



Pests and Pesticides in Child-serving Facilities: An IPM Newsletter

Special Points of
Interest: Ground Beetles
& Drain Flies

Classroom Holiday Party Invitations Shouldn't Include Pests!

Karen Vail and Janet Hurley

Let's face it, most classrooms will have a party before school dismisses for the Thanksgiving and winter breaks. Teachers, students and parents will be sharing baked treats, candies and drinks. For most of you this image brings feelings of joy and excited anticipation, but as a pest management specialist, I'm starting to cringe. If the pests only knew, they would be planning their party too. Teachers are often as excited as students to start the holiday and may rush out of classrooms before rescinding their pest invitation. We offer a checklist for teachers (and classroom helpers and custodians) to use as they prepare for the breaks so pests won't be having a party in their classroom.

Holiday Party Checklist or How to Prevent Inviting Pests to Your Party

Solid foods

- Choose foods that are easy to clean up. For instance, use bagels instead of cupcakes.
- Designate an easily cleaned area for eating.
- Ensure the area is cleaned after eating. Involve the kids and make it fun. Its never too early to teach cleaning techniques.
- Ensure garbage cans are lined with plastic bags so food debris isn't left in the can when it is emptied.
- Don't let cans or bins overflow.
- Empty garbage cans and recycle bins often. These should all be emptied before the start of break.
- Always keep snacks and other food items, whether for kids or teachers, in pest-proof containers such as sealed plastic, glass or metal containers. Yes, that means that package of crackers and emergency candy you keep in your top desk drawer.
- Look under furniture for food crumbs and remove them. We find that food eating surfaces are often cleaned, but food debris under objects is often ignored.
- Remaining party food should be sent home and not left in the classroom overnight or over break!
- Send the kids home with art and crafts projects made of food. We don't want pests nibbling on these while you're gone. Food-based art projects should have limited duration in the classroom regardless of the time of year.



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Water and other liquids

- Use water as the preferred beverage in the classroom. It's better for the kids and doesn't leave a sticky, sugary mess when spilled for the pests to enjoy.
- Any spills should be wiped up immediately. Report spills of sugary substances on carpets to ensure they are cleaned quickly.
- Report leaking faucets and pipes ASAP. Cockroaches can only live a few days without water, but weeks without solid food.
- Ensure water is present in the p-trap of any sink and cover or plug drains to ensure American cockroaches don't make a visit to your classroom through the pipes.



Adult American Cockroach. Credit: Daniel R. Suiter, University of Georgia, Bugwood.org

Clutter (i.e, pest shelter)

- Cardboard boxes used to bring in party supplies should be sent home, recycled or returned to the owner.
- Transition from cardboard as a long-term storage container to plastic totes or similar items. German cockroaches love to hide in **corrugated cardboard** and are often transported into buildings this way. German cockroaches so enjoy corrugated cardboard that we use it for their harborage when we rear them in the laboratory. Crickets will also munch on it, mice build nests out of it and many pests may use it as a hiding place.
- Arts, crafts, and miscellaneous **supplies tend to accumulate in the classroom**. Ask yourself if you have used stored items in the last year. If not, is there someone else who could use it more?
- Please reduce clutter in the classroom. Not only does clutter provides a place for pests to hide, it is very difficult to clean or inspect in, under and around it. Ask yourself why it is here and if you can do without it.



German cockroach adult with nymphs. Credit: Gary Alpert, Harvard University, Bugwood.org

Follow these steps to help keep your classroom pest free. Not only do pests disrupt the learning environment, they are also a source of allergens and asthma triggers.

Source:

Hurley, J. 2013. As we all prepare to enjoy a few days off with our family and friends, please remember these few short tips to help keep our classrooms, cafeterias, and offices free of places for pests to hide over the holiday break.

Occasional Invader: Carabid or Ground Beetle

Pat Barnwell and Karen Vail

The next two articles spotlight two of the pests, ground beetles and moth flies, that we encountered during October school inspections in Tennessee. Ground beetle control requires pest proofing the structure to keep the beetles out while moth fly management requires the removal of organic matter which sustains the fly larvae.

Ground beetles inhabit areas under leaf litter, mulch, stones and logs. A few of these beetles may be found on trees hunting for prey. Eggs are laid in the ground and larvae inhabit burrows in the soil or find harborage under debris or bark. Although adults are usually black or brown in coloration, some are brightly colored or metallic. Length varies from 1/16" to 1 3/8". Antennae are threadlike, the elytra (hardened front wings) often striated and the body somewhat flattened. Both larvae and adults are scavengers or predators, consuming dead or living insects, snails, slugs and millipedes, but some feed on seeds including those of noxious weeds such as ragweed. Adults are active from spring to fall and can live for 2 to 3 years.

Ground beetles are nocturnal and wander into the school interior because they are attracted to lights. Entry occurs through a gap under or around the door. Ground beetles do no harm to humans, materials or structures and are considered to be excellent biological control agents in crop systems. The best strategy for dealing with these insects is to sweep them into a dustpan and return them outside far from the building entrance. Remove piles of debris, stones, excessive mulch and logs close to entry ways to deter these beetles from residing near entrances. Check the seal around doors for needed repairs. Screen vents around the foundation. Consider shading or turning off indoor lights near doorways or using lighting with a wavelength corresponding to yellow.



Commonly encountered ground beetle, *Harpalus (Pseudoophonus) pennsylvanicus*
Credit: http://www.cbif.gc.ca/spp_pages/carabids/phps/image3_e.php#Harpalini



Less commonly encountered ground beetle, *Galerita janus*. Credit: Kansas Department of Agriculture Archives, bugwood.org. <http://www.insectimages.org/browse/detail.cfm?imgnum=5512120>

Reference:

Shetlar, David J. Entomology Fact Sheet, Ground Beetles, HYG 2102-10. The Ohio State University Extension, <http://ohioline.osu.edu/hyg-fact/2000/pdf/2102.pdf>, accessed 5/9/2014.

Moth Flies

Pat Barnwell and Karen Vail

Drain or moth flies (Psychodidae) are small 1/16" to 3/16" flies with hairy bodies and wings. When at rest, the flies hold their hairy wings roof-like or flat over their abdomens thus resembling moths. Wing veins are well developed and appear almost parallel. Color varies from pale yellow to brownish gray to black depending on the species. Flight is weak and erratic. Flight paths are short jerky lines that cover small distances.



Drain or moth fly. Credit: <http://lancaster.unl.edu/pest/images/flies/drainfly.jpg>

Females deposit eggs in shallow polluted water or moist organic debris where larvae feed on algae, bacteria, fungi, protozoans and sludge in the debris helping to break it down. Larvae have light-colored, 1/8" - 3/8" long cylindrical bodies that narrow towards the head and bear a breathing siphon on the rear end. Both the head and siphon are dark. In buildings, larvae can feed on organic sludge in dirty garbage containers and biofilms lining the water-free part of the drains. Other sources of food for larvae are found in pans under refrigerators, unused toilets, condensate lines of ice makers, loose floor tiles where water accumulates and the soil under broken sewer pipes. Development from egg to adult varies from 7 to 28 days; adults live about 2 weeks. Adults rest during the day and are active at night. The adults are attracted to lights and can easily pass through the mesh of a standard window screen.



Moth fly larvae and pupa. Credit: <http://msue.anr.msu.edu/news/>

Insect light traps are useful in attracting and monitoring for moth flies but will not eliminate them. To rid the environment of moth flies, the larval feeding sight must be eliminated. To determine if moth fly larvae are living in drains, place tape over part of the drain or place a glue board on a cardboard collar over the drain and check to see if flies are caught on these traps. Scrubbing drains with a stiff brush and flushing the drain with hot water to move the loosened organic material through the pipes removes the nourishment that the fly larvae require to thrive. When cleaning with a brush, use a brush 1/2" smaller in diameter than the drain opening. Move the brush with a circular or side to side motion instead of an up and down to avoid splashing debris onto exterior surfaces. Bleach does little to help with a drain fly problem. Microbial/enzymatic drain cleaners are designed to dissolve the organic film that can build up in drains; apply them according to directions to get the best results. Keep drains free of organic debris by cleaning with a brush or with a microbial/enzymatic cleaner once a week. Assign the task to someone to ensure that the drain gets cleaned.

Keep garbage cans and dumpsters clean, repair loose floor tiles or coving to keep water out, and periodically clean places where water or condensate accumulates. If flies start to accumulate in a structure and the source can't be found, check for leaking pipes underground. Repair pipes and remove and replace soil to get control of this moth fly infestation.

References:

Makdesi, Adel. "Drain Cleaning: Effective Challenges, Procedures and Recommendations." *American School & Hospitality Facility*, May/June 2009,. Web 13 Nov. 2014 (<http://facilitymanagement.com/issues.html>)
Smith, Eric C. & Richard C. Whitman, 2007. *NPMA Field Guide to Structural Pests 2nd Edition*. National Pest Management Association.

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NATIONAL IPM INFORMATION

eXtension's Pest Management In and Around Structures: Urban Integrated Pest Management
<http://www.extension.org/Urban%20Integrated%20Pest%20Management>

National School IPM
schoolipm.ifas.ufl.edu/

IPM in Schools Texas
schoolipm.tamu.edu/resources.htm

IPM Institute of North America
www.ipminstitute.org/

School IPM PMSP—all schools IPM by 2015
http://www.ipminstitute.org/school_ipm_2015.htm

National Pest Management Association IPM
www.whatisipm.org/

EPA schools
www.epa.gov/pesticides/ipm/schoolipm/index.html

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Disclaimer

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