important because most flowering plants rely on pollination to reproduce, providing habitat and food for wildlife, food for people, and numerous other environmental benefits.

Unfortunately, recent evidence indicates that several pollinators like native bees are declining, and features of urban landscapes like warmer temperatures and fewer flowering plants is associated with the reduction in the number and/or diversity of pollinators that live in these spaces.

Urban and residential landscapes — where over 90 percent of the 22 million Floridians and 80 percent of people in the United States live — are rapidly expanding and replacing natural vegetation with buildings, roads and parking lots.

This change in land use has been linked to declines in insect diversity, including pollinators. This change in land use has also been linked to increases in the abundance or damage caused by insect plant pests, which presents a challenge when trying to protect and maintain the plants that remain in urban landscapes.

Continued
Conserving beneficial insects

Fortunately, urban landscapes can support diverse and abundant communities of pollinators if suitable habitats are available. Conservation habitat can take many forms, particularly in tropical or subtropical climates where there is a high diversity of plants and animals.

To work well, conservation habitat must provide food or places of refuge that will attract wildlife of interest. These requirements differ and can be tailored to the wildlife of interest. For example, pollinators like monarch butterflies, Danaus plexippus, need a specific genus or species of flowering plant to complete their life cycle. Monarchs need milkweed.

A very important aspect of creating flowering habitats is selecting the appropriate species. Base your plant selections on site conditions: sun exposure, soil moisture; geographic region: tropical, subtropical, temperate; and anticipated level of maintenance the plants will receive.

In addition, flowering plants can be selected based on the services you want them to provide. For example, some flowering plant species attract specific predatory or parasitic insects that attack plant pests. For example, shrubby false buttonweed, Spermacoce verticillata, attracts a wasp called Larra bicolor, which specifically attacks and controls pest mole crickets. Alternatively, partridge pea, Chamaecrista fasciculata, a commonly used native wildflower, is also highly attractive to Larra bicolor.

Research at the University of Florida has demonstrated that planting these species attracts this wasp and increases biological control of invasive mole crickets up to 650 feet from the planting.
More than bees

Recent research from my lab at the University of Florida has investigated the effects of planting wildflowers and different wildflower mixtures to attract insect pollinators, and the benefits these plants can provide.

As predicted, we have found that converting areas of maintained turfgrass into wildflower habitats increases the abundance of pollinating insects and the number of different pollinator species using that space. This is particularly important for native bees, like many of the 300-plus native bees that live in Florida.

Our research has also found that on average, native bees are three to four times more abundant in areas where mixtures of eight wildflower species are planted compared to turfgrass areas and wildflower mixtures of four species. Therefore, creating wildflower habitats boosts general pollinator abundance, but more diverse plant species mixtures may provide even more benefits for native bees.

Although bees are extremely valuable, many insects that are attracted to wildflowers do more than pollinate. Flowering plants also attract and support a diversity of predatory and parasitic insects that attack other insects.

Why this matters for pest control

You may be wondering why conserving bees and other pollinators is relevant to pest control. Well, the most abundant insect to establish and reproduce within our experimental wildflower plots in North Central Florida was the red-marked pachodynerus, *Pachodynerus erynnis*, a predatory wasp that specifically attacks caterpillars, particularly the fall armyworm, *Spodoptera frugiperda*. As many pest control
professionals in the Southeast know, fall armyworms, sod webworms, and other caterpillars can cause quite the headache when managing turfgrass lawns.

To capture the true benefit of these wasps and other predators visiting our wildflower plots, we measured predation rates of fall armyworm caterpillars within maintained turfgrass areas adjacent to wildflower plantings. We found that the biological control of fall armyworm caterpillars increased by 50 percent up to 60 feet from the wildflower plantings.

A 50 percent increase in pest control without any additional pesticide applications or pest control efforts can make quite a difference when it comes to protecting your landscape plants and reducing the time and cost of doing so. It means fewer insecticide applications and less damage from insect plant pests like caterpillars. That should be particularly attractive during the late summer and fall, when caterpillar pests tend to flare up.

The multitude of predatory bugs, beetles, wasps and flies that are attracted to flowering plants conduct pest control daily. In fact, their primary life function is to attack and kill other insects, primarily those that eat plants. Therefore, by planting flowering vegetation that is attractive to pollinators next to your home, garden or workplace, you can simultaneously increase the natural pest control going on in that space. The evidence says so.

Postscript

After two years of walking through, sitting down in, and capturing insects from wildflower plots, none of the approximately eight people involved in this research has been stung or bitten by an insect living there. PP

Dr. Adam Dale can be reached by email at agdale@ufl.edu or by phone at 352-273-2976. Resources that further explain content discussed here can be found at http://edis.ifas.ufl.edu/ind1213.

Caterpillars aren’t the only insects that feed on palm thatch in tiki huts. A few beetles can bore into the thick petioles of the palm leaves. The “tiki weevil” is the beetle most often found in palm thatch. Its scientific name is Phoenicobiella chamaeopsis, and it belongs to a family of beetles called the fungus weevils.

It is 8–12 mm long and has a broad, flat beak that is not long and narrow as in the true weevils. Males have antennae that are longer than the body. The tiki weevil is found in Florida and Georgia and is associated with cabbage palms. The larva bores into the leaf stems, and the adult makes a large, oval exit hole when it emerges.

A couple of false powderpost beetles may also burrow into the leaf stems of palm thatch in South Florida. They don’t appear to be common pests of tiki huts, as I know of only one occasion for each. The larger species is Amphiheres cornutus, at 8–13 mm long. Xylopus capucinus is smaller, at 3–5 mm long. Both species have a variety of other host plants that they probably prefer over palms. PP

Lyle J. Buss, Scientific Photographer, manages the Insect Identification Lab at the UF/IFAS Entomology and Nematology Department.