



Creating beneficial insect habitat

Lacewings, lady bugs and mantis, oh my!

BY JAMES LOOMIS



Now, this is not another article about bees, or any other pollinators for that matter. Bees get entirely too much press when it comes to insects in the garden. Bless their little honey-crust hearts, but there's a whole other cast of characters that deserve a little time in the lime-light. This is an article about a voracious crew of blood-thirsty assassins, hellbent on keeping pest populations to a minimum: predatory insects.

I'm fond of repeating the mantra, "There are no pest problems, only a lack of predators." In a balanced ecosystem, predators and their prey tend to reach an equilibrium in their respective populations. When we achieve this balance in the garden, the result is that we see very little sustained damage from pests. The occasional infestation may pop up, but before you have time to worry, they're gone, a feast for our good guy insect allies. Unfortunately, most gardens are severely lacking in beneficial insects, and this is generally caused by one of two things; the use of broad spectrum insecticides in the garden, or a lack of the habitat needed to sustain a healthy beneficial insect population.

I'd like to point out that the slaughter of beneficial insects often occurs even in "organic" gardens and farms. In USDA Organic agriculture, it is prohibited for the grower to spray broad spectrum insecticides made from petrochemicals, yet it is entirely acceptable to use insecticides made from flowers. (Pyrethrins, which can be made from the chrysanthemum flower, fit this description). While slightly less toxic to people and planet, these broad-spectrum organic insecticides still kill indiscriminantly, and even the occasional use of these products will disrupt the balance we are seeking with our insect populations. It's nearly impossible to wipe out an entire pest population, and they tend to repopulate rapidly. Conversely, our beneficial insect population tends to breed much slower than the pests, so by using insecticides we end up favoring pest insects in our garden.

By avoiding wholesale slaughter of insect populations, we allow the numbers of our beneficial insects to build up to control levels. Once a healthy balance is achieved, pest populations can be constantly suppressed.

Rock the boat with pesticides, and it's back to square one. This is a longterm solution, and it will take time for balance to be achieved. Be patient, quick fixes are almost always temporary. Every time you reach for an insecticide, organic or conventional, you are actually making the problem worse, and increasing your dependency on the product.

Furthermore, these products are harmful to the microbes on the plants and in the soil as well, which further weaken the resiliency of our garden ecosystem. I'm not saying you're an a**hole for using insecticides; wait, yes I am. That's exactly what I'm saying. Stop using them.

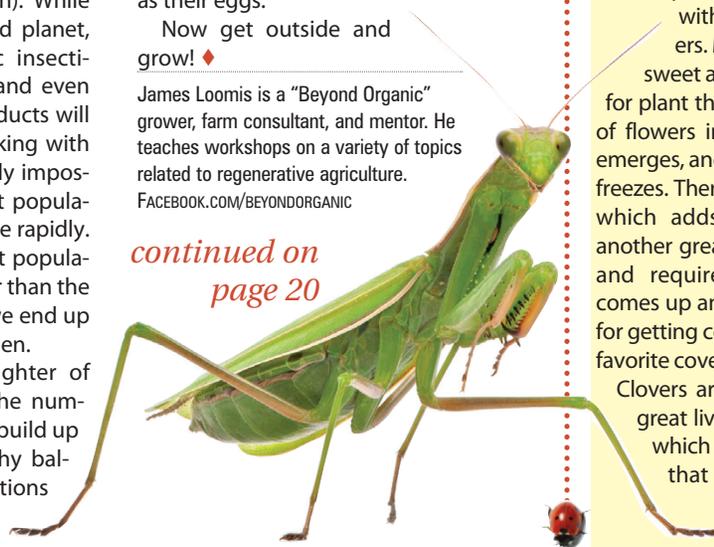
Once we've committed to not killing our beneficial insects, we can focus on attracting and sustaining their presence in our gardens. A simple equation to accomplish this is Food + Water + Shelter = Sexy Time. Provide the first three and your beneficial insects will stick around and breed, and you'll have a self-sustained population of beneficial insects.

Reminder: When in doubt, don't kill a bug! A general rule of thumb is that most pests occur in clusters, and most beneficials are somewhat more solitary. Learning to identify and spot beneficial insects can add another layer of enjoyment and action in your garden. In a future column I'll help you learn to identify the various stages of our generalist predators, as well as their eggs.

Now get outside and grow! ♦

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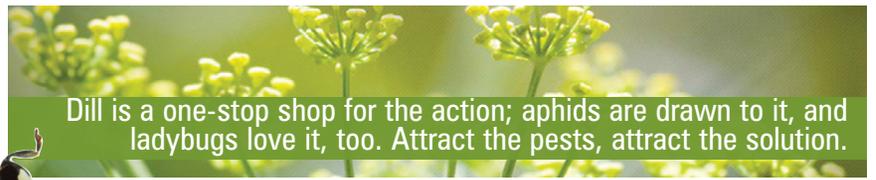
Habitat basics

Without sufficient habitat in place, any purchased insects will fly off in search of a better home. One of my favorite instructions that I've seen accompany a bucket of ladybugs advises the consumer to "spray the ladybugs with 7-Up diluted with water. The sticky residue will glue their wings closed and they won't be able to fly off for several days." Seriously? That's the opposite of a boss move. A better strategy, savvy gardener friend of mine, is to plant the proper habitat; then, all of the purchased ladybugs from your neighbors will take up residency in your garden. That's a boss move. Nice work.

So what is sufficient habitat? In my designs, I shoot for a bare minimum of around 15-20% of available space devoted to a mix of perennial and annual

plants that serve the primary purpose of providing habitat and nectar for the good bugs on your team. Most of the generalist insect predators we are trying to attract, such as lacewings, syrphid flies, aphid midges, and ladybugs, feed primarily on nectar as adults. It's their larval stages that wreak havoc on clusters of aphids and other pests. In order to get a steady supply of these gangster insect youth, we need to keep the adults around and well fed.

Remember, one of the most important strategies to embrace is diversity. We want to make sure to have a diversity of plant height, flower size and color, and bloom time. Making sure there are always multiple plants in bloom not only makes for ideal habitat, it also results in a more beautiful garden.



Dill is a one-stop shop for the action; aphids are drawn to it, and ladybugs love it, too. Attract the pests, attract the solution.

Food

When choosing food plants for our beneficial insects, consider the size of their faces. Larger blossoms tend to attract bees, moths, and other pollinators, while tiny blooms tend to attract our generalist predators. In particular, think "big clusters of small flowers." Most of our predatory insects prefer plants with large clusters of micro flowers. My staple in this application is sweet alyssum, a prolific, easy to care for plant that puts out copious amounts of flowers in a matter of weeks after it emerges, and keeps cranking them until it freezes. There is also a perennial Alyssum, which adds to the diversity. Yarrow, another great staple, is low maintenance and requires little water. Buckwheat comes up and flowers fast, which is great for getting cover in quickly (and is also my favorite cover crop for weed suppression). Clovers are also fantastic, and make a great living mulch below taller crops, which is a great trick for tucking in that 20% minimum into your design. This is a classic per-

maculture design concept known as "stacking functions"

We can take this whole stacking functions party up a notch by cultivating plants we can use before they flower, like dill, parsley and cilantro, which, like aphids to insects, are delicious to people. These plants can be harvested continually as they grow, and once they bolt, ka-pow! Big clusters of small flowers. Dill in particular is a one stop shop for the action; aphids are drawn to it, and ladybugs love it, too. Attract the pests, attract the solution. Genius. Thanks, Momma Nature, you're the ultimate boss.

Let's keep going, and step this thing up one more time. Most of our spring crops produce these large clusters of small flowers when they "bolt," or set seed. Let some of your lettuce, arugula, and brassicas flower to provide food for our beneficial insects, and then harvest their seed once mature. Food for you, then nectar for insects, then seed for next season, all from the same square foot. Stacking functions at its finest, seriously next level boss maneuver. ♦

2016 UTAH PLANTING GUIDE

Vegetable	Planting date	# of seeds/plants for 1 ft. of row	Planting depth (")	Between rows	Thin to # of plants/ft.	Days to harvest	Compatible plants	Incompatible Plants
Beans (bush)	May 5 - July 1	3-4 seeds	1-1.5	2-3 ft.	3-4	70 - 80	potato, corn, cucumber, strawberry, celery, summer savory, petunia	onion
Beans (pole)	May 5 - July	2-3 seeds	1-1.5	2-3 ft.	3-4	60 - 65	corn, summer savory broccoli, cabbage	onion, beet, kohlrabi, sunflower
Beets	March 25 - July 15	5-10 seeds	.75 - 1	15-18 in.	3-6	50 - 60	onion, kohlrabi, broccoli, cabbage	pole bean
Broccoli	July 15 - Aug 25	1 plant	3 - 4	18-24 in.	1	60 - 70	see cabbage	tomato
Brussels Sprouts	March 15 - April 15	2 - 4 seeds or 1 plant	.75 - 1	12 in.	1	see cabbage	see cabbage	
Cabbage	Feb 15 - April 1	1 plant	3 - 4	1-2 ft.	1	60 - 70	potato, celery, dill, thyme, mint, tomatoes, sage, rosemary, beet, onion, nicotiana	strawberry, pole bean, tomato
Carrot	March 25 - June 15	15-20 seeds	.5 - .75	2-3 in.	4-6	60 - 70	peas, leaf lettuce, chives, onion, leek, dill, rosemary, sage, tomato, radish	
Cauliflower	July 15 - Aug 25	1 plant	3 - 4	2 ft.	1	50 - 60	see cabbage	
Chard	March 25 - July 15	5-10 seeds	.75 - 1	1 ft.	1-2	40 - 50		
Corn	May 5 - July 1	3 - 4 seeds in a hill	1 - 1.5	2 ft.	1-2	66 - 90	beans	
Cucumber	May 5 - June 20	2-3 seeds	1 - 1.5	1 ft.	2-3	50 - 60	beans, corn, radish, sunflower, nasturtiums	potato, aromatic herbs
Eggplant	May 20 - June 1	1 plant	3 - 4	18 in.	1	70 - 60	beans, catnip	
Endive	March 25 - June 15	1 - 2 seeds	3 - 4.5	18 in.	1	70		
Ground cherries	May 1	1 plant	all but 3 sets of leaves	1 per 3 ft.	70			
Kale	July 1 - Aug. 15	2 - 4 seeds	.5	18 in.	1	70	see cabbage	
Kohlrabi	March 15 - Aug. 1	10 - 15 seeds	.5 - 1	1 ft.	2-3	50 - 50	see cabbage	
Lettuce (head)	March 25 - May 15	1 plant	2 - 2.5	1	1	60 - 70	carrot, radish, strawberry, cucumber	
Lettuce (leaf)	March 25 - May 15	20-25 seeds	.25 - .5	4 in.	4	40 - 50	carrot, radish, strawberry, cucumber	
Melon	May 15 - June 1	3 seeds in a hill	1 - 2	4 ft.	4 ft. (1 hill)	110 - 120		
Okra	May 25 - June	4 - 6 seeds	1 - 1.5	3 ft.	.5-1	90		
Pea	July 25 - Aug 25	6-12 seeds	1.5 - 2	12-18 in.	6-12	60 - 70	carrot, turnip, radish, cucumber, corn, spinach, bean, lettuce, Chinese cabbage	onion, garlic, gladiolus, potato
Pepper	May 20 - June 1	1 plant	3 - 4	2-3 ft.	1	60 - 70	basil, okra	
Potato	March 25 - May 15	1 piece	3 - 4	2-3 ft.	1	60 - 100	bean, corn, cabbage, horseradish, marigold, eggplant	pumpkin, tomato, sunflower, cucumber, squash
Pumpkin	May 1 - June 1	2 - 4 seeds in a hill	1 - 1.5	4 ft.	n/a	90 - 110	corn, beans, peas, borage, radish	potato
Radish	March 15 - Sept. 1	10-12 seeds	.5 - .75	15-18 in.	12	25 - 30	peas, nasturtium, lettuce, cucumber, carrot	
Rutabaga	June 15 - July 1	10-15	.75 - 1	2 ft.	2	105		
Spinach	Aug 10 - Sep 25	10-15 seeds	.5 - .75	15-18 in.	6-12	40 - 50	strawberry	
Squash (summer)	May 5 - July 1	2 - 4 seeds in a hill	1 - 1.5	3-5 ft.	n/a	50	nasturtium, corn, bean, peas, radish, borage	potato
Squash (winter)	May 20 - June 1	2 - 4 seeds in a hill	1 - 1.25	4-7 ft.	n/a	90 - 120	see summer squash	
Tomato	May 1 - June 1	1 plant	3 - 4	1-3 ft.	n/a	60 - 70	onion, parsley, asparagus, marigold, nasturtium, carrot	cabbage, potato, broccoli
Turnip	Sep 10 - Oct 10	20 - 30 seeds	.5 - .75	1-2 ft.	2 - 3	60 - 70	peas	





SEED LIFE EXPECTANCY

Store in a cool, dark, dry place. Plant more densely than you would new seed. (University of Colorado) Expectancy notated in years.

Bean 3	Muskmelon 5
Beet 4	Mustard 4
Broccoli 3	Okra 2
Brussels sprouts 4	Onion 1
Cabbage 4	Parsnip 1
Carrot 3	Pea 3
Cauliflower 4	Pepper 2
Chinese cabbage 3	Pumpkin 4
Collard 5	Radish 5
Corn 2	Rutabaga 4
Corn salad 5	Salsify 1
Cucumber 5	Spinach 3
Eggplant 4	Squash 4
Endive 5	Swiss chard 4
Kale 4	Tomato 4
Kohlrabi 3	Turnip 4
Leek 2	Watermelon 4
Lettuce 6	

This planting guide reflects some of the changes occurring in the city garden. With the rise of raised beds, intensive planting, vertical gardening and no-till methods, planting charts of yesteryear are less useful. In this chart you'll find these improvements:

- Planting dates are geared toward the Salt Lake Valley, not all of Utah (see "Salt Lake City area—first and last frost dates" for even more useful detail).
 - Fewer seeds to plant per foot (resulting in less thinning).
 - More plants remaining after thinning (more intensive planting, possibly to accommodate vertical strategies).
 - The space between rows is less (less unnecessary space to weed, more space for gardening).
 - Based on the assumption that the gardener is using raised beds.
- Offers interplanting suggestions. Fred Montague says interplanting makes fuller use of garden resources (e.g. shallow-rooted plants with deep; short shade-loving plants with tall sun-loving ones). It also offers some protection and encourages plant yield.

References and influences:

Fred Montague, *Gardening: An Ecological Approach* (Mountain Bear Ink)

Mel Bartholomew, *Square Foot Gardening* (Rodale)

Toby Hemenway, *Gaia's Garden: A Guide to Homescale Permaculture* (Chelsea Green)

Louise Riotte, *Carrots Love Tomatoes* (Storey)

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ZAP IT IS YOU!
SALT LAKE COUNTY

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Water

Another important insect need in our equation is water. Provide plenty of water access for your little insect friends. Drip trays from houseplants are great, pottery vessels are even more stylin'. Remember to consider the scale of our insect buddies, and make sure to provide safe access to that water. Place gravel or broken pottery shards in the bottoms of the trays to prevent accidental insect drownings. Place these at various places all around the garden, and you'll not only hydrate your insect pals but also attract toads and small reptiles, who are also fantastic allies in keeping pest populations in check.

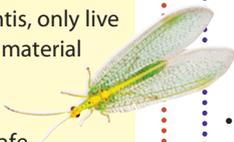


Every time you reach for an insecticide, organic or conventional, you are actually making the problem worse.

Shelter

The shelter part of the equation starts with resisting the urge to keep your habitat too tidy, especially in fall and late winter. Beneficial Insects need a safe place to overwinter, ready to emerge and gorge on aphids the next season. Leave the dead-heading of spent perennials alone in the fall, and bunching native grasses provide some of the best locations for overwintering allies. Other insects, like the preying mantis, only live one season but lay a massive cluster of eggs on dry, woody material to overwinter.

The flowering plants you established as a food source provide the bulk of the habitat, giving our insects a safe place to hide from their predators (often each other), as well as keep out of the desiccating sun. Broken pots and rock piles placed strategically around the garden provide habitat for spiders, as well as dark, moist places for the toads and reptiles that might come around now that you've provided them water. I never miss an opportunity to assemble "jenk" (useful junk) into garden art that simultaneously provides habitat (stacking functions high-five).



SALT LAKE CITY AREA FIRST & LAST FROST DATES

Area	Early	Avg	Late	Early	Avg	Late
SLC	19-Mar	12-Apr	30-Apr	11-Oct	31-Oct	21-Nov
SLC/City Creek WTP*	30-Apr	22-May	14-Jun	18-Sep	30-Sep	12-Oct
SLC/east bench	31-Mar	26-Apr	13-May	18-Sep	19-Oct	3-Nov
SLC/Intl. Airport	11-Mar	26-Apr	28-May	17-Sep	18-Oct	14-Nov
SLC/SUB SEW	20-Apr	5-May	18-May	15-Sep	3-Oct	25-Oct
SLC/Triad Center	16-Feb	7-Apr	1-May	26-Oct	4-Nov	15-Nov
SLC/U of U	03-Apr	01-May	06-Jun	18-Sep	21-Oct	16-Nov
Sandy	27-Apr	13-May	20-Jun	03-Sep	24-Sep	14-Oct
Bountiful/Val Verda	11-Mar	17-Apr	09-May	08-Oct	24-Oct	14-Nov
Draper	14-May	03-Jun	30-Jun	13-Sep	21-Sep	04-Oct
Ogden	18-Apr	13-May	16-Jun	10-Sep	07-Oct	26-Oct
Park City	20-May	09-Jun	21-Jun	09-Aug	09-Sep	03-Oct
Park City/Meadows	07-Jul	07-Jul	07-Jul	05-Sep	05-Sep	05-Sep
Provo/Airport	04-Apr	21-May	03-Jul	31-Aug	25-Sep	23-Oct

* water treatment plant

View a more complete chart of frost dates across Utah at: CLIMATE.USURF.USU.EDU/REPORTS/FREEZE-DATES.PHP

EDIBLE PERENNIALS

Make room for permanent plantings of perennial fruits & vegetables in your garden:

- berries (strawberries; cane types such as raspberries, blackberries, gooseberries, currants; elderberries)
- rhubarb
- grapes
- fruit trees/shrubs
- asparagus
- sunroot/sunchoke (*Helianthus tuberosus*; formerly called Jerusalem artichoke)

