

# PEST PREVENTION MANAGEMENT

## ROLE OF ECOLAB PEST ELIMINATION SERVICE SPECIALIST

- Thoroughly inspect restaurant to identify breeding and harborage sites monthly
- Apply pesticides to prevent and eliminate pests
- Recommend structural and sanitation actions to eliminate breeding and feeding sites
- Remove and/or treat breeding and feeding material to end the reproduction cycle
- Ensure pest control devices are to standard, placed correctly

## ROLE OF RESTAURANT MANAGEMENT

- Immediately report any pest activity to your Ecolab Pest Elimination Service Specialist (**DO NOT** wait until next scheduled visit)
- Allow your Ecolab Pest Elimination Service Specialist access to all locked areas in your restaurant
- Promptly correct any structural or sanitation issues discovered during your Ecolab Pest Elimination Service Specialist's inspection
- Discuss structural repairs with management
- Establish standard cleaning practices
  - Clean and sanitize floors daily
  - Clean drains weekly

### BEFORE SERVICE:

- Prepare your restaurant for pest elimination service by ensuring all food and food contact items (i.e., utensils, pans, smallwares, etc.) are properly stored or covered
- Clean-up debris and remove trash within the restaurant

### AFTER SERVICE:

- Thoroughly clean and sanitize all exposed counter-tops, prep tables and other food contact surfaces prior to prepping or cooking food

## ROLE OF EVERY TEAM MEMBER

- Immediately report pest sightings to restaurant management
- Clean-up spills, trash or debris within the restaurant
- Do not prop doors open. This will eliminate an easy pest entry point



# PEST PREVENTION MANAGEMENT

## RODENTS

### FACTS:

1. Rats can spread over 35 diseases to humans
2. Rats contaminate and destroy enough food worldwide each year to feed 200 million people
3. Rodents can gnaw through a wide variety of materials; including lead and aluminum sheeting, window screens, wood, rubber, vinyl, fiberglass, plastic and even concrete block
4. Mice can enter a building in an opening as small as 1/4 inch. Rats need only 1/2 inch opening
5. A female mouse can produce 12 litters in a single year with up to 12 young in each litter
6. A female rat can produce up to 8 litters in a year with up to 14 young in each litter

### TYPES:

Most common types of rodents are the House Mouse, Norway Rat and Roof Rat



HOUSE MOUSE



NORWAY RAT



ROOF RAT

### TRAITS:

#### House Mouse

- About 2 to 3 inches body length with a 3 to 4 inch long, hairless tail
- Usually light brown to gray with small head, small eyes, and large ears
- Can jump, run, climb, and swim
- Obtain water from food eaten

#### Norway Rat

- Up to 16 inches long, including tail
- Has a large, bulky body with coarse brown fur and grayish underbelly
- Digs burrows for harborage and can live in and come up through sewer lines

#### Roof Rat

- At about 14 inches, it is slightly shorter than the Norway rat
- Has a slimmer, sleeker body with black fur and grayish underbelly
- Called roof rats because of their ability to climb and their likelihood of living in upper areas of facilities, such as above/within ceilings

### FOOD AND WATER SOURCES:

- Spilled garbage
- Standing water
- Packaged goods
- Food debris

### HARBORAGE SITES:

- Outdoors: ground burrows and under concrete slabs or in trees, areas of heavy vegetation
- Indoors: inside walls, ceilings, floors, and in any material or equipment that is stored for long periods of time without being disturbed
- Dark, warm and confined spaces



# PEST PREVENTION MANAGEMENT

## RODENTS (CONT)

### HOW TO PREVENT RODENT ACTIVITY:

**1. Reduce rodent pressure on the exterior of your restaurant by minimizing the presence of food, water and harborage areas:**

- Eliminate spillage of garbage
- Eliminate standing water
- Secure all garbage and dumpster receptacles with tight fitting lids and move receptacles away from the restaurant whenever possible
- Remove clutter and items stored on the ground around your restaurant

**2. Create a barrier to minimize entry points.**

- Seal holes and gaps on the exterior of the restaurant
- Seal openings and voids around pipes leading into restaurant
- Seal all doors, inspect and repair entrances on a regular basis
- Trim trees so that no branches touch the restaurant
- Eliminate standing water
- Remove weeds, tall grass and other excessive vegetation
- Partner with your Distribution Center and carefully inspect incoming goods for the presence or activities of rodents—reject shipment(s)

**3. Reinforce the restaurant interior by minimizing conditions that support pest activity:**

- Minimize product spillage and regularly clean under shelves
- Eliminate all standing water and accumulated condensation
- Seal potential access to hidden runways and harborage areas
- Remove unneeded cardboard boxes and unused equipment from restaurant



# PEST PREVENTION MANAGEMENT

## COCKROACHES

### FACTS:

1. Cockroaches present a significant risk to food safety due to their ability to harbor and spread E. coli, Salmonella and Dysentery
2. In many parts of the country, a single cockroach sighting by a health inspector is considered a critical violation and could lead to a restaurant closure
3. A single pair of German cockroaches can produce over 250,000 offspring in one year
4. Cockroaches are omnivorous and will eat anything – including soap and glue to survive
5. A cockroach can live without its head for up to 1 week

### TYPES:

GERMAN  
COCKROACH



### TRAITS:

#### German Cockroaches

- Brownish with two longitudinal stripes on the pronotum (mid-section behind the head)
- Adults are approximately 1/2 inch long
- The nymphs resemble the adults but are smaller and lack wings
- Indoor pest – does not harbor on the exterior

The German cockroach (*Blattella germanica*) is the most significant insect pest of the food industry



#### American Cockroaches

- Largest cockroach species
- Considered a perimeter pest, occasionally enters structures
- Prefers warm, damp locations and can be found by the thousands in sewers, steam tunnels and boiler rooms
- Can fly and migrate between buildings
- Referred to as Palmetto bugs in Florida and other parts of the South and can survive well outside

The American cockroach (*Periplaneta americana*) is the largest species of the common cockroach

AMERICAN  
COCKROACH

### FOOD AND WATER SOURCES:

- Standing water (even droplets)
- Grease build-up
- Food debris
- Foods with yeast (pan dough)

### HARBORAGE SITES:

- Cracks and crevices near their food and water
- Prefer warm temperatures and high humidity
- Prefer cardboard and wood but will harbor on stainless steel and plastics
- Equipment and materials that sit undisturbed
- Nocturnal – avoid light



# PEST PREVENTION MANAGEMENT

## COCKROACHES (CONT)

### HOW TO PREVENT COCKROACH ACTIVITY:

1. Ensure your facility is prepared for Cockroach Service for every Ecolab Pest Elimination Service Specialist visit
2. Promptly correct any structural or sanitation issues discovered during your Ecolab Pest Elimination Service Specialist visit
3. Check with management to fix any structural concerns in order to keep cockroaches out
4. Avoid cockroach entry by inspecting deliveries before moving to storage
5. Immediately clean spills and food debris from under equipment and/or on floors
6. Remove unneeded cardboard boxes and unused equipment from restaurant
7. Remove all trash and food debris from under equipment and shelving, especially hard to reach locations
8. Minimize pressure washing floors and walls during the cleaning process to reduce food and water being driven into cracks and wall voids



# PEST PREVENTION MANAGEMENT

## LARGE FLIES

### FACTS:

1. Large flies have been known to carry and transport more than 100 pathogens that cause human diseases, including Salmonella and E. coli
2. Flies found in your restaurant may be breeding at locations up to a mile away
3. Flies actively enter open doors and windows, especially if there is food or garbage odor near entrances
4. Adult flies cannot eat solid food. They regurgitate stomach content including their last meal, bacteria, enzymes and stomach acid to help dissolve solids and mop up these liquids with their sponging mouth parts
5. Fly populations generally increase in warm months. Warm weather causes rapid decomposition of vegetation and other organic matter, providing ample food for flies and their larvae
6. The lifecycle of a fly is 8-12 days. In this time, however, a female fly can lay as many as 500 eggs

**TYPES:** The most common large fly species include house flies, bottle flies, blow flies and flesh flies



HOUSE FLIES



BOTTLE FLIES



BLOW FLIES



FLESH FLIES

### TRAITS:

- Large flies vary in color from dark gray to metallic blue and green depending on species
- Range in size from 1/4" long to 7/16" long
- Large flies move from area to area in search of food and breeding material, indicated by odors from decaying material, garbage and food preparation
- Adults will feed on some solid material by breaking up or scraping off particles and then emulsifying them with saliva and vomit, often leaving spots of excreta or "fly spec" on the surfaces they land. This unique feeding process, in addition to sponge-like mouthparts and padded feet, makes flies excellent mechanical vectors of microorganisms, including diseases and foodborne illnesses

### FOOD AND WATER SOURCES:

- Garbage, feces, dead animals and rotting vegetation
- Human food
- Standing water and wet decaying material

### HARBORAGE SITES:

- Decaying garbage areas, such as dumpsters and trash cans
- Standing water



# PEST PREVENTION MANAGEMENT

## LARGE FLIES (CONT)

### HOW TO PREVENT LARGE FLY ACTIVITY:

#### 1. Reduce large fly pressure on the exterior of the restaurant:

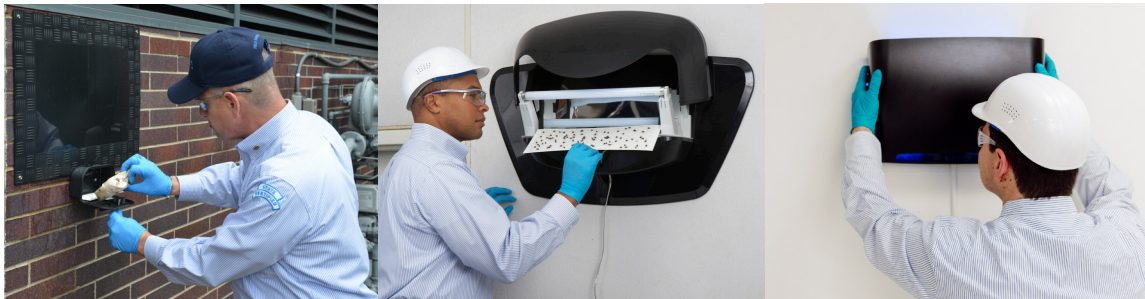
- Secure all garbage and dumpster receptacles with tight fitting lids and eliminate all garbage spills
- If there is an exterior dining or seating area, ensure that food and debris are properly removed
- Move garbage or trash receptacles away from your restaurant
- Always take garbage directly to dumpster receptacle and do not leave garbage outside BOH doors
- Eliminate standing water
- Remove clutter and items stored on the ground around your restaurant

#### 3. Maintain good sanitation within restaurant interior:

- Eliminate all standing water and accumulated condensation. Repair water leaks and ensure proper plumbing and drainage around sinks and dishmachine areas
- Limit interior access, where possible, by keeping doors to back areas closed
- Remove food debris thoroughly and regularly
- Clean trash bins regularly

#### 2. Minimize large fly entry points to your restaurant:

- Keep windows and doors closed as much as possible; equip windows with properly-fitted screens and doors with sweeps and self-closing mechanisms
- In high pressure situations, consider double-door vestibules, air doors or plastic door strips



# PEST PREVENTION MANAGEMENT

## SMALL FLIES

### FACTS:

1. Like German cockroaches, small flies often breed indoors and can live in your restaurant year round
2. A female small fly can lay up to 100 eggs per day which develop into adult flies in 10-20 days
3. Small flies groom themselves on smooth flat surfaces, including food preparation surfaces, where they may transfer breeding and dead or decaying organic feeding material that could contain bacteria onto surfaces



### TYPES:

The two most common small flies species (often referred to as fruit flies) are the Red-Eyed Fruit Fly and the Dark-Eyed Fruit Fly

RED-EYED  
FRUIT FLY



DARK-EYED  
FRUIT FLY



### TRAITS:

- Small flies vary in color from black to yellow depending on the species and have red or dark color eyes
- Small flies range in size from 1/8" to 7/16" long
- Found throughout restaurant but most often located in areas with decaying material
- Poor sanitation attracts and sustains small fly populations

### FOOD AND WATER SOURCES:

- Wet, decaying organic material
- Decaying fruits and vegetables
- Drip, condensation lines
- Moist food residues inside and under equipment
- Standing water

### HARBORAGE SITES:

- Biofilms and "sugar snakes" in drain lines, in cracks and crevices, in and under equipment, under broken tiles
- Areas where decaying, organic material reside such as garbage cans, soda dispensers and floor drains



# PEST PREVENTION MANAGEMENT

## SMALL FLIES (CONT)

### HOW TO PREVENT SMALL FLY ACTIVITY:

#### 1. Minimize restaurant exterior breeding opportunities:

- Secure all garbage and dumpster receptacles with tight fitting lids and eliminate all garbage spills
- Move garbage or trash receptacles away from your restaurant
- Always take garbage directly to dumpster receptacle and do not leave garbage outside BOH doors

#### 2. Minimize small fly entry points to your restaurant:

- Seal all doors, inspect and repair entrances on a regular basis
- Minimize the amount of time doors and windows are kept open
- Inspect incoming goods and products, and reject materials with evidence of small fly activity

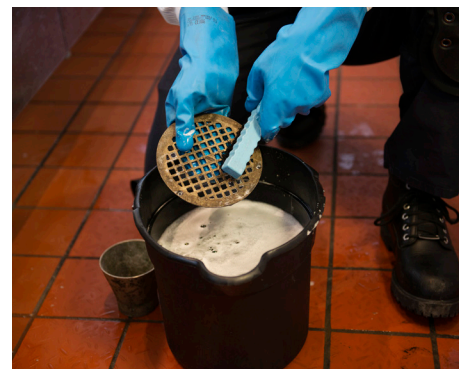
#### 3. Minimize restaurant interior breeding opportunities:

- Eliminate all standing water and accumulated condensation
- Establish standard cleaning practices
- Regularly clean drains, sinks, and mop sinks
- Clean up food debris
- Clean rags and mop heads before storing
- Store food appropriately and follow FIFO
- Remove garbage from restaurant frequently
- Replace cracked floor tile and missing grout
- Repair plumbing and drain problems immediately

### DRAIN CLEANING INSTRUCTIONS:

- Prepare a solution of water and general purpose cleaner, according to label, in a bucket
- Remove drain grate/strainer to access drain bowl and pipe
- Wet the drain with a small amount of water and general purpose cleaner
- Use a brush to clean all surfaces in and around the drain and to clean the drain grate/strainer
- Clean tight areas such as the seam around the drain bowl and threads using a small brush
- Place and secure the drain grate/strainer
- Completely rinse drain with clean water

**NOTE:** Ecolab Pest Elimination recommends a best practice of cleaning drains one time per week to prevent small fly activity



# PEST PREVENTION MANAGEMENT

## ANTS

### FACTS:

1. Social insects which live in a colony. Colony broken into "castes" (e.g. workers and queen)
2. Some ants can sting if disturbed
3. Ant colonies may contain more than one queen if they become large enough
4. Ant colonies typically have one or more fertile females ("queens") responsible for producing new individuals within a colony
5. Some ant colonies can "bud" if disturbed, splitting into multiple colonies

**TYPES:** There are over 8,000 species of ants worldwide



### TRAITS:

- Elbowed antennae
- Slender "waist" (constriction between thorax and abdomen), with either one or two nodes
- May or may not have wings and can fly
- Size can vary between 1/8 and 1/16" long and color can vary from black to redish brown
- The vast majority of ants live outdoors. They are found in most environments throughout the world

### HARBORAGE SITES:

Many ant species can be pests and live within and around buildings:

- Inside foam insulation
- Inside wood
- Soil around structure perimeters
- Underneath floors, in wall voids, and behind baseboards
- In potted plants
- Around pipes and sinks

### FOOD SOURCES:

- Feed on a wide variety of foods. They are typically predators and/or scavengers
- Sweet foods
- Greasy foods such as meats and cheeses

### HOW TO PREVENT ANT ACTIVITY:

- Immediately clean spills and other food debris
- Clean floors regularly
- Minimize moisture around structure
- Keep mulch depth to 2-inches or less in active areas
- Trim foliage away from structure to prevent above ground access by ants



# PEST PREVENTION MANAGEMENT

## CRAWLING INSECT PESTS

### TRAITS:

#### Crickets

- Most common during the late summer or early fall, but move indoors when outdoor vegetation dries up and weather becomes unfavorable
- Attracted to lights, mulch and other debris around foundations
- Enters structures through cracks in poorly fitted doors, windows, foundations or siding
- Does not breed or live long indoors, but can damage furniture, rugs and clothing, and the male's chirping can be a nuisance



CRICKETS

#### Ground Beetle

- Beneficial predator that feeds on harmful pests
- Runs rapidly but seldom flies, and many species are attracted to light
- Most active at night, when it typically enters structures with internal lights on — by crawling under a door or through an open window
- Will enter structures during daylight hours looking for shelter
- Harmless to humans and does not reproduce indoors



GROUND BEETLE

The presence of crawling insect pests (crickets, grasshoppers, spiders, beetles, plant bugs, etc.) within the restaurant usually indicates the presence of light attractants and pest entry points

### MINIMIZE EXTERIOR PEST PRESSURE:

- Eliminate the storage of items on the ground near the restaurant
- Minimize insect breeding areas near the restaurant by reducing vegetation, leaf litter, plant beds and decaying plant material on the exterior of the restaurant
- Seal sidewalk cracks, expansion joints, access to voids in cinder block walls and other exterior harborage points
- Reduce the amount of "white" light around the exterior and install yellow bulbs (sodium vapor) wherever possible and consider indirect lighting in areas where it is possible

### MINIMIZE CRAWLING INSECT PEST ENTRY POINTS:

- Keep doors closed as much as possible; equip windows with properly-fitted screens and doors with sweeps and self-closing mechanisms
- In high pressure situations, consider double-door vestibules, air doors or plastic door strips
- Ensure air-intake vents are properly screened to exclude small flying pests