland, Ohio. <http://ir4.rutgers.edu/>

#### December

- 2009 National Soybean Rust Symposium, December 9–11, New Orleans, Louisiana. <http://www.apsnet.org/online/sbr/>
- Entomological Society of America, December 13–16, Indianapolis, Indiana. <http://www.entsoc.org/am/index.htm>

### 2010

#### February

- 24th Vertebrate Pest Conference, February 22–25, Sacramento, California. <http://www.vpconference.org/>

For more information, see “News/Announcements” and “Funding Opportunities” on the WIPMC Web site.

## Highlight

## WORK GROUP

# Increasing Regional Communication to Improve Orchard Spray Application Efficiency

By Franz Niederholzer, University of California Cooperative Extension

The WIPMC-funded work group on Increasing Regional Communication to Improve Orchard Spray Application Efficiency met in Portland, Oregon, on January 13. The meeting had two objectives: (1) to connect interested parties from around the western United States—public and private—concerned with improving pesticide application efficiency, and (2) to hear what those interested parties have been doing and plan to do in the area of spray application efficiency. The following presentations were made:

- The Effect of Riparian Vegetation on Surface Water Loading of Aerial and Ground-Applied Organophosphate Pesticides in Cherry Production (Dr. Jeffrey Jenkins, <http://emt.oregonstate.edu/people/faculty/jeffrey-jenkins>, Department of Environmental and Molecular Toxicology, Oregon State University)
- Spray Efficiency (Dr. Ken Giles, <http://bae.engineering.ucdavis.edu/pages/faculty/giles.html>, Department of Biological and Agricultural Engineering, University of California, Davis)
- USDA Research Review: National Application Technology Lab (Dr. Rich Derksen, <http://www.ars.usda.gov/pandp/people/people.htm?personid=1353>, USDA-ARS Application Technology Research Unit, Wooster, Ohio)
- Applied Research in Spray Efficiency/Drift Management (by Franz Niederholzer, [http://cesutter.ucdavis.edu/Orchard\\_Crops612/](http://cesutter.ucdavis.edu/Orchard_Crops612/), University of California Cooperative Extension, Sutter-Yuba Counties)
- Training Options: Web-based Adobe Presenter, Narrated PowerPoints®, and Audience Response Systems (by Carol Ramsay, <http://entomology.wsu.edu/Profiles/ramsay.html>, Washington State University)
- Air-Blast Sprayer Calibration/Set-up: A Manufacturer's Perspective (by Kim Blagborne, Owner, Slimline Manufacturing, <http://www.turbomist.com/default.cfm>, Penticton, British Columbia)

The audience included pest control consultants, extension educators, growers, and researchers from Washington, Oregon, and California.

Direct outcomes from this meeting include:

- A \$50,000 planning grant proposal, titled “Development of a Smart Targeted Spray Application Technology Roadmap for Specialty Crops” was submitted to the Specialty Crop Research Initiative (SCRI) program by Washington State University. Co-Project

Directors from University of California, Oregon State University, USDA-ARS, and Cornell University contributed to the grant. The involvement of the University of California and USDA-ARS in this proposal was a direct result of contacts made at the Portland work group meeting.

- The University of California Division of Agriculture and Natural Resources leased a low-drift Turbo-Mist tower sprayer for on-farm research and grower demonstrations beginning in April. Turbo-Mist sprayers are built by Slimline Manufacturing, owned by Kim Blagbourne, one of the presenters at the meeting.

Contact Franz Niederholzer at [fjniederholzer@ucdavis.edu](mailto:fjniederholzer@ucdavis.edu).



Turbo-Mist sprayer in pear orchard near Walnut Grove in Sacramento County.

Franz Niederholzer

The Western Front is published three times a year by the Western Integrated Pest Management Center (WIPMC) at 4249 Meyer Hall, University of California, One Shields Ave., Davis, CA, 95616. The newsletter is available online at [www.wripmc.org](http://www.wripmc.org). The WIPMC is supported by a grant from USDA-CSREES.

**Director:**  
Rick Melnicoe, (530) 754-8378  
E-mail: [rmelnicoe@ucdavis.edu](mailto:rmelnicoe@ucdavis.edu)

**Editing and Design:**  
Diane Clarke, (530) 752-7011  
E-mail: [dmclarke@ucdavis.edu](mailto:dmclarke@ucdavis.edu)



**Acknowledgements:**  
Banner images: wheat field, Rick Melnicoe, WIPMC; Seattle skyscrapers, Denny Fleenor, Washington State University; and creek in foothills, Suzanne Paisley, ANR Communication Services.