



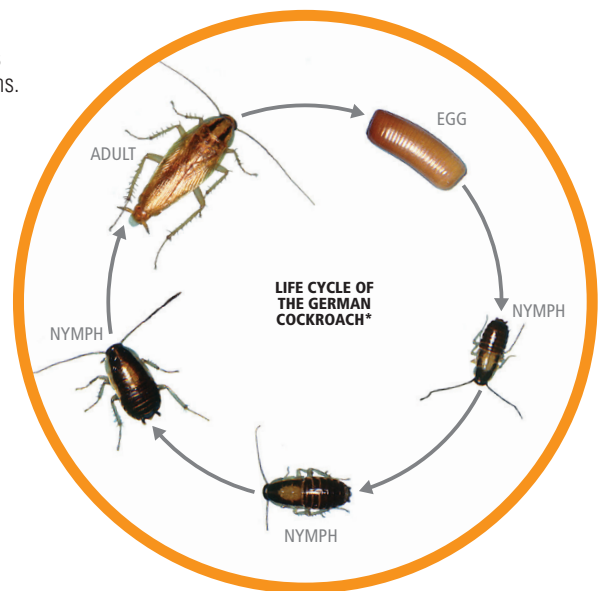
PEST IDENTIFICATION & TREATMENT

Residential German Cockroach Control Protocol




Understanding German Cockroach Habits and Life Cycle

- Gradual metamorphosis, passing through three life stages – egg, nymph and adult.
- Nymphs are similar in appearance to adults, but smaller and lack wings.
- As the nymph matures, it sheds its exoskeleton to grow. Freshly molted cockroaches are white, assuming their typical coloration within a few hours as their cuticle hardens.
- Each nymphal stage is larger than the previous one and the adult emerges after the last nymphal stage.
- Several nymphal stages (6-7 molts) before becoming adults.
- In general, cockroaches need four things to successfully live in an environment: water, food, shelter and warmth.



Identifying German Cockroaches

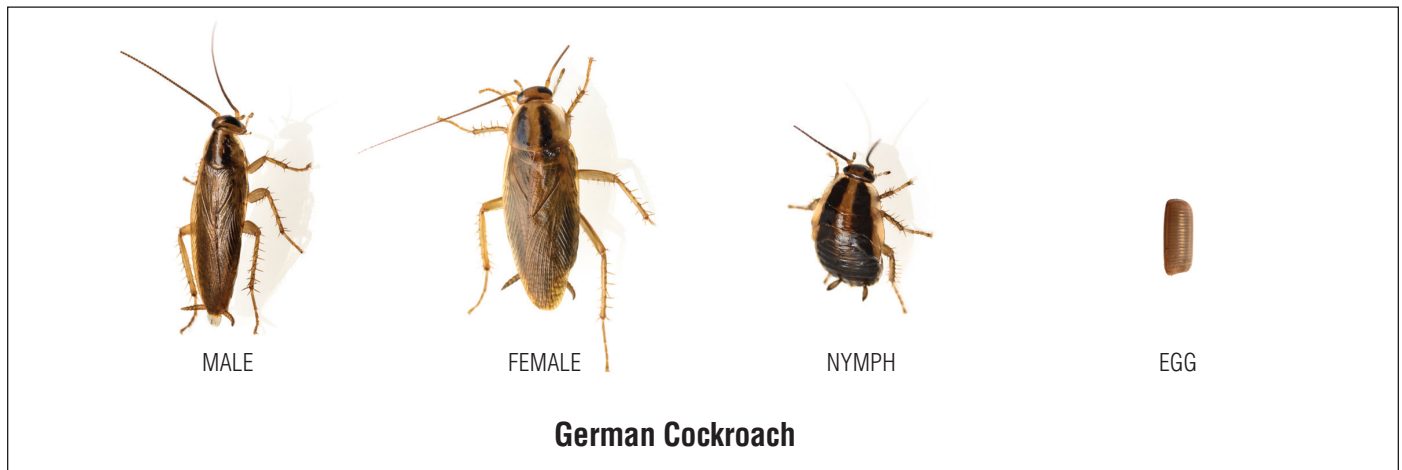
- Adults are light brown to tan in color with two longitudinal black stripes on the pronotum.
- Nymphs are dark brown and about 1/8 inches long and the Ootheca is light brown.
- Can be confused with Asian or brownbanded roaches

COCKROACH SPECIES	LENGTH (INCHES)	COLOR AND MARKINGS	EGGS PER CASE	EGG TO ADULT (DAYS)	NUMBER OF MOLTS	AVERAGE LIFE SPAN OF ADULT (DAYS)	REPRODUCTIVE CHARACTERISTICS
GERMAN (<i>Blattella germanica</i>) 	1/2 – 5/8	Light brown with two dark stripes on the pronotum	30 – 40	54 – 215	6 – 7	100 – 200	Females carry egg cases about 24 hours before hatching, then drops it in a secure place



Residential German Cockroach Control Protocol

Cockroach Life Stages



Assessment

- Determine the infestation level: high, medium or low
 - High – Large number of roaches can be found inside and outside common harborage areas
 - Medium – Moderate number of roaches can be found in common harborage areas
 - Low - Very few roaches are found in common harborage areas
- Glue traps can also be used to assess the level of infestation



HIGH INFESTATION

Inspection

- Focus on areas where the following conditions exist: high humidity/ water, darkness and limited air movement. Look under sinks, refrigerators, dishwashers and stoves, around toilets, near trash containers and inside cabinets and storage areas. See common harborage sites on page 3.
- Check behind objects attached to walls such as pictures, paintings, smoke detectors and posters.
- In high level infestations do not restrict inspection to well-known areas such as kitchens and bathrooms.
- Other signs of German roach activity are: dead roaches, egg casings and fecal material



MEDIUM INFESTATION

Pre-Treatment

- Stress the importance of sanitation to your customers. Encourage them to remove water sources and eliminate hiding places by reducing clutter to increase the likelihood of a successful treatment.
- When using baits be careful not to contaminate bait placement areas with insecticidal dusts, aerosols, or liquid sprays. These products will likely reduce the palatability of the bait leading to reduced bait consumption.
- Bait placed on folded wax paper strips can be used in areas where contamination is a concern or in high clutter areas.

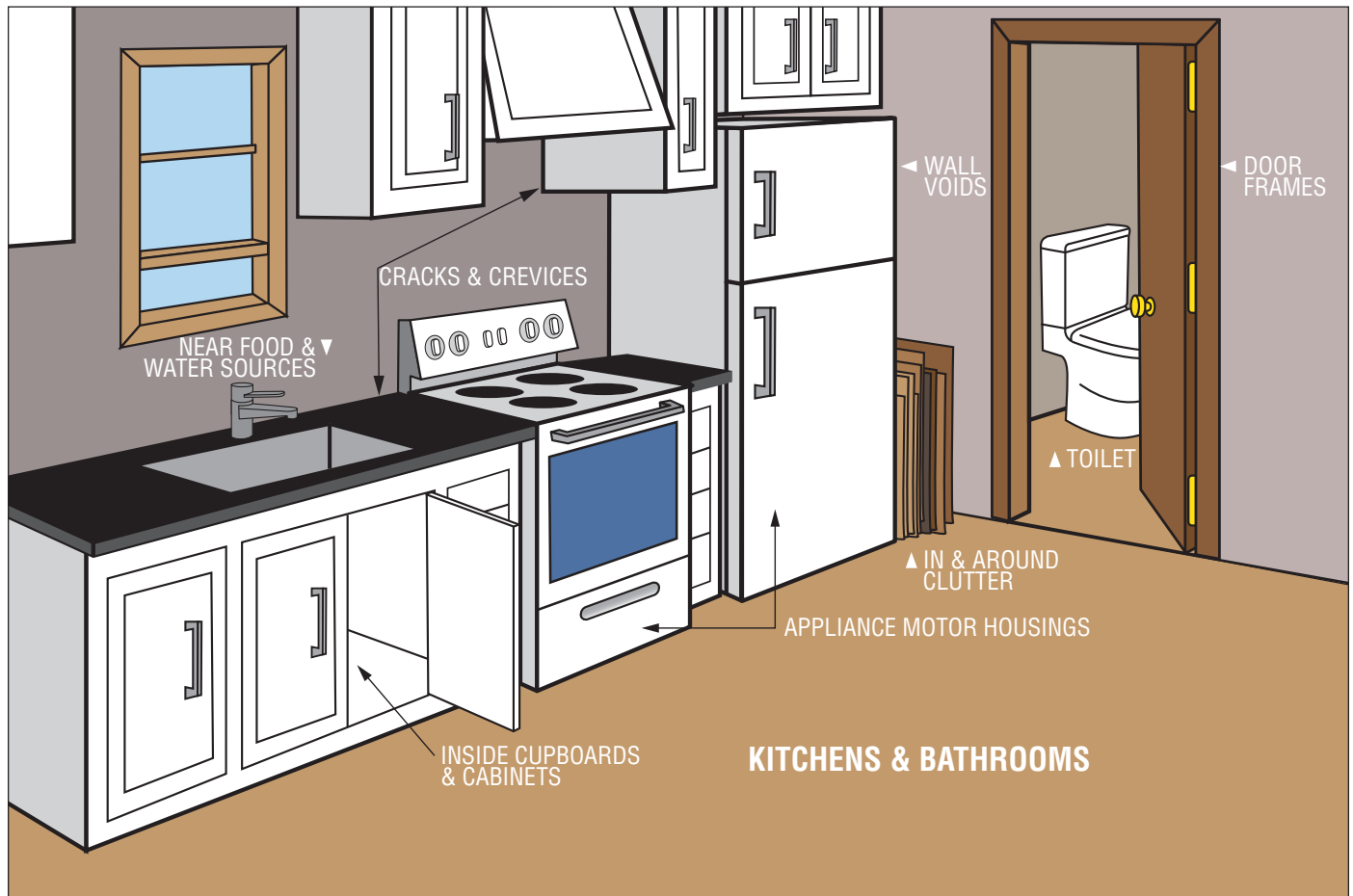


LOW INFESTATION

Residential German Cockroach Control Protocol



Common German Cockroach Harborage Areas



- Kitchens and bathrooms
- Near food and water sources
- Inside cupboards and cabinets
- Toilet
- Door frames
- Cracks and crevices
- Wall voids
- Around motor housings in appliances
- In and around clutter (stacked boxes, cartons, cardboard, etc.)

Treatment for High Level Infestations



- To reduce labor and chemical cost decreasing the roach population is the goal. The use of a bait product at this stage is not recommended due to disturbance causing bait avoidance.
- Mechanical control.
 - Use a HEPA (rated) filtered vacuum.
 - Remove all visible roaches found during the inspection.
 - Repeat in heavily infested areas.
- Treat all harborage areas with one of the following options:
 - Shockwave® 1 Flushing, Killing & Residual Aerosol.
 - Use a compressed air sprayer to apply Onslaught FastCap at a rate of 1fl. oz. per gallon per 1,000 square feet.
 - Dust products are also an option.
- Communicate to customer what to expect after the treatment (dead or dying cockroaches).
- Follow up approximately two weeks later.
 - Vacuum dead and dying roaches to reduce callbacks and help with reevaluation.
 - Make an assessment and treat according to the level of infestation.

Treatment for Medium Level Infestations



- MGK studies show that the use of Shockwave or Onslaught FastCap in a harborage area does not cause palatability issues when using Vendetta bait two weeks later.
- Apply Vendetta Nitro®
 - Place 1-4 mm beads (1/32-1/8 inch sized bait points) close to harborage areas. See common harborage sites on page 2.
 - Place sufficient bait for the level of infestation.
- Apply Sumari® Insecticide as a spot or crack and crevice treatment at a rate of 2 fl. oz. in sufficient water to cover 1,000 sq. ft.
- Follow up approximately one month later.
 - Vacuum dead and dying roaches to reduce callbacks and help with reevaluation.
 - Make an assessment and treat according to the level of infestation.
- To help reduce the chance of bait aversion developing in roaches, baits should be rotated on a routine basis.
 - Use Vendetta® 360 as a rotational bait

Treatment for Low Level Infestations



- Use glue traps to pinpoint harborage areas and make targeted applications.
 - Monitors containing predominantly adult cockroaches indicate they are not placed close to a harborage area.
 - Large numbers of small instars captured on a glue trap is an indication you are close to the harborage area.



- Apply Vendetta Plus.
 - Place 1/8 inch to 1/4 inch in diameter sized bait points close to harborage areas. See common harborage sites on page 3.
 - Place sufficient bait for the level of infestation.
- Apply NyGuard® IGR at a rate of 8 ml. per 1000 sq. ft. as a broadcast, spot or crack and crevice treatment to reduce the reproductive potential of cockroaches.
- To help reduce the chance of bait aversion developing in roaches, baits should be rotated on a routine basis.
 - Use Vendetta® 360 as a rotational bait.

Maintain Control

- Conduct visual/glue trap inspections in areas frequently reinfested.
- Apply Vendetta in areas where roaches are found.
- Apply NyGuard IGR at a rate of 8 ml. per 1000 sq. ft. as a broadcast, spot or crack and crevice treatment to reduce the reproductive potential of cockroaches.



Residential German Cockroach Control Protocol

Portfolio of Products



BREAK THE REPRODUCTIVE CYCLE

NyGuard® IGR Insect Growth Regulator

- The only IGR with EPA Reduced Risk status in food handling areas
- May be used in food and non-food areas
- Photostable so it can be used both indoors and outdoors
- Up to six months of residual cockroach control



FLUSH & KILL

Shockwave® 1 Flushing, Killing & Residual Aerosol

- All-in-one flushing and residual aerosol
- Provides flushing, killing, residual and long-lasting control with an IGR
- May be used in food and non-food areas
- Offers convenience and improved cockroach control performance
- Doesn't drip or leak, even when sprayed upside down



RESIDENTIAL CONTROL

Onslaught® FastCap Microencapsulated Insecticide

- Quick kill, residual and long-lasting control
- For use indoors and outdoors, including indoor broadcast treatment
- May be used in food and non-food areas



ALL-IN-ONE SOLUTION

Sumari® Insecticide

- For use indoors and outdoors including food handling facilities
- 90-day residual
- Kills a wide variety of labeled pests
- Contains NyGuard® IGR for dual modes of action
- Labeled for use in food handling facilities
- No signal word



Residential German Cockroach Control Protocol

Vendetta® Portfolio of Products

Innovative Bait Matrix Technology



ROTATE

Vendetta® 360 Cockroach Gel Bait

- Ideal rotational product
- Advanced roach defense system
- Contains NyGuard® IGR
- Ideal for use in sensitive accounts
- Use as a rotational bait with Vendetta®, Vendetta® Plus, Vendetta Nitro® or other products that control the same pests



CLEAN OUT

Vendetta Nitro® Cockroach Gel Bait

- Use for heavy infestations
- No signal word
- Highly palatable to bait averse and non-averse cockroaches
- Contains NyGuard® IGR
- Stable in high heat



GAIN CONTROL

Vendetta® Plus Cockroach Gel Bait

- Attractive
- Contains NyGuard® IGR
- Breaks the life cycle of German cockroaches
- Stable in high heat



MAINTAIN CONTROL

Vendetta® Cockroach Gel Bait

- Attractive to bait averse and non-averse German cockroaches
- Stable in high heat
- Works around the clock
- Kills roaches where they hide



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