



BUG BIZ

Pest Management and Insect Identification Series



Atta texana, Texas Leaf Cutter Ant (Hymenoptera: Formicidae)

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Description

Adults of *Atta texana*, the Texas leaf cutter ant, are highly polymorphic, meaning there are significant variations in size and strength among individuals in the colony. Their color ranges from light brownish orange to dark burgundy or brownish red and varies by caste or role in the colony. Adults vary from 0.15 to 0.50 (3.5 to 13.0 mm) of an inch in length. Their heads are large and appear to be an upside-down heart with large mandibles for cutting leaves. Two spines are located on either side of the back of the head behind the compound eyes. The thorax of adults are narrower in the middle, making the front of the thorax (prothorax) and rear of the thorax (metathorax) appear larger than the middle (mesothorax). The thorax bears six spines. One pair of spines projects from the top (dorsal surface) of either side of each thoracic segment. The segment connecting the abdomen, also called a gaster in most Hymenoptera, to the thorax is known as a pedicel which appears to be divided by two distinct bumps. The thick rectangular part of the leg base next to the thorax, known as a coxal sclerite, is well defined and thicker than the rest of the leg and the thin, spineless legs are covered in small hairs.

Alates, the winged reproductive caste, are different in appearance from workers. Female alates are dark brownish red with long brownish yellow wings that extend well past the abdomens. The body is much more robust and does not have large spines on the thorax. The female alates' mandibles are smaller than those of most workers, but they can still cut leaves. The heads of male alates are much smaller than those of females, with narrow sickle-shaped, nonfunctional mandibles and three prominent simple eyes (ocelli) on the top of the head.

Atta texana is the only leaf cutting ant species found in Louisiana. A morphologically similar species, *Atta mexicana*, which extends from Mexico into Arizona, is the only other



Atta texana alate
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species in the genus found in the U.S. Fifteen additional species of *Atta* occur in tropical America. Several other species of fungus-growing ants in the same group of genera occur in the southern U.S. but are much smaller and less conspicuous than members of *Atta*. In Louisiana, Texas leaf cutter ants are mainly limited to areas along the Texas border and upland areas of west and central Louisiana as far east as Rapides and Bienville parishes. Isolated colonies may be established elsewhere and are likely the result of inadvertent transport of mated queens. Texas leaf cutter ants are also known as "town ants" throughout its range in the U.S.

Life Cycle

True to their common name, foraging workers of leaf cutting ants spend most of their time cutting and hauling leaves. The temperature range for Texas leaf cutter ant foraging is 45 to 80 degrees Fahrenheit (7.2 to 27.0 degrees Celsius). Foraging trials can extend in all

directions from the nest for hundreds of feet outwards. Workers normally forage at night but will forage during the day as long as temperature conditions are met. They will not forage if temperatures are below 45 degrees Fahrenheit. *Atta* ants are notorious for removing large amounts of foliage, but what is not commonly known is that these ants don't actually eat plants. *Atta* ants feed exclusively on fungus molds (mycophagy). *Atta* workers create massive underground fungus gardens that they closely manage and protect. They transport cut pieces of leaves, flowers, vegetables and other plant matter underground, where smaller individuals of the colony begin chewing it into a fine paste. Texas leaf cutter ant salivary glands secrete several different antibiotics that act as fungicides to kill fungi other than the species they are trying to grow (mainly *Leucoagaricus gonglyophorus*: Basidiomycota, Agaricaceae). They also have the ability to alter concentrations of fungicide mixtures to combat adaptations by various species of fungi. Some fungus species, such as members of the genus *Excovopsis* (Ascomycota: Hypocreaceae), are pathogenic to leaf cutter ant colonies and occasionally will infiltrate fungus gardens and kill colonies.



Atta texana queen being tended by workers (Alex Wild, used with permission, <https://www.alexanderwild.com/>).

as 20 feet (6 meters) and cover more than 4,000 square feet (372 square meters) with hundreds of entrances to the colony. Lateral tunnels connecting different chambers of the colony may be as long as 1,600 feet (488 meters).

In addition to accommodating underground fungus gardens, leaf cutter ant nests provide habitat for a large variety of insects and other animals that are adapted to various parts of life among ants. These range from opportunistic trespassers to true symbiotic organisms, such as the peculiar cockroach *Attaphila fungicola* (Blattodea: Ectobiidae).

Ecological Significance and Pest Status

Texas leaf cutter ants in agricultural and urban settings may damage crops and ornamentals, including fruit-bearing trees, bushes, vines and vegetable gardens. Texas leaf cutter ants are generalists and will utilize approximately



Atta texana workers tending fungal garden. (Alexander Mikheyev, Rice University).

When plant matter other than soft, fresh leaves is brought in, it is normally removed by more experienced workers who recognize it as undesirable waste. One single colony can have multiple queens and up to 2 million workers. The species prefers loose, sandy soil that stays relatively dry, but nests may also be created in soil with higher clay and silt concentrations so long as it does not become too wet. Colonies can be as deep



Atta texana colony mound entrances (Ronald F. Billings. Bugwood.org. Creative Commons ver.3.0).

200 species of plants. They can remove all leaves in a home garden in a matter of hours, which makes this ant a serious pest for home garden enthusiasts in areas where they occur. Because they normally forage at night, identifying leaf cutter ants as the culprit for a defoliated garden might be difficult at first. However, their damage will soon be indistinguishable from any North American pest. The species is not considered a pest in typical natural habitats where they occur. Their leaf cutting activities rarely do lasting damage to forest trees and undergrowth and provide ecological services in the form of soil aeration and nutrient recycling.

Control

Because leaf cutter ants subsist on their fungus gardens and not collected leaves, traditional ant baits are completely ineffective. One ant bait, hydramethylnon, is labeled for leaf cutter ants but is only 30% effective and requires frequent reapplication. It also has a very short shelf life, meaning one might have to purchase this product multiple times before the colony is eliminated. Even direct insecticide application on plants is fairly ineffective due to the ant's large numbers and high rate of defoliation. The most effective insecticide treatment is direct application to the nesting site. Because of the enormous size and numbers of the colony, there is no guarantee the entire colony can be killed without repeated applications. Leaf cutter ant foraging trails can also be hundreds of yards long, meaning the nest could take a while to find and may not even be on the homeowner's property.

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Atta texana alate with symbiotic cockroaches (Alex Wild, used with permission, <https://www.alexanderwild.com/>).

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