

Remarkable Ants

By Dr. Reese Halter

Ants and human beings have much in common, including that both species have globally conquered the planet. We are both highly socialized creatures, agriculturalists and ruthless in warfare. Both depend on forests for sustenance.

Ants have been on Earth for more than 140 million years and evolving from wasps. There are about 12,000 species known and professor E. O. Wilson of Harvard University estimates there about another 9,500 kinds still to be discovered.

Currently there are about ten thousand trillion living ants. When combined, all ants on Earth would weigh about as much as all humans.

There are currently about 750,000 known species of insects. There are about 15,000 species of highly social insects of which ants make up 12,000. Half the living tissue of insects is made up of just two per cent of the species that live in well organized colonies.

A worker ant is one-millionth the size of a human. Yet, a leaf-cutter ant, whose jaws can slice human skin, will not back down from a human.

Ants are of crucial importance in dispersing and planting large numbers of seeds. They move more soil than earthworms, circulate vast amounts of soil nutrients and essentially keep forests' healthy.

Their diversity in tropical forests is legendary. One study site of 20 acres (eight hectares) in a Peruvian rainforest contained over 300 different species of ants and one tree alone had over 43 different kinds of ants.

How have ants and other social insects (some bees, some wasps and termites) come to rule terrestrial ecosystems? There is strength in numbers, irrespective of size, particularly when they act in concert. The most advanced social insects, those with the biggest and most complicated societies, have reached this pinnacle because adults care for young, two generations of adults live together in the same nest and the members of each colony are divided into a reproductive "royal" caste and a non-reproductive "worker" caste.

Ants have risen to the top as a world dominant force because they are highly developed, self-sacrificial and extremely labor efficient. In fact, ants are like gangs of factory workers.

There is one queen in the nest. She can live, on average, for five years although the record is 29 years. In her life she can produce 150 million eggs and at any one time her colony can support 8 million workers. Most of the

eggs are fertilized and are females. They are either workers or soldiers and are responsible for providing food, tending to the young and defending the nest. Males, which are unfertilized eggs, are only born when new queens are born. New queens leave the nest in search of creating their own colony. Only one in 100,000 queens are successful. Male drones - parasites who live on the labor of others - have only one function, to impregnate nuptial queens. When you see a flying ant, chances are it's a male. They have about two days to live after leaving the nest.

When an impregnated queen finds a nest site, she breaks off her wings, builds a nest single-handedly and raises the first brood of workers.

The largest living super colony of ants in the world occurs in Northern Japan along the Ishikari coast of Hokkaido. There are 307 million worker ants, 1.1 million queens with 45,000 interconnected nests extending 12 miles (20 kilometers). The colony is about 1000 years old. These red ants are custodians of the coastal oak forests. A new port was constructed in the 1990s and a superhighway split the colony in half. The oak forests started to die back. Banff and San Francisco-based conservation institute, Global Forest Science, became involved and assisted in creating tunnels under the highway to reconnect the colony. Within a few years the dying forests began to stabilize.

Ants are arguably the most aggressive and war-like of all animals. They exceed humans in organized warfare. Ants act like six-legged Kamikazes and they conduct genocidal annihilation of neighboring colonies whenever possible. Soldiers have jaws like wire clippers, snipping off the heads, legs and body parts of enemy insects. Warfare, in the ant world, is all about territory and food.

Ants employ a wide array of tactical maneuvers. Some, like the Arizona ants, are fast moving and spray toxic gas on their foes. Others, in the arid southwest, pick up pebbles and other small objects with their jaws and drop them vertically down the entrance shafts - a rare instance of tool use by insects.

One species of Malaysian ants have two huge glands along their entire body length that is filled with a toxic secretion. During war they burst their abdominal muscle, sacrificing their life, and douse poison onto the enemy

Leaf-cutting ants are supreme agriculturalists. They grow fungus on freshly cut leaves brought back into their nests, sustaining millions of workers. Nuptial queens tuck a small wad of the thread-like fungus in their mouths, spit out the packet on the chamber floor and begin growing the new garden. One nest in Brazil had 1,000 chambers. The ants had excavated 40 tones of soil equal to the feat, for ants, of building the Great Wall of China.

Nomadic Malaysian ants are stock farmers. They dwell in the rainforest

canopy and their "cattle" are mealy bugs - sap sucking insects. They are carried by the ants to feeding sites some 66 feet (20 meters) from the nest, guarded while they suck sap and returned to the nests. Whereby they are milked of plant sap that sustains the ant colony. In return the ants protect the mealy bugs and their offspring. Neither species can exist without the other.

The most formidable of the species are army ants. They can capture prey up to and including frogs, by overwhelming them with sheer numbers.

We should admire ants, not despise them. They do not demolish ecosystems nor cause mass species extinction like humans. They can teach us about sustainability and coexisting on our exquisite planet.

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