IDENTIFICATION OF
COMMON LOUISIANA COCKROACH PESTS

General Overview

Cockroaches are common household pests and members of the taxonomic order Blattodea. Most cockroach species are important recyclers or decomposers of decaying matter, but some can also be mechanical disease vectors of enteric viruses, bacteria and nematodes, in addition to contaminating indoor surfaces, and depositing allergens. Cockroaches are hemimetabolous insects, meaning they undergo incomplete metamorphosis and lack a pupal stage. Immature cockroaches, or nymphs, lack wings and are unable to reproduce, but otherwise look somewhat similar to adults in appearance. Some physical characteristics that distinguish cockroaches from other insects include a shield-like pronotum (part of the thorax) that covers part of the cockroach's head, leathery wing coverings, an ovular body shape, a pair of cerci (paired sensory appendages) on the tip of the abdomen and filiform, or threadlike antennae.

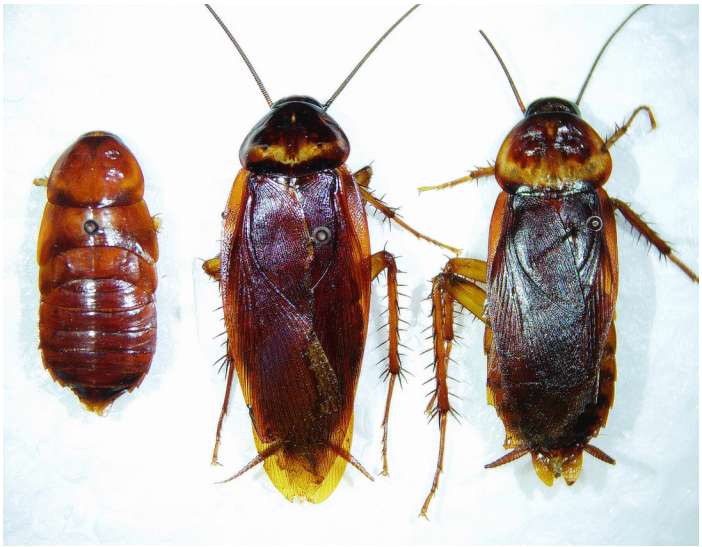
Distinguishing male and female cockroaches is relatively straightforward. Male cockroaches possess a pair of anal styli that look like a smaller set of cerci. Females tend to be slightly larger than males and wider-bodied, in addition to other slight differences that vary by species. Females may also carry an ootheca or egg case until they attach it to a surface or drop it, depending on species. The descriptions here will assist in differentiating common cockroach species to improve management strategies. Preferred environments also vary by cockroach species.

LSU Urban Entomology Cockroach Identification Pre-Quiz

Scan the QR code to take a pre-quiz before reading this document.

American Cockroach (*Periplaneta americana*) Linnaeus

American cockroaches are the largest indoor infesting cockroaches, with adult specimens ranging from 1 3/8 inches to 2 1/8 inches (34-54 mm) in body length. They have reddish brown forewings and legs, with the forewings covering the paler colored abdomen in adults. The pronotum behind the head is light brown along the edges and dark brown in the center. Nymphs are dark brown to reddish brown, undergo a variable number of molts to reach adulthood depending on food quality and temperature and take about a year to complete development. Adults are capable of flight at higher temperatures and can directionally glide at lower temperatures. They remain active down to about 70 F and cannot tolerate freezing temperatures. American cockroaches are the most frequently encountered members of the genus Periplaneta in Louisiana. They are common in drainage systems and emerge to forage on the surface at night.



American cockroach juvenile (left), adult male (middle) and adult female (right). The adult male can be differentiated from the female by the presence of two anal styli at the end of the abdomen adjacent to two cerci. These styli are lacking in females. Photo by Cecilia Rogers

Smoky Brown Cockroach (*Periplaneta fuliginosa)* Serville

Adults are dark brown to almost black in color and 1 inch to 1 1/2 inches (25-36 mm) long, with wings that cover the abdomen in males and females. The pronotum has no distinct markings. Nymphs are shiny, dark brown to black. Early instar nymphs have white markings on their antennae and several white bands on their abdomens. These characters are lost as they mature, and they are indistinguishable from American cockroach nymphs until they mature to adulthood. Temperature influences the development rate of the nymphs, and they can take up to two years to reach adulthood. They undergo a variable number of molts before reaching adulthood, similar to most peridomestic cockroaches. Smoky brown cockroaches lose moisture more quickly than other roaches and prefer to reside in high humidity areas with minimal airflow such as mulch piles, potted plants, tree holes, under concrete and wooden decks, attics or wall voids, greenhouses, gardens and zoos. They are attracted to light and will enter structures through cracks at night. Smoky brown cockroaches can be brought indoors accidentally on wood, or will enter structures from surrounding trees, attics, wooden patios, etc., but are not normally found indoors.



Smoky brown cockroach juvenile (left), adult female (middle) and adult male (right). Photo by Cecilia Rogers





Smoky brown cockroach nymph (bottom left) and American cockroach nymph (above) comparisons at early and middle instars. Early instars are easily distinguished, as smoky brown cockroach nymphs are much darker than American cockroach nymphs. Middle instars to late instars are nearly identical in appearance. Photos by Cecilia Rogers

Oriental Cockroach (*Blatta orientalis)* Linnaeus

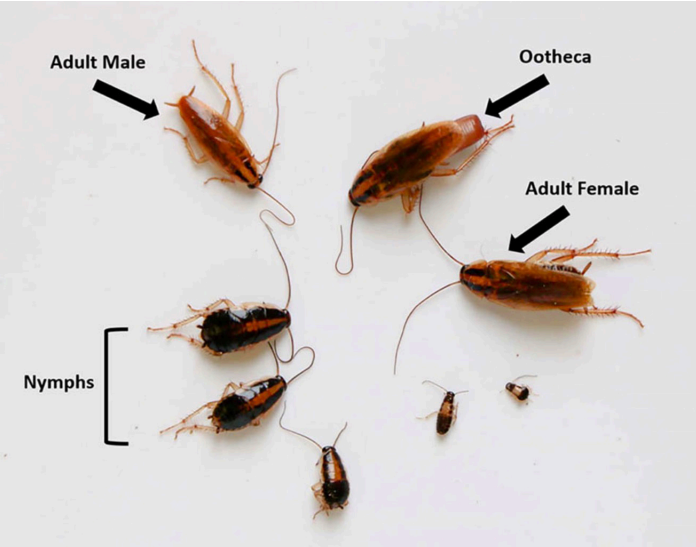
Adults of the oriental cockroach are shiny black in color and sexually dimorphic (i.e., the sexes differ in appearance). Wings of males cover two-thirds of the abdomen and females possess only short wing pads. Adult males (average length of 1 inch or 25 mm) are smaller and narrower than females (average length of 1 1/4 inches or 31 mm). Nymphs are dark, reddish brown and become darker, almost black, with age. Development requires six or seven months from egg to adult. Adults cannot fly. The species is cold weather adapted and widely distributed throughout the world. They prefer cooler habitats such as basements, drains, sewers, pipes, wall voids, under concrete or rocks, or crawl spaces. Oriental cockroaches are attracted to shady, wet areas and often can be found in animal production buildings. They do not climb well. Oriental cockroaches are generally sluggish and may migrate indoors in large numbers when temperatures become cold. This species is rarely encountered in Louisiana and is more common in states farther north.



Oriental cockroach adult male (left), adult female (middle) and ootheca-bearing female (right). The female possesses wing pads only, and is wider and larger than the male, which has reduced wings. Photo by Cecilia Rogers

German Cockroach
(*Blattella germanica)* Linnaeus

Adult German cockroaches are 1/2 inch to 2/3 inch long (13-16 mm) and are light to dark brown in color. Adults possess two dark brown to black lateral stripes on the pronotum immediately behind the head. Nymphs possess black stripes down the entire body, with pale margins and midline of the thorax, and are smaller. Nymphs will fully mature in about three months. Adult males are slender, with tapering abdomens, and the end of the abdomen is usually exposed behind the wings. Females are stout, with a rounded posterior abdomen that is entirely covered by the wings. Female cockroaches carry their eggs in a brown-colored egg case (ootheca or plural, oothecae) that extends beyond the abdomen. Ootheca are carried by this species until the nymphs are about to hatch, at which point the case is deposited.



Different life stages of the German cockroach (Blattella germanica) and adult males and females. Sexual dimorphism is evident in females based on the wide abdomen and presence of ootheca. Photo by Aaron R. Ashbrook



German cockroach juvenile (left), adult male (middle), and adult female (right). Photo by Cecilia Rogers

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Asian Cockroach
(*Blattella asahinai)* Mizukubo

Adults of this species average 5/8 inch (15 mm) in body length and closely resemble those of the German cockroach. The body is brownish tan, and two black parallel markings are present on the pronotum. The easiest way to tell the two apart is that Asian cockroaches are strong flyers, whereas German cockroaches only glide and prefer to run. Asian cockroaches always have wings longer than their abdomen. Asian cockroach nymphs resemble German cockroach nymphs but are smaller in size and have white margins on the abdomens.

Unlike German cockroaches, Asian cockroaches mainly live outdoors, and are common in gardens, leaf litter, grassy areas, mulch and ornamental plants. Adults climb to the tips of plants and grass to take flight. Asian cockroaches feed on fruit in commercial production settings but are not considered major pests. They will also feed on eggs of pest insects in crop systems. Lights on structures attract Asian cockroaches to buildings, which they may subsequently enter. If large numbers of *B. asahinai* are found indoors, they likely have access to the indoors from the landscape and a large outdoor population is present.

Brown-Banded Cockroach (*Supella longipalpa*) Fabricius

The brown-banded cockroach is the only other cockroach species other than the German cockroach that solely depends on human behavior and structures. Adults are light brown to tan in color and about 1/2 inch long (13 mm). The common name refers to the two distinct dark bands across the abdomen. The pronotum is transparent at the edges with a black bell-shaped marking. The two dark bands are more distinct in adult males. Males possess wings that extend over the abdomen, and they can fly. Adult females are darker in color than males, possess a wider abdomen and have reduced wings. Brown-banded cockroaches have small purselike oothecae. Nymphs are light brown with two thin brown bands on the abdomen. Nymphs require three to seven months to fully mature, and they undergo six to eight nymphal stages (instars).

Brown-banded cockroaches develop more quickly at higher temperatures. They prefer warm dry environments such as motors of electronics, stoves, microwaves, pantries, cabinets, ceilings and behind pictures where temperatures are higher. Because of this they are nicknamed the "furniture roach." Individuals are often spread out and scattered in the buildings they infest, although they may form small aggregations. Brown-banded cockroaches typically infest older buildings, homes, universities, research facilities, museums and offices.



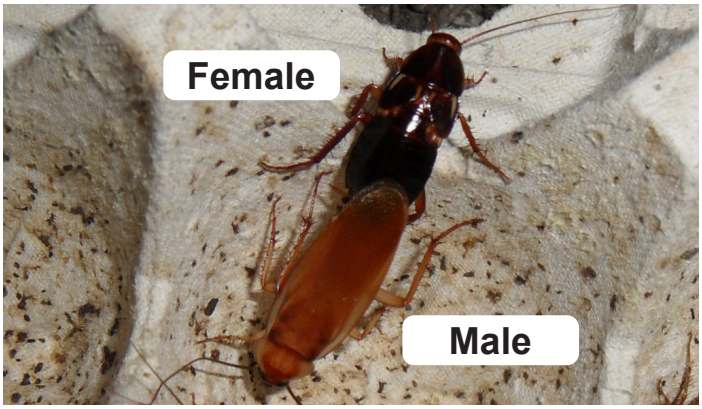
Brown-banded cockroach juvenile (left), adult female (middle) and male (right). The female has wings that do not cover the entire abdomen, and the body is darker in color than that of the male. Photo by Cecilia Rogers

Turkestan Cockroach (*Blatta lateralis*) Walker

Adult Turkestan cockroaches are sexually dimorphic and measure approximately 7/8 inch to 1 1/8 inches (22-29 mm) in body length. Females are generally more robust, dark brown to black, and have short, reduced wings that leave much of the abdomen exposed, while males are more slender, reddish brown to orange-brown, and have long wings that completely cover the abdomen. Adult females are frequently mistaken for Oriental cockroaches, although Oriental cockroaches possess a broader thorax. Adult males may be confused with American cockroaches; however, American cockroaches are considerably larger. Nymphs lack wings and are distinctly bicolored, with a light brown thorax and dark brown abdomen.

While originally native to a region spanning from northern Africa to Central Asia, it was first documented as an invasive species in California in 1978. Over time, the Turkestan cockroach has expanded its range eastward across the United States. Although it has not yet been formally documented in Louisiana, its continued spread and established populations in neighboring states suggest it is likely present within the state.

Turkestan cockroaches are primarily outdoor insects but may occasionally enter structures, particularly in warm, humid environments. Adult males are more commonly encountered because their fully developed wings allow them to glide and make short flights, and they are readily attracted to lights. Due to their higher reproductive capacity and faster development, Turkestan cockroaches have displaced Oriental cockroaches in many urban areas of the southwestern United States. Common harborage sites include utility boxes (e.g., water meter, irrigation and electrical boxes), cracks and crevices, expansion joints, hollow block walls and other sheltered ground-level areas.



Mating Turkestan cockroaches. The female (top) is darker in color than the male (bottom). Photo by Happy1892, Wikimedia Commons, Creative Commons BY-SA 3.0



Turkestan cockroach nymphs. Photo by Happy1892, Wikimedia Commons, Creative Commons BY-SA 3.0

LSU Urban Entomology Cockroach Identification Post-Quiz

Scan the QR code to take a post-quiz after reading this document.

Anatomy Key

Anal cerci: A pair of appendages found on the end of the abdomen.

Anal styli: A pair of appendages only found on males.

Antennae: Sensory organs; look like beaded strings on cockroaches (filiform).

Labial palp: The smaller set of palps.

Labium: The "lower lip."

Labrum: The "upper lip."

Maxillary palp: The larger set of palps.

Mesothoracic leg: Midlegs stemming from the mesothorax.

Mesothorax: The second thoracic segment.

Metathoracic leg: Hindlegs stemming from the metathorax.

Metathorax: The third thoracic segment.

Ovipositor valve: Where egg cases are carried before deposition.

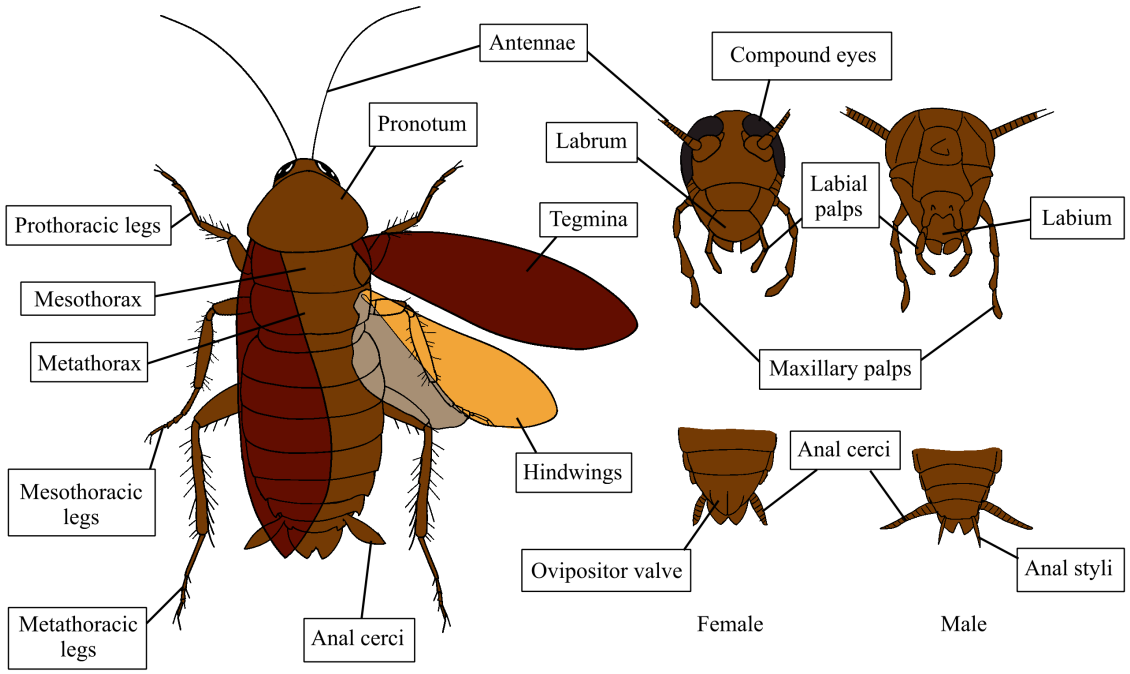
Palps: Fingerlike sensory appendages, feelers that are covered in sensory "hairs" used for tasting.

Pronotum: The top portion of the prothorax; modified in cockroaches to cover part of the head.

Prothoracic legs: Forelegs stemming from the prothorax.

Prothorax: The first segment of the thorax.

Tegmina: Modified forewings that are tough and leathery to protect the more delicate hindwings; they attach to the mesothorax.



A simple diagram of basic adult cockroach anatomy. Illustration by Cecilia Rogers

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Authors

Cecilia Rogers, Transient–Research, Entomology Department
Chance D. Hudnall, Graduate Assistant, Entomology Department
Aaron R. Ashbrook, Assistant Professor, Entomology Department
Victoria Bayless, Research Associate, Entomology Department

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