Pollinator Gardens

UCMG 2020

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ENDANGERED POLLINATORS
AND THEIR HABITATS
POLLINATOR PARTNERSHIP
GREIF
EPRI
BAYER
CropScience
syngenta
American Bird Producers Association
BOEING
CYPRESS CREEK
EEI
USDA
USGS
NAPPC
APHIS
YALENT

Figwasps

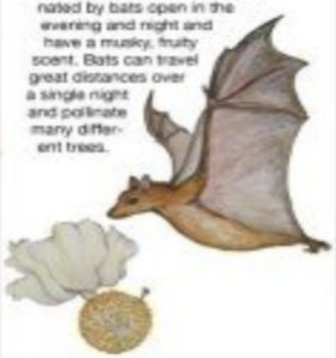
Figwasps are the tiny pollinators of the mighty Fig Trees. Figwasps have a very special relationship with the Fig Trees. Each kind of Fig Tree has it's own unique kind of Figwasp that pollinates it. The tree cannot survive without the figwasp, and the wasp cannot survive without the tree. They are wedded together forever. Only female figwasps pollinate and can fly between the trees. Males never leave the fig they are born in.

Sunbirds

Sunbirds are colourful pollinators of many plants with special flowers. Aloes and Red-hot Poker Trees are pollinated by sunbirds. Flowers pollinated by sunbirds are often red or orange and have lots of sugary nectar. Giant lobelias that grow on the high mountains of East Africa are pollinated by sunbirds. Sunbirds also feed on insects that visit flowers. Male sunbirds are very colourful while the females are dull-coloured.

Bats and Bushbabies

Bats and bushbabies are mammals that pollinate plants in East Africa. The Baobab tree is pollinated by Fruit Bats and occasionally by Bushbabies. Sausage Trees are pollinated by bats. Flowers that are pollinated by bats open in the evening and night and have a musky, fruity scent. Bats can travel great distances over a single night and pollinate many different trees.



Butterflies and Moths

Butterflies and Moths are pollinators of certain kinds of flowers. Many red flowers with short tubes are pollinated by butterflies. White flowers with fragrance in the evening or at night are often pollinated by moths. Hawkmoths are an important group of pollinators. They pollinate many different kinds of African orchids. Papaya is also pollinated by hawkmoths.

Nature Kenya

The East Africa Natural History Society
Action for Biodiversity Conservation

Insect Committee of the East Africa Natural History Society

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The East Africa Natural History Society
Action for Biodiversity Conservation

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Our Friends the Pollinators

Pollinators

Flowers produce seeds and fruits. Seeds and fruits are produced when a flower is pollinated. Pollination is the transfer of pollen from the anthers to the stigma of a flower. As plants can't move around, they rely on other creatures to carry their pollen for them. Pollinators transport pollen between different flowers and make sure that flowers produce seeds and fruits. Did you know that every one in three bites of food is thanks to a pollinator?

Honeybees

Honeybees are common visitors to flowers. They live in large colonies i both domestic beehives and in the wild in hollow trunks. They collect nectar and pollen from flowers. A honeybee can tell her fellow bees where to find flowers through a special dance language. Many herbs, wildflowers and trees are pollinated by honeybees.

Wild Bees or Native Bees

There are many different kinds of wild bees. Most wild bees lead a solitary life. They collect pollen and nectar from flowers. Some wild bees are specialised and collect oils and other substances from flowers. Wild bees are one of the most important groups of pollinators. There are thousands of different kinds of wild bees.

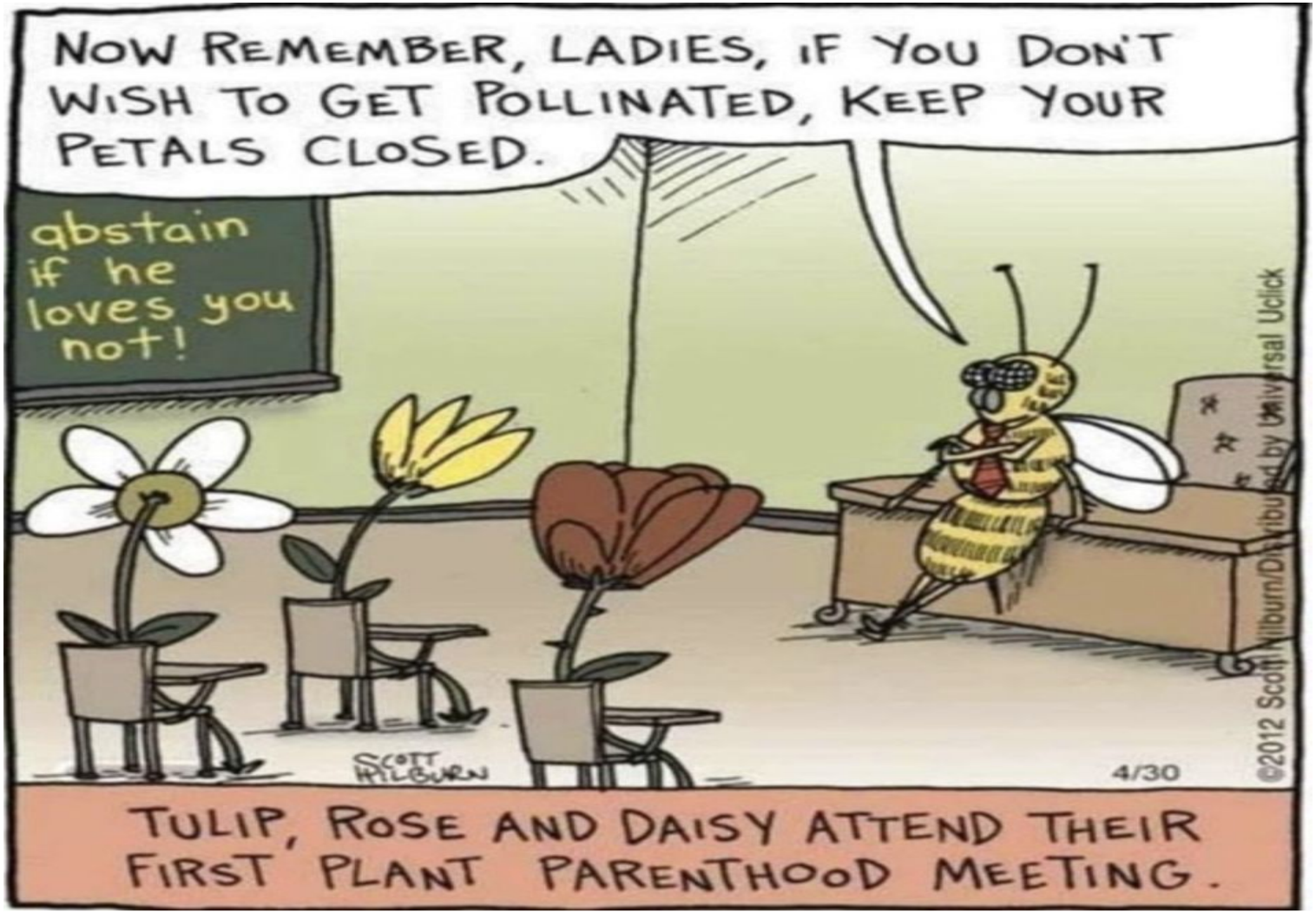
Stingless Bees

Stingless bees live in colonies like the honeybee. They are smaller than honeybees and are also called 'Sweat Bees'. Stingless bees live in hollow trees, rocks and even termite mounds. They often make tubes from resin at the entrances to their nests. They are very important pollinators as they rely entirely on flowers for nectar and pollen to feed their larvae. Many forest and dryland plants are pollinated by stingless bees.


Join the Conversation about
Native Bees
What's the buzz?
www.pollinator.org
NRCS
NATIONAL GEOGRAPHIC
Saint Louis Zoo
EnergyUnited

Pollinator Plants

- **CA is one of the most floristically biodiverse areas in the world**
- **The pollinator plants "advertise" the presence of nectar and pollen with scents and colors**
- **Bee flowers have evolved distinctive patterns of ultraviolet light visible only to the bees**
- **Native wildflowers is the best sources of nectar and pollen for pollinators -- most significant action that can be taken**
- **Choose a variety of plants with overlapping and sequential bloom periods to provide nectar & pollen through the entire season**
- **The more flowers the more you will attract pollinators!!!**


NOW REMEMBER, LADIES, IF YOU DON'T WISH TO GET POLLINATED, KEEP YOUR PETALS CLOSED.
abstain if he loves you not!
SCOTT HILBURN
4/30
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TULIP, ROSE AND DAISY ATTEND THEIR FIRST PLANT PARENTHOOD MEETING.

Recommended Native Wildflowers for Pollinators and Beneficial Insects

	COMMON NAME	SCIENTIFIC NAME		LIFE CYCLE[1]	MAX HEIGHT	NOTES
Early	Baby blue eyes	*Nemophila menziesii*	L	A	0.25′	
	Bicolor lupine	*Lupinus bicolor*	M	A	0.5′	
	Chinese houses	*Collinsia heterophylla*	M	A	0.5′	
	Common tidytips	*Layia platyglossa*	L	A	0.25′	Tolerates clay soils
	Golden lupine	*Lupinus densiflorus* var. *aureus*	L	A	2.5′	
Early–Mid	California poppy	*Eschscholzia californica*	L	A, P	0.5′	Tolerates clay soils
	Farewell-to-spring	*Clarkia amoena*	M	A	0.5′	
	Foothill penstemon	*Penstemon heterophyllus*	L	P	3′	
	Globe gilia	*Gilia capitata*	M	A, P	1′	
	Sticky monkey flower	*Mimulus aurantiacus*	M	P	2′	
Mid	Black sage	*Salvia mellifera*	L	P	2′	
	California phacelia	*Phacelia californica*	L	P	1′	
	Common deerweed	*Lotus scoparius*	L	P	3′	Very long-blooming; tolerates wet or dry conditions
	Coyote mint	*Monardella villosa*	L	P	2′	Requires good drainage
	Narrowleaf milkweed	*Asclepias fascicularis*	M	P	1.5′	Tolerates clay soils; tolerates wet or dry conditions
	Nettleleaf giant hyssop	*Agastache urticifolia*	M	P	4′	Tolerates clay soil; tolerates wet conditions
	Purple sage	*Salvia leucophylla*	L	P	2′	
	Summer lupine	*Lupinus formosus*	L	P	1.5′	
Mid–Late	California fuchsia	*Epilobium canum*	L	P	3′	
	Common sunflower	*Helianthus annuus*	M	A	5′	Tolerates clay soils
	Golden-yarrow	*Eriophyllum confertiflorum*	M	P	3′	
	Gumplant	*Grindelia camporum*	L	P	4′	Tolerates clay soils; can re-seed aggressively; tolerates wet or dry conditions
	Seaside woolly sunflower	*Eriophyllum stoechadifolium*	L	P	3′	
Late	California aster	*Symphyotrichum chilense*	L	P	5′	Tolerates clay soils; tolerates wet or dry conditions
	California buckwheat	*Eriogonum fasciculatum*	L	P	2.5′	Can be extremely drought-tolerant
	Canada goldenrod	*Solidago canadensis*	M	P	3′	Tolerates wet or dry conditions
	Marsh gumplant	*Grindelia stricta*	M	P	5′	

KEY: Bloom time; Water needs: low (L), medium (M), high (H); Establishes better from transplant than seed; Monarch butterfly host plant

Milkweed Plants

- **Named after the bitter sticky white sap which is toxic**

  Especially irritant to your eyes
- **Genus is Asclepias - more that 200 species**
- **Important in the Monarch Butterfly life cycle**
- **Xerces Society recommends only native species**
- **California has 15 different species**
- **Only a few grow on the Central Coast**

  Narrow leafed (Asclepias fascicularis)

  Woolypod (Asclepias eriocarpa)

Narrow-leafed Milkweed

Wollypod Milkweed

- ***Asclepias curassavica Wildfire, Tropical, Bloodflower, Cotton Bush, Mexican Butterfly, Mexican, butterfly weed, redhead, scarlet,*** **hierba de la cucaracha, wild Ipecacuanha**

- ***Asclepias curassavica gold***

How to provide a home for pollinators

Become a Beekeeper

70% of Native bees are ground nesting

Inside look at a ground nest

30% of Native Bees are cavity nesting

Cavity nest site

Bee Hotel for cavity nesting bees

Bumble bee nest


Offer a source of water

How to create nesting areas for pollinating bees

- Mulch less - mulch differently
- Leave some of last years stalks in place
- Leave dead wood or sticks for overwintering
- Build a nesting brush or wood pile
- Provide a source of water
- Install bee hotels
- (This is my favorite!) Become a Bee Keeper!! (OK maybe just support your local Bee Keeper)

Why is it important to conserve these creatures?

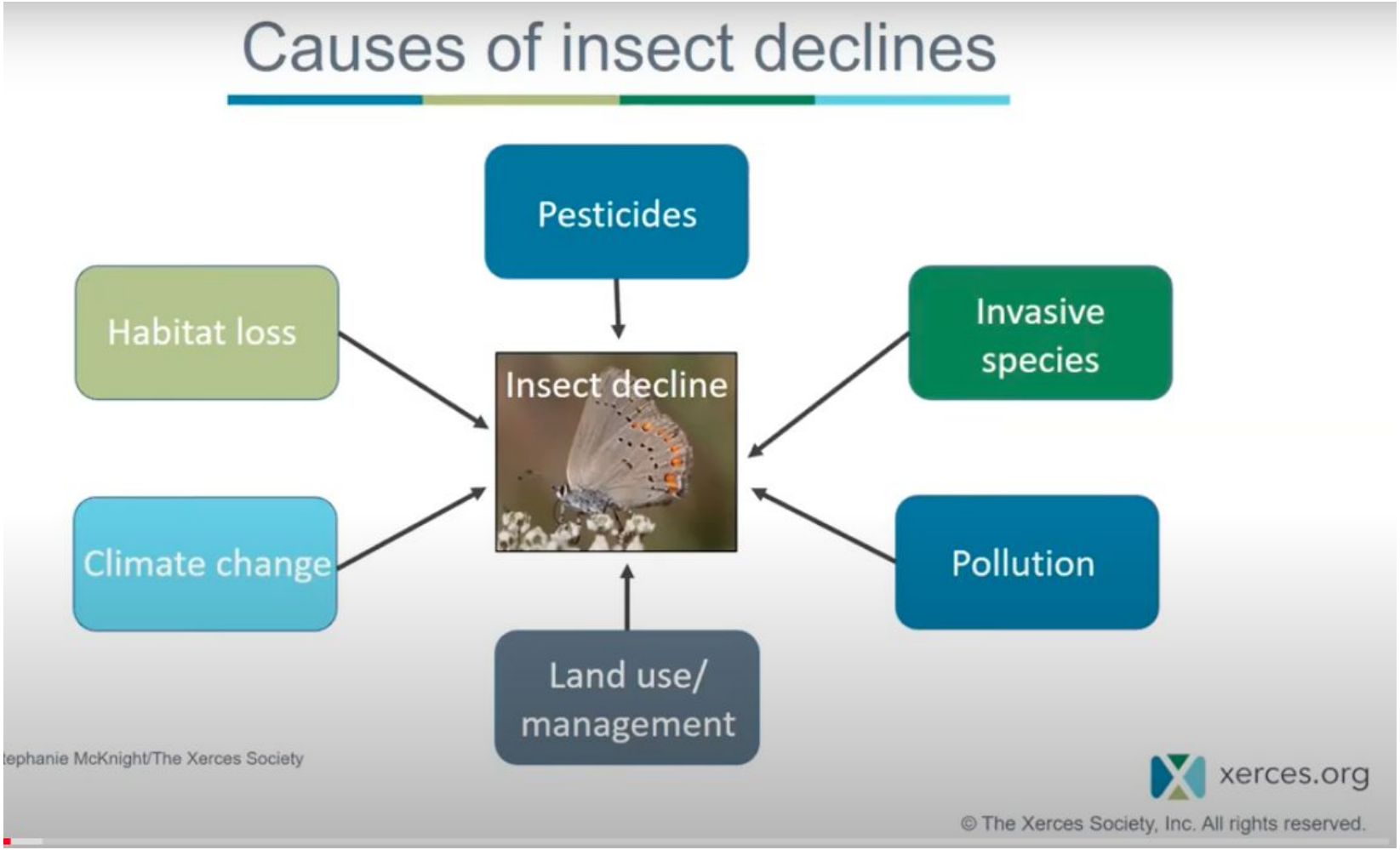
Importance of Pollinators

to: Whole Foods Market

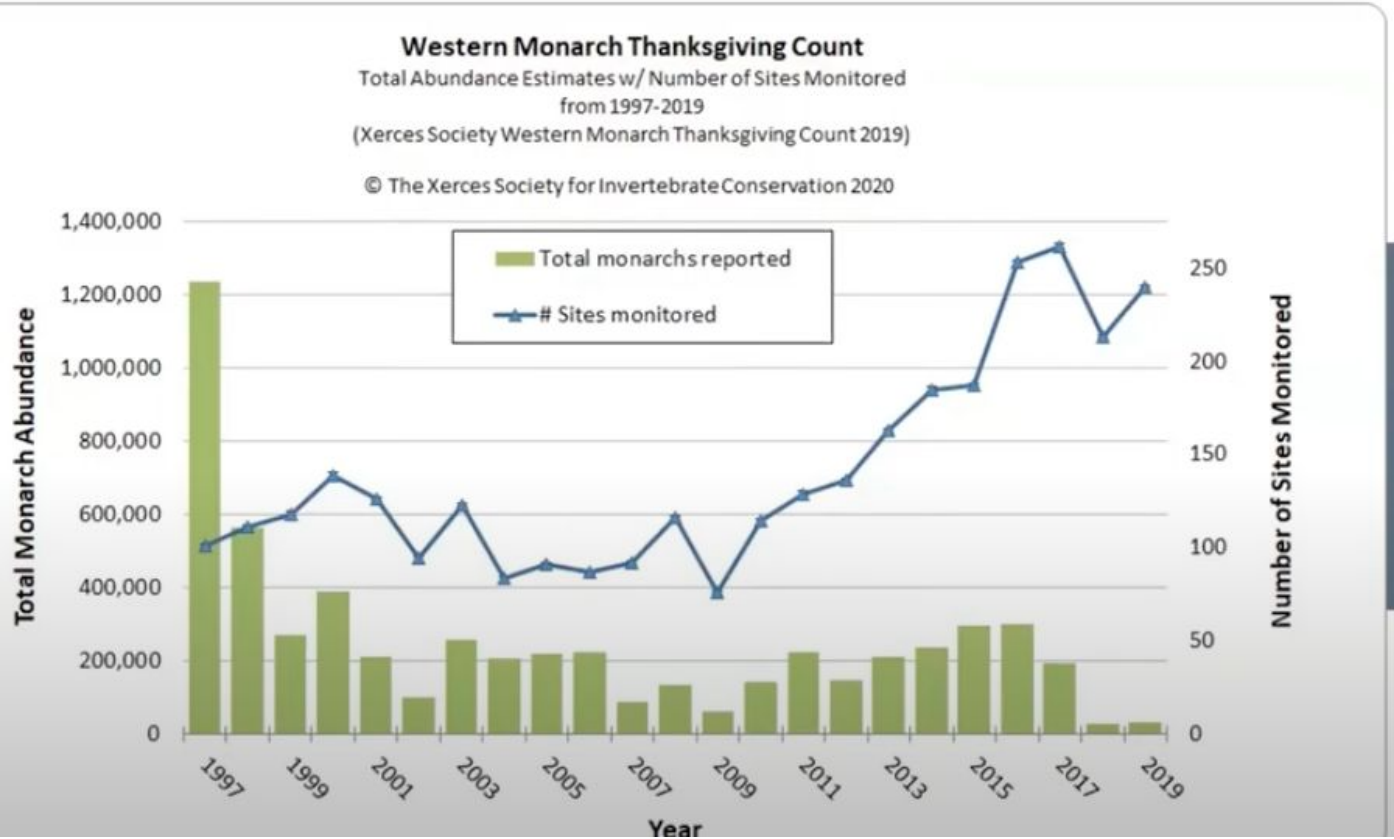
Importance of Pollinators

Photo: Whole Foods Market

Causes of insect declines



California Overwintering: Thanksgiving Counts



- 2017: 192,629 monarchs at 262 sites
- 2018 & 2019: less than 30,000 monarchs counted
- An 86% drop from 2017
- A 99.4% decline from the 1980's

xerces.org

Pinnacles National Park

Almost 400 bee species - One of the most diverse bee communities on earth

Photo: National Park Service

Pesticides and Pollinators

THREATS AND ALTERNATIVES

Pesticide – an umbrella term that encompasses several different groups of chemical substances used to control pests.

Insecticides
Herbicides
Fungicides

Insecticides

- HIGHLY TOXIC TO BEES
- WIDELY USED ACROSS THE LANDSCAPE
- LONG LIVED IN THE ENVIRONMENT
- CONTAMINATE POLLEN AND NECTAR
- SEVERAL SIMILAR PRODUCTS BEING DEVELOPED

Herbicides

- **SIGNIFICANT FACTOR IN MONARCH DECLINES**
- **PRIMARILY INDIRECT EFFECT ON POLLINATORS BY REMOVAL OF PLANTS**
- **SOME EVIDENCE SUGGESTS DIRECT TOXICITY**

Fungicides

- CONTRIBUTED TO LOSS OF WILD NATIVE BEE POPULATIONS
- REDUCES INVERTEBRATE POLLINATORS ABILITY TO FIGHT DISEASE
- HAVE INSECTICIDAL PROPERTIES OR CAN WORK IN SYNERGY WITH INSECTICIDES

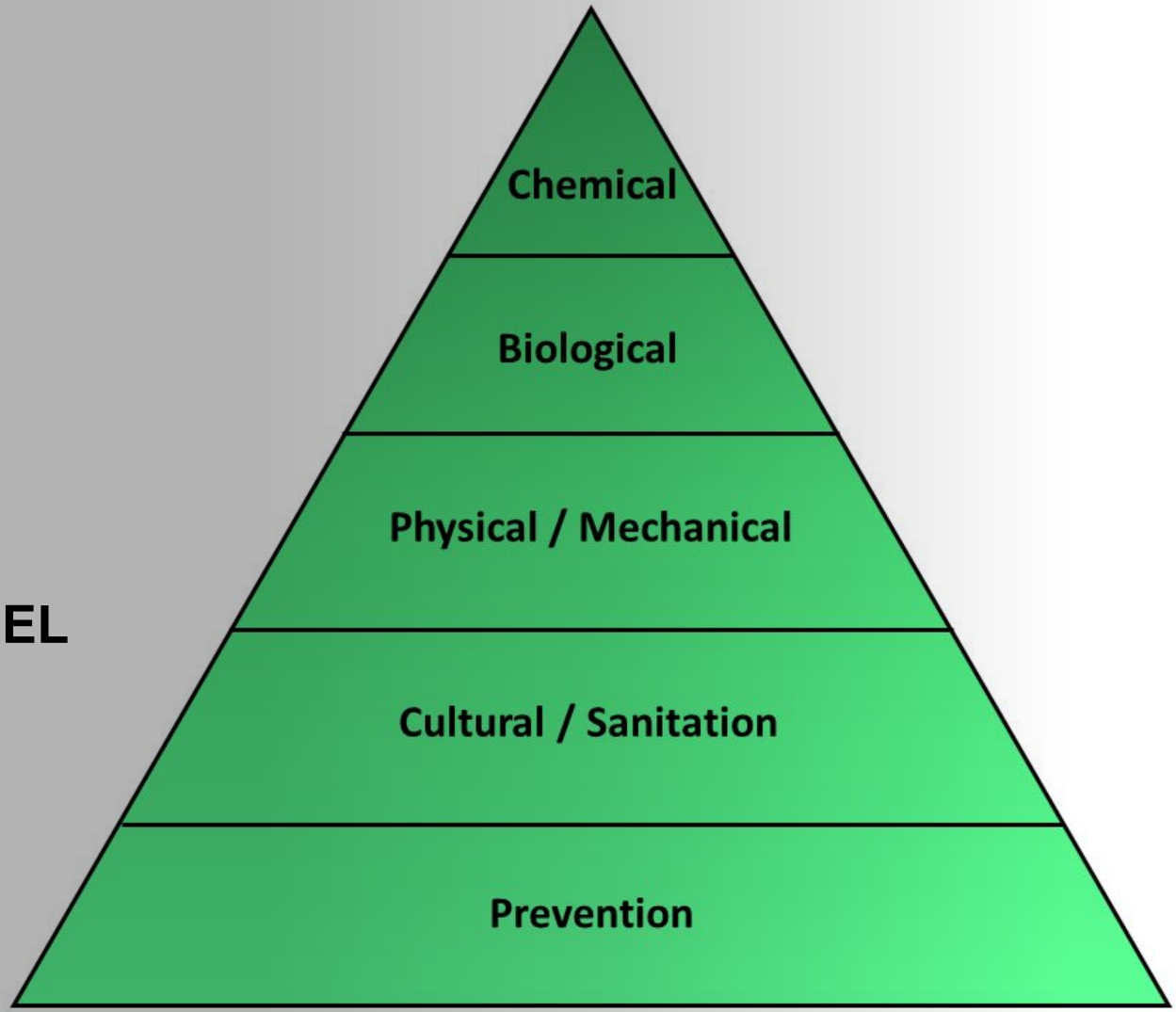

Pesticides in urban gardens are used for aesthetics with more pesticide use per acre than agricultural fields.


Pollinator friendly does not mean pesticide free.

Alternatives

- USE POLLINATOR FRIENDLY PLANTS
- UTILIZE INTEGRATED PEST MANAGEMENT (IPM) PRACTICES

IPM MODEL


Chemical
Biological
Physical / Mechanical
Cultural / Sanitation
Prevention

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Vickie

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Betsy

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- **Https://ucanr.edu/blogs/dirt/index.ctm?tagname=pollinator%20plants**

Trish

- **UC Berkeley Urban Lab (helpabee.org)**
- **Cornell University**
- **DavidSuzuki.org**
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- **Bumblebeeorganazation.org**

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Danielle

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Jennifer

Xerces.org

Calepa.ca.gov (CA Environmental Protection Agency)

Cdpr.ca.gov (CA Dept. Pesticide Regulation)

Cdfa.ca.gov (CA Dept of Food and Agriculture)

Nrcs.usda.gov (Natural Resources Conservation District)