

German Cockroach, *Blattella germanica* (Linnaeus) (Insecta: Blattodea: Blattellidae)¹

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Introduction

The German cockroach (Figure 1) is the cockroach of concern, the species that gives all other cockroaches a bad name. It occurs in structures throughout Florida, and is the species that typically plagues multifamily dwellings. In Florida, the German cockroach may be confused with the [Asian cockroach](#), *Blattella asahinai* Mizukubo. While these cockroaches are very similar, there are some differences that a practiced eye can discern.



Figure 1. Adult female German cockroach, *Blattella germanica*, with ootheca

Credits: James Castner, University of Florida

Distribution

The German cockroach is found throughout the world in association with humans. They are unable to survive in locations away from humans or human activity. The major factor limiting German cockroach survival appears to be cold temperatures. Studies have shown that German cockroaches were unable to colonize inactive ships during cool temperatures and could not survive in homes without central heating in northern climates. The availability of water, food, and harborage also govern the ability of German cockroaches to establish populations, and limit growth.

Description

Egg

Eggs are carried in an egg case, or ootheca, by the female until just before hatch occurs. The ootheca can be seen protruding from the posterior end (genital chamber) of the female. Nymphs will often hatch from the ootheca while the female is still carrying it (Figure 2). A typical egg case contains 30 to 40 eggs. The egg case is a tiny, brown, purse-shaped capsule. It is about 8 mm long, 3 mm high, and 2 mm wide (Figure 3).

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Figure 2. First instar nymphs emerging from the oothecae (egg case) of a German cockroach, *Blattella germanica* (Linnaeus).
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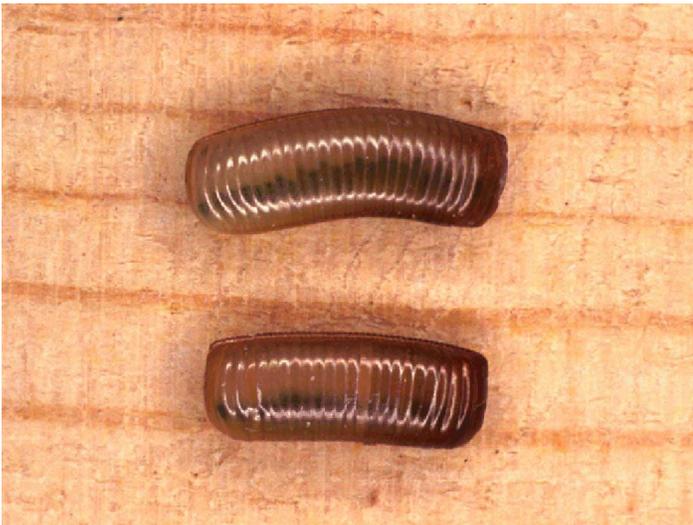


Figure 3. Oothecae of the German cockroach, *Blattella germanica*.
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Larva or Nymph

The nymphal stage begins with egg hatch and ends with the emergence of the adult. Nymphs are dark brown to black in color, with distinct dark parallel bands running the length of the pronotum. Nymphs do not possess wings. The number of molts required to reach the adult stage varies, but the most frequently reported number of molts is six. The stage between molts is called an instar (Figure 3). At room temperature nymphs complete development in about 60 days. All developmental stages actively forage for food and water.



Figure 4. Third instar nymph of German cockroach *Blattella germanica* (Linnaeus).
Credits: James Castner, University of Florida



Figure 5. Newly molted adult German cockroach, *Blattella germanica* (Linnaeus). Within a few hours the cuticle will harden and darken.
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Adult

The adult is 10-15 mm long, brown to dark brown in color with two distinct parallel bands running the length of the pronotum. The sexes can be distinguished by the following characteristics: male - (Figure 6) body thin and slender, posterior abdomen is tapered, terminal segments of abdomen visible, not covered by tegmina (leathery outer wings); female - (Figure 7) body stout, posterior abdomen is rounded, entire abdomen just covered by tegmina.



Figure 6. Adult male German cockroach, *Blattella germanica* (Linnaeus).

Credits: P. G. Koehler, University of Florida



Figure 7. Adult female German cockroach, *Blattella germanica* (Linnaeus).

Credits: P.G. Koehler, University of Florida

Life Cycle

The German cockroach has three life stages typical of insects with incomplete metamorphosis: the egg, nymph, and adult. The entire life cycle is completed in about 100 days. However, factors such as temperature, nutritional status, and strain differences may influence the time required to complete a life cycle. German cockroaches breed continuously with many overlapping generations present at any one time. Under ideal conditions, population growth has been shown to be exponential. Actively growing field populations are comprised of 80 percent nymphs and 20 percent adults. The German cockroach is omnivorous, eating table scraps, pet food, and even book bindings.

Medical and Economic Significance

German cockroaches adulterate food or food products with their feces and defensive secretions, physically transport and often harbor pathogenic organisms, may cause severe allergic responses, and in extremely heavy infestations have been reported to bite humans and feed on food residues on the faces of sleeping humans. In addition, some scientists suggest that German cockroach infestations may cause human psychological stress and that the stigma associated with infestations alters human behavior. For example, people with infested houses do less entertaining, and avoid the kitchen at night for fear of encountering a cockroach.

Action Threshold

Since the German cockroach is considered an aesthetic pest, the action threshold for this insect depends upon the tolerance of the people living in the infested dwelling. However, most people associate cockroach infestations with poor sanitary conditions and typically go to excessive lengths to eradicate them from their houses.

Management

Insecticides in the organophosphorous, carbamate, pyrethroid, amidinohydrazone, insect growth regulator, inorganic, microbial, and botanical classes are available for controlling German cockroaches. Insecticide treatments are available in a wide variety of formulations including baits, sprays (emulsifiable concentrates, wettable powders, microencapsulated), dusts, and powders.

See the following for insecticide recommendations:

Insect Management Guide for cockroaches (<http://edis.ifas.ufl.edu/ig082>)

Least Toxic Methods of Cockroach Control (<http://edis.ifas.ufl.edu/scripts/ig105>)

German Cockroach Management in Low Income Housing (<http://edis.ifas.ufl.edu/ig115>)

Non toxic and low toxic alternatives for German cockroach control are available. Sticky traps can be used to monitor or reduce population size. Improving sanitation by eliminating food and water sources and clutter can have a significant impact on reducing the chances of infestation population size. Finally, exclusion practices such as sealing cracks and crevices will reduce harborage space and also negatively impact population size.

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