

# Why you should pay attention to fly vomit

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New research from the University of Massachusetts Amherst concerning "synanthropic" flies—or the non-biting flies that live with us—argues that we need to pay far more attention to them as disease carriers. While epidemiologists have focused their attention on the biting flies that can spread diseases by transferring infected blood from host to host, it turns

out that what the non-biting flies regurgitate is a far greater risk to human health.

"I've been working on synanthropic flies since I was a graduate student in the 1960s," says John Stoffolano, professor of entomology at UMass Amherst's Stockbridge School of Agriculture and the author of a new paper that appeared recently in the journal *Insects*. "And synanthropic flies have largely been ignored. Blood-feeding flies have taken the limelight, but we should pay attention to the ones that live among us because they get their nutrients from people and animals that shed pathogens in their tears, feces and wounds."

To illustrate the point, consider the common house fly. In the course of its day, buzzing in and out of your house, it may feast on a [variety of foods](#): roadkill, animal dung, rotting garbage and quick trips to the sewer buffet. Each time it feeds, it fills its crop.

"The crop is like a gas tank," says Stoffolano, "a place to store food before it makes its way into the [digestive tract](#) where it will get turned into energy for the fly." Because the crop is a place for storage—not digestion—there are very few [digestive enzymes](#) or [antimicrobial peptides](#), both of which would neutralize most pathogens, at work. And so, inadvertently, the crop also becomes a place to store disease-producing pathogens.

As the fly then takes off, crop filled, say, with fresh dog feces left on the sidewalk, it gets rid of excess water in its crop by "bubbling," or regurgitating the water out, misting everything it contacts. Let's say that same fly then comes in through your window and lands on the sandwich you're making. Before helping itself to a bite of your grinder, it regurgitates some of what's left in its crop right onto your bread. Along with the crop contents, up comes whatever illness-causing pathogens that fly happen to ingest earlier.

It gets worse. Because a fly's crop is one of the cauldrons where microbes develop antibacterial resistance, what gets spewed out onto your food might not respond well to conventional treatments.

And yet, we still don't know many of the basics about these flies, as Stoffolano points out. How robust are the immune systems of different synanthropic flies, for instance? Do the flies incubate and encourage the growth of harmful pathogens in their guts, or are they simply transporting diseases from place to place? Are female or male flies better transmitters of pathogens? How do crop volumes vary by species?

"It's the [little things](#) that cause the problems," Stoffolano says. "Our health depends on paying closer attention to these flies that live with us."

**More information:** John G. Stoffolano, Synanthropic Flies—A Review Including How They Obtain Nutrients, along with Pathogens, Store Them in the Crop and Mechanisms of Transmission, *Insects* (2022). [DOI: 10.3390/insects13090776](https://doi.org/10.3390/insects13090776)

Provided by University of Massachusetts Amherst

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