Raising Native Bees

Blue Orchard Mason Bees and Leafcutter Bees

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IDAHO master GARDENER
A UNIVERSITY OF IDAHO EXTENSION PROGRAM

Courtesy of Crown Bees. Compiled by Kara Carleton, Coordinator, IMG Program. For options about planting for all native and non-native bees, please refer to our handout "Planting a Bee Garden" available from UI Extension Idaho Master Gardener office or on our website.

While the timing is different for spring mason bees and summer leafcutter bees, the process of raising them is very similar.

Install house

- Select a location that receives early morning sun (generally south to southeast facing) and protects the nesting materials from wind and rain. If your area has extreme heat (over 100°F/38°C) during the day, ensure that the house is shaded during the highest temperatures of the day, while still exposed to morning sun.
- Mount house at eye-level: 5-8 feet, 1.5-2.5 meters. These bees are fun to watch!
- If you paint the bee house, allow plenty of time for the paint to cure. The smell of wet paint may deter the bees.
- If birds become a problem, you can fashion a safety zone with some wire mesh or chicken wire. Use a mesh size with about 1" openings and loosely create a 3" bubble around the front of the house. This gives the bees some space and keeps the birds from perching on the mesh.
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Place Nesting Holes

- Generally, you should have 1 nest hole available for each cocoon (male and female). Female bees often claim two or more nest holes in one season.
- Put loose nesting holes in a random arrangement so the bees can find their nest hole easier.
- Many native bee species nest in a variety of hole sizes.

Spring Mason Bees	Summer Leafcutter Bees
• Mason bees prefer nesting holes with an 8mm diameter opening. • The burnishing on the front of our reusable wood trays helps mason bees to identify their home.	• Leafcutter bees prefer nesting holes with a 6mm diameter opening. • Reusable wood leafcutter trays are preseasoned with bee scent.

Release Cocoons

- Pro Tip: Dandelions are blooming = time to release mason bee cocoons.
- Fun idea: Let a few mason or leafcutter bees emerge from cocoons in your hand while standing outside in your garden. Great fun for kids! Holding these bees is best done as they are hatching. We do not recommend holding them other times in their lifecycle.
- Please remember to keep cocoons out of direct sun.
- Extend your bee season by releasing half your cocoons, then waiting a few weeks to release the second half. Remember to release a variety of cocoon sizes.

Spring Mason Bees	Summer Leafcutter Bees
• Release cocoons when you have open blossoms and consistent daytime temps of 55°F/13°C or warmer. • Place cocoons behind or on top of your nesting holes. A small paper cup can easily hold cocoons on windy days. • Larger cocoons are female bees, smaller cocoons are male bees. You need a good mix of both for egg fertilization and the natural ratio for mason bees is 6 males: 4 females. Don't worry if your numbers are not exact. • Make sure all your mason bee cocoons are released by the beginning of May.	• Release cocoons when you have open blossoms and consistent daytime temps of 75°F/24°C or warmer. • Leafcutter bees require incubation, see incubation instructions below. • Cocoons purchased from Crown Bees: we incubate them for you. • If conditions are ideal, leafcutter bees are capable of having multiple generations emerge in one season. Large holes in leaf-capped ends are a sign of a second generation emerging. • Make sure all your leafcutter bee cocoons are released by the beginning of September.

Wait & Watch

- As your bees emerge, you will see a beige substance that looks like splattered paint. The is meconium, the bee's first elimination of waste (bee poop!).
- The males emerge first and wait for the females to emerge later.
- After mating, the female will claim a nesting hole and use it as a shelter at night and during poor weather.
- Fun idea: Shine a flashlight in the nesting holes at night or early morning. You'll see bee faces (or bottoms) peering back at you.
- If you're a morning person, watch the bees warm themselves at the front of their nesting hole in the morning sun.

Collect & Protect Nesting Holes

- At the end of the season of bee activity, remove nesting holes from the bee house to protect the developing bees from parasitic wasps and other predators. Place nesting holes inside the BeeGuardian bag with the capped or open end facing up. If weather is still warm, leafcutter bees can emerge again, watch for these extra bees if you choose to protect them.

Spring Mason Bees	Summer Leafcutter Bees
• Mason bee activity usually ends in late spring or early summer. • Place the nesting material in an area that stays warm, but is not exposed to extreme heat and large predators. A garage or shed is a good location to store bees over the summer. • Please remember that mason bees need the summer warmth to develop from egg to adult. DO NOT put your nesting material in the refrigerator right now as this will halt development.	• Leafcutter bee activity usually ends in late summer or early fall. • Place the nesting material in an area that stays cool, such as a garage or shed, to store bees over the winter. • Do not store leafcutter cocoons in the refrigerator because they are very susceptible to moisture damage.

Harvest Cocoons

- Harvesting cocoons ensures bee health, prevents the spread of disease, and reduces pest populations.
- For full instructions go to "Harvest Cocoons | Step by Step" with Crown Bees or

Register for UI Extension's Cocoon Harvest Party October 19, 2019 9 am – 1:30 pm or November 2, 2019 9 am – 1:30 pm UI Extension 208-446-1680

Spring Mason Bees	Summer Leafcutter Bees
• Fall is time to harvest cocoons. The larvae have spun cocoons and are fully mature waiting for winter hibernation. • To extend the life of your bee house and nesting materials store them in your shed or garage. Give the house and wood trays a good cleaning with a stiff brush and store unused tubes and reeds in a dry place.	• Early spring, or during release of spring mason bees, is time to harvest cocoons. • Do not wash leafy cocoons as they are not waterproof. • After harvest in the spring, begin the incubation process to encourage the eggs to develop for summer pollination.

Store Cocoons

Spring Mason Bees	Summer Leafcutter Bees
• Store your harvested mason bee cocoons in the fridge in a HumidiBee (or another container with airholes) to maintain cocoon moisture over winter. • Be sure to check and add water, if needed, once a month. • Sign up for BeeMail to receive timely reminders with Crown Bees.	• Beginning in late summer or early fall, unharvested bee nesting materials should be stored in a BeeGuard Bag in an unheated shed or garage. • Store harvested cocoons in a BeeGuardian bag in a warm area to begin the incubation process. Plan ahead for when you want bees pollinating because It may take 4-5 weeks for incubation.

Leafcutter Bee Cocoon Incubation

- Place the BeeGuard Bag full of harvested leafcutter cocoons into a dark warm location.
- Try this: incubate the cocoons near your hot water heater, remember to check periodically.
- Development is dependent on time spent in warmer temperatures.
    - At consistent 84°F (30°C), adults emerge after 20 days
    - At 70°F (21°C), adults emerge after about 42 days
- After about 7-12 days begin checking for Pteromalus and kill these very small parasitic wasps.
- Some leafcutter bees have a shorter development cycle and may begin emerging after 18-20 days of warmth.
- Release emerged adult bees and place remaining unopened cocoons into the bee house.
    - Intact cocoons can't regulate their temperature above 90°F (32°C), place them in a cooler location and release adult bees as they emerge until the hot weather passes.

Native Beekeeping Seasonal Timeline

	WHEN	SPRING MASON BEES	SUMMER LEAFCUTTER BEES	WHEN
	Early Spring	Place out 8mm nesting holes or 8mm reusable wooden trays.	Place out 6mm nesting holes or 6mm reusable wooden trays.	Late Spring
	Spring 55°F/13°C	Release cocoons on top of or behind nesting holes when blossoms are open and daytime temps are at least 55°F/13°C. If needed: place out moist clayey mud, keep the mud source moist.	Release incubated cocoons on top of nesting holes when blossoms are open and daytime temps are 75°F/24°C. Purchased cocoons: we begin the incubation process for you, but the larvae may need more time in warm weather to finish developing.	Summer 75°F/24°C
	Spring 55°F/13°C	Wait and watch. Males emerge first. The larger females can take several weeks to emerge.	Wait and watch. The green-eyed males emerge first. Black-eyed females can take several weeks to emerge.	Summer 75°F/24°C
	Spring	Females gather pollen and nectar, lay eggs, seal chambers with clayey-mud.	Females make cocoons from leaves or petals. A second generation may emerge if summer conditions are right.	Summer
	Late Spring	Collect nesting holes and with capped ends face-up, place into a BeeGuard Bag. Store in a warm, protected location.	Collect nesting holes and with capped ends face-up, place into a BeeGuard Bag. Store in a cool, protected location.	Fall
	October	Harvest cocoons in the fall: an effective way to reduce pests.	Store delicate leafy cocoons intact in nesting holes until harvest in the spring or early summer.	Fall/Winter
	Fall/Winter	Store harvested cocoons in fridge and check for humidity once a month.	Harvest cocoons in early spring and begin incubation about 1 month before your summer garden blooms.	Early Spring
	October to January	Share cocoons with your friends, family & neighbors, or donate them to our Pollination Project Demonstration Garden	Share cocoons with your local friends, family & neighbors.	Late Spring

What should you plant for these two native bees specifically? Plant 3 different species with a similar bloom time for each season. Plant in groups or clumps so the flowers are easily located. These are only suggestions, please do our own research and make sure you are planting the right plant, in the right place. Here are suggestions for native (to the Inland NW) and non-native plants.

		Bloom Time			
Scientific Name	**Common Name**	**spring**	**summer**	**Fall**	**Origin N = native, I = introduced**
Achillea millefolium	yarrow	✓	✓		N
Amelanchier alnifolia	serviceberry	✓			N
Chamerion angustifolium	fireweed		✓	✓	N
Erigeron filifolius	threadleaf fleabane		✓		N
Erigeron pumilus	shaggy daisy	✓ ✓			N
Erigeron speciosus	showy daisy		✓		N
Eriophyllum lanatum	woolly sunflower	✓✓			N
Festuca idahoensis	Idaho fescue	n/a			N
Gaillardia aristata	blanketflower	✓ ✓			N
Geranium viscosissimum	sticky geranium		✓		N
Geum triflorum	prairie smoke	✓			N
Mahonia repens	Oregon grape	✓			N
Helianthella uniflora	little sunflower		✓		N
Linum lewisii	Lewis flax	✓			N
Linum perenne	blue flax	✓			I
Penstemon attenuatus	taper-leaved penstemon		✓		N

Penstemon confertus	yellow pentstemon		✓		N
Penstemon deustus	hotrock penstemon		✓		N
Philadelphus lewisii	Lewis' mockorange	✓			N
Potentilla arguta	tall cinquefoil		✓		N
Potentilla gracilis	slender cinquefoil		✓		N
Ribes aureum	golden currant		✓		N
Rosa nutkana	Nootka rose	✓	✓		N
Rosa woodsii	Woods rose	✓			N
Salix	Willow	✓			varies
Solidago canadensis	Canada goldenrod		✓	✓	N
Solidago missouriensis	Missouri goldenrod		✓	✓	N
Symphyotrichum spathulatum	western mountain aster		✓	✓	N
Trifolium spp	clover species	✓	✓		I

Adapted from Plants for Pollinators in the Inland NW. USDA Technical note October 2011

Crops and garden plants that may be preferred by leafcutting and mason bees

Flowers (native to the Pacific Northwest)	**Leafcutting Bees**	**Mason Bees**
Crops and home orchards	Alfalfa and other legume crops, squash, warm-season vegetables	Fruit and berry crops (e.g., apple, apricots, raspberries, cherries) and legume crops
Astragalus—legumes that include milkvetches, e.g., woollypod milkvetch *(A. purshii),* basalt milkvetch *(A. filipes)*	x	x
Balsamorhiza—group of plants in the sunflower family that are commonly called balsamroots, e.g., arrowleaf balsamroot (*B. sagittata*), Carey's balsamroot (*B. careyana*), Hooker's balsamroot (*B. hookeri*)		x
Cleome—group of plants commonly called spider flowers or bee plants, e.g., Rocky Mountain beeplant *(C. serrulata),* yellow spiderflower *(C. lutea)*		x
Crepis—in the aster family and commonly known as hawksbeard, e.g., largeflower hawksbeard (*C. occidentalis*), tapertip hawksbeard (*C. acuminata*)	x	x
Dalea—legumes that are commonly known as prairie clover or indigo bush, e.g., Blue Mountain prairie clover (*D. ornata*)		x
Hedysarum—legumes commonly known as sweetvetches, e.g., Utah sweetvetch (*H. boreale*)	x	x
Helianthus—sunflowers, e.g., common sunflower (*H. annuus*)		x
Penstemon—commonly known as beardtongues—a large and diverse group, e.g., scabland penstemon (*P. deustus*), royal penstemon (*P. speciosus*)		x
Phacelia—often called scorpionweed, e.g., threadleaf phacelia (*P. linearis*), silverleaf phacelia (*P. hastata*)		x
Rosa—roses, e.g., Nootka rose (*R. nutkana*), Woods' rose (*R. woodsii*)		x
Solidago—goldenrods, e.g., Missouri goldenrod (*S. missouriensis*), Canada goldenrod (*S. canadensis*)		x

Adapted from Megachilid Bees in the Pacific Northwest: An Introduction. PNW Publication 692