The Million Pollinator Garden Challenge™ Meets its Mark

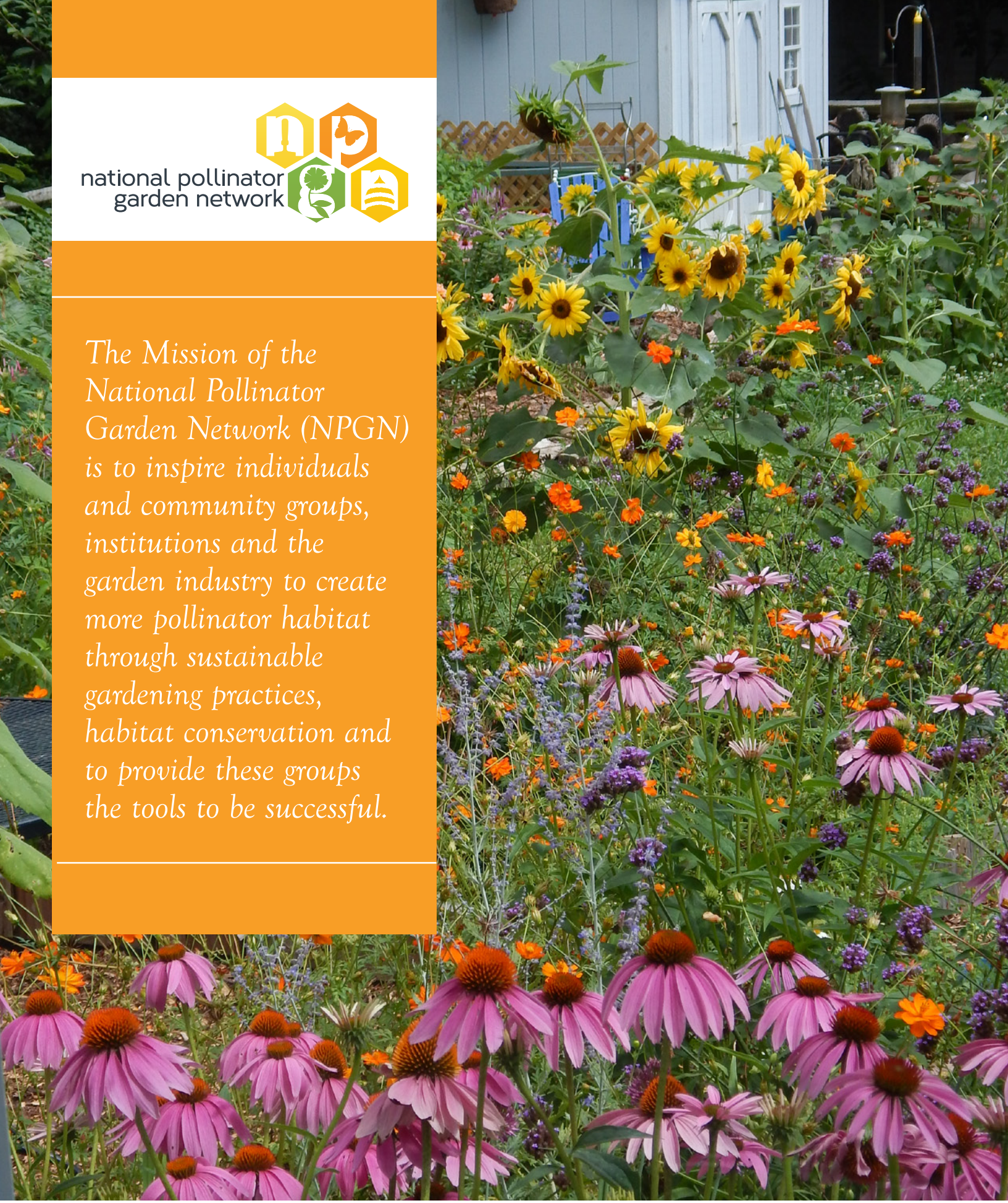
2015-2018

1,040,000 registered gardens
>8 million people planting
>5 million acres of pollinator habitat

National Pollinator Garden Network
millionpollinatorgardens.org

national pollinator garden network

The Mission of the National Pollinator Garden Network (NPGN) is to inspire individuals and community groups, institutions and the garden industry to create more pollinator habitat through sustainable gardening practices, habitat conservation and to provide these groups the tools to be successful.



Kim O'Shea

Introduction

One simple act can lead to lasting beauty, life, and sustenance–a buzz with promise. ~The National Pollinator Garden Network™

In 2015, a determined group of people who cared about the future of our threatened pollinators imagined a million gardens adding to a network of flowering habitat, replacing what is being lost. Simple, individual actions would tally up to a big footprint for pollinators facing steep declines.

- **40% of all invertebrate pollinator species–particularly bees and butterflies–are at risk of extinction.** (National Research Council, 2007)

- **Habitat is declining by a million acres a year, fragmented by increasing urban and suburban development.** (Merrill, Leatherby, 2018)

The National Pollinator Garden Network's vision was realized in 2018. The 1,040,000 registered gardens are predominantly in the United States, with international sites in Canada, Mexico, and others across the globe. Today, many communities bloom with gardens buzzing with promise for our pollinators, our own food supply, and the planet.

Not since the Victory Garden war effort of the 1940s has our nation embarked on a comparable campaign for gardens. A third of all vegetables grown then came from victory gardens. Now? Pollinator gardens help to ensure the very future of our vegetables and fruits.

- **Pollinators are responsible for one out of three bites of food we take each day.** (McGregor, 1976)

Today, the National Pollinator Garden Network credits more than an estimated eight million people who contributed to this Challenge's success, from school children, families, seniors, and facility managers to mayors, and countless community groups.

From tiny yards to public gardens, the million-plus gardens add up to a network of approximately five million acres of enhanced or new pollinator habitat.

Pollinator gardens can make a real difference for pollinators. Studies show floral-rich, small-scale gardens are proven to increase pollinator abundance and diversity.

Increasing numbers of people are planting with purpose. There is a growing transformational shift in homes and communities, from valuing flower gardens as ornamental to valuing them for both beauty and benefits to bees, butterflies, birds, and all pollinators.

Today, pollinator gardens flower outside homes, in public parks, places of worship, schoolyards, and businesses. Garden clubs, plant nurseries, and garden centers all joined in to inspire, educate, provide plants and seeds, and more.

This is the largest effort in size and scale on behalf of pollinators, and the first to engage the horticultural and voluntary sector in a major role.

The Million Pollinator Garden Challenge shows that individuals, organizations, and business care about the health of pollinators and are acting in concert to address their critical needs.

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Georgia June von Neumann

Report Highlights

Landmark Reached: A Million+ Pollinator Gardens in Three Years

The Million Pollinator Garden Challenge incentivized the ultimate goal of dramatically increasing the number of pollinator-friendly gardens and landscapes to help revive the health of bees, butterflies, birds, bats, and other pollinators.

Collaboration made success possible. From its start in 2015, the National Pollinator Garden Network focused on what all partners agreed on—to increase public commitment to create pollinator habitat. Today, the Network has grown to over 50 conservation, garden trade, and civic organizations that represent more than 850,000 members.

Like pollinators themselves out buzzing, flitting, sipping, and sharing flowers for pollen and nectar, people at every level worked collectively to reach the scale of pollinator habitat we need. Everyone was (and is) welcome to join. Each pollinator gardener is celebrated.

The Challenge added many **pollinator garden hot spots** within our growing urban and suburban areas and along migratory flyways. Studies show that these lush floral buffets increase pollinator diversity and abundance. This report recognizes leading communities with the highest gardening activity.

Where are the Gardens?

Million Pollinator Gardens range from container gardens to half acres, and even several thousands of acres. **Urban and suburban individual residences compose 85% of registered gardens** on a small footprint, with the average U.S. home lot a quarter of an acre. **Another 10% comprise larger gardens** found in K-12 schools, universities, public gardens, zoos, museums, heritage sites, parks, businesses, and places of worship. They also include small farms, vineyards, and orchards, averaging about 20 acres a site. **Federal participating agencies registered the remaining 5%.** These include national parks, refuges, and landscapes at federally owned facilities.

Teresa Considine

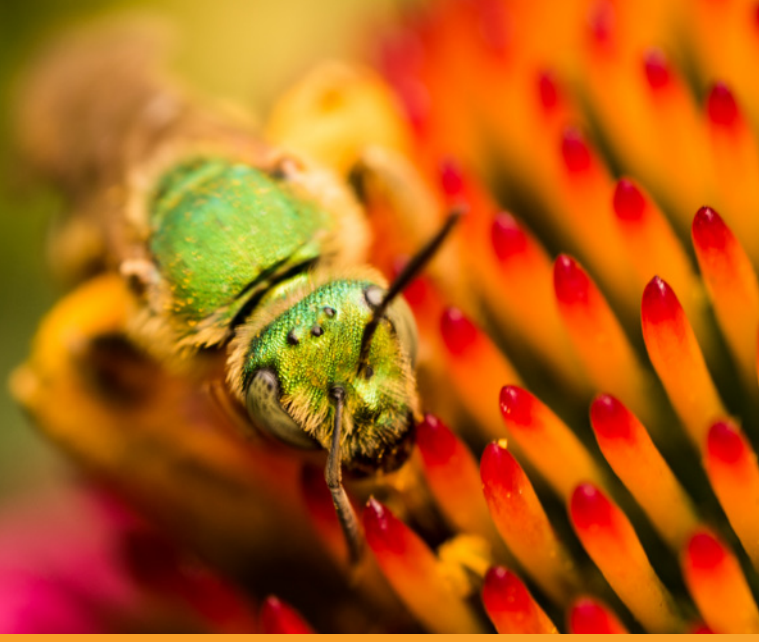
Demand Skyrockets

Garden center associations report a **92% increase in demand for pollinator-friendly plants and services during the last 3 years.** (AmericanHort/Garden Center Group, 2018) Conservation organizations note the popularity of state native plant sales, sponsored by native plant societies, master gardener events, and at parks, nature and wildlife centers.

Hot Trend in Landscaping

An impressive 83% of landscape architects cite an increasing trend for clients wanting sustainable designs with native plants. (ASLA Survey, 2018)

Garden clubs, botanic gardens, museums, zoos and aquariums, and others are showcasing new ways to landscape for pollinators. Community demonstration gardens that overflow with multi-season blooms and native plants inspire people to create their own home gardens.



Adam Reinstein

More Buzz, More Action

The buzz about pollinators from 2015-2018 led to:

- a 170% increase in online searches for pollinator garden plants during the Million Pollinator Garden Challenge.
- 450-plus municipal leaders taking the Mayors Monarch Pledge to create monarch/pollinator habitat.
- 39 states creating 109 policies to help pollinators. (Hall, DM, Steiner, R. 2019)
- Garden centers and big box stores reducing (phasing out) flowering plants treated with chemicals harmful to pollinators.

Valuable Lessons of the Challenge

The National Pollinator Garden Network learned that pollinators:

...“have their own champions.” People’s affinity for honey bees and monarch butterflies serve as a catalyst for action for all pollinators.

...“are popular.” We witnessed an unprecedented outpouring for bees, monarchs and other butterflies at festivals, workshops, and requests for plants and seeds. Pollinator garden starter kits sold out in a matter of hours each spring!

...“need all types of people.” Anyone, at any age, and from any background can make a hands-on difference for pollinators.

...“connect generations.” Pollinator and butterfly gardening is a popular shared activity for children and their caregivers. Countless National Garden Clubs, Daughters of the American Revolution, and LINKS, Inc. members are reaching out to school children, scouts, and other youth gardens. KidsGardening.org reported a 20% increase in school pollinator gardens during the Challenge.

...“attract heroes.” The National Wildlife Federation’s Butterfly Heroes™ campaign experienced unprecedented demand for seed kits, garden guides, exceeding supply. Close to 200,000 monarch garden starter kits were distributed to young families, grandparents, schools, and community groups.

...“cross international borders.” Garden registrations expanded beyond the U.S. to the provinces of Canada and to towns in Mexico (300 on the border alone) mirroring the migratory flyway of the monarch butterfly. Worldwide, there are 18 U.S. Embassy locations and more international sites.

Pollinator Garden Qualities

The Million Pollinator Garden Challenge suggests that gardeners:

- use plants that provide nectar and pollen sources
- provide a water source
- be situated in sunny areas with wind breaks
- create large “pollinator targets” with clusters of native or non-invasive plants
- establish continuous blooms throughout the growing season
- eliminate or minimize the impact of pesticides

Patrick Fitzgerald

NRPA Starr Farm, Vermont

Pollinator Primer

Pollination is...

the transfer of pollen between the male and female parts of flowers for fertilization and reproduction. Through pollination, plants are able to form seeds and reproduce.

Pollinators are...

animals that visit flowers to feed on nectar and pollen, carrying pollen from flower to flower, and thereby fertilizing plants. Bees, wasps, butterflies, and many species of flies and beetles are pollinators, as are hummingbirds and even some bats.

Pollinators need...

flowering plants, trees, or shrubs that offer high-energy nectar and protein-rich pollen. They also need a diversity and abundance of plants to bloom from early spring through late fall when pollinators are active, as well places to hide, raise young, and sip water.

Why are pollinators so important?

Without pollinators, both the wild food web and our agricultural system would collapse. The annual value of global crops that depend on pollinators is as high as $577 billion.

Why are pollinators in trouble?

Many factors threaten our pollinators, including pathogens, pests, climate change, management of land and animals, genetics, pesticide exposure, and habitat loss and fragmentation.

Pollinator-friendly plants are...

flowering plants, trees and shrubs that offer nutrient-rich nectar and pollen, or serve as host plants for caterpillars. Native plants are important for specialist pollinators, because pollinators co-evolved with native plants. Some non-native and non-invasive flowering plants can support honey bees and other "generalist" pollinators.

Why a Garden Network?

Multiplying the Value of Small-Scale Pollinator Gardens

Charlene Tavarozzi

The National Pollinator Garden Network recognizes that everyday citizens can be pollinator leaders. The Network formed as a response to a crisis and an opportunity to empower people to plant for pollinators yard by yard—a scientifically supported benefit.

Pollinator gardens around homes, by schools, places of worship, in public gardens, and outside offices have another value. They bring people close to brilliant butterflies sipping nectar from flowers with petals like landing pads, close to the humming of bees, and close to the whirring of hummingbirds delving deep into tubular blooms. The gardens motivate people to care.

Gardening is popular, with 70 % of Americans participating in gardening activities. (National Gardening Survey, 2015). From early on, the Network partners saw the huge potential for gardeners to create bountiful and high-quality habitat.

Origins of the Network and Challenge

Since, the early 2000s, science and conservation groups increasingly identified pollinator declines. In 2014, a Presidential Memorandum on the pollinator crisis alerted the public to far-reaching implications of stressors facing all pollinators, both managed (like honey bees) and native species (including bees to butterflies, bats, and birds).

The memorandum directed federal agencies to establish a Pollinator Health Task Force to develop a national Pollinator Health Strategy. In addition, The White House Office of Science and Technology Policy reached out to conservation, garden trade, and voluntary civic sectors to explore solutions to the pollinator crisis.

Dialogue among these groups led to the independent formation of the National Pollinator Garden Network, which launched the Million Pollinator Garden Challenge in 2015.

The voluntary, nonpartisan, public and private Network now represents 50 conservation, garden trade, and civic organizations that all together have some 850,000 members. Each group rallied its members to plant and register gardens. Thousands of individuals outside the groups have stepped up to self-register their gardens as well.

The Network and the Challenge together attract generosity—embodying people's passion for pollinators, for flowers, our food, and our future. The Network did not rely on a major funder and instead received the support of many partners to remain authentic and collaborative in spirit. The group collectively provided in-kind contributions of time, materials, design, social media, and education.

Why Pollinator Gardens? They really make a difference!

A frequent question during the course of the campaign from media and some pollinator gardeners themselves was: "Do these gardens really help pollinators?" The answer is a resounding, "Yes!"

Scientists studying urban and suburban pollinator gardens find measurable benefits to pollinator health—defined here as species richness and abundance.

Stanz

Value of Small-Scale Pollinator Gardens

Published and ongoing research on small-scale gardens leads to useful guidelines for gardeners, landscapers, and facility ground managers as they plan for the best possible outcomes for pollinators.

Studies on Certified Wildlife Habitats® (properties recognized for providing key elements of food, water, cover, and places for wildlife to raise their young) show a doubling of abundance and diversity of key pollinator species than found on traditionally landscaped properties. (Drake,Widows, 2014)

A review of seven garden bee studies highlights places to improve bee habitat. Specifically, spring-flying bees and ground-nesting bees are generally sparse in gardens. Planting early spring-blooming bee plants and leaving some garden areas undisturbed and without mulch will benefit these important pollinators. (Langellotto 2017)

An **Ohio bee study** revealed the importance of plentiful flowers, taller vegetation, more cover by woody plants, less grass cover, and larger vegetable gardens. (Pardee and Philpott 2014)

What if 35 million households planted for pollinators?

- 35 million households currently participate in some type of flower gardening. (National Gardening Survey, 2015)
- 60 million households have a lawn, and 49% of all U.S. households indicated they participated in lawn care. (National Gardening Survey,2015)
- A 2005 NASA study derived from satellite imaging found that turf grasses took up nearly 2% of the entire surface of the continental United States, covering an estimated 63,000 square miles.
- Impervious surfaces in the contiguous 48 states cover 43,000 square miles—typically 2/3 pavement and 1/3 roofs. (Schueler, 2000)
- Backyards, green roofs, and planted boulevards can serve as corridors supporting native pollinators.

Charlene Tavarozzi

In California, an investigation of 19 gardens along the California Central Coast correlated high numbers of bees and species diversity with bigger gardens, those with abundant flowers and with less mulch cover. (Quistberg RD, et al, 2016)

An Iowa City study across 35 urban sites showed that profusely flowering and vegetated residential and natural areas support pollinators important for urban agriculture across 72% of the city. Areas with mostly lawns show up as resource-poor for pollinators. (Zhao, C, et al 2019)

Another study of urban gardens in New York City found concentrations of bumble bees aross floral-rich community gardens. The science suggests that bees find dependable nectar and pollen from garden flowers (e.g. marigolds, zinnias, coneflowers, sunflowers) that bloom for relatively long periods. (Matteson, K.C., et al, 2009)

On the Right Track

The studies confirm that the Million Pollinator Garden Challenge is on the right track, and needs to keep going. The science supports integrating design and management of private residential gardens into city-wide pollinator conservation strategies.

The Pollinator Crisis: Urgency

From Awareness to Recovery Strategy

We're losing intricate ecological connections and a practical process that serves all life—pollination. Our food security is at stake, along with livelihoods and—harder to quantify—the beauty of pollinators in our lives.

Pollinator declines have concerned scientists for decades. The Million Pollinator Garden Challenge raised awareness for this long-standing problem and offered a " hands-on" opportunity for action.

The North American Pollinator Protection Campaign, initiated in 1999, led to a National Academy of Sciences Status of Pollinators report in 2006. The findings revealed the following:

16.5% of vertebrate and 40% of invertebrate pollinators faced a risk of extinction

47 species of hummingbirds in North America are endangered or susceptible to species-wide population declines.

30% of North American bat species, which are important pollinators and predators of insects, have declined.

Numbers of the rusty patched bumblebee, native to 28 states, tumbled by 87% in the last 20 years. (Proceedings of the National Academy of Sciences)

The iconic monarch butterfly suffered a 90% population loss in the United States of America just in the past two decades.

Monica Ward

Why Pollinators are Essential to Life

"...let me say a word on behalf of these little things that run the world" ~E.O. Wilson

For People:

Losing pollinators is a global crisis. The 90% of flowering plants relying on pollinators include many fruits and vegetables, along with fiber crops and medicines. (Kearns CA, Inouye DW, Waser NM, 1998) Insect-pollinated crops yield about 70% of Vitamin A, and pollination increases production by about 43%. (Vanbergen, et al, 2014)

For Wildlife:

Many birds, small mammals, reptiles, and other creatures depend on animal-pollinated plants.

- 90% of birds dine on insects as a primary food source.
- 25% of birds and many mammals eat pollinated fruits and seeds.

Pollinators are at the foundation of the food chain. Addressing their declines is central to recovering many kinds of wildlife. Today, a third of U.S. species are at increased risk of extinction. (Stein, et al 2018)

Crisis Impacts Farm Economy

The role of managed and native pollinators in the agricultural economy is immense. With 25% of all American households growing berries, vegetables, and fruit trees, declines hit close to home. (National Gardening Survey, 2015)

- $235 to $577 billion: estimated annual value of global crops directly affected by pollinators. (IPBES, 2016)
- 300% increase in volume of agricultural production dependent on animal pollination in the past 50 years. (IPBES, 2016)

Managed pollinators for crop production include the European **honey bee,** Alfalfa leaf cutting bees and some bumble bees. As honey bee colonies collapse, so do their pollination services that add more than $15 billion in value

to agricultural crops annually in the United States. Almond crops alone require 1.3 million colonies of honey bees to pollinate more than 615,000 acres of almond plantations. (National Resources Council, 2007)

- In 2018, The Bee Informed Partnership reported an estimated 40.1% loss of managed honey bee colonies.

Introduced to North America, the European honey bee primarily lives in hives that commercial farmers and hobby beekeepers manage for the bees' honey, beeswax, and pollination services.

Donna Brands

The threat to food and agriculture motivated the White House in 2014 to direct the heads of executive departments and agencies to create a Federal strategy promoting the health of honey bees and other pollinators.

In 2015, this Task force released a plan to improve the management of Federal buildings, landscapes, rangelands and forests to increase and improve pollinator habitat nationally.

Native Pollinators, especially bees, are important to crop pollination and production, with an estimated 20,000 native bee species alone worldwide, and 4000 species native to North America. (IPBES, 2016) All must have wild native plant communities for survival.

- Native bees add an additional $9 billion of pollination services that support an estimated 15% of the combined value of U.S. fruit, nut, vegetable, and field crop production. Their presence triples the production of tomatoes, blueberries, and other crops, and produces larger, healthier fruits. (National Resources Council, 2007)

Horticultural and Garden-Trade Economies Face Losses. People's joy in planting flowers adds up to a $196 billion horticulture industry that creates more than two million U.S. jobs. American public gardens contribute $2.3 billion in tourist spending. The future of that industry lies in the balance. (NICH, 2018)

In response, **The Horticultural Research Institute** (HRI) **and its trade association partner, AmericanHort** launched the **Grow Wise, Bee Smart** stewardship program to inform horticulture professionals about pollinators, threats to their health, and steps all can take to improve their habitat. This initiative also funded research and joined the Million Pollinator Garden Challenge campaign.

"There is no question that horticulture is beneficial to bees and pollinators. After all, the best way to support bees is to plant healthy and bee-friendly plants. Professional growers of trees, plants, and flowers provide the very thing pollinators need to thrive: diverse and ample sources of forage."

~Horticultural Research Institute

Mobilizing a Million + Movement

To enlist more than a million pollinator gardens in three years took galvanizing positive efforts already underway. Credit for encouraging networks to plant habitat for pollinators goes to many partners. While conservation organizations have long led habitat garden efforts, to build a widespread movement takes engagement at multiple levels, especially bringing in the horticulture industry.

This sector-by-sector overview gives a sense of the depth and breadth of the effort to reach the million pollinator garden mark—with too many partners to credit in this one report.

Building on Existing Conservation Efforts

For 46 years, the National Wildlife Federation's Garden for Wildlife™ program has conserved pollinator and wildlife habitat, with 225,000 Certified Wildlife Habitat® gardens across the world and 200 U.S. towns and cities designated as Community Wildlife Habitats®.

Wild Ones, the Habitat Network, and The National Audubon Society, along with native plant societies, numerous naturalists and master gardeners, all have promoted pollinator habitats. Others include: The Pollinator Partnership's Bee Friendly Farms, Xerces Society for Invertebrate Conservation's Bring Back the Pollinators and Bee City, USA; Monarch Watch Way Stations, and the Monarch Joint Venture.

A half a million educators engaged through Captain Planet, Kids Gardening.org, Edible Schoolyard Project, City Blossoms, American Horticultural Society's school garden network, and National Wildlife Federation's Schoolyard Habitats and Eco-Schools USA.

Providing Larger Garden Habitat across Community and Public Gardens

The American Public Gardens Association, the Association of Zoos and Aquariums, and the National Recreation and Parks Association contributed acres of demonstration gardens and pollinator programs through their members.

national pollinator garden network

City by City: Volunteer-led Clubs and Civic Groups

National Garden Clubs, Inc., Daughters of the American Revolution, Rotary, Links, Inc., and more voluntary membership groups sent gardeners to plant at schools, libraries, post offices, and other public places; supported youth, connected garden projects to STEM and wildlife biology curricula.

Towns, cities and counties joined in with Keep America Beautiful and America in Bloom. Park and municipal events reached residents with local Million Pollinator Garden challenges and campaigns to register gardens.

Spreading the Word to Gardeners

The Challenge gained a huge boost, thanks to the Association of Landscape Architects, Garden Writers of America, The National Gardening Association, Grow IT! The Plant Community, AmericanHort, American Seed Trade Association, American Horticultural Society, and garden trade publications and conferences that inspired members to plant and register gardens.

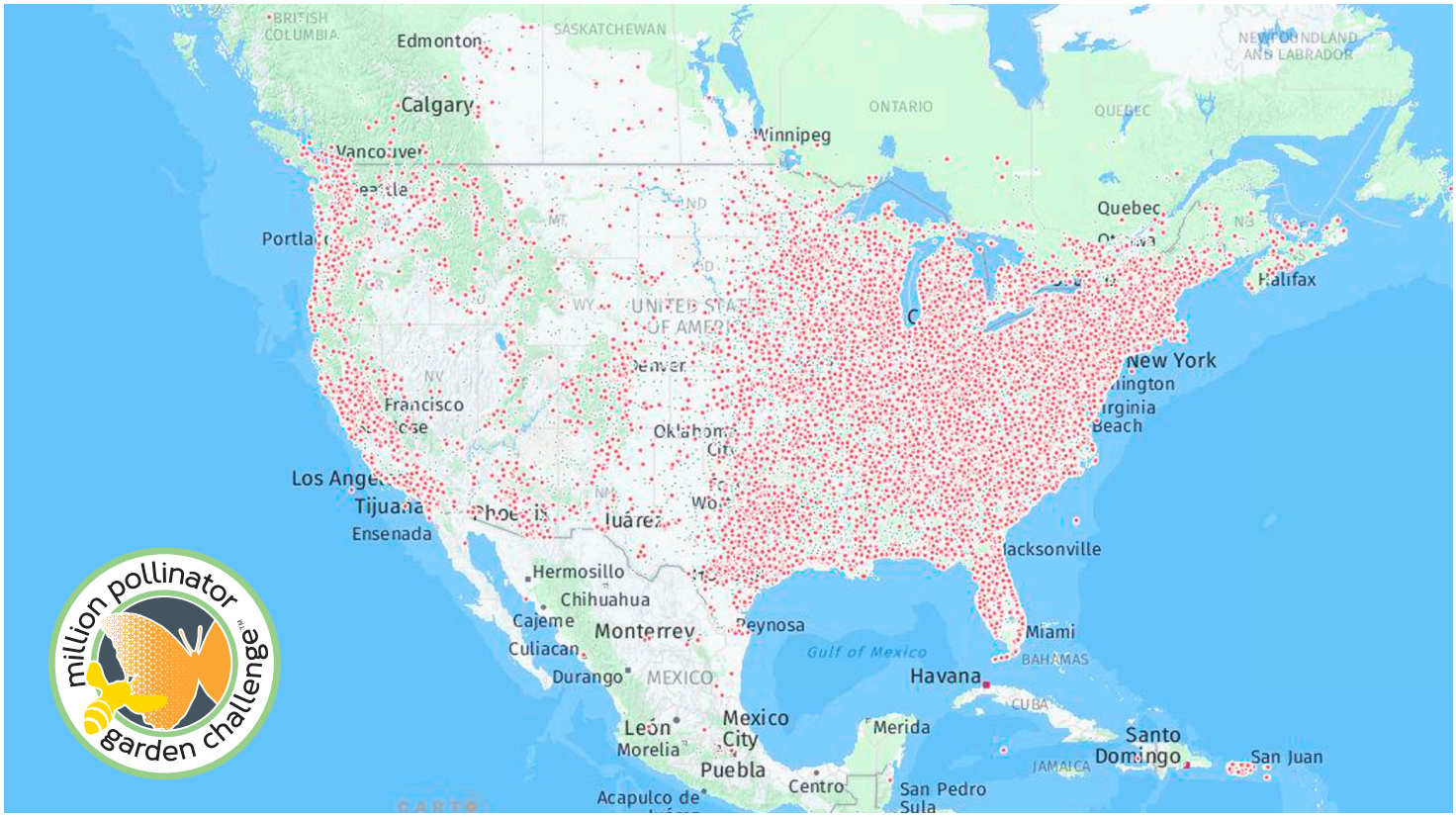
Federal Agency Effort

Lead federal agencies ran campaigns, developed films, and offered seed and plant resources. They coordinated with state wildlife and transportation agencies and parks departments to increase pollinator habitat across federally managed properties.

Ginny Lyon

Pollinator Garden Hot Spots:

Champion Towns and Cities



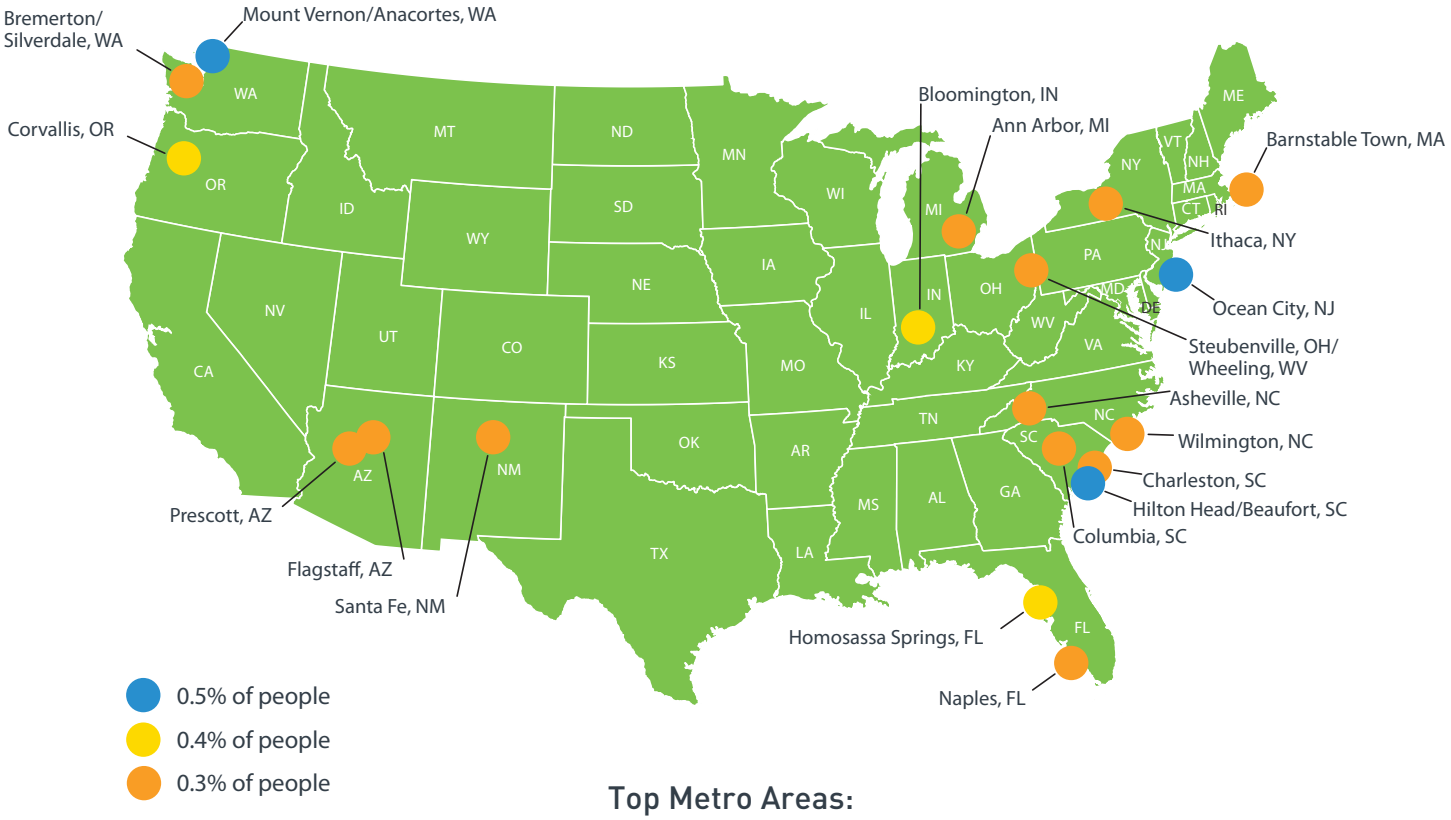
The 1,040,000 individual pollinator gardens concentrated in the United States, bordering Canadian provinces, and Mexico states. Additional gardens are registered across the globe. Click on sites to see details on many gardens at: http://millionpollinatorgardens.org/about/

Municipalities with outstanding numbers of registered gardens are defined here as pollinator garden hot spots. Concentrations of gardens potentially create stepping stones of habitat among gardens and parks that, together with wildlands, maintain healthy pollinator populations.

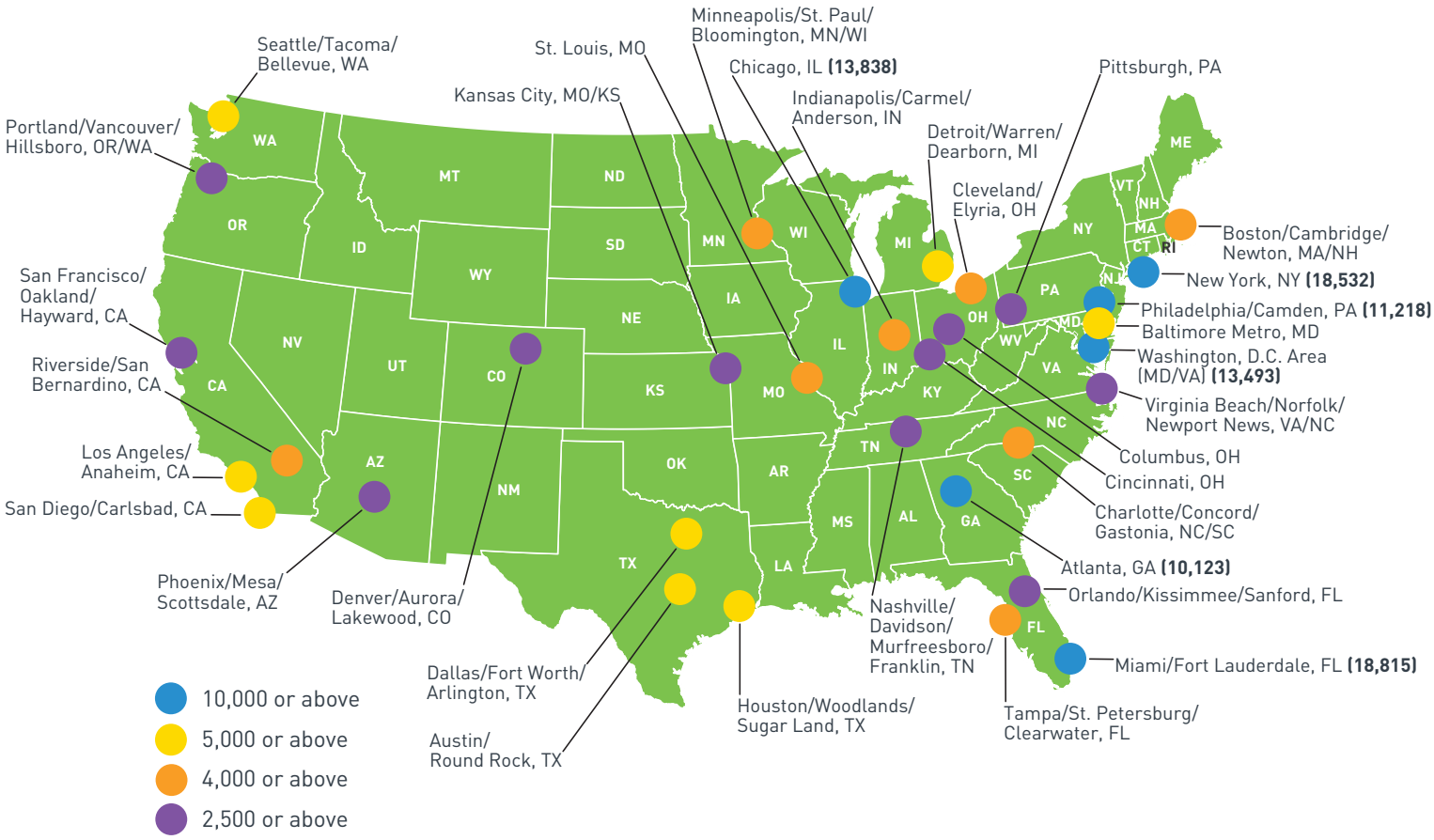
This is best illustrated in areas where bee species numbers reach their zenith, such as the desert Southwest and, in the East, within the Smoky Mountain region. (Droege, 2019) In the desert Southwest, the Phoenix-Mesa-Scottsdale, Arizona metro area, plus the smaller towns of Santa Fe, New Mexico, and Prescott and Flagstaff, Arizona, are top-performing pollinator garden cities and towns per capita. In the Smoky Mountain region, which straddles North Carolina and Tennessee, towns across the two states contributed more than 35,000 gardens.

When top-performing cities and towns for registering gardens coincide with nature's pollinator hot spots, the rewards are significant. The energy and gifts of participants everywhere matters. While larger cities had more registrations, smaller cities generally had higher percentages of participation.

Percentage of the Population Engaged in Planting for Pollinators



Top Metro Areas: Highest Numbers of Registered Gardens



NOTE: Gardens included in each metro area calculation were determined based on metropolitan statistical area (MSA) boundaries.

Top-Performing Pollinator Garden Counties

Broward County, Florida, led the way among counties encouraging residents to plant for pollinators and register gardens.

County Name	Number of Gardens
Broward County, FL	6,420
Los Angeles County, CA	5,829
Cook County, IL	5,636
Miami-Dade County, FL	4,741
San Diego County, CA	4,538
King County, WA	4,523

Tessa Charnofsky

Wendy Kaveney

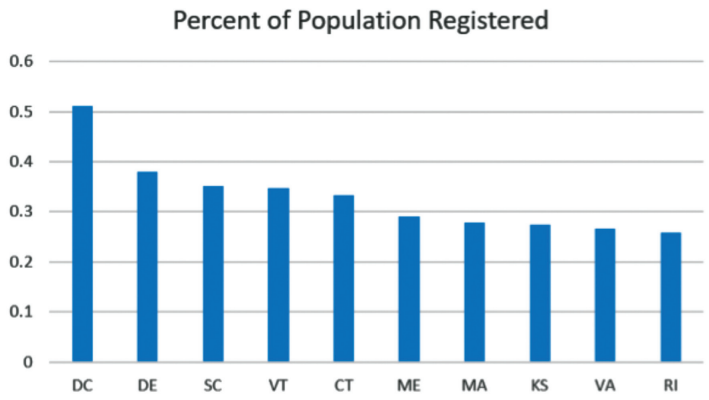
States with Highest Number of Registered Gardens

On average, individual U.S. States and Canadian provinces registered 12,000 gardens. The top five states are California, New York, Ohio, Massachusetts, and New Jersey.

40,000 or above Leader: California 53,646	**25,000 or above** Leader: New York 31,029	**20,000 or above** Leader: Michigan 23,696	**15,000 or above** Leader: Massachusetts 19,108	**10,000 or above** Leader: New Jersey 14,516
California Florida Texas	New York Pennsylvania Georgia North Carolina Illinois Ohio	Virginia	Massachusetts South Carolina Washington Tennessee	New Jersey Maryland Indiana Connecticut Missouri Wisconsin Oregon

Jean Baker

States with the highest number of gardens per their population



International Participation

The Challenge quickly extended beyond U.S. borders, showing the global desire to save pollinators. The border towns of Mexico registered 300 sites. Across the world, 18 U.S. Embassies feature pollinator-friendly gardens.

Canada Highlights

All ten Canadian provinces registered gardens, with Ontario ranking highest, followed by Quebec, British Columbia, Alberta, Manitoba, and Saskatchewan. Groups like David Suzuki Foundation and Pollinator Partnership Canada inspired many Canadians to participate. Approximately 50 mayors took Monarch Pledges, and the city of Toronto features pollinator conservation in its sustainability plans.

David Suzuki Foundation

Increasing the Buzz

Elevating the Conservation

Jennifer Schambers, Greenscape Garden Centers

With the Million Pollinator Garden Challenge comes a buzz about why pollinators matter to our lives and our futures. The plant-to-food connection is a key part of outreach. Just as bees range far to gather pollen, so the 50 national partners of the National Pollinator Garden Network spread the message of help for our pollinators far and wide.

From Hum to Buzz

Prior to the 1990s, the term "pollinator conservation" was not part of the national dialogue. (Martins, et al 2013) The 1996 book, *The Forgotten Pollinators* opened the door to broader public awareness.

The plight of honey bees piqued the public's interest in the early 2000s, with the advent of The North American Pollinator Protection Campaign, and the 2007 launch of National Pollinator Week, facilitated by Pollinator Partnership, as well the formation of the Honey Bee Health Coalition.

In 2012, the Xerces Society for Invertebrate Conservation unveiled a "Bring Back the Pollinators" campaign targeted to farms and homeowners. (Gemmill-Herren, 2016) Programs like Monarch Watch, Journey North, Monarch Butterfly Fund and the Monarch Lab raised awareness of the monarch butterfly's decline during this same time period, and in 2009, the Monarch Joint Venture formed, bringing partners together across the United States.

Building the Buzz!

The National Pollinator Garden Network built on these efforts. Respect and cooperation among partners from this new consortium of conservation, horticultural, voluntary civic, and federal participants has ensured a high level of coordination.

The National Pollinator Garden Network and Million Pollinator Garden Challenge significantly elevated outreach to the general public and consumer gardening industry at an unprecedented scale.

By committing to a consistent message across all sectors, every organization amplified it across their networks to reach millions: **Plant pollinator-friendly habitat to help all pollinators, from honey bees to native bees, butterflies, bats, and birds.**

Lighting up the Empire State Building, and more!

The Million Pollinator Garden Challenge was literally illuminated during June 2017's National Pollinator Week—creating a buzz that led to a surge in new garden registrations. The Network sent more than one million emails via its many partners for the lighting of the **Empire State Building** in yellow-and-black bee colors.

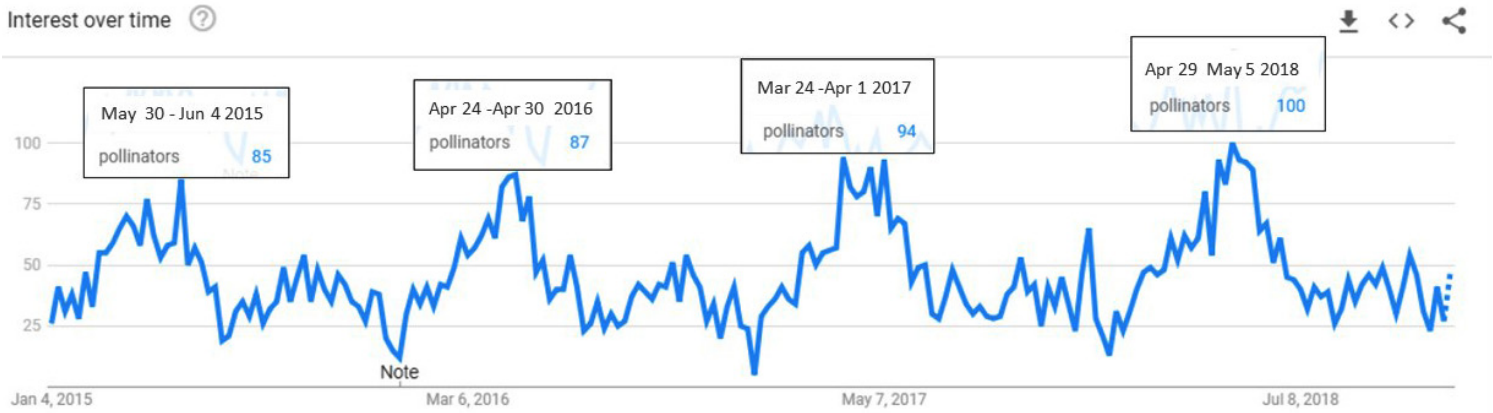
Initiated by National Wildlife Federation, with Shark Tank host and beekeeper Daymond Johns, the event created a groundswell of social media under #PolliNation and #BeeCounted to plant and register gardens. The message got another massive boost with **lighting Niagara Falls** and the **CN Tower in Toronto,** coordinated by the Pollinator Partnership in the same week.

When **First Lady Michelle Obama** announced the Million Pollinator Garden Challenge on its launch at the White House, June 4, 2015, visibility soared to 100 million "hits" on Google search.

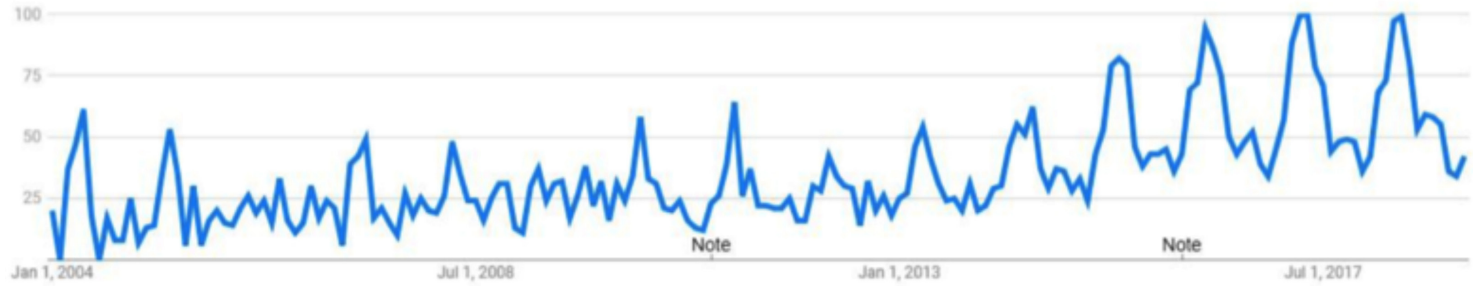
Since then, a steady hum around pollinators continues, with significant peaks each spring, building to 100 million online hits for the word pollinators in the spring of 2018. Google trends tracking Million Pollinator Garden Challenge articles and activity directly mirror this increase.

Insert credit *Anne Bolen*

Increased Pollinator Search Activity During Million Pollinator Garden Promotions



Pollinator Google Trends, 2004 - 2017



Empire State Empire - Terri Brennan, Canada - Vicki Wojcik

The illumination worked—with 200,000 new gardens registered by October 2017. The highly visible actions stirred more creative acts on behalf of pollinators, like Brooklyn Borough President Eric Adams pledging to add a pollinator garden at every school.

The National Gardening Association reaches more than 7.6 million gardeners a year, and during the Million Pollinator Garden Challenge recorded on its website:

- A 25% uptick in participation in its forum, "Gardening for Bees and Butterflies.
- A 45% increase in searches relating to pollination.
- 140,000 photos of pollinator-friendly plants and pollinators uploaded.

Grow It! The Plant Community, a mobile App launched in 2015 and now with more than 700,000 followers, creates garden profiles and conversations about plantings. Viewings of flowering pollinator-friendly plants grew from one out of six most viewed plants in 2016, to three out of the top six by 2018.

National Garden Bureau, Garden Writers of America, Garden Media Group, Garden Center Group, KidsGardening.org and AmericanHort helped generate 400,000 pollinator articles in garden trade, home and garden, and other publications.

Heather Hubbard

Monarch Motivation

A beautiful butterfly that migrates 3,000 miles, fills trees in winter with fluttering wings, lays its eggs only on milkweed—who wouldn't want to take action to save the monarch? In 2014, the severe 20-year decline of this iconic species prompted a petition to the U.S. Fish and Wildlife Service (USFWS) to consider monarchs for Endangered Species Act listing.

National Fish and Wildlife Foundation support accelerated efforts to save the monarch. The 80 partners of the Monarch Joint Venture, the USFWS, state wildlife agencies, and NWF's Mayors' Monarch Pledge all have expanded their habitat work. These efforts and others helped the Million Pollinator Garden Challenge succeed. In turn, the monarch serves as a charismatic symbol for thousands of other pollinator species that need our help.

Local Campaigns and Partnerships

National Pollinator Garden Network local initiatives converged across sectors, community by community, and rippling across regions and the nation. Municipalities and volunteer-led community groups customized the Challenge message with localized campaigns to encourage residents to plant—block by block.

Discovery Hill Outdoor Learning Center, Austin,TX NWF Certified Schoolyard Habitat

All Hands On Deck for Pollinators in St. Louis

St. Louis, Missouri, exemplifies a local campaign where several organizations worked together for big results. The city of St. Louis currently hosts nearly 45% of the bee diversity of the state, likely making it one of the most species-rich cities relative to its state's total bee fauna in the entire country. (Camilo, 2017)

Former St. Louis Mayor Francis Slay was the first of 450 leaders to take National Wildlife Federation's Mayors' Monarch Pledge. The City's *Milkweeds for Monarchs: The St. Louis Butterfly Project* resulted in more than 400 monarch gardens in the city of St. Louis.

Simultaneously, St. Louis County Parks' Million Pollinator Garden Challenge Proclamation and its Pollinator Pantry, along with garden centers and community groups, all rolled up their sleeves to convert acres into pollinator habitat. Nearby, Chesterfield's Community Wildlife Habitat enriched and expanded habitat gardens with pollinator plants.

The Greenscapes Garden Center showed great initiative—offering pollinator education and plants—and becoming a leader and model for promoting the Challenge at garden centers nationwide. This garden center is part of Grow Native!, a Missouri Prairie Foundation consortium of 140 pollinator-friendly garden centers and nurseries serving the lower Midwest.

The Saint Louis Zoo and the Missouri Botanical Garden each provided a wealth of pollinator conservation resources and demonstration gardens, energizing even more local and national visitors to create gardens at home.

NRPA, St. Louis County Parks

Catherine Werner

National Garden Clubs, Inc. proved to be a formidable force for pollinators. This network of close to 200,000 members marshalled each of its 5000 chapters to plant for pollinators at public spaces, schools, and some created innovative partnerships with garden centers. In addition, its Plant America Community Grants Project supported a large majority of new pollinator gardens.

The New Jersey Garden Club exemplifies one of many active clubs. Members created educational signs and materials for garden centers to host "Pollinator Center" displays. The club led a successful campaign to designate the Black Swallowtail as the state butterfly in 2016.

The Daughters of the American Revolution, a service organization with 185,000 members across all 50 states and in four countries overseas, embraced the Million Pollinator Garden Challenge. DAR creates new gardens, protects native habitat and hosts community outreach, including a community butterfly garden in New Mexico, a signed pollinator garden at a historic New York property, and preserving monarch butterfly habitat in California. The National DAR Conservation Award program has recognized citizens for outstanding pollinator work.

Hands-on Public Gardens, Zoos, Aquariums

Approximately 121 million people visiting 650 public gardens each year participated in hands-on learning about pollinators and gained skills to create their own gardens. Some of these gardens are listed below:

- Smithsonian Gardens, National Museum of Natural History, and the U.S. Botanic Gardens in Washington, D.C.
- Highline in New York City; Lurie Garden in Chicago, and The Denver Botanic Gardens.
- Disney World's Epcot and Animal Kingdom—extensive pollinator gardens and displays in Orlando, Florida.
- The Cincinnati Zoo worked with local nurseries to suggest a line of pollinator plants suited to the area.

New Jersey Garden Club

Smithsonian Natural History Museum

Planting Gardens

Meeting the Demand

Jennifer Schambers

The increase of Internet searches for pollinator-friendly plants by 170%, demonstrated that people were planning and ready to take action—from fingers on keyboards to plants in the ground.

Typically, 28 million households purchase gardening plants and supplies at garden centers (National Gardening Survey 2015). To track consumer spending on pollinator plants, AmericanHort and the Garden Center Group surveyed garden centers nationwide, comparing 2015 to 2018. Of survey respondents:

- 92% indicated an increase in demand for pollinator-friendly plant materials, services, and information.
- 86% are offering more pollinator-friendly plants, services, and education.
- 88% report more sales of pollinator plants and services.
- 70% have begun or boosted marketing efforts in response to pollinator plant and service demand.

Plant Purchases Reveal Pollinator-Savvy Consumers

The response of gardeners to the Challenge shows a gratifying upswing in purchases of pollinator-friendly plants. Educational outreach is working. Gardeners are becoming discerning—not content to sprinkle a few zinnia seeds and plant a row of marigolds. More people are striving to create a palette of pollinator-friendly plants, from nectar-rich annuals to native plant perennials.

Judy Young

Power Plants

The top trends and most requested "power plants" (great for pollinators) reflect that understanding. **Sunflowers** almost always rank in the top three of pollinator plant searches online, with an increase of almost a third during the Challenge. They're colorful, easy to grow, offer a broad selection of native species for local gardens, and provide nectar, food for select butterfly caterpillars, plus seeds for birds that can last all winter if left standing. **Goldenrod** and **asters** are also popular for extending blooms into late summer and fall.

Milkweed is popular! Schoolchildren and communities across America know that monarch butterflies lay eggs on native milkweed leaves, where their caterpillars will feed, grow, and gain a natural toxin defense against predators. The summer blooms of milkweed (genus *Asclepias*) also yield nectar for bees and butterflies.

More than 800 citizen scientists observed more than 84,000 milkweed stems in 2017 and 2018 as part of the International Monarch Monitoring Blitz. They also recorded more than 19,000 monarch eggs, caterpillars, pupae, and adults on those plants.

The Million Pollinator Garden Challenge supports collective, remarkable North American efforts underway to save monarch butterflies, providing monarch waystations, and other planting efforts across tribal, federal, residential, agricultural, and educational properties.

2015-2018 Rise in Milkweed *(Asclepias)*

- Northcreek Nurseries, one of the largest native plant providers in North America , reported an increase in *Asclepias* sales by 48%. They now carry 16 types to provide the right plant for the right region.

- Botanical Interests, Inc. saw a doubling of butterfly seed mix requests during this timeframe and have since created regional seed collections to support interest in native collections.

Tina Miniaci

- Monarch Watch Milkweed Market experienced a flood of orders for flats of milkweed plugs, a significant increase during the last 3 years.

- National Wildlife Federation's Garden for Wildlife program received about 200,000 requests for milkweed seed from cities, schools, and individuals.

Searches for Pollinator-Friendly Plants

Approximately 800,000 people searched for native plant lists for their zip codes. Some 400,000 visited National Wildlife Federation's Native Plant Finder from 2016 to 2018, with top searches revealing sunflowers, goldenrod, milkweed, and wild geranium as most popular. NWF's database is based on the research of Dr. Doug Tallamy, and covers 11,000 species of butterflies and moths and the plants their offspring depend on to survive. The Native Plant Database by the National Audubon Society, saw 360,062 unique visitors.

New Trends in the Garden Trade

The horticulture industry responds to what most gardeners want—easy to propagate, brilliant, and showy plants with full blooms. Today, however, increased awareness on which plants offer value for pollinators has led to shifts in consumer purchasing and industry response.

Slowly, native wildflowers and non-natives that offer nectar and pollen have gained a foothold. Flowering shrubs and trees are increasingly recognized as important, too, and among them are popular ornamentals that attract bees to their blooms, like Cornelian cherry for honey bees, and red horse chestnut for bumble bees.

Today, the buzz of the Million Garden Pollinator Challenge is leading to transformation, but not without some challenges. The National Pollinator Garden Network offers a platform for dialogue, learning and problem-solving to change the paradigm. Where once gardeners celebrated the unblemished plant without one insect-nipped leaf, today more understand that a hole in a leaf means a happy caterpillar that will become a butterfly pollinating flowers.

To sell pollinator plants effectively, 60% of garden centers offer education—with an emphasis on blooms in three seasons, the flights of butterflies, wonder of bees gathering pollen, and the pleasing array of trees and shrubs. Customers learn the value of tangled stems, plants gone to seed, thickets and openings, providing insect hotels, and offering pollinator cover.

Garden Center Challenges

- Encouraging customers to welcome beneficial insects snacking on their purchased plants.
- Selling pollinator-friendly plants that are often not in full, showy bloom.
- Meeting new demands for wholesale quantities of perennial pollinator plants sold in flats as small seedlings, or roots.
- Balancing pollinator-friendly plant production (that takes investment in time, money, and additional staffing for sustainable practices) with offerings of less expensive, more traditional plants consumers expect.
- Strategizing and taking action to reduce and eliminate systemic chemicals that impact pollinator health.

Shrubs and Trees for Bees

The Horticultural Research Institute funded a study of 70 types of native and nonnative woody plants (shrubs and trees) in more than 300 sites during three growing seasons, identifying 16,000 bees and providing growers and nurseries with details on woody ornamentals that attract unique bee combinations as well as best management practices on limiting insecticide use.

Allyson Whalley

Actions and Change

on Behalf of Pollinators

David Suzuki Foundation

Garden by garden, pollinators are regaining lost footholds. Town by town, mayors are taking the monarch pledge. State by state, governors are proclaiming new pollinator-friendly policies. On the federal level, agencies continue to carry out their commitments. The quest to save pollinators is making significant progress and offering hope and inspiration for others to join.

The National Pollinator Garden Network recognizes these efforts where passion for pollinators has led to long-term change. The Network invites others to join in and explore what is possible as a result of these 3 years and beyond.

Carolyn Millard

Town by Town and City by City

- 450 mayors have signed the Mayors Monarch Pledge.
- Municipalities in the U.S. and Canada are incorporating pollinators into their sustainability plans.

After taking the Mayors Monarch Pledge in 2017, the City of Toronto then adopted a Pollinator Protection Strategy with the goal of protecting the more than 360 species of bees and 100 species of butterflies and other pollinators that call Toronto home. (Toronto, 2018)

State by State

- Governors in all 50 states made pollinator proclamations. In 2013, the number was just 36.
- More than a dozen states held Monarch Summits and created state plans to save the monarch.
- Pollinator-friendly policies surged in states after 2013.

A study of laws passed by state legislatures from 2000–2017 found 109 new laws covering pollinator health related issues, with a significant increase in numbers from 2015-2017.

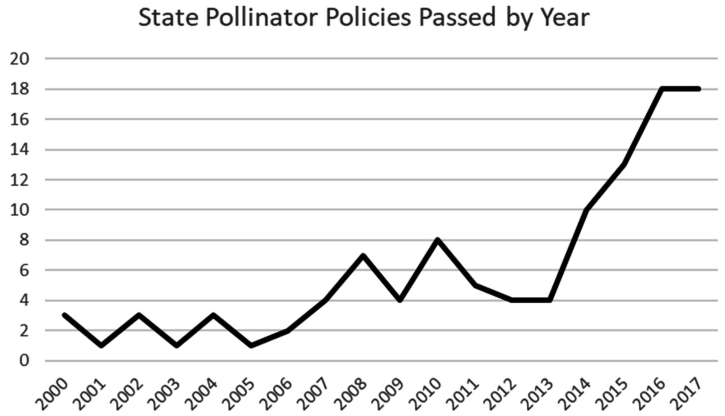


Chart Source: Hall, DM, Steiner, R. 2019. Insect pollinator conservation policy innovations at subnational levels: Lessons for lawmakers. Environmental Science & Policy, 93:118-128. DOI https://doi.org/10.1016/j.envsci.2018.12.026

The Mid-America Monarch Conservation Strategy aims to plant 1.3 billion milkweed stems, critical for saving the monarch butterfly. Illinois, Indiana, Kansas, Oklahoma, Michigan, Arkansas, Missouri, Texas, Kentucky, Ohio, Nebraska, and South Dakota have hosted Monarch Summits to create action plans and share resources for monarch conservation among state agencies, nonprofit organizations, businesses, and individuals.

Across the Nation—Federal Action

What started in 2015 at the White House—giving a huge boost in public understanding of the pollinator crisis—continues today with agencies working on national strategies on behalf of pollinators.

The U.S. Fish and Wildlife Service collaborates with partners on voluntary conservation measures to conserve monarch butterflies. Since 2015, the Service has restored and enhanced more than one million acres of monarch habitat on Service owned and administered lands, created and enhanced over 1,000 monarch and pollinator gardens, and leveraged more than $30 million of partnership projects.

The U.S. Forest Service has restored, enhanced, or maintained 1,067,220 acres of pollinator habitat since 2015. The Native Plant Materials Program supports production of pollinator-friendly plants in private nurseries. Research and monitoring protocols inform agro-foresters, gardeners, farmers, and other land managers with ways to promote pollinator habitat. Multi-media educational resources created

by the Forest Service and partners include: the Celebrating Wildflowers website (www.fs.fed.us/wildflowers), the Natural Areas Association Pollinator Webinar Series, and the award-winning short film "Pollinators Under Pressure" (https://www.pollinatorsunderpressure.org/). Interagency collaboration, funding, and direct outreach on all 192 million acres of National Forests and Grasslands extends Forest Service reach to all demographics of the American public with pollinator-friendly practices.

The National Park Service (NPS) engaged citizen scientists, partners, the public, and park staff to expand inventory, monitoring, education, and stewardship efforts for a wide range of pollinator species, including some of the most endangered, like the San Juan Island marble butterfly. The NPS applied best-management practices to improve pollinator habitat and health, including the reduction of neonicotinoid pesticide use. The agency created new pollinator gardens, and restoration projects included pollinator goals and objectives in their design. The NPS pollinator website showcases examples of pollinator protection efforts.

The U.S. Department of State leverages its social media platforms to bring pollinator awareness to a vast global audience. It works with its hundreds of properties around the world to help support pollinators, with 18 now formally recognized by the National Wildlife Federation for featuring pollinator-friendly gardens.

Wilma Light

The Next Challenge? 2019 Call to Action

This report skims the surface of the outstanding efforts underway for our threatened pollinators. What was a challenge has become a movement. Each spring, thousands of people are planning ahead for gardens—ordering seeds, looking up best-pollinator plants, and digging up lawns for new beds.

The National Pollinator Garden Network remains in full swing, looking ahead to see what else can be achieved with the power of partnership, on-the-ground dedication, innovation and persistence. We are reframing the challenge and asking for two things.

1) Maintain and expand garden habitat

If all 35 million Americans who participate in flower gardening took even small steps for pollinators, we could significantly change the landscape to help our precious and declining bees, butterflies, and all pollinators.

Planting just three pollinator-friendly plants that bloom in three different seasons (spring, summer, fall) could make a survival difference for a bee or butterfly searching for nectar. Knowing that one in three bites of the food we eat depend on pollinators, assuring their future is worth at least three plants in a yard.

New England Asters provide fall bloom and forage sources for pollinators. For our partners' plants lists and more, see http://millionpollinatorgardens.org/resources/ Photo: Becca Harris

Allison Mannella

"The glory of gardening; hands in the dirt, head in the sun, heart with nature." ~Alfred Austin

2) Track Positive Outcomes through Citizen Science

To track the outcomes of this movement, we are encouraging everyone to participate in citizen science projects that help pollinators. Visit https://www.scistarter.org/pollinatorgardens

Today, we celebrate surpassing the Million Garden Pollinator Challenge in three years along with the knowledge that the network is clearly benefiting pollinators. The Challenge revealed something else remarkable. Individual citizens from all backgrounds took action on multiple fronts to plant and register gardens across the United States and internationally. They along with leaders in all sectors (voluntary, conservation, government, business, schools, and more) found a common chord that resonated—a passion for pollinators and gardens that support them.

Pollinator gardens are popular and beneficial, and the Network itself is influential. Each partner organization elevates the national conversation on pollinators. Lead researchers study the benefits of pollinator gardens. The garden sector responds to new demands and sales of pollinator-friendly plants and seeds, including native species.

Please join us in spreading the word and teaming up on behalf of the "little things that run the world" —our pollinators.

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Cover Image: Monarch butterflies, *(Danaus plexippus),* Anna's Hummingbird, *(Calypte anna)* and a Soldier Beetle *(Chauliognathus pensylvanicus)* feast together on Purple Blazing Star flowers *(Liatris pycnostachya).* Liatris is native to the central and southeastern United States. Credit: Debi Nitka

Mark Brinegar

million pollinator garden challenge™

A campaign to register a million public and private gardens and landscapes to support pollinators.

millionpollinatorgardens.org