

The Outside Story



“We Wouldn’t Know”

By: Joe Rankin

Last February you might have seen news stories about an impending insect apocalypse.

“Huge global extinction risk.” “Plummeting insect numbers threaten collapse of nature.” “Insects are dying off at a scary rate.” And those were just the headlines on online articles from *New Scientist*, *The Guardian*, and *Fortune*.

Whew.

The source was an article in the journal *Conservation Biology* by Francisco Sanchez-Bayo of the University of Sydney, Australia, and Kris Wyckhuys at the China Academy of Agricultural Sciences in Beijing. Reviewing existing studies, they concluded that 40 percent of insect species are declining, a third are endangered, and that the total mass of insects worldwide is dropping at a rate of 2.5 percent a year. They blamed commercial

agriculture – mainly pesticide use – urbanization, and climate change. They said ecosystems across the planet, and humans themselves, were at risk because of the decline.

The study was barely out before some other researchers started tearing it apart, saying their work was flawed and they used alarmist language. Strong language, anyway. They didn’t mince words: “Unless we change our ways of producing food, insects as a whole will go down the path of extinction in a few decades,” the two researchers wrote. “The repercussions this will have for the planet’s ecosystems are catastrophic to say the least.”

But even those with misgivings about how the peer-reviewed scientific study was conducted, and about the alarmist language used, have concerns about humans’ combined effect on our six-legged friends.

“I don’t think it’s something that we should dismiss out of hand,” said Judy Rosovsky, the Vermont State entomologist. She remembers that when the initial reports of acid rain killing forests and fish came out of Europe they were dismissed by many scientists, but it wasn’t long before acid rain damage was confirmed in North America.

Kent McFarland, a conservation biologist at the Vermont Center for Ecostudies, said, “it wasn’t that their conclusions aren’t true, but how they came to them. They had some flaws in what they did.”

The 73 studies referenced and analyzed by Sanchez-Bayo and Wyckhuys came mainly from North America and Europe, because there was a dearth of relevant studies from South America, Africa and elsewhere. This made worldwide extrapolation a leap. The paper also suffered from selection bias.

But there is little question that some insect species in our region are having a hard time of it. You’d have to have been living in a cave the last 10 years not to have heard about the threats to honeybees.

McFarland notes the less publicized fact that some native bumblebee species have disappeared in recent decades, a trend that's happening worldwide.

The nine-spotted ladybeetle, a Vermont native, hasn't been seen since the mid-1970s (though the imported Asian ladybeetle is all over the place). Some species of butterflies and moths are in decline locally as well, he said.

"The biggest story is that we wouldn't know" if there's a real problem with insect decline in our region, said McFarland. "There's no monitoring unless [the insect is] an agricultural pest, or carries some kind of disease that affects humans, or is some charismatic microfauna like monarch butterflies."

Rosovsky agrees, suggesting that while the alarmist headlines may have been premature, the whole exercise highlights how much we don't know. "We have to know what we have in the first place before we can tell that we're losing species, said Rosovsky. "My take on this insect apocalypse idea is that we should start compiling information on what we have now so we can monitor to see if we're losing stuff going forward."

Insects are vital to most terrestrial ecosystems on the planet. For one thing, they pollinate a significant portion of plants and trees, including everything from wildflowers to commercial vegetables. "You wipe out the bumblebees, for instance, you'd see a lot of things disappear from the grocery store," said McFarland.

There are some 900,000 known insect species inhabiting earth, according to the Smithsonian. But that's likely a fraction of the real number. Estimates range from 2 million to 30 million, a mind-boggling difference that indicates the gaps in our knowledge base.

It's worth noting that not long after the *Conservation Biology* article came out, the United Nations released a massive report on biodiversity and ecosystem health — with 455 contributors and authors — saying that up to a million species of plants and animals are threatened with extinction, some within decades, from pollution, habitat loss, climate change and other human-caused threats. Reading it is enough to make you cry.

Despite those all-too-frequent reports, McFarland remains optimistic. "I feel like we're behind the eight ball, but I refuse to give up. We can do this; we just need the wherewithal. I just keep holding out hope."

Joe Rankin writes on forestry and nature. The illustration for this column was drawn by Adelaide Tyrol. The Outside Story is assigned and edited by Northern Woodlands magazine (northernwoodlands.org) and sponsored by the Wellborn Ecology Fund of the New Hampshire Charitable Foundation (wellborn@nhcf.org).

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