

Nectar and Pollen Seasons, and the Impact on Colony Management

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Photo credit Chris Schad

What We Cover

- The Big Idea: Having healthy colonies means matching colony resource needs with natural resource availability.
- Pollen – some details
- Nectar and honey – some details.
- Floral fidelity & diversity –why they matter
- The floral season in this region
- What you can do
- Helpful Resources
- Q&A

The Basic Resources

- Water
 - Site your bees to have access to water
- Shelter
 - A container with a lid
- Food
 - Nectar
 - Pollen



Photo credit Chris Schad

Pollen

- Foragers bring it in, transfer into the brood nest.
- Is the nutritional and mineral source for royal jelly.
- Fresh pollen is high in protein and moisture, idea for fermentation.



Fermented Pollen = Bee Bread

- Pollen not consumed is fermented to bee bread.
- Mixed with nectar and salivary secretions to make bee bread, which is fed to larvae.



Photo credit Chris Schad

Honey



Photo credit Chris Schad

What is Honey

- Starts as nectar, which can be up to 80% water and sucrose, a complex sugar molecule.
- Contains 180+ components, the result of unique and complex chemical processes.
- Treated by salivary enzymes and dried down, converts to simple sugars of glucose and fructose at something less than 19% water.



Photo credit Chris Schad

Floral Fidelity

- Foragers from a hive may visit many species of plants in a given day
- BUT, individual foragers display flower fidelity or constancy.
- Individual bees visit a floral source for several days or until the resource is no longer producing nectar or pollen
- When a new species bloom begins, new foragers might pick up on the new bloom, but old foragers may switch once their current favorite isn't widely available.

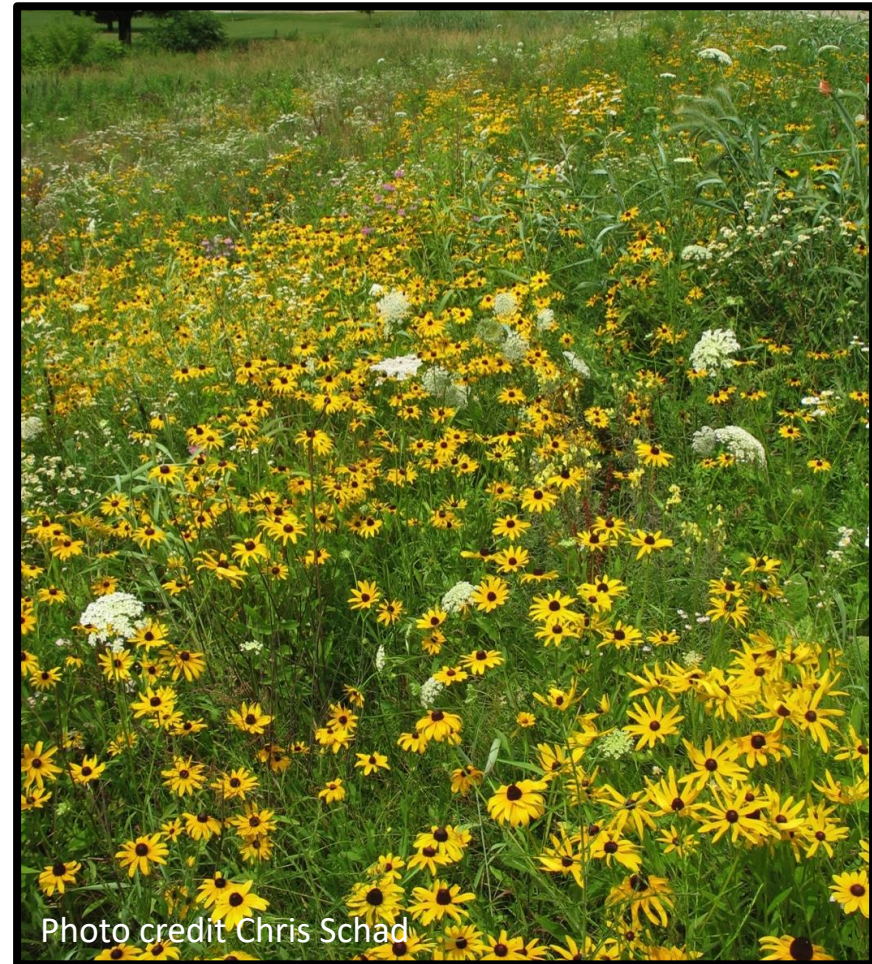


Photo credit Chris Schadt

Floral Diversity



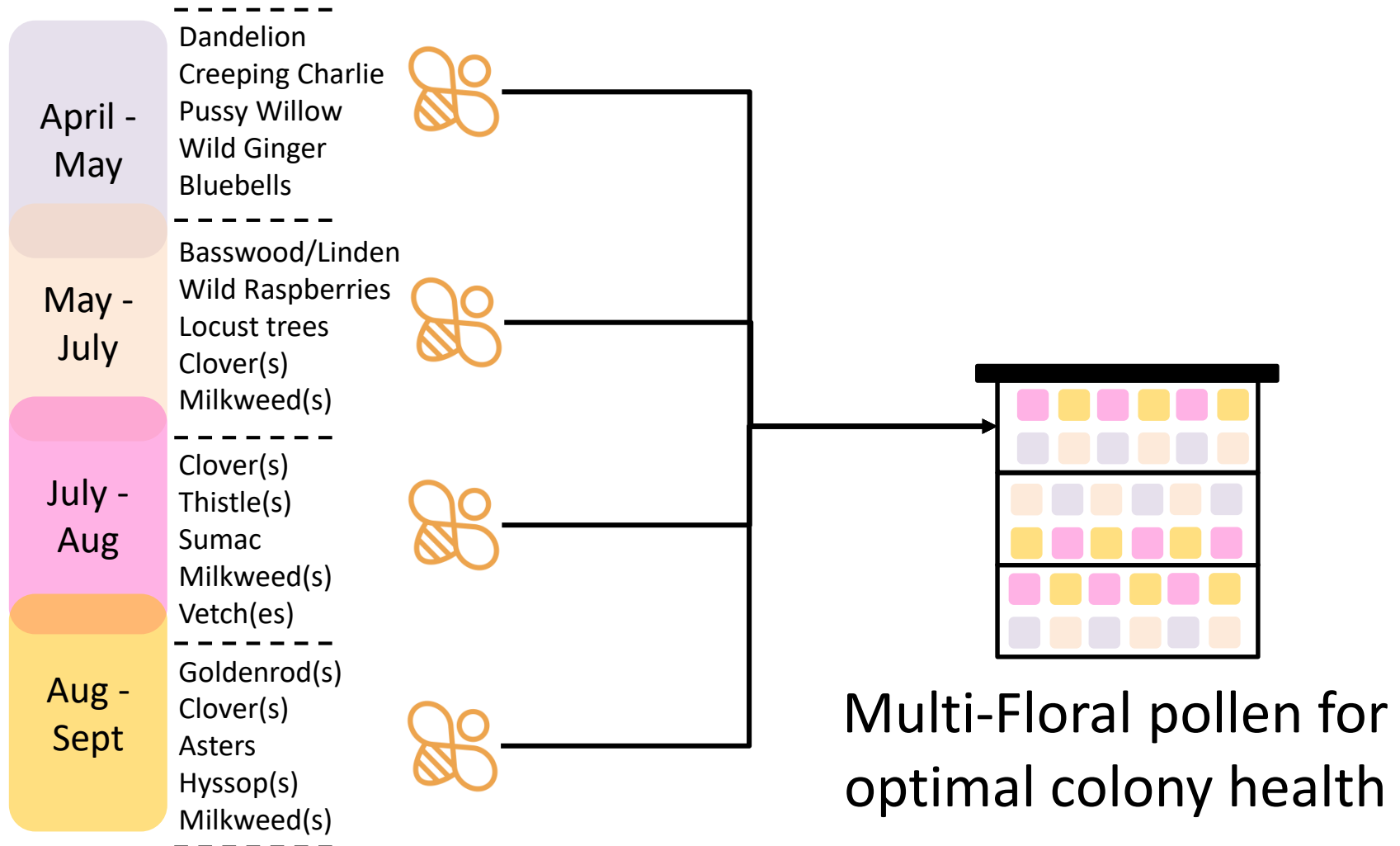
Photo credit Chris Schad

Floral Diversity



- No single type of plant produces bee pollen that will have all the vitamins, minerals, fats and proteins in exactly the right ratios for optimal honey bee health.
- Colonies tend to forage on a variety of pollen sources so they have a mixture of pollen from a wide variety of plant species.

Floral Diversity



Tracking the Bloom



Photo credit Chris Schad

Hyper-Local Tracking

Bloom	2014	2015	2016	2017	2018	2019
Maple	16-Apr	4-Apr	12-Apr	7-Apr	20-Apr	28-Apr
Willow	3-May	12-Apr	1-May	23-Apr	4-May	4-May
Drones present		12-Apr	3-Apr			
Daffodils	27-Apr	15-Apr	13-Apr	15-Apr	1-May	2-May
Bloodroot	4-Apr	24-Apr	16-Apr	15-Apr		
Dandelion	10-May	24-Apr	18-Apr	15-Apr	3-May	6-May
creeping charlie	10-May	28-Apr	16-Apr	15-Apr	3-May	8-May
Marsh Marigold	16-May	3-May	24-Apr	23-Apr	7-May	7-May
Golden Alexander	16-May	3-May	5-May	7-May	15-May	12-May
Flowering Crab	16-May	28-Apr	10-May	18-May	12-May	12-May
Wild Plum	18-May	30-Apr	25-Apr	29-Apr	14-May	12-May
Jack-in-the-pulpit	18-May	3-May	4-May	1-May	13-May	
Golden Delicious	22-May	3-May	25-Apr	6-May	15-May	16-May
Mesabi Cherries	22-May	1-May	25-Apr	6-May		
Bluebells		5-May		6-May	16-May	

Overlaying Seasonal Bloom with Colony Observations (55901)

April

Maples
Willows
Woodland
ephemerals

May

Dandelions
Maples
Willows
Woodland
ephemerals

June

Dandelion
Black Cherry
Woodland
ephemerals
Fruit trees
Black Locust
Wild
Raspberries

July

Alsike Clover
Tall Sweet
Clover
Yellow Clover
Basswood
Linden
Milkweed
Staghorn
Sumac
Vetches
Butterfly
Weed
Beardtongue
(various)
Prairie
Coreopsis

Aug

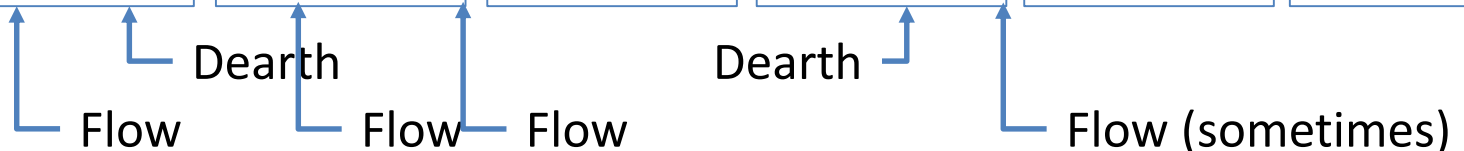
Tall Sweet
Clover
Cup Plant
Goldenrod
Jewel Weed
Ironweed
Compass
Plant
Wild
Cucumber
Joe Pye Weed
Purple
Hyssop
Wild
Bergamot

Sept

Goldenrod
Asters
(various)

Oct

None



Floral Fidelity and Diversity – Applications in Colony Management

- To optimize colony health, know what blooms and when near your yard.
- Seek out diverse sources of flowering plants.
- Watch for extended rainy periods and natural dearths that suppress pollen production, which can hamper brood production.
- Look for pollen stores during hive inspections to determine if you need to supplement pollen patties.

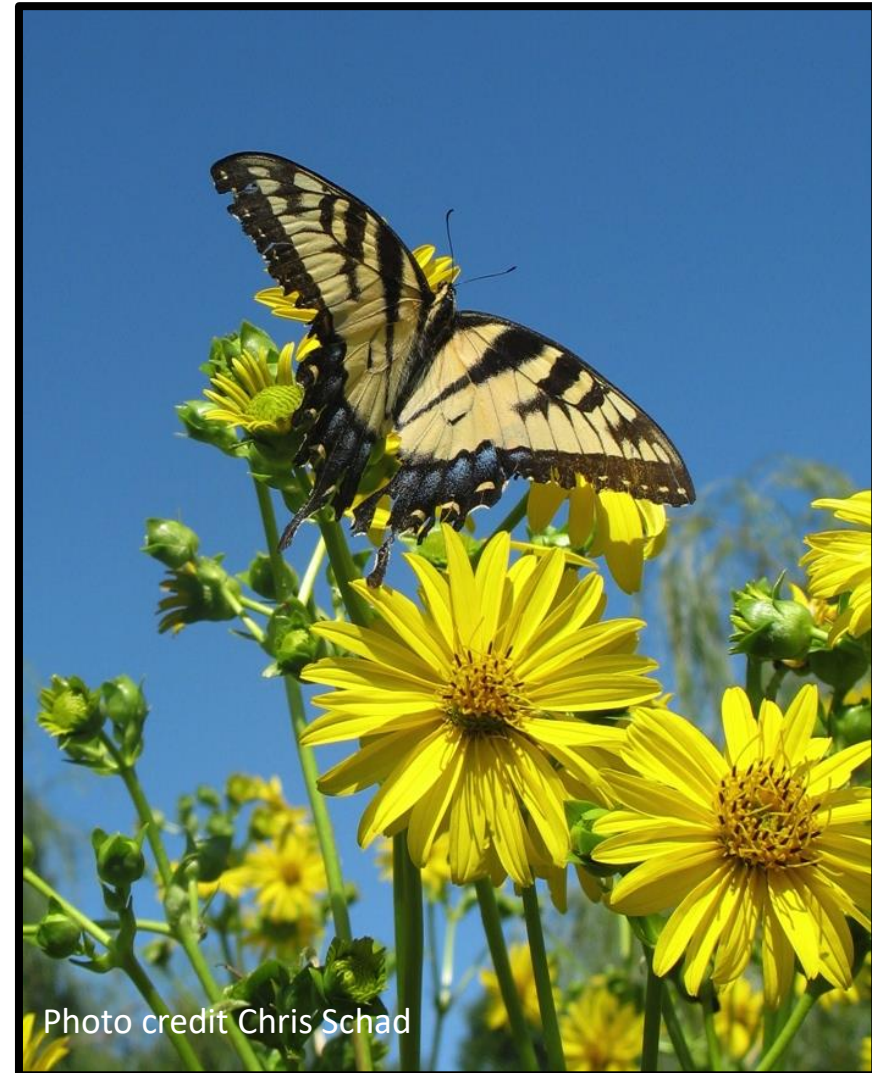


Photo credit Chris Schad

One More Reason - Winter Survival

From UM research - three colony level metrics stood out as most strongly relating colony health to survival:

- Varroa mite infestation levels in September
- Amount of sealed brood in September (i.e. lots of winter bees)
- Amount of fresh pollen collected over the summer.



Photo credit Chris Schad

What You Can Do



What You Can Do: Advocate in the Legislature

Call to Action:

Contact Governor Walz to
support MN pollinators



Tell him you support

House File 1255 to give MN cities the power to ban the use of
pollinator lethal pesticides

&

HF 721 to put into law the DNR practice of banning the use of neonics in
Wildlife Management Areas.

Why?

Our pollinators need clean, pesticide free forage to survive

& are responsible for one in every three bites of food we take .

In 2019 beekeepers in Minnesota lost 50% of their hives.

Minnesota is still one of the few places where the rusty patched bumble
bee can still be found.

Call Governor Tim Walz at 651-201-3400

What You Can Do: Scold Your Neighbor About Dandelions



What You Can Do:

Diversify your Landscape

- Lawns to Legumes Program
- \$350 grants to offset the cost of putting a pollinator mix into your yard
- >6,000 applications for 300 grants
- Additional grants are being made available



Diversify Your Landscape – Five Easy Steps

- Find the site
- Clear the site
- Get your seeds
- Seed the site
- Wait...

Resources

- Lawns to Legumes:
 - <https://bwsr.state.mn.us/lawns-legumes>
- University of Mn Bee Lawn information
 - <https://www.beelab.umn.edu/learn-more/beelawn>
- University of Mn Pollinator-Friendly Flowers
 - <https://www.beelab.umn.edu/flowers>
- Xerces Society
 - <http://www.xerces.org/pollinator-conservation>
- Minnesota Wildflower:
 - <https://www.minnesotawildflowers.info/>
- Prairie Moon Nursery:
 - <https://www.prairiemoon.com/>

Learn More

- Check out my TEDx talk on YouTube
<https://youtu.be/E87LW85MxqA?t=636>

