

Restoring the Little Things That Run the World

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In 1987, E.O. Wilson challenged conventional wisdom by claiming that insects were the little things that ran the world. If insects were to disappear, he explained, so would nearly all flowering plants and the food webs they support. This loss, in turn, would cause the extinction of reptiles, amphibians, birds, and mammals: in effect, nearly all of the earth's terrestrial animal life. The loss of insects would also end rapid decomposition of organic matter and thus shut down nutrient cycling. And – oh, yes - humans would be among the species unable to survive in a world without insects.

Though sobering, Wilson's dire predictions were considered little more than theoretical musings in 1987 because few people were worried that insects would ever decline, let alone fall below functional levels. In fact, we were far more interested in discovering new ways to kill them in our homes, lawns, crops, and forests than in thinking about how we might coexist with these essential creatures.

Unfortunately, we are now learning that our global war on insects has been enormously successful. Insects populations are a fraction of what they need to be to sustain viable ecosystems, and they are still declining rapidly because their ecological importance has been unappreciated and their needs ignored. The UN's Global Assessment Report on Biodiversity and Ecosystem Services has found one million species to be at imminent risk of extinction, most of which are, in fact, insects. Industrial agriculture, millions of miles of road hazards, unnecessary night lights, overuse of pesticides, habitat elimination, tens of millions of acres of sterile lawn, and the widespread replacement of the native plant communities that generate insects with introduced "pest-free" ornamentals that do not, have caused a 45% decline in insect populations just in the last 40 years. Headlines like "The Insect Apocalypse is Here" are alerting us to the mess we have made of insect populations and thus the ecosystems we depend on, but there is little discussion about what can be done to reverse this hazardous trend.

The good news is that there is nothing inevitable about insect declines! We can and must restore insects to our landscapes, and we have to do it now. And by we, I mean you. More than 85% of the U.S. east of the Mississippi river, and 83% of the entire coterminous U.S. is privately owned, and landowners must now take a leading role in the future of conservation. We can no longer ignore private holdings if conservation is to succeed. Our parks and preserves are vital, for they are where biodiversity is huddling; but, as the statistics are showing, they are not large enough and are too isolated from each other to sustain for much longer the plants and animals that run our ecosystems. Even if you don't own a precious piece of our biosphere, public parks desperately need volunteers to help manage their acreage.

Here are seven things we all can do to help our beleaguered insect populations:

- 1) Cut your lawn area in half. We have converted an area the size of New England into this ecologically destructive status symbol. Lawn fails to support diverse food webs and vital pollinator communities, it degrades our watersheds, and it is the worst plant choice for sequestering carbon. Restrict your lawn to the areas where you regularly walk.

- 2) Remove invasive plants from your property, and resist the temptation to buy new ones at your local nursery. By definition, these plants are ecological tumors that spread to natural areas, where they displace the valuable native plant communities that support insects.
- 3) Plant more of the native plants that support the most insect species. In general, native plants support the life cycles of 10-100 times more insect species than non-native plants, and a few native plants serve as host plants for 10-100 times more insects than most other native plants. You can find out which plants are best at fueling food webs in your county by visiting the Native Plant Finder at the National Wildlife Federation website.
- 4) Minimize insecticide use. Homeowners use more insecticides than agriculture does, and nearly all of this use is unnecessary.
- 5) Oppose mosquito fogging in your community. Contrary to what many fogging companies tell you, the pyrethroids used to knock down adult mosquitoes kill nearly all of the insects they contact. Mosquitoes are best controlled in the larval stage with targeted products like mosquito dunks (*Bacillus thurengiensis*) that kill nothing else.
- 6) Build pollinator gardens with specialist pollinators in mind. We need diverse pollinator communities not only because they are important to human crops, but because they pollinate 80% of all plants and 90% of all flowering plants. If we were to lose our pollinators, we would lose 80-90% of the plant species on the planet. This, of course is not an option we can live with. Although declines in honey bee populations have gotten a lot of press, we have 4000 species of native bees that pollinated the vast majority of the plants in North America before we introduced the honey bee from Europe. Most of these native bees are suffering from our tendency to replace blooming native plants with lawn and concrete. Plants like goldenrod, asters, sunflowers, violets, evening primrose, and native willows are best at supporting native bee specialists, and they attract generalist pollinators like honeybees and bumblebees as well.
- 7) Put motion sensors on your security lights. Lights draw insects in all night long, exhausting them and making them easy prey for bats and birds. If each of the millions of lights we turn on in this country, mostly out of habit, kills just a few insects each night...well, you can do the math.

We can no longer leave conservation to the conservationists; there simply are not enough of them. We must accept that along with land ownership comes the responsibility of stewarding the life associated with that land. For all we know, it may be all of the life in the universe, an awesome responsibility indeed. But the task is not as enormous as it seems. Just take care of the life on your property. Such a goal is far more manageable than trying to save the entire planet. You will not reverse insect declines by yourself, but if we each do our own small part, not only will we successfully restore insect populations, we will create the largest collective conservation effort in history; one that can and must succeed for our own good.