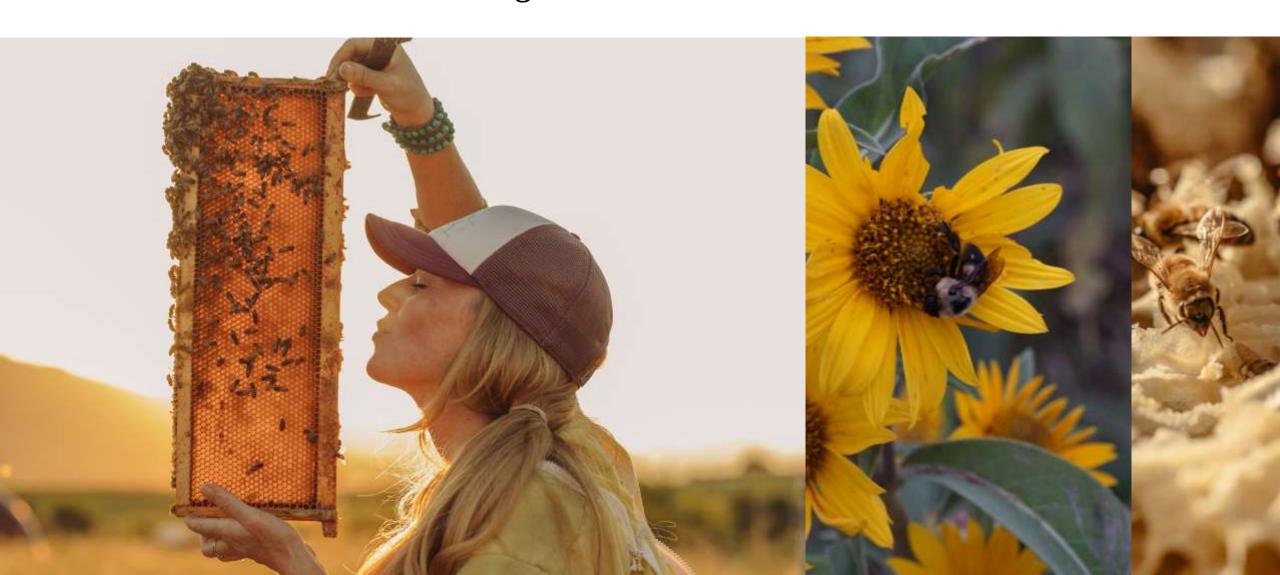


Bee Regenerative is a grassroots nonprofit centered on bee habitat conservation through research, regeneration, art & education.

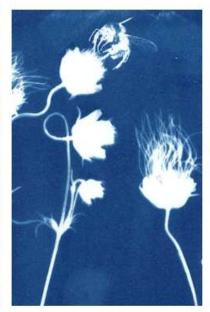








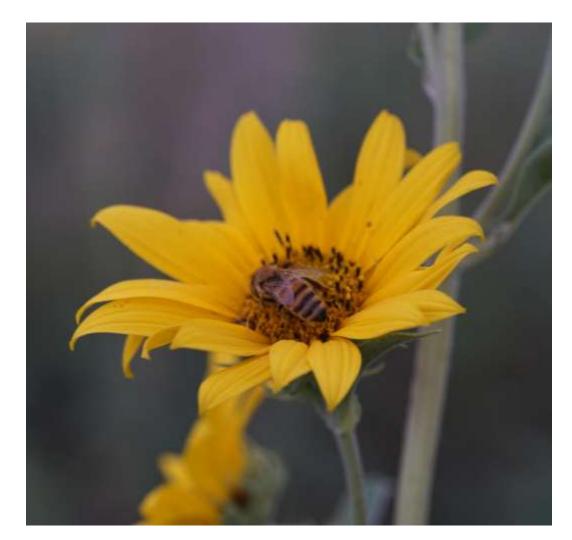






Bee Regenerative's mission is to create a world where bees enrich our working landscapes and our lives.

We envision a future filled with the vibrant hum of biodiverse working landscapes, bursting with healthy bees, coexisting with livestock and wildlife, and where agricultural producers work in harmony with nature to provide for our communities.





Honey Bees our littlest livestock







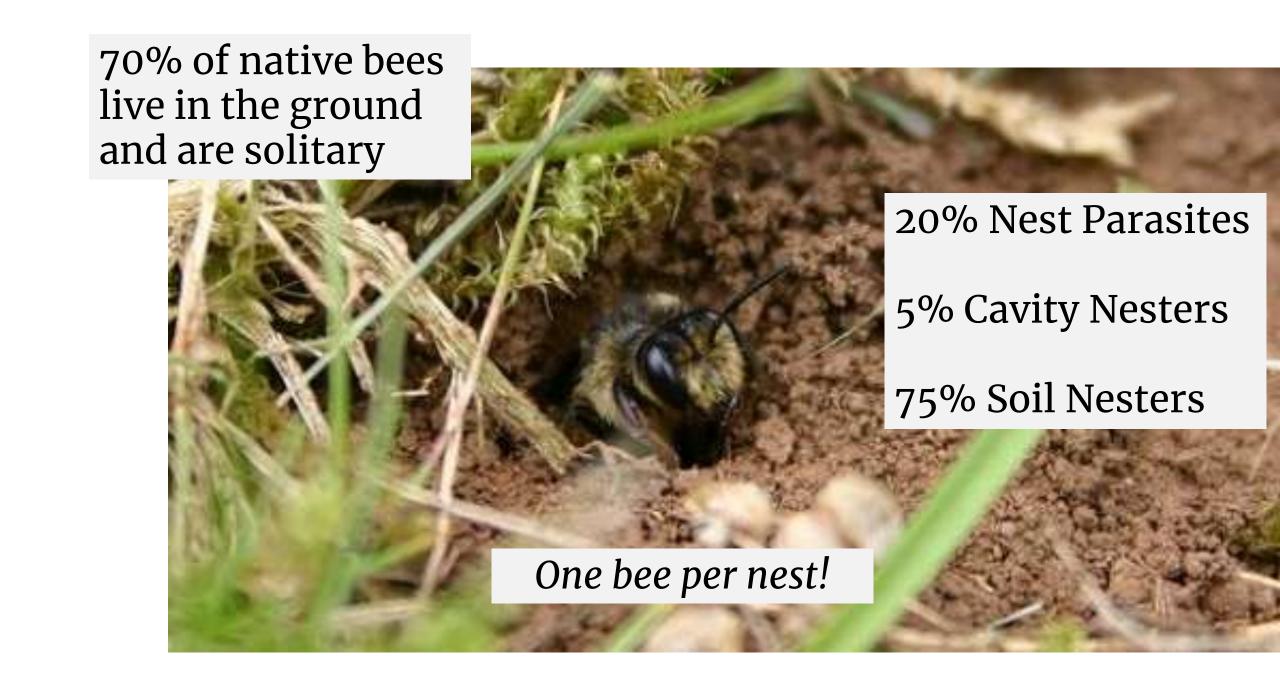
Native Bees our littlest wildlife



Honey Bees

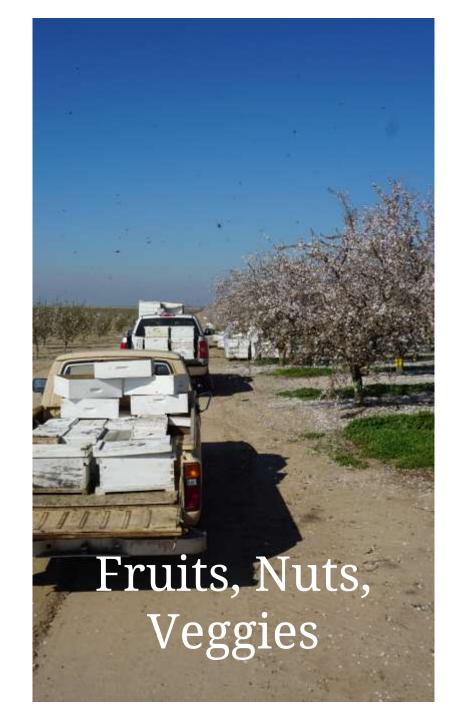
live in hives and are "kept" by beekeepers everywhere in the world (except Antarctica and the Sahara Desert)

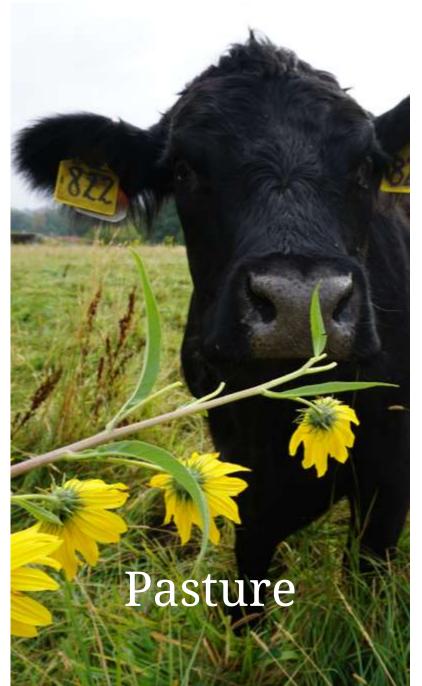
75,000 bees live in here!



"Why Bees?"

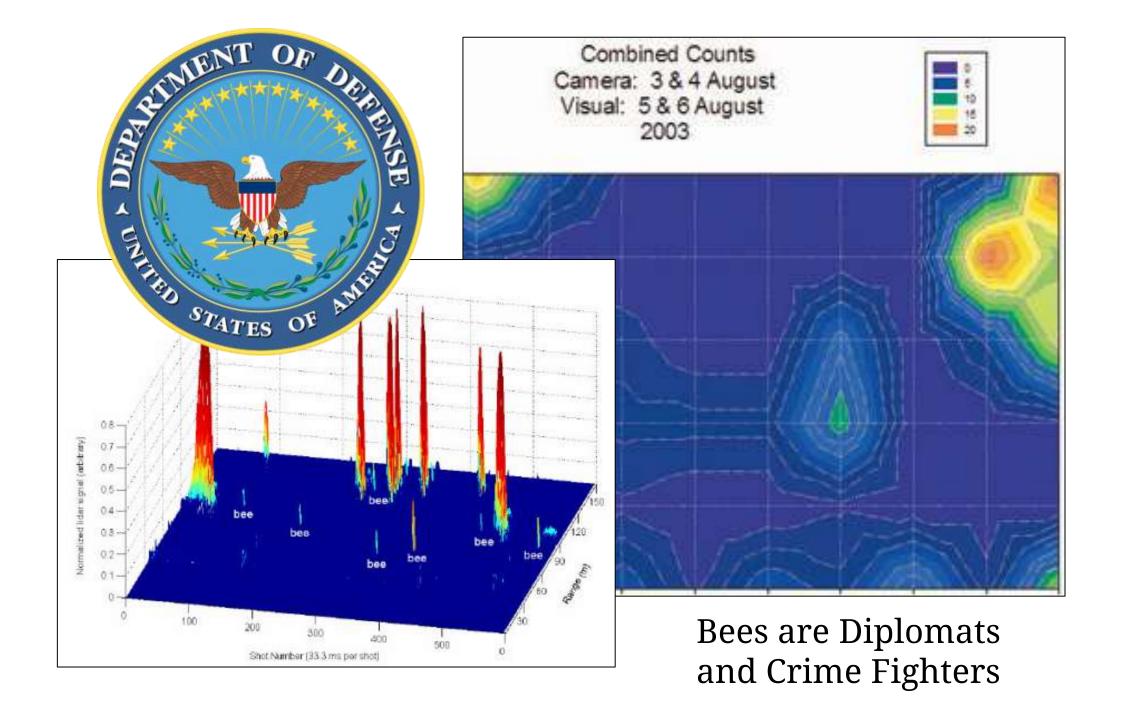
















Bees are Community Developers & Fundraisers Programs in developing nations enable beekeepers to raise money to pay for school fees, medical bills, increase their land and invest in more livestock - or hives.

Wild Survivors / NARI Women's Group in Upper Kitete Tanzania, Africa



Bees are Peacekeepers

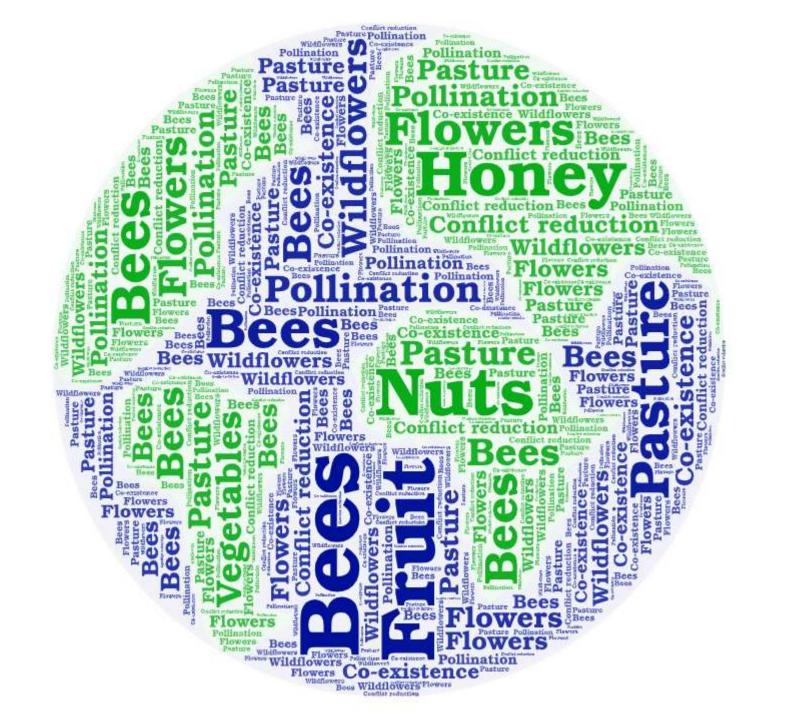
Beehives are used to reduce conflict between farmers and elephants in Kenya and Tanzania

Bee Love is a Universal Language









... however, our bees are in trouble ...

What we this year

APRIL 7, 2025 · 5:50

HEA 💓

anc

By k

FREQUENTLY

Does native

Loss of plant of are highly spedisappear, the

While some of pollinated by r

Over one-fifth of native North American pollinators at elevated risk of extinction

h of

test Earthquakes

Search

NatureServe and Florida Museum staff March 26, 2025

which are used to pollinate crops like watermelons and pumpkins.

The Four P's

Pests

Pesticides

Poor Nutrition

Pathogens

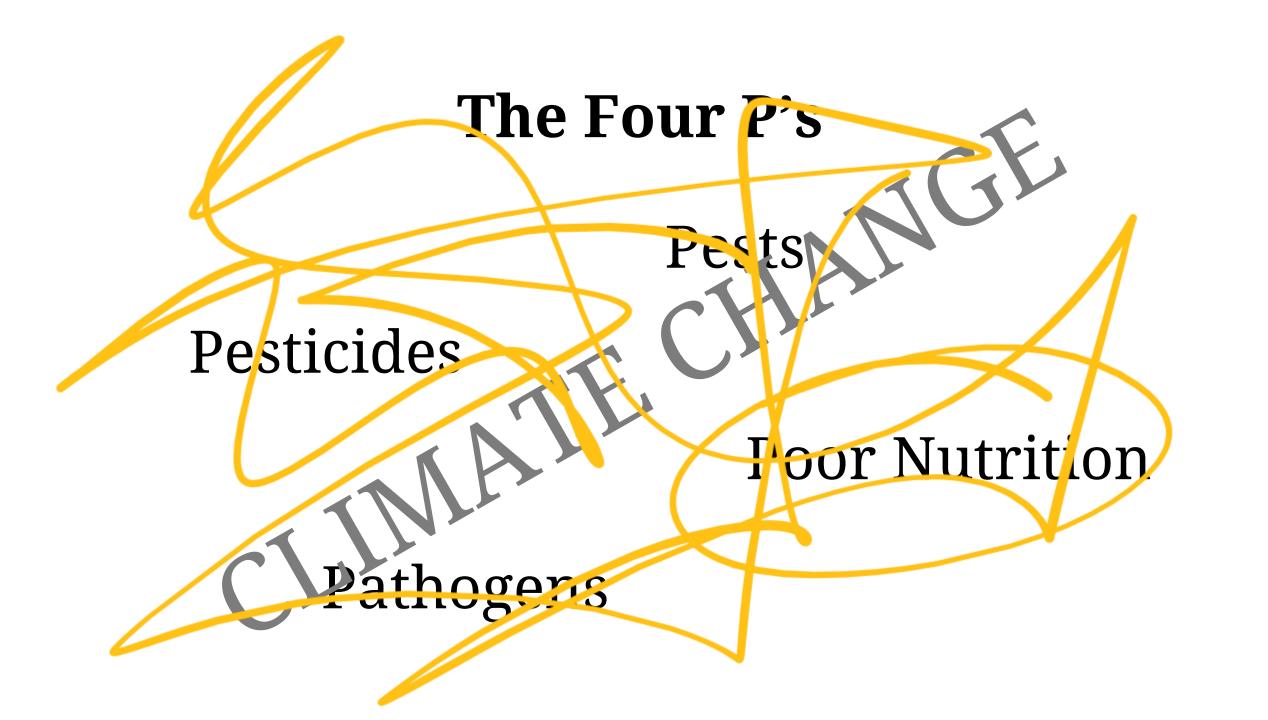
The Four P's

Pests

Pesticides

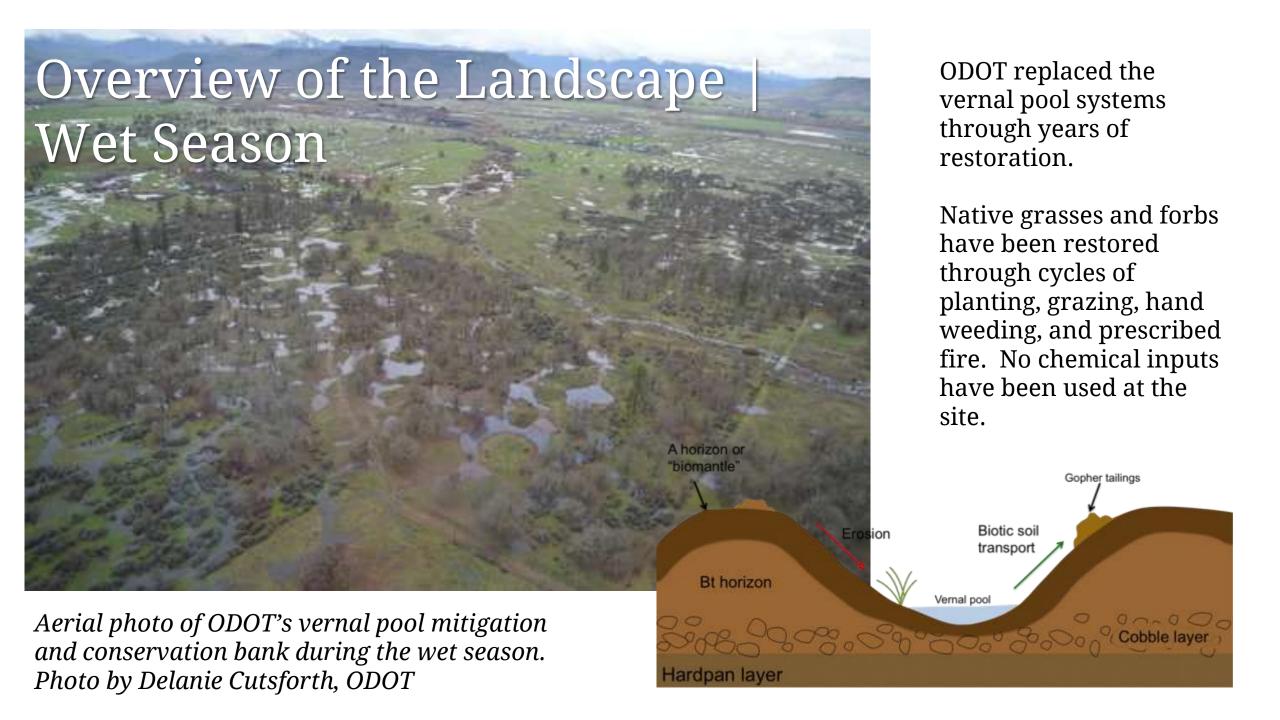
Poor Nutrition

Pathogens









Spent every week during bee season for five years –

Watching nature heal, regenerate, function, and thrive





Apis mellifera on Asclepias fascicularis, prescribed burn in the background.



Happy researcher in a field of Eriophyllum lanatum

Lessons from a Restored Natural System

Despite –

- Heat waves
- Severe drought
- Fire

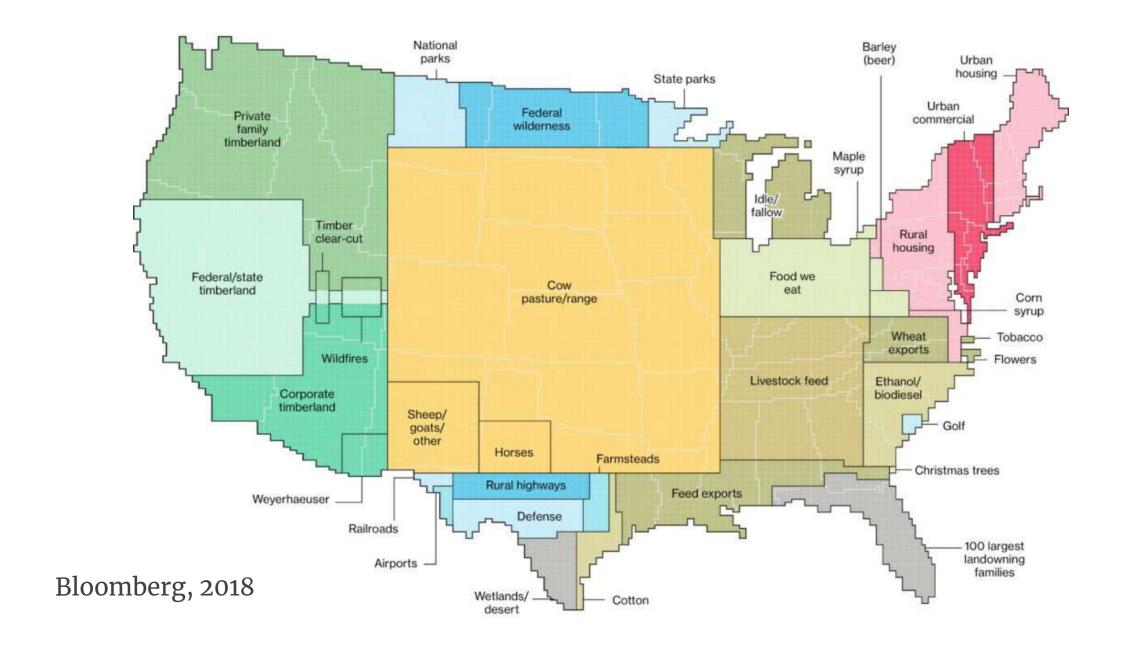
Native bee populations increased

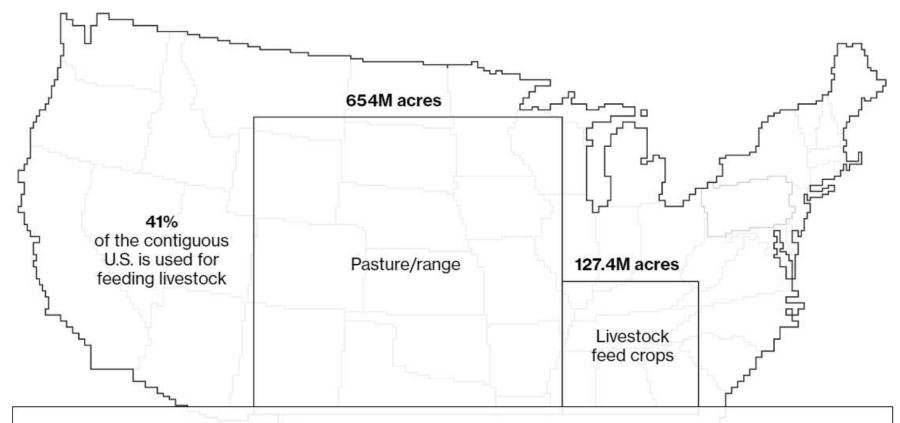
Native bee diversity increased

Honey bee health was *consistently stronger* at the vernal pool property, in comparison with apiaries in agricultural landscapes / urban settings

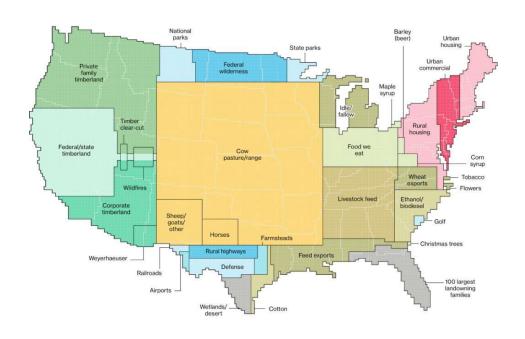
- Lower Varroa mite levels
- Higher over wintering rate
- Lower pathogen counts







There's a single, major occupant on all this land: cows. Between pastures and cropland used to produce feed, 41 percent of U.S. land in the contiguous states revolves around livestock.



41 percent of U.S. land is used to feed livestock (Bloomberg, 2018)

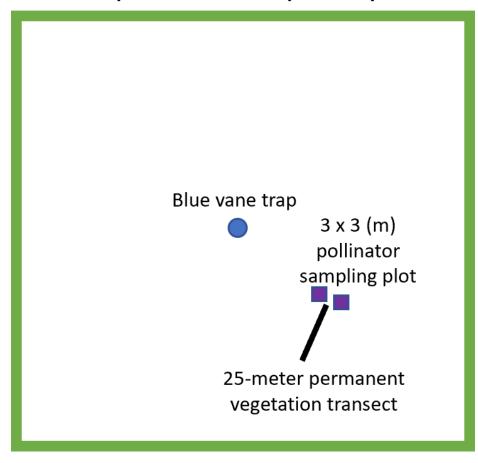
Less than 0.01% of land in North America's Prairie Pothole Region to be adequate for native bee and honey bee nutrition (USGS, 2021).





Methods & Materials

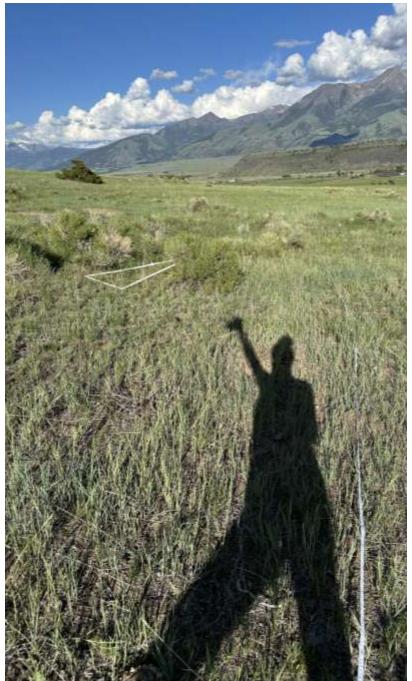
Example of 1-acre plot layout













BOTR Mineral Additive Seed Mixes

2022

Anatone Bluebunch Wheatgrass 50% Native Purple Prairie Clover 20% Joseph Idaho Fescue 20% Stillwater Prairie Coneflower

2023

Cider Milkvetch (75%), Rocky Mountain Bee Plant (3%), and Birdsfoot Trefoil (22%)

2024

Cider Milkvetch (75%), Rocky Mountain Bee Plant (3%), and Birdsfoot Trefoil (22%) While I didn't observe any flowers coming up as a direct result of the cowpies or bale grazing, I did see some very cool bee communities on your ranches... Deep Creek (Managed by Barney Creek Ranch) – Control (13 species)

Bald-spot sweat bee, Lasioglossum paraforbesii

Bicolored striped sweat bee, *Agapostemon virescens*

Bull-headed furrow bee, *Lasioglossum zonulum*

Edwards's long-horned bee, Eucera edwardsii

Friendless sweat bee, Lasioglossum versans

Honey bee, Apis mellifera

Margined mason bee, Osmia longula

Misbehaved sweat bee, Lasioglossum inconditum

Texas / angelica stripped sweat bee, *Agapostemon angelicus / texanus*

Three-zoned sweat bee, Lasioglossum trizonatum

Trevor's mason bee, Osmia trevoris

Two-form bumble bee, *Bombus bifarius*

Western bumble bee, *Bombus occidentalis*

Deep Creek (Managed by Barney Creek Ranch) - Treatment (20 species)

Bald-spot sweat bee, Lasioglossum paraforbesii

Bicolored striped sweat bee, *Agapostemon virescens*

Bull-headed furrow bee, Lasioglossum zonulum

Friendless sweat bee, Lasioglossum versans

Hairy-faced summer mason bee, *Hoplitis pilosifrons*

Honey bee, Apis mellifera

Hunt's bumble bee, Bombus huntii

Kincaid's cellophane bee, Colletes kincaidii

Long-horned bee, *Melissodes sp.*

Metallic sweat bee sp., Lasioglossum sp.

Purple miner bee, *Andrena prunorum*

Red-belted bumblebee, *Bombus rufocinctus*

Strong-veined metallic sweat bee, *Lasioglossum s.str.*

Tansy mustard sweat bee, Lasioglossum sisymbrii

Texas / angelica stripped sweat bee, *Agapostemon* angelicus / texanus

Three-zoned sweat bee, *Lasioglossum trizonatum*

Two-form bumble bee, *Bombus bifarius*

Vancouver island bumblebee, *Bombus vancouverensis*

Western bumble bee, Bombus occidentalis

White-shouldered bumble bee, *Bombus appositus*

Bee Highlights: Western bumble bee, Bombus occidentalis



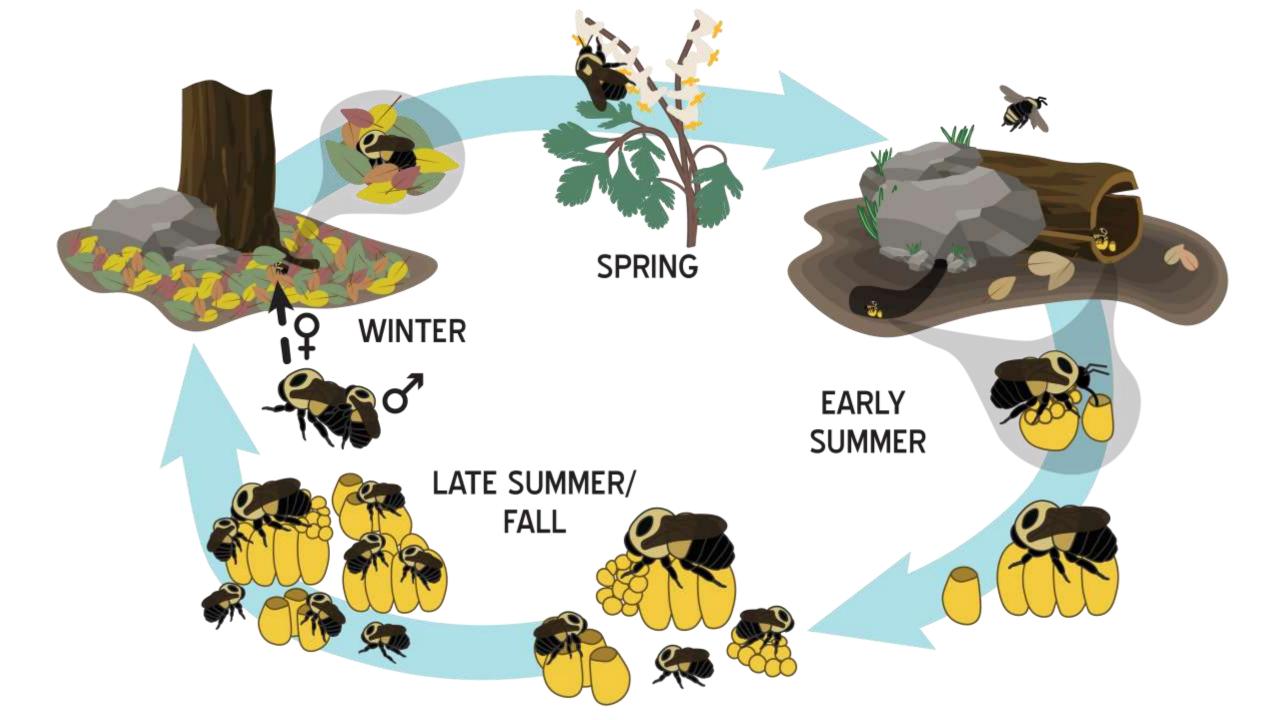
Forage needs

- Diverse flowers blooming spring, summer, fall
- Geranium, goldenrod, lupine, spirea

Nesting needs

- Underground in abandoned rodent burrows
- Hollow logs and stumps

Mated queens live out of the nest in "hibernaculum" – usually piles of wood, leaf litter, or dried grass.



Keewaydin – Control (16 species)

Bear-like digger bee, *Anthophora ursina*

Bicolored striped sweat bee, *Agapostemon virescens*

Central bumble bee, *Bombus centralis*

Digger bee, Anthophora affabilis

Edwards's long-horned bee, *Eucera edwardsii*

Golden northern bumble bee, Bombus fervidus

Hairy-faced summer mason bee, Hoplitis pilosifrons

Hoary sweat bee, Lasioglossum pruinosum

Long-horned bee, Eucera sp.

Metallic sweat bee sp., Lasioglossum sp.

Nevada bumble bee, *Bombus nevadensis*

Southern bronze furrow bee, *Lasioglossum cooleyi*

Tansy mustard sweat bee, Lasioglossum sisymbrii

Texas / angelica stripped sweat bee, Agapostemon

angelicus / texanus

Trevor's mason bee, Osmia trevoris

Western digger bee, Anthophora occidentalis

Keewaydin – Treatment (9 species)

Bald-spot sweat bee, Lasioglossum paraforbesii

Bicolored striped sweat bee, *Agapostemon virescens*

Bull-headed furrow bee, *Lasioglossum zonulum*

Edwards's long-horned bee, Eucera edwardsii

Metallic sweat bee sp., Lasioglossum sp.

Texas / angelica stripped sweat bee, *Agapostemon* angelicus / texanus

Trevor's mason bee, Osmia trevoris

Western digger bee, Anthophora occidentalis

Wide-legged sweat bee, Agapostemon femoratus

Bee Highlights: Golden Northern Bumble Bee, Bombus fervidus



Forage needs

- Diverse flowers blooming spring, summer, fall
- They are known for their long tongues and preference for flowers with deep corollas, such as clovers, wild bergamot, and thistles.

Nesting needs

- They nest both on and slightly under the ground, often in abandoned rodent burrows, under haystacks, or in tall grass
- These are meadow bees and thrive in grasslands.

Mated queens live out of the nest in "hibernaculum" – usually piles of wood, leaf litter, or dried grass.

Milk Maid – Control (2 species)

Bicolored striped sweat bee, Agapostemon virescens

Orange-tipped wood-digger bee, *Anthophora terminalis*

Milk Maid – Treatment (9 species)

Anomalous metallic sweat bee, *Lasioglossum Dialictus* anomalum

Bald-spot sweat bee, Lasioglossum paraforbesii

Bicolored striped sweat bee, *Agapostemon virescens*

Bull-headed furrow bee, Lasioglossum zonulum

Edwards's long-horned bee, *Eucera edwardsii*

Scurfy pea carder bee, Anthidium tenuiflorae

Texas / angelica stripped sweat bee, *Agapostemon* angelicus / texanus

Trevor's mason bee, Osmia trevoris

Two-form bumble bee, Bombus bifarius

Bee Highlights: Bicolored Striped Sweat Bee, Agapostemon virescens



Forage needs

- Females are attracted to a variety of flowers, but they particularly like those in the Asteraceae family.
- Also roses, strawberries, and sunflowers.

Nesting needs

- They dig nests in bare or sparsely vegetated soil, preferring well-drained, sandy, or loose soils with good sunlight (like bison wallows!)
- Their nests are "aggregated" or communal, they dig multiple chambers underground and many females share the entrance but have individual nests.



West Creek – Control (6 species)

Bicolored striped sweat bee, Agapostemon virescens

Hudsonian Sweat Bee, *Lasioglossum Dialictus* hudsoniellum

Mason bee, Osmia Melanosmia sp.1

Mason bee, Osmia Melanosmia sp.2

Metallic sweat bee sp., Lasioglossum Dialictus sp.1

Small carpenter bee, Ceratina sequoia

West Creek – Treatment (8 species)

Bicolored striped sweat bee, *Agapostemon virescens*

Bull-headed furrow bee, Lasioglossum zonulum

Bumble-bee-mimic digger bee, *Anthophora bomboides*

Edwards's long-horned bee, Eucera edwardsii

Hudsonian sweat bee, Lasioglossum Dialictus incompletum

Maine blueberry bee, Osmia atriventris

Orange-tipped wood-digger bee, Anthophora terminalis

Texas / angelica stripped sweat bee, *Agapostemon* angelicus / texanus

Bee Highlights: Maine blueberry bee, Osmia atriventris



Forage needs

- Blueberry flowers!
- Also other spring and early summer flowers, usually bell-shaped and nightshade (hackberries, tomatoes).

Nesting needs

- Existing cavities such as hollows stems, cracks in rocks, of holes in wood made by birds and worms.
- Unlike most Osmia, these bees seal their brood chambers with leaves (instead of mud)

They can live in deserts, prairies, shrublands, deciduous forests, and coniferous forests – but are not commonly found in agricultural areas.



SHE CUTE!



HE CUTE!

Anderson – Control (15 species)

Bald-spot sweat bee, Lasioglossum paraforbesii

Bufflehead mason bee, Osmia bucephala

Bull-headed furrow bee, Lasioglossum zonulum

Central bumble bee, Bombus centralis

Hudsonian sweat bee, Lasioglossum Dialictus incompletum

Indiscriminate cuckoo bumble bee, Bombus insularis

Mason bee, Osmia sp.1

Orange-tipped wood-digger bee, Anthophora terminalis

Paradise valley mason bee, Osmia paradisica

Southern bronze furrow bee, Lasioglossum cooleyi

Texas / angelica stripped sweat bee, Agapostemon angelicus / texanus

Three-zoned sweat bee, Lasioglossum trizonatum

Trevor's mason bee, Osmia trevoris

Yellow head bumble bee, Bombus flavifrons

Anderson Ranch – Treatment (38 species)

Bald-spot sweat bee, Lasioglossum paraforbesii

Black short-faced bee, *Dufourea maura*

Black-and-gray leafcutter bee, Megachile melanophaea

Black-tailed bumble bee, *Bombus melanopygus*

Bufflehead mason bee, Osmia bucephala

Bull-headed furrow bee, Lasioglossum zonulum

Bumble bee, Bombus sp.

Confused sweat bee, *Halictus confusus*

Forest bumble bee, Bombus sylvicola

Fuzzy-horned bumble bee, *Bombus mixtus*

Golden northern bumble bee, Bombus fervidus

Hudsonian Sweat Bee, *Lasioglossum Dialictus* incompletum

Hunt's bumble bee, Bombus huntii

Indiscriminate cuckoo bumble bee, *Bombus insularis*

Large black-bellied mason bee, Osmia nigriventris

Long-horned bee, *Melissodes sp.*

Metallic sweat bee sp., Lasioglossum Dialictus sp.1

Metallic sweat bee sp., Lasioglossum Dialictus sp.2

Metallic sweat bee sp., Lasioglossum Dialictus sp.3

Metallic sweat bee sp, Lasioglossum – Sphecodogastra

sp.

Mining bee, Andrena sp. 1

Modest masked bee, *Hylaeus modestus subsp.*

Citrinifrons

Orange-legged furrow bee, *Halictus rubicundus*

Orange-tipped wood-digger bee, Anthophora terminalis

Anderson Ranch – Treatment (38 species) Continued

Paradise valley mason bee, Osmia paradisica

Red-belted bumblebee, Bombus rufocinctus

Silver-tailed petalcutter, Megachile montivaga

Southern bronze furrow bee, Lasioglossum cooleyi

Texas / angelica stripped sweat bee, *Agapostemon angelicus / texanus*

Three-zoned sweat bee, *Lasioglossum trizonatum*

Two-form bumble bee, *Bombus bifarius*

Unarmed leafcutter bee, Megachile inermis

Vancouver island bumblebee, *Bombus vancouverensis*

Western bumble bee, Bombus occidentalis

Western leafcutting bee, Megachile perihirta

White-shouldered bumble bee, *Bombus appositus*

Yellow head bumble bee, Bombus flavifrons

Yellow-faced bee, *Hylaeus annulatus sp.*

Bee Highlights: Silver-tailed Petalcutter Bee, Megachile montivaga





Forage needs

 Gumweed (common at Anderson ranch in the summer), sunflower, aster, goldenrod.

Nesting needs

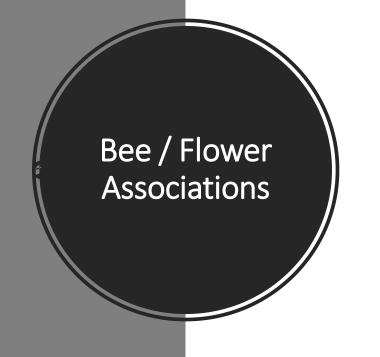
- Existing cavities such as hollow stems, tree
 holes and abandoned beetle burrows in wood.
- This species has even been seen in goldenrod ball galls!
- Unlike other leafcutters, this species cuts flower pedals to line her nest, particularly from plants like *Cirsium* (thistle), *Helianthus* (sunflower), *Verbascum* (mullein), and *Clarkia*.



THAT TUMMY BRUSH, THO!



■ Anderson Ranch	8
⊟ARC	4
■ Carraway	1
Miner bee sp.	1
■ Hound's tongue	2
Hunt's bumble bee	1
Two-formed bumble bee	1
■ Salsify	1
Small carpenter bee	1
■ART	4
■ Hound's tongue	1
Hunt's bumble bee	1
■ Rocky Moutain Iris	3
Black and blue miner bee	1
Friendless sweat bee	1
Mason bee	1



■ Deep Creek	1
■ DCT	1
■ False flax	1
W-marked miner bee	1



■ Keewaydin Ranch	9
⊟ KRC	7
■ False London rocket	6
Joker miner bee	2
Metallic sweat bee sp.	3
Mining bee	1
■ Hairy golden aster	1
Metallic sweat bee sp.	1
■ KRT	2
■ Sainfoin	2
Fuzzy-horned bumble bee	1
Leafcutter bee	1



■ Milk Maid	3
■ MMT	3
■ Alsike clover	3
Honey bee	3

Bee / Flower Associations

■ West Creek Ranch	19
⊟WCC	2
■ Hairy golden aster	:
Mason bee	3
■ Prickly pear	-
Bicolored striped-sweat bee	3
■ WCT	17
⊟ Alfalfa	3
Dense-haired mason bee	3
■ False London rocket	2
Lupine miner bee	3
Victoria miner bee	-
⊟ Hairy golden aster	10
Bicolored striped sweat bee	-
Big-cheeked mason bee	
Centaurea Leafcutter Bee	-
Colorado miner bee	-
Lapland leafcutter bee	-
Pugnacious leafcutter bee	-
Spine-shouldered cellophane bee	-
White-faced summer mason bee	-
⊟ Hoary alyssum	-
Prunus miner bee	-
■Scarlet globemallow	
Edwards's long-horned bee	-
Globe mallow bee	-
Metallic sweat bee	•

Alfalfa	1	A1 /	
Dense-haired mason bee	1	Attractive Flowers /	
Alsike clover	3	_	
Honey bee	3	All Ranches	
Carraway	1		
Miner bee sp.	1	Hoary alyssum	1
False flax	1	Prunus miner bee	1
W-marked miner bee	1	Hound's tongue	3
False London rocket	8	Hunt's bumble bee	2
Joker miner bee	2	Two-formed bumble bee	1
Lupine miner bee	1	Prickly pear	1
Metallic sweat bee sp.	3	Bicolored striped-sweat bee	1
Mining bee	1	Rocky Moutain Iris	3
Victoria miner bee	1	Black and blue miner bee	1
Hairy golden aster	12	Friendless sweat bee	1
Bicolored striped sweat bee	1	Mason bee	1
Big-cheeked mason bee	3	Sainfoin	2
Centaurea Leafcutter Bee	1	Fuzzy-horned bumble bee	1
Colorado miner bee	1	Leafcutter bee	1
Lapland leafcutter bee	1	Salsify	1
Mason bee	1	Small carpenter bee	1
Metallic sweat bee sp.	1	Scarlet globemallow	3
Pugnacious leafcutter bee	1	Edwards's long-horned bee	1
Spine-shouldered cellophane bee	1	Globe mallow bee	1
White-faced summer mason bee	1	Metallic sweat bee	1

Alfalfa	1	All Danchas managing for flavor	•
Dense-haired mason bee	1	All Ranches – managing for flower	5
Alsike clover	3	that feed many bees	
Honey bee	3	that reed many bees	
Carraway	1		
Miner bee sp.	1	Hoary alyssum	1
False flax	1	Prunus miner bee	1
W-marked miner bee	1	Hound's tongue	3
False London rocket	8	Hunt's bumble bee	2
Joker miner bee	2	Two-formed bumble bee	1
Lupine miner bee	1	Prickly pear	1
Metallic sweat bee sp.	3	Bicolored striped-sweat bee	1
Mining bee	1	Rocky Moutain Iris	3
Victoria miner bee	1	Black and blue miner bee	1
Hairy golden aster	12	Friendless sweat bee	1
Bicolored striped sweat bee	1	Mason bee	1
Big-cheeked mason bee	3	Sainfoin	2
Centaurea Leafcutter Bee	1	Fuzzy-horned bumble bee	1
Colorado miner bee	1	Leafcutter bee	1
Lapland leafcutter bee	1	Salsify	1
Mason bee	1	Small carpenter bee	1
Metallic sweat bee sp.	1	Scarlet globemallow	3
Pugnacious leafcutter bee	1	Edwards's long-horned bee	1
Spine-shouldered cellophane bee	1	Globe mallow bee	1
White-faced summer mason bee	1	Metallic sweat bee	1

Alfalfa	1	All Danches managing for flower	**
Dense-haired mason bee	1	All Ranches – managing for flower	15
Alsike clover	3	that feed uncommon GYE bees	
Honey bee	3	that icea direction of E Sees	
Carraway	1		
Miner bee sp.	1	Hoary alyssum	1
False flax	1	Prunus miner bee	1
W-marked miner bee	1	Hound's tongue	3
False London rocket	8	Hunt's bumble bee	2
Joker miner bee	2	Two-formed bumble bee	1
Lupine miner bee	1	Prickly pear	1
Metallic sweat bee sp.	3	Bicolored striped-sweat bee	1
Mining bee	1	Rocky Moutain Iris	3
Victoria miner bee	1	Black and blue miner bee	1
Hairy golden aster	12	Friendless sweat bee	1
Bicolored striped sweat bee	1	Mason bee	1
Big-cheeked mason bee	3	Sainfoin	2
Centaurea Leafcutter Bee	1	Fuzzy-horned bumble bee	1
Colorado miner bee	1	Leafcutter bee	1
Lapland leafcutter bee	1	Salsify	1
Mason bee	1	Small carpenter bee	1
Metallic sweat bee sp.	1	Scarlet globemallow	3
Pugnacious leafcutter bee	1	Edwards's long-horned bee	1
Spine-shouldered cellophane bee	1	Globe mallow bee	1
White-faced summer mason bee	1	Metallic sweat bee	1

Alfalfa	1	All Danchas managing for flawers
Dense-haired mason bee	1	All Ranches – managing for flowers
Alsike clover	3	that feed possibly undiscovered bees!
Honey bee	3	that icea possibly allaiscovered bees.
Carraway	1	
Miner bee sp.	1	Hoary alyssum 1
False flax	1	Prunus miner bee 1
W-marked miner bee	1	Hound's tongue 3
False London rocket	8	Hunt's bumble bee 2
Joker miner bee	2	Two-formed bumble bee 1
Lupine miner bee	1	Prickly pear 1
Metallic sweat bee sp.	3	Bicolored striped-sweat bee 1
Mining bee	1	Rocky Moutain Iris 3
Victoria miner bee	1	Black and blue miner bee 1
Hairy golden aster	12	Friendless sweat bee 1
Bicolored striped sweat bee	1	Mason bee 1
Big-cheeked mason bee	3	Sainfoin 2
Centaurea Leafcutter Bee	1	Fuzzy-horned bumble bee 1
Colorado miner bee	1	Leafcutter bee 1
Lapland leafcutter bee	1	Salsify 1
Mason bee	1	Small carpenter bee 1
Metallic sweat bee sp.	1	Scarlet globemallow 3
Pugnacious leafcutter bee	1	Edwards's long-horned bee 1
Spine-shouldered cellophane bee	1	Globe mallow bee 1
White-faced summer mason bee	1	Metallic sweat bee 1

Flower Highlights: Hairy golden aster



Flower Highlights: Scarlet Globemallow



Flower Highlights: Sainfoin







www.beeregenerative.org



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Questions?