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Atta, leaf cutting ant

Ant Curiosities

Complex behaviors in tiny insects

An ant colony contains one or several fertile females called queens, which lay eggs and sterile workers, which are also females. In northern areas, during spring, from a few eggs in 35-45 days sexual flying individuals are formed, males and females. The flying individuals go out on a warm wet day. They mate, but only a few females survive; all the males die. The sperm collected in the spermatheca is enough for the female to fecundate her eggs for years. They fly tens of meters out of the colony and then they cut their wings and establish new colonies. The female lays 2 eggs per day, 0.2-1 mm long, yellow-whitish. From hatching to metamorphosis, everything occurs in 6 weeks. The fecundated eggs "produce" females, mostly workers and fertile females only if the food abounds. From the non-fecundated eggs only males result. Throughout several years, a colony has tens of "queens". Workers live 5-6 years, the queen 20 years and the males just a few weeks. The mounds are orientated towards southeast (more sunlight), in areas with good food sources. In colder climate, the mound is covered by twigs and leaves, which confer tightness. Sometimes, ants can form supercolonies, with a couple to tens of mounds located at 50-100 m (170-340 ft) from the mother mound. During summer, the ants make openings in the mound for cooling off. During winter, the ants retreat towards the bottom of the mound. "Thermic messenger" workers, located towards the surface, detect the air warming during spring and wake up the colony. In temperate areas, ants are omnivorous, eating aphid "honey", animal preys, sap, fungi and grains. Ants hunt caterpillars, butterflies, moths, wasps, bugs, spiders and ants from different species. The prey is paralyzed with a jet of formic acid, secreted by the anal glands. The formic acid can be shot up to 1 m (3 ft). Only a part of the ants in a colony hunt, the rest being fed by these individuals. They ask for food by touching the antennae of the feeders with their own. A 7-10 mg ant can transport a prey 60 times heavier. Many ants form trophobiosis (symbiosis) with the ants. The ants protect the aphids against the ladybirds (which consume 60 aphids daily and about 1,000-2,000 in the larvae stage) and their parasite wasps. The ants excite the abdomen of the aphids with their antennae and the aphids eject through their anus sugary sap. An ant can carry 3-8 mg of sap at once. A colony collects 20 kg (44 pounds) of sap per season. Ants can also farm caterpillars of some Lycaenidae butterflies, which have sweet secretions, just like aphids. Some species put their "cattle" in underground "stalls" and some species transport their "cattle" from one plant to another. Ants use "track pheromones" for orientation. In some ants, these tracks are established following geometrical rules, that eases the finding of the way back. In some ant species, the tracks form angles of 50-60°. When an ant returns to the nest and reaches a bifurcation, the ant chooses the route that deviates less from its trajectory and leads inevitably to its nest. This geometry optimizes ants' movements in this red, especially when ants move in both directions and decrease the amount of energy spent by the ants in the case of a wrong direction. When two ants from different colonies meet, they emit alarm pheromones asking for support from the workers of their own colony. With the increasing temperature, the ants turn increasingly aggressive. Ants' sight is orientated towards the UV spectrum. Ants cannot see anything red. The eye of the worker has 400-600 eyelets, the one of the queen 100-900, of the male 200-2000. The antennae and the fore feet contain hearing organs. There are ants that emit sounds, audible by man. The antennae also have a role in taste, smell and touch. On the tip of their feet, ants have organs for cleaning the antennae. Ants evolved from wasps and the most primitive living ants; the bulldog ants of Australia and Tasmania still have a sting inflicting a painful bite. The army ants (Eciton) of South and Central America are famous for their processions in

which a colony's individuals kill everything on their way, from insects to small vertebrates (like lizards). All these ants are blind! Instead of building nests, they form nomad armies, made of hundreds of thousands, and make temporary bivouacs, masses of ants interlocking their legs to form a living curtain around the queen and her brood. From the bivouac, raiding parties are sent out in long columns to seek prey. The leaders of the parties execute flanking movements to trap prey. This happens when having no scent trail to follow the leading workers hesitate and hold up the advance. The ants in the rear inexorably press forward, and bulging occurs in some parts of the front line, causing a series of advances pointing to flanking movements. Army ants operate on a 36-day cycle, going on the march for some 16 days and then remaining stationary for 20 days, during which the queen lays her eggs. After that, hunger causes the colony to go on the march again. The marching columns, some 10 m (33 ft) wide, are edged by fleeing spiders, scorpions, beetles, frogs, and lizards followed by birds, which prey on these fugitives but not in the ants. The ants can even enter the houses, cleaning them completely of insects in 1-2 hours. The ants of the *Messor* (Mediterranean) and *Pogonomyrmex* (North America) genera collect seeds for the winter. The leaf cutting ants (*Atta*) from tropical America cut the leaves of the trees for cultivating fungi in their underground colonies. The weaver ants use their larvae, which secrete a special silk with which they weave a nest from leaves. There are species (in Australia) in which some workers function like containers, accumulating huge amounts of sugar as reserves for the dry season, when the other individuals of the colonies come to the inflated individuals to ask for food. In the Amazon, ants have a symbiosis with the vine *Tetracera*. The vine releases in its upper parts a sugary liquid appreciated by the ants, which defend aggressively the plant. Till now, there have been discovered only two species known to capture slaves: man and ant. Some ant species organize real expeditions for capturing slaves, which are put to work or to defend their own colony. They choose another colony which is surrounded and assaulted. The victims take their pupas in the mandibles trying to flee, but the attackers have already cut their way and impeded them in case they try to resist. After that, the convoy comes back to its colony with their hostages which are assimilated in their own colony. After a period, the "slaves" adopt something from the behavior of the winner and later, they are involved in the plunder expeditions, when the ants steal the supplies gathered with so much effort by another colony. Some African acacia trees are completely dependent on ants for their survival. The trees offer to the ants food and sheltering (in holes inside the branches), while the ants kill any insect landing on the trees and pinch any herbivorous animal trying to eat the trees' leaves. But the trees need pollinating insects to pollinate their flowers. During the bloom, the trees expel a chemical that inhibit the ants, allowing only in that period other insects to visit their flowers. The oily secretions of some larvae of ant parasites, like *Phoridae* (flies) or *Staphylinidae* (rove beetles) lure ants, which neglect their own larvae for taking care of the larvae of their "guests". Saprophagous insects, like larvae of *Syrphidae* (flies) or *Scarabeidae* (beetles) feed with remains around the ant nests. Ants are predated by spiders, *Staphylinidae*, millipedes, acarions, snakes, birds. Their parasites include nematode worms, *Ichneumonidae*, fungi. Ants can be intermediary hosts for lesser liver fluke. Flying ants are hunted by swallows; foxes and badgers look for *Scarabeidae* larvae in the ant nests, which they destroy. 5-15 % of the woodpeckers' food is made by ants. They search and dig down to 60 cm (2 ft) in the nests. Ants enrich the soil in organic matters, spread the seeds of many plants, destroy many pest insects (50,000 per day per nest) and turn the soil more permeable to water.