

# Arizona Highlands Garden Conference

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## “Planting to Attract Bees for Habitat Creation and Improved Pollination of Home Food Crops”

presented by

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**Denver, CO**

**Photos by David Salman**

2. “**The hum of bees is the voice of the garden**” Elizabeth Lawrence, garden designer and author, Charlotte, NC (1904 – 1985)

### 3. **Native Bees and Bumble Bees**

- Over 4,000 species of native bees and bumble bees
- Bees are either solitary or social
- European Honey bees and Bumble Bees are social (live in hives)
- Other native bees are solitary and build nests
- Solitary bees rarely if ever sting/social bees sting very infrequently

### 4. **Honey Bees and their life cycle**

This Old World insect, *Apis mellifera*, is social in nature and behaves differently than native bees

- Social bees live in hives and produce multiple generations per season
- Are general feeders collecting pollen and nectar from a wide range of plant species
- Larva are fed nectar and pollen by adults
- Will build their populations more quickly when provided an abundance of early season flowers

### 5. **Solitary Native Bees and their lifecycles**

- Solitary native bees don't live in hives
- Have only one generation per season
- Adult bees only live for 3 to 4 weeks. Larval stage lives for 10+ months over-wintering to hatch the following spring/summer.
- Are more specific in their plant choices/bloom times for collecting pollen and nectar.
- Solitary bees will share habitat with their own species and with other species but each female bee makes her own nest and feeds her own larva

### 6. **Attracting Bees to your garden**

Providing food, water and shelter are key to bringing them into your garden

#### **Provide a source of water**

- Bees like any source of water (running or still) and appreciate a rock in the middle of the water where they can stand and drink at water's edge.

### 7. **Attracting Bees to your garden**

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#### **Garden organically**

- Use organic/natural composts and fertilizers for all soil preparation and soil fertility.

- Don't use chemical insecticides and fungicides. Neonicotinoids are especially toxic and are systemic. Their use poisons the nectar and pollen of plants treated with them.
- Neem oil is the best bee-safe, wide spectrum organic insecticide

### **8. Attracting Bees to your garden**

Providing food, water and shelter are key to bringing them into your garden

Provide nesting sites

- bare soil for burrowing solitary bees, bumble bees
- Nesting tubes for solitary bees (like Mason bees)
- Snags (standing dead trees) for European Honey bees and other solitary bees

### **9. Some strategies to keep bees coming to your yard for the whole growing season**

- Plant a diversity of flowering plants that bloom from early spring into the fall.
- Summer/early Fall blooming plants help to keep bees around your vegetable garden when squash, melons, cucumbers and tomatoes are flowering
- An abundance of early and mid-spring blooming plants help to build honeybee numbers for later in the growing season

**photo caption:** Forsythia and Pear blooming in early spring

### **10. Flower form affects usefulness for bees**

- Here is a single flowered rose and the anthers and pistils are visible indicating that there is nectar and pollen available to collect.
- Here is a double flowered rose where the anthers and pistils are covered by flower petals. Bees are unable to harvest nectar and pollen from these flowers.

### **11. The Importance of Planting Native Plants for Habitat Creation in our Gardens**

- There has been recent ground breaking research by Dr. Doug Tallamy, University of Delaware, regarding the use of plants by native insects. His work has revealed that native Lepidoptera (moths and butterflies) are only able to feed on native plants. -
- There is much less research on native bees and their use of Old World and native plants as nectar and pollen sources. But it is highly likely that certain species of native bees are closely associated with the native plants in their habitats.

**photo caption:** Upper R: *Jasminum nudiflorum*, Lower R: *Berberis fendleri*

### **12. The Importance of Planting Native Plants for Habitat Creation in our Gardens**

To create a habitat-friendly garden for native insects and songbirds, I recommend using a ration of 70% natives to 30% Old World species

**photo caption:** Titmice on a Hesperaloe flower spike feeding on aphids →

### **13. Flowering shrubs are superb, low maintenance plants for bees**

- Plant a succession of early, mid- and late flowering species for season long bloom
- Many native shrubs are the best for early and mid-spring flowers
- Old World shrubs are particularly important for summer and late summer flowers

**photo caption:** *Caryopteris* (Blue Mist Spirea) →

### **14. Native Shrubs for early spring color -**

Cliff Fendlerbush (*Fendlera rupicola*)  
Utah Service Berry (*Amelanchier utahensis*)

### **15. Native Shrubs for early spring color**

Creeping Oregon Grape (*Mahonia repens*)

**16. Native Shrubs for early spring color**

Prunus besseyi Pawnee Buttes® (Creeping Sand Cherry)

- Fragrant flowers in early spring
- Glossy green foliage that turns burgundy in fall

**17. Native Shrubs for early spring color**

Ribes odoratum 'Crandall'

**18. Native Shrubs for early spring color**

Rhus aromatica 'Gro Low'

- Chartreuse flowers buzz with bees
- Glossy green foliage turns fiery red in fall

**19. Native Shrubs for mid- to late spring color**

Philadelphus lewisii 'Cheyenne' - perfumed flowers

**20. Native Shrubs for mid- to late spring color**

Red Berry Mahonia (*Mahonia haematocarpa*)

**21. Native Shrubs for mid- to late spring color**

Fendler's Barberry (*Berberis fendleri*)

- Profuse spring flowers
- Incredible fall/winter display of red edible fruit

**22. Native Shrubs for summer flowers**

Fernbush (*Chamaebatia millifolium*)

**23. Old World shrubs for summer flowers**

Russian Sage (*Perovskia atriplicifolia*) - summer long flowers that honeybees love

**24. Old World shrubs for summer flowers**

Chaste Tree (*Vitex agnus-castus*) - An incredible bee shrub with huge fragrant flower spikes

**25. Native Shrubs for fall flowers**

Rabbit Brush (*Chrysothamnus nauseosus*) - growing with Three leaf sumac

**26. Early Spring Flowering Perennials - Cold Hardy Iceplants (*Delosperma* cultivars)**

- *Delosperma* sp. 'Lesotho Pink'
- *Delosperma* 'Blut'

**27. Early to Mid-spring flowering cacti - Beaver Tail cacti (*Opuntia basilaris*)**

- *Opuntia basilaris* from near Zion National Park, UT
- *Opuntia basilaris* v. *heilii* from UT

**28. Late Spring flowering perennials - English Lavender (*Lavandula angustifolia*)**

- 'Thumbelina Leigh'
- 'Vera'

**29. Late Spring flowering perennials**

New Mexico Hummingbird Mint (*Agastache neomexicana*)

**30. Later Spring flowering perennials**

Sulfur Buckwheat (*Eriogonum*)

- *Eriogonum umbellatum* v. *aureum* 'Kannah Creek'
- *Eriogonum umbellatum* with *Penstemon pseudospectabilis* 'Coconino County'

**31. Summer flowering perennials**

Chocolate Flower (*Berlandiera lyrata* 'Mora County Mix' - Highly fragrant, chocolate scented flowers

**32. Summer flowering perennials - Beebalm (*Monarda fistulosa* 'Wichita Mountains')**

### 33. Summer flowering perennials

perennial garden combinations

#### Clockwise from top

- Hybrid Hyssop (Agastache 'Blue Forture')
- Purple Coneflower (Echinacea purpurea)
- Golden Rod (Solidago)
- Yellow Coneflower (Rudbeckia fulgida 'Goldstrum')
- Obedient Plant (Physostegia virginiana 'Miss Manners')

### 34. Summer flowering perennials

perennial garden combinations

- Prairie Coneflowers (Ratibida )columnaris,
- Purple Coneflower (Echinacea purpurea),
- Sea Holly (Eryngium)

### 35. Summer flowering perennials - Ornamental Onions (Allium)

- Allium 'Millennium'
- Allium christophii fall planted bulb

### 36. Late Summer-Fall flowering perennials

Tall Goldenrod (*Solidago rugosa* 'Fireworks' ) with Aster frikartii 'Monch'

Prairie Gayfeather (Liatris punctata) ↓

37. Fall flowering perennials

**Aster species** - recommended varieties; A. oblongifolius Raydon's Favorite, A. laevis 'Bluebird'

### 38. Fall flowering perennials - Maximilian's Sunflower (*Helianthus maximiliana*)

Helianthus with Agastache, Perovskia

### 39. Fall flowering perennials

Prairie Sage (*Salvia azurea*) - A fabulous flower for bumble bees !

### 40. Have fun planting more bee attracting plants in your landscape.

You'll enjoy seeing many types of bees in your garden, busy pollinating your flowers and vegetables.

Make your yard a destination and a sanctuary for bees and other pollinators.

Plant Them and They Will Come!

### 41. Some additional resources for information about bees

1. Halter, Reese, 'The Incomparable Honeybee And the Economics of Pollination', Rocky Mountain Books, 2011
2. Xerces Society ([www.xerces.org](http://www.xerces.org)) - an international, nonprofit organization that protects wildlife through the conservation of invertebrates and their habitat.
3. Wilson, Joseph & Carill, Olivia 'The Bees in Your Backyard' ,Princeton University Press, 2016.

**Notes:**

**Read David Salman's Blogs**

[highcountrygardens.com](http://highcountrygardens.com)

[waterwisegardening.com](http://waterwisegardening.com)