

# PESTWEST NEWSLETTER

## DID YOU KNOW...

Ongoing research is showing that houseflies, *Musca domestica*, may be important in the transfer of the hospital 'superbug' *Clostridium difficile*.

Fly eyes have the fastest visual responses in the animal kingdom. A new study shows that their rapid vision may be a result of their photoreceptors -- specialised cells found in the retina -- physically contracting in response to light.

The Asian Rock Pool Mosquito, *Aedes japonicus* could be the next invasive species to make it to the UK! The nuisance biting reporting scheme, 'Mosquito Watch' will possibly be the first to identify new mosquito biting nuisance issues that could be related to an invasive species.

## MOST WANTED: FLYES

By Dr. **Stuart Mitchell**

They come by air, land, and filth flagrantly violating our public health laws. These flying infections criminally move pathogens from filth to food.

### The offence

- They vector diseases such as dysentery, gastroenteritis, tuberculosis, and intestinal-worms.
- Spotting is produced when feeding and defecating. These law-breakers each produce 16 to 31 spots in 24 hours.
- They harbor up to 6 million external bacteria and 25 million internal bacteria.

### The culprit

These flying felons are House flies, *Musca domestica*. Adults are 6 - 8 mm long. The thorax is grey with four longitudinal dark-stripes. The fourth vein on the wing bends forward (almost reaching the third vein). The sides of the abdomen are yellowish. Larvae undergo three molts, increasing in size and changing color from white to cream. Pupae are about 6 mm long and may be yellow, brown, or black.

Adult perpetrators live 1-3 months depending upon temperature. Females become sexually mature 1-2 days after emergence. Eggs (400-750 per lifetime) are placed, after copulation, in moist, fermenting, or putrefying materials.

Larvae seek a hideout from light, burrowing into food material and seeking zones of high temperature (45-50°C). Upon maturity, larvae seek a cooler environment (for example in soil). Larvae may travel distances, and become an offensive inclusion within commodities.

### Help us protect you

Adult fly suspects may travel or can be blown up to 20 miles. Attracted by odors, food requirements for adults are mainly carbohydrates. Stolen in liquid form, nutrients are dissolved by regurgitated digestive juices.

Arresting these suspects before public health crimes are committed involves good hygiene to limit food sources and breeding sites. Refuse should be stored in tightly sealed containers. Fly screens and exclusion methods should be utilised.

UVA light traps should be installed where appropriate. Flytraps with a bait attractant are useful in dealing with focal pressures. Properly labeled insecticides may be used depending upon the scope and site of lawless infestations.



# Fly Aggression & Human Anger

BY DR. STUART MITCHELL



Biologists have begun to research whether flies can get angry. This research is part of a wider-scope study on how animal behavior is genetically related.

Do flies get angry? That is the key question, and possibly illustrates a fly's repeated and increasingly tenacious return to your food plate after your every attempt to move it away. To study this question, researchers crafted an experiment using *Drosophila* (Fruit flies).

To promote the sought behavioral response, biologists designed a micro air pressure device. The concept was to place a food attractant at one point and then blow the flies away from the food upon approach. Upon repeated and unsuccessful food approaches by flies, biologists measured whether or not the flies became more and more agitated from the experience.

Results indicated that the flies did not have a need for the food. The singular act of blowing

the flies and disrupting their orientation caused measurable agitation. This indicated to biologists that food stimulation was not necessary to the research.

Primitive, emotional-type behavior was exhibited by flies. A series of micro air pressure disruptions prompted such responses. Flies moved frantically within a test container for a prolonged period of time. Even after flies calmed-down, they were hypersensitive to micro air bursts. *Drosophila* assume a reserved posture and stop moving in response to a steady wind pressure. This may be a sensory tool that enhances the way insects navigate in flight.

*Drosophila* research demonstrated that a pheromone (a chemical messenger) promotes aggression. In addition, aggression is linked to specific neurons in the fly's antennae. The findings lead biologists to believe there may be a relationship between the neurotransmitter dopamine and attention

deficit hyperactivity disorder (ADHD). A *Drosophila* brain contains some 20,000 neurons, and has been a viable system to study the genetic basis of memory, learning, and circadian rhythms.

*Drosophila* have been a potent tool to study emotions. Humans and Fruit flies share many of the same genes and neurons that produce brain chemicals associated with psychiatric disorders.



## ROYSTON CAVE PRESERVATION AND PESTWEST

PestWest units not only protect the present but also the past as a Chameleon unit was installed to protect the precious interior of Royston Cave, Hertfordshire.

Dating from the 14th Century, Royston Cave features an extensive range of wall carvings representing the crucifixion, the holy family and several saints, among them St Katherine, St Laurence and St Christopher.

Local historians have said the wall carvings suggest the Grade I-listed site may have been used by the Knights Templar.





# NOW YOU SEE THEM, NOW YOU DON'T

By Dr. Stuart Mitchell

House flies, *Musca domestica*, now you see them, now you don't, but its what they leave behind and what you don't see! What you don't see can make your customers sick!

UVA fly management systems (insect light traps) can reduce the potential of public health assaults within spaces by reducing or eliminating House flies and the micros they both carry and spread. The question is; are your UVA systems effectively deployed for flies to see? More importantly, how do you know?

Distances at which insects respond to an ILT and EFK are determined by trap design and lamp type. The visual acuity and nature of the specific insect varies responses (photopic or scotopic and opsin proteins). Insects do not respond to EFKs more than 100 feet away (attraction zone). House flies respond at 20 to 25 feet with a significant increase at 12 feet (capture zone). At 12 feet, it will take up to 7 hours for 90 percent of flies to respond, and 36 hours for 99 percent to respond.

## American Institute of Baking (AIB) Requirements for EFK's

- Insect light traps are installed farther than 10 feet or 3 meters from food contact surfaces, exposed products, packaging, and raw materials in processing or storage areas.
- Insect light traps are used to intercept flying insects at locations that are likely to allow access into the facility.
- Insect light traps are installed in a way that does not attract insects to the facility.
- Shatter-resistant lamps are used in all units or otherwise explained in the facility's Glass, Brittle Plastics, and Ceramics Program.
- Insect light trap lamps are changed annually (at the beginning of the active season).
- Service checks are performed on all units on a weekly basis during the active season and a monthly basis during colder seasons or as dictated by climate.

## Service checks include the following.

- Emptying collection devices.
- Unit cleaning.
- Any needed repairs.
- Checks for lamp breakage.
- All services provided to light traps are documented.
- Service records are kept in the device and on file with the pest management documentation.
- The facility documents, on a trap line audit, the types and quantities of insects found in light traps, and uses the information to identify and eliminate the source of activity (trend analysis).

## Other considerations include the following.

- Always hang units where they can be accessed for servicing.
- It is undesirable to hang a unit over machinery that has to be switched off before servicing.

- Make sure units are not positioned where they might be damaged (by a fork lift truck).
- Avoid mounting units in areas where they may present a hazard to people.
- Place units both perpendicular to, and above, door openings.
- Avoid competing light (not near or projecting out windows).
- Height to draw away from sensitive areas.
- An appropriately designed system for wet or dry environments (food processing).
- A dedicated power source.
- No potential for cultural practice obstructions to trap line of sight (constructive v. deconstructive light projection).
- Placement security from damage, theft, or sabotage.

"In an enclosed environment, House flies will go the easiest accessible attractant, no matter what the height." -The Sky's the Limit by Dr. Joseph DiClaro, Dr. Phil Koehler, and Dr. Roberto Pereira of the University of Florida Entomology Department.

"The key to pest prevention and management is early detection through the use of more insect light traps (ILTs) and electronic fly killers (EFKs)." -Dr. Ted Granovsky, BCE

PestWest EFKs are designed and engineered with top-quality materials to allow many years of reliable service. In addition, PestWest UVA fly management systems will cover a given square footage of space based upon insect line of sight. PestWest underwrites this efficacy through our exclusive UV-AMeter. The UV-AMeter includes a service panel on the back of the unit to define approximate measuring distances from the UVA plume based upon different system wattages. The chart below provides an overview of this critical information.

Wattage	10	20	30	50	80
Distance (m)	1.3	1.5	2.0	2.2	2.5
Distance (ft)	4.25	5.0	6.5	7.25	8.25

## Distance the UV-AMeter should be held from the UVA system.

The PestWest UV-AMeter is specifically calibrated to measure both ambient light within the space to be protected and the UVA light emitted by the EFK. Through a red, yellow, or green indicator, the UV-AMeter provides "in the green" assurance of proper EFK placements based upon competing light and the ideal UVA plume attraction frequency of 365 nm. When you are "in the green," you are "in the know." **Now you see them, now you don't!**



Commercial Sticky Traps –  
Sunburst & Naturele

# SAVING ENERGY FROM THE FRONT-OF-HOUSE TO THE BACK

To deliver highly effective fly control at low running costs the new generation of PestWest units are equipped with state-of-the-art energy-efficient technology.

Professional Electronic Fly Killer – Nemesis Quattro

The Pro Range – Chameleon Vega