Fleas in the classroom
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As I reflect upon the past year, two somewhat unusual pest related occurrences stand out to me. I’ll report on flea activity in this newsletter and the increase in delusory parasitosis in the next.

Although adult cat fleas can bite humans, they cannot develop and reproduce on human blood if a viable host (cat, dog, opossum, raccoon, etc.) is absent. When fleas are found in schools, it’s usually due to one of these hosts living inside or nearby, or students/staff transporting the adult fleas to the structure.

Flea eggs are laid on the host animal, fall off the host and the larvae hatch to feed on partially digested blood and other organic matter in the environment. They go through several molts before pupating. The pre-emergent adults will wait for a stimulus (heat, vibration, pressure) to indicate a host is nearby and can persist in this stage for 5 months or more. Flea management at a school usually requires finding and removing the host animal and sealing host entry points, or determining who is responsible for bringing the fleas to prevent future introductions. Below is a description of a cat flea infestation that occurred at a Tennessee childcare this summer and management practices needed to resolve the situation.

Sometime in August, personnel in a childcare facility were finding fleas in the lower floor classroom which sits on a slab. This is a multi-story nearly 90-yr old brick structure. To the west, the rest of the

A glue board from the complaint classroom with two larvae (upper arrows) and two adult (lower arrows) cat fleas (A), close-up of larva (B) and pronotal comb and genal comb with the most anterior spine nearly as long as the second spine in the close-up of the adult cat flea (C). Photo: Karen Vail, UT E&PP
building sits on a crawlspace of differing depths. During the summer, some of the students noted their pets from home had fleas. By the time the flea problem at the childcare was reported, these students were no longer at the childcare. Treatment of the fleas was somewhat difficult to discern as two pest management firms were involved, initially unbeknownst to each other. Evidently the childcare was sprayed over the weekend by the second company, but the original pest managers with responsibilities for this site were called to follow up after fleas were still seen on Monday.

The original pest managers then regularly vacuumed the premises and removed a jute rug from the complaint classroom. Vacuuming serves many purposes when managing fleas: it removes the adult biting stage of the flea and its dried fecal blood which serves as a food source for the larva; removes a good proportion of the eggs (less larvae are removed because they can wrap around carpet fibers and other similar objects, although most of the floors were now tile); and the vibration stimulates the pre-emergent adults to leave the cocoon. After use, vacuum cleaner contents should be emptied into a plastic bag and the bag sealed to prevent fleas from escaping.

Larval and adult cat fleas were found on a glue board which had been placed in the classroom. The presence of larval fleas could indicate a viable host was present. It was unlikely that the larvae crawled an inch or more onto the glue board, they were likely dropped onto the board when the rug was removed or fell from another infested item.

White pants allow fleas to be easily seen during an inspection (A,B). A lint roller sheet can be used to easily remove fleas from the pants after inspecting each area to help delineate which areas are most active (C). Photo: Jennifer Chandler, UT E&PP.

Three adult flea hot spots were found including the outside area near the laundry room (feathers were found in the vent and inside the room on a glue board, A), the damaged screen entry to the crawlspace at the far end of the building (B) and in the crawl space (ladder leads to crawl, C). Photo: Jennifer Chandler, UT E&PP.
Adult flea activity continued into mid-September at which time the UT Urban IPM Lab personnel joined the original pest managers in an inspection of the facility. White pants and a lint roller helped determine where the flea populations were the greatest. An abundance of adult fleas were found in the front of the building near the kitchen/laundry room which was one room away from the complaint classroom, near a damaged crawl space vent screen at the opposite end of the building from the complaint room, and in the crawl space (which stopped one room away from the complaint room). Previous trapping outside the damage crawl space vent had yielded a feral cat. Over the following weeks, 2 raccoons and another feral cat had been caught outside the damaged crawl space vent (which had been repaired), and an opossum had been trapped in the crawl space.

Flea sightings were always greatest on Monday and then trailed off during the week which caused the pest managers to suspect someone was bringing in a pet over the weekend, but no one admitted to doing so and the effort stopped short of installing surveillance cameras. Flea activity complaints continued until mid-October or so.

Pre-emergent adults in the cocoons in the crawlspace or cracks and crevices in the less visited areas of the facility would have little stimulus to emerge and could prolong the presence of fleas in the childcare. Fleas inside the cocoon are protected from insecticidal sprays so it isn’t very helpful to apply insecticides at this point. Vacuuming is a better option because it causes the adults to emerge from the cocoon and removes the adults. Steam cleaning is another viable option especially if upholstered furniture is present or vacuuming cannot reach all areas, but take precautions to prevent damaging items when steaming.

More information on managing fleas can be found in the following references, but not all management information pertains to schools.


To eliminate fleas in a classroom where no pets are kept, its important to locate the viable host and remove it or deny its access to the school property. Search the perimeter of the structure and the landscape for signs (tracks, burrows, feces, etc.) of vertebrate pests that may be serving as the flea host. Vertebrate hosts may also be nesting in the crawl space (as in the case provided here), attic, chimney or wall voids.
For more information about IPM in Tennessee schools and other facilities, or to view past issues of Pests and Pesticides in Child-serving Facilities, please visit schoolipm.utk.edu.

### NATIONAL IPM INFORMATION

- **eXtension’s Pest Management In and Around Structures: Urban Integrated Pest Management** [http://www.extension.org/urban_integrated_pest_management](http://www.extension.org/urban_integrated_pest_management)
- **National School IPM** [schoolipm.ifas.ufl.edu/](http://schoolipm.ifas.ufl.edu/)
- **IPM in Schools Texas** [http://schoolipm.tamu.edu/](http://schoolipm.tamu.edu/)
- **IPM Institute of North America** [www.ipminstitute.org/](http://www.ipminstitute.org/)
- **National Pest Management Association IPM** [www.whatispim.org/](http://www.whatispim.org/)
- **EPA schools** [http://www2.epa.gov/managing-pests-schools](http://www2.epa.gov/managing-pests-schools)

For further information about the IPM program at your school or in your county, contact your county Extension Agent or the school IPM Coordinator. For county agent contact information, please visit [https://extension.tennessee.edu/Pages/Office-Locations.aspx](https://extension.tennessee.edu/Pages/Office-Locations.aspx)

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