

In Defense of Insects

By Jennifer L. Hopwood

As much as some of us might like to, we can't get away from insects.

There are about two billion of them for each one of us. Insects make up more than 80 percent of the world's known species and a major share of the earth's biomass.

The harmful insect species---those that spread disease and eat our crops---make up only 1.5 percent of the more than one million known insect species. The rest are indispensable members of nearly every ecosystem. Human and insect lives are inextricably intertwined, and that's not a bad thing.

Here are some of the services insects provide.

As Pollinators

Nearly 90 percent of flowering plant species depend on animal pollinators, primarily insects such as bees, butterflies, moths, some beetles and even some flies. In the U.S. thousands of native wild bee species, along with the ubiquitous honey bee, pollinate many of our crops. It's estimated their pollination services in fruits and vegetable crops are worth at least \$20 billion a year. About one in four bites of our food comes to us courtesy of an insect pollinator.

As Food Providers

Many insects consume only plants, which makes them a critical link in the food chain. It works like this: Using water and carbon dioxide, plants convert the energy of the sun into energy-rich sugars and other nutrients. Plant-eating insects make those nutrients available to animals that consume insects but not plants. Insects such as grasshoppers, caterpillars, aphids, and some beetles and ants bridge the



Jennifer L. Hopwood stands up for insects from her home in Ames, Ia.

gap between plants and animals by becoming food for fish, birds, amphibians, reptiles and some mammals. We consume many animals that could not survive without insects to eat.

As Dispersers of Seed

Busy ants disperse the seed of 35 percent of flowering plants. Some ants drop uneaten seed accidentally, while others eat the oily part before dropping the seed unharmed where it has a chance to germinate. Why is this service important? Seed dispersal means new seedlings won't have to compete with their parents or siblings for light, nutrients or water. This service may also allow plants to colonize new habitats.

As Recyclers

What we think as waste is food to insect scavengers. They aid the decomposition and recycling of nutrients to the soil as they grind or chew

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up dead plants, dead animals and excrement. Ants and termites promote the process by mixing subterranean soil with decaying organic matter from the surface.

True to their name, burying beetles find and bury small dead mammals three times faster than larger scavengers like skunks or opossums. Meanwhile, dung beetles recycle dung to enrich the soil and reduce dung-breeding pests in the process. The beetles process the some 500 billion gallons of waste produced by the more than 100 million cows in the U.S.--- a dung-removal and soil-fertilization service estimated to be worth \$380 million a year---all for free, of course.

As Regulators

It has been estimated that in just a single summer, one pair of common house flies, along with their progeny, can produce enough offspring to cover the state of Montana to a depth of nearly 47 feet. Not to worry: Insects are their own worst enemies.

Predatory and parasitic insects keep populations of other insects, as well as plants and animals, from exploding and throwing ecosystems out of kilter. Among many examples are the dragonflies in your own back yard that grab and devour mosquitoes in flight.

Nearly 10 percent of known insects have a unique if slightly grisly lifestyle. They place their own eggs into or onto the body of a host. When the eggs hatch, the larvae slowly devour the host, eventually killing it. These parasitoids, as they are known, are often highly host-specific, and for that reason can often be used as biological control agents of a particular pest.

These are just a few of the ways insects impact our lives for the better. The next time you encounter an insect, ask not what that insect will DO to you, but what it has done FOR you.

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