



## With Respect to the Ant

By Eric Dinerstein

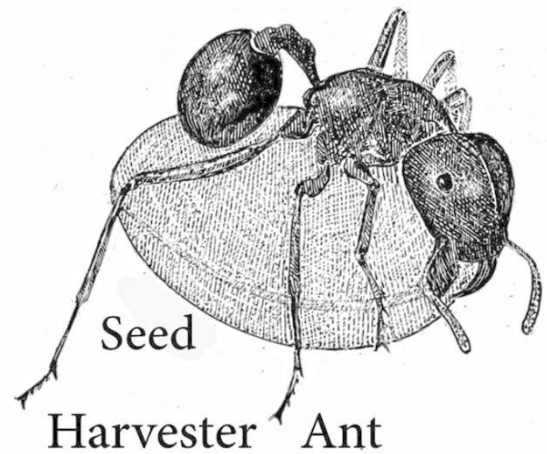
One of the extraordinary natural history experiences in Cabin John is to stroll through the woods in late March to early April and marvel at the spring wildflowers sprawling like a carpet along the banks of the Potomac or on the slopes of Cabin John Park. These vistas, however ephemeral, fill our hearts with joy and have inspired many a poet. What few casual strollers may know, however, is that we owe a good deal of this unrivaled display to an unsuspecting diminutive creature—the ant. Wild wood poppy, spring beauty, Dutchman’s breeches and its cousin bleeding hearts, yellow trout lily, many species of violet, bloodroot, twinleaf, various Trillium species, and bellworts—to name a few of the early spring stars—are all dependent on a group of ants (often in the genus *Aphaenogaster*), that pick up ripe seeds and carry them off to their lairs. There, in these underground nests, the seed is stripped of its fatty attached tissue (called an elaiosome). The fat sac is then divided up to feed the hungry larvae in the nest. And the discarded seed? It is deposited in a site with exceptionally good conditions for germination: darkness, proper humidity and temperature, often in soil rich in organic matter, and far from the location of parent plants in case a seed predator was cueing in on the seeds that might fall conveniently below the parent or were left sitting on the soil surface where the seed might desiccate.

As it turns out, dispersal of seeds by ants is widespread from Maryland to Brazil, from Cape Town, South Africa to Perth, Australia. In fact, more than 11,000 flowering plant species found in 77 plant families and among 334 genera rely on ants to move their seeds—that is, almost 1 in every 25 species of plants relies on ants for dispersal. Having evolved among so many different families of plants from different continents is a big deal in nature; ant dispersal is an example of what biologists call convergent evolution.

Several years ago, I wrote an article in this column entitled “Ants in Our Plants” featuring this phenomenon of ant-mediated seed dispersal in wild ginger (*Asarum*). It was told mostly from the perspective of the plants, so this being our year of invertebrates, the focus here is on the ants.

Few groups of insects deserve as much awe as the ant. Farmers, harvesters, predators, slave masters, ecosystem engineers, not to mention food for many tropical birds, ants have many roles in nature.

Illustration by Trudy Nicholson



As many as 12,000 species have been recorded, making them one of the richest groups of insects and one of nature’s largest families of invertebrates (all species of ants belong to the family Formicidae). Ants are actually wingless bees or wasps, as all are in the same order—the Hymenoptera. That is why ants share a painful trait, they sting and can inject formic acid in the wound they make. Most ants, though, are harmless and only sting when threatened, and the ones that harvest our seeds are nothing to fear.

Ants come in many sizes, from the smallest at slightly less than a millimeter, to the giant bullet ant of Central and South America measuring up to 30 mm (1.2 inches). The latter is one to avoid, I can say from personal experience. The local name for this species is “bala,” Spanish for bullet, and it seems quite apt. The sensation of being stung by this ant known to science as *Paraponera clavata* has been equated to being shot. I have not experienced the latter, but I have encountered a bala and brushed many off while working in Costa Rica, a most unpleasant experience.

Ants are ancient, the first appearing over 100 million years ago, so the relationship between ants and plants developed only after the flowering plants exploded about 60 million years ago. Before then, ants lived on scavenging and each other. But eventually, plants that evolved to produce these fleshy attachments to their seeds found a reliable carrier of their seeds. Why more plant species don’t produce elaiosomes and rely on ants is not clear.

We do know how important ants are to our forest ecosystems. Where mature forests have been logged or their understories have been disturbed, ant populations are diminished. We may thus expect to see fewer wildflowers or other plants dispersed by ants and the seeds in these disturbed sites will fall to the ground, dry out, and die without germinating. In fact, some biologists have suggested counts of ant species and populations as the ideal “bio-assay” to estimate the intactness and uniqueness of tropical forests. The ant faunas of tropical forests are relatively well known compared to other invertebrates. A rapid census of an area’s ant fauna can tell biologists a lot about the health and diversity of the overall forest that would take much longer to gain by sampling all of its trees and other plants. Of great interest to bird fanatics are

the diverse array of bird species—ant-wrens, ant-pittas, ant-thrush, antbirds, etc.—that make their living following around swarms of army ants across the tropics. The birds wait patiently above the swarming ant legions as insects desperate to escape flit in the air to be snatched by the hungry birds.

Ants are one more species that we should cherish. Sure, if they come after food sitting around in your kitchen, they can be pests. But for ants in the garden—have a heart and don’t spray with chemicals if you want to keep this chain of nature intact. Every time you see an ant crawling across the countertop, show it the door on a piece of newspaper. Think of its kin that provide us with these fantastic spring displays of Dutchmen’s breeches and trout lilies and let them live. **VN**