Resilient Gardens

New Naturalism and gardening in Laramie
And Vegetable Garden survival ideas

Another major reason to plan some resiliency in your garden is that climate change is happening.
This means the same temps, freeze dates, rainfall etc cannot be relied upon.
Our climate in Laramie has always been erratic and unreliable – BUT ITS GOING TO GET MUCH WORSE
Hotter longer summers
Rapid swings of temperature
Severe cold episodes in winter
Relative drought

Resiliency is the ability to withstand adversity

Why bother creating a resilient garden? To create a living island, an oasis as a buffer and resource for the future .

WHY ?

There has been Massive environmental degradation and habitat loss resulting in:

Bird population of North America dropping 30% in 50 years.

Insect population dropping 45% in 30 years including bees and pollinators :

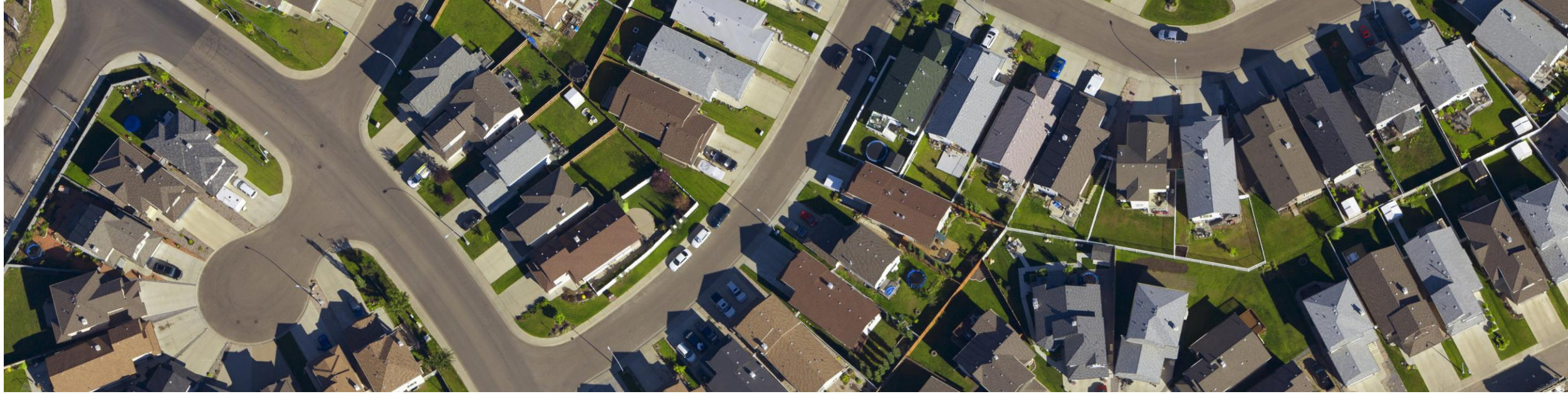
Because of environmental degradation a lot of land is extremely inhospitable to life forms. Islands of reserve may help replenish the environment later . Gardens have been studied as a reserve for all bees especially native bees, with success.

According to many experts – it helps if gardeners keep learning and being curious.
If a plant isn't working out – ask questions as to why ?

Learn about your garden space, its orientation N/S , its protections ? Its microclimates etc which will help for most beneficial plant placement.

Climate change just doesn't mean things are getting warmer – last fall was very warm for Laramie ; BUT it also brings some big temperature swings because of an unstable polar airmass- like the big freeze we just had and the snow in Florida. This brings big challenges to gardeners.
We need to look for plants (especially in Wyoming) that can tolerate extreme conditions.

Photo is Orange tree This year in Florida.



View of suburbia to some this is a toxic desert of chemically treated lawns
Toxic sterile green deserts
Free roaming invasive carnivores that kill over 2.5 BILLION birds a year
A LOT of cultural resistance to change

Midwest farmland.
Fields of monoculture but some trees
NOTE : Home owners are estimated to use approximately 10 x as much pesticide per acre as farmers – its not cost effective for farmers

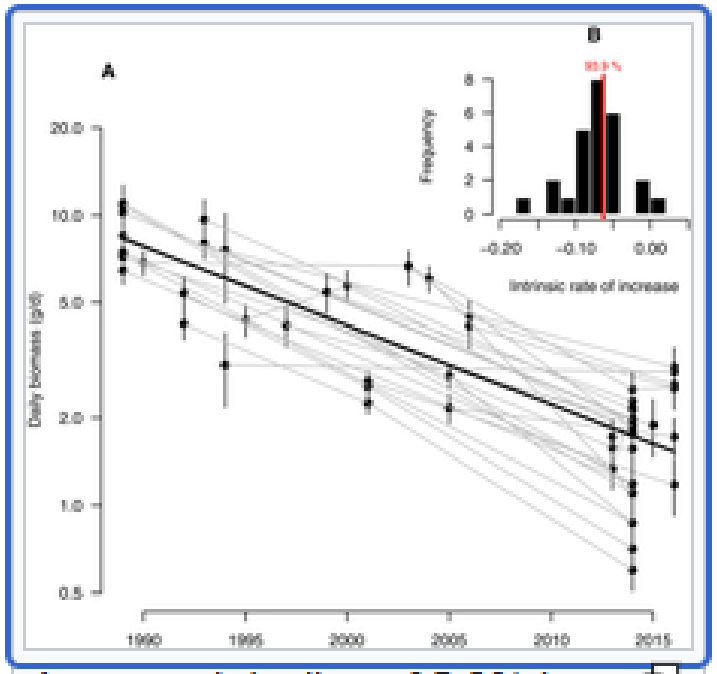
HISTORY

Historically early settlers used the environment, and it wasn't until relatively recently that any " conservation " was done.
Bald eagles were almost made extinct by hunting and DDT such that only 400+ pairs existed in 1963. after DDT was banned they recovered well. An example of " a great come back"
Egrets were almost wiped out for their feathers
Consumption was the ethic of the day.

- Rachel Carson wrote "Silent Spring" in 1962 about pesticides and birds (DDT etc) and was attacked verbally. Nevertheless, birds have declined 30% since 1970

Many writers and people , John Muir , Thoreau etc extolled nature but people compartmentalized it into parks.
Rivers and land became more polluted

In 1969 the Cuyahoga river caught fire, it had done so regularly since the late 1880s as did other industrial rivers.
But this event was covered by TIME magazine .
The resulting national interest provoked change and the EPA was formed and signed off by President Nixon in 1970
Now the river is relatively clean and shiny and a water recreation destination.



An annual decline of 5.2% in flying insect biomass found in nature reserves in Germany – about 75% loss in 26 years[1]

BUT

Globally there has and continues to be a massive decline in most insects. They are an important part of the ecology of the environment. Pollinators, waste disposers , bird food etc

This is a HUGE problem and there is a general lack of awareness: and the general thought is that BUGs need KILLING asap. This is done through large amounts of increasingly toxic Chemicals, and in suburbia the rates of application are up to 10x greater or more than on farms.

NOONE wants any BUGS in the backyard.

THERE IS NO SUCH THING AS A SELECTIVE INSECTICIDE, you kill the ants, mosquitos , “ bugs “ you kill the bees and all the other insects. LESS than 1% of insects can be thought of as a pest and most of those are minor.

The ecology of biological systems is well known, However social attitudes are a major block in restoring the environment

If we can save butterflies, We can save ourselves.®

North American Butterfly Association

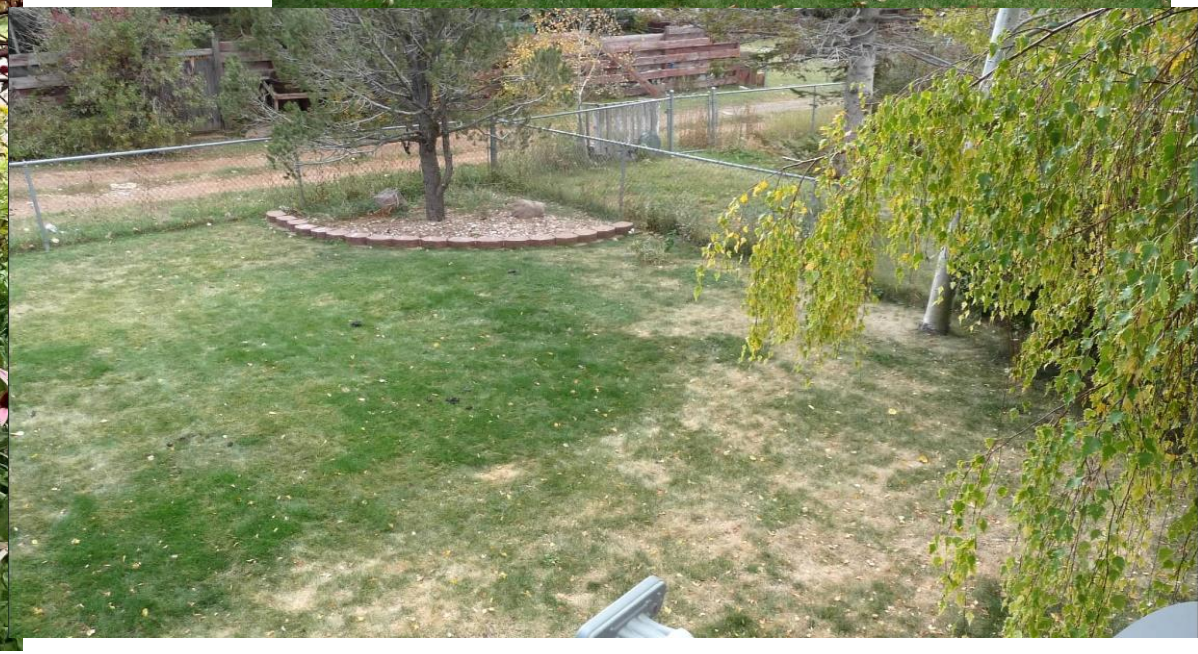
Xerces Society : Protecting the life that sustains us

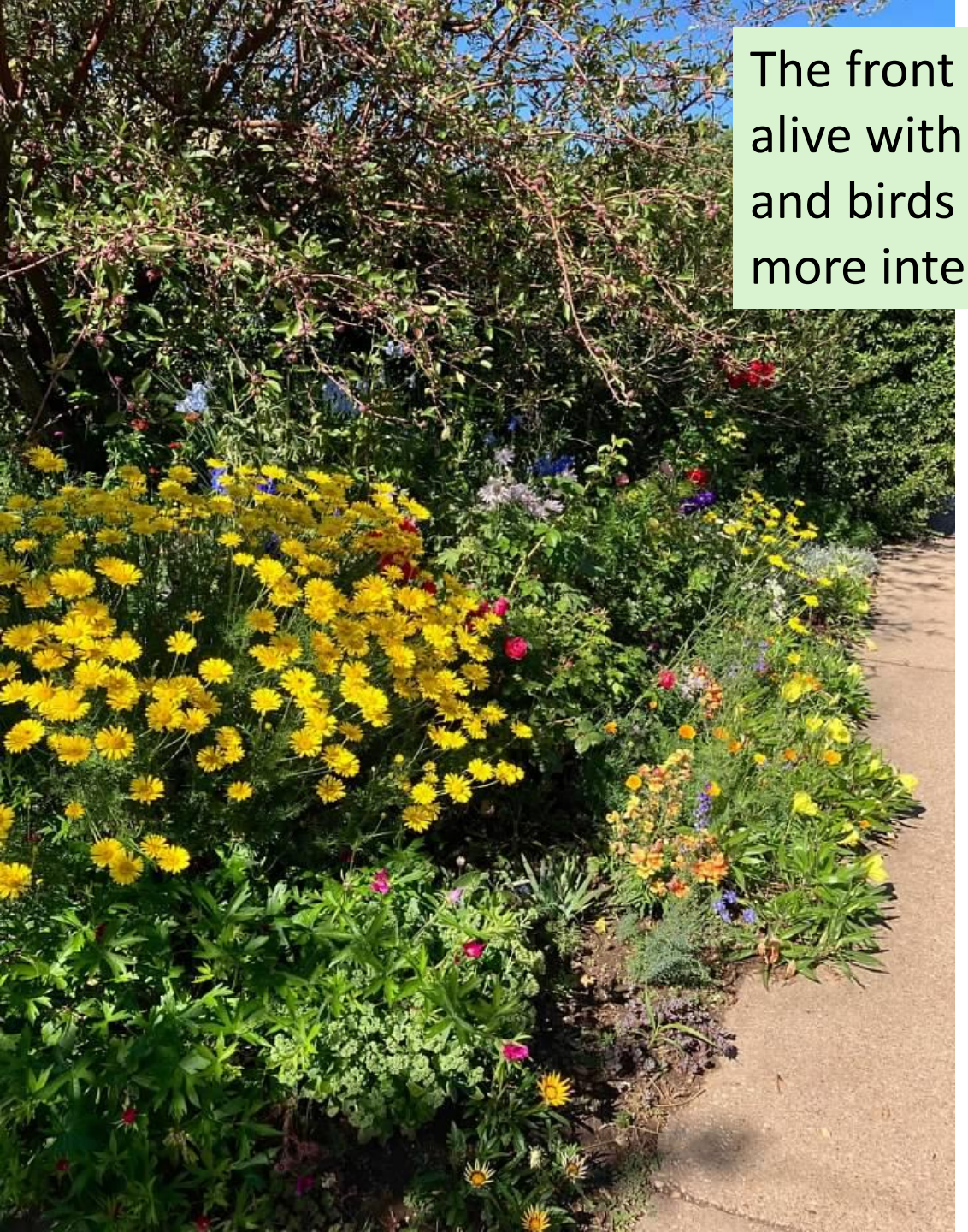
Just as the Bald eagle recovered after only a relatively few pairs were left, It is theoretically possible to recover from some of this destruction. We can create oases of healthy natural ecology in our own gardens and make them come alive to create a reserve so hopefully things can come back in the future.

At the same time, we will be improving the health and resilience of our gardens and ourselves.

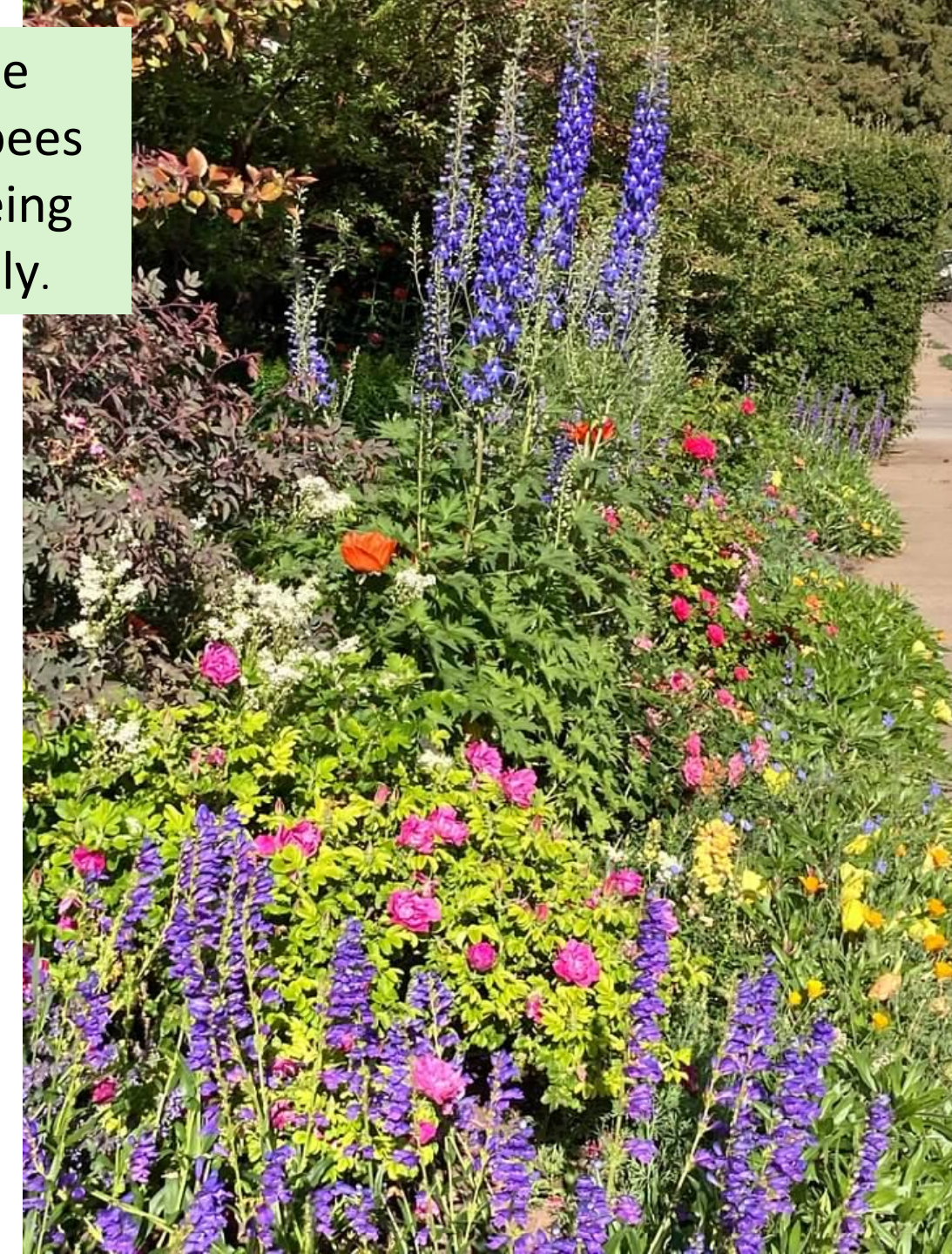
By creating our own patches of pesticide free biodiversity, we can make a difference, and our gardens become islands of life .

These are before and after pics of my little patch of earth.





The front lawns became alive with butterflies, bees and birds as well as being more interesting visually.



Spring

“ basket of gold”
Gold alyssum under trees
Various daffodils, tulips

1. Monoculture chemically treated lawn
2. Weed barrier and heavy layers wood mulch
3. Individual “ specimen plants” double flowers”
4. Plain fence

5. This is exceptionally sterile and possibly toxic, and provides nothing to pollinators

1. Lawn mixed with clover and even dandelions
2. Green mulch in bed , no weed barrier
3. Hedge
4. Diverse and mixed dense planting

5. This makes an ecological great situation

Planning your Garden

1. Needs - kids , dogs ? Lawn
2. Veggies / flowers
3. Landscape Sun hours ? Trees
4. WATER system
5. Time
6. If flowers native ? , non native , Mixed
7. Bird feeders
8. Insect habitats (rock piles , brush piles etc)
9. Native perennial plantings can require little maintenance and provide much for pollinators and life.
10. Annuals and non natives will need more water and care

THE SOIL

Depending on your location in Laramie you may have clay, sand or the worst alkali possible.
Before you redo a garden it might be a good time to fix the soil before planting . This will **GREATLY** contribute to a much more resilient garden because the plants will have stronger roots and nutrient availability and drought tolerance. This especially true if you want to grow vegetables.

It is a good idea to start with a soil test – done at CSU soil lab or Ward
https://agsci.colostate.edu/soiltestinglab/ $43

https://www.wardlab.com/services/soil-health-analysis/ $ 23.65

The native soil – " frigid and aridic " is not by nature fertile. It is low in organic matter and life due to cold and lack of water.

Solutions

Add MASSIVE amounts of organic matter and work it in . I mean HUGE amounts. 1.5 " then dig in .
Do NOT add sand to clay / clay to sand : result = concrete.
Consider a " cover crop " which in our short season means you grow that one growing season.
To improve the soil a mix is recommended , rye, legumes like clover, safflower . radish buckwheat. Their deep roots break up the soil, clover adds nitrogen, the diversity increases the soil microorganism diversity and also the roots produce substances that improve soil aggregation. They add organic matter to the soil and all these plants will die in our winters.
After improving the soil minimal if any fertilization is needed especially for Natives
Minimize or do NOT till the soil as it destroys the structure and depletes the soil.

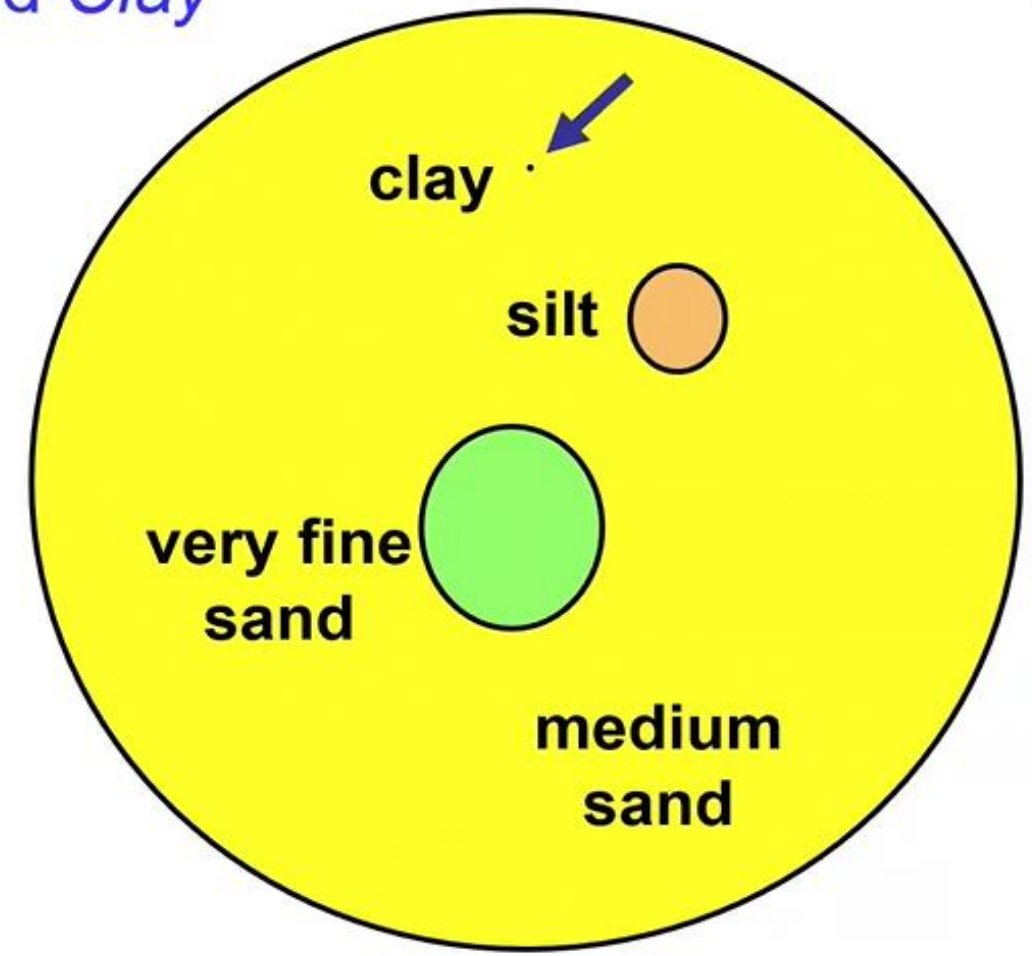
80% of plant /tree / shrub problems are due to the soil . NOT lack fertilizer, insects, dz, etc

TEXTURE: Soil Particle Sizes
Sand, Silt, and *Clay*

Sand – large

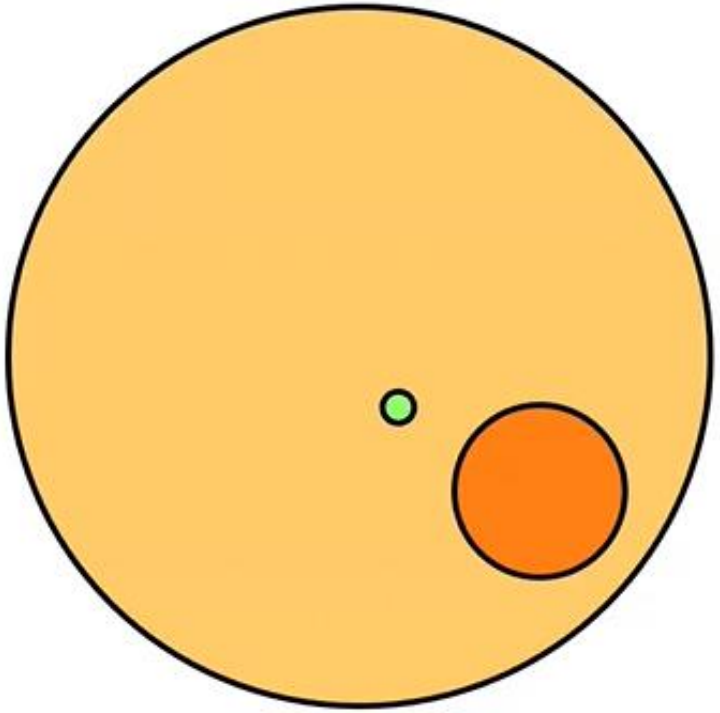
Silt – small and wedge shaped

Clay – TINY and shaped like flat plates,
easy to compact, dense.



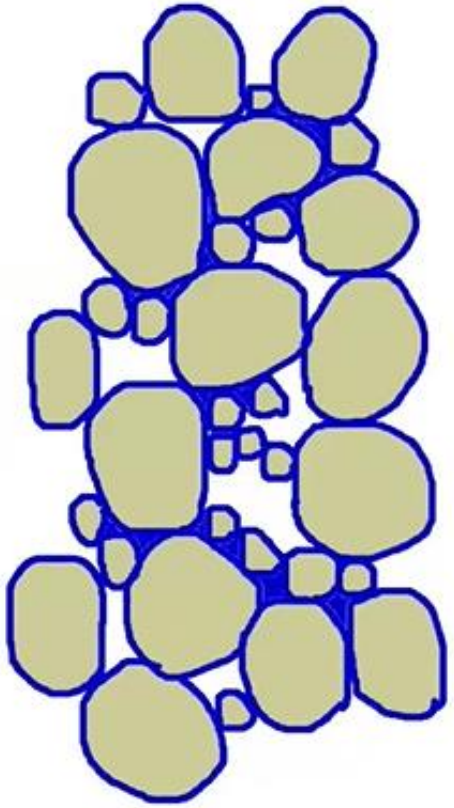
Texture

Size of soil particles



Structure

Arrangement of soil particles



Soil structure is improved by

Organic matter – compost

Earthworms- no till

Cover crops

The extensive channeling and burrowing by earthworms loosens and aerates the soil and improves soil drainage. Soils with earthworms drain up to 10 times faster than soils without earthworms. In zero-till soils, where worm populations are high, water infiltration can be up to 6 times greater than in cultivated soils.

As earthworms feed, smaller fragments of organic matter are mineralized by microorganisms inside their gut and, upon excretion, become readily available to plants. Earthworms continually excrete these castings throughout the soil profile. There, the castings rapidly stabilize and become resistant to chemical and physical degradation. This benefits overall soil structure by helping to prevent compaction. Castings also act as storage units for nutrients such as carbon and nitrogen.

SOIL ORGANIC MATTER

1. Increases biological diversity of soil micro organisms

2. Increases water retention and availability, decreases compaction and allows water to penetrate soil. Increases air flow.

3. Increases soil fertility and nutrient availability

4. Decreases surface crusting.

The native local soil does NOT have a high organic content, but by adding good amounts of organic matter (compost etc) you improve the soil greatly which helps the plants grow better roots , have better relationship with the soil microorganisms ie Mycorrhizae and others. This greatly improves the ability of the plants to survive and recover from adversity. (heat , drought etc) .

Cover crops for increasing soil structure

1. Breaking up heavy clay soil,- buckwheat, forage radishes, turnip – “Appin”
2. These plants have long tap roots to break up clay and also produce exudates that cause soil aggregation which improves soil structure .
3. Organic matter Ie compost is best added in moderate amounts 2x a year and dug in, can be done together with cover crop.

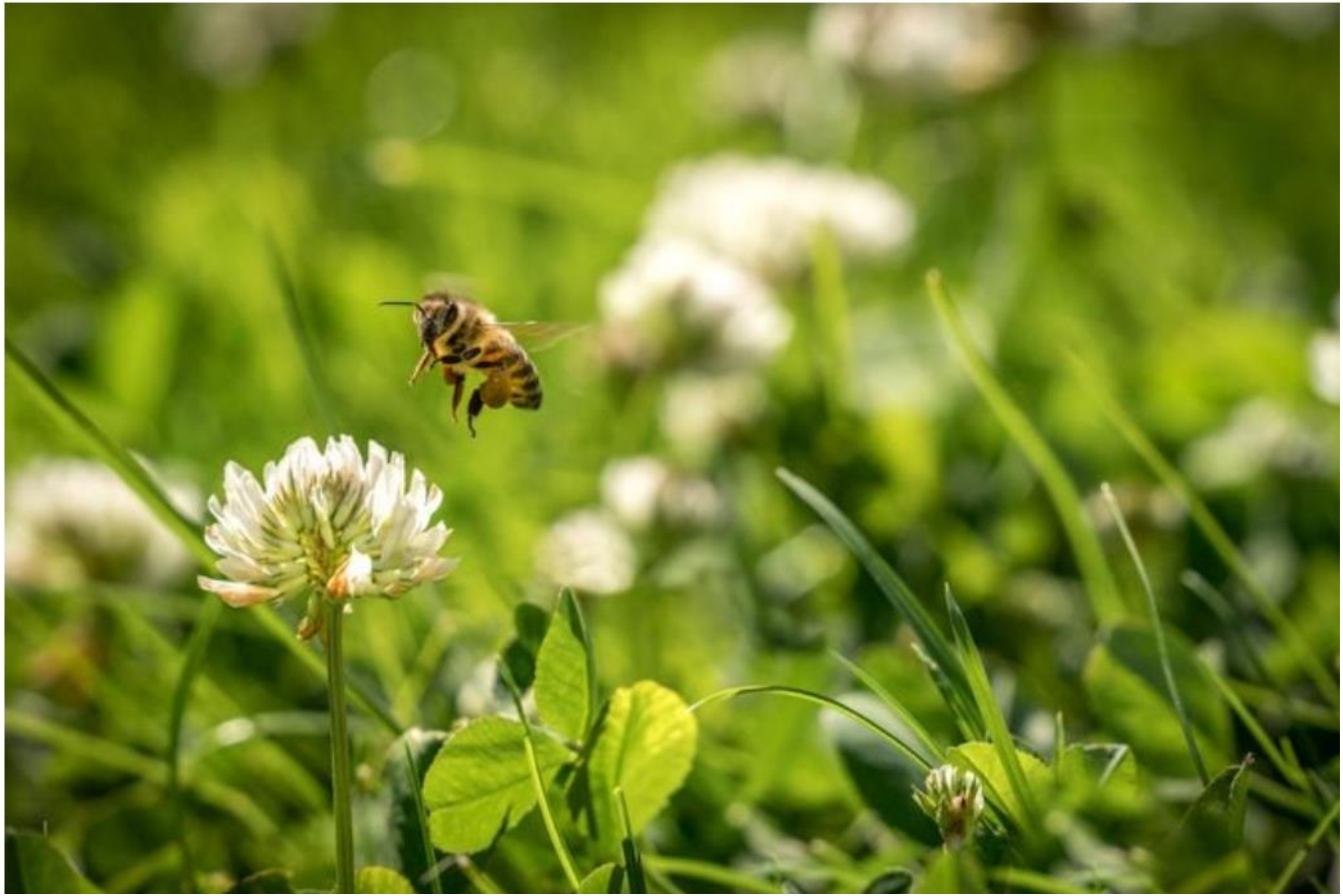
Mycorrhizal fungi are the supply chains of the soil. With filaments thinner than hair, they shuttle vital nutrients to plants and tree roots.

In exchange, the fungi obtain carbon necessary for expanding their networks. This process allows for 13 billion tons of carbon dioxide from the atmosphere—equivalent to one-third of global fossil fuel emissions—to be absorbed by the soil annually.
Image

The LAWN some refer to this as " toxic green desert"

Do you NEED a lawn - various less thirsty ground covers exist or perhaps more garden , shrubs and trees.

Clover – generally Dutch white regular is best for Laramie
" Microclover " is not as heat / drought/ shade / traffic tolerant .
Clover has strong roots that deal with compacted soil, it fixes nitrogen, controls erosion, de icer tolerant, dog urine tolerant ,may attract rabbits away from your veggies as tastes better.
Acts as pollinator, Needs less water , less mowing. Stays green in heat .



Accidental clover lawn at St Matthews / Ivinson st July 10, 2024

LAWN CARE

NO Pesticides or fungicides or herbicides . NO CHEMICALS

To increase drought tolerance of lawns, increase mowing height 2.5-4 inches
A lawn's root system is about proportional to above ground growth. Cut higher means deeper roots
Deep less frequent watering helps also .

Personally- I spread thin layer of compost in the spring and let it rain in. The worms do a great job aerating .

Smaller lawns are better ecologically .

After decades of the assumption that a proper lawn must be made up of a single type of uniformly green—and freshly mown—grass, people are realizing that there are other (far less time-consuming and more environmentally friendly) options out there. One of these is a **tapestry lawn.**

Suggestions for Laramie:
Hen and chicks
Sedums
Sulfur Buckwheat
Creeping Veronicas
Species tulips and crocus
Gold Alyssum “ Basket Of Gold”
Cacti
I would suggest winter tolerant , low care and drought tolerant .
There are more than the above .
NO ground fabric
Maybe a few stone piles or crevices

The non veggie garden

The resilient new naturalism in a way replicates nature but it does not need to be a " random wildflower meadow"

Beds can be designed and planned. Basic concepts are a community of plants with the same needs (especially water). Ie ecologically compatible. Some plants just grow well together. Groups of plants often look better and densely planted functions better. The more diversity the better.

Basically for a border – there are the front low growing plants especially for a look of order. Then a " matrix collection " background long lived plants that are not too aggressive. Native bunchgrasses are ideal . NOT rhizomatous grass which could undesirably spread.

And then groups of (ideally) sequentially blooming plants. Perhaps shrubs in the background . The idea being that the plants cover all the soil so as to form a " green mulch" . Having the soil covered decreases water loss and helps maintain a healthy soil. The lack of a groundcovering barrier allow access to the soil for soil nesting bees etc.

The choice of plants is personal. Ecologically drought tolerant work best. Invasive types should be avoided . To increaser insect and bird diversity mostly locally native plants are ideal .

LANDSCAPING

NO LANDSCAPE / WEED barrier fabric . 70% or more of native bees and also other invertebrates hibernate in the soil. Weed barrier is BAD FOR BEES. BEES NEST IN THE GROUND .

NO massive layers of mulch – dense matrix planting instead. (See above)
Woody debris piles as habitat for insects, logs with holes drilled(or not)for bees etc
Rock piles rock crevices and both !

Pruning of shrubs and perennials left for spring for stem living insects

Native BUNCH grasses – a habitat for bees and beetles, both beneficial.

LEAVE the LEAVES .

HOLISTIC Garden Planning

Previously the thoughts given to a garden were -

Sun hours and temperatures
Soil
Water
Colors etc

NOW the extra, and some would say most important is :“ What good is my garden for nature, for bees, insects , birds and wildlife. How can I plan it optimally for them??

Even a small area of the garden devoted to pollinators and native plants is an oasis of nature

Principles of Permaculture Gardening

Permaculture gardening is a method of sustainable gardening that focuses on working with nature rather than against it. Three main principles guide it – care for the earth, care for people, and fair share.

Care for the Earth

The first principle of permaculture gardening is to care for the earth. This means creating an environment that supports and nourishes all living organisms in the garden, not just plants. Here are some ways to practice this principle:

- Use natural methods of pest control instead of harmful chemicals.
- Encourage biodiversity by planting a variety of plants and welcoming beneficial insects.
- Conserve water by using techniques such as drip irrigation and rainwater harvesting.
- Build healthy soil through composting and mulching.

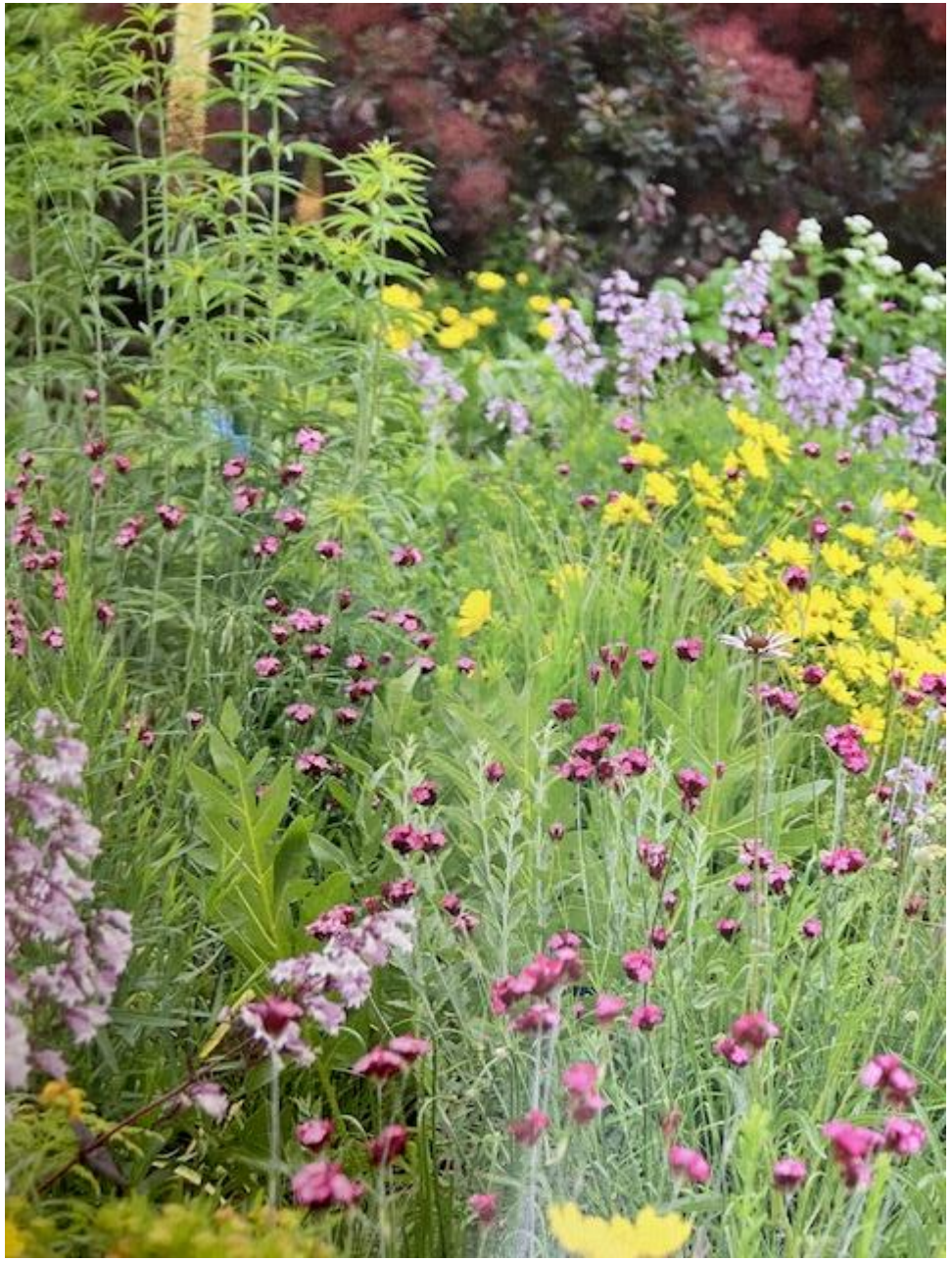
It is clear that there is a LOT of similarities between permaculture, naturalism, pollinator gardens, native gardens and pollinator gardens

Permaculture ethics

1, “ care for the earth”

2, People care – yourself and/or others

3, Altruistic –sharing (plants , seeds., knowledge)



Examples of naturalistic planting

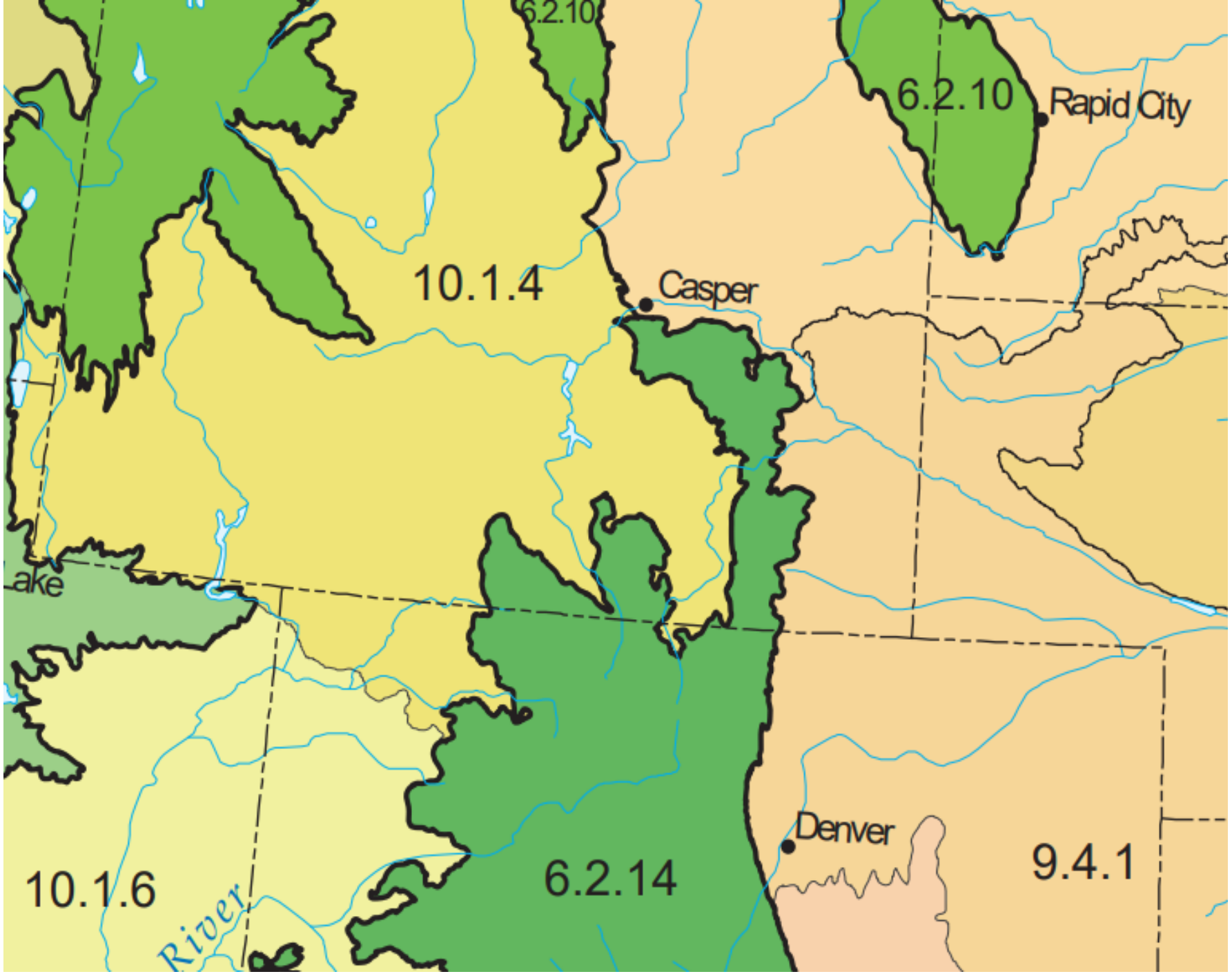
PLANTING in the naturalistic way :-

The idea in a Naturistic garden is dense planting and “ green mulch” the plants cover the soil rather than pieces of wood.

The background is termed “ matrix “ some type of perennial especially native bunch grasses and tough low perennials

The backbone = structure + shrubs and bigger long lived plants

The accents – “ vignettes” annuals and isolated specimens



ECOREGION SE WY
10.1.4 " cold desert"
Wyoming Basin

6.2.14 Southern Rockies

9.4.1 High Plains

NOTE Laramie is a " cold desert"
<u>However with some water</u> you can get some of Rocky Mtns and High Plains plants to grow.

Note : Happy Jack and the areas around Vedauwoo have a different climate, more rain and different soil . This is not the Midwest where ample rain and good soil cover MANY states. But it is entirely possible by grouping plants according to their needs to grow great gardens here .

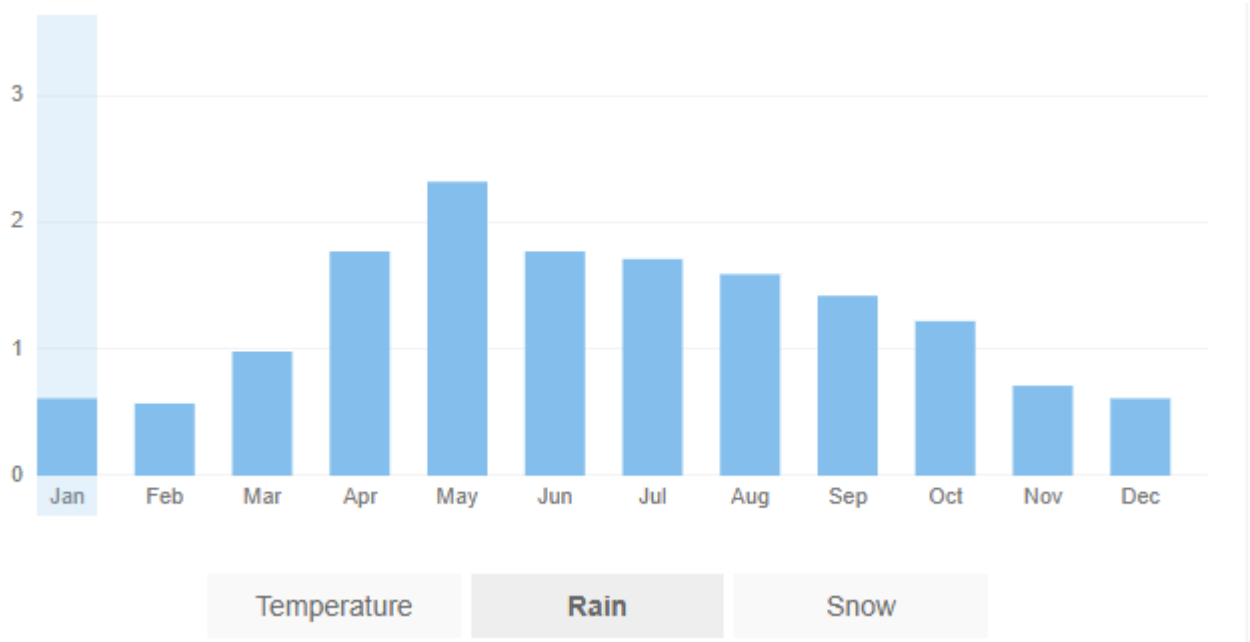
It is important to remember Laramie's annual rainfall is 11.43 inches

Cheyenne and Fort Collins are both warmer and get 16" average. Plants that thrive there will need more care in Laramie.

THE PLANTS

Laramie is High, dry and often cold with radical temperature swings.
Native plants are the most adapted to this environment and need least resources to grow well.
Plants from similar ecosytems of the world – dry cold steppes and others also can do well

Whether one choses Native , non -native or a mix depends on your thoughts. Many non natives provide nectar at scarce times of the year (species tulips and crocus in early spring) or have that landscaping look that is desired. THE IMPORTANT Part is NO pesticides / insecticides.
Especially the **Neonicotinoids** , these are derived from Nicotine are VERY long lasting and have lethal effects on all insects, are harmful to birds and mice and ? Humans .
They are " systemic" which means they get in EVERY part of the plant including the pollen, seeds etc.
Unfortunately most plants sold by box store come laden with neonics – with the " spin" that they are " protected from aphids whiteflies etc for life"
They are also TOXIC to bees, birds and any other living thing. When ingested, a single neonic-coated seed can kill a songbird. A very common and questionable use for this product .



Laramie historical Average is 11.46 ins = 29.1 cms

A borderline situation BUT basically very dry ESPECIALLY in winter.

Deserts are fascinating areas of the Earth, characterized by extreme arid conditions and minimal rainfall. **A desert is defined as a large area of land that receives less than 25 centimeters (about 10 inches) of rain per year**, making it a unique ecosystem where only specially adapted plants and animals can thrive.

Aside from plain freezing to death the most common cause of plant demise is " Winter Dessication" . They dry up and die.

To keep plants alive especially shrubs and trees from a different " ecoregion" it is important **to water them when the ground is not frozen or covered with snow**. Survival is better under snow .

ABOUT WERA

WERA-1013 is an officially recognized Western Education/Extension and Research Activity designed to enhance the introduction and evaluation of native plants and to provide education concerning their use and propagation. The people involved make up a working group of western US university and nursery professionals who wish to advance the use of native plants in landscaping and gardening.

The need for increased use of native plants for landscape uses involve three major environmental issues:

- The increasingly critical need to conserve water in the arid west.
- The need to provide habitat for local animals within the urban environment.
- Create more sustainable landscape systems through the use of adapted plant materials.

OBJECTIVES

- Establish a regional system for the development, evaluation, and introduction of new native plant materials.
- Coordinate regional efforts to provide education to both public and industry professionals on native plant use, propagation, and production.

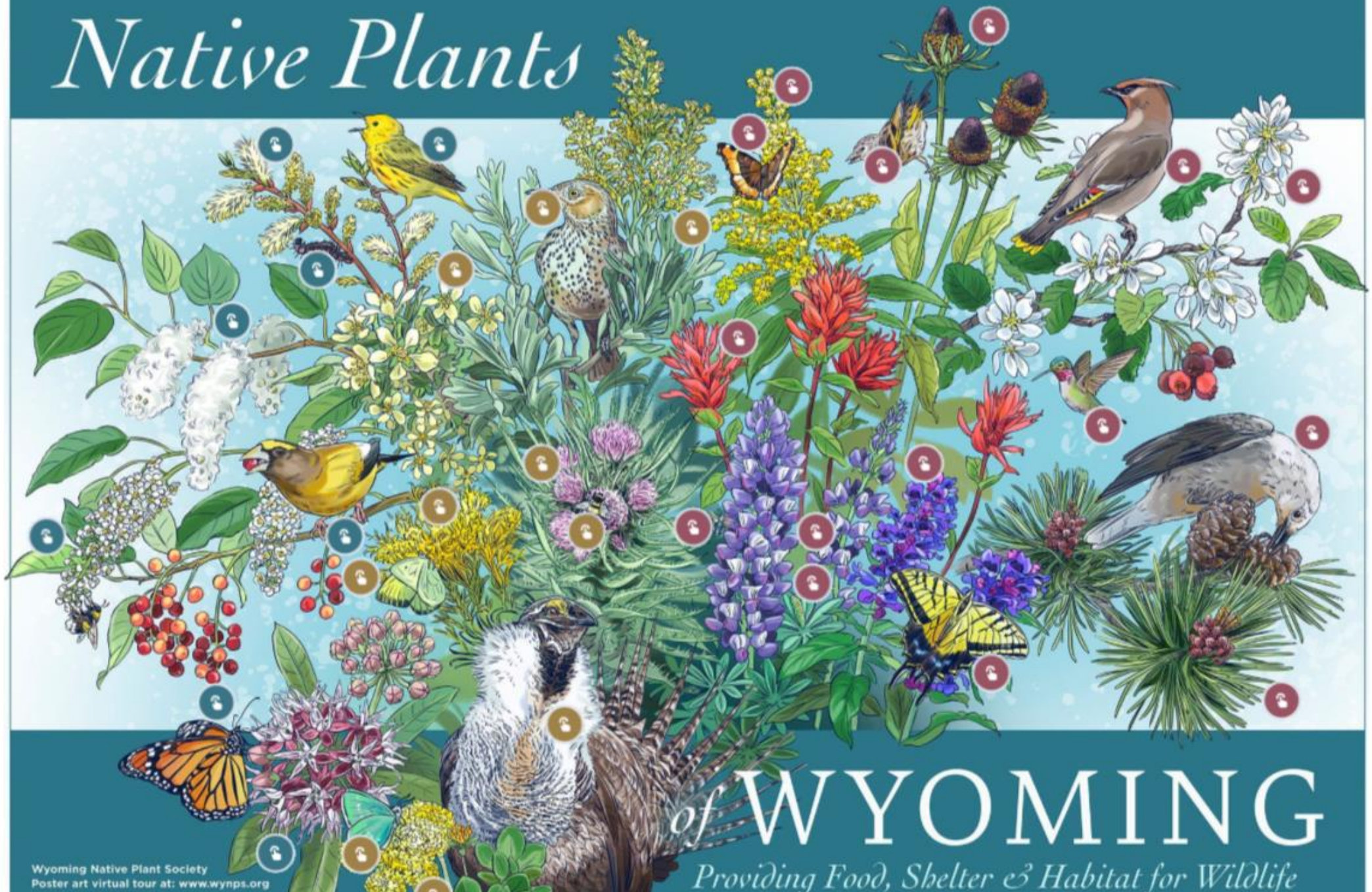
ANNUAL MEETING


PUBLICATIONS


PLANT LIST


GROWERS

Native Plants



of WYOMING

Providing Food, Shelter & Habitat for Wildlife

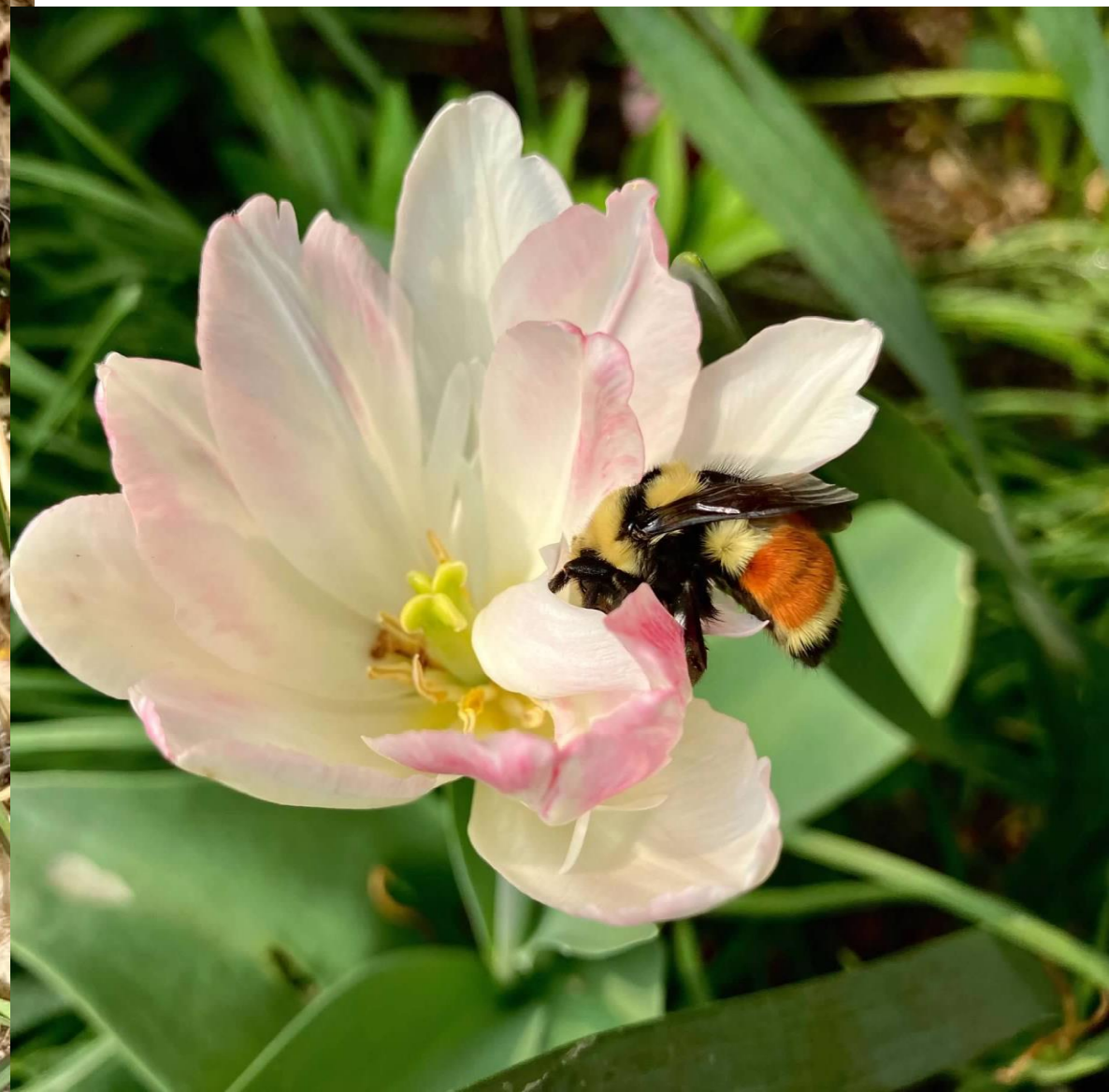
Wyoming Native Plant Society
Poster art virtual tour at: www.wynps.org

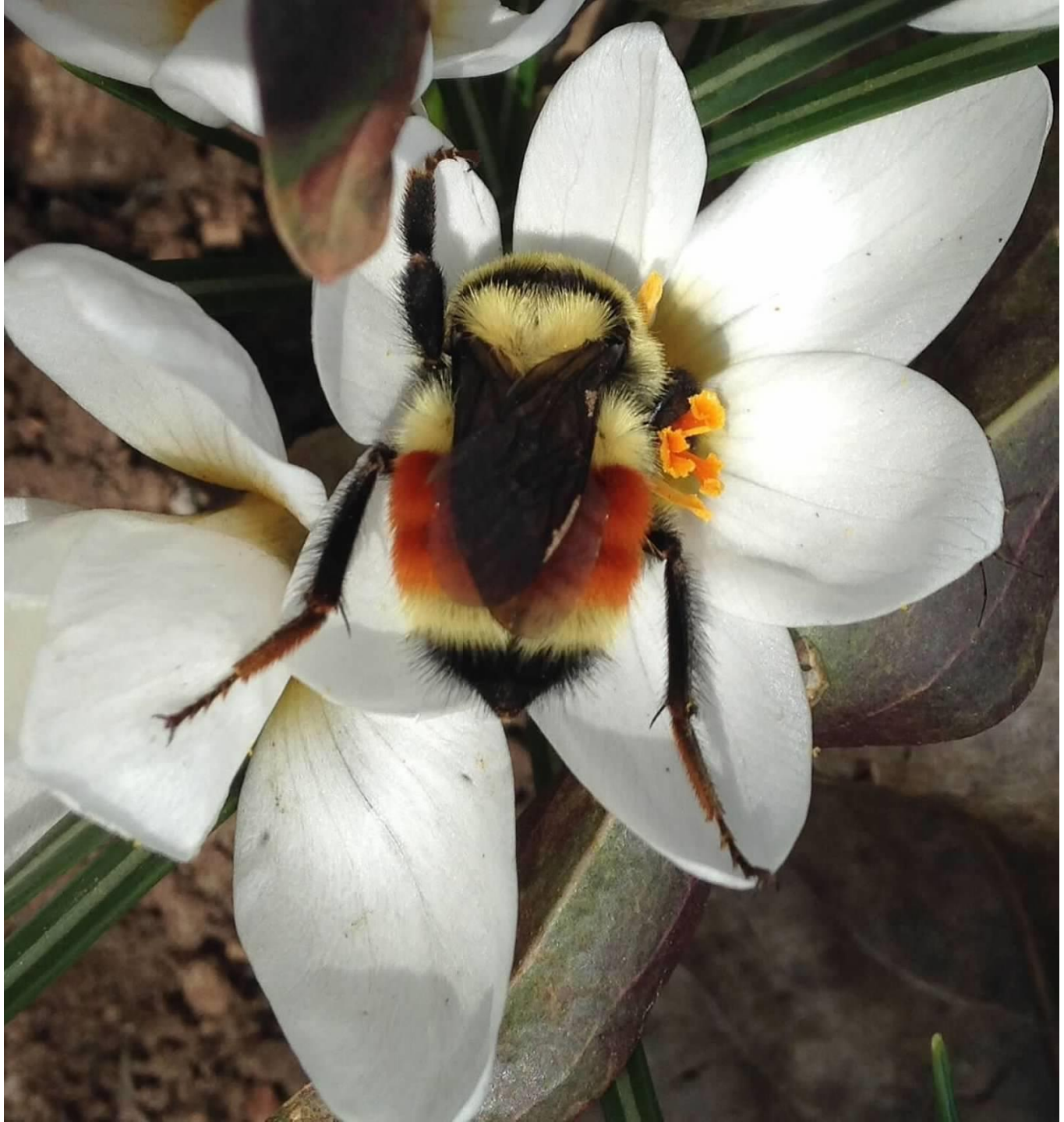
Next to my drive Late Fall, densely planted and diverse with pollinator plants

My front right garden in late August

Spring

In spring it is important to provide pollen / nectar for emerging bees especially the bumble bees who start over every year with one.





Plants in the Aster/ Sunflower family are a great food source for pollinators. Below in a “ long horned bee”

PLANT LISTS

There are many sources for plant lists . XERCES provides long lists by region. Laramie is somewhere between Northern Plains and Rocky Mountains and Wyoming Basin

Native plants- Xerces are extensive and describes growing conditions and benefits

For Flowers :IMOP

Harebell – Companula rotundifolia

Fireweed – Chamerion angustifolium

Erigeron umbellatum – Sulphur buckwheat

Gaillardia aristate - Blanket flower

Grindella squarrosa - Curly cup Gumweed

Linum lewsii – Bule flax

Monarda fistulosa – Wild bergamot

Liatris ligulistylis Rocky mtn blazing star

Ratibida columnifera Mexican Hat

Artemsia - sagebrush

And more

Many Non natives will provide food and also encourage beneficial insects
Various drought tolerant ones

Yarrow all types
Nepeta – Catmint – extremely tough ,long flowering season , great for pollinators
Petrovskia atriplicfolia – Russian Sage – great but needs cutting in fall
All salvias
 California poppy – has taproot- drought tolerant
Shirley poppy
Spanish poppy
Cosmos , Gazania,
Lamium – extremely tough and beloved by pollinators even grows in dry shade
Veronica creeping etc
Sedums
Delosperma – ice plant
Species tulips – love it dry – food in early spring
Crocus
Basket of gold –Gold alyssum – Aurinia saxatilis great under deciduous trees – early flowering
Alliums – native to dry high mtns of turkey Iran etc .Central Asia , Come in MANY sizes and colors some blooming early other later . Described as “ pollinator Magnets “ they are mostly extremely well adapted to climate and conditions of Laramie

A word on plants.
There are several resources put out by XERCES and Barnyards and Backyards. UW.
Plant lists by area, habitat and management.
Their lists are a great start although the lists cover a LARGE area.

Xeriscaping lists can be helpful although many plants are geared toward the sw,(Arizona,NM, CA)

Plants from similar high altitude locales around the world can be extremely useful , resilient and beneficial. Strictly limiting oneself to pure Wyoming natives may reduce the nectar/ pollen available .

Spring : crocus and tulips especially species tulips are great for early pollinators. Tulips are from turkey and beyond.

Early summer – any daisy, penstemon, Agastache is great. Poppies – bees love their pollen. Catmint

Mid summer , Monarda , anything in mint family , lamium etc, daisies, cosmos, umbellifera such as Dill, coriander Penstemons, liatris, milkweeds, phacelias, buckwheat, yarrow, and many more

Late summer – catmint, lamiums, liatris, All asters . And esp rabbitbrush.

DROUGHT resistant, z4 , plants ,. Planted densely and with great diversity will bring in the pollinators and beneficial bugs

Terminology

Native – a plant that grows locally / regionally

Nativar –A plant derived from native plant having some “ improved “ characteristic

Cultivar – plant derived from a species and altered to achieve a “ look”

Hybrid- a cross between at least two plant of different species

Ecotype - **genetically distinct geographic variety, population, or race within a species**, which is genotypically adapted to specific environmental conditions.

Ecotype - local ecotypes are native plant species that have a genetic background typical for the local region and adapted to it. This is done through Epigenetics. Plants do a LOT of epigenetic modifications. It changes how the plant behaves by suppressing some genes and activating others.

With native plants especially , it works better to get seeds grown under the same conditions as where you want to plant . Ie NOT Missouri for Wyoming.

The idea behind natives is to provide food for butterfly larvae,
But it is also great to provide food for pollinators year round so they have food, and also
To provide an environment for them to survive the winter – which is the basis for the Xerces program

LEAVE THE LEAVES

The impulse to " Clean up the garden for the fall " has VERY BAD effects on a whole host of pollinators and beneficial insects. IT KILLS THEM . A lot of insects DEPEND on leaf litter to survive the winter .
Remember - 70% of Native bees are ground nesting

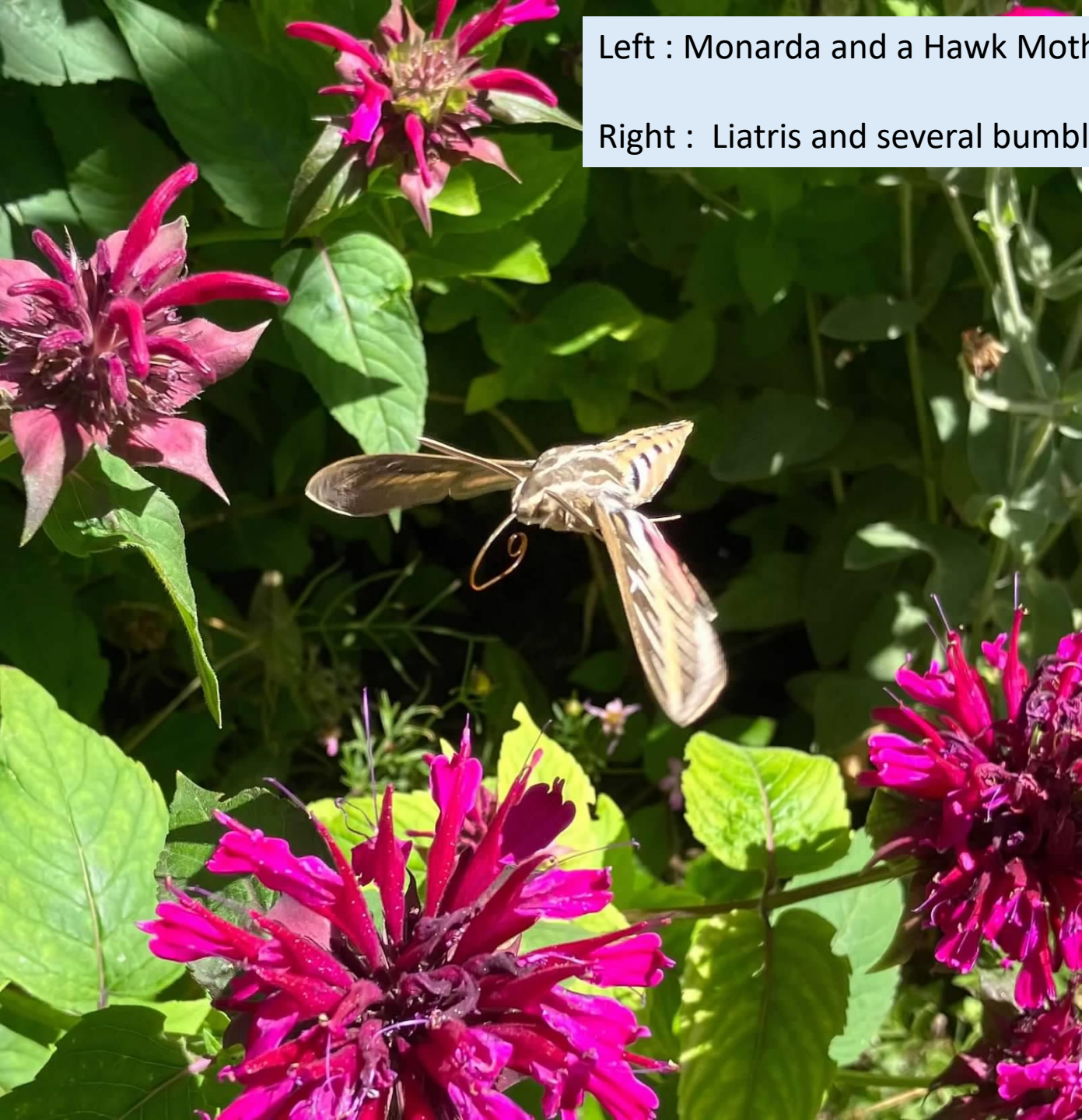
POLLINATORS NEED HABITAT IN WINTER AS WELL AS SUMMER

The Xerces website has almost an encyclopedia of information on how to garden for the benefit of pollinators and all insects most of which are beneficial . It explains the whys and hows and has detailed information sheets available to print .VERY EXTENSIVE AND THOROUGH. HIGHLY RECCOMENDED !!

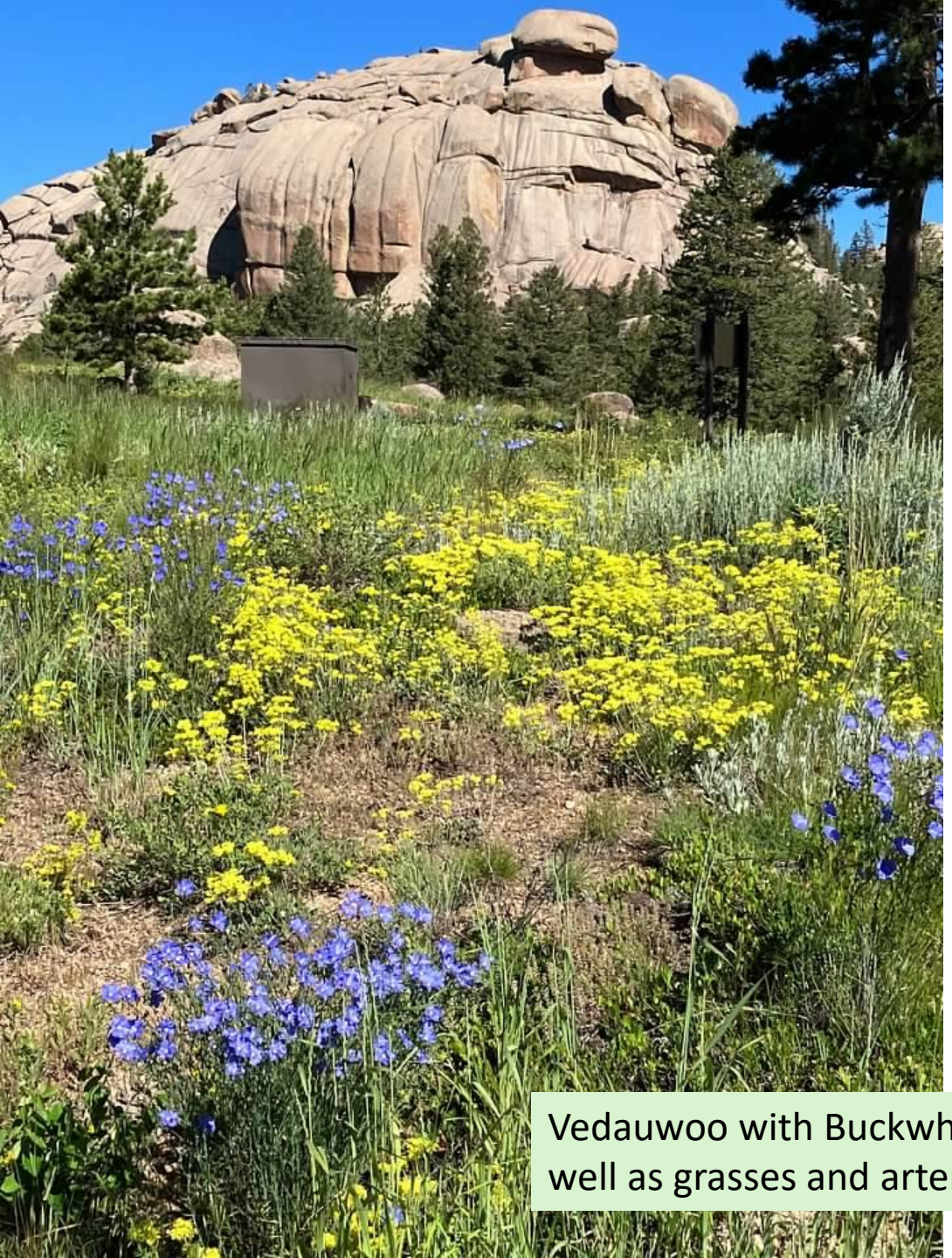

XERCES .ORG

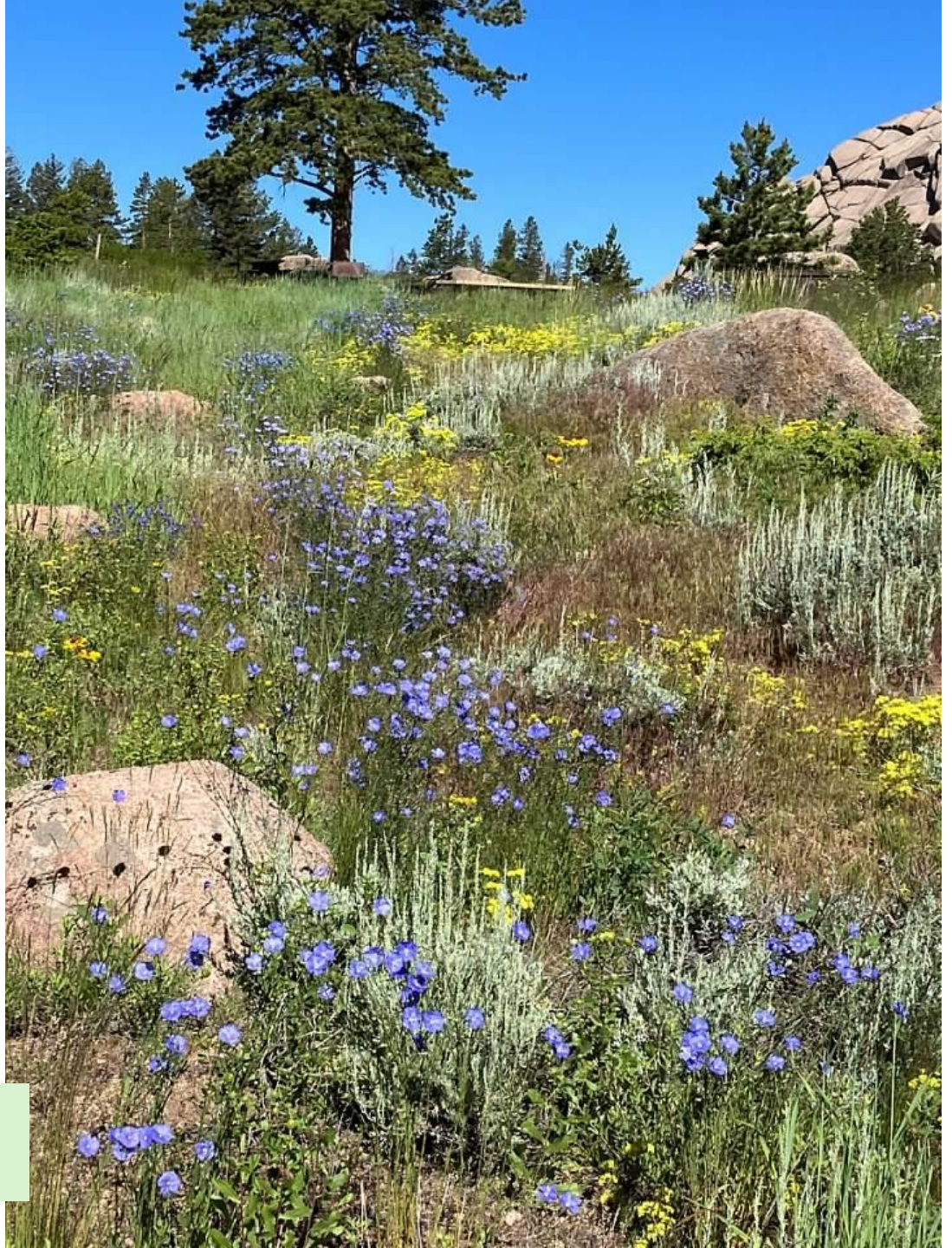
Left : Monarda and a Hawk Moth

Right : Liatris and several bumble bees



Non native plants can be great food sources
Left golden Nettle right poppy





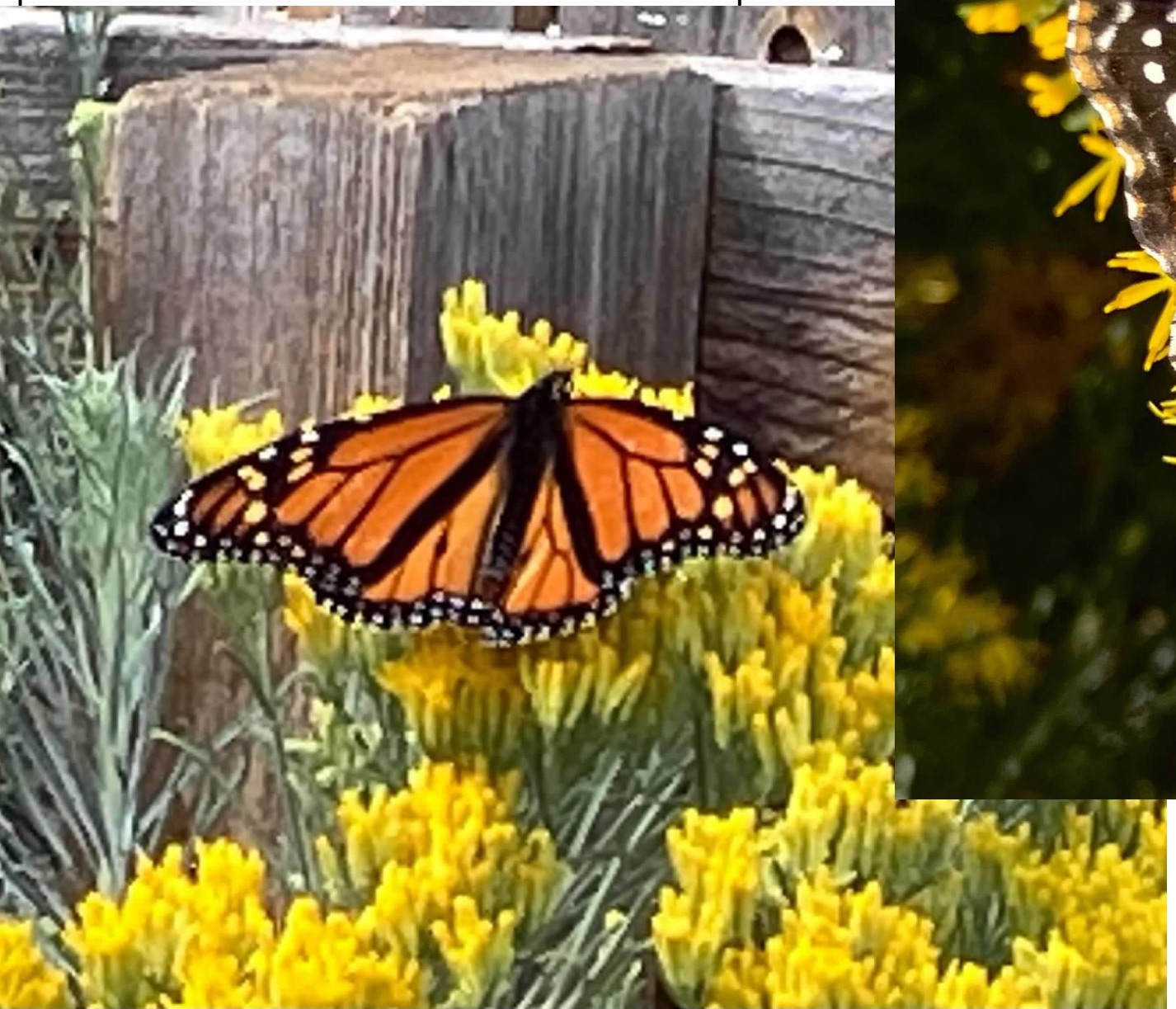
Vedauwoo with Buckwheat and Flax as well as grasses and artemsia . Ideal

Penstemon eatonii
Beloved by Hummers who like red tubular flowers

Broadtail hummingbird on Eaton’s Penstemon

Veronica
Although not native, it makes a great relatively drought tolerant ground cover and is NECTAR rich so is great for pollinators.

Rabbitbrush ia GREAT pollinator plant. It is Native and adapted to high dry cold environment. It provides nectar late in the season – October pics

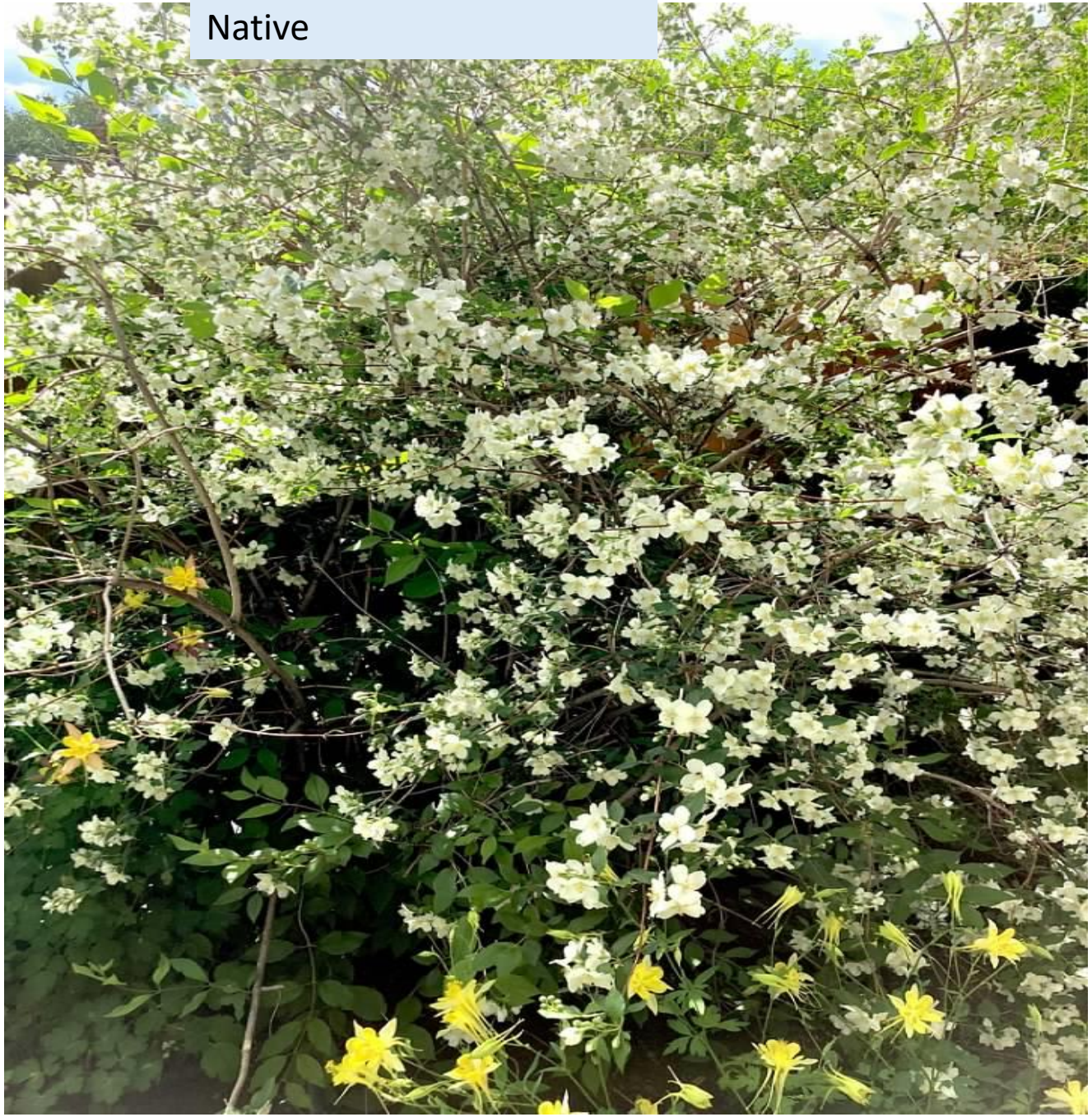


Left – Monarch: specialist - milkweeds
Right – Painted Lady : generalist almost everything


Blanket flower / Rocky Mtn Penstemon


Gaillardias and Missouri Even
Primrose

Cheyenne Mock Orange
Native



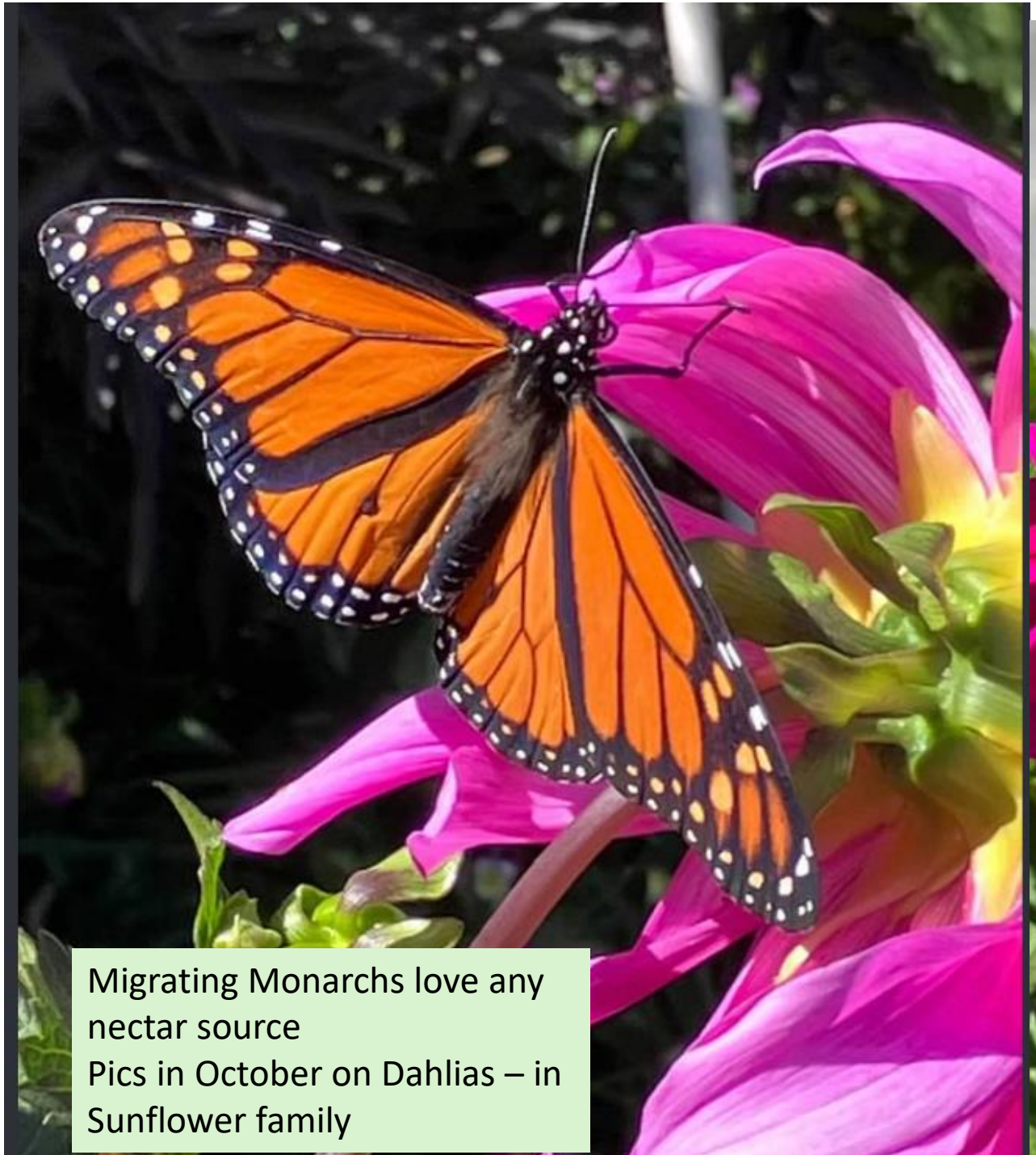
Pawnee Buttes Sandcherry and Basket of Gold
Aurinia saxillitis

Golden Currant Ribes Aureum is NATIVE and a great source for early nectar
It is relatively easy to grow in Laramie

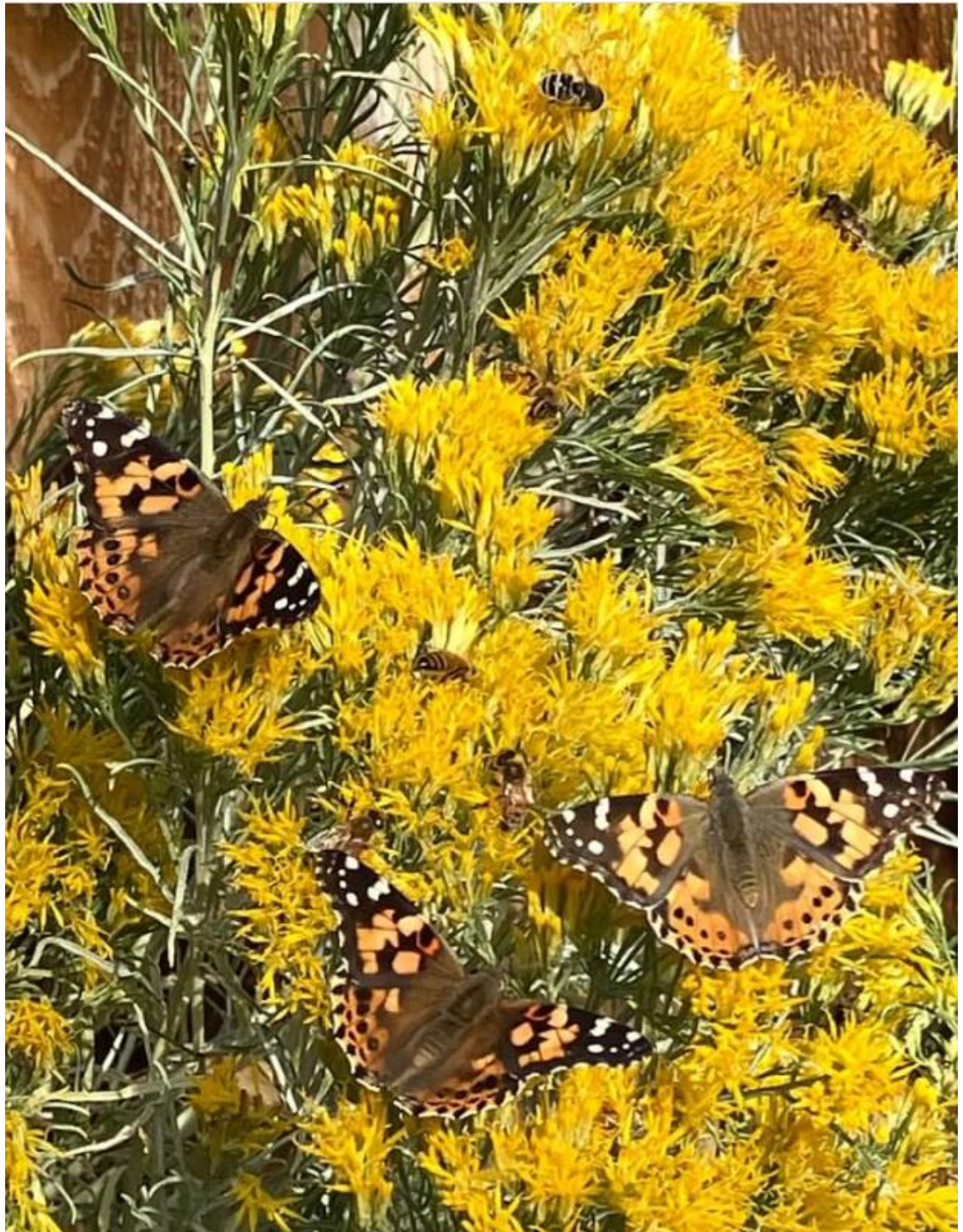
Metallic green bee
Agapostemon on Ice plant

Leaf cutter bees at work

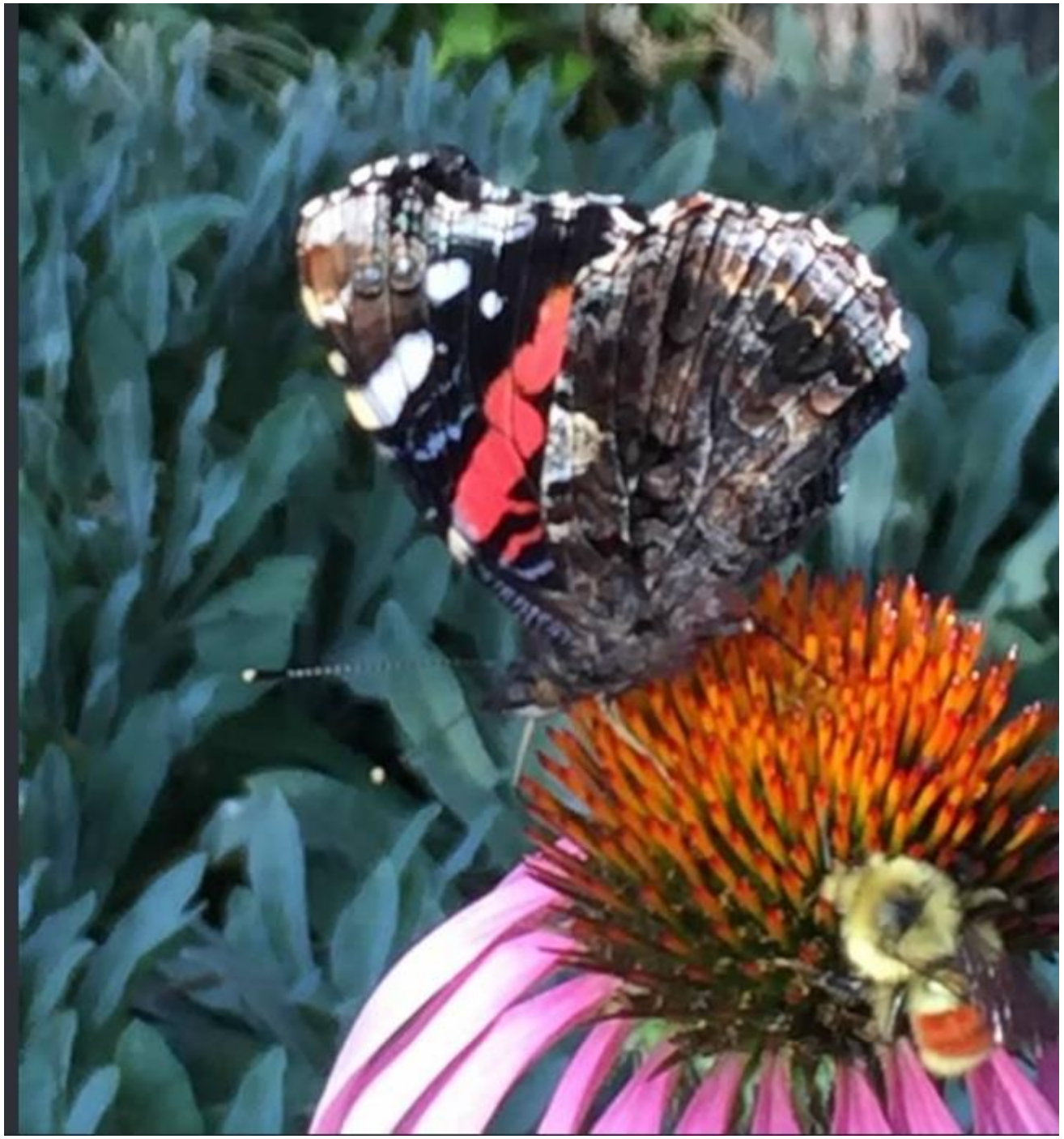
Fireweed
Chamerion angustifolium
Great nectar producer – great for bees
VERY vigorous and spreads by Rhizomes
Edible and used by some butterfly larvae



Migrating Monarchs love any nectar source
Pics in October on Dahlias – in Sunflower family



Rabbit brush is a very important Fall source of nectar for all pollinators Therse are migrating Painted ladies



Red Admiral butterfly on Echinacea
And a Hunts Bumble bee

Fritillary Butterfly on Echinacea

Globe thistle – VERY attractive to bees

THE VEGGIE GARDEN

SOIL IMPROVEMENT- the best thing to do FIRST

WATER – drip or soaker

Insect control –

Rows of native perennial bunchgrasses are called " beetle banks" they are intended as habitat for beneficial insects
Xerces has info on **Beetle banks**

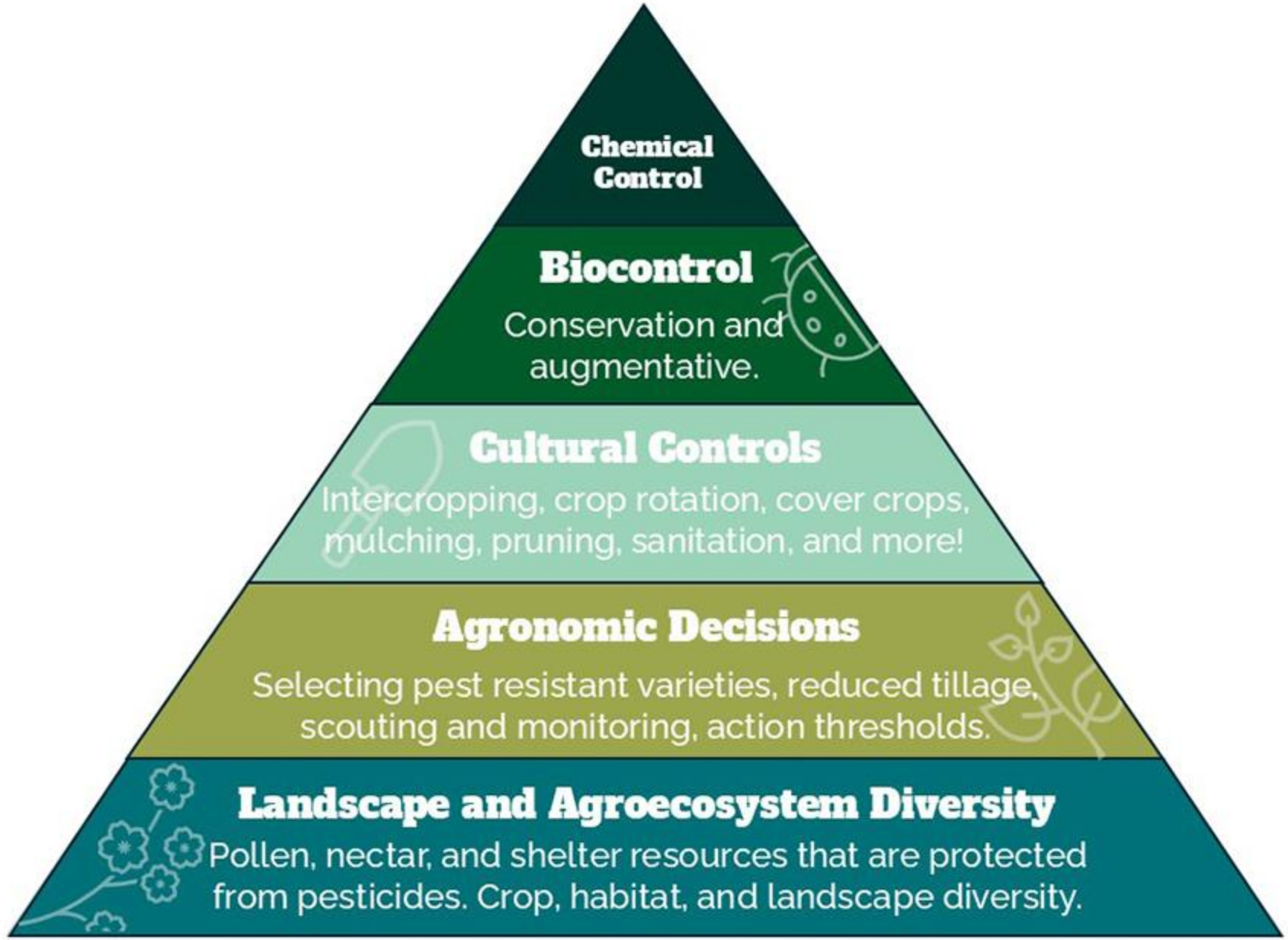
Rows of beneficial insect habitats
Called **INSECTARIES .**

Insectary plants are those **grown to attract, feed, and shelter insect parasites (parasitoids) and predators to enhance biological pest control**. Insectary plants provide nectar and pollen, which the adults of many natural enemy species need to consume. Examples are yarrow, alyssum, dill and coriander left to flower. They provide a habitat for beneficial insects which eat the " bad bugs"

Row covers to keep out bad bugs

Birds – The white crowned sparrows in my veggie garden happily eat all the Cabbage white larvae known as " green worms"
There are NEVER any pesticide chemicals in my veggie garden

A Word on Pest Control


Chemical Control
Biocontrol
Conservation and augmentative.
Cultural Controls
Intercropping, crop rotation, cover crops, mulching, pruning, sanitation, and more!
Agronomic Decisions
Selecting pest resistant varieties, reduced tillage, scouting and monitoring, action thresholds.
Landscape and Agroecosystem Diversity
Pollen, nectar, and shelter resources that are protected from pesticides. Crop, habitat, and landscape diversity.

Ladybug- prob convergent – various life stages. Lady bugs are carnivorous eating aphids etc

Anise swallowtail caterpillar on my Dill

Because groundbeetles like to take shelter in ground grasses during the day – building a beetle bump or row is the best way to encourage these beneficials .

Invest in a beetle bank

by Jessica WalliserComments (16)

•*This post may contain affiliate links. If you make a purchase through links on our site, we may earn a commission.*

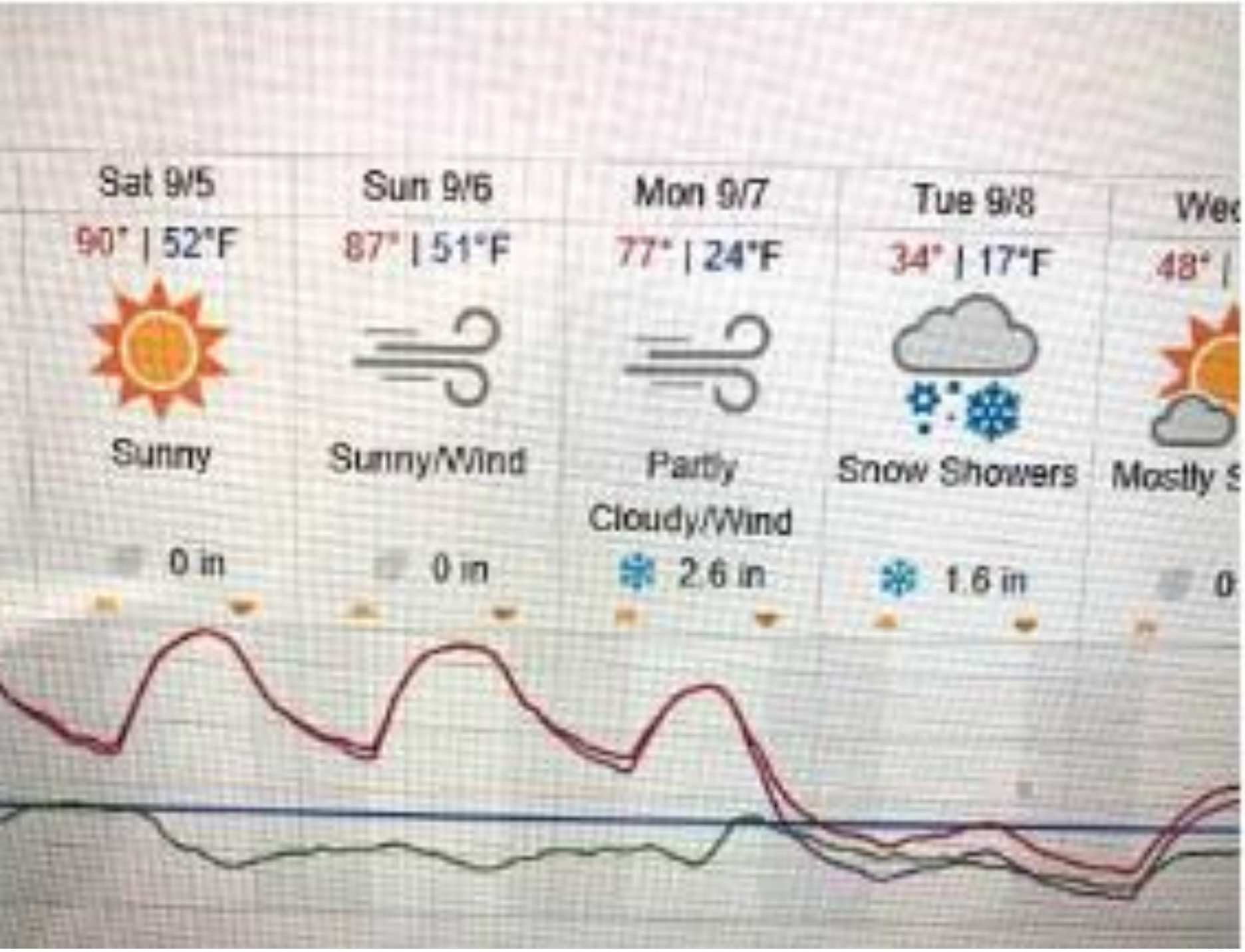
One of the most important – and yet often overlooked – facets of gardening is its ability to increase backyard biodiversity. And not just within the plant kingdom. When a garden is composed of a wide range of plant material, the animal kingdom also benefits. Especially insects. Most gardeners know that having a diversity of good bugs in the garden means better pollination and fewer pests. **While there are thousands of species of beneficial insects in North America, one of the best bugs for your garden is the ground beetle.**

Ground beetles: Slug snackers extraordinaire!

Unless you garden at night, you aren't likely to encounter this nocturnal beneficial insect on a regular basis, even though ground beetles are extremely common – there are over 2,000 species in North America alone. Each species looks different, of course, but most ground beetles are dark and shiny with ridged wing-covers. They hide in grasses or underneath objects during the day, so if you flip over a rock or a log and see a dark beetle scurrying around, there's a very good chance it's a ground beetle.

Temperature Control / modification

A word on Climate:
UNPREDICTABLE
Changes radically year to year
Growing season can be short or months longer.



September shock 2020

It did not get as low as 17 till NOV 6 2024

But BE PREPARED
Weather:
Hail
Snow
Frost
WIND

June 8 , 2020
noon

June 8 7:30 pm
Seems to be coming down
A LOT.

June 9 am

NOTE
Zucchini and
everything survived.

It was supposed to be
1” max and was
obviously much more

SOIL TEMPS FOR GERMINATION

Carrot min 40F optimal 45-85F
Pea min 40F optimal 40-75F
Corn min 50F opt 60-95F
Cuke 60 F opt 60-95 F
Squash 60 F opt 70-95 F
Snap beans 60F

Temp is higher for germination than for plant growth . It is VERY possible to presprout corn, peas . Grow as Small plants- squash and Cukes
Carrots – if the seeds dry, they become resistant to germination . WAIT till soil warmer.
Beans don’t transplant well and NEED warm soil

Soil warming

Row covers – thick frost “ blankets “

Under plastic

Local micro climates

Raised beds – soil can warm up earlier

Problem is cold nights and occasional hail, - frost blanket heavy row cover or WAIT.

Hail is another all summer problem
.

Some plants get totally trashed in hail.
Some are more resistant

June 27 , 2019

With and without Hail protection

Season extenders

Weather protectors

1. Wind
2. Hail
3. Increase temp = faster growth
4. Increase humidity – photosynthesis
5. Protect from drying and too much sun
6. Protect from birds, rabbits and bugs

Various “ row covers” mesh and plastic available in 16 to 250ft lengths at

TERRITORIAL seed co

JOHNNY’S seeds

And others (more expensive)

Gro-therm perforated plastic
300 holes per square yard (9sq ft) so crops don’t cook but it is usually 10F higher than outside, esp in wind.
Increased humidity inside

Roll up sides for pollination, lower for hail storm forecast.

There are many ways to build hoops. Some strong people make out of conduit.

My method is rebar sunk several feet into the ground and sticking up. The ½ to ¾ plastic irrigation pipes are flexible and slide over them.

Without some kind of solid fixation hoops WILL BLOW AWAY.

In the Fall if crops not ready and frost coming, many Laramie gardeners resort to the laundry look

Another use for covers is for summer germination for Fall crops

Seeds will be difficult to germinate if they dry out and our low humidity, strong sun and cloudless days lend to drying out.

Solution – shade and cover while germinating then gradually remove covers so plants get adjusted to light and low humidity

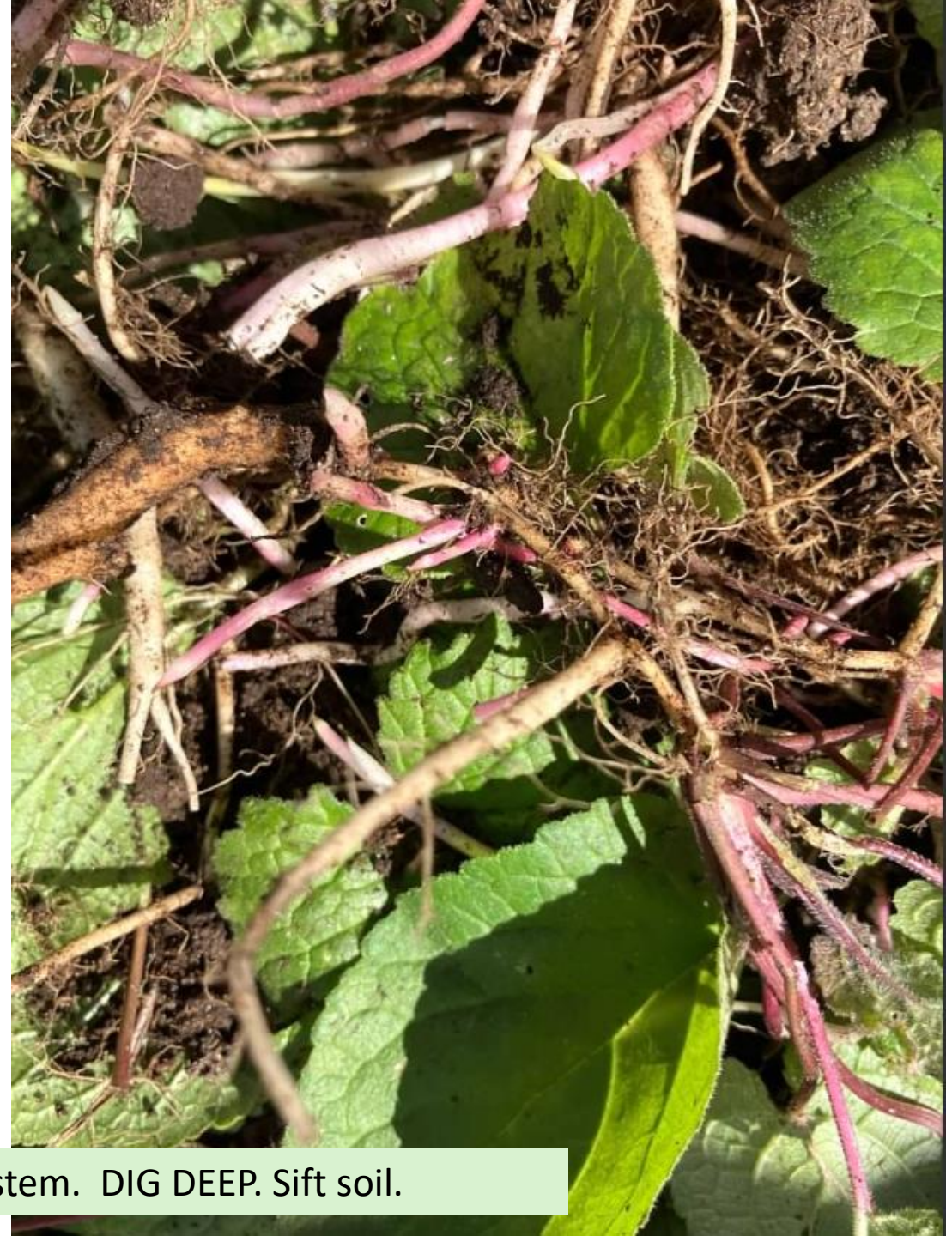
August 4

A Word on WEEDS

1. Weeds are successful plants – they WILL take over. They have many ways to guarantee success.

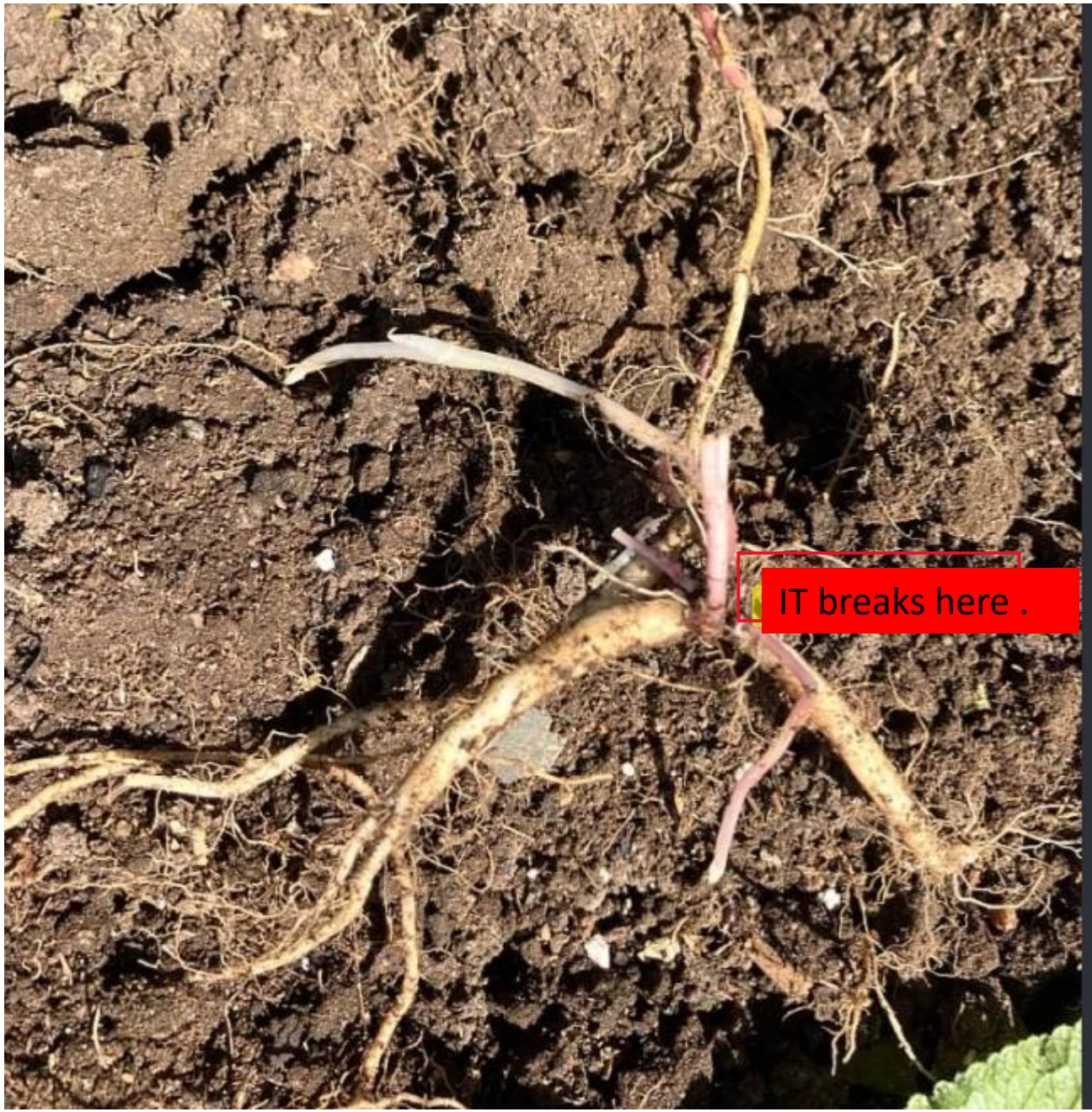
    They make **millions of seeds** – try to NEVER let a weed go to seed and REMOVE it completely.

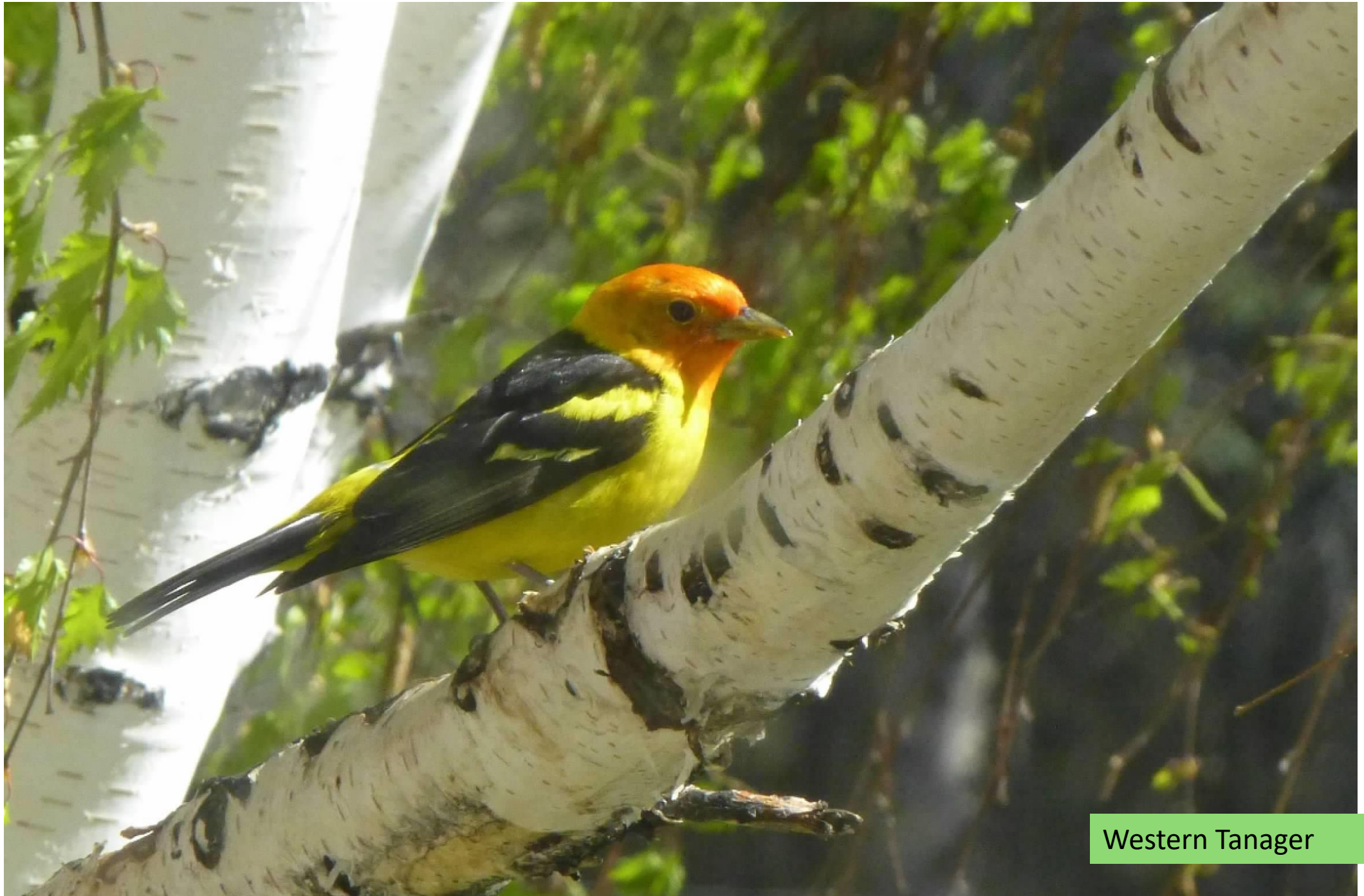
2. They can have deep vigorous roots with root storage – roots can do **very deep**.
    2. **Bindweed/ thistle** – way too deep. Pull the shoots asap to starve it.
    3. Consider very selective _ place tube (bottomless soda cup) over plant and spray round up in the fall. The plant sucks nutrients back to roots in fall and hopefully this will kill it.
    4. **“ Bluebells** “ pulling breaks the VERY brittle surface roots and leaves the swollen tap root. (white carrot like) Need to dig it ALL out or use mega chemicals . PULL Seedlings in spring as soon as noted. (VERY EARLY SPROUTERS) Companula rapuncloides - creeping bellflower . Roots are WHITE which makes the easier to see mixed with other plant roots.



A SMALL PATCH of “ Bluebells” has an ENORMOUS root system. DIG DEEP. Sift soil.

The “ bluebells” have a devilish root system. The shoots are brittle and break very easily when pulled – leaving the mass of huge roots and rhizomes behind. Young roots are white and easily recognized if pulling SMALL seedlings.





Western Tanager

Local Oriole

Bullocks Oriole

Western Bird

Off course ;-

Baltimore Oriole
Generally an Eastern Bird