Boost Biodiversity in Your Garden with Insect-Friendly Habitat

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Invertebrate populations fell 45% in 40 years. (Dirzo et al. 2014)

"If all mankind were to disappear, the world would regenerate back to the rich state of equilibrium that existed ten thousand years ago. If insects were to vanish, the environment would collapse into chaos." —E.O. Wilson

Causes of insect declines
Pesticides
Pollution
Climate change
Invasive species
Habitat loss (agriculture, deforestation, urbanization)

#1 Provide keystone plants for caterpillars
Birds feed chicks 812 times per day, primarily caterpillars. (Robert Stewart 1973)

67% of caterpillars only eat plants from 1 family.
49% of caterpillars only eat plants from 1 genus. (Tallamy 2021)

14% of plants feed 90% of caterpillars—keystone plants (Narango et al. 2020)

Salix	312 spp. caterpillars	*Salix scouleriana*
Prunus	240 spp. caterpillars	*Prunus virginiana*
Populus	227 spp. caterpillars	*Populus tremuloides*
Alnus	210 spp. caterpillars	*Alnus rhombifolia*

#2 Don't spray your aphids
760+ spp. PNW (Peterson 2018), food for 38 spp. in my garden:

Ladybugs (7 spp. in my garden)	Soldier beetles
Hoverflies (16 spp. in my garden)	Damselflies
Long-legged flies	Aphid mummy wasps
Lacewings	Square-headed aphid wasps

#3 Provide pollen plants

Pollen is protein: 2 to 62% protein—Food for baby bees

Buzz-pollination

Blueberry (*Vaccinium corymbosum*)
California lilac (*Ceanothus*)
California poppy (*Eschscholzia californica*)
Comfrey (*Symphytum*)
Honeywort (*Cerinthe major* 'Purpurascens')
Manzanita (*Arctostaphylos*)
Penstemon (*Penstemon*)
Nootka rose (*Rosa nutkana*)
St. John's wort (*Hypericum*)
Shrubby cinquefoil (*Potentilla fruticosa*)
Thimbleberry (*Rubus parviflora*)
Tomato (*Solanum lycopersicum*)

4,000 bee spp. in the U.S., 25% are specialists

Aster family plants
Asters (*Symphyotrichum*)
Goldenrod (*Solidago*)
Sunflowers—annual and perennial types (*Helianthus*)
Gumweed (*Grindelia integrifolia*)

More pollen plants for bees

Camas (*Camassia*)
Crabapple & apple (*Malus*)
Lupine (*Lupinus*)
Meadowfoam (*Limnanthes*)
Oceanspray (*Holodiscus discolor*)
Varileaf phacelia (*Phacelia heterophylla*)
Lacy phacelia (*Phacelia tanacetifolia*)
Raspberry (*Rubus idaeus*)
Spirea (*Spiraea lucida*)
Pacific waterleaf (*Hydrophyllum tenuipes*)
Willow, male (*Salix*)

#4 Provide nectar plants

Nectar is carbs—25 to 55% sugar
Honey bees are not native, compete with native bees

Mint-family nectar plants

Wild bergamot (*Monarda fistulosa*)
Lesser calamint (*Calamintha nepeta*)
Self-heal (*Prunella vulgaris*)

Apiaceae nectar plants

Greater masterwort (*Astrantia major*)
Sea hollies (*Eryngium*)
Shrubby hare's ear (*Bupleurum fruticosum*)

Aster-family nectar plants

Asters (*Symphyotrichum*)
Coreopsis 'Zagreb'
Goldenrod (*Solidago*)
Gumweed (*Grindelia integrifolia*)
Pearly everlasting (*Anaphalis margaritacea*)
Sunflowers (*Helianthus*)

#5 Leave some bare ground

70% of native bees nest in bare ground
Mining bees—Mostly spring
Sweat bees—Spring/summer/fall
Longhorn bees—Mid- to late summer

Look for nests, bees flying low, cuckoo bees

#6 Provide cut stems

Small carpenter bees (*Ceratina*)

Hummingbird mint (*Agastache*)
Asters (*Symphyotrichum*)
Culver's root (*Veronicastrum virginicum*)
Goldenrod (*Solidago* 'Fireworks')
Gumweed (*Grindelia integrifolia*)
Monarda
Sunflowers—perennial types (*Helianthus*)
Blue vervain (*Verbena hastata*)
Elderberry (*Sambucus*)
Hydrangeas
Raspberries & other caneberries (*Rubus*)
Roses
Sumac (*Rhus*)

Stems need to be cut to provide an entry point! Leave 12 to 15" long.

Larger stems (bamboo)—homes for leafcutter bees (*Megachile*)

Rose leaves, clarkia petals

Mason bee houses need maintenance—clean house and cocoons every year.

#7 Provide some deadwood

Leave a dead tree, drill holes
Stumpery
Beetles, solitary wasps, *Anthrax*!
Deadwood is full of life

#8 Put in a pond

Fish eat baby dragonflies
Dragonflies eat mosquitoes
Cardinal meadowhawk (*Sympetrum illotum*)
Shadow darner (*Aeshna umbrosa*)

Resources

Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard, Doug Tallamy. 2019.

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Nurturing Mason Bees in Your Backyard in Western Oregon, OSU. https://extension.oregonstate.edu/catalog/pub/em-9130-nurturing-mason-bees-your-backyard-western-oregon#:~:text=Mason%20bees%20cannot%20create%20their,urban%20areas%20than%20honey%20bees

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