

For: Southern Region Integrated Pest Management Center

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Proceedings of the 2005 National Turfgrass Insect Workshop

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Coastal Research and Extension Center

Biloxi, MS

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Executive Summary

The 2005 National Turfgrass Insect Workshop was organized by Drs. David Held (Mississippi State University) and Eileen Buss (University of Florida), and was held on 20–21 February at the Coastal Research and Extension Center (CREC) Conference facility in Biloxi, MS. Thirty-six participants representing industry (Golf Course Superintendents Association of America and various pesticide manufacturers), government (USDA–ARS), and students and faculty from twelve universities in the U.S. and Canada attended.

The meeting had several goals, including bringing together key researchers, extension specialists, government, and industry personnel to network, share information about their programs, and to dialog about the current needs and issues related to insect pest management on turfgrass in the United States. The conference participants concluded that the basic biology, natural enemy complex, and integrated management of several traditional and new exotic pests need to be examined under several different turfgrass maintenance systems (e.g., golf course, sod, athletic field, residential lawn). Particular examples of current pests included billbugs (*Sphenophorus* spp.), white grubs, red imported fire ants (*Solenopsis invicta*), the turfgrass ant (*Lasius neoniger*) and other nuisance ants on tees and putting greens, and even earthworms. The southern chinch bug has had ongoing insecticide resistance problems, appears to be developing resistance to pyrethroids, and no highly efficacious products exist to replace pyrethroids. The exotic pest problems that were indicated included the introduction of an exotic armored scale (*Duplochianaspis divergens*) in the South, the continued range expansion of Japanese beetles (*Popillia japonica*), and the recent discovery of European crane fly (*Tipula paludosa*) and another crane fly (*Tipula oleraceae*) in New York state. Identification and application of biological organisms such as nematodes, viruses, and bacteria to turfgrass for insect control

needs greater attention. And, more insecticide efficacy data are needed for the green June beetle (*Cotinis nitida*), hunting billbug (*Sphenophorus venatus vestitus*), *Phyllophaga* spp., cranberry girdler (*Chrysoteuchia topiaria*), and ground pearls (Margarodidae)

Obtaining funding to support the various programs is often competitive, and university budgets continue to decline while responsibilities increase (e.g., teaching and distance education). Several opportunities do exist to provide at least seed money to generate preliminary data so researchers can then seek larger federal or regional grants. Representatives from the Golf Course Superintendents Association of America (GCSAA), IR-4, and the National Turfgrass Evaluation Program (NTEP) offered to partner with and sought interest from university turfgrass entomologists to enhance the quality of their own programs.

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Meeting History, Background, and Format

The National Turfgrass Insect Workshop is a meeting of commodity entomologists from across the United States. This meeting typically occurs once every 12–24 months in different locations in the U.S. to foster greater interaction among turfgrass entomologists, their students, and representatives of major product manufacturers.

The first meeting of this type was called the Cool-season Turfgrass Insect Workshop at held in Geneva, NY in the early 1980's. The group broadened its emphasis in 1992 to include those researcher and extension personnel in the southern and southwestern United States. The last National Turfgrass Entomology meeting was held in March 2–5, 2003 at the Maricopa Center, near Tuscon, AZ.

The 2005 meeting was held 20–21 February 2005 at the Coastal Research and Extension Center (CREC) Conference facility in Biloxi, MS. Meeting organizers were David Held and Eileen Buss. Thirty-six participants (Table 1) representing industry (Golf Course Superintendents Association of America and various product manufacturers), government (USDA–ARS), and students and faculty from 12 universities in the U.S. and Canada attended.

Participants were housed at the Grand Hotel, Biloxi. All ground transportation during the meeting was provided by a contracted motor coach. Lunch was provided on-site everyday as well as light refreshments during the morning and afternoon breaks. Dinner was off-site each evening and most of these expenses were covered by industry representatives attending the meeting.

All general sessions were held in the conference facility at the CREC. The room was set with tables and chairs in an open format where participants could see and easily talk to each other. Each person was provided a table tent when they registered. These tents were placed on

the table so everyone's name was visible. Each participant was provided a folder, legal pad, pen, and a copy of the meeting agenda on the tables in the meeting room on the first day.

Moderators were solicited from among the group ahead of time to introduce the topical sessions and facilitate discussion on that topic. In addition, some participants were asked to provide a short presentation on a topic that would further stimulate discussion in a given area. Most presentations were made using digital slides projected using an LCD projector and laptop.

Agenda and Program Notes

Before sessions began on Sunday, participants were greeted by Dr. David Veal, head of the Coastal Research and Extension Center, followed by opening remarks by David Held. During these opening remarks, there was a brief introduction where participants stated their name, position, and affiliation.

The first session titled, "Graduate Student Informal Presentations", was a 2 hour session where graduate students made 15 minute presentations on their research followed by questions and comments from the group. This session was moderated by Eileen Buss, University of Florida. The next session on Sunday entitled, "Current and Emerging Arthropod Pests" began following lunch. Fred Baxendale, University of Nebraska-Lincoln, moderated this session. Jim Reinert, Daniel Potter, Chris Williamson, Daniel Peck, and Fred Baxendale made short presentations. Current pests that still present management problems in established turf and sod production are: billbugs in southern sod production and golf courses (*Sphenophorus* spp.), several white grub species, red imported fire ants (*Solenopsis* spp.) in commercial and residential lawns and recreational turf, the turfgrass ant (*Lasius neoniger*) and other nuisance ants in close-mown grass on tees and putting greens, and earthworms. Exotic pests were the most commonly

mentioned emerging pests (e.g., an exotic armored scale, *Duplochianaspis divergens*; continued range expansion of Japanese beetles (*Popillia japonica*); and the recent discovery of European crane fly (*Tipula paludosa*) and another crane fly (*Tipula oleraceae*) in New York state).

Presently, there are few, if any, regional or national surveys for most of these pests and no place to get current distribution information about them. It would be useful to incorporate trapping data or observations on these pests into NAPIS or other national databases on exotic pests. This group would be an excellent source for information or to collect information via trapping studies on these pests.

During the afternoon break on Sunday, a 15 minute session entitled, “Job Hunting and Interviewing”, was scheduled to allow the graduate students to ask questions about the interview process and some of the skills required for positions in universities and industry. This session was held in a conference room in the administration building at the CREC. The industry representatives (Nate Royalty, Scott Dunham, Ann Weise, Stuart Falk, and Jackie Driver) suggested that students take opportunities to broaden their skill set while still in graduate school. For example, students could conduct an efficacy trial or assist students working on related project such that they will have experience in systems and with insects apart from those they are primarily studying. Two recently hired university faculty members (Doug Richmond and David Held) suggested that students take opportunities to regularly speak to commodity groups at field days or state meetings to improve their communication skills. It was also suggested that students network with faculty, other students, and industry persons to learn about the requirements for these positions and possible job openings. Doug Richmond also provided students with reprints of an article on interviewing skills.

The final session on Sunday was entitled, “Opportunities to Advance the Science of Turfgrass Entomology”. This session was moderated by Patricia Vittum, University of Massachusetts-Amherst. This was a diverse session that included presentations on potential collaboration with industry groups, unconventional sources to publish turfgrass research, and possible sources of funding for projects in turfgrass. Clark Throssell, Director of Research for the Golf Course Superintendents Association of America (GCSAA) and Teresa Carson made a presentation on the GCSAA magazine. This periodical is distributed to every golf course in the U.S. and internationally. They requested more articles on pests or IPM issues related to turfgrass entomology. Daniel Potter and David Held mentioned a new online journal, Applied Turfgrass Science, that is also soliciting a range of articles related to turfgrass. This publication is refereed, and allows authors to publish full color images with no page charges.

Presentations were also made by Clark Throssell and Charles Meister to stimulate discussion on funding opportunities for projects in turfgrass. Clark mentioned the GCSAA has a competitive grants program that matches funds raised by local chapters for projects up to \$10,000 per year. Charles Meister represents the IR-4 program in the southern region. He provided contact information for the other IR-4 research coordinators in other regions as well as described the types of projects and the process of funding those projects through IR-4. Other areas mentioned for funding were the Turf Producers International trade organization, Noer Foundation, U.S. Golf Association, and regional grants from the USDA and the Environmental Protection Agency.

Gretchen Pettis, University of GA, presented a talk on her experience organizing a Pest Management Strategic Planning (PMSP) meeting for turfgrass in GA last year. PMSP programs are relatively new and funded through special grants submitted to the USDA. Anyone can

organize these meetings. The Georgia meeting hosted entomologists, plant pathologists, agronomists, and weed scientists from the southern region. Results of PMSP meetings are published on-line (www.IPMcenters.org) and can be cited as rationale for grants submitted to USDA for funding.

Discussion was initiated by Clark Throssell on behalf of Kevin Morris, the Director of the National Turfgrass Evaluation Program (NTEP), regarding the role of entomologists in NTEP. The NTEP program evaluates the turf quality and performance (color, density, tolerance to heat, cold, drought and traffic) on 17 species of turfgrass species in 40 states in the U.S. and six provinces in Canada. Data collected in NTEP trials are used by state and local governments, landscape professionals, and sod producers to make decisions regarding grass suitability in their region. Clark provided a handout outlining questions NTEP had for the group related to adding entomology data to NTEP evaluations. Presently data on insects is not being formally collected on these national trials. Many participants expressed concerns over the lack of cooperation between agronomists and entomologists, and the need for standards for evaluating resistance to certain pests (e.g., multi-year evaluations and methodology). It was suggested that the group in attendance work with NTEP leaders to develop these standards and NTEP would work to better facilitate collaboration.

Participants also discussed their experiences with distance education and use of the worldwide web for extension and formal teaching. Most participants are involved formally or informally in classroom instruction in addition to extension teaching. The University of GA offers an online certification in turfgrass management. Pennsylvania State University, University of Florida, and University of Nebraska also offer online courses in entomology and online degree programs (FL and NE). Discussion indicated that there is a demand on faculty to

teach these courses by administrators, however, they require more time to develop lectures, grade papers and exams, and answer email questions from students. Several people involved in teaching such courses have little or no formal teaching appointment or compensation for these additional responsibilities.

The second day of the meeting started with a session titled, “Conventional and Innovative Strategies to Manage Arthropod Pests in Turfgrass” moderated by Dave Shetlar (the Ohio State University). Dave Shetlar, Kris Braman, and Daniel Potter made short presentations. New insecticides, primarily neonicotinoids, are being evaluated for label expansion into the turf and ornamental markets. Limitations on the present suite of products for key pests such as grubs, mole crickets, and caterpillars in turf were discussed. Species identified as having a limited number of published efficacy trials in turfgrass were: the Green June beetle (*Cotinis nitida*), hunting billbug (*Sphenophorus venatus vestitus*), *Phyllophaga* spp., cranberry girdler (*Chrysoteuchia topiaria*), and ground pearls (Margarodidae).

Identification and application of biological organisms such as nematodes, viruses, and bacteria to turfgrass for insect control was discussed as a pest management strategy. In general, field efficacy evaluations and potential for commercialization of these agents has received little research emphasis. A strain of baculovirus has been field tested against black cutworm in cool-season grass and is presently being patented. Viruses attacking other caterpillar pests in turf have been identified but none were commercialized. Nematodes are still being researched and attempts are being made to commercialize a deliverable product for white grub control. Nematac S is commercially available for mole cricket control in the southeast. The bacteria that cause Milky disease (*Paenibacillus* spp.) in white grubs in field populations have not been researched apart from failed attempts to commercialize pure *P. popilliae*. Dave Shetlar suggested that

members of the group collaborate on a regional or national survey of the milky diseases impacting key white grubs in an attempt to find a more virulent strain.

The interactions of turfgrass variety, natural enemies, and key pests were also discussed. Turf species and cultivar, as well as turf management can influence the overall natural enemy complex, parasitism rates of fall armyworm, and colonization by fire ants. There are only a few studies on this area of turfgrass entomology. These factors can influence the occurrence of pest outbreaks or the success of new management strategies. Use of endophytic grass or genetically modified grasses (i.e., Roundup Ready bentgrass) raised several, unanswered questions: 1) Are natural enemies also killed if they feed on these grasses? 2) Can endophytic grasses be incorporated into stands of southern grasses for insect control? 3) How do pests and natural enemies respond to Roundup-Ready bentgrass?

Following lunch on Monday, we began the session entitled, “Industry Updates: New Products, New Strategies, New Technology” moderated by Daniel Potter (University of KY). This session allowed all the industry participants the opportunity to make 5 minute presentations on new products, updates on re-registration of organophosphates and carbamates, or new marketing strategies for products in commercial and residential turf. These presentations were followed by discussion of the relative merits of these products or strategies. Arena (clothianidin), Allectus (imidacloprid and bifenthrin), and products containing indoxacarb are the newest in the turfgrass market. Areas where additional research was suggested included, the influence of soil types and pH, and repeated applications (enhanced microbial degradation) on treatment efficacy.

The final session on Monday was devoted to open discussion on any topic that needed further discussion. David Held moderated this session. Clark Throssell asked for feedback on

the handout he provided to the group earlier. There were questions raised from the group regarding the destructive nature of insects and potentially destructive sampling methods used to sample common turfgrass pests. Insect damage to NTEP grass selections is counterproductive to evaluating the growth characteristics required by NTEP which presently limits the role of entomologists. In addition, three replicates of each grass selection in NTEP trials are not enough to adequately evaluate insect responses. In response to these concerns, Clark suggested that individual entomologists could petition NTEP for ancillary trials. The trials allow the investigator flexibility to increase the number of plots and duration of the study with minimal need to preserve the integrity of the grass. Participants also suggested that greenhouse or other small scale studies may be more useful than field evaluations for these grasses. Clark requested feedback on protocol development and standards for these tests.

The final topic discussed was the location and host for the next meeting. The next meeting of the National Turfgrass Workshop will be in February 2006 hosted at the Bayer CropScience facility in Clayton, NC. Doug Richmond (Purdue University), Tim Gibb (Purdue University), and Rick Brandenburg (NC State) will develop the program for the meeting and Bayer will only provide the facilities and food. Other product manufacturers will still be involved in the meeting.

Participants and their Program Areas:

Alm, Steven R.

University Affiliation:

University of Rhode Island

Courses Taught:

ENT 550 Insect Taxonomy and Systematics

ENT 387 Insects of Turf and Ornamentals

ENT 411/511 Pesticides and the Environment

Research Interests: Entomopathogenic nematodes; other biological controls; pheromones

Extensions: Extension Turfgrass Entomologist; Pesticide Coordinator

Baxendale, Frederick P.

University Affiliation:

University of Nebraska-Lincoln

Appointment:

75% Extension, 25% Research

Research and Extension Activities:

Extension: My extension program is designed to enable stakeholders (extension staff, professional turfgrass and landscape managers, commercial horticulturalists, criminal investigators, and the general public) to develop, use and/or deliver research-based entomological information to improve their IPM practices. Emphasis is on the promotion of effective and environmentally-responsible IPM strategies for the insect and mite pests affecting turfgrasses, landscapes, and other horticultural plantings.

Research: My research program is designed to develop effective and environmentally-responsible integrated pest management strategies for arthropods affecting turfgrasses and horticultural plantings in Nebraska. Current emphasis is on identifying the insects and mites associated with buffalograss and zoysiagrass, investigating their biology, ecology, distribution and injury potential, and developing management alternatives for potential pests. Special attention is given to the identification of natural enemies which may play an important role in regulating pest populations, and on locating insect-resistant germplasm.

Braman, S. Kristine

University Affiliation:

University of Georgia-Griffin

Research and Extension Activities:

My research since joining the Georgia Station faculty in 1989 has explored the ecology and management of arthropod pests associated with turfgrass and woody ornamentals in the urban environment. The focus of my research is the development of decision making guidelines for

landscape pests which incorporate knowledge of the biology, behavior, and damage potential of the pests and those regulating influences due to associated beneficial arthropods. Key pests and beneficials found in turf and ornamentals may be viewed at the [Landscape Pest Management](#) web site.

Recent research emphases include: use of degree-day forecasting, host plant resistance, and enhancement of natural enemy complexes for azalea lace bug management, dynamics of beneficial arthropods in managed turf, damage impact relations among several species of white grubs and their turfgrass host plants, and basic biological studies of nonnative pest mole crickets.

Current collaborative projects with scientists in other disciplines, e.g., crop and soil sciences and horticulture, address the influence of cultural management practices on pest and beneficial arthropods in the landscape, development of improved turfgrass and woody ornamental cultivars, and effects of landscape pest management and fertilization on water quality and the environment.

Buss, Eileen A.

University Affiliation:

University of Florida

Appointment:

70% Extension, 25% Research, 5% Teaching

Research and Extension Activities:

My program provides research-based information on turfgrass and ornamental plant pest management to the Green Industry. Because the insect pests in Florida appear to have more generations and the timing of control measures is often different than for more northern states, my lab's emphasis has been to describe the biology of key insect pests, their natural enemy complexes, and try to tailor effective reduced-risk management programs to particular plant systems. Recent projects have involved examining the biology and insecticidal control of kermes scales on live oak trees, establishing an insect-parasitic nematode (*Steinernema scapterisci*) on golf courses for mole cricket suppression and determining the nematode's compatibility with current mole cricket insecticides, monitoring adult scarab beetle flights in northern and southern Florida to identify when preventive grub control might be needed, developing an IPM program for southern chinch bugs (*Blissus insularis*), evaluating the effect of common insecticides against big eyed bugs (*Geocoris uliginosis*), and determining the biology and management of sugarcane grubs (*Tomarus subtropicus*) on St. Augustinegrass. My program also conducts several insecticide tests each year on chinch bugs, white grubs, and mole crickets.

Gibb, Timothy J.

University Affiliation:

Purdue University

Appointment:

75% Extension, 25% Research

Research and Extension Activities:

Extension training for the turfgrass industry, both within IN and nationally, is a main priority. I complement these extension activities with 'applied research' efforts including work on the Black cutworms, Japanese beetle and the annual white grub complex in IN and the mid-west. Recent research into the biology and control of moles is also progressing. I conduct several pesticide efficacy trials each year and teach many turfgrass professionals about insect pest management through field day, association conferences, seminars and workshops.

Held, David W.**University affiliation:**

Mississippi State University-Coastal Research and Extension Center

Appointment:

75% Extension, 25% Research

Research and Extension Activities:

My appointment is a split between ornamentals and turfgrass. My present research interests are Hymenopteran parasitoid of turf pests especially range expansion of *Larra bicolor*, ectoparasite of mole crickets, in the northern Gulf Coast. I evaluate insecticides in golf course efficacy trials on mole crickets and armyworms. I provide a guest lecture on entomology in turfgrass management and golf course operations classes on the main campus of Mississippi State University and in courses taught at local community colleges. I am a regular contributor to state and regional golf course superintendents newsletters, and serve as a subject editor for Applied Turfgrass Science. Along with Rick Brandenburg, I am working to revise the ESA Handbook on Turfgrass Insects.

Hudson, Will**University Affiliation:**

University of Georgia-Tifton Campus

Appointment:

78% Extension, 22% Research

Research and Extension Activities:

I am responsible for educational programs covering management of insect pests of commercial and recreational turf, sod farms, ornamental plant production, pecans, Christmas trees and fish bait production. I also handle identification of insect specimens sent in to the Tifton office. The research portion of my appointment is used to support my extension programs.

The most serious pests of turfgrass in the Southeast are mole crickets, and most of my turf work has focused on various approaches to management of this problem. In addition to pesticide screening trials that provide the data to refine our recommendations for mole cricket control, I have made releases of three biological control agents for mole crickets. One, the nematode *Steinernema scapterisci*, is now established and widespread in Southeast Georgia. The parasitic fly, *Ormia depleta*, so far has not survived. The parasitic wasp, *Larra bicolor*, is apparently

established in the Tifton area and has been released elsewhere. Monitoring and releases of natural enemies continues.

Insect problems in ornamental plant production are much more varied than in turf, and range from mites to whiteflies and aphids to caterpillars and beetles. I am currently working on control, both conventional and biological, of whiteflies, spider mites and Ambrosia beetles.

Meagher, Robert L. Jr.

Affiliation: USDA-ARS-CMAVE

Adjunct Faculty, Entomology & Nematology Department, University of Florida

Appointment:

Research Entomologist

Research and Extension Activities:

My research involves behavior and biological control of Lepidoptera that are pests in field crops, turfgrass and vegetable agroecosystems. Currently, the emphasis of my work has been on host strain identification and behavior of fall armyworm (*Spodoptera frugiperda*) in different geographical locations and different habitats. Differences in host strain behaviors, such as mating, ovipositional choice, and larval feeding, may create new approaches for management of this pest. Other projects concerning fall armyworm involve the identification of mortality factors and the effectiveness of cover crops to reduce migrating populations in agricultural settings.

Peck, Daniel C.

University Affiliation:

New York State Agricultural Research Station (NYSAES)

Cornell University

Appointment:

Assistant Professor (2002 to present)

Research and Extension Program:

My overall area of academic interest is applied insect ecology emphasizing the associations of soil insects with perennial grass-based agroecosystems. My current position area is soil insect ecology and turfgrass entomology. Two major challenges for managing turfgrass insect pests are the inherent difficulty of studying subterranean insect behavior and the changing face of the control environment. Pesticide restrictions and phaseouts, for instance, force us to reexamine pest biology in the search for new control opportunities, but efforts are stymied by our unfamiliarity with the soil habitat, and in particular how to access, interpret and manipulate interactions played out belowground. My research program emphasizes three trajectories. The first is on the biology, ecology and management of key turfgrass pest with the goal of filling major knowledge gaps in our understanding of natural history, advance alternative cultural and biological controls and disseminate the newest information. The second is on leveraging biologicals into the turfcape with the goal of broadening opportunities for biologically-based pest management of soil insect pests. The third trajectory is on the non-target effects of pest management on soil arthropod communities with the goal of gauging the effect of pest

management tactics on the abundance, diversity and ecological function of non-target soil arthropods.

Potter, Daniel A.

University Affiliation:

University of Kentucky

Appointment:

Research-Teaching-Extension

Research Program

The University of Kentucky Turf and Landscape Entomology Lab studies all aspects of the biology, ecology, and management of insects associated with trees, shrubs, and turf. Our goals are 1) to provide effective, environmentally-sound solutions to insect problems, 2) to illuminate the behavior, ecology, and host-plant relationships of key pests as a foundation for improved management, and 3) to develop graduate students as future leaders in urban landscape entomology. Recent studies have focused on 1) biology and conservation of *Tiphia vernalis* and *Tiphia pygidialis*, parasitoids of Japanese beetle and masked chafer grubs, respectively; 2) characterization and evaluation of a newly-discovered baculovirus (AgipMNPV) for as a biological insecticide for season-long suppression of black cutworms on golf courses; 3) biology of hymenopteran wasp parasitoids of black cutworm, 4) biology of the turfgrass ant *Lasius neoniger* including seasonal mounding activity and queen emergence, nest location and factors affecting distribution of mounds on putting greens, and 5) basic and applied aspects of flower-feeding by Japanese beetle (JB) adults. New projects (2005) include 1) state-wide survey for pathogens of *Cyclocephala* spp. and JB grubs, 2) post-alighting cues used by JB to select oviposition sites, including response to insecticide residues, 3) effects of soil insecticide residues on scarabaeid eggs, 4) augmentation of silicon content of turfgrasses for enhanced insect resistance. D.A. Potter teaches an annual undergraduate course (Horticultural Entomology) that emphasizes turf and landscape insects, and a graduate course in Insect-Plant Relationships.

Reinert, James A.

University Affiliation:

Texas A&M University

Appointment:

100% research

Research and Extension Program:

Richmond, Douglas S.

University Affiliation:

Purdue University

Appointment:

80% Research, 20% Teaching

Research Program Emphasis:

- 1) Biology and ecology of insects, insect-plant interactions and microbial mediation of plant defense
- 2) Multi-trophic interactions and the role of plant-defense in above- and below-ground food webs
- 3) Linkage between insect herbivory and weed invasion in managed perennial systems
- 4) Applied ecology of turfgrass and ornamental systems
- 5) Integration of host-plant resistance and biological controls in integrated

Shetlar, David John**University Affiliation:**

Ohio State University

Appointment:

60% Extension, 20% Research, 20% Teaching

Current Turfgrass Research Activities:

Evaluation of chemical, biological and cultural controls for management of turfgrass pests
Development of models which describe insect pest activity in turf - mainly working with sod webworm species in Ohio, bluegrass billbug, and northern masked chafer.
Determine influence of turf resistance (endophytes) on insect populations.
Investigating the biology and ecology of the hairy chinch bug.
Measuring the biodiversity of urban turfgrass environments (new research area).

Current Extension Activities:

Bulletins & Factsheets (most are posted on 1) <http://ohioline.osu.edu> and 2) <http://bugs.osu.edu/~bugdoc/Shetlar/factsheet/index.htm>

Development of turfgrass insect detection and monitoring videos

Urban Landscape Ecology Program - multi-discipline program whose goal is to develop more sustainable urban landscapes. Our current project is to work with a development company to design community landscapes before the individual properties are sold.

Training for green industries of Ohio.

Swier, Stanley R.**University Affiliation:**

University of New Hampshire

Research Interests:

Development of low risk insecticides for turf and ornamental insect management. Use of degree days to predict insect emergence

Extension Interests:

Working with the green industry to develop Best Management Plans to balance the need for pest management and the public desire to protect the environment. Demonstrating the proper use of IPM techniques in turf, landscape and nurseries. Management of insect pests on ornamentals, turf, and forestry.

Vittum, Patricia J.

University Affiliation:

University of Massachusetts

Appointment:

50% Extension, 35% Teaching, 15% Research

Research and Extension Program :

1. Biology and control of annual bluegrass weevil (*Listronotus maculicollis*)
2. Biology and control of white grubs (esp. Japanese beetle, oriental beetle, European chafer, and asiatic garden beetle)
3. White grub complex in the Northeast - changes in distribution
4. Field efficacy of biological control agents (esp. entomopathogenic nematodes, *Bacillus thuringiensis* var. *tenebrionis*) and biorationals (spinosad)
5. (Extension) Pesticide Coordinator for Massachusetts
6. Weekly updates during the growing season for our UMass Turf Team website
7. Invited speaker at state and regional conferences throughout the country

Teaching :

ENTOM 107 Turfgrass Entomology (2 credits, taught every Spring semester, primarily targets first-year students in our Stockbridge School, Associates Degree program)

ENVSCI 342 Pesticides in the Environment (3 credits, taught every Fall semester, primarily targets juniors and seniors in our Environmental Science program)

Winter School - a seven week intensive school for turf managers, offered through Continuing Education. I have 14 two-hour classes periods, all in Turfgrass Entomology.

Website: www.umassturf.org

We provide weekly updates in entomology, pathology, and agronomy throughout the growing season, along with other timely announcements. We include several links to other sources.

Williamson, R. Chris

University Affiliation:

University of Wisconsin-Madison

Appointment:

70% Extension, 30% Research

Research:

My research program is primarily applied research to support my extension programming. Most projects are field research projects. Many research projects are designed to answer important, fundamental questions or issues faced by respective constituency groups.

Extension:

I serve the turfgrass industry by providing my respective constituency with sound, science-based information that will enable them to increase productivity and profits, reduce pesticide reliance and input, maximize efficiency and effectiveness, and minimize potential negative environmental impact. Turfgrass constituency groups include golf course managers, athletic field managers, sod farm managers and producers, lawn care owners and applicators, parks and recreation managers, as well as airport (grass) facilities managers.

Recent (2000-2005) Publications in Turf Entomology**Refereed**

Alm, S. R. and C. G. Dawson. 2003. Evaluation of two prototype traps and existing trap designs for captures of Japanese beetles, *Popillia japonica* Newman (Coleoptera: Scarabaeidae). J. Econ. Entomol. 96:453-455.

Alm, S. R., C. G. Dawson, and P. Robbins. 2004. Optimization of a valine:isoleucine methyl ester pheromone blend and comparison of Robbins and Trece traps for capture of *Phyllophaga anxia* (Coleoptera: Scarabaeidae) in Rhode Island. J. Econ. Entomol. 97: 1983-1986.

Barbara, K. A. and E. A. Buss. 2004. Survival and infectivity of *Steinernema scapterisci* (Nematoda: Steinernematidae) after contact with soil drench solutions. Florida Entomologist 87 (3):300-305.

Barbara, K. A. and E. A. Buss. 2005. Integration of insect parasitic nematodes (Rhabditida: Steinernematidae) with insecticides for control of pest mole crickets (Orthoptera: Grylotalpidae: *Scapteriscus* spp.). Journal of Economic Entomology 98 (3): 689-693.

Bauerfeind, R.J., K.F. Haynes, and D.A. Potter. 2000. Responses of three *Cyclocephala* (Coleoptera: Scarabaeidae) species to hexane extracts of *Cyclocephala lurida* sex pheromone. J. Kansas Entomol. Soc. 72:246-247.

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