

Gardening for Night Pollinators



Sphinx moth on *Monardella odoratissima* (Paul G. Johnson)



POLLINATOR
PATHWAY
BEND

**We create and connect
pesticide-free habitat for
imperiled native pollinators
(in Bend & beyond!)**

Our Shared Challenges

- Highly reduced numbers of pollinator species
- Reduced habitat in communities, states and ecosystems

Our Shared Opportunities

- Plant more native plants at homes, businesses and community spaces
- Educate others in importance of all insects and pollinators
- Decrease pesticide use in public and private spaces

The quest for a better world starts here!

Let's start with some basics...

**Who are our moths and
why are they important as night
pollinators?**

Moths: Our Forgotten Pollinators

Moths

150,000 SPECIES WORLDWIDE
14,000 SPECIES IN U.S.

Evolved 190 million years ago
Comprise 1/9 of all animal species on Earth!

Butterflies

17,000 SPECIES WORLDWIDE
750 SPECIES IN U.S.

Evolved 56 million years ago

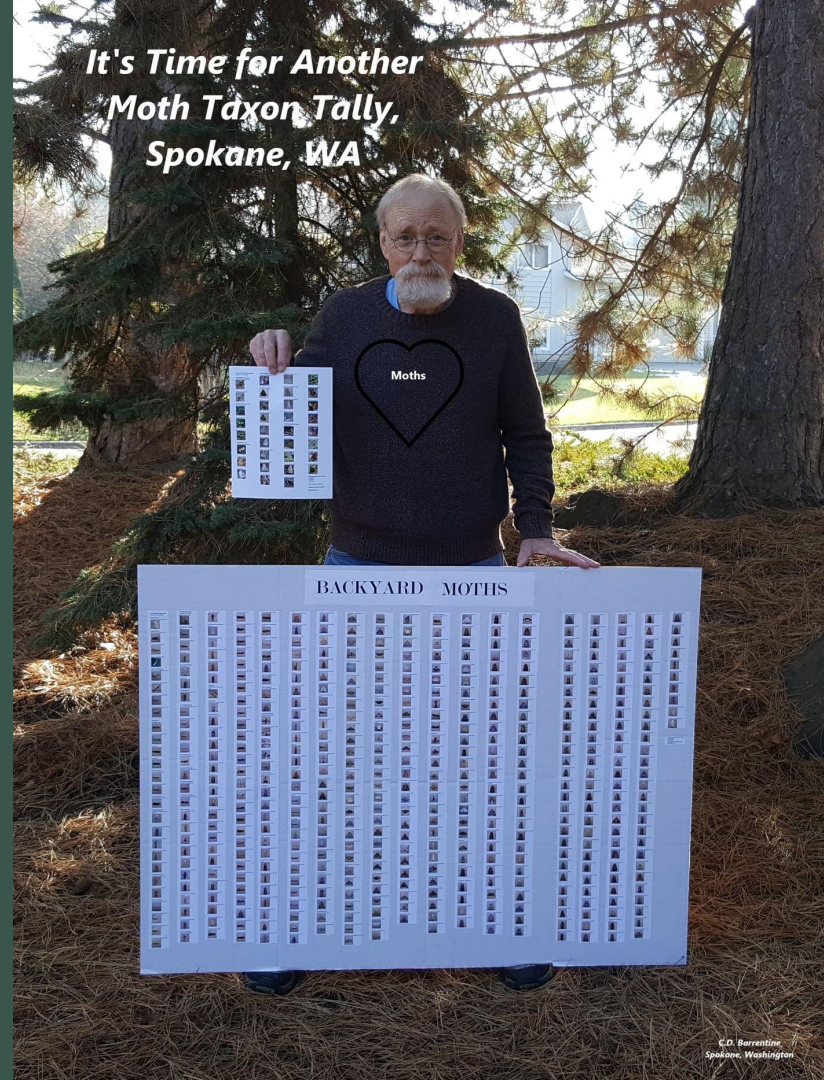
- 75% of all flowering plants need animal-assisted pollination to reproduce.
- Moths are a critical part of the food web; they are food for birds, owls, bats, frogs, toads and lizards.

Moth Diversity is AMAZING

15 November 2023 Moth Taxon Tally
Spokane, Washington
Carl Barrentine

Year	Families	Genera	Species
2023	37	321	526
2022	38	320	515
2021	37	333	568
2020	37	334	571
2021	36	325	515
2018	36	310	495

*It's Time for Another
Moth Taxon Tally,
Spokane, WA*



Moths: They're not all small and brown!



Police car moth (Calscape)



Elegant day moth (Sue Anderson)



Ceanothus silk moth (iNaturalist)



Lined sphinx moth (R. Anderson)



Pandora moth (Wikipedia)



Eyed sphinx moth (1000 things of PNW)



Heliolonche Mondicella (U.S. Natl Museum)

Central Oregon Moths



Lithopane ponderosa (PNW moths)



Abagrotis glenni (bugnet)



Alypia langton (Langston forester moth)



Hemileuca hera (iNaturalist)

Moths Pollinate More Plant Species Than Bees

- Moths pollinate at a faster rate than day time bees and pollinate a wider range of plant species.
- Moths have large, furry bodies which easily pick up pollen and help transfer that pollen between flowers.
- Moths carry more pollen than previously thought and visit more types of trees and fruit trees outside of those with pale/fragrant flowers.
- Moths might pollinate an entirely different set of plants than bees.

Issues Threatening Moths

Habitat loss

Pesticide use

Light Pollution

Climate change

Disease



Sphinx moth on *Cleome serrulata* (Mia McPherson)



DarkSky

OREGON

darkskyoregon.org

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Light Pollution and Dark Skies

Problems with white spectrum lights at night:

- Attraction to light disorients moths and causes fundamental behavior changes
- Light pollution disrupts moth reproduction
- Light pollution aids in caterpillar predation
- Light pollution negatively impacts caterpillar growth

Solutions to increase dark sky and pollinator health:

- Use amber light bulbs for all outdoor lighting (esp. garden areas)
- Use down-facing light fixtures outside
- Use motion detectors or turn off outdoor lights after midnight
- Promote updated dark sky standards with local government/neighborhoods
 - Replace city high pressure sodium (HPS) street lights with LEDs



Pollinator Friendly Priorities

Plant native plants

Go pesticide-free

Provide water

Create nesting habitat

Rethink lawn,
maintenance and
lighting



How to Bee Part of the Pollinator Pathway

1. Plant native plants

Plant for continuous bloom

Plant in blocks of similar species

Aim for 70% native species



Worthy Brewing native plant landscape (Lisa Sanco)

How to Bee Part of the Pollinator Pathway

2. Go pesticide-free



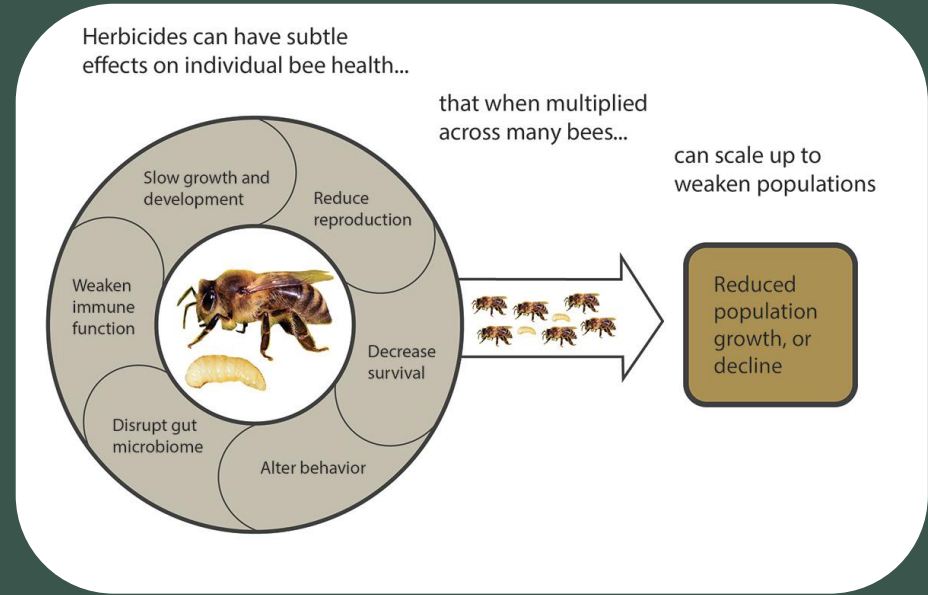
Juba skipper on *Ericameria nauseosa*

Pesticide Problems

Neonicotinoids (a class of systemic insecticides) can harm or kill pollinators, and are especially dangerous because they're transferred through all parts of the plant (systemic).

Herbicides can hurt pollinators, too.

- Take away food sources
- Can take away the ability to navigate and find food
- Can weaken the health of adult and juvenile insects
- Can reduce the number of butterfly offspring



How to Bee Part of the Pollinator Pathway

3. Provide water



Bird bath with rocks for support (Basey Klopp)

How to Bee Part of the Pollinator Pathway

4. Create nesting habitat

Leave the leaves

Save the stems

Embrace bare ground



Pithy stems from a previous year's mountain hollyhock (Basey Klopp)

How to Bee Part of the Pollinator Pathway

5. Rethink lawn, maintenance and lighting

Reduce turfgrass, leave clippings

Leave fallen leaves & twigs, old stumps

LOVE your bugs and learn more about them

Use dark sky lighting practices



Worthy Brewing native plant landscape (Lisa Sanco)

How to Bee Part of the Pollinator Pathway

6. Register your garden

Help us track our progress! Visit pollinatorpathwaybend.org/resources to add your garden to the pathway.

Buy a yard medallion at Locavore or Wild Birds Unlimited.



PPB medallion (Basey Klopp)

Gardening Specifically for Moths:









HABITAT, HABITAT

MIX:

- Large and small flowering plants
- Grasses and woody shrubs/small trees
- Flower colors and shapes
- Bloom period and bloom time of day
- Nectar plants and host plants

Higher plant diversity = Higher pollinator diversity



	Bee	Butterfly	Fly	Moth	Bird	Bat	Beetle	Wind
Color	Blue, yellow, bright white	Purple, bright red	Purple, white, brown	Purple, white, pink, pale red	Scarlet, orange, red, white	Dull white, green, purple	White, green	White, brown, pale green, often lacks petals
Odor	Fresh, mild, pleasant	Faint but fresh	Putrid	Emitted at night, very sweet	None	Emitted at night, strong and musty	None to fruity or foul	None
Flower shape	Shallow with a landing platform, tubular	Narrow tube with a spur, wide landing pad	Shallow, funnel-like or complex with a trap	Regular, tubular without a lip	Large, funnel-like with strong perch support	Bowl shaped, closed during the day	Large, bowl shaped	Regular, small
	 <p>University of Florida</p>	 <p>Cool Kid Facts</p>	 <p>Discover Pollinators</p>	 <p>National Moth Week</p>	 <p>Fine Art America</p>	 <p>Bat Conservation Int</p>	 <p>Morning Earth</p>	 <p>Gondwananet</p>

Ok, let's get to the actual plants!

Keystone species are important

**(will be denoted with an
asterisk [*] in the following slides)**

Trees & Shrubs

- *Willows (*Salix*)
- *Vine maple (*Acer circinatum*)
- *Serviceberry (*Amelanchier*)
- *Chokecherry (*Prunus virginiana*)



Vine maple



Wax currant

- Wax currant (*Ribes cereum*)
- Oregon grape (*Mahonia aquifolium*)
- Rock spirea (*Holodiscus microphyllus*)
- Desert sweet (*Chamaebatiaria millefolium*)
- *Rabbitbrush (*Ericameria & Chrysothamnus*)
- Kinnikinnick (*Arctostaphylos uva-ursi*)



Desert sweet

Trees & Shrubs

Snowberry (*Symphoricarpos* sp.)

Manzanita (*Arctostaphylos* sp.)

Ocean spray (*Holodiscus discolor*)

Subalpine spirea (*Spirea splendens*)

Blue elderberry (*Sambucus cerulea*)

Wood's rose (*Rosa woodsii*)

Golden currant (*Ribes aureum*)

Twinberry honeysuckle (*Lonicera involucrata*)

Berry family - (*Rubus* sp.)



Twinberry honeysuckle



Oceanspray (native plant PNW)



Wood's Rose (gardenia.net)



Western serviceberry (kitsap conserv)



Blue elderberry (great basin seed)



Subalpine spirea (native plant PNW)

Grasses

Great basin wild rye
(*Leymus cinereus*)



G.B. wild rye

Bluebunch wheatgrass
(*Pseudoroegneria spicata*)

Bluebunch wheatgrass

Prairie junegrass
(*Koeleria macrantha*)

Indian ricegrass
(*Achnatherum hymenoides*)

Needle and thread grass
(*Hesperostipa comata*)

Idaho fescue (*Festuca idahoensis*)



Indian ricegrass



Wildflowers (open at night, lighter colors, fragrant)

Evening primrose (*Oenothera*)



Primrose

Western white clematis (*Clematis ligusticifolia*)



Clematis

Yucca (*Yucca angustissima*)



Yucca

Prickly pear (*Opuntia* sp.)



Prickly pear

Datura (*Datura* sp.)



Datura

Creeping phlox (*Phlox diffusa*)



Creeping phlox

Oregon sunshine (*Eriophyllum lanatum*)



Oregon sunshine

More Wildflowers

*Milkweed (*Asclepias speciosus* & *Asclepias fascicularis*)

*Yarrow (*Achillea millefolium*)

Fireweed (*Chamerion angustifolium*)

*Varileaf phacelia (*Phacelia heterophylla*) **

Rocky Mtn bee plant (*Cleome serrulata*)

*Goldenrod (*Solidago canadensis*)

Shrubby penstemon (*Penstemon fruticosus*)

Scarlet globemallow (*Sphaeralcea coccinea*)

*Douglas aster (*Symphotrichum subspicatum*)

Snow buckwheat (*Eriogonum niveum*)

Pussytoes (*Antennaria rosea*)

California poppy (*Eschscholzia californica*)

Western thistle (*Cirsium occidentale*)**

Wild tobacco (*Nicotiana attenuata*)**



Showy milkweed



Sphinx moth on Rocky Mtn Bee Plant



Goldenrod



Globemallow



W. thistle/sphinx moth (Tim Lyden)



Phacelia

** available by seed

Non-native Moth Plants

Scarlet Bee Balm (*Monarda didyma*)

Echinacea (*Echinacea* sp.)

Tobacco plant (*Nicotiana* sp.)**

Annual Morning Glory (*Ipomoea* sp.)**

** available by seed



Bee Balm



Morning glory (Eden bros.)



Nicotiana (wikipedia)



Echinacea (Garden Design)

Help Grow Our Knowledge of Moths

Join iNaturalist!

If you happen to photograph a night moth on a flower, take a picture with your cell phone and upload to iNaturalist - you help all.



Local Native Plant Sources

WinterCreek Nursery

(541) 420-0083

63405 Deschutes Market Road, Bend

Wintercreeknative.com

Great Basin Nursery - wholesale nursery with seasonal retail events

(541) 848-7703

63635 Deschutes Market Road, Bend

Greatbasinnursery.com

Clearwater Native Plant Nursery - mostly wholesale

(541) 350-5261

1980 SW 55th Street, Redmond

clearwaternatives.com

Klamath Siskiyou Native Seeds



Resources & Connect

- PollinatorPathwayBend.org
 - Resources
 - Events calendar
 - Volunteer opportunities; donate to help get more plants in the ground!

Join PPB on Facebook/ Instagram

- WorthyEnvironmental.org: [Handout Series](#)

A Thought to End On:

We have to incorporate ecological goals into how we manage our landscapes. It is possible to choose beautiful plants that also support food webs. When we do this, we should prioritize the two most important insect groups: pollinators, because they pollinate 80% of all plants; and caterpillars, which transfer more energy from plants to other animals than any other insect.

- *Doug Tallamy: Nature's Best Hope*

Thank you for Coming! Questions?



greylilac