

Introduction to Today's Workshop:

Advanced IPM Training for Master Gardeners

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University of California Statewide IPM Program

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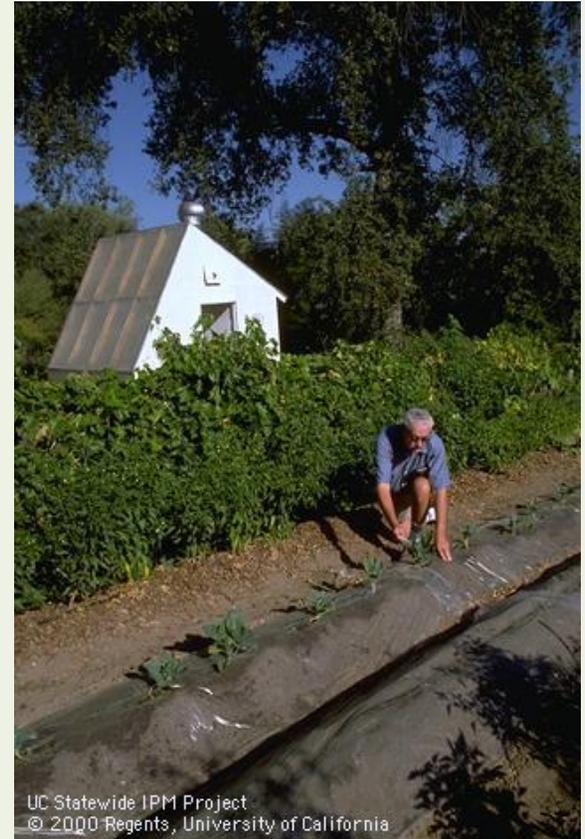


Quick Overview

- What is IPM?
- Why are we here?
- New UC IPM Resources for Master Gardeners
- What are we going to do today?
- What we hope you do after you leave

What is Integrated Pest Management (IPM)?

- IPM *combines* several environmentally sound methods to *prevent* or manage pest problems over the long term and *protect* people, the environment and beneficial organisms.
- Common methods include
 - resistant plants
 - encouragement of natural enemies
 - use of physical and mechanical controls and
 - good gardening practices
 - less toxic pesticides.



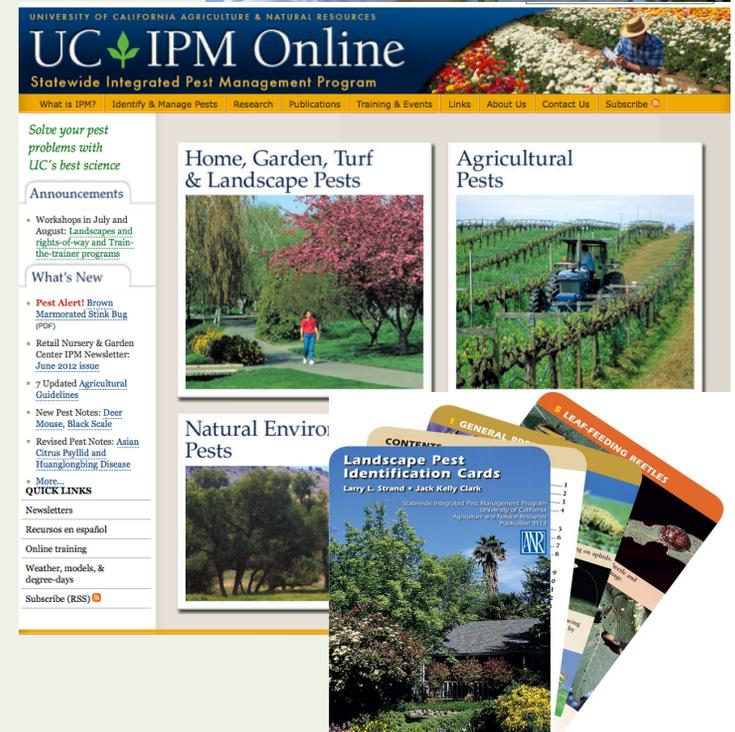
Key IPM messages for home & garden

- Most insects and other organisms in the garden and landscape are not pests
- Identify your pest before trying to manage it
- Regularly monitor or inspect for pests & the habitat that favors them
- Use an IPM program that relies primarily on prevention, biological control and integrating nonchemical methods
- If pesticides are required, choose least toxic products
- UC has resources you can use to help identify and manage your pests



What is the UC Statewide IPM Program?

- Statewide program within UC works with county UC Cooperative Extension offices and campuses
- Charged with developing and promoting IPM programs for use in California agriculture, landscapes and homes
- IPM Advisors and Specialists research & demonstrate IPM methods
- Produce books, leaflets, a web site and other educational materials



Our Vision: “ Making IPM THE way Californians manage pests”

UC IPM Commitment: Support UC Master Gardener Outreach

- UC Master Gardeners a major outreach mechanism to consumers
- It is essential that MGs deliver the most up-to-date, environmentally sound information.
- We help by providing you with materials, training, and advice.
- Don't hesitate to call us if you can't find answers in the UC IPM resources



What have you done?

MGs answered 28,602 consumer **Help Line Questions related to pests** in 2009-10—mostly consulting Pest Notes and the UC IPM web site

Quick Tips—distributed 200,000 of these cards annually (46 titles—English & Spanish)

UC IPM kiosk used in 42 counties

MGs continue to be UCCE's most important direct link to consumers for IPM info



Recent changes/ additions in UC IPM Resources

New web site
format

UNIVERSITY OF CALIFORNIA AGRICULTURE & NATURAL RESOURCES

UC IPM Online

Statewide Integrated Pest Management Program



PRINT

HOME

ON THIS SITE

- What is IPM?
- Home & landscape pests
- Agricultural pests
- Natural environment pests
- Exotic & invasive pests
- Weed gallery
- Natural enemies gallery
- Weather, models & degree-days
- Pesticide information
- Research
- Publications
- Events & workshops
- Online training
- Links
- About us
- Contact us

Home, garden, turf, & landscape pests

University of California's official guidelines for managing pests with environmentally sound methods. ([More...](#))

Search home & landscape:

Pests of homes and structures

- [Household](#)—pests of homes, structures, people and pets
 - Pests that sting, bite, or injure
 - Wood-destroying, food, fabric, and nuisance pests
 - Vertebrate pests birds, mammals, and reptiles

Pests in gardens and landscapes

Choose a plant to find the most likely source of your pest problem

- [Flowers](#)
- [Fruit trees, nuts, berries, and grapevines](#)
- [Lawns and turf](#)—including comprehensive lawn guide
- [Trees and shrubs](#)—including roses and other ornamentals
- [Vegetables and melons](#)

Some common pests and methods

- [Birds, mammals, and reptiles](#)—vertebrate pests
- [Insects, mites, mollusks, and nematodes](#)—invertebrate pests
- [Plant diseases](#)
- [Weeds](#)
- [Management methods, including pesticides and biological control](#)

Pesticide information

- [Hiring a pest control company](#)
- [Pesticides: safe and effective use / En español](#)
- [Pesticides and water quality](#)
- [Active ingredients database](#)



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QUICK LINKS

- [Recent updates](#)
- [Quick Tips library](#)
- [Pest Notes library](#)

SPECIAL RESOURCES FOR...

- [Retail nursery & garden center staff](#)
- [Landscape professionals](#)
- [UC Master Gardeners](#)



Special UC IPM web page for Master Gardeners

UC IPM Biological Control in Gardens a...

www.ipm.ucdavis.edu/FAQ/mgbioco

Most Visited Getting Started UC IPM Photo Latest Headlines Apple Amazon Agri Valley Cons... eBay Yahoo! News Apple .Mac Bookmarks

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UC IPM Online

Statewide Integrated Pest Management Program

HOME

SEARCH

ON THIS SITE

What is IPM?

Home & landscape pests

Agricultural pests

Natural environment pests

Exotic & invasive pests

Weed gallery

Natural enemies gallery

Weather, models & degree-days

Pesticide information

Research

Publications

Events & workshops

Online training

Links

About us

Contact us

Master Gardener Training Materials for Biological Control UC Master Gardeners

[IPM for MGs](#) | [Training & Presentations](#) | [Kiosk Information](#) | [Ordering Materials](#)
Search home and garden:

Biological Control in Gardens and Landscapes

We have developed a package of materials for UC Master Gardeners who wish to teach themselves or the general public about biological control in landscapes and gardens.

The package includes:

- A PowerPoint presentation titled "Biological Control in Gardens and Landscapes" which includes a script (Access from the ANR Repository—[See instructions below](#))
- Narrated version of the presentation, which runs about 24 minutes and covers the entire script in the PowerPoint. Find it at http://stream.ucanr.org/biocontrol_final/index.htm
- Handout: *Biological Control and Natural Enemies Pest Note*. ([HTML](#)) ([PDF](#))
- Handouts: Five Quick Tip cards related to biological control. (Your UC Master Gardener office should have hard copies of these. If not, ask your coordinator or office staff to [order them](#) from us.)
 - IPM & Beneficial Insects ([HTML](#)) ([PDF](#))
 - Beneficial Predators ([HTML](#)) ([PDF](#))
 - Common Garden Spiders ([HTML](#)) ([PDF](#))
 - Parasites of Insect Pests ([HTML](#)) ([PDF](#))
 - Less Toxic Insecticides ([HTML](#)) ([PDF](#))
- Poster: *Meet the Beneficials: Natural Enemies of Garden Pests*. (2 MB PDF) You can download the poster and print additional copies at sizes up to 19 x 25 inches for use in your educational programs. Also [see note below](#).

Additional resources

You should also consult these additional resources to prepare yourself for giving a presentation.

- The [Natural Enemies Gallery](#)
- [Natural Enemies Handbook: The Illustrated Guide to Biological Control](#) UC ANR Publication 3386

Using the PowerPoint presentation

- The PowerPoint presentation has a suggested script built into each slide. View the **Notes Page** to see it.
- To prepare yourself to give the presentation, we suggest you view the [narrated version of the PowerPoint](#) on the UC IPM web site.
- You may modify the script to make it more appropriate for your audience. It may be too technical or long for some audiences.
- The script also includes captions for the photographs in each slide and in many cases resources for more information.
- If the slide presentation is too long, you may eliminate some slides.

To access and download the PowerPoint:

1. [Logon to ANR Portal](#) (login and password protected).
2. Under the list **My Links** on the left-hand side, click on **Repository**.
3. In the **Search Repository** box at the top right-hand side of the Repository page, type in the title.



Compare Risks Buttons now on most online Pest Notes

UC IPM Online
Statewide Integrated Pest Management Program

UC IPM Home > Homes, Gardens, Landscapes, and Turf > Psyllids

How to Manage Pests

Pests in Gardens and Landscapes

Psyllids [Download PDF](#) [Quick Tip](#)
Revised 8/07

UC IPM Online
Statewide Integrated Pest Management Program

HOME

SEARCH

ON THIS SITE

- What is IPM?
- Home & landscape pests
- Agricultural pests
- Natural environment pests
- Exotic & invasive pests
- Weed gallery
- Natural enemies gallery
- Weather, models & degree-days
- Pesticide information
- Research
- Publications
- Events & workshops
- Online training
- Links
- About us
- Contact us

HOME

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- Publications
- Events & workshops
- Online training
- Links
- About us

How to Manage Pests

Compare Risks of Pesticide Active Ingredients

[| More Pests](#) [| About Risk Comparisons](#) |

Psyllids

This table compares potential hazards of pesticides mentioned in the UC IPM Pest Note for [Psyllids](#).

- This table does not include all pesticides registered for this purpose, only those included in the Pest Note.
- These pesticides vary in efficacy.
- Be aware that pesticides are often not necessary and nonchemical controls may be as effective.
- Please see the text of the Pest Note for complete information on management.

Click on the active ingredient name for more details of that pesticide

Pesticide Active Ingredient	Potential Hazard ¹ to					Notes
	Water quality ² (aquatic wildlife)	Natural enemies (beneficials)	Honey bees ³	Acute ⁴	Long Term ⁵	
Azadirachtin	M	LM	M	VL	Not listed	
Horticultural oil	NKR	L	M	VL	Not listed	
Imidacloprid	L	MH	VH	M	Not listed	
Neem oil	NKR	L	M	VL	Not listed	
Soap	NKR	L	L	VL	Not listed	

These pages were created to give general information on the potential hazards of pesticides mentioned in the UC IPM Pest Notes pages. Values are for active ingredients—not formulated products. Different formulations can increase or reduce risks. Ratings were taken from the information sources below. **Please visit the listed links to find out more about how the ratings were determined.**

For more information on toxicity of pesticides go to the [National Pesticide Information Center](#).

Ants

Although ants are annoying when they come indoors, they can be beneficial by feeding on fleas, termites, and other pests in the garden. While spraying chemicals inside the house might seem effective, it won't prevent more ants from entering your home, because most ants live outdoors. Instead, focus efforts on keeping ants from entering buildings. Combine several methods such as caulking entryways, cleaning up food sources, and baiting when necessary. Avoid using pyrethroids (e.g., bifenthrin and cypermethrin), especially on hard surfaces such as driveways or sidewalks or around the foundation of buildings. These products pollute waterways.

Make your house less attractive to ants.

- ♦ Caulk cracks and crevices that provide entry into the house.
- ♦ Store food attractive to ants in closed containers.
- ♦ Clean up grease and spills.
- ♦ Ant-proof kitchen garbage pails with sticky barriers such as petroleum jelly under the lip and place pet dishes in a moat of water.
- ♦ Remove or manage sweet food sources next to your house such as aphid-infested bushes and ripened fruit on trees.
- ♦ Keep plants, grass, and organic mulch at least a foot away from the foundation of buildings to reduce ant foraging and nesting.

When ants invade your house:

- ♦ Sponge up invading ants with soapy water as soon as they enter.
- ♦ Plug up ant entryways with caulk.
- ♦ Take infested potted plants outdoors and submerge pots in a solution of insecticidal soap and water.
- ♦ Clean up food sources by wiping up spills or placing food in tight-fitting containers.
- ♦ Rely on outdoor baits to control the ant colony.
- ♦ Insecticide sprays shouldn't be necessary.
- ♦ If you hire a pest control company, ask them to use baits and spot treatments rather than perimeter treatments or monthly sprays.

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Management Program

How baits work:

Pesticide baits attract worker ants, so they will take the product back to the nest where the entire colony, including queens, can be killed. The pesticide must be slow acting so workers won't be killed before they get back to the nest.

How to use baits:

Place baits near ant trails and nest openings. Prepackaged or refillable bait stations or stakes are the safest and easiest to use. Active ingredients in baits may include boric acid/borate, fipronil, avermectin, sulfluramid, or hydramethylnon; 1% borate baits in refillable bait stations are best for severe Argentine ant infestations. Replace baits when empty and reposition them, or try a different bait product if ants don't appear to be taking it. It can take 5 to 10 days to see fewer ants.

See www.ipm.ucdavis.edu/ants for more details.



Argentine ant; actual size is 1/8 of an inch. 

Minimize the use of pesticides that pollute our waterways. Use nonchemical alternatives or less toxic pesticide products whenever possible. Read product labels carefully and follow instructions on proper use, storage, and disposal.

For more information about managing pests, contact your **University of California Cooperative Extension office** listed under the county government pages of your phone book, visit the UC IPM Web site at www.ipm.ucdavis.edu, or scan the QR code with a smartphone.



What you use in your landscape affects our rivers and oceans!

University of California
Agriculture and Natural Resources
Statewide IPM Program

UC
CE

University of California
Cooperative Extension

March 2012

QR codes now on some Quick Tips:

- Ants
- Gophers
- Powdery Mildew
- Peach Leaf Curl
- Weeds in Landscapes

You can help stop a new pest by recognizing and reporting it.

Brown Marmorated Stink Bug

The brown marmorated stink bug (BMSB), *Halyomorpha halys*, has been detected in California. Wherever BMSB takes up residence, it causes severe crop and garden losses and becomes a nuisance to people. The ability of BMSB to hitchhike in vehicles and planes has allowed it to spread rapidly to new areas. Since it was introduced to the United States from Asia in the 1990s, BMSB has become established in the mid-Atlantic States as well as in Portland, Ore., and Los Angeles.

How to identify BMSB



Use your ring to collect relevant Quick Tips today

Newsletters



Retail Nursery and Garden Center

IPM News

University of California
Agriculture and Natural Resources

Vol. 2 • No. 2 • June 2012

Tools for Removing Dandelions and Other Weeds

Dandelions can be an especially troublesome weed in lawns and landscapes. Once established, these perennial weeds readily regrow from their deep taproot when their tops are pulled or cut. Since dandelions spread via windborne seeds, prevention of new infestations is difficult. The best way to manage dandelions is to dig them out when they are young. Controlling these and other weeds before they set seed reduces the potential for further spread and invasion. For dandelions, it is important to remove the whole plant, taproot and all, since regrowth can occur if even 1 inch of the taproot remains.

Specialized tools for removing individual weeds and their roots are great nonchemical choices for customers who are looking for alternatives to herbicides. The UC IPM Program recently tried several dandelion removal tools for their ease of use, soil displacement, and weed removal ability on mature dandelions in moderately moist soil. Many different styles are available on the market, but we sampled six hand-held and seven long-handled tools. A summary of what we found is below; see Table 1 for comments and rating on each tool.

Long-handled Tools

We tried several different long-handled tools (Figure 1) and rated their efficacy on removing both the weed and the taproot. For ease of use, Enviroweeder and Speedy Weedy Puller performed the best. These tools have naillike tines that go into the soil to grab the weed and a retractable plunger that shoots the weed off the end for easy disposal. You often don't even get your hands dirty.

One big drawback of these tools is that they take a large divot out of the area where the weed is removed, which is especially noticeable in lawns (Figure 2). Top dressing or fill may be required to replace the hole left behind. In addition, the tines on these tools didn't always remove the entire dandelion taproot; however, they successfully removed many types of shallow-rooted weeds.

In separate trials, UC Davis weed scientist Tom Lanini found that another product that we didn't test, the Weed Hound, was the best tool among the long-handled type with tines. It didn't leave as large a divot as the tools mentioned here.

The best long-handled tools consistently removed the dandelion along with its taproot. Three tools met this requirement: Grampa's Weeder Tool, ... continued on Pages 2 and 3



K. Windšid-Rojas, UC IPM

Figure 1. Long-handled tools (from left): Speedy Weedy, Enviroweeder, Rittenhouse Weed Twister, Ergonica Weed Twister (hand and drill models), Radius ProWeeder, Lee Valley Dandelion Digger 60 inch, Rocket Weeder, and Grampa's Tool.

WHAT'S INSIDE ...

- New Pest Notes | Page 3
- Invasive Plants | Page 4
- Yellowjacket Traps | Page 5
- Weed Identification Tool | Page 6

WANT A FREE SUBSCRIPTION? To receive this newsletter electronically, send your e-mail address to UCIPMretail@ucdavis.edu with the subject line "Subscribe to retail newsletter." Please share this newsletter with your co-workers and encourage them to subscribe too!

Information for pest management professionals and pesticide applicators



Green Bulletin

University of California
Agriculture and Natural Resources

Vol. 2 • No. 3 • May 2012

Should You Be Worried about Herbicide Resistance?

When a pesticide or pesticides with similar modes of action are repeatedly applied to a site, there is a good chance the pest population will evolve resistance to that type of pesticide and no longer be effectively controlled. Resistance is able to develop because populations of most pests are genetically diverse, and strong pesticide selection pressure will kill susceptible individuals and allow resistant individuals to survive and reproduce.

One place weed populations can evolve herbicide resistance is areas where herbicides are the primary means of weed control such as roadsides, right-of-ways, and canal banks. This is likely due to the herbicide choices that impart both the broad spectrum of weed species controlled and a long residual time. In order to achieve both, a postemergent herbicide is often used, or a postemergent herbicide is used with a preemergent herbicide but the preemergent may be applied at a high rate to achieve a longer residual period. In addition, many agencies have a specific palette of herbicides they are permitted to use, and this limits one of the ways to



A. Shrestha, CSU Fresno

Figure 1. Glyphosate-resistant (left) and susceptible (right) horseweed sprayed with Roundup Weathermax at one, two, and four times the labeled rate. The two plants in front (labeled 0x) were untreated.

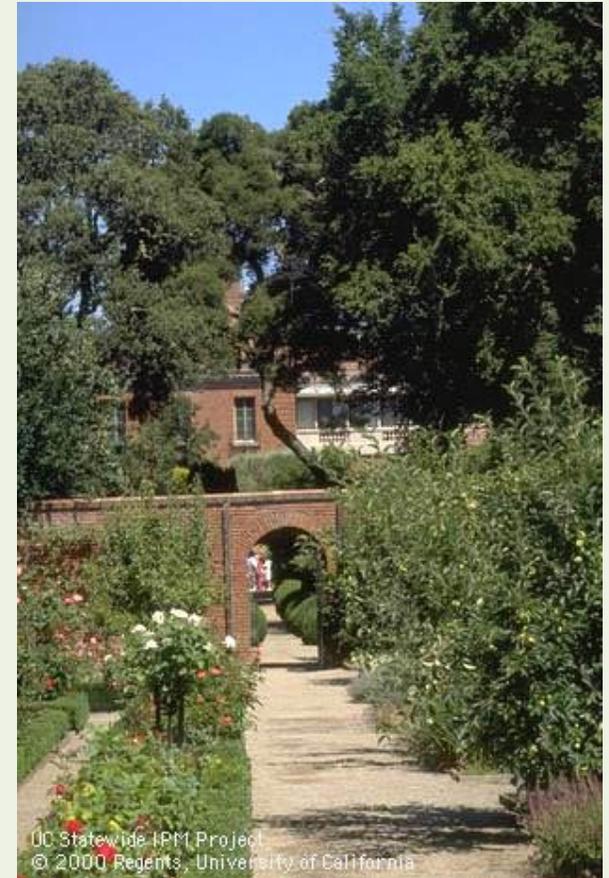
WHAT'S INSIDE ...

- Ask the Expert | Page 2
- Yellowjacket Lure Traps | Page 3
- Detecting Bed Bugs | Page 4
- Bee Swarms and Hives | Page 5

Sign up to receive them on the UC IPM web site

Today's Topics

- News from the Statewide Master Gardener Program
- Invasive Pests and MGs
- Weed Management for vegetables*
- Less toxic and organic pesticides*
- Biological Control*



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* Hands-on breakout sessions

Hands-on, train-the-trainer learning

- Learn by doing
- Use real specimens, real products
- We provide you with materials to repeat some of the training in your county
- PowerPoints and materials on the UC IPM MG web site
- Training others helps reinforce the material you learned

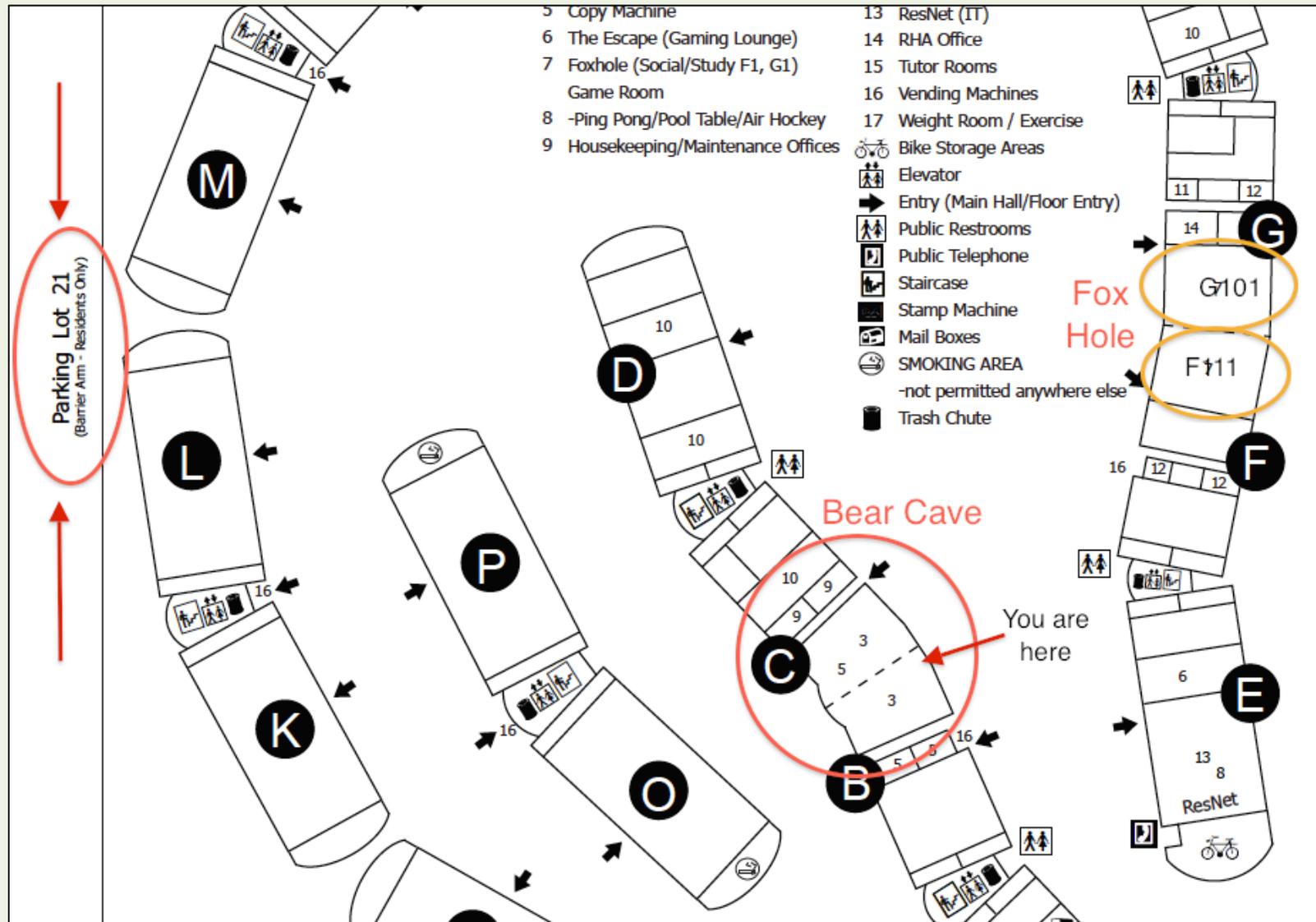


How we'll be organizing you

- You will be divided into 3 groups—yellow, red and blue. Each group has a different schedule.
- Look in your folder for your schedule.
- After the plenary session, each group will rotate around the 3 breakout sessions.
- Please stay with your group and stay on time.
- There will be a final summary session at the end in this room for everybody.



Map of meeting rooms



When you return to your county, we hope you. . .

- will use the tools we are providing to train others— we'll have a special web page for you.
- let others know about UC IPM resources.
- get your clientele enthused about IPM.
- give us feedback about how the materials worked for you.

