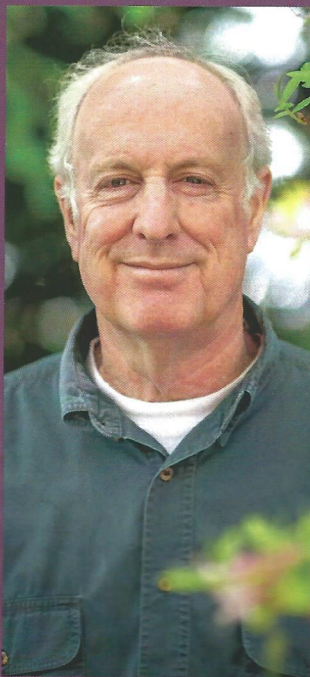


“It became abundantly clear that our invasive plant problem was serious issue for insects (who can’t eat them) and for the birds who eat insects.” –Doug Tallamy



The Cherry Scallopshell moth pictured above is just one of the 1,195 species of moths Doug Tallamy has photographed on his property in Pennsylvania. Photo Doug Tallamy

An Interview with Doug Tallamy



Doug Tallamy is the T. A. Baker Professor of Agriculture in the Department of Entomology and Wildlife Ecology at the University of Delaware, where he has authored 106 research publications and has taught insect related courses for 41 years. Chief among his research goals is to better understand the many ways insects interact with plants and how such interactions determine the diversity of animal communities. His books include *Bringing Nature Home*; *The Living Landscape*, co-authored with Rick Darke; *Nature's Best Hope*, a New York Times Best Seller; and *The Nature of Oaks*, winner of the American Horticultural Society's 2022 book award. In 2021, he co-founded Homegrown National Park with Michelle Alfandari. His awards include recognition from The Garden Writers Association, Audubon, The National Wildlife Federation, Allegheny College, The Garden Club of America and The American Horticultural Association.



Cylburn Arboretum Friends:

What inspired you to study entomology and wildlife ecology? Then how did your research evolve into a focus on biodiversity?

Doug Tallamy: I was born loving nature and I say that seriously. I have a brother and sister who have the same background, same house and they're kind of normal people. It's not that they don't like nature, but it doesn't fascinate them, it doesn't draw them in.

After an inspiring entomology course, I studied insect behavior for 25 of my 40-year career. Then we moved to a new house in Oxford, Pennsylvania. By the time we moved in the entire property was choked with invasive plants. It became abundantly clear that our invasive plant problem was a serious issue for insects (who can't eat them) and for the birds who eat insects. I might have put it all together without moving but that was the catalyst.

CAF: We are an arboretum, so of course we have a focus on trees. The future Nature Education Center will have a focus on the "Hidden World" of trees. For example, people might not think of trees in relation to pollinators. Can you speak to the important role that trees play in the life cycle of pollinators?

DT: Everybody thinks of pollinators in terms of flowering herbaceous plants. Of course, most of our trees *are* flowering plants. For example, oak trees and cherry trees are host plants for butterflies—they create butterflies. A black cherry tree can produce 100,000 berries and every one of those berries was pollinated by an insect, so that provided a lot of pollen and nectar for those insects. Then there are trees like basswood that have specialist moth pollinators. Without the moth pollinator, you wouldn't have the basswood. For every species of butterfly, there are 19

species of moths. Pollinators depend on far more than our flower bed.

CAF: How much of a plant is required to "make" a butterfly or moth? (How many leaves?) How many caterpillars does it take to "make" a bird?

DT: The only time I have seen a figure in terms of leaves required to make a caterpillar was with the spicebush swallowtail. It takes three complete leaves of spicebush to create the caterpillar that makes the butterfly. I ask people, can you spare three leaves of your spicebush to make a beautiful butterfly?

For a nest of chickadees, it takes 6,000-9,000 caterpillars just to get the chicks to the point where they leave the nest. After they leave the nest, they need caterpillars for another 21 days. If you add it all up, it's tens of thousands of caterpillars to make one bird that weighs a third of an ounce.

"For a nest of chickadees, it takes 6,000-9,000 caterpillars just to get the chicks to the point where they leave the nest." –Doug Tallamy



Photo Doug Tallamy





Each of these types of trees supports hundreds of caterpillar species!

Quercus (oaks)	498 species
Prunus (cherries)	378 species
Salix (willows)	319 species
Betula (birches)	316 species
Acer (maples)	274 species
Populus (aspen, cottonwood)	264 species
Vaccinium (blueberries)	251 species
Carya (hickories)	241 species
Ulmus (elms)	187 species
Alnus (alders)	183 species
Pinus (pines)	169 species
Tilia (basswood)	144 species

CAF: You gave us permission to use your caterpillar data specific to the Baltimore area. This will go in a portion of our NEC exhibit called "The Woodland Sausage Cart." What is it you would like someone to walk away with who is looking at this data set?

DT: I would like for them to sit and think: "Gee, if I put this tree in my yard, look at all the life I could create." The tree will support the caterpillars, it will support the birds that eat those caterpillars, it will support the predatory insects that depend on those caterpillars, and it will support all of the parasitoids. That tree would literally support at least 1,000 species in a food web! It's like playing God.

CAF: We know you are a huge proponent of oaks. We are currently a part of a study on oak trees here at Cylburn in collaboration with the University of Delaware, University of Kentucky, and the US Forest Service. The study looks to advance the resilience of forests in cities,

and specifically the adaptive capacity of oak trees sourced from a climate gradient across climate zones. My question for you is: How should landowners think about what they plant (especially long-lived species like trees) in the face of climate change?

DT: The tendency is to take a southern tree and plant it farther north than its normal distribution because of climate change. I usually warn against that because climate change has really increased climate variability. We still get the cold snaps. Two years ago, there was a freeze that went all the way down into Mexico and even killed native plants that belonged there. If we start moving things farther north, the chances that they will suffer from climate variability are great. Generally speaking, I would plant the plants that have always been where you are, and I would focus more on matching soil type with the plant's needs. For example, people say I want an oak tree. Well, there are oak trees that like acidic soil, there are oak trees that like basic soil,

SEASONS




there are oak trees that like bottomland, and there are oak trees that like rocky outcrops. I would match that rather than worrying about climate change.

As far as the diseases that are ravaging many of our trees, we need to find the trees that have some resistance. If 90% die, the 10% that live will be the future of our forests. If we stop planting species that are being attacked now, like oaks and beeches, we are never going to discover that 10% that are resistant, and then you lose an essential tree species. It's the opposite of what most horticulturalists or arborists are suggesting. We've got bacterial leaf scorch on our property and I've already lost a red oak and two black oaks. But I've got several red oaks and black oaks that

are doing fine. They're the resistant ones that we need to favor.

CAF: What advice do you have for city dwellers with small (or no) yards or with limited economic means to landscape?

DT: If you have no money—start from seed that you've collected. I started most of the oaks on my property as acorns. That was 22 years ago and they're now over 60 feet tall, so you don't have to wait that long. You do have to go find the acorn and plant it and you've got to protect it from deer. If you have a tiny yard in a city, there are small trees you can plant. In the U.S., 82% of us live in cities, so you've got a lot of people with apartments or with no yard. If that's the case, move to



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container planting. Let's say everybody in an apartment with a balcony had containers with fall asters in them. I saw this last weekend and it was spectacular. A migrating monarch would use those asters, even though they are in containers. Or bees, any of our 4,000 species of native bees will use native flowering plants that we put on our balconies.

CAF: Cylburn Arboretum is here for the citizens of Baltimore City. We try to show things you could do in your own yard and have a garden called City Backyards. Even with the best intention, sometimes planting an oak in a row home garden makes for a cramped situation. Would pollarding an oak negate its benefit to caterpillars? In other words, is an oak's benefit correlated to its size and biomass?

DT: The benefits are in its leaves, for the most part, so if the oak is still making leaves

the caterpillars will use it. I am sitting next to a window and I am looking out at a Black cherry that grew up (I didn't plant it) too close to the house. I went to cut it down two years after it started to grow and there were 11 tiger swallowtail caterpillars on it. I said, "I can't touch that!" Then it got taller than the house so last fall I cut it down but left the stump and it came back as a cherry bush. It was heavily used by caterpillars with all the stems coming up. There were a number of Lunate zales and other caterpillars that were using it all summer long.

Let me make one request. Why don't you call it city yards instead of backyards? People talk about backyard habitat and it implies that you can't do it in your front yard, and it also implies it is so ugly that you have to hide it in the backyard. Neither is true.



“All we have to do is put the native plants back”

–Doug Tallamy



The future Nature Education Center Garden. Renderings and plan by Intreegue Design

CAF: Our NEC will feature a teaching garden that demonstrates how a garden can be beautiful while also providing water management features and supporting wildlife. We hope these ideas educate and inspire people to bring these concepts back to their home gardens. Can you talk about your own message around Homegrown National Park and the issue of wildlife depletion?

DT: All we have to do is put the native plants back. As I said, our property was totally invaded! But we got rid of the multiflora rose and autumn olive and planted native plants. Then I started counting. I started taking a picture of every species of moth that is now making a living on our property and I'm up to 1,195 species so far and I am still counting. We have recorded 60 species of birds that breed here. So, can you reverse it? Absolutely, you can! If we put the plants back, we create the habitat our wildlife needs. That is the goal

of Homegrown National Park. The U.S. has parks and preserves, yet we're in the sixth great extinction. Parks and preserves are not enough. We need to practice conservation outside of parks and preserves on private property. Seventy eight percent of the country is privately owned, and 85.6% of the country east of the Mississippi is privately owned. Without conservation on private property, we're going to fail. For example, if we cut the amount of lawn in half, that would give us 22 million acres that we could put toward conservation. Everybody can be a part of Homegrown National Park. It's simply a matter of recognizing that every square inch of the earth has ecological value and we need to treat it that way. We want to change the cultural relationship with nature as much as we want to actually restore land.