

Climate-Smart Urban Habitat



LEFT: Climate change can have a variety of effects on pollinators, including native bumble bees. **MIDDLE:** Pollinator habitat can enhance home gardens, parks, office spaces, places of worship, and retail spaces. **RIGHT:** Native plants and trees provide important food sources for pollinators.

In California, climate change is expected to cause higher temperatures, more frequent and longer heat waves, and increased drought frequency and severity. Extreme weather events will also become more common. These challenges posed by climate change are extensive, but there ways you can increase climate resilience for pollinators in your yard, neighborhood park, or whole community.

Pollinators play a vital role in ecosystems, pollinating more than 85% of all flowering plants. About one-third of food production also depends on animal pollinators. Although honey bees are key for crop pollination, native bees are important pollinators in most natural ecosystems. California is home to about 1,600 species of bees, and this diverse group provides pollination services throughout the state, from Yosemite National Park to your home garden. Other insect pollinators include butterflies and moths, as well as some flies, beetles, and wasps. Unfortunately, many species of pollinators have undergone population declines. Pesticide use, disease, habitat loss, and climate change are all linked to worrying decreases in pollinator diversity and abundance.

The good news: cities and towns can provide important habitat for insect pollinators. In some urban areas, native bee diversity is quite high—in many cases higher than in agricultural areas. Parks, home gardens, and abandoned lots have the potential to provide high-quality habitat for insect pollinators.

Pollinators and Climate Change

Urban areas tend to be warmer than the surrounding landscape. This is called the urban heat island effect, and it is a result of a large amount of impervious surfaces, such as asphalt and concrete. In urban areas, one global climate change concern is that the urban heat island effect will exacerbate heat waves and increased temperatures. Bees and other insect pollinators are sensitive to temperature, and each species needs to stay within a particular temperature range to survive. Nonlethal temperatures outside the optimal range can have a variety of negative effects on pollinators, including reductions in survival, growth rates, or reproduction.

Climate change may have a variety of additional effects on pollinators. For example, some species may change their distributions to track a more favorable climate. Climate change may also affect phenology, which is the timing of biological events. For many bees and other pollinators, their emergence in spring or summer is timed to match the flowering of preferred plants. A phenological mismatch may occur if pollinators and their host plants don't respond to climate change in the same way. Finally, global climate change can combine with other stressors, such as pesticide use, disease, and habitat loss, to negatively affect pollinators.

You Can Help!

Global climate change presents an unprecedented challenge, but there are several actions you can take to increase climate resilience for pollinators in your neighborhood.

Create pollinator habitat

Creating habitat is crucial to increasing climate resilience for pollinators. Planting a pollinator garden at your home, office, place of worship, school, or local park will create habitat that provides for larger populations of pollinators. The larger a population is, the less susceptible it is to extinction.

- ⇒ Include a variety of flowering plants with multiple species in bloom during spring through fall (for plant lists specific to your region, visit xerces.org). A garden with many plant species provides small spaces, called microhabitats, that vary in temperature and amount of cover. These provide refuges for pollinators during heat waves or other extreme weather events.
- ⇒ Use drought-tolerant native plants. Native species tend to be adapted to the local climate and can often resist drought more effectively than cultivars. Native plants also provide important food resources for specialist bees and butterflies that have narrow resource requirements, and they tend to be attractive to more insects than ornamentals and introduced plant species.
- ⇒ Plant native bunch grasses, which can provide important nesting habitat for bees and are host plants for some butterflies.
- ⇒ Provide nesting areas for native bees. Leave areas of bare ground for ground-nesting bees. For cavity-nesting bees, provide pithy-stemmed native plants, such as elderberry, goldenrod, and wild rose. Avoid aggressively cutting back these plants in order to leave dried stems and twigs for bees to nest in.
- ⇒ Reduce pesticide use as much as possible. Eliminating cosmetic use is a good first step. See the fact sheet *Guidance to Protect Habitat from Pesticide Contamination* (available at xerces.org) for more ideas. Protecting pollinators from pesticides can allow bees to be more resilient in the face of climate impacts such as extended heat waves.
- ⇒ Avoid using neonicotinoids and other systemic insecticides. Avoid buying plants that have been treated with neonicotinoids. One reason systemic insecticides are so

problematic is that they can stay in the ecosystem for months or years, continuing to affect pollinators and other beneficial insects long after they were applied.

Reduce the urban heat island effect

There are several actions you can take to reduce the urban heat island effect in your city or town.

- ⇒ Depave, removing impervious surfaces such as concrete or asphalt where appropriate. Replacing impervious surfaces with gravel or vegetation reduces temperatures and has the added benefits of reducing flood risk and the amount of pollutants in our water.
- ⇒ Plant native trees and other vegetation, which can reduce temperatures. As a bonus, trees are excellent at carbon sequestration.
- ⇒ Support policies that promote green infrastructure, such as green roofs.

Advocate for change

While these actions help mitigate effects of climate change on pollinators, they can only go so far. It is vital that we work to reduce the magnitude of climate change by supporting policies and policy makers focused on limiting global warming.

- ⇒ Advocate for policy change locally and nationally. Limiting climate change is an attainable goal, but it requires political will and immediate action. Let your representatives know that you support bold action on climate change.
- ⇒ Reduce your carbon footprint. Actions such as using public transportation, reducing food waste, and choosing energy-efficient appliances can add up.

Additional Resources

Xerces Society, *Guidance to Protect Habitat from Pesticide Contamination*: xerces.org/guidance-to-protect-habitat-from-pesticide-contamination/

Xerces Society, Pollinator-Friendly Plant Lists, other areas: xerces.org/pollinator-conservation/plant-lists/

Xerces Society, *Recommended Plants for Pollinators and Beneficial Insects: California Central Valley Region*: xerces.org/pollinator-conservation/plant-lists/pollinator-plants-california/

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