

Winter Pollinator Management

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What is 'IPM'?

- Integrated Pest Management
- Effective and environmentally sensitive approach to pest management that relies on a combination of commonsense practices
- IPM is not a principle that can/should be strictly and equally applied to every situation, but a philosophy that can guide the practitioner to use it as appropriate for the situation.

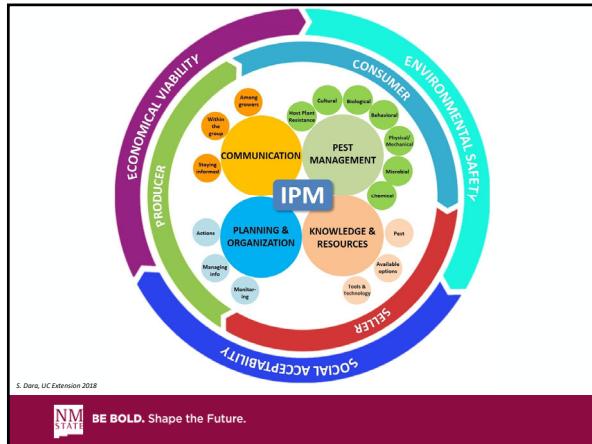


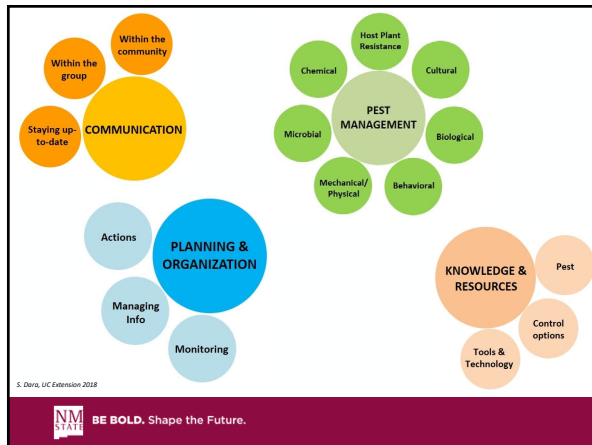
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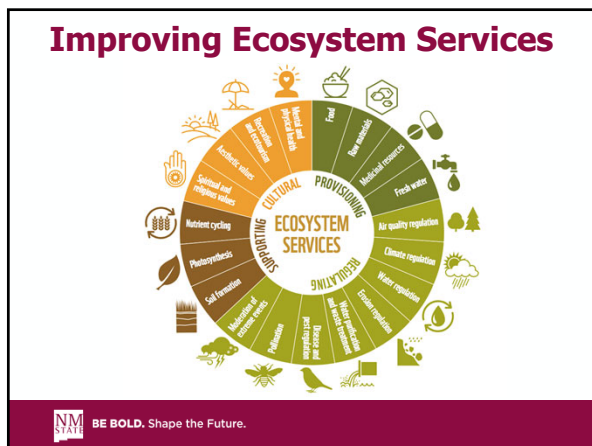
Multidisciplinary

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Integrated Pest and Pollinator Management IPPM

Bee hives in apple orchard



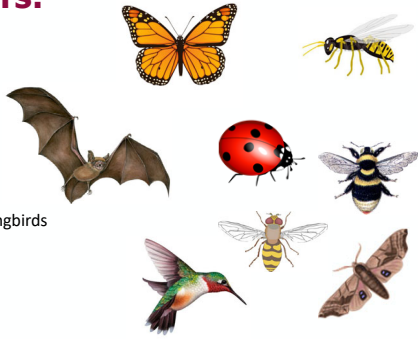
Pollinators in Agricultural Crops



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Pollinators:

- Beetles
- Moths
- Butterflies
- Flies
- Wasps
- Beetles
- Bats
- Birds – Hummingbirds
- Bees



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Threats to pollinator health

Climate change

Urbanization and land fragmentation

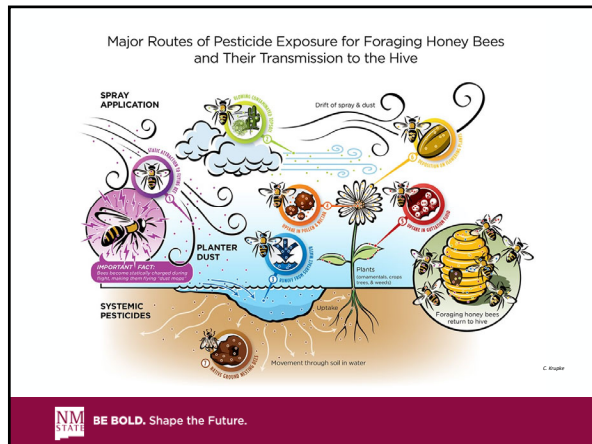
Deforestation

Monoculture agriculture

Chemical pesticides

Pathogens

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Pollinators: Bees

Native Bees: Over 1000 species in New Mexico

Generalist and specialist foragers

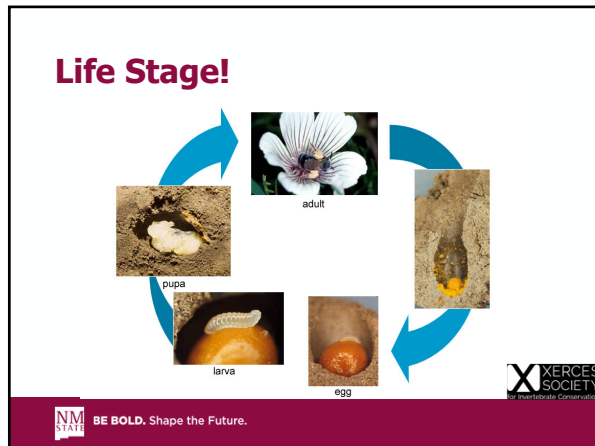
Ground nesting and stem nesting

Honey Bees: Introduced (non-native to US)

Generalist foragers

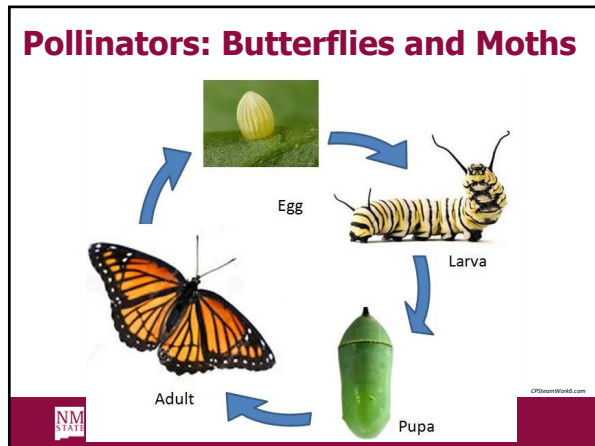
Cavity nesting

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Pollinators: Butterflies and Moths

- 300+ species
- Major Groups:
 - Butterfly:
 - Swallowtail
 - Brush-footed
 - Skippers
 - Sulphurs
 - Snout-nosed

Four small photographs show different butterfly species: a blue and black butterfly on a rock, an orange butterfly on a flower, a white butterfly on a yellow flower, and a brown butterfly on a purple flower.

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Pollinators: Butterflies and Moths

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 - Skippers
 - Sulphurs
 - Snout-nosed
 - Moths
 - Miller
 - Hawk/Sphinx/Hummingbird

A grid of 12 small images shows various butterfly and moth species. A larger image on the right shows a hawk moth (Sphinx moth) on a pink flower.

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Caterpillars

Pupa/Cocoons

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Know your pest...

Leafminer

~1/4 inch

Syrphid

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Syrphid Fly

Adult = Pollinator

Larva = Predator

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Submitting a sample to NMSU Plant Diagnostic Clinic

- Contact your local extension agent
- Collect fresh samples
- More information, including address, sampling, forms:
<https://aces.nmsu.edu/ces/plantclinic/>



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Implementing IPPM Fall/Winter

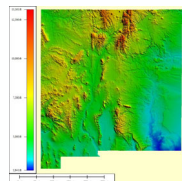


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Eco-Regions
(7)



Elevation
(2,800ft – 13,161ft)



Growing Zones
(11)



Average Rain Fall
13.85 inches/year



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Provide pollinators with resources!



Variety, Variety, Variety!

- Color
- Shape
- Nectar/Pollen Content
- Blooming Period
- Species: Annual and Perennial



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Insect mouthparts

sucking



butterfly
(side view)

lapping



bee
(front view)

chewing



beetle
(front view)



cicada
(front view)



housefly
(front view)



grasshopper
(side view)

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Flower Shape

Disk



Cone Flower

Tubular



Angle's Trumpet

Bowl



Poppy

Lipped



Cone Flower


Wind Pollinated



Karen Retto and M. Saunders

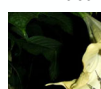
Flower Shape

Disk



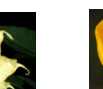
Cone Flower

Tubular




Angle's Trumpet

Bowl





Poppy

Wind Pollinated



THE CARBS





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Karen Retep and M. Saunders

Pollinator Pocket Garden

Size: 8" x 8"

Designed for a corner potting edge or center island of a full or half round planter. Plants are placed towards the back. Lower level plants are placed in front. The 8" x 8" planter should be placed in a sunny location. The planter can be used as a small space.

For more information about the plant selections, or for other garden plans visit www.thinkingplants.com

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	Common Name (color)	Bloom time
A	<i>Butterfly Milkweed</i> (orange) <i>Asclepias tuberosa</i>	Jul - Aug
B	<i>Anise Hyacinth</i> (various) <i>Asperula penetrans</i> - or - <i>Prairie Spiderwort</i> (blue-purple) <i>Tradescantia occidentalis</i>	Jul - Aug
C	<i>New England Aster</i> (blue-purple) <i>Symphoricarpos nemoralis</i> - or - <i>Blackheart</i> (various) <i>Liatris</i> spp.	Aug - Oct
D	<i>False Sunflower</i> (yellow) <i>Helianthus scaberrimus</i> - or - <i>Stiff Goldenrod</i> (yellow) <i>Coreopsis</i> spp.	Aug - Oct
E	<i>Wild Bergamot</i> (various) <i>Monarda</i> (various)	May - Sep
F	<i>White Flowering</i> (white) <i>Asclepias</i> spp.	Jul - Sep
G	<i>Purple Coneflower</i> (pink-purple) <i>Coneflower</i> (various)	Jul - Aug
H	<i>Joe Pye Weed</i> (pink) <i>Euthycheum purpureum</i> - or - <i>Stemmed Milkweed</i> (pink) <i>Asclepias incarnata</i>	Jul - Sep

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Resources – Fall blooms

The collage consists of five photographs of bees on yellow flowers. The top row features two small images: the left one shows a bee on a yellow tubular flower, and the right one shows a bee on a yellow flower with a dark center. The bottom row also has two small images: the left one shows a bee on a yellow flower, and the right one shows a bee on a yellow flower. To the right of these is a larger image of a yellow flower with a dark center, with a bee on its center.

Resources – Fall blooms

Fall

Helianthus maximiliani

Liatris punctata

Symphotrichum lavea

Solidago rigida

Verbena macdougalii

Senecio riddellii



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Resources – Early spring blooms

Spring

Penstemon palmeri

Penstemon strictus

Penstemon grandiflora

Gaillardia pinnatifida

Melampodium leucanthum

Stanleya pinnata



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Think Spring!

- Plan Ahead



- Plant Bulbs and Seeds

- Remember, perennials take time to mature

- Cover crops



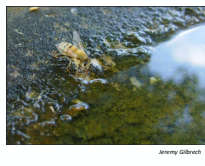
- Reduce Chemical Use on Flowering Plants

- Including trees and shrubs

- Look at residual time on systemic!

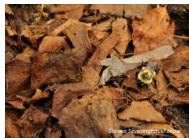


Resources



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Leaves!



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Winterizing to avoid pests

Do



Don't



Keep Perennials

Remove Annuals




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Winterizing to avoid pests

Do



Don't



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Pollinators interact across the landscape, so they need a landscape approach to their management



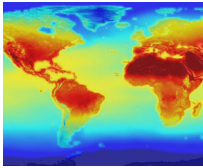

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Outside of your control

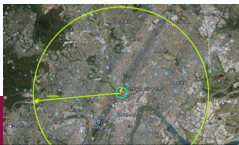
Surrounding landscape




Climate







Pollinators can have large foraging ranges





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IPM Resources

- Website: <https://aces.nmsu.edu/ipm>
- Social Media: @NMSU_IPM
- Email: NMSUIPM@NMSU.EDU


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Backyard Beneficial Insects in New Mexico



Pocket Guide to the Native Bees of New Mexico



Pocket Guide to the Beneficial Insects of New Mexico



Integrated Pest Management (IPM) Strategies for Common Insect Pests of Trees in New Mexico

Current Projects

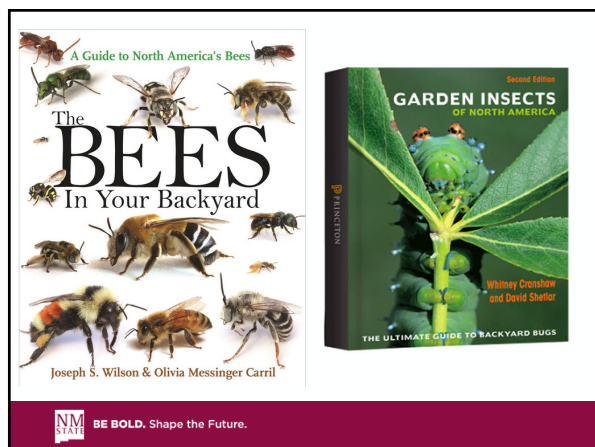
- NMSU Los Lunas Ag. Science Center Learning Garden
- Native Plant Plots
- Pollinator Lecture Series
- Pollinator Workshops
- Develop UAV monitoring IPM program
- IPM for Honey Bees








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Contact Information

Email: skid@nmsu.edu

Twitter: [@Dr_Skidmore](#) and [@NMSU_IPM](#)

Resources:

- Website: <https://aces.nmsu.edu/ipm>
- Guides
 - IPM for Home Gardeners
 - Backyard Beneficial Insects in New Mexico
 - Pocket Guide to the Native Bees of New Mexico
 - Landscape Design for Pollinators
 - IPM Strategies for Common Garden Pests

