U.S. Air Force Pollinator Conservation Reference Guide – Appendix B: Restoration and landscaping information

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U.S. Air Force

Pollinator Conservation Reference Guide

Appendix B: Restoration and landscaping information

Prepared for

U.S. Air Force Civil Engineer Center

Prepared by

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ABBREVIATIONS

Light preference
S=full sun (6 or more hours per day direct sunlight during growing season)
PS=part shade (3 to 6 hours per day direct sunlight during growing season)
Sh=Shade (less than 3 hours per day direct sunlight during growing season or filtered light)

Soil moisture
D=dry (areas that do not remain wet after rain)
M=moist (areas with damp and occasionally saturated soils)
W=wet (areas saturated during most of the growing season)

Bloom time
Jan = January
Feb = February
Mar = March
Apr = April
May = May
Jun = June
Jul = July
Aug = August
Sep = September
Oct = October
Nov = November
Dec = December

Bloom color
B=blue
Br=brown
G=Green
O=orange
Pi=Pink
Pu=purple
R=red
Y=yellow
W=white

Height
" = inches
' = feet

Suitable for landscaping
Y=yes (based on appearance; note: some plants, even those common in home gardens, are toxic)
N=no
ND = not determined

Other
AFB = Air Force Base
FS = Forest Service
P2 = Pollinator Partnership
NAPPC = North American Pollinator Protection Campaign
NRCS = Natural Resource Conservation Service
USDA = U.S. Department of Agriculture
USFWS = U.S. Fish and Wildlife Service

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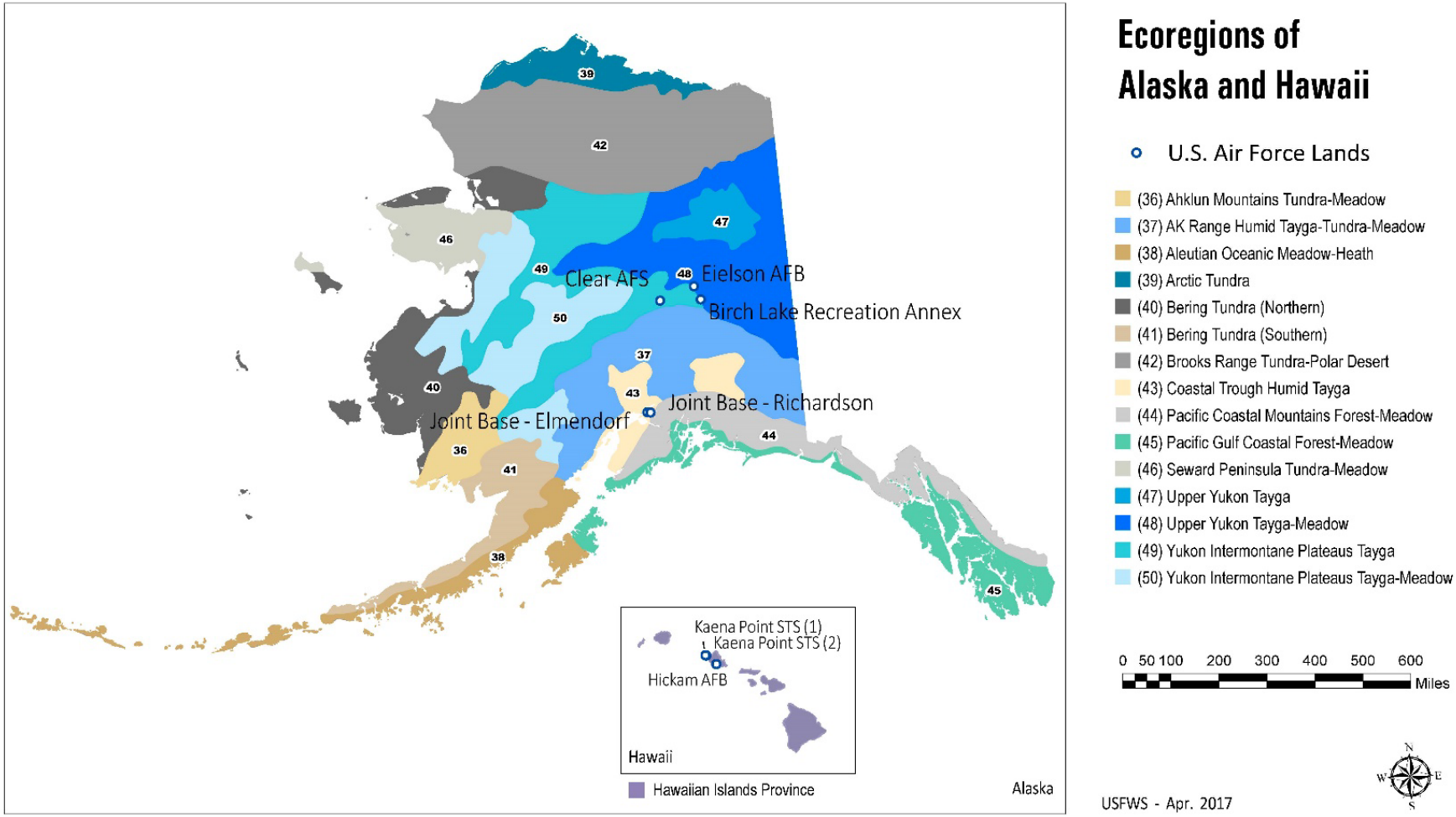

Table 1: U.S. Air Force lands and ecoregions in the U.S.

Air Force installation name	State	Ecoregion(s)
Altus Air Force Base	OK	Great Plains Steppe and Shrub
Arnold Air Force Base	TN	Eastern Broadleaf Forest (Continental)
Avon Park Air Force Range	FL	Outer Coastal Plain Mixed Forest
Badlands Bombing Range	SD	Great Plains-Palouse Dry Steppe
Barksdale Air Force Base	LA	Lower Mississippi Riverine Forest
Barry Goldwater Air Force Range	AZ	American Semi-Desert and Desert
Beale Air Force Base	CA	Sierran Steppe-Mixed Forest-Coniferous Forest-Alpine Meadow AND California Dry Steppe
Birch Lake Recreation Annex	AK	Upper Yukon Tayga-Meadow Province
Bolling Air Force Base	DC	Southeastern Mixed Forest
Brandywine Receiver Station	MD	Outer Coastal Plain Mixed Forest
Brandywine Storage Annex/DRMO	MD	Outer Coastal Plain Mixed Forest
Buckley Air Force Base	CO	Great Plains-Palouse Dry Steppe
Cannon Air Force Base	NM	Southwest Plateau and Plains Dry Steppe and Shrub
Canyon Lake Recreational Area	TX	Southwest Plateau and Plains Dry Steppe and Shrub
Cape Canaveral Air Force Station	FL	Outer Coastal Plain Mixed Forest
Cape Cod AS	MA	Eastern Broadleaf Forest (Oceanic)
Carter Creek	UT	Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow
Claiborne Range	LA	Outer Coastal Plain Mixed Forest
Clear Air Force Station	AK	Yukon Intermontane Plateaus Tayga Province
Columbus Air Force Base	MS	Southeastern Mixed Forest
Creech Air Force Base	NV	American Semi-Desert and Desert
Davidsonville Transmitter Site	MD	Outer Coastal Plain Mixed Forest
Davis-Monthan Air Force Base	AZ	American Semi-Desert and Desert
Dover Air Force Base	DE	Outer Coastal Plain Mixed Forest

Air Force installation name	State	Ecoregion(s)
Dyess Air Force Base	TX	Southwest Plateau and Plains Dry Steppe and Shrub
Edwards Air Force Base	CA	American Semi-Desert and Desert AND California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow
Eglin Air Force Base	FL	Outer Coastal Plain Mixed Forest
Eielson Air Force Base	AK	Upper Yukon Tayga-Meadow Province
Ellsworth Air Force Base	SD	Great Plains-Palouse Dry Steppe AND Black Hills Coniferous Forest
Fairchild Air Force Base	WA	Intermountain Semi-Desert
Farish Memorial Memorial Recreational Annex	CO	Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow
Fort Fisher Recreation Area	NC	Outer Coastal Plain Mixed Forest
Fort Tuthill	AZ	Arizona-New Mexico Mountains Semi-Desert-Open Woodland-Coniferous Forest-Alpine Meadow
Fourth Cliff Recreation Annex	MA	Eastern Broadleaf Forest (Oceanic)
Francis E Warren Air Force Base	WY	Great Plains-Palouse Dry Steppe
Goodfellow Air Force Base	TX	Southwest Plateau and Plains Dry Steppe and Shrub
Grand Bay Weapons Range	GA	Outer Coastal Plain Mixed Forest
Grand Forks Air Force Base	ND	Prairie Parkland (Temperate)
Griffiss Air Force Base	NY	Laurentian Mixed Forest
Grissom Air Force Base	IN	Eastern Broadleaf Forest (Continental)
Hanscom Air Force Base	MA	Eastern Broadleaf Forest (Oceanic)
Hickam Air Force Base	HI	Hawaiian Islands Province
Hill Air Force Base	UT	Intermountain Semi-Desert and Desert
Holloman Air Force Base	NM	Chihuahuan Semi-Desert
Hurlburt Field	FL	Outer Coastal Plain Mixed Forest
Ipswich Antenna Farm Annex	MA	Eastern Broadleaf Forest (Oceanic)
JB San Antonio-Camp Bullis	TX	Southwest Plateau and Plains Dry Steppe and Shrub
JB San Antonio-Ft. Sam Houston	TX	Southwest Plateau and Plains Dry Steppe and Shrub
JB San Antonio-Lackland	TX	Southwest Plateau and Plains Dry Steppe and Shrub
JB San Antonio-Randolph	TX	Southwest Plateau and Plains Dry Steppe and Shrub
JB-Andrews	MD	Outer Coastal Plain Mixed Forest

Air Force installation name	State	Ecoregion(s)
JB-Charleston Naval Weapons Station	SC	Outer Coastal Plain Mixed Forest
JB-Charleston Naval Weapons Station (Short Stay)	SC	Outer Coastal Plain Mixed Forest
JB-Dix	NJ	Eastern Broadleaf Forest (Oceanic)
JB-Elmendorf	AK	Coastal Trough Humid Tayga Province
JB-Ft. Eustis	VA	Outer Coastal Plain Mixed Forest
JB-Lakehurst	NJ	Eastern Broadleaf Forest (Oceanic)
JB-Langley	VA	Outer Coastal Plain Mixed Forest
JB-Lewis	WA	Pacific Lowland Mixed Forest
JB-McChord	WA	Pacific Lowland Mixed Forest
JB-McGuire	NJ	Eastern Broadleaf Forest (Oceanic)
JB-Richardson	AK	Coastal Trough Humid Tayga Province AND Pacific Coastal Mountains Forest-Meadow Province
Jonathan-Dickinson Missile Tracking Annex (JDMTA)	FL	Everglades
Kaena Point STS (1)	HI	Hawaiian Islands Province
Kaena Point STS (2)	HI	Hawaiian Islands Province
Keesler Air Force Base	MS	Outer Coastal Plain Mixed Forest
Kirtland Air Force Base	NM	Colorado Plateau Semi-Desert
Laughlin Air Force Base	TX	Chihuahuan Semi-Desert
Little Rock Air Force Base	AR	Southeastern Mixed Forest
Los Angeles Air Force Base	CA	California Coastal Chapparral Forest and Shrub
Luke Air Force Base	AZ	American Semi-Desert and Desert
Macdill Air Force Base	FL	Outer Coastal Plain Mixed Forest
Malabar Transmitter Annex	FL	Outer Coastal Plain Mixed Forest
Malmstrom Air Force Base	MT	Great Plains-Palouse Dry Steppe
March Air Force Base	CA	California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow
Maxwell Air Force Base	AL	Southeastern Mixed Forest
McClellan Air Force Base	CA	California Dry Steppe
McConnell Air Force Base	KS	Great Plains Steppe
Melrose Air Force Range	NM	Southwest Plateau and Plains Dry Steppe and Shrub
Minot Air Force Base	ND	Great Plains Steppe

Air Force installation name	State	Ecoregion(s)
Moody Air Force Base	GA	Outer Coastal Plain Mixed Forest
Mountain Home AFB (Strike Dam Marina)	ID	Intermountain Semi-Desert
Mountain Home Air Force Base	ID	Intermountain Semi-Desert
Nellis Air Force Base	NV	American Semi-Desert and Desert
Nellis Air Force Range	NV	Intermountain Semi-Desert and Desert AND American Sem-Desert and Desert
New Boston Air Station	NH	Eastern Broadleaf Forest (Oceanic)
Newport Test Annex	NY	Laurentian Mixed Forest
Offutt Air Force Base	NE	Prairie Parkland (Temperate)
Oscura Bombing Gunnery Range	NM	Chihuahuan Semi-Desert
Patrick Air Force Base	FL	Outer Coastal Plain Mixed Forest
Peterson Air Force Base	CO	Great Plains-Palouse Dry Steppe
Poinsett Bombing and Target Range	SC	Outer Coastal Plain Mixed Forest
Pope Air Force Base	NC	Southeastern Mixed Forest
Robins Air Force Base	GA	Southeastern Mixed Forest
Rome Laboratory	NY	Laurentian Mixed Forest
Sagamore Hill Elect Research	MA	Eastern Broadleaf Forest (Oceanic)
Saylor Creek Range	ID	Intermountain Semi-Desert
Schriever Air Force Base	CO	Great Plains-Palouse Dry Steppe
Scott Air Force Base	IL	Eastern Broadleaf Forest (Continental)
Seguin Airfield	TX	Prairie Parkland (Subtropical)
Seymour Johnson Air Force Base	NC	Outer Coastal Plain Mixed Forest
Shaw Air Force Base	SC	Outer Coastal Plain Mixed Forest
Sheppard Air Force Base	TX	Great Plains Steppe and Shrub AND Southwest Plateau and Plains Dry Steppe and Shrub
Silver Mountain RRA	UT	Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow
Stockbridge Test Annex	NY	Laurentian Mixed Forest
Sudbury Elec Research Annex	MA	Eastern Broadleaf Forest (Oceanic)

Air Force installation name	State	Ecoregion(s)
Tinker Air Force Base	OK	Great Plains Steppe and Shrub AND Prairie Parkland (Subtropical)
Travis Air Force Base	CA	California Dry Steppe
Tyndall Air Force Base	FL	Outer Coastal Plain Mixed Forest
United States Air Force Academy	CO	Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow
Utah Test and Training Range	UT	Intermountain Semi-Desert and Desert
Utica Radar Site	NY	Laurentian Mixed Forest
Vance Air Force Base	OK	Great Plains Steppe
Vandenberg Air Force Base	CA	California Coastal Chapparral Forest and Shrub
Verona Defense Fuel Support	NY	Laurentian Mixed Forest
Verona Test Annex	NY	Laurentian Mixed Forest
Whiteman Air Force Base	MO	Prairie Parkland (Temperate)
Wright-Patterson Air Force Base	OH	Eastern Broadleaf Forest (Continental)

SECTION 1. B. ECOREGION DESCRIPTIONS AND NATIVE PLANT LISTS

1. B. 1. American Semi-desert and Desert Province (#2 on Figure 1)

ECOREGION DESCRIPTION

The Air Force lands within the American Semi-desert and Desert Province occur within the Sonoran Desert of Arizona. In this province, seasonal and daily temperature ranges are large. In the summer temperatures can reach over 125°F in the daytime, with winter temperatures averaging around 70°F. In winter daily ranges between maximum and minimum temperatures are often between 50 and 60°F. The western portion of the Sonoran Desert lies in the rainshadow of the California coastal ranges and is very dry, with rainfall per year typically between one and a half and five inches. Elsewhere in the Sonoran Desert, precipitation of up to 16 inches per year may occur. Precipitation occurs in both summer and winter, with summer rains typically short and heavy, and winter rains longer, lighter, and more widespread. Vegetation is usually very sparse, with bare ground between individual plants, and plants have small or absent leaves. Cacti and thorny shrubs are conspicuous, but many thornless shrubs and herbs are also present. Pollinator habitat restoration or enhancement will be a challenge in this region. Plummer, et al. (1968) determined that average annual precipitation must be at least nine inches before artificial seeding (grasses, forbs, or shrubs) is successful; therefore supplemental irrigation will be necessary. Potted transplants are also unlikely to be successful in this region without supplemental irrigation. Important plant species for pollinators, identified for this region consist mainly of locally-native shrubs and trees.

In the Bailey's classification system this Province is given code 322.

This list focuses on the portion of the ecoregion near Barry M. Goldwater Range (BMGR), Luke AFB (Luke), and Davis-Monthan AFB (DM), and for each plant indicates bases where its use would be appropriate in the Notes column.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Abronia villosa	Sand verbena	bees	S	D	Feb - Jul	Y	1'	Y	Annual, but self-seeds. May not be available commercially. BMGR West.
Asclepias linaria	Pineleaf milkweed	butterflies	S, PS	D, M	Feb - Oct	W	4'	Y	Queen butterfly larval host plant. DM, Luke.
Agave palmeri	Palmer agave	bats	S, PS	D	Jun - Oct	Y	3'	Y	May require supplemental water. DM, Luke.
Aloysia wrightii	Wright's bee brush	butterflies, moths	S, PS	D	Aug - Oct	W	3'	Y	DM, Luke.
Aristolochia watsonii	Southwestern pipevine	butterflies	PS	D	Mar - Dec	G, Pu	5'	Y	Larval host plant for pipevine swallowtail butterfly. DM, Luke, MBGR East.
Asclepias subulata	Desert milkweed	butterflies	S	D	Apr - Oct	Y	4'	Y	Important monarch butterfly larval host plant. Requires good drainage. DM, Luke, BMGR East/West.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Baileya multiradiata	Desert marigold	bees, butterflies, wasps, flies	S	D	Mar - Nov	Y	1.5'	Y	DM, Luke, BMGR East/West.
Bouteloua curtipendula	Sideoats grama	butterflies, moths	S, PS	D	Apr - Oct	Br	3'	Y	Butterfly larval host plant. DM, Luke, MBGR East.
Calliandra eriophylla	Fairy duster	butterflies, bees, hummingbirds	S, PS	D	Mar - Apr	Pi	3'	Y	Butterfly larval host plant. DM, Luke, BMGR East.
Carlowrightia arizonica	Arizona wrightwort	butterflies, bees	S, PS	D	Apr - May	W, Pu	2'	Y	Butterfly larval host plant. DM, Luke, MBGR East.
Chilopsis linearis	Desert willow	butterflies, moths, hummingbirds	S, PS	D	Apr - Sep	Pi	15'	Y	Moth larval host plant. DM, Luke, BMGR East/West.
Dalea formosa	Feather dalea	butterflies, hummingbirds	S, PS	D	Mar - Jun	Pu	2'	Y	Butterfly larval host plant. DM, Luke.
Datura wrightii	Sacred datura	butterflies, moths	S, PS	D	May - Oct	W	3'	Y	Sphinx moth larval host plant. DM, Luke, BMGR West.
Encelia farinosa	Brittlebush	butterflies, bees	S	D	Feb - May	Y	3'	Y	DM, Luke, BMGR East/West.
Erigeron divergens	Spreading fleabane	butterflies	S, PS	D	Feb - Oct	W	2'	N	Short-lived, but reseeds readily. Great for revegetation. DM, Luke, BMGR East.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Fouquieria splendens	Ocotillo	bees, butterflies, hummingbirds	S	D	April - June	R	12'	Y	Moth larval host plant. DM, Luke, BMGR East/West.
Hibiscus coulteri	Desert rosemallow	butterflies, moths, bees, hummingbirds	S, PS	D	through out the year	Y	3'	Y	DM, Luke, BMGR East.
Hyptis emoryi	Desert lavender	butterflies, bees	S, PS	D	Jan - May	Pu	6'	Y	Butterfly larval host plant. DM, Luke, BMGR East/West.
Larrea tridentata	Creosote bush	butterflies, bees	S	D	spring	Y	8'	N	Very important native bee plant. Used by many pollen specialists. DM, Luke, BMGR East/West.
Lycium andersonii	Anderson wolfberry	butterflies, bees, moths, hummingbirds	S, PS	D, M	Jan - May	Pu	6'	Y	DM, Luke, BMGR East/West.
Melampodium leucanthum	Blackfoot daisy	butterflies, bees, moths, wasps, fliesl	S	D	Mar - Oct	W	2'	Y	DM, Luke.
Muhlenbergia dumosa	Bamboo muhly	butterflies	PS	M	Mar - May	Br	4'	Y	Butterfly larval host plant. DM, Luke, BMGR East/West.
Olneya tesota	Desert ironwood	bees	S, PS	D	Apr - Jun	Pi	15'	Y	Valuable late spring-early summer pollen source. DM, Luke, BMGR East/West.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Parkinsonia florida	Blue paloverde	bees, butterflies, moths, hummingbirds	S, PS	D, M	Mar - May	Y	20'	Y	Butterfly and moth larval host plant. DM, Luke, BMGR East/West.
Parkinsonia microphylla	Foothill paloverde	bees, butterflies, moths, hummingbirds	S	D	Apr - May	Y	12'	Y	Butterfly and moth larval host plant. DM, Luke, BMGR East/West.
Parthenium incanum	Mariola	bees, wasps, flies	S, PS	D	Jul - Nov	W	3'	Y	DM, Luke.
Penstemon parryi	Parry penstemon	bees, moths, hummingbirds	S, PS	D, M	Spring	Pi	3'	Y	Self-seeds readily. DM, Luke, BMGR East.
Prosopis velutina	Velvet mesquite	butterflies, bees	S, PS	D	Mar - Aug	Y	25'	Y	Butterfly larval host plant. DM.
Psorothamnus fremontii	Indigo bush	bees	S	D	Aprl - Jun	Bl	4'	Y	May not be available commercially. BMGR West.
Psorothamnus spinosus	Smoketree	bees	S	D	Jun - Jul	Bl, Pu	36'	Y	Used as an ornamental. BMGR West.
Senegalia greggii (Acacia greggii)	Catclaw acacia	butterflies	S	D	Apr - Oct	Y	10'	Y	Butterfly larval host plant. DM, Luke, BMGR East/West.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Senna covesii	Desert senna	butterflies	S	D	Apr - Oct	Y	1.5'	N	Butterfly larval host plant. Pretty, but prolific. DM, Luke, MBGR East/West.
Sphaeralcea ambigua	Desert globe mallow	butterflies, bees	S, PS	D	Feb - Nov	O	3'	Y	Butterfly larval host plant. DM, Luke, BMGR East/West.
Thymophylla pentachaeta (Dyssodia pentachaeta)	Dogweed	butterflies	S, PS	D	Mar - Oct	Y	1'	N	Butterfly larval host plant. Pretty, but prolific. DM, Luke, BMGR East/West.

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1. B. 2. Arizona-New Mexico Mountains Semi-desert-Open Woodland-Coniferous Forest-Alpine Meadow Province (#3 on Figure 1)

ECOREGION DESCRIPTION

This ecoregion is unique to Arizona and New Mexico, and is formed by foothills, mountains, and deeply incised high plateaus. It is an area of very diverse topography, with elevations ranging from 4,500 to 10,000 feet. Climate varies with altitude creating an average annual temperature of 55°F in lower areas and 40°F in higher zones, within average annual precipitation ranges of 10 to 35 inches. Low humidity is the norm. Precipitation patterns tend to exhibit a dry spring, with the onset of summer monsoons and thunderstorms, followed by some early autumn and winter rains, and snow in upper elevations during colder months. Vegetation varies with elevation. Mixed grasses, chaparral brush, oak-juniper woodland, and pinyon-juniper woodland are found below 7,000 feet. Open ponderosa pine forests, with some mixed with pinyon-juniper woodland, Chihuahuan, and Apache pine are found below 8,000 feet. Douglas fir, aspen, and limber pine are dominant below 9,000 feet, merging into Engelmann spruce and corkbark fir found over 9,000 feet, along with limber and bristlecone pines in rockier spots.

One Air Force facility, Fort Tuthill, is located within the Rocky Mountain montane conifer forest community approximately four miles south of Flagstaff, AZ, at 7,000 feet elevation. At Fort Tuthill, the average annual precipitation is 21.8 inches, with equal amounts falling in winter and summer. Summer temperatures average 63°F. Winter temperatures average 36°F. Ponderosa pine is the dominant vegetation in the community near Fort Tuthill. Fort Tuthill is a very small facility, surrounded by lands managed by Coconino County. Supplemental irrigation is recommened to initially establish plants for landscaping. Continued irrigation may be used to maximize growth and bloom production.

In the Bailey's classification system this Province is given code M313.

This native plant list focuses on the portion of the ecoregion near Fort Tuthill.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias subverticillata	Whirled milkweed	butterflies, bees, wasps	S	D	May - Sep	W	1-3’	Y	Very important monarch butterfly plant in northern AZ. Does very well when irrigated.
Achillea millefolium	Common yarrow	butterflies, bees, moths	S, PS	D	Apr - Sep	W, Pi	1-3’	Y	Easily obtained commercially.
Asclepias tuberosa	Butterfly milkweed	butterflies, bees	S, PS	D	May - Jul	O	1-3’	Y	Very attractive native ornamental.
Chamaebatiaria millefolium	Fern bush	bees	S	D	Jul - Sep	W	6-12’	Y	None.
Chrysothamnus viscidiflorus	Yellow rabbitbrush	bees	S	D	Sep - Oct	Y	3-5’	Y	Readily spreads. Future seedlings may need to be controlled. Very important late season pollinator plant for bees and monarch butterflies.
Dasiphora fruticosa	Shrubby cinquefoil	bees	S	M	Jun - Sep	Y	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ericameria nauseosa	Rubber rabbitbrush	bees	S	D	Sep - Oct	Y	3-5’	Y	Readily spreads. Future seedlings may need to be controlled. Very important late season pollinator plant for bees and monarch butterflies.
Eriogonum umbellatum	Sulphur buckwheat	butterflies	S, PS	D	Jun - Sep	Y	1-3’	Y	None.
Heliomeris multiflora	Showy goleneye	bees	S	D	Jul - Sep	Y	1-3’	Y	None.
Ipomopsis aggregata	Sky rocket gilia	hummingbirds	PS		Aug - Oct	R	3-6’	Y	Readily established by seed.
Lupinus argenteus	Silver lupine	butterflies, bees	S, PS	D	Jun - Jul	Pu, Pi, rarely W	1-2’	Y	Spreads quickly to form colonies.
Monarda fistulosa	Beebalm, Mexican oregano	bees, butterflies	S, PS	D	May - Sep	W, Pi, Pu	1-3’	Y	None.
Opuntia macorhiza	Twist-spine prickly pear	bees	S	D	May - Jun	R, O, Y	1-3’	Y	None.
Opuntia phaeacantha	Tulip prickly pear	bees	S, PS	D	Apr - Jul	R, O, Y	3-6’	Y	None.
Penstemen palmeri	Palmer's penstemon	bees	S	D	May - Jun	W, Pi	3-6’	Y	Spreads easily by seed.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Pericome caudata	Mountain tailleaf	butterflies, bees, wasps	S, PS	D	Aug - Sep	Y	3-6’	Y	Attracts numerous pollinating insects. Important late season pollinator plant. May be difficult to obtain commercially.
Potentilla thurberi	Scarlet cinquefoil	bees	Sh	D, M	Jul - Oct	R	1-3’	Y	None.
Purshia mexicana	Mexican cliffrose	bees	S	D	Jun - Aug	W, Y	6-12’	Y	None.
Rhus glabra	Smooth sumac	butterflies, bees	S, PS	D	May - Aug	W, Y, G	6-12’	Y	None.
Rhus trilobata	Skunkbush sumac	bees	S, PS	D	Mar - Apr	W	1-3’	Y	None.
Robinia neomexicana	New Mexico locust	bees	PS	D	Apr - Aug	Pi	6-12’	Y	Readily spreads. Future seedlings may need to be controlled. Spreads by suckers. Can be very thorny.
Solidago multiradiata	Rocky Mountain goldenrod	butterflies, bees	PS	D	Jul - Sep	Y	1’	Y	None.
Sphaeralcea parvifolia	Small-leaf globemallow	bees	S	D	May - Sep	O	1-3’	Y	Biannual, but readily reseeds itself. Valuable native bee plant.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Thermopsis montana	False lupine	butterflies, bees	S	D, M	May - Aug	Y	1-3’	Y	Very valuable bumble bee plant. Likely to require irrigation for establishment and persistence.
Verbena macdougalii	Macdougal verbena	bees	S	D	Jun - Oct	B	2-4’	Y	None.

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1. B. 3. Black Hills Coniferous Forest Province (#4 on Figure 1)

ECOREGION DESCRIPTION

The Black Hills are an isolated mountain range in the Great Plains of western South Dakota and northeastern Wyoming. Trending roughly northwest–southeast, the uplift is approximately 124 miles long and 64 miles wide, with an area of more than 2 million acres. Elevations range from the about 3,000 feet in the surrounding plains to 7,242 feet at Harney Peak. Within the Black Hills, precipitation is greater, variations in air temperature more moderate, and wind velocities lower than on the surrounding Great Plains. The northern Black Hills receive significantly more precipitation and are cooler than the southern. The boundary between the two regions runs roughly west from Rapid City through Deerfield. Throughout the uplift, 65 to 75 percent of the year's moisture falls as rain or occasionally snow from April through September. Storms are typically frontal prior to mid-June, and convective the remainder of the summer. Intense thundershowers are common. Late July through early September is referred to as the dry season. Snow has been recorded for every month of the year, but commonly falls from October through April. The Black Hills have strong floristic ties to four of the North American biomes: Cordilleran Forest, Grassland, Eastern Deciduous Forest and Northern Coniferous Forest. The Cordilleran biome to the west is best represented. The varied topography, geology and climate result in a corresponding variety in plant communities, including western ponderosa pine forests, grasslands of the Great Plains, and northern white spruce forests. Midwest hardwoods are well-represented by stands dominated by oak, ash, and elm. The Black Hills Community Inventory identified 68 community types. Due to the number of community types, in this Province, the species list below is comprised of a variety of plants that were found in common in most of the community types.

In the Bailey's classification system this Province is given code M334.

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer negundo	Boxelder	bees	S	M	Mar - Apr	Y, G, Br	35-60’	Y	Larval host plant for Cecropia silkmoth. Special value to honey bees.
Achillea millefolium	Common yarrow	bees	S, PS	D	Apr - Sep	W, Pi	1-3’	Y	Special value to native bees.
Amelanchier alnifolia	Saskatoon service-berry	bees, butterflies	PS	D, M	Apr - Jun	W	4-15’	Y	Shrub. Special value for native bees. Larval host plant for California hairstreak elf.
Amorpha canescens	Leadplant	nectar loving insects	S, PS	D	Jun - Jul	B, Pu	3-6’	Y	Shrub. Special value for native bees.
Andropogon geradii	Big bluestem	butterflies, native bees	S	D	Aug - Nov	R, B, Br	4-8’	Y	Grass. Special value for native bees. Larval host plant for Delaware skipper and dusted skipper.
Antennaria parvifolia	Small-leaf pusseytoes	butterflies	S, PS, Sh	D	Jul - Sep	W, R, Pi, G, Br	0-1’	Y	Larval host plant for painted lady.
Artemisia frigida	Prairie sagebrush	native bees	S	D	Jun - Aug	Y	1-3’	Y	Shrub. Special value to native bees.

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Artemisia tridentata	Big sagebrush	bees, moths	S	D	Jun	Y	6-12’	Y	Shrub. Provides nesting material for native bees. Special value for native bees. Larval host plant for Hera buckmoth.
Asciepias viridiflora	Green milkweed	monarchs, bumble bees and other native bees, honey bees	S	D	Jun - Sep	G	12-32”	Y	Special value to bees. Provides nesting materials to native bees. Monarch larval host plant.
Asclepias verticilla	Whorled milkweed	monarch butterfly	S, PS	D	May - Sept	W, G	1-3’	Y	Monarch larval host plant.
Astragalus crassicarpus	Ground plumb	butterflies	S, PS, Sh	M	May - Jun	W, B, Pu	1-3’	Y	Larval host plant for Afranius duskywing.
Betula papyrifera	Paper birch	butterflies, moths	S, PS, Sh	M	Apr	Y, G, Br	72-100’	Y	Larval host plant for luna moth and eastern tiger swallowtail.
Bouteloua curtipendula	Sideoats grama	butterflies, native bees	S, PS	D	Jun - Nov	R, O, Y	2-3’	Y	Grass. Special value for native bees. Larval host plant for green skipper, dotted skipper, orange skipperling, bronze roadside skipper, sheep skipper, Elissa roadside skipper.

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Bouteloua gracilis	Blue grama	butterflies	S	D	Jul - Oct	Y	12-14”	Y	Grass. Larval host plant for skippers (Uncas skipper, Pahaska skipper, green skipper, Rhesus skipper, Simius roadside skipper and Garita skipperling).
Campanula rotundifolia	Bluebell bellflower	hummingbirds	S, PS, Sh	D	Jun - Sep	Pu, B	1-3’	Y	
Cirsium undulatum	Wavy-leaf thistle	bees	S	D	May - Jun	Pi	1-3’	Y	Special value to native bees. Provides nesting materials for native bees. Has spines.
Dalea purpurea	Purple prairie clover	butterflies, bees	S	D	Jun - Sep	Pu	3-12”	Y	Special value to bees.
Danthonia spicata	Poverty oatgrass	butterflies	S, PS, Sh	D	May - Jul	G	1-3’	Y	Grass. Larval host plant for Indian skipper and chryxus arctic.

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Fraxius pennsylvanica	Green ash	butterflies	S, PS, Sh	D, M, W	Apr - Jun	G, Pu, B	36-72’	Y	Larval host plant for eastern tiger swallowtail, two-tailed tiger swallowtail, tiger swallowtail, orange sulphur, giant sulphur, cloudless giant sulphur, and mourning cloak.
Geum triflorum	Prairie smoke	butterflies	S, PS, Sh	D	Mar - Sep	R, Pi, Pu	0-1’	Y	none
Glycyrrhiza lepidota	Wild licorice	butterflies, bees	PS, Sh	M	June - July	W	1-3’	Y	Special value to native bees. Larval host plant for silver-spotted skipper.
Iris missouriensis	Rocky Mountain iris	hummingbird	S	W	May - Jun	Pu	1-2’	Y	
Juniperus scoplorum	Rocky mountain juniper	butterflies	S, PS	D	Apr - May	Y	12-36’	Y	Larval host plant for the olive butterfly.
Liatris punctate	Dotted gayfeather	bees, butterflies	S	D	Aug - Oct	Pu	1-3’	Y	Special value to native bees.
Linum lewisii	Prairie flax	bees	S	D	Mar - Sep	Pu, B	16-20’	Y	Special value for native bees
Opuntia humifusa	Prickly pear	native bees	S	D	May - Jul	Y	0-3’	Y	Special value for native bees

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Phlox hoodia	Spiny phlox	bees, flies	S	D	Apr - Jun	W, Pi, B	2-12”	Y	
Picea glauca	White spruce	butterflies, moths	S, PS, Sh	D, M	Apr - May	R, Y	72-100’	Y	Larval host plant for the Columbia silkmoth.
Pinus contorta	Lodgepole pine	butterflies, moths	S	D	Jun	Y	12-36’	Y	Larval host plant for the Pine elfin.
Populus deltoides	Eastern cottonwood	butterflies	S, PS, Sh	D, M, W	Feb - Apr	Y	12-36’	Y	Larval host plant for mourning cloak and viceroy.
Populus tremuloides	Quaking aspen	butterflies	S, PS, Sh	M, W	Apr - May	Y, G, Br	35-50’	Y	Larval host plant for great ash sphinx, eastern tiger swallowtail, and viceroy.
Quercus macrocarpa	Bur oak	butterflies	S, PS, Sh	D, M, W	Mar - May	Y, G, Br	100’	Y	Larval host plant for Edwards’ harstreak and Horace’s duskywing.
Rhus trilobata	Fragrant sumac	native bees	S, PS	D	Mar - Apr	W, Y	2-8’	Y	Shrub. Special value to native bees.

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Schizachyrium scoparium	Little bluestem	butterflies, native bees	S, PS	D	Jun - Dec	W, G, Br	3-6’	Y	Grass. Special value for native bees. Larval host plant for Ottoe skipper, Indian skipper, crossline skipper, dusted skipper, cobweb butterfly, and dixie skipper.
Solidago canadensis	Giant goldenrod	bees, butterflies	S, PS	D, M	Sep - Nov	Y	3-6’	Y	Special value to bees.
Solidago missouriensis	Prairie goldenrod	butterflies native bees, honey bees	S	D	Jul - Sep	Y	1-3’	Y	Special value for native bees; special value for honey bees
Spirea betulifolia	White spirea	bees	PS	M	Jun - Jul	W	6-12’	Y	Shrub. Special value for native bees.
Symphyotrichum laeve	Smooth blue aster	butterflies, bees	S	D	Aug - Oct	Pu	1-3’	Y	Larval host plant for pearl crescent. Special value to native bees.
Symphyotrichum longifolius	Blue aster	native bees	S, PS	D, M	Sep - Nov	Pu	<20”	Y	Special value to native bees.
Trandescantia occidentalis	Prairie spiderwort	native bees	S, PS	D	Jun - Jul	Pu	0-1’	Y	Special value for native bees

Scientific name	Common name	Pollinators expected	Light Preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ulmus americana	American elm	butterflies	S, PS	M	Feb - Apr	G, R	72-100’	Y	Larval host plant for eastern comma, mourning cloak, Columbia silkmoth, question mark, and painted lady.
Verbena stricta	Hoary verbena	butterflies native bees	S	D	Jul - Sep	Pu	1-4’	Y	Larval host: Common Buckeye
Viola pedatifida	Prairie violet	butterflies	S, PS	D, M	May - Sep	Pu	4-8”	Y	Larval host: Fritillaries
Yucca glauca	Plains yucca	butterflies	S	D	Jun - Aug	W	4-5’	Y	Provides nesting material for native bees.

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1. B. 4. California Coastal Chaparral Forest and Shrub Province (#5 on Figure 1)

ECOREGION DESCRIPTION

In this province the annual temperature average is 50 to 56ºF. The average year-round precipitation is between 10-50 inches with a pronounced summer drought. This province has a more moderate climate than the interior and receives some moisture from fog in summer. Fire is common in this province, usually a result of lightning during the summer. This region is 10,300 square miles along the coast of southern California and is characterized by Coastal plains, low mountains, and interior valleys from San Francisco to San Diego with elevations ranging from sea level to 2,400 feet. Plant communities adapted to summer drought dominate, including sclerophyll forest, chaparral, coastal scrub and sagebrush. Common tree species include cypress, pine, oak, chamise, red shanks, manzanita, bush lupine and coyote bush. The soils of this region are mostly Alfisols and Milliols which are quite fertile with adequate water. Most of the Coastal plains and interior valleys have been converted to urban use or irrigated agriculture causing habitat fragmentation and degradation and displacement of native plants and animals.

In the Bailey's classification system this Province is given code 261.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea millefolium	Pink yarrow	bees, flies, bettles, *Aquilegia formosa*	S	M, D	May - Aug	Pi	1-4'	Y	None.
Aesculus californica	California buckeye	moths, butterflies	PS	M	Apr - May	Pi,W	15’	Y	None.
Amorpha californica	California false indigo	bees	PS, Sh	M	May - Jun	Pu	6-8’	Y	None.
Aquilegia formosa	Western columbine	hummingbirds, bees	S	M	Feb - May	R	12-36”	Y	None.
Arctostaphylos edmundsii	Dwarf coastal manzanita	bees	S, PS	M, D	Apr - May	W	1-1.5’	Y	Shrub.
Arctostaphylos tomentosa	Woollyleaf manzanita	bees	S, PS	M, D	Feb - Mar	W	3-8’	Y	Shrub.
Arctostaphylos uva-ursi	Kinnikinnick	hummingbirds, butterflies	S, PS	M, D	Mar - Jun	W	3-4”	Y	Shrub.
Asclepias californica	California milkweed	butterflies, bees, beetles, flies,	S	M, D	Jun	Pu	12-54”	Y	Monarch larval host plant.
Asclepias eriocarpa	Wollypod milkweed	butterflies, bees, beetles, flies	S	D	Jun - Aug	W, Pi	to 60"	Y	Monarch larval host plant.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias fascicularis	Narrowleaf milkweed	butterflies, bees, beetles, flies	S	D	Jun - Aug	W	to 60”	Y	Monarch larval host plant.
Astragalus trichopodus	Santa Barbara milkvetch	butterflies, moths	S	M, D	Feb - Jun	W	8-24’	Y	None.
Ceanothus crassifolius	Hoaryleaf ceanothus	butterflies, bees, beetles, flies	S	M, D	Apr - May	W	12’	Y	None.
Ceanothus oliganthus	Hairy ceanothus	bees, flies, beetles	S	M, D	Feb - Apr	B	3-9’	Y	Shrub.
Ceanothus thyrsiflorus	White Mountain lilac	bees, flies, beetles	S	M, D	Feb - Jun	W	2-16’	Y	Shrub.
Cornus glabrata	Brown dogwood	bees, flies, beetles	S, PS	M, D	Apr - May	W	4-10’	Y	None.
Delphinium cardinale	Scarlet larkspur	hummingbirds, bees	S, PS	M	Mar - May	R	2-4"	Y	None.
Delphinium nudicaule	Red larkspur	hummingbirds, bees	PS, Sh	M	Mar - Apr	R	2-3’’	Y	None.
Dicentra formosa	Pacific bleeding heart	bees	PS, Sh	M	Mar - Apr	Pi	12-18”	Y	None.
Dodecatheon clevelandii	Padre’s shooting star	bees	S	M	Feb - Mar	Pu	12”	Y	None.
Eriogonum fasciculatum	California buckwheat	butterflies, moths	S	D	Mar - Jul	Pi	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Eschscholzia californica	California poppy	beetles, bees	S	M, D	Jan - Aug	O, Y	12-18”	Y	None.
Fragaria chiloensis	Beach strawberry	bees, beetles, flies	S	M	Mar - May	W	6-8”	N	None.
Helianthus gracilentus	Slender sunflower	butterflies, bees, beetles, flies	S	M, D	Aug - Sep	Y	12”	N	None.
Heteromeles arbutifolia	Toyon	bees, hummingbirds	S	D	Jun - Aug	W	5-16’	Y	Shrub.
Heuchera pilosissima	Seaside alumroot	flies	S, PS	M, D	Mar - Apr	Pi, W	12-18”	N	None.
Lithophragma heterophyllum	Mission woodland-star	bees	Sh	M	Mar - May	W	12”	N	None.
Lupinus albifrons	Silver lupine	bees, butterflies	S, PS	M, D	Mar - May	B	3-5’	Y	None.
Mimulus cardinalis	Scarlet monkeyflower	hummingbirds, bees	Sh	M, W	Apr - May	R	3’	Y	None.
Phacelia tanacetifolia	Tansy phacelia	bees, flies	S	D	Mar - May	B	12-36”	Y	Annual.
Prunus ilicifolia	Hollyleaf cherry	bees, butterflies	S, PS	M	Mar	W	25’	Y	None.
Rhododendron occidentale	Western azalea	bees, butterflies	PS, Sh	W	May	W	6-8’	Y	Shrub.
Ranunculus californicus	California buttercup	bees	S, PS	M, D	Feb - May	Y	12-18”	N	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Salix exigua	Narrowleaf willow	butterflies, bees	PS	W, M	Apr - May	W	4-15’	Y	None.
Salix laevigata	Red willow	bees	S, PS	W, M	Apr - May	W	10-25’	Y	None.
Salvia leucophylla	San Luis purple sage	bees, butterflies	S	D	May - Jun	Pu	3-6’	Y	Shrub/subshrub.
Salvia mellifera	Black sage	butterflies, hummingbirds, bees	S	D	May - Jun	W, B	3’	Y	Shrub/subshrub
Tellima grandiflora	Fringe cup	hummingbirds, bees	Sh	M	Mar - May	Pi	2’	Y	None.

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1. B. 5. California Coastal Range Open Woodland-Shrub-Coniferous Forest-Meadow Province (#6 on Figure 1)

ECOREGION DESCRIPTION

Temperatures average 53 to 65°F in the Coast Range, but are only 32 to 60°F in the mountains of southern California, falling with rising elevation. Precipitation, which ranges from 12 to 40 inches per year, is evenly distributed through fall, winter, and spring, and increases with elevation. Most precipitation is rain. The little snow that falls in winter melts quickly. Frost and short periods of freezing weather occur occasionally in winter. Coastal areas have a more moderate climate than the interior and receive some moisture from fog in summer. This region spans 24,900 square miles within the central part of the California Coastal ranges and the mountains of Southern California. Elevations range from 500 feet to 12,000 feet. The region is dominated by alternating patches of sclerophyll forest and chaparral. Common tree species include oak, laurel, madrone, chinkapin, bayberry, and pine. Chaparral shrubs include chamise, manzanita, Christmasberry, California scrub oak, and mountain mahogany. The soils in this province are Alfisols, Entisols and Mollisols. The pattern of Alfisols, Entisols, and Mollisols in this region is complex. Mollisols are usually found along the coast; Alfisols occur in the north; and the south is mostly Entisols.

In the Bailey's classification system this Province is given code M262.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer macrophyllum	Big leaf maple	bees	S, PS	M, D	Apr - May	R-G	50'	Y	None.
Aesculus californica	California buckeye	bees	S, PS	M, D	Apr - May	W-Pi	15'	Y	None.
Arctostaphylos tomentosa	Woollyleaf manzanita	bees	S, PS	M, D	Feb - Mar	W	3-8'	Y	Shrub.
Arctostaphylos uva-ursi	Kinnikinnick	bees	S, PS	M, D	Mar - Jun	W	3-4"	Y	Shrub.
Asclepias californica	California milkweed	butterflies, bees, beetles, flies	S	D, M	Jun	Pu	12-54"	Y	None.
Asclepias eriocarpa	Wollypod milkweed	butterflies, bees, beetles, flies	S	D	Jun - Aug	W, Pi-W	to 60"	Y	None.
Ceanothus crassifolius	Hoaryleaf ceanothus	bees, flies, beetles,	S, PS	M, D	Apr - May	W	12'	Y	Shrub.
Ceanothus oliganthus	Hairy ceanothus	bees, flies, beetles	S, PS	M, D	Feb - Apr	B	8'	Y	Shrub.
Ceanothus thyrsiflorus	White Mountain lilac	bees, flies, beetles	S, PS	M, D	Feb - Jun	W	10'	Y	Shrub.
Cercis occidentalis	Western redbud	butterflies, bees	S, PS	M	Feb - Apr	Pi	14'	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Cornus glabrata	Brown dogwood	bees, flies, beetles	S, PS, Sh	M, D	Apr - May	W	4-10'	Y	Shrub/tree.
Dendromecon rigida	Chaparral bush poppy	butterflies, other insects	S	D	Apr - Jun	Y	6-8'	Y	Shrub/tree.
Delphinium cardinale	Scarlet larkspur	hummingbirds, bees	P, PS	M	Mar - Apr	R	2-4'	Y	None.
Delphinium nudicaule	Red larkspur	hummingbirds, bees	P, PS	M	Mar - Apr	R	2-3"	Y	None.
Dicentra chrysantha	Golden eardrops	hummingbirds	S	D	May - Jul	Y	2-4'	Y	None.
Dodecatheon clevelandii	Padre's shooting star	bees	S	M	Apr - May	Pu	12"	Y	None.
Eschscholzia californica	California poppy	beetles, bees	S	M, D	Mar - Jun	O, Y	12-18"	Y	None.
Frangula californica ssp. californica	Coffeberry	butterflies, bees	S, PS, Sh	M, D	May - Jun	G	4-8'	Y	Shrub/tree.
Gilia capitata	Bluehead gilia	bees, beetles, flies, butterflies	S	D	Apr - May	B	8-15"	Y	None.
Helenium puberulum	Rosilla	bees, beetles, flies, butterflies	S	W, M	May - Aug	Y	18-24"	N	None.
Helianthus gracilentus	Slender sunflower	bees, beetles, flies, butterflies	S	M, D	Aug - Sep	Y	12"	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Hesperoyucca whipplei	Chaparral yucca	moths	S	D	Apr - Jun	W	6-9'	Y	None.
Heteromeles arbutifolia	Toyon	bees, hummingbirds	S	D	Jun - Aug	W	5-16'	Y	None.
Lupinus albifrons	Silver lupine	bees, butterflies	S	M, D	Mar - May	B	3-5'	Y	None.
Mimulus cardinalis	Scarlet monkeyflower	hummingbirds, bees	Sh	W, M	Apr - May	R	3'	Y	None.
Prunus ilicifolia	Hollyleaf cherry	bees, butterflies	S, PS	M	Mar	W	25'	Y	None.
Ranunculus californicus	California buttercup	bees	S, PS	M, D	Apr - May	Y	12-18"	Y	None.
Salvia leucophylla	San Luis purple sage	bees, butterflies, hummingbirds	S	D	May - Jun	Pu	3-6'	Y	Shrub/subshrub.
Salvia mellifera	Black sage	bees, butterflies,	S	D	May - Jun	W, B	2-3'	Y	Shrub/subshrub.
Symphoricarpos albus	Common snowberry	hummingbirds, bees	PS	W, M	May - Jun	Pi	4-5'	Y	Shrub/subshrub

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1. B. 6. California Dry Steppe Province (#8 on Figure 1)

ECOREGION DESCRIPTION

Annual temperatures average 60 to 67°F, but can fall as low as 55°F in the south. Precipitation is largely limited to winter rainfall, which peaks in December through February. Summers are hot and the winters mild with little or no snow except near the coast. Annual rainfall ranges from about 6 inches in the upper San Joaquin Valley to nearly 30 inches along the coast. Potential evaporation during the warmest months is often much greater than the precipitation. Low rainfall and small streamflow result in water scarcity in many areas. This region encompasses 19,200 square miles within the Central Valley of California, a flat alluvial plain between the Coast Ranges and the Sierra Nevada. Elevations range from sea level to 500 feet. This area has broad, nearly level valleys bordered by sloping alluvial fans, slightly dissected terraces and the lower foothills of the surrounding uplands. Large undrained basins lie in the south. Common plants include introduced annual grasses, avens, barley, brome and fescue. The soils in this province are mostly Entisols and Alfisols. The Entisols are usually at the lower elevations and the Alfisols at slightly higher elevations away from the valley floor. A small area of Aridisols occurs in the more arid southern portions of the San Joaquin Valley.

In the Bailey's classification system this Province is given code 262.

NATIVE PLANT LIST

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Allium fimbriatum	Fringed onion	butterflies, bees	S	D	Mar - May	Pu-R	12-15"	N	None.
Amsinckia menziesii intermedia	Fiddleneck	bees	S	D	Mar - Jun	Y	8-32"	N	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Brickellia californica	California brickelbush	bees, butterflies	S	D	Aug - Oct	Y-G	20-40"	Y	Shrub/subshrub.
Calochortus splendens	Mariposa lily	beetles, bees, butterflies	S, PS	M, D	May - Jun	Pu	12-24"	Y	None.
Ceanothus cuneatus	Buckbrush	bettles	PS, S	D	Mar - May	W	8-20'	Y	None.
Cercis occidentalis	Redbud	bees	PS, S	M	Apr - May	R-Pu	8-18'	Y	None.
Cephalanthus occidentalis	Buttonwillow	bees, wasps, butterflies, moths	PS, S	M	Apr - Jun	Y	7-25'	Y	None.
Clarkia purpurea	Purple clarkia	bees, moths	PS, S	M, D	Apr - Jul	Pu-Pi	6-12"	Y	None.
Eriogonum fasciculatum polifolium	California buckwheat	bees, moths, butterflies	S, PS	D	Apr - Nov	W	2-4'	Y	Shurb.
Lupinus albifrons	Silver bush lupine	bees	S	D	Mar - Jun	B	3-5'	Y	Shrub/subshrub.
Lupinus nanus	Sky lupine	bees	PS, S	M, D	Apr - May	B with W	4-8"	Y	None.
Lycium andersonii	Box thorn	bees, hummingbirds	S	D	Mar - May	W, Pi	3-5'	Y	Shrub.
Prosopis glandulosa torreyanna	Mesquite	bees	S	M, D	Apr - Jun	Y	8-20'	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ribes quercetorum	Oak gooseberry	bees, butterflies, hummingbirds	S	D	Mar - May	Y	2-3’	Y	Shrub.
Salix laevigata	Red willow	bees	S, PS	M	Mar - May	Y	15-40'	Y	None.
Salvia carduacea	Thistle sage	bees, hummingbirds	S	D	Mar - Jun	Pu, B	6-20"	Y	None.

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1. B. 7. Chihuahuan Semi-Desert (#11 on Figure 1)

ECOREGION DESCRIPTION

Portions of Arizona, New Mexico, and western Texas make up the Chihuahuan Desert providence. This arid ecoregion is characterized by undulating plains near 4,000 feet in elevation with intermittent mountain ranges rising 2,000 to 5,000 feet above. The Rio Grande River and Pecos River are the main drainages through drier lands. The riparian vegetative community includes cottonwood trees, willows, and flowering shrubs that have roots perennially in water. The average annual temperatures are mild, ranging from 50 to 65°F. Summers are long and hot while winters are short but may include periods of below-freezing weather. This province is characterized by little rainfall throughout most of the year with intense summer storms from July until October. Thorny shrubs growing in open stands or low, closed thickets dominate. Yucca and cacti, such as prickly pear and cholla, are abundant, with many other cactus species endemic to this ecoregion. Creosote bush covers large areas especially on gravel fans. Honey mesquite is common on deep soils. Ocotillo, juniper trees, and pinyon pines are found in rocky outcrops at higher elevations. Oak-pine communities occur within the higher mountains. Douglas fir and white fir are found in sheltered within the higher mountains. Nearly 80 percent of the region has calcareous (calcium-rich) soils derived from limestone beds, with Aridisols most common in the western and northern portions of this province, and both Aridosols and Entisols found in the south.

In the Bailey's classification system this Province is given code 321.

This list focuses on the areas near Oscura Bombing Gunnery Range (Oscura), Holloman AFB (Holloman), Laughlin AFB (Laughlin) and for each plant indicates bases where its use would be appropriate in the Notes column. ± before base name indicates that the species has not been documented in the county where the Air Force base is located, but known populations are found nearby in similar habitats. The species would probably do well in a landscape setting, may or may not be appropriate for habitat restoration.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Acacia berlandieri	Guajillo	bees	S	D	Feb - Mar	W	10-15’	Y	Excellent early-season bee forage. Very drought-resistant rounded shrub with delicate foliage. Needs well-drained soil. Laughlin.
Agave lechuguilla	Lechuguilla	bees, moths	S	D	May - Jul	W, Pi, Y	6-10’	Y	Moth larval host plant. Sharp leaf-tips can cause injuries. Laughlin, Holloman.
Ageratina havanensis	Havana snakeroot	butterflies	S, PS, Sh	D	May - Nov	W	1-5’	Y	Excellent butterfly plant. Needs well-drained soil. Laughlin.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Allowissadula holosericea	Velvet-leaf mallow	butterflies	S, PS, Sh	M	Jun - Oct	Y, O	2-6’	Y	Sub-shrub with arching stems. Needs well-drained soil. Laughlin, ±Holloman.
Aloysia gratissima	Whitebrush	bees, butterflies	S	D, M	Mar - Nov	W	6-12’	Y	Shrub with large numbers of small, fragrant white flowers. Laughlin.
Amorpha fruticosa	False indigo bush	bees	S, PS	M	Apr	Pu	4-8’	Y	Shrub with long stems. Very attractive flower spikes. Laughlin, Holloman, Oscura.
Asclepias asperula	Antelope horns	butterflies, bees, bumble bees, wasps	S	D, M	Mar - Apr	W with Pu	1-2’	Y	Primary growth in spring. May emerge again in late summer depending on rainfall. Periodically emerges from perennial tubers, then dies back during dry weather. Latex is toxic - isolate plants from small children. Needs well-drained soil. Laughlin, ±Holloman, ±Oscura.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Asclepias oenotheroides	Zizotes milkweed	butterflies, bees, bumble bees, wasps	S	D	Aug - Oct	W-Y-G	1-3’	Y	Monarch larval host plant. Primary growth in late summer and fall. Periodically emerges from perennial tubers, then dies back during dry weather. Latex is toxic - isolate plants from small children. Needs well-drained soil. Laughlin, ±Holloman, ±Oscura.
Asclepias tuberosa	Butterfly weed	butterflies, bees	S	D, M	Apr - Oct	R, Y	3’	Y	Butterfly larval host plant. ±Holloman, Oscura.
Baileya multiradiata	Desert marigold	bees, butterflies, wasps, files	S	D	Mar - Nov	Y	1.5’	Y	Laughlin, Holloman, Oscura.
Bouteloua curtipendula	Sideoats grama	butterflies, moths	S	D, M	Apr - Oct	Br	3’	Y	Host plant for grass skippers. Laughlin, Holloman, Oscura.
Callirhoe involucrata	Purple poppy-mallow	bees	S	D	Mar - May	R-Pu	1’	Y	A perennial winecup. Needs well-drained soil. Laughlin.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Chilopsis linearis	Desert willow	butterflies, moths, hummingbirds	S	D, M	Apr - Sep	Pu-W	10-15’	Y	Attractive small tree. Moth larval host plant. Needs well-drained soil. Laughlin, Holloman, Oscura.
Dalea candida	White prairie clover	bees, wasps	S	D	May - Sep	W	3’	Y	Butterfly larval host plant. Holloman, Oscura.
Dalea frutescens	Black dalea	bees	S	D	Jul - Oct	Pu with W	1-3’	Y	Very drought resistant. Rounded shrub. Several other Daleas to consider include *D. aurea* (yellow flowers) and *D. multiflora* (white flowers). Needs well-drained soil. Laughlin, Holloman, Oscura.
Engelmannia peristenia	Engelmann daisy	butterflies	S	D	Mar - Jul	Y	0.5-2’	Y	Browsed by deer. Needs well-drained soil. Laughlin, Holloman, Oscura.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Eysenhardtia texana	Texas kidneywood	bees	S	D	May - Sep	W	4-10’	Y	Rugged, drought-resistant shrub. Blooms over long season following rain. Flowers pleasantly fragrant. Needs well-drained soil. Laughlin.
Fouquieria splendens	Ocotillo	bees, butterflies, hummingbirds	S	D	Apr - Aug	R	12’	Y	Moth larval host plant. Tall, arching, cane-like stems. Very drought resistant. Needs well-drained soil. Laughlin, Holloman, Oscura.
Gaillardia suavis	Pincushion daisy	bees, butterflies	S	D	May - Aug	R, Y	1-2’	Y	Important nectar source for native bees. Laughlin.
Helianthus maximiliani	Maximilian sunflower	butterflies	S	M	Aug - Oct	Y	4-8’	Y	Forms colonies through rhizomes. Excellent nectar plant for fall monarchs. Browsed by deer. Needs well-drained soil. Laughlin.
Hesperaloe parviflora	Red yucca	hummingbirds	S	D	Mar - Jul	R	4’	Y	Needs well-drained soil. Laughlin.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Leucophyllum frutescens	Cenizo	bees, butterflies	S	D	Mar - Nov	Pu, B, W	4-8’	Y	Very drought resistant. Needs well-drained soil. Attractive gray-green foliage. Ultra common in landscapes. Larval host plant for Theona checkerspot butterfly and Calleta silkmoth. Laughlin.
Liatris punctata	Dotted blazing star	bees, bumble bees	S	D	Aug - Oct	Pu-B	2-3’	Y	Drought resistant. Needs well-drained soil. Excellent late nectar for bees. Laughlin, Holloman, Oscura.
Lupinus texensis	Texas bluebonnet	butterflies, bees, files	S	D	Mar - May	B, W	1-2’	Y	Annual. Butterfly larval host plant Laughlin.
Nyctaginia capitata	Scarlet musk-flower	moths	S	D	Mar - Nov	R-O	0.5-1.5’	Y	Sprawling stems from perennial rootstock. Striking scarlet flowers. Needs well-drained soil. Laughlin, Holloman, Oscura.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Penstemon cobaea	Foxglove beardtongue	bees, bumble bees	S, PS, Sh	D	Apr - May	W-Pu	1-2.5’	Y	One of several Penstemons native to our area. All have beautiful flowers. Needs well-drained soil. Browsed by deer. Laughlin.
Salvia azurea	Giant blue sage	bees	S, PS, Sh	D, M	Sep - Oct	B	3-6’	Y	Good shade plant. Laughlin.
Salvia farinacea	Mealy blue sage	bees	S, PS, Sh	M	Apr - Sep	B	1-3’	Y	Good shade plant. Laughlin, Holloman, Oscura.
Salvia texana	Texas sage	butterflies, bees	S, PS	D	Mar-May	B, Pi, Pu	1-3’	Y	Good shade plant. Laughlin, ± Holloman.
Senna lindheimeriana	Lindheimer senna	butterflies, bumble bees	S	D, M	Sep - Nov	Y	2-4’	Y	Arching stems with velvety foliage. Laughlin, Holloman, Oscura.
Verbesina encelioides	Cowpen daisy	bees, flies, wasps	S	D	Jun - Sep	Y	3’	N	Annual. Super-abundant weed, but good nectar plant. Laughlin, Holloman, Oscura.
Verbesina virginica	Frostweed	butterflies	S, PS, Sh	D, M	Aug - Nov	W-G	3-6’	Y	Good understory plant. Excellent nectar for fall monarchs. Laughlin.

Scientific Name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping	Notes
Vernonia lindheimeri	Woolly ironweed	bees	S	D	Jul - Sep	Pu-B	2-3’	Y	Rounded sub-shrub. Drought-resistant. Needs well-drained soil. Laughlin.
Viguiera dentata	Goldeneye	butterflies	S, PS, Sh	D	Sep - Oct	Y	3-6’	Y	Good understory plant. Needs well-drained soil. Laughlin, Holloman, Oscura.
Wedelia texana	Orange zexmenia	butterflies	S	D	Apr - Nov	Y	2-3’	Y	Drought resistant. Needs well-drained soil. Laughlin.
Yucca torreyi	Torrey yucca	moths	S	D	Mar - May	W	6-12’	Y	Very drought resistant. Needs well-drained soil. Interesting specimen plant. Pollinated by Yucca moth. Laughlin, Holloman, Oscura.

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1. B. 8. Coastal Trough Humid Tayga Province (#43 on Figure 2)

ECOREGION DESCRIPTION

The Coastal Trough Humid Tayga Province consists of plains surrounded by high mountains in Alaska. Cook Inlet is level to rolling, with most areas less than 500 feet above sea level. The Copper River lowland is a broad basin at an altitude of 1,000 to 2,000 feet on the site of a Pleistocene glacial lake. The Copper River and its tributaries form steep-walled canyons (100 to 500 feet). Average annual temperatures range from 32 to 39°F with temperatures averinge about 5°F in winter and reaching a maximum of about 64°F in summer. Snowfall averages from 4 to 10 inches annually. Soils in the uplands of the Cook Inlet are Spodosols and in the lowlands of the Copper River basin primarily Inceptisols (adapted from Bailey, 1995).

"Throughout the Cook Inlet lowlands, lowland spruce-hardwood forests are abundant. Bottom land spruce-poplar forest adjoins the larger river drainages, along with thickets of alder and willow. Wet tundra communities exist along the Cook Inlet coastline. The Copper River lowland is characterized by black spruce forest interspersed with large areas of brushy tundra. White spruce forests occur on south facing gravelly moraines, and cottonwood-tall bush communities are common on large floodplains" (Bailey, 1995).

In the Bailey's classification system this Province is given code 135.

This list is most appropriate for the southwestern portion of this province (Cook Inlet-Susitna lowland and Copper River lowland) near Joint Base Elemendorf-Richardson.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea borealis	Common yarrow	bees, butterflies, beetles, moths	S	D	Jun - Aug	W	3-36"	Y	May not be commercially available.
Aconitum delphinifolium	Monkshood	bees, butterflies	S	D, M	Jun - Aug	Pu	2-4'	Y	May not be commercially available.
Cornus canadensis	Dwarf dogwood	bees, beetles, flies, moths	PS	D, M	Jun	W	4-8"	Y	Low growing shrub.
Delphinium glaucum	Mountain larkspur	bees, butterflies	S	D, M	Jun - Aug	Pu	4-6'	Y	May not be commercially available.
Dodecatheon frigidum	Shooting stars	bees	S	D, M	Jun	Pu-Pi with Y or W	10-15"	Y	Commercially available.
Ledum palustre	Labrador tea	bees, beetles, flies	PS	D, M	Jun	W, Pi-W	10-30"	Y	Shrub.
Lupinus arcticus	Arctic lupine	bees, butterflies	S	D, M	Jun - Jul	B	15-36"	Y	None.
Mertensia paniculata	Blue bells	bees, butterflies	PS	D, M	May - Jul	B	2'	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Potentilla fruiticosa	Shrubby cinquefoil	bees, butterflies, beetles, flies	S	D, M	Jun - Jul	Y	18-36"	Y	Shrub.
Rosa acicularis	Wild rose	bees, butterflies, beetles, flies	S	D, M	Jun - Jul	Pi	2-6'	Y	Shrub.
Sambucus racemosa	Red elderberry	bees, hummingbirds, butterflies	PS, Sh	M	May - Jun	W	10-20'	Y	Shrub. Provides nesting material for native bees.
Spiraea beauverdiana	Spiraea	bees, beetles, flies, moths	PS	D, M	Jun - Aug	W	10-30"	Y	None.
Vaccinium ovalifolium	Oval-leaf blueberry	bees	S, Sh	M	May	Pi	3-6'	Y	Shrub.
Vaccinium uliginosum	Bog berry	bees	S	M	May - Jun	W	6-16"	Y	Shrub.
Vaccinium vitis-idaea	Lingonberry	bees, ants	PS	D, M	May - Jun	Pi	3-8"	Y	Low growing shrub. May not be commercially available.
Viburnum edule	Highbush cranberry	bees, flies, moths	S, PS, Sh	M	Jun - Jul	W	2-8'	Y	Shrub. Important food source for over-wintering birds.

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1. B. 9. Colorado Plateau Semi-Desert Province (#12 on Figure 1)

ECOREGION DESCRIPTION

The Colorado Plateau Semi-Desert Province spans areas of Arizona, New Mexico, and Utah. It is formed by plateaus and tablelands with carved buttes, dissecting canyons, and interspersed volcanic mountain ranges. Plateau tops range from 5,000 to 7,000 feet with local, often steep, relief of buttes or deep canyons ranging from 1,000 to 3,000 feet. The Colorado River is the main drainage and only large stream in this province, with smaller perennial streams and many other ephemeral waterways feeding into the overall drainage basin. Summer days are hot and nights are cool with notable diurnal variation due to the high altitude and low humidity. Annual average temperatures are 40 to 55 °F, and average annual precipitation is 20 inches. The higher areas have cooler temperatures and more rain and snowfall, while lower areas can have as little as 10 inches of precipitation annually. Vegetation varies with altitude and microclimate. Lower zones are arid grasslands interspersed with bare areas, xeric shrubs, cactus, yucca, and sagebrush stands in some areas. Most blooms of annuals and perennials occurr in response to the summer rainy season. Juniper, pinyon pines, and sagebrush dominate the woodland zone. Ponderosa pine forests fill in the montane zone, with some aspen and Douglas fir in sheltered or higher locations. Englemann spruce and subalpine fir form the subalpine zone.

Kirtland Air Force Base is located within the City of Albuquerque, New Mexico. It is located at 5,400 feet in elevation, which is associated with lower elevation vegetation communities within the province. Average annual precipitation is nine inches. NRCS Web Soil Survey Ecological Site Descriptions indicate semi-desert grassland was the historic plant community for the area around Kirtland Air Force Base. Species diversity for shrubs and forbs is naturally low for this area.

In the Bailey's classification system this Province is given code 313.

Many plants on this list may need supplemental watering to establish and to maximize growth and bloom production. Restoration of disturbed lands around the Kirtland Air Force Base would be difficult without supplemental water to establish plants. Some species may establish on disturbed sites if provided water for initial establishment as indicated in Notes column below.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea millefolium	Common yarrow	bees	S, PS	D	Apr - Sep	W, Pi	1-3’	Yes	Special value to native bees. Suitable for landscaping only with irrigation.
Asclepias latifolia	Broadleaf milkweed	butterflies, bees	S	M	May - Sep	Pi, Pu	1-3’	Yes	Important monarch butterfly host plant. Suitable for landscaping only with irrigation.
Asclepias subverticillata	Whirled milkweed	butterflies, bees, wasps	S	D	May - Sep	W	1-3’	Yes	Important monarch butterfly host plant.
Asclepias tuberosa	Butterfly milkweed	butterflies, bees	S, PS	D	May - Jul	O	1-3’	Yes	Important monarch butterfly host plant. Very attractive native ornamental. Suitable for landscaping only with irrigation.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Baccharis pteronioides	Yerba de pasmo	bees	S	D	Apr - Jun	Y, W	3-6’	ND	Local *Baccharis* species. This genus is important for pollinators. Spreads readily, but may become weedy.
Baileya multiradiata	Desert marigold	bees, butterflies	S	D	Mar - Nov	Y	1-3’	Yes	Annual, but self reseeds. Special value to native bees. Suitable for landscaping only with irrigation. May be suitable for disturbed site restoration with minimal care.
Chrysothamnus viscidiflorus	Yellow rabbitbrush	bees, butterflies	S	D	Jun - Oct	Y	3-6’	Yes	Very important late season nectar source for migrating monarch butterflies. Special value to native bees. Suitable for landscaping only with irrigation. Spreads readily and may become weedy. May be suitable for disturbed site restoration with minimal care.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Cylindropuntia spinosior	Walkingstick cactus	bees	S	D	Apr - Aug	R, Pu	3-6’	Yes	Special value to native bees. May only need water to initially establish.
Dalea candida	White prairie clover	bees, butterflies	S	D	May - Sep	W	1-3’	Yes	Special value to native bees, especially bumble bees. Suitable for landscaping only with irrigation.
Dalea purpurea	Purple prairie clover	bees, butterflies	S	D	Jun - Sep	Pu	1-3’	Yes	Special value to native bees, especially bumble bees. Suitable for landscaping only with irrigation.
Ericameria nauseosa	Rubber rabbitbrush	bees, butterflies	S	D	Sep - Oct	Y	3-6’	Yes	Very important late season nectar source for migrating monarch butterflies. Special value to native bees. Suitable for landscaping only with irrigation. Spreads readily and may become weedy. May be suitable for disturbed site restoration with minimal care.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Gaillardia aristata	Common gaillardia	bees	S	D	Jul - Sep	Y	1-3’	Yes	Special value to native bees. Suitable for landscaping only with irrigation.
Gaillardia puchella	Indian blanket flower	bees, butterflies	S, PS	D	May - Aug	R with Y	1-3’	Yes	Annual. Special value to native bees. Suitable for landscaping only with irrigation.
Gutierrezia sarothrae	Broom snakeweed	bees	S	D	Aug - Nov	Y	1-3’	Yes	Seeds are commercially available. Suitable for landscaping only with irrigation. May be suitable for disturbed site restoration with minimal care.
Helianthus maxmiliani	Maxmillian sunflower	bees	S	D, M	Aug - Nov	Y	4-6’	Yes	Perennial sunflower, self seeds. Special value to native bees. Suitable for landscaping only with irrigation.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Larrea tridentata	Creosotebush	bees	S	D	Mar - Sep	Y	3-6’	Yes	Special value to native bees. May only need water to initially establish. May be suitable for disturbed site restoration with minimal care.
Monarda fistulosa	Beebalm, Mexican oregano	bees, butterflies	S, PS	D	May - Sep	W, Pi, Pu	1-3’	Yes	Suitable for landscaping only with irrigation.
Opuntia polyacantha	Plains prickly pear	bees	S	D	Apr - May	O, Y	1-3’	Yes	Special value to native bees. May only need water to initially establish.
Solidago nemoralis	Prairie goldenrod	bees, butterflies	S, PS, Sh	D	Jun - Oct	Y	1-3’	Yes	Very important late season nectar source for migrating monarch butterflies. Suitable for landscaping only with irrigation.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Sphaeralcea ambigua	Desert globemallow	bees	S	D	Feb - Nov	O	1-3’	Yes	Biennial that self reseeds. Special value to native bees. Suitable for landscaping only with irrigation. May be suitable for disturbed site restoration with minimal care.
Sphaeralcea laxa	Calicheglobe mallow	bees	S	D	Apr - Sep	Pi	1-3’	Yes	Biennial that self reseeds. Special value to native bees. Suitable for landscaping only with irrigation. May be suitable for disturbed site restoration with minimal care.
Verbesina eneceliodes	Cowpen daisy	bees	S	D	Apr - Oct	Y	1-3’	Yes	Special value to native bees. Suitable for landscaping only with irrigation.

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1. B. 10. Eastern Broadleaf Province (Continental) (#13 on Figure 1)

ECOREGION DESCRIPTION

The province is dominated by broadleaf deciduous forest, favoring the drought-resistant oak-hickory association. "The oak-hickory forest is medium-tall to tall, becoming savannalike in its northern reaches from eastern Oklahoma to Minnesota, where it gradually turns into prairie. From eastern Kansas to Indiana, it forms a mosaic pattern with prairie. Widespread dominants are white oak, red oak, black oak, bitternut hickory, and shagbark hickory. The understory is usually well developed, often with flowering dogwood. Other understory species include sassafras and hophornbeam. The shrub layer is distinct, with some evergreens. Many wildflower species occur. Wetter sites typically feature an abundance of American elm, tuliptree, and sweet gum" (Bailey, 1995). "Northern reaches of the oak-hickory forest contain increasing numbers of maple, beech, and basswood. The maple-basswood forest, dominated by sugar maple and American basswood, occurs from central Minnesota south through Wisconsin and northeastern Iowa. Glaciated areas of Ohio and Indiana feature a beech-maple forest defined by American beech and sugar maple. In these latter associations, oak and hickory occur on poor sites" (Bailey, 1995).

The elevations in this ecoregion range from 89 to 1,650 feet. Average annual temperatures range from 40 to 65°F, going from north to south. Precipitation ranges from 20 to 40 inches, going from north to south near the 95th meridian. Most precipitation occurs during the growing season (Bailey, 1995).

In the Bailey's classification system this Province is given code 222.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amorpha fruticosa	False indigo	bees, butterflies, flies	S, PS	M	May - Jul	Pu	6-10’	Y	Shrub
Aronia melanocarpus	Black chokeberry	bees	PS	M	May - Jun	W	6-12’	Y	Shrub
Asclepias incarnata	Swamp milkweed	bees, wasps, butterlies, flies, beetles	S, PS	M, W	Jun - Sep	Pu-W	3-5’	Y	None.
Asclepias tuberosa	Butterfly weed	bees, wasps, butterlies, flies, beetles	S	D, M	Jun - Sep	O	1-3’	Y	None.
Cercis canadensis	Eastern redbud	bees, butterflies	S, PS	M	Apr - May	Pi-Pu	8’-25’	Y	Needs well-drained soil.
Cornus florida	Flowering dogwood	butterflies, bees, flies	S, PS	M,	Apr - May	W	15-30’	Y	Shrub. Needs well-drained soil.
Echinacea purpurea	Eastern purple coneflower	butterflies, bees	S, PS	D, M	Jun - Aug	Pi	2-3’	Y	None.
Euonymus atropurpureus	Wahoo	bees, flies	S, PS	D, M	May - Jun	Pu, W	10-16’	Y	Shrub
Eupatorium perfoliatum	Boneset	bees, wasps, butterlies, flies, beetles	S, PS	M, W	Jul - Sep	W	3-6’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Eutrochium maculatum	Spotted joe pye weed	bees, wasps, butterlies, flies, beetles	S, PS	M	Jul - Sep	Pi, Pu	3-6’	Y	None
Eutrochium (Eupatorium) purpureum	Joe pye weed	bees, wasps, butterlies, flies,beetles	S, PS	M	Jul - Sep	Pi, Pu	3-6’	Y	None
Geum canadense	White avens	bees, flies	PS, Sh	M	Apr - Jun	W	1-3’	ND	None.
Helenium autumnale	Sneezeweed	bees, flies, butterflies	S, PS	M, W	Aug - Oct	Y	3-5’	Y	None.
Helianthus angustifolius	Swamp sunflower	bees, wasps, butterlies,flies, beetles	PS	W	Sep - Oct	Y	1-3’	Y	None.
Hibiscus moscheutos	Swamp rose mallow	bees	S, PS	M, W	Jul - Aug	W, Pi	3-6’	Y	None.
Liatris aspera	Rough blazing star	butterflies, bees	S	D	Jul - Sep	Pi	3-6’	Y	None.
Liatris spicata	Dense blazing star	butterflies, bees	S	M	Jul - Sep	Pi	3-6’	Y	None.
Mertensia virginica	Virginia bluebells	bees, flies, moths, butterflies, hummingbirds	PS, Sh	M	Mar - May	B	1-3’	Y	None.
Penstemon digitalis	Foxglove beardtongue	bees, flies, moths, butterflies	S, PS	D, M	May - Jun	W-Pu	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Physostegia virginiana	Obedient plant	bees, hummingbirds	S	M	Aug - Sep	Pi	2-4’	Y	None.
Polemonium reptans	Jacob’s ladder	bees, flies, moths, butterflies, beetles	Sh	M	Apr - May	B	1-3’	Y	None.
Prunus serotina	Black cherry	bees, flies, beetles	S	D, M	May - Jun	W	20’-50’	Y	None.
Ratibida pinnata	Grayhead coneflower	bees, flies, butterflies	S, PS	D, M	May - Aug	Y	3-6’	Y	None.
Rhododendron periclymenoides	Pink azalea	butterflies, bees, hummingbirds	S, PS	D, M	Apr - May	Pi	3’-6’	Y	Shrub.
Rhus aromatic	Fragrant sumac	butterflies, bees	S, PS	D, M	Apr - May	Y-G	4’-8’	Y	Shrub.
Rudbeckia hirta	Black-eyed Susan	bees, flies, butterflies, wasps	S, PS	D, M	Jun - Aug	Y	2-5’	Y	None.
Rudbeckia laciniata	Cutleaf coneflower	bees, flies, butterflies, wasps	S, PS	M	Jun - Aug	Y	3-7’	Y	None.
Rudbeckia triloba	Brown-eyed Susan	bees, flies, butterflies, wasps	S, PS	D, M	Jun - Aug	Y	2-5’	Y	None.
Symphyotrichum ericoides	Heath aster	bees, flies, butterflies, wasps	S, PS	D, M	Aug - Oct	W	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Symphyotrichum novae-angliae	New England aster	bees, flies, butterflies, wasps	S	D, M	Aug - Oct	B	3-8’	Y	None.
Symphyotrichum patens	Late purple aster	bees, flies, butterflies, wasps	S, PS	D	Aug - Oct	B	1-3’	Y	None.
Tiarella cordifolia	Foamflower	bees, flies, butterflies	Sh	M	Apr - Jul	W	1-3’	Y	None.
Tilia americana	Basswood	bees, flies, beetles, wasps, moths	S, PS	M	Apr - Jun	Y-W	70’ +	Y	Needs well-drained soils.
Tradescantia virginiana	Spiderworts	bees, flies	S, PS	M	Mar-Jul	B	1-3’	Y	None.
Trillium grandiflorum	Wake robin	bees, flies, beetles	PS, Sh	M	Mar - Apr	W	6-12”	Y	None.
Veronicastrum virginicum	Culver’s root	bees, butterflies, moths, wasps	S, PS	M	Jul - Sep	W	3-6’	Y	None.
Viburnum opulus	American highbush cranberry	butterflies, bees	S, PS	D, M	Apr - Jun	W, Pi	2’-8’	Y	Shrub.
Viburnum prunifolium	Blackhaw vibernum	butterflies, bees	S, PS, Sh	D, M	Apr - Jun	W	5’-15’	Y	Shrub.
Viburnum acerifolium	Maple leaved viburnum	butterflies, bees	S, PS	D, M	Apr - Jun	W	3’-8’	Y	Shrub.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Viburnum dentatum	Arrowwood	butterflies, bees	S, PS, Sh	D, M	Apr - Jun	W	5'-15'	Y	Shrub.

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1. B. 11. Eastern Broadleaf Province (Oceanic) (#14 on Figure 1)

ECOREGION DESCRIPTION

This province includes Appalachian Plateaus, New England lowlands, mid-Atlantic coastal plain, and Piedmont Plateau. It is characterized by cold winters, warm summers, and year-round precipitation, which tends to be greatest in the summers. Altitudes range from sea level to 3,000 feet. The dominant plant community is temperate deciduous forest with a sparse shrub understory and thick ground cover of forbs in the spring. The temperate deciduous forest is divided into three associations: 1) mixed mesophytic in the Appalachian Plateaus, which has high species diversity, including buckeye, basswood, oak, hemlock, and beech; 2) Appalachian oak in the Piedmont, which is dominated by oaks; and 3) pine-oak forest ("Pine Barrens") in sandy, dry soils within the coastal plain, which has frequent fire and contains a thick shrub layer beneath an overstory of pines.

In the Bailey's classification system this Province is given code 221.

This list is most appropriate for the eastern portions of this province (NJ through NH). Different plants would be required for the western portion (TN through PA).

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer rubrum	Red maple	flies, bees	S, PS	M, W	Mar - Apr	R	50-100'	Yes	Red fall color.
Amelanchier arborea	Downy serviceberry, Shadbush	bees	S, PS	D, M	Mar - May	W	15-25'	Yes	Many birds and other wildlife species eat the fruits.
Asclepias tuberosa	Milkweed, Butterfly weed	bees, butterflies, flies, hummingbirds	S, PS	D, M	May - Aug	Y, O	1-3’	Y	Host plant for monarch butterflies.
Ceanothus americanus	New Jersey tea	bees, butterflies	S, PS	D	varies May - Sep	W	3-4’	Y	Very adaptable. Can withstand inhospitable conditions.
Chelone glabra	White turtlehead	bees, butterflies, hummingbirds	S, PS	W, M	Jul - Oct	W	2-3'	Y	Strong grower. Host plant for the Baltimore checkerspot.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Eutrochium (Eupatorium) maculatum	Joe pye weed	butterflies, bees, moths	S, PS	M, W	Jul - Oct	Pi-Pu	1.5-10'	Y	Tolerant of water-logged conditions. Could be used in a rain garden.
Geranium maculatum	Wild geranium	flies, bees, beetles	S, PS	M	Apr - Jul	Pu, Pi	1-2’	Y	Adaptable plant, spreader
Helianthus divaricatus	Woodland sunflower	butterflies	PS	D, M	Jul - Sep	Y	1.5-6.5'	Y	
Liatris spicata	Blazing star	butterflies, bees, hummingbirds	S, PS	M	Jul - Aug	Pi-Pu, W	1-6’	Y	
Lobelia cardinalis	Cardinal flower	butterflies, bees, hummingbirds	S, PS	M, W	Jul - Oct	R	2-4'	Y	Showy red flowers. Keep soil moist.
Monarda fistulosa	Wild bergamot, Beebalm	butterflies, bees, hummingbirds	S, PS	M, W	May - Sep	Pu, Pi, W	2-5'	Y	Leaves have minty smell, hardy garden standard
Phlox divaricata	Wild blue phlox, Wild sweet William	butterflies	PS, Sh	M	Apr - Jun	B, Pu, W	1.5'	Y	
Rubus odoratus	Flowering raspberry	butterflies, bees, birds	S, PS	M	Jun - Aug	Pi-Pu	3-6'	Y	Good ornamental. Thornless canes. Can spread rapidly.
Rudbeckia hirta	Black-eyed Susan	bees, beetles, butterflies	S, PS	D, M	Jul - Oct	Y	1-3.5'	Y	Annual, but reseeds readily.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Solidago odora	Anise-scented goldenrod	butterflies, bees	S	M	Jul - Oct	Y	2-4'	Y	Leaves have licorice scent.
Solidago sempervirens	Seaside goldenrod	butterflies, bees, beetles, flies	S, PS	D, M	Jul - Nov	Y	1-6’	Y	Only plant in coastal areas and dunes.
Symphyotrichum novae-angliae	New England aster	butterflies, bees, beetles	S, PS	M	Aug - Oct	Pu	1-6’	Y	
Tilia americana	American basswood	bees, flies, moths	PS, Sh	M	Apr - May	Y-W	70-130'	Y	
Vaccinium corymbosum	Highbush blueberry	bees, butterflies	S, PS, Sh	M	May - Jun	W, Pi	6-12'	Y	Typically in acidic soil in the forest understory.
Viola pedata	Bird-foot violet	butterflies, bees	S, filtered Sh	D, M	Apr - Jun	B-Pu	6-8"	Y	

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1. B. 12. Everglades Province (#15 on Figure 1)

ECOREGION DESCRIPTION

The Everglades Province occurs at the southern tip of Florida and is predominantly flat (sea level to 25 feet). This low coastal plain has large areas of swamps and marshes, with low beach ridges and dunes rising several feet above them. The average temperature ranges from 70 to 75°F. The area is frost-free most of the year. Rains occur mostly between late spring and the middle of autumn, averaging 50-65 inches. About one fifth of the area is covered by moist hardwood forest, predominantly cypress. Mangrove is widespread along the eastern and southern coasts. Much of the area is open marsh covered by grasses, reeds, sedges, and other aquatic herbaceous plants. Within these grasslands are mesic "hammocks" that rise above the wetter areas and contain groves of low to medium-tall broadleaf evergreen trees and shrubs such as mahogany, redbay, palmettos and epiphytes (Bailey, 1995).

In the Bailey's classification system this Province is given code 411.

Scientific name	Common name	Pollinators expected	Light preference	Soil Moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias incarnata	Swamp milkweed	butterflies, native bees, honey bees, hummingbirds	S, PS	M, W	Jun - Oct	Pi, Pu	2-5’	Y	Showy flowers. Host plant for larval Monarch and Queen butterfly.
Asclepias tuberosa	Butterfly weed	butterflies, native bees honey bees	S, PS	M, W	May - Sep	W	2’	Y	Grows well in a container. Larval host plant to Monarch, Queen, and Soldier butterflies.
Baccharis halimifolia	Salt bush, Groundsel tree	butterflies, bees, moths	S	M, W	Aug - Oct	W	5-10’	N	Important late season nectar plant for monarch butterfly and birds.
Byrsonima lucida	Locust berry	butterflies	S, PS	D	Dec - Aug	W, Pi, Y	15’	Y	Multi-trunked shrub to small tree. Host plant for FL duskywing.
Callicarpa americana	Beautyberry	butterflies	PS	M	May - Jul	Pi	3-5’’	Y	Magenta purple fruit imporpant for birds. Larval host plant for butterflies.

Scientific name	Common name	Pollinators expected	Light preference	Soil Moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Cephalanthus occidentalis	Buttonbush	butterflies, bees, beetles, flies	PS, Sh	M, W	Jun - Sep	W	6-12’	Y	Showy, attractive ornamental with attractive flowers and fruit. Suitable for bog, pond or water garden.
Coccothrinax argentata	Florida silver palm	butterflies	S	D	Apr - Oct	W	10’	Y	Shrub-Small tree. Underneath the green leaves, flash metallic silver. Purple fruit. Larval host plant for monk skipper.
Croton cascarilla (Croton linearis)	Pineland croton	butterflies	S	D, M	Jan - Dec	W	3’	Y	Evergreen shrub. Thrives in poor, sandy soil. Attractive as accent plant or hedge. Larval host plant for Bartram’s hairstreak and FL leafwing.
Erythrina herbacea	Coralbean	hummingbirds, butterflies	S, PS	M	Mar - Nov	R	6-8’	Y	Shrub with colorful, tubular flowers. Drought tolerant.
Flaveria lineraris	Narrowleaf yellowtops	butterflies	S	M	Jan - Dec	Y	1-2’	Y	Drought tolerant. Larval host plant for many butterfly species

Scientific name	Common name	Pollinators expected	Light preference	Soil Moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Hamelia patens	Firebush	butterflies, hummingbirds, bees, wasps, moths	S	D, M	Jan - Dec	R	6-12’	Y	Nectar plant for black swallowtail, zebra swallowtail, other butterflies and moths.
Lantana involucrata	Butterfly sage	butterflies	S, PS	D	Jan - Dec	W, Pi	1-3’’	Y	*Lantana depressa* also good. Drought tolerant. Nectar plant for skippers, Gulf fritillary, and hairstreaks.
Lysiloma latisiliquum	False tamarind	butterflies, moths	S, PS	D, M	Apr - Sep	W, G	30-35’	Y	Larval host plant for large orange sulphur, mimosa yellow and cassius blue butterflies. Nectar plant for mangrove skipper.
Morella cerifera	Wax myrtle	butterflies	S, PS	M, W	Feb - Jun	G	6-12’	Y	Good screening hedge. Larval plant for red-banded hairstreak butterfly. Favorite of birds.

Scientific name	Common name	Pollinators expected	Light preference	Soil Moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Passiflora suberosa	Corkystem passionflower	butterflies	S, PS	D, M	Apr - Sep	G	vine	Y	Showy flower. Can be grown as ground cover or can climb on shrubs or trellis. Host plant for Gulf fritillary, Julia and zebra longwings
Phyla nodiflora	Frogfruit	butterflies	S, PS	D, M	May - Oct	W	ground cover	Y	Deer resistant. Host plant for Phaon crescent, buckeye and white peacock butterflies.
Senna mexicana var. chapmanii	Bahama senna	butterflies	S	D, M	Jan - Dec	Y	2-12’	Y	Host plant for orange-barred sulphur and sleepy orange cloudless sulphur butterflies.
Solidago sempervirens	Seaside goldenrod	butterflies, bees	S	M	Oct - Nov	Y	3-9’	Y	Attractive. Salt and drought tolerant. Sandy soils. Fast grower.
Stachytarpheta jamaicensis	Blue porterweed	butterflies, bees, moths, beetles, hummingbird moths	S, PS	D	Jan - Dec	B	3’	Y	Ground cover. No irrigation needed, once established. Host plant for buckeye butterfly and many others.

Scientific name	Common name	Pollinators expected	Light preference	Soil Moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Zamia integrifolia	Coontie	butterflies, beetles	S, Sh	D	Jul - Aug	G	2-3'	Y	Small cyad. Favorite larval food for rare Atala butterfly

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1. B. 13. Great Plains Steppe Province (#16 on Figure 1)

ECOREGION DESCRIPTION

This 134,000-square mile province consists of flat to rolling (<300 feet relief) high plains and central lowlands occurring from the North Dakota-Canada border south through Oklahoma. Elevations range between 1,000 to 2,500 feet. Lands north of the Missouri River are young glacial drifts and dissected till plains, while lands south are well-drained loess and sand deposits. Average annual temperatures range from 40 to 65°F north to south, and from 55 to 60°F east to west. Annual precipitation ranges between 15 inches in the northwest and 30 inches in the southeast. Mixed-grass steppe vegetation ranges in height from 18 to about 48 inches. Woody vegetation is not a dominant landscape feature, except generally as part of cottonwood floodplains. Soils are largely Mollisols with dark upper horizons, but there are also smaller areas of Entisols and Vertisols (adapted from Bailey 1995).

In the Bailey's classification system this Province is given code 332.

NATIVE PLANT LIST

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amorpha canescens	Leadplant	native bees	S, PS	D	Jun - Jul	B, Pu	3-6'	Y	Deciduous shrub.
Amorpha nana	Dwarf false indigo	native bees	S, PS, Sh	D, M	May - Jul	Pu	1-3'	Y	Deciduous shrub.
Artemisia ludoviciana	White sage	native bees	S	D	July - Oct	Y	1-3'	Y	Nesting material for native bees.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias incarnata	Swamp milkweed	butterflies, hummingbirds, native bees, bumble bees, honey bees	S, PS	M, W	Jun - Sep	Pi	2-5’	Y	Plants in genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for monarch and queen butterflies
Asclepias syriaca	Common milkweed	butterflies, native bees, bumble bees, honey bees	S	M	Jun - Aug	Pu	2-5’	Y	Plants in genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for Monarch butterfly. Common in southern part of ecoregion.
Asclepias viridiflora	Green milkweed	native bees, bumble bees, honey bees	S	D	Jun - Sep	G	12-32”	Y	Plants in genus *Asclepias* are somewhat toxic to animals and humans.
Cirsium undulatum	Wavyleaf thistle	native bees, bumble bees	S	D	May - Jun	Pi, Pu	1-3’	N	Biennial. Nesting material for native bees.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Cleome serrulata	Rocky Mountain beeplant	native bees, honey bees, butterflies, moths	S, PS	D	Jul - Sep	W, Pi	3-6’	Y	Annual. Larval host for checkered white.
Dalea purpurea	Purple prairie clover	butterflies, native bees, bumble bees, honey bees	S	D	Jun - Aug	Pu	8-36”	Y	None.
Dalea villosa	Silky prairie clover	native bees, bumble bees, honey bees	S, PS	D	Jun - Aug	Pi, Pu	8-20”	Y	None.
Echinacea angustifolia	Black-samson echinacea	bees, butterflies	S, PS	D	May - Jul	Pi, Pu	8-24”	Y	None.
Fraxinus pennsylvanica	Green ash	butterflies	S, PS, Sh	D, M, W	Apr - Jun	G	50-75’	Y	For use in riparian zone (not prairie grassland). Larval host of eastern tiger swallowtail, two-tailed tiger swallowtail, tiger swallowtail, orange sulphur, cloudless giant sulphur, and mourning cloak.
Gaillaridia aristata	Blanket flower	butterflies, native bees	S	D	Jul - Sep	Y	2-4’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Helianthus pauciflorus	Stiff sunflower	native bees	S	D	Jul - Sep	Y	1-7’	ND	Forms colonies via rhizomes (roots).
Helianthus petiolaris	Prairie sunflower	native bees, butterflies	S	D	Jun - Sep	Y	3-5’	Y	Annual.
Liatris punctata	Dotted gayfeather	native bees, bumble bees, butterflies	S	D	Aug - Oct	Pu	1-3’	Y	None.
Oenothera biennis	Common evening primrose	moths, hummingbirds	S, PS, Sh	D	Jul - Sep	Y	3-6’	Y	Biennial. Does well in newly landscaped areas, but generally does not persist in undisturbed sites.
Prunus virginiana	Choke cherry	butterflies, native bees	S, PS	D, M	Apr - Jul	W	12-36’	Y	Perennial shrub. Larval host plant of tiger swallowtail. Not recommended for native *grassland* reconstruction or restoration.
Ratibida columnifera	Prairie coneflower	bees, butterflies	S	D, M	May - Oct	O, Y	1-3’	Y	None.
Rhus glabra	Smooth sumac	butterflies, native bees, honey bees	S	D	Apr - May	W	6-12’	Y	Perennial shrub. Larval host plant of hairstreak butterfly. Naturally occurs sparsely scattered in prairie landscape.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Rudbeckia hirta	Black-eyed Susan	butterflies	S	D, M	May - Oct	Y	1-3’	Y	Annual. Bloom time varies with climate (e.g., may bloom in May in KS, but likely not in ND). Larval host plant for bordered patch and Gorgone checkerspot.
Solidago missouriensis	Missouri (prairie) goldenrod	butterflies, native bees, honey bees	S	D	Jul - Sep	Y	1-3’	Y	None.
Schizachyrium scoparium	Little bluestem	butterflies, native bees	S, PS	D	Jun - Dec	W, G, Br	3’	Y	Larval host plant for many skippers. Provides nesting material for native bees.
Solidago rigida	Stiff (-leaved) goldenrod	native bees, honey bees	S	D, M, W	Aug - Oct	Y	1-5’	Y	None.
Sorghastrum nutans	Indiangrass	butterflies, native bees	S, PS, Sh	D, M	Aug - Oct	Y	3-8’	Y	Sod-forming grass. Larval host plant for some skippers. Provides nesting material for native bees.
Symphotrichum ericoides	Many-flowered or White heath aster	native bees	S	D	Aug - Oct	W	1-3’	Y	One of the last plants to remain in flower in autumn.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Tradescantia bracteata	Bracted spiderwort	native bees	PS	M	Jun - Jul	B, Pu	1-3’	Y	None.

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1. B. 14. Great Plains Steppe and Shrub Province (#17 on Figure 1)

ECOREGION DESCRIPTION

This ecoregion is formed by flat, irregular plains with elevational ranges from 1,600 to 3,000 feet, increasing from east to west. The climate is semiarid-subtropical and ranges from drier areas to the west, and wetter areas to the east, with warm to hot summers and cold, dry winters. Most rain falls in the summer, with annual precipitation ranging from 19 to 29 inches. Grasses form the dominant vegetative community with tall grasses toward the eastern edge of the province, and bluestem-prairie dominating most of the areas. A band of oak savanna associated with the cross timbers area bisects the province. Finer textured soils cover most of the ecoregion, with coarser textured soils found toward the west, supporting sandsage-bluestem prairies. Soils are Mollisols with small amounts of Alfisols.

Altus Air Force Base is located in southwestern Oklahoma. It is located at 7,000 feet elevation. Average annual precipitation is 21.8 inches. Supplemental irrigation is recommened to initially establish plants for landscaping. Continued irrigation may be used to maximize growth and bloom production.

In the Bailey's classification system this Province is given code 311.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amorpha canescens	Leadplant	bees	S, PS	D	Apr - Jun	B, Pu	3-6’	Y	Special value to native bees.
Amorpha fruitcosa	Indigo bush	butterflies, bees	S, PS	M	Apr - Jun	O, B, Pu	6-12’	Y	Special value to native bees. Larval host plant for many butterflies. Difficult to establish and persist without irrigation. Used in rain gardens and along drainage canals.
Asclepias speciosa	Showy milkweed	butterflies, bees	S	M	May - Sep	Pi, Pu	1-3’	Y	Important monarch butterfly host plant.
Asclepias sullivantii	Prairie milkweed	butterflies, bees	S	D, M	Jun - Aug	Pi, Pu	1-3’	Y	Important monarch butterfly host plant.
Asclepias tuberosa	Butterfly milkweed	butterflies, bees	S, PS	D	May - Jul	O	1-3’	Y	Very attractive native ornamental.
Ceanothus americanus	New Jersey tea	butterflies, bees	PS, Sh	D, M	Mar - Apr	W	1-3’	Y	Special value to native bees.
Coreopsis grandiflora	Common coreopsis	bees, butterflies	PS	D	May - Jun	Y	1-3’	Y	Self seeds. May become weedy.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Coreopsis tinctoria	Plains coreopsis	bees, butterflies	S, PS	M	Apr - Jun	Y	1-3’	Y	Annual, but reseeds. Very showy and popular. May be difficult to establish and persist without irrigation. Used in rain gardens, or along drainage canals.
Dalea candida	White prairie clover	bees, butterflies	S	D	May - Sep	W	1-3’	Y	Special value to native bees, especially bumble bees.
Dalea purpurea	Purple prairie clover	bees, butterflies	S	D	Jun - Sep	Pu	1-3’	Y	Special value to native bees, especially bumble bees.
Echinacea angustifolia	Narrow-leaf coneflower	bees, butterflies	S, PS	D	May - Jul	Pi, Pu	1-3’	Y	Special value to native bees.
Gaillardia puchella	Indian blanket flower	bees, butterflies	S, PS	D	May - Aug	R with Y	1-3’	Y	Special value to native bees.
Helianthus maxmiliani	Maxmillian sunflower	bees	S	D, M	Aug - Nov	Y	4-6’	Y	Perennial sunflower. Self seeds. Special value to native bees.
Monarda fistulosa	Beebalm, Mexican oregano	bees, butterflies	S, PS	D	May - Sep	W, Pi, Pu	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Prunus angustifoilia	Sandhill plum	bees, butterflies	S, PS	D	Feb - May	W	12-36’	Y	Special value to native bees. Used in erosion control or as a windbreak.
Ratibida columnifera	Prairie coneflower	bees	S	D, M	May - Oct	Y, O	1-3’	Y	Deer-resistant.
Rudbeckia hirta	Black-eyed Susan	butterflies, bees	S	D, M	Jun - Oct	Y	1-3’	Y	Annual, but reseeds. Very showy and popular.
Shaeralcea coccinea	Scarlet globemallow	bees	S	D	Apr - Sep	R, O	3-6’	Y	Biennial, but self reseeds. Special value to native bees.
Silphium laciniatum	Compass plant	bees	S	D	Jul - Sep	Y	4-6’	Y	Special value to native bees, especially bumble bees.
Solidago nemoralis	Prairie goldenrod	bees, butterflies	S, PS, Sh	D	Jun - Oct	Y	1-3’	Y	Very important late season nectar source for migrating monarch butterflies.

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1. B. 15. Great Plains-Palouse Dry Steppe Province (#18 on Figure 1)

ECOREGION DESCRIPTION

This 290,700-square mile province consists of Palouse grassland in Washington and Idaho (1,200-6,000 feet), and Rocky Mountain Piedmont and Upper Missouri Basin Broken Lands (2,500-5,500 feet) in the north-central and central United States. The smaller area of Palouse grassland is composed of loess-covered basalt tablelands, and the larger eastern part of the province is dominated by rolling plains. The average annual temperature is 45°F, but an annual average temperature of 60°F is possible in the southern portion of this province. Annual precipitation ranges between 10 and 25 inches north to south, respectively. Evaporation usually exceeds precipitation. The number of frost-free days ranges from less than 100 days in the north to more than 200 days in the south. Steppe vegetation is largely shortgrass prairie with plants characteristically bunched and sparsely distributed. A wide range of coverage in the occurrence of shrubs (e.g., sagebrush, rabbitbrush) and trees (e.g., pinyon pine, juniper) exists in the area east of the Rocky Mountains (adapted from Bailey, 1995 and Anderson and Bailey, 2010).

Most Air Force bases in this province occur between 3,250 and 6,250 feet in elevation, and four of eight bases occur in Colorado. Plants selected for inclusion generally occur at elevations of the plains (3,000-6,000 feet) and/or foothills (6,000-9,000 feet) and most occur in at least parts of Colorado. Bloom times and growth characteristics vary with changes in elevation and climate.

In the Bailey's classification system this Province is given code 331.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea millefolium	Western (common) yarrow	native bees	S, PS	D	Jun - Aug	W	2-3’	Y	Naturally occurring in prairies, foothills up to subalpine zone. Available, but not commonly available for landscaping.
Amelanchier alnifolia	Serviceberry	native bees, butterflies	S, PS	D, M	May - Jun	W	2-12’	Y	Shrub. Suckers, 4 to 10’ spread. Naturally occurs in foothills and prairie ravines. Larval host plant for California hairstreak (*Satyrium californica*) and elf (*Microtia elva*).
Amorpha canescens	Leadplant	native bees	S, PS	D	Jul - Aug	Pu	1-4’	Y	Deciduous shrub. Occurs in plains and foothills.
Artemisia ludoviciana	White (prairie) sage	native bees	S	D	Jul - Oct	Y	10-30”	Y	Nesting material for native bees. Wind pollinated. Naturally occurs in plains to alpine zone elevations.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Aquilegia coerulea	Colorado columbine	hummingbirds, butterflies, hawk moths, native bees, bumble bees	S, PS	M	Jun - Aug	W, B	3’	Y	Naturally occurring in foothills to alpine.
Asclepias incarnata	Swamp milkweed	hummingbirds, butterflies, native bees, bumble bees, honey bees	S, PS	M, W	Jun - Aug	Pi	2-5’	Y	Plants in the genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for monarch and queen.
Asclepias speciosa	Showy milkweed	hummingbirds, butterflies, native bees, bumble bees, honey bees	S	M	Jun - Aug	Pi, Pu	1.5-3’	Y	Plants in the genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for Monarch and Queen. Occurs in (CO) plains to montane zones.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias tuberosa	Butterfly milkweed	butterflies, native bees, bumble bees, honey bees	S, PS	D	May - Sep	O, Y	1.5-3’	Y	Occurs in CO foothills. Plants in the genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for monarch and queen.
Bouteloua gracilis	Blue grama	butterflies	S	D	Jul - Oct	Y	1-3’	Y	Larval host plant for the Garita skipperling and some skipper species, such as the green skipper.
Campanula rotundifolia	Harebells	hummingbirds	S, PS, Sh	D	Jun - Sep	B, Pu	6-24”	Y	Perennial. Occurs (CO) foothills to alpine.
Dalea candida	Slender white prairie clover	native bees, bumble bees, honey bees, butterflies	S	D	Jun - July	W	18-24”	Y	Naturally occurs in prairie within the plain zone. Larval host plant for dogface butterfly. Drought tolerant, once established.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Dalea purpurea	Purple prairie clover	butterflies, native bees, bumble bees, honey bees	S	D	Mar - Jun	Pu	2-3’	Y	Native to prairie and dry hills, plains to foothills.
Echinacea angustifolia	Black-samson echinacea (Purple coneflower)	native bees, butterflies	S, PS	D	May - Jul	Pi, Pu	8-24”	Y	More common in eastern MT and northeastern WY prairies (plains).
Eriogonum umbellatum	Sulphur flower	flies, wasps, native bees, butterflies	S, PS	D	Jun - Aug	Y, W	6-12”	Y	Naturally occurs on mountain slopes and ridges, foothills to montane zones. Larval host plant for lupine blue (*Plebejus lupini*) and Acmon blue (*Plebejus acmon*). Many native buckwheat species are listed as threatened or endangered within parts of their range.
Ericameria nauseosa (Chrysothamnus nauseosa)	Rubber rabbitbrush	butterflies, native bees	S	D	Aug - Oct	Y	1-8’	Y	Perennial shrub. Occurs in elevations 450-8,000 feet.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Gaillaridia aristata	Blanket flower	butterflies, native bees	S	D	Jun - Aug	Y	2-4’	Y	Occurs in plains to montane zones.
Helianthus maximiliani	Maximilian (perennial prairie) sunflower	native bees, honey bees, butterflies	S	D, M	Aug - Oct	Y	4-6’	Y	Occurs in prairies, mostly in the eastern part of the province.
Heterotheca villosa	Hairy (false) golden aster	flies, butterflies, wasps, bumble bees and other native bees, honey bees	S	D	Jun - Aug	Y	2-4’	Y	Occurs in prairies and foothills to montane zones.
Juniperus scopulorum	Rocky Mountain juniper	butterflies	S, PS	D	Apr - May	Y	15-50’	Y	Naturally occurs on rocky or sandy hillsides in transition zone between foothills and plains. Larval host plant for the juniper hairstreak butterfly.
Liatris punctata	Dotted gayfeather	native bees, bumble bees, butterflies	S	D	Jun - Oct	Pu	12-32”	Y	Occurs in plains and foothills.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Mahonia repens	Creeping barberry, Creeping hollygrape, Oregon grape	butterflies, native bees	S, PS, Sh	D, M	Apr - Jun	Y	1-3’	Y	Perennial evergreen (sub-shrub). Occurs in foothills to montane zones.
Monarda fistulosa	Beebalm, horsemint, Wild bergamot	hummingbirds, butterflies, bumble bees and other native bees	S, PS	D, M	Jun - Aug	Pi, Pu, W	12-36”	Y	Occurs in plains/foothills to montane zones.
Oenothera caespitosa	Tufted (fragrant) or Stemless evening primrose	butterflies, moths, native bees	S	D	May - Aug	W	4-12”	Y	Native to exposed hillsides, open woods, dry buttes. Occurs 3,000-10,000 feet. Attracts night insects.
Penstemon eriantherus	Fuzzytongue penstemon	hummingbirds, native bees, bumble bees	S	D	May - Jun	Pu	12-20”	Y	

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Penstemon strictus	Rocky Mountain penstemon	hummingbirds, native bees	PS	D	May - Jun	Pu, B	1-3’	Y	Native habitat is subalpine to valley sagebrush and conifer forests. Host plant for Anicia checkerspot (*Euphydryus anicia*).
Prunus virginiana	Chokecherry	native bees	S	M	Mar - May	W	10-30’	Y	Deciduous shrub. Suckers, 4-8 feet spread. Naturally occurs in foothills and prairie coulees (4,500-10,000 ft). Leaves toxic in spring. Larval host plant for small-eyed sphinx (*Paonias myops*) and Columbia silkmoth (*Hyalophora columbia*). Adult food source for California hairstreak (*Satyrium californica*).

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ratibida columnifera	Prairie coneflower	bees, butterflies	S	D, M	Jun - Sep	O, Y	18-24”	Y	Occurs in plains and foothills.
Ribes aureum	Golden currant	hummingbirds, butterflies, native bees	S, PS	D, M	Apr - May	Y	3-6’	Y	Deciduous shrub. Suckers, 3-6 foot spread.
Rosa woodsii	Wood’s rose	native bees, bumble bees	S, PS, Sh	D, M	May - Jul	Pi	4-5’	Y	Suckering shrub, 4-10 foot spread. Nesting materials/structure for native bees.
Rudbeckia hirta	Black-eyed Susan	butterflies	S	D, M	Jun - Aug	Y	1-3’	Y	Bloom time varies with climate (e.g., may bloom in May in Kansas, but likely not in North Dakota); Larval host for bordered patch and Gorgone checkerspot
Salvia azurea	Pitcher sage	native bees, bumble bees	PS	D	Sep - Oct	B	36”	Y	Within province, occurs in eastern CO, western KS, northwest OK, western NE. Does not occur in MT, WY, ND, and SD.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Schizachyrium scoparium	Little bluestem	butterflies, native bees	S, PS	D	Jun - Dec	W, G, Br	3’	Y	Larval host plant for many skippers. Provides nesting material for native bees.
Solidago canadensis	Canada goldenrod	butterflies, native bees, honey bees, butterflies	S, PS	D, M	Sep - Oct	Y	3-6’	Y	None.
Sorghastrum nutans	Indiangrass	butterflies, native bees	S, PS, Sh	D, M	Aug - Oct	Y	3-8’	Y	Sod-forming grass. Larval host plant for some skippers. Provides nesting material for native bees.
Symphyotrichum laeve	Smooth aster	native bees	S, PS	M	Aug - Sep (until frost)	B	2-3’	Y	Naturally occurring in foothills to prairies (plains to montane zones).

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1. B. 16. Hawaiian Islands Province (Figure 2)

ECOREGION DESCRIPTION

This province is comprised of the nine main Hawaiian Islands which are situated just south of the Tropic of Cancer. These islands are volcanic in origin and are mostly hilly to mountainous. Volcanic activity still occurs on some islands. Approximately 75 percent of the landmass is greater than 650 feet in elevation with some peaks reaching over 13,000 feet. Relatively flat coastal plain is rare and occurs primarily on Oahu and Niihau. Coastlines tend to be rugged and rocky. Surface streams are generally sparse and high gradient due to the porous volcanic ground and steep slopes.

The climate in Hawaii is tropical and relatively uniform year-round due to the surrounding waters and northeast trade winds. Despite the near constant temperatures and precipitation, elevation variability can be extreme. At sea level, average temperatures range from 70 to 75°F year-round, while snow can fall on the highest peaks year-round. Ocean waters and the trade winds significantly affect precipitation. The trade winds push moisture from the ocean into the northeast facing mountains that receive up to 200 inches of rain annually. The leeward sides of the islands fall within the rain shadow resulting in a semiarid precipitation pattern. Rainfall in these areas may be 20 inches or less annually.

The Hawaiian Islands supported four general forest types depending on the rainfall/moisture patterns. Trees such as ohia and koa occur in the wetter areas at mid to high elevations. These trees are important for native wildlife. Most of the low to mid elevation native habitats have been lost to exotic and invasive plants as a result of development, land conversion for agriculture, and plant introductions. This has significantly compromised native bird and invertebrate populations.

In the Bailey's classification system this Province is given code M423.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acacia koa	Koa	bees, butterflies, flies	S, PS	M	Jan – Mar	Y	>50’	Y	Tree. Host plant for Koa butterfly.
Argemone glauca	Pua kala	bees, wasps	S	M	year-round	W, Y	6’	Y	Not often available.
Bacopa monnieri	Water hyssop	bees, flies	S, PS	M	year-round	Pi, Pu, W	1’	Y	None.
Bidens torta	Ko’oko’olau	bees, flies	S	M	year-round	Y	10’	Y	None.
Canavalia galeata	‘Awikiwiki	bees	PS	M	year-round	Pi, Pu	Vine	Y	None.
Hibiscus kokio	Kokioulaula	bees, moths, birds	S, PS	D, M	Feb - May	R	10’	Y	Shrub.
Lipochaeta integrifolia	Nehe	bees	S, PS	M	year-round	Y	1’	Y	None.
Metrosideros polymorpha	Ohia lehua	bees, birds	S, PS	D, M	year - round	R, O, Y, Pi	60’	Y	Tree
Pipturus spp.	Mamaki	butterflies	S, PS	M	year - round	G, W	< 30’	Y	Tree to shrub depending on species. Host plant for Kamehameha butterfly.
Portulaca lutea	‘Ihi	bees, flies	S	D, M	Jul – Nov	Y	1’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Psydrax odoratum	Alahe'e	bees, moths, flies	S, PS	D	year - round	W	30'	Y	Tree
Santalum freycinetianum	'Iliahi	bees, butterflies, birds	S, PS	M	year-round	R, Pi	50'	Y	Tree. Not often available.
Sapindus oahuensis	Ionomea	bees, moths, flies	S, PS	D, M	year-round	W	50'	Y	Tree.
Scaevola sericea	Beach naupaka	bees, butterflies, moths, flies	S	D, M	year-round	W	10'	Y	Shrub.
Sesuvium portulacastrum	Seapurslane	bees, flies	S	M, W	year-round	Pi	1'	Y	None.
Sida fallax	Ilima	bees	S, PS	M	year-round	Y, O, R	1'	Y	Shrub.
Vitex rotundifolia	Pohinahina	bees, butterflies	S	D	year-round	Pu, B	6'	Y	Shrub.
Wikstroemia uva-ursi	Akia	butterflies, moths	S, PS	D, M	Oct - Feb	Y	6'	Y	Shrub.

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1. B. 17. Intermountain Semi-Desert Province (#19 on Figure 1)

ECOREGION DESCRIPTION

This province contains the mid to high elevation plateaus that drain into the Columbia-Snake River Basins, as well as the Wyoming Basin. Elevations within the province range from near sea level in the river valleys to over 4,000 feet, although most of the plateaus lie at about 3,000 feet. The plateaus give way to some of the most dramatic riverine systems in the Pacific Northwest that once supported vast numbers of migratory salmon. Isolated mountain ranges and the bordering Rocky Mountain provinces accentuate the high desert landscape. The Wyoming Basin consists of high elevation plains ranging between 6,000 and 8,000 feet. Hills and mountains are interspersed within the plains and reach upwards of 2,000 feet higher than the surrounding lands. The climate is semiarid and generally cool but temperatures can vary considerably across the province. The average annual temperature is about 50°F on the plateaus but temperature extremes can dip well below freezing in the winter and exceed 100°F during the summer. Average annual precipitation varies by location due to the Cascade Mountains intercepting coastal moisture. The western portion of the province is generally drier with less than 10 inches of rain, while the eastern province averages about 20 inches of precipitation annually. Summers are generally dry. Precipitation in the form of both rain and snow is evenly distributed the remainder of the year. Snowfall ranges from 10 to 40 inches annually.

The vegetation in this province is dominated by shrub-steppe with hardy drought tolerant shrubs, such as sagebrush and rabbitbrush, with an understory of grasses and forbs. Grasses formerly consisted of a diversity of bunchgrasses but many have been replaced by invasive cheatgrass. Trees are generally absent except for western juniper. Riparian vegetation such as willows, cottonwoods, and sedges exist along streams and rivers where adequate water exists. Two plant lists are provided one for the southern portion of the ecoregion and one for the northern portion of the ecoregion.

In the Bailey's classification system this Province is given code 342.

This portion of the plant list covers the Northern Range in areas with 12 to 18 inches of rain.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Agastache occidentalis	Western giant hyssop	bees, butterflies, hummingbirds	S	D, M	Jun - Aug	Pu, Pi	2’	Y	None.
Allium cernuum	Nodding onion	bee, butterflies	S	M	May - Aug	Pi, W	20”	Y	None.
Antennaria microphylla	Rosy pussytoes	bees, butterflies, hummingbirds	S	D	May - Aug	W, Pi	6”	Y	None.
Asclepias speciosa	Showy milkweed	bees, butterflies	S, PS	D, M	Jun - Jul	Pi	4’	Y	None.
Ericameria nauseosa	Rubber rabbitbrush	bees, butterflies, moths, hummingbirds	S	D, M	Aug - Oct	Y	6’	N	Shrub. Best for natural landscapes.
Erigeron pumilus	Shaggy fleabane	bees, butterflies	S	D	May - Jul	W, Pi, B	20”	Y	None.
Eriogonum umbellatum	Sulphur-flower buckwheat	bees, butterflies	S, PS	D	Jul - Sep	Y	2’	Y	Shrub.
Eriophyllum lanatum	Woolly sunflower	butterflies	S, PS	D	May - Jul	Y	2’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Gaillardia aristata	Blanketflower	bees, butterflies	S, PS	D, M	Jul - Sep	Y, R	30”	Y	None.
Geranium viscosissimum	Sticky geranium	bees, butterflies, hummingbirds	S, PS	D, M	May - Jun	Pi, Pu	3’	Y	None.
Geum triflorum	Prairie smoke	bees	S, PS	M	Apr - Jun	R	8”	Y	None.
Helianthella uniflora	Little sunflower	bees, butterflies	S	D, M	Jun - Aug	Y	40”	Y	None.
Helianthus annuum	Common sunflower	bees, butterflies	S	D, M	Jul - Sep	Y	5’	Y	None.
Iris missouriensis	Rocky Mountain iris	hummingbirds	S	M, W	May - Jun	W, Pu	2’	Y	None.
Linum lewisii	Lewis flax	bees	S	D, M	May - Jul	B	2’	Y	None.
Lupinus argenteus	Silvery lupine	bees, butterflies	S, PS	M, D	Jun - Jul	B, Pu	3’	Y	Forb.
Monardella odoratissima	Mountain monardella	bees, butterflies, hummingbirds	PS	D, M	Jun - Aug	Pu	1’	Y	None.
Penstemon deustus	Scabland penstemon	bees, hummingbirds	S	D	May - Jul	Y	2’	Y	None.
Pseudoroegneria spicata	Bluebunch wheatgrass	butterflies, moths	S	D, M	Apr - May	G	4’	N	Bunchgrass.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ribes aureum	Golden current	bees, butterflies, hummingbirds	S, PS	D, M	Apr - May	Y	6”	Y	Shrub.

NATIVE PLANT LIST - SOUTHERN

This portion of the plant list covers the southern range in areas with 9 to 12 inches of rain.

Scientific Name	Common Name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer glabrum	Rocky Mountain maple	bees, butterflies, moths, hummingbirds	S, PS	D, M	Apr - May	G, Y	30’	Y	Small tree.
Aguilegia formosa	Western columbine	bee, butterflies	PS	M	Apr - Aug	R	20”	Y	None.
Artemisia tridentata	Big sagebrush	butterflies, moths, hummingbirds	S	D, M	Aug - Oct	Y	10’	N	Shrub. Best for natural landscapes.
Asclepias speciosa	Showy milkweed	bees, butterflies	S, PS	D, M	Jun - Jul	Pi	4’	Y	None.
Cleome lutea	Yellow bee plant	bees	S	D	May - Jun	Y	4’	Y	None.

Scientific Name	Common Name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ericameria nauseosa	Rubber rabbitbrush	bees, butterflies, moths, hummingbirds	S	D, M	Aug - Oct	Y	6’	Y	Shrub. Best for natural landscapes.
Erigeron compositus	Cutleaf daisy	butterflies	S, PS	D	May - Aug	Pu, Pi, W	1’	Y	None.
Erigeron pumilus	Shaggy fleabane	bees, butterflies	S	D	May - Jun	W, Pi, B	20”	Y	None.
Eriogonum caespitosum	Mat buckwheat	bees, butterflies	S	D	May - Jun	Y, R	4”	Y	None.
Eriogonum umbellatum	Sulphur-flower buckwheat	bees, butterflies	S, PS	D	Jul - Sep	Y	2’	Y	Shrub.
Eriophyllum lanatum	Oregon sunshine	bees, butterflies	S, PS	D	May - Aug	Y	2’	Y	None.
Gaillardia aristata	Blanketflower	bees, butterflies	S, PS	D, M	Jul - Sep	Y, R	30”	Y	None.
Geranium viscosissimum	Sticky geranium	bees, butterflies, hummingbirds	S, PS	D, M	May - Jun	Pi, Pu	3’	Y	None.
Geum triflorum	Prairie smoke	bees	S, PS	M	Apr - Jun	R	8”	Y	None.
Helianthus annuus	Common sunflower	bees, butterflies	S	D, M	Jul - Sep	Y	5’	Y	None.
Heterotheca villosa	Hairy false goldenaster	bees, butterflies	S	D	May - Oct	Y	30”	Y	None.

Scientific Name	Common Name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Iris missouriensis	Rocky Mountain iris	hummingbirds	S	M, W	May - Jun	W, Pu	2’	Y	None.
Leymus cinereus	Basin wildrye	butterflies	S	D, M	Apr - May	G	2’	ND	Grass.
Lupinus sericeus	Silky lupine	bees, butterflies	S	D	Jun - Aug	Pu, B, W	2’	Y	None.
Oenothera pallida	Pale evening primrose	bees, butterflies, moths, hummingbirds	S	D, M	May - Jun	Pi, W	20”	Y	None.
Opuntia polyacantha	Plains prickly pear	bees, butterflies	S	D	Apr - May	R, Y, O	10”	Y	Cactus.
Penstemon procerus	Littleflower penstemon	bees, hummingbirds	S, PS	D	May - Aug	B, Pu	16”	Y	None.
Rhus trilobata	Skunkbush sumac	bees, butterflies, hummingbirds	S, PS	D	May - Jun	Y	8’	Y	Shrub.
Ribes aureum	Golden current	bees, butterflies, moths, hummingbirds	S, PS	D, M	Apr - May	Y	6”	Y	Shrub.
Sphaeralcea grossulariifolia	Gooseberry globemallow	bees, butterflies	S	D	Apr - Jun	O, R	3’	Y	None.

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1. B. 18. Intermountain Semi-Desert and Desert Province (#20 on Figure 1)

ECOREGION DESCRIPTION

Average annual temperature ranges from 40 to 55°F. Spring comes early, except at higher elevations. Annual precipitation averages only 5 to 20 inches, often falling as winter snow. Almost no rain falls during the summer months except in the mountains. This region emcompasses 107,100 square miles within Nevada, Utah and Colorado. Elevations range from 4,000 to 14,200 feet. The region is dominated by vertical zonation, with lower elevation shrubs tolerating alkali to varying degrees and mountains covered by vegetation. Common plant species include sagebrush, antelope bitterbrush, spiny hopsage, greasewood, fourwing saltbrush, and rubber rabbitbrush. Tree species include short-statured Gambel oak, pinyon pine, juniper, Douglas-fir, ponderosa pine, subalpine fir, and Engelmann spruce. Aridisols soils dominate basin and lowland areas. Forest soils are found at higher elevations. Narrow bands of Entisols lie in stream floodplains and rocky landscapes. Salt flats and playas without soils are extensive in the lower parts of basins with interior drainage.

In the Bailey's classification system this Province is given code 341.

NATIVE PLANT LIST

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Argemone platyceras	Prickly-poppy	beetles, bees, other insects	S	D	Apr - May	W	1-3'	Y	Plant in gravelly, sandy, well-drained soil.
Artemisia tridentata	Big sagebrush	bees, moths, other insects	S	D	Aug - Sep	Y	3-12'	Y	Tree/shrub. Plant in well-drained soil.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Astragalus drummundii	Drummund's milkvetch	bees, butterflies, moths	S	D	Mar - May	W	1-3"	N	Plant in well-drained soil.
Calochortus nuttallii	Sego lily	insects	S	D	Mar - Jun	W	8-20"	Y	Plant in well-drained soil.
Castilleja applegatei	Wavyleaf Indian paintbruch	bees, hummingbirds	S, PS	D	Apr - Jun	O, R	1-2'	Y	Grows in rocky, well-drained soil.
Chamaebatiaria millefolium	Fembush	butterflies, bees, moths	S	D	Jun - Jul	W	4-6'	Y	Tree/shrub.
Cleome serrulata	Rocky Mountain bee plant	butterflies, moths	S	D	Jul - Aug	Pi, Pu	3-5'	Y	Plant in well-drained soil.
Datura wrightii	Sacred datura	moths	S, PS	D	Mar - Jul	W	2-6'	N	Plant in well-drained soil.
Encelia farinosa	Brittlebush	butterflies, bees,	S	D	Mar - May	Y	1-3'	Y	Plant in well-drained soil.
Ericameria nauseosa	Rubber rabbitbush	bees, butterflies, other insects	S	D	Aug - Oct	Y	2-4'	Y	Tree/shrub. Plant in well-drained soil.
Eriogonum umbellatum	Umbrella desert buckwheat	butterflies, bees	S	D	Apr - Jun	Y	8-12"	N	Plant in well-drained soil.
Fallugia paradoxa	Apache plume	bees, other insects	PS	D, M	May - Jul	W	3-6'	Y	Tree/shrub. Plant in well-drained soil.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Lomatium dissectum	Desert parsely	bees, butterflies, other insects	S	D	Apr - May	Pu, Y	1-3’	N	Grows in rocky, well-drained soil.
Opuntia polyacantha	Plains prickly pear	butterflies, bees	S	D	Jun - Jul	R, Y, Pi	12-18’	Y	Plant in well-drained soil. Other native *Opuntia* species will also support pollinators.
Penstemon eatonii	Firecracker penstemon	hummingbirds	S	D	Apr - May	R	2-3’	Y	Plant in well-drained soil.
Phlox longifolia	Long-leaf phlox	butterflies, moths	S	D	Apr - May	Pi	5-9”	Y	Grows in rocky well-drained soils
Sphaeralcea grossulariifolia	Globemallow	bees, other insects	S	D	Mar - Jun	O	20-40”	Y	Plant in well-drained soil.
Viola nuttallii	Nuttall’s violet	butterflies, other insects	S, PS	D, M	Apr - Jul	Y	2-6”	Y	Plant in well-drained soil.

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1. B. 19. Laurentian Mixed Forest Province (#21 on Figure 1)

ECOREGION DESCRIPTION

This province contains rolling hills at elevations ranging from sea level to 2,400 feet. Moderately long and sometimes severe winters greatly influence the plant community. Average annual temperatures range from 35 to 50°F. The growing season is short with humid summers and moderate annual precipitation of 24 to 45 inches. The plant community is transitional between boreal forest and broadleaf deciduous, containing mixed stands of conifers and deciduous species. The deciduous forest has a dense understory, while the coniferous forest has a spare, fire-dependent understory. Common deciduous species here include yellow birch, sugar maple, and American beech. The coniferous forest typically contains white pine, eastern hemlock, and eastern red cedar.

In the Bailey's classification system this Province is given code 212.

NATIVE PLANT LIST

Note that this list is most appropriate for the portion of this ecoregion that occurs in NY and PA. Different plants would be required for other areas, such as ME, MN, WI, and MI.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amelanchier arborea	Downy serviceberry	bees	S, PS	D, M	Mar-May	W	15-25'	Y	Many birds and other wildlife species eat the fruits.
Aquilegia canadensis	Red columbine	bees, hummingbirds	PS, S	D, M	May - Jul	R, Y	12-36"	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias tuberosa	Milkweed, Butterfly weed	bees, butterflies, flies, hummingbirds	S, PS	D, M	May - Aug	Y, O	1-3’	Y	Host plant for monarch butterfly larvae.
Campanula rotundifolia	Harebell	bees	PS, S	D, M	Jun - Oct	B	8-24”	Y	Does well in a variety of sites, including rock gardens.
Cephalanthus occidentalis	Common buttonbush	moths, hummingbirds	S	M, W	Jun - Jul	W	to 9’	Y	Good plant for wetland restoration. Tolerates flooding.
Chelone glabra	White turtlehead	bees, butterflies, hummingbirds	S, PS	W, M	Jul - Oct	W	2-3'	Y	Strong grower. Host plant for the Baltimore checkerspot.
Crataegus crus-galli	Cockspur hawthorn	bees, flies, beetles, butterflies	S, PS	D, M	May - Jun	W	to 30’	Y	Has large thorns. Do not plant near paths.
Eutrochium (Eupatorium) maculatum	Spotted joe pye weed	butterflies, bees, moths	S, PS	M, W	Jul - Oct	Pu-Pi	1.5-10'	Y	Tolerant of water-logged conditions. Could be used in a rain garden.
Gaultheria procumbens	Eastern teaberry, wintergreen	bees	S, PS	D, M	Jul - Sep	Pi-W	4-8”	Y	May not bloom in shade.
Hamamelis virginiana	American witch-hazel	moths	Sh, PS, S	M	Oct - Nov	Y	15-20’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ilex verticillata	Common winterberry	bees, flies	S, PS, Sh	M, W	May - Jun	W	7-10’	Y	Wetland plant.
Monarda fistulosa	Wild bergamont, Horsemint	bees, wasps, butterflies, hummingbirds	S, PS	M	Jul - Sep	Pu-Pi, Pu-B	2-5'	Y	Leaves have minty smell. Hardy garden standard.
Penstemon digitalis	Tall beardstongue	bees, hummingbirds	S, PS	D, M, W	Jun - Jul	W	3-5'	Y	Can be weedy in sunny sites.
Phlox maculata	Wild sweetwilliam	bees, butterflies	S, PS	M	Apr - Jun	Pi, Pu	2-3'	Y	None.
Prunus virginiana	Chokecherry	bees	S, PS, Sh	D, M	May-Jun	W	12-36'	Y	Sometimes vulnerable to disease. Important wildlife food.
Rhus typhina	Staghorn sumac	butterflies, bees	S, PS	D, M	Jun - Aug	Y-G	10-15’	Y	Can be aggressive in landscaping.
Rudbekia hirta	Black-eyed Susan	bees, beetles, butterflies	S, PS	D, M	Jul - Oct	Y; Br center	1-3.5'	Y	Annual flower, but reseeds readily.
Tilia americana	American basswood	bees, flies, moths	PS, Sh	M	Apr - May	Y	70-130'	Y	None.
Vaccinium angustifolium	Lowbush blueberry	bees	S, PS, Sh	D, M	May - Jun	W with Pi	0.5-2'	Y	Typically in acidic soil in the forest understory.
Zizia aurea	Golden zizia, Golden alexanders	flies, bees	S, PS	M, W	May - Jul	Y	1-3'	Y	Host plant for black swallowtail butterfly.

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1. B. 20. Lower Mississippi Riverine Forest Province (#22 on Figure 1)

ECOREGION DESCRIPTION

This province is mostly flat with gentle sloping broad floodplains and low terraces. From an elevation of near sea level at the mouth of the Mississippi River altitude increases gradually to about 660 feet in the north. The area contains many oxbow lakes and swamps. The winters are warm with temperatures of 50 to 60°F, and summers are hot with temperatures ranging from 70 to 80°F. Rain falls throughout the year (55 inches) with minimum precipitation in autumn. Snowfall is negligible. At the northernmost part of the province at Cairo, Illinois, average temperatures for January and August are about 41°F and 77°F, respectively with 43 inches average annual precipitation. Before cultivation the province was covered by bottomland deciduous forest with an abundance of ash, elm, cottonwood, sugarberry, sweetgum, and water tupelo as well as oak and bald cypress. Pecan is also present, associated with eastern sycamore, American elm and roughleaf dogwood.

In the Bailey's classification system this Province is given code 234.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amorpha fruticosa	Wild false indigo	bees, butterflies	S	M, W	Apr - Jul	Pu, B	6-12’	Y	Attractive, ornamental blooms. Good for bog or pond area. Larval host for clouded sulphur, gray hairstreak and several skippers and moths.
Amsonia tabernaemontana	Blue star	bees	S, PS	M, W	Apr - May	B-Pu	24-30”	Y	Star-shape flowers.
Arisaema triphyllum	Jack-in-the pulpit	flies	Sh	M, W	Mar - Apr	G-R	1-2’	Y	Excellent woods/ garden plant. Easy to cultivate. Requires little care.
Asclepias perennis	Aquatic milkweed	bees, butterflies	S, PS	M, W	May - Sep	W	3-6’	Y	Larval host plant for monarch butterfly. Good for wet areas and butterfly gardens.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias viridis	Green milkweed	butterflies, bees	S	M, D	May - Aug	W to Y-G	9-25”	N	Larval host for monarch. Found in seasonally moist prairies, glades, and open habitats.
Asimina triloba	Pawpaw	butterflies, beetles, flies, moths	S, PS	M, W	Mar - May	W	10-40’	Y	Larva of zebra swallowtail feed exclusively on pawpaw leaves.
Bidens aristosa	Beggar ticks	bee, beetles, flies, butterflies	S	M	Sep - Oct	Y	24-30”	Y	Annual. Conspicuous yellow flowers.
Campsis radicans	Trumpet creeper	bees, hummingbirds	S, PS	M	Apr - May	R, Y	30-35”	Y	Vine. Attractive on a trellis or fence.
Cephalanthus occidentalis	Buttonbush	bees, beetles, flies, butterflies	S, PS	M, W	Jun - Sep	W	6-10’	Y	Good for rain gardens. Will survive periodic flooding and clay soils. Host plant to moths.
Helianthus angustifolius	Narrowleaf sunflower	butterflies, native bees	S, PS	M, W	Sep - Oct	Y	5-7’	Y	Good for bog or pond area.
Hibiscus lasiocarpus	Wooly rosemallow	bees	S, PS	M, W	May - Sep	W, Pi	5-7’	Y	Large showy flowers.
Impatiens capensis	Jewel weed	bees, butterflies, hummingbirds	PS, Sh	M, W	May - Nov	O	3-5’	Y	Conspicuous, but delicate flower.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Iris fulva	Copper iris	bees	S, PS	M, W	Mar - May	R, O, Y	20-26”	Y	Popular in southern gardens.
Prunus angustifolia	Chickasaw plum	bees, butterflies, flies, beetles	S, PS	D, M	Mar-Apr	W	15-30’	Y	Shrub-small tree. Easy to grow in almost any soil. Edible red fruit in Aug – Sep.
Nyssa aquatic, Nyssa sylvatica	Water tupelo, Black gum	native bees, flies, honey bees	S	M, W	Apr - May	G	30’	Y	Well-known nectar plants among beekeepers.
Penstemom digitalis	Beardtongue	butterflies, sphinx moths, bees, hummingbirds	S, PS	D, M	Jun - Aug	W, Pi, Pu, R	3’	Y	Prolific nectar producer. Supports specialist bees and wasps.
Pycnanthemum albescens	Mountain mint	native bees, bumble bees, honey bees	S	D, M	Jun - Aug	W	18-24”	Y	Aromatic.
Rudbeckia hirta	Black-eyed Susan	bees, butterflies, flies, beetles	S, PS	D, M	May-Aug	Y	14-20”	Y	Annual. Deer resistant. Good for gardens, pocket prairies, and meadows. Larval host plant for bordered patch butterflies and Gorgone checkerspot.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Rudbeckia triloba	Coneflower	bees, butterflies, flies, beetles	S, PS	M	Jul - Oct	Y	14-20”	Y	Produces abundant seeds for birds.
Veronia gigantea	Ironweed	bees, flies, butterflies	S	M	Aug - Oct	Pu	ND	Y	Hardy. Host plant for several moths.

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1. B. 21. Outer Coastal Plain Mixed Forest (#27 on Figure 1)

ECOREGION DESCRIPTION

In this province, the land surface is comprised of the flat and irregular Atlantic and Gulf Coastal Plains extending to the Atlantic coast to the east and the Gulf of Mexico to the south. Annual temperature ranges from 60 to 70°F. Rainfall is abundant (40 to 60 inches annually) and distributed throughout the year. The plants comprise a temperate rainforest with evergreen oaks mixed with laurels and magnolias. The understory includes tree ferns, small palms, shrubs, herbaceous plants, and abundant lianas and epiphytes (e.g., Spanish "moss"). Extensive coastal marshes extend along the Atlantic Coast. Interior swamps are dominated by gum and cypress. Most upland areas are covered by a subclimax pine forest with an understory of grasses and sedges (savannas). Soils, derived mainly from coastal plain sediments, range from heavy clay to gravel with sandy materials predominant.

In the Bailey's classification system this Province is given code 232.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer rubrum	Red maple	butterflies, bees, moths, wasps, beetles	S, PS	M	Feb - Apr	Pi, R	30-70’	Y	High ecological value as a late winter and early spring pollen/nectar source.
Asclepias perennis	Aquatic milkweed	butterflies, native bees, bumble bees, honey bees, beetles, hummingbirds	S, PS	M, W	Apr - Oct	W	2-3’	Y	An evergreen perennial milkweed that regrows quickly after defoliation. Host plant for monarch, queen, and grey hairstreak butterfly larvae.
Asclepias tuberosa	Butterfly milkweed	butterflies, native bees, honey bees, beetles, hummingbirds	S	D, M	May - Sep	O, Y	1-2’	Y	Showy. Tolerates drought. Host plant for monarch, queen, and grey hairstreak butterfly larvae.
Bacharris halimifolia	Salt bush	butterflies, native bees, bumble bees, honey bees, hummingbirds	S, PS	M, W	Sep - Dec	W	5-10’	Y	Shrub. Important late season food for pollinators, especially migrating monarch butterflies. There are 3 *Baccharis* species in the outer coastal plain.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Cercis canadensis	Eastern redbud	butterflies, native bees, bumble bees, honey bees, beetles	S, PS	D, M	Feb - Apr	Pi, Pu	12-36’	Y	A small, hardy, attractive tree that provides early season food for pollinators.
Chamaecrista fasciculata	Partridge pea	butterflies, bees, moths, wasps	S, PS	D, M	Jul - Nov	Y	1-3’	Y	Vigorous, annual species. Germinates well from seeds, and spreads within a season. Nitrogen-fixing. Preferred by bees. Larval host plant for orange sulphur and sleepy orange butterflies.
Chionanthus virginicus	Fringe tree	butterflies, bees, moths, wasps, beetles, hummingbirds	PS	M	Feb - Apr	W	3-6’	Y	Attractive shrub. Blooms early in the season, providing initial food for many pollinators. Larval host plant for rustic sphinx moth.
Coreopsis lanceolata	Lanceleaf tickseed	butterflies, bees, moths, wasps	S, PS, Sh	D, M	Mar - Jun	Y	1-2’	Y	Hardy species that is adaptable to rock, sandy, and calacareous soils. Use *C. gladiata* with consistently wet soils.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Echinacea purpurea	Purple coneflower	butterflies, native bees, bumble bees, honey bees, hummingbirds	S, PS	D, M	Apr - Jul	Pi, Pu	1-3’	Y	Hardy species with high ornamental value. Tolerant of sites with calcareous soils.
Gaillardia pulchella	Firewheel	butterflies, bees, moths, wasps	S, PS	D, M	Apr - Nov	O, Pi, Pu, R, Y, W	1-3’	Y	Hardy, brilliant-colored aster, adaptable to harsh environments. Does well in gardens.
Helianthus angustifolius	Narrowleaf sunflower	butterflies, bees, moths, wasps, beetles	PS	W	Aug - Dec	Y	1-3’	Y	Salt-Tolerant. Can withstand constantly wet soils. Spreads by rhizome. Seeds eaten by birds and mammals. Use *H. debilis* for coastal dunes, interior scrubs and sandhills.
Liatris spicata	Blazing star	butterflies, bees, moths, wasps, beetles, hummingbirds	S, PS	M	Aug - Nov	Pi, Pu	3-6’	Y	Adaptable. Important nectar/pollen source for many pollinators.
Magnolia virginiana	Sweetbay magnolia	butterflies, bees, moths, wasps, beetles	S, PS	M, D	Apr - Aug	W	40-80’ Tree	Y	Widespread tree. Larval host plant for the eastern tiger swallowtail butterfly.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Monarda punctata var. punctata	Eastern Horsemint or Spotted bee balm	butterflies, bees, moths, wasps, hummingbirds	S	D, M	Apr - Oct	Pu, Pi, W,Y	1-3’	Y	Host plant for gray marvel moth. Important for bees in the fall.
Passiflora incarnata	Purple passionflower	butterflies, native bees, bumble bees, honey bees, hummingbirds	S, PS	D, M	Mar - Oct	Pi, Pu	6-12’	Y	Perennial, deciduous vine. Dies back to rootstalk annually. Large, unusual flowers and edible fruit. Can be used in gardens as a ground-trailing vine, or allowed to grow upwards. Larval host plant for gulf fritillary, variegated fritillary, banded hairstreak, red-banded hairstreak, and the zebra longwing.
Phyla nodiflora	Frogfruit	butterflies, bees, moths, wasps,	S, PS	D, M	May - Oct	Pi, W	3-6”	Y	A spreading groundcover tolerant of calcareous, salty, or wet soils. Larval host plant for the phaon crescent, buckeye, and white peacock butterflies.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Rudbeckia hirta	Black-eyed Susan	butterflies, bees, beetles,	S, PS	D, M	Jul - Aug	Y	1-3.5’	Y	Host plant for silvery checkerspot butterfly larvae.
Sabal minor	Bluestem palmetto	butterflies, bees, moths, wasps, beetles	S, PS, Sh	D, M	May - Aug	W	3-5’	Y	Aromatic flowers attract many pollinators, and small fruits attract birds and squirrels. Base of plant used as a hibernaculum for overwintering bees.
Salvia lyrata	Lyre leaf sage	butterflies, bees, moths, wasps, beetles	S, PS, Sh	M, W	Jan - Apr	Pu	1-2’	Y	Widespread perennial herb that reseeds well, and offers cold-season food sources for pollinators.
Solidago canadensis	Tall goldenrod	butterflies, bees, moths, wasps, beetles, hummingbirds	S, PS	D, W	Aug - Nov	Y	3-6’	Y	Important as a late season food source for pollinators, especially for migrating monarch butterflies. *Solidago sempervirens* is best if using seaside, due to its salt tolerance.

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1. B. 22. Pacific Coastal Mountains Forest-Meadow Province (#44 on Figure 2)

ECOREGION DESCRIPTION

This province includes the Coast Range of southeast Alaska, St. Elias Mountains and Chugach-Kenai Mountains. "The most important trees in the thick forest that covers the lower elevations of this province are Alaska-cedar, western hemlock, mountain hemlock, Sitka spruce, several species of willow, and black cottonwood. Several kinds of shrubs also grow in the forest, often forming a fringe on its margins. In many places, the dense vegetation is practically impenetrable. The timberline is at low elevations, and much of the mountainous area above it is covered with nearly bare rocks, snowfields, and glaciers. Wherever soil has accumulated, however, there are grasses, herbs, and low shrubs. The timberline varies greatly in elevation from place to place, depending on slope exposure and other factors. Near Prince William Sound, for example, the timberline is usually between 1,000 and 2,000 ft., but sometimes it drops as low as 500 ft." (Bailey, 1995).

In the Bailey's classification system this Province is given code M244.

Note that this list is most appropriate for the northwestern portion of this province near Joint Base - Richardson.

Scientific Name	Common Name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Achillea borealis	Common yarrow	bees, butterflies, beetles, moths	S	D	Jun - Aug	W	3-36"	Y	May not be commercially available.
Aquilegia formosa	Western columbine	bees, butterflies, hummingbirds	PS	D, M	May - Aug	R with Y	1-3"	Y	Commercially available.
Arctostaphylos uva-ursi	Kinnikinnik	bees, ants	PS	D, M	May - Jun	W with Pi	3-8"	Y	Low growing shrub. May not be commercially available.
Campanula rotundifolia	Bluebell flower	bees	S, PS, Sh	D, M	Jun - Jul	B	15"	Y	May not be commercially available.
Castilleja unalaschcensis	Alaska Indian paintbrush	hummingbirds	S, Sh	D, M	Jul - Aug	Y	12-18"	Y	May not be commercially available.
Chamaedaphne calyculata	Leatherleaf	bees	S	M	May	W	3’	Y	Shrub. May not be commercially available.
Epilobium angustifolium	Fireweed	bees, butterflies	S	D, M	Jun - Aug	Pi	2-5'	Y	None.

Scientific Name	Common Name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Geranium erianthum	Woolly geranium	bees	S, PS, Sh	M	Jun - Aug	B, Pi, Pu	4'	Y	None.
Geum macrophyllum	Largeleaf avens	bees, butterlies, flies	Sh	M	Jun - Jul	Y	1-2'	Y	May not be commercially available.
Iris setosa	Wild iris	bees, butterflies	S	M	Jun - Jul	Pu	1-2’	Y	None.
Mertensia paniculata	Bluebells	bees, butterflies	PS	D, M	May - Jul	B	2'	Y	None.
Myrica gale	Sweet gale	birds	S, PS, Sh	M	Jul - Aug	Y-G	6'	Y	Shrub. Wetland species. Provides food and nesting habitat for native birds.
Oxytropis campestris	Field locoweed	bees	S	D	Jun - Jul	W-Y	1’	Y	Shrub. Ggood seedling vigor and drought tolerance. May not be commercially available.
Polemonium acutiflorum	Jacob's ladder	bees, butterflies	S	D	Jul - Aug	B-Pu	10-36"	Y	
Potentilla fruiticosa	Shrubby cinquefoil	bees, butterflies, beetles, flies	S	D, M	Jun - Jul	Y	18-36"	Y	Shrub.

Scientific Name	Common Name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Pulsatilla patens	Pasque flower	bees, butterflies	PS	D, M	May - Jun	Pu	6-8"	Y	May not be commercially available.
Rosa acicularis	Wild rose	bees, butterflies, beetles, flies	S	D, M	Jun - Jul	Pi	2-6'	Y	Shrub.
Rubus parviflorus	Thimbleberry	bumblebees	PS, S	D, M	Jun - Jul	W	4-6'	Y	Shrub.
Streptopus amplexifolius	Claspleaf twisted stock	bees, flies	PS, Sh	M	May - Jun	G-W	3'	Y	May not be commercially available.

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1. B. 23. Pacific Lowland Mixed Forest Province (#29 on Figure 1)

ECOREGION DESCRIPTION

This province consists of the low elevation forest communities of the Willamette Valley, Oregon, and the Puget Trough, Washington. It is located between the Coast Ranges and the Cascade Mountains in Oregon and Washington. Forests are within the western hemlock vegetation zone. Elevations range from sea level to 1,500 feet. The climate is usually mild year-round with wet winters and relatively dry summers. The average annual temperatures range is from 48 to 55°F with occasional highs over 100°F and lows going below freezing. Average annual rainfall varies from 15 to 60 inches. The Coast Range and the Olympic Mountains intercept moisture laden clouds from the coast, resulting in a drier, milder inland climate. Most precipitation occurs during the winter months and falls primarily as rain. There is little, if any, snow most years. The region supported dense coniferous forests dominated by western red cedar, western hemlock, Douglas-fir and grand fir. Riparian areas supported big-leaf maple, black cottonwood, and Oregon ash. Areas of high disturbance from activities such as forest harvesting, fires or windstorms form red alder forests that transition to the conifer dominated landscapes. Oregon white oak and madrone and other unique plant and animal species are found in the prairies.

There are two plant lists provided for this ecoregion: one for the Puget Trough and one for the Willamette Valley.

In the Bailey's classification system this Province is given code 242.

NATIVE PLANT LIST – PUGET TROUGH

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer circinatum	Vine maple	bees, moths	PS	M	Mar - May	W, R	25'	Y	Small tree.
Allium cernuum	Nodding onion	bees, butterflies	S	M	May - Aug	Pi, W	20"	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Aquilegia formosa	Western columbine	bees, butterflies, hummingbirds	PS	M	Apr - Aug	R	20”	Y	None.
Arctostaphylos uva-ursi	Kinnikinnick	bees, butterflies, moths	S, PS	D, M	Mar - Apr	W, Pi	8”	Y	Spreading groundcover.
Camassia quamash	Common camas	bees	S	M	Apr - May	B, Pu	26”	Y	Prefers drying in summer.
Erigeron glaucus	Beach daisy	bees, butterflies, moths	S	D, M	Jun - Jul	Pi	1’	Y	None.
Eriophyllum lanatum	Oregon sunshine	bees, butterflies	S, PS	D	May - Aug	Y	2’	Y	None.
Erysimum capitatum	Western wallflower	bees, butterflies	S	D	Apr - Jun	O, Y	3’	Y	None.
Festuca roemeri	Roemer’s fescue	moths, butterflies	S	D, M	Apr-May	G	3’	Y	Bunchgrass.
Gaillardia aristata	Blanket flower	bees, butterflies	S	D, M	Jun - Sep	Y, R	3’	Y	None.
Gaultheria shallon	Salal	butterflies, moths	S, PS, Sh	M, W	May - Jul	W, Pi	7’	Y	Shrub. May spread.
Geranium oregonum	Oregon geranium	bees	S, PS	M	May - Jul	R, Pu	30”	Y	None.
Helianthus annuus	Common sunflower	bees, butterflies	S	D, M	Jul - Sep	Y	5’	Y	May spread.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Hydrophyllum tenuipes	Pacific waterleaf	bees	Sh	M	May - Jul	W	30”	Y	None.
Iris tenax	Oregon iris	bees	S, PS	D, M	Apr - Jun	B, Pu, W	14”	Y	None.
Lupinus polyphyllus	Bigleaf lupine	bees, butterflies, hummingbirds	S	D, M	May - Jun	B	40”	Y	None.
Mahonia aquifolium	Tall Oregon grape	bees, butterflies	S, PS	D, M	Mar - May	Y	7’	Y	Shrub.
Monardella odoratissima	Coyote mint	bees, butterflies	S, PS	D, M	Jul - Sep-	Pi, Pu, W	2’	Y	None.
Penstemon serrulatus	Cascades penstemon	bees, butterflies	S, PS	M, W	Jun - Aug	B, Pu	30”	Y	None.
Ribes sanguineum	Red current	bees, butterflies, moths, hummingbirds	S, PS	D, M	Mar - Jun	R, Pi	10’	Y	Shrub.
Rosa nutkana	Nootka rose	bees, moths	S, PS	D, M	Jun - Jul	Pi	6’	Y	Shrub. May spread.
Sidalcea campestris	Meadow checkermallow	bees	S	D, M	Jun - Jul	Pi, W	3’	Y	None.
Symphoricarpos albus	Common snowberry	bees, moths, hummingbirds	S, PS	M	Jun - Jul	Pi, W	6’	Y	Shrub. May spread.
Symphyotrichum subspicatus	Douglas aster	bees, butterflies	S	M	Aug - Sep	Pu, B	4’	Y	May spread.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Acer circinatum	Vine maple	bees, moths	PS	M	Mar - May	W, R	25’	Y	Small tree.
Allium cernuum	Nodding onion	bees, butterflies	S	M	May - Aug	Pi, W	20”	Y	None.
Aquilegia formosa	Western columbine	bees, butterflies, hummingbirds	PS	M	Apr - Aug	R	20”	Y	None.
Arctostaphylos uva-ursi	Kinnikinnick	bees, butterflies, moths	S, PS	D, M	Mar - Apr	W, Pi	8”	Y	Spreading groundcover.
Asclepias speciosa	Showy milkweed	bees, butterflies	S, PS	D, M	Jun - Jul	Pi	4’	Y	May spread.
Camassia quamash	Common camas	bees	S	M	Apr - May	B, Pu	26”	Y	Pefers drying in summer.
Erigeron glaucus	Beach daisy	bees, butterflies, moths	S	D, M	Jun - Jul	Pi	1’	Y	None.
Eriophyllum lanatum	Oregon sunshine	bees, butterflies	S, PS	D	May - Aug	Y	2’	Y	None.
Erysimum capitatum	Western wallflower	bees, butterflies	S	D	Apr - Jun	O, Y	3’	Y	None.
Eschscholzia californica	California poppy	bees	S	D	May - Aug	O, Y	16”	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Festuca roemeri	Roemer's fescue	moths, butterflies	S	D, M	Apr-May	G	3'	Y	Bunchgrass.
Gaillardia aristata	Blanket flower	bees, butterflies	S	D, M	Jun - Sep	Y, R	3'	Y	None.
Gaultheria shallon	Salal	butterflies, moths	S, PS, Sh	M, W	May - Jul	W, Pi	7'	Y	Shrub. May spread.
Geranium oregonum	Oregon geranium	bees	S, PS	M	May - Jul	R, Pu	30"	Y	None.
Helianthus annuus	Common sunflower	bees, butterflies	S	D, M	Jul - Sep	Y	5'	Y	May spread.
Hydrophyllum tenuipes	Pacific waterleaf	bees	Sh	M	May - Jul	W	30"	Y	None.
Iris tenax	Oregon iris	bees	S, PS	D, M	Apr - Jun	B, Pu, W	14"	Y	None.
Lupinus polyphyllus	Bigleaf lupine	bees, butterflies, hummingbirds	S	D, M	May - Jun	B	40"	Y	None.
Mahonia aquifolium	Tall Oregon grape	bees, butterflies	S, PS	D, M	Mar - May	Y	7'	Y	Shrub.
Monardella odoratissima	Coyote mint	bees, butterflies	S, PS	D, M	Jul - Sep-	Pi, Pu, W	2'	Y	None.
Penstemon serrulatus	Cascades penstemon	bees, butterflies	S, PS	M, W	Jun - Aug	B, Pu	30"	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ribes sanguineum	Red current	bees, butterflies, moths, hummingbirds	S, PS	D, M	Mar - Jun	R, Pi	10’	Y	Shrub.
Rosa nutkana	Nootka rose	bees, moths	S, PS	D, M	Jun - Jul	Pi	6’	Y	Shrub. May spread.
Sidalcea campestris	Meadow checkermallow	bees	S	D, M	Jun - Jul	Pi, W	3’	Y	None.
Symphoricarpos albus	Common snowberry	bees, moths, hummingbirds	S, PS	M	Jun - Jul	Pi, W	6’	Y	Shrub. May spread.
Symphyotrichum subspicatus	Douglas aster	bees, butterflies	S	M	Aug - Sep	Pu, B	4’	Y	May spread.

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1. B. 24. Prairie Parkland (Subtropical) Province (#30 on Figure 1)

ECOREGION DESCRIPTION

Rolling, flat plains form this subtropical prairie province. The majority of the area is gently sloping, with elevations ranging from sea level to 1,300 feet. Many streams and rivers through the province empty out into the Gulf of Mexico along the Texas coast. Winters are warm and summers are hot. Average annual precipitation ranges from 35 inches in the north to 55 inches along the south coast, where areas can be frost-free. The region is dominated by short and medium-to-tall grasses dominated by bluestem, with tree species, such as post oak, blackjack oak, and hickories, interspersed. Fine, heavy soils support grasslands, while coarse, lighter soils support mixed savanna. Marshes can occur 5 to10 miles inland along the coast. Soils consist of Mollisols, Alfisols, and Verisols, with dry alfisols associated with the drier savannas, and the other soil types associated with prairies.

Tinker Air Force base is located in central Oklahoma near Oklahoma City, toward the northern edge of this province that borders the Gulf Coast. It is located at 1,270 feet elevation. Annual precipitation ranges between 32 to 36 inches per year. Supplemental irrigation is recommened to initially establish plants for landscaping. Continued irrigation may be used to maximize growth and bloom production. A few species may be limited to only landscaping or in situations where wetland, drainage areas, or rain gardens are used.

In the Bailey's classification system this Province is given code 255.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias tuberosa	Butterfly milkweed	bees, butterflies	S	D, M	May - Sep	O	1-3’	Y	Important monarch butterfly host plant.
Asclepias viridis	Green milkweed	bees, butterflies	S	M	Apr - Sep	W, Y, Pu	1-3’	Y	Important monarch butterfly host plant.
Cephalanthus occidentalis	Buttonbush	butterflies, moths, bees	PS, Sh	M	Jun - Sep	W, Pi	6-12’	Y	Keep soil moist. Landscaping only with irrigation. May not be suited for all restoration projects. May be difficult to establish and persist without irrigation. Best for low areas with higher moisture, rain gardens, or along drainage canals. Special value to native bees, especially bumble bees.
Coreopsis lanceolata	Lanceleaf coreopsis	bees, butterflies	S, PS, Sh	D	Apr - Jun	Y	0-1’	Y	Perennial that self seeds. Special value to native bees.
Coreopsis tinctoria	Plains coreopsis	bees, butterflies	S, PS	M	Apr - Jun	Y	1-3’	Y	Annual that reseeds. Very showy and popular.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Dalea aurea	Golden prairie clover	bees, butterflies	S	D	Apr - Jun	Y	1-3’	Y	Special value to native bees, especially bumble bees.
Dalea candida	White prairie clover	bees, butterflies	S	D	May - Sep	W	1-3’	Y	Special value to native bees, especially bumble bees.
Dalea frutescens	Black dalea	bees	S	D	Jul - Oct	Pu	1-3’	Y	Special value to native bees, especially bumble bees.
Dalea purpurea	Purple prairie clover	bees, butterflies	S	D	Jun - Sep	Pu	1-3’	Y	Special value to native bees, especially bumble bees.
Echinacea angustifolia	Purple coneflower	bees, butterflies	S, PS	D	May - Jul	Pi, Pu	1-3’	Y	Special value to native bees.
Gaillardia suavis	Pincushion daisy	bees	PS	D	Mar - May	R, Br	1-3’	Y	Special value to native bees.
Helianthus maxmiliani	Maxmillian sunflower	bees	S	D, M	Aug - Nov	Y	4-6’	Y	Perennial sunflower that self seeds. Special value to native bees.
Liatris punctata	Dotted blazing star	butterflies, bees	S	D	Aug - Oct	Pi, Pu	1-3’	Y	Special value to native bees, especially bumble bees.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Liatris pycnostachya	Prairie blazing star	butterflies, bees	S	D	Aug - Dec	Pi, Pu	3-6’	Y	Special value to native bees, especially bumble bees.
Lobelia cardinalis	Cardinal flower	butterflies, hummingbirds	S, PS, Sh	M, W	May - Oct	R	3-6’	Y	Soil must be kept moist. Landscaping only with irrigation. May not be suited for restoration projects.
Monarda fistulosa	Beebalm, Mexican oregano	bees, butterflies, hummingbirds	S, PS	D, M	May - Sep	W, Pi, Pu	1-3’	Y	Special vlaue to native bees, especially bumble bees.
Oenothera macrocarpa	Missouri evening primrose	moths, bees	S	D	Apr - Aug	Y	0-1’	Y	Special value to native bees.
Rudbeckia hirta	Black-eyed Susan	butterflies, bees	S	D, M	Jun - Oct	Y	1-3’	Y	Annual that reseeds. Very showy and popular.
Salvia coccinea	Scarlet sage	butterflies, hummingbirds	S, PS, Sh	D, M	Feb - Oct	W, Pi, R	1-3’	Y	None.
Silphium laciniatum	Compass plant	bees	S	D	Jul - Sep	Y	4-6’	Y	Special value to native bees, especially bumble bees.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Solidago nemoralis	Prairie goldenrod	bees, butterflies	S, PS, Sh	D	Jun - Oct	Y	1-3’	Y	Very important late season nectar source for migrating monarch butterflies.
Vernonia baldwinii	Western ironweed	butterflies, bees	S	M	Jul - Nov	Pi, Pu	3-6’	Y	Spreads by rhizomes.
Callicarpa americana	American beautyberry	butterflies, bees	PS	M	May - Jul	W, Pi	3-6’	Y	Soil must be kept moist. Landscaping only with irrigation. May not be suited for all restoration projects. May be difficult to establish and persist without irrigation. Best for low areas with higher moisture, rain gardens, or along drainage canals.

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1. B. 25. Prairie Parkland (Temperate) Province (#31 on Figure 1)

ECOREGION DESCRIPTION

The Prairie Parkland (Temperate) Province consists of prairie and deciduous forest habitats mostly from Canada to Oklahoma. Air Force land within the northern and central areas of this Province are located in the Red River Valley (Grand Forks County, North Dakota) and Central Dissected Till Plains (Sarpy County, Nebraska) Sections, respectively. Küchler vegetation types and elevations are bluestem prairie and northern flood plain forest from 825 to 1,150 feet in the Red River Valley, and bluestem prairie and oak-hickory forest from 600 to 1,500 feet in the Central Dissected Till Plains. Local elevation is 3 to 25 feet in the Red River Valley, and 20 to 165 feet in the Central Dissected Till Plains. Growing seasons are 111 to 136 days for the Red River Valley and 160 to 180 days for the Central Dissected Till Plains. Average precipitation is 18 to 23 inches in the Red River Valley and 30 to 40 inches in the Central Dissected Till Plains. Mean annual temperature is 36 to 45°F in the Red River Valley and 50 to 56°F in the Central Dissected Till Plains.

Air Force land within the southern edge of this Province is located in the Osage Plains Section (Whiteman Air Force Base (AFB) in Johnson County, Missouri), which is part of the Central Lowlands geomorphic province. It generally includes the eastern half of Kansas, the central part of Oklahoma, and smaller areas in southwest Missouri and north-central Texas. It is characterized by gently rolling plains and escarpments rising 100 to 300 feet. Soils of the Osage Plains are about 70 percent Mollisols, 20 percent Alfisols (northeast), and 10 percent Ultisols (south). The growing season is 190 to 235 days. Mean annual precipitation is 35 to 41 inches. Mean annual temperature ranges from 55 to 63°F. Küchler vegetation types are mostly a mix of bluestem prairie and oak-hickory forest along drainages. Historically, the Osage Plains Section was 70 percent tallgrass prairie with oak groves, and upland prairie zones sloped into low prairie, sloughs, marshes, and mixed bottomland forest with silver maple, green ash, cottonwood, pecan, pin oak, and bur oak. Today the area is approximately 75 percent pasture and agricultural crops. Two of the more common soils on the Whiteman AFB are Sampsel silty clay loam and Haig silt loam, which support the ecological site types Wet Footslope Prairie and Claypan Summit Prairie, respectively.

The plant list in the table for the Osage Plains Section below focuses on vegetation supported by Wet Footslope Prairie and Claypan Summit Prairie ecological site type. The notes column lists which ecological site type supports the species. Bloom times vary by season and climate conditions. Pollinator species listed in the table are not specific to Whiteman AFB.

In the Bailey's classification system this Province is given code 251.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea millefolium	Western (Common) yarrow	native bees	S, PS	D	Jun - Aug	W	2-3’	Y	None.
Amorpha canescens	Leadplant	native bees	S, PS	D	Jun - Jul	B, Pu	3-6’	Y	Deciduous shrub.
Andro gerardii	Big bluestem	butterflies, native bees	S	D	Aug - Nov	R, B, Br	4-8’	Y	Grass. Special value for native bees. Larval host plant for some skippers.
Asclepias incarnata	Swamp milkweed	butterflies, hummingbirds, native bees, bumble bees, honey bees	S, PS	M, W	Jun - Sep	Pi	2-5’	Y	Plants in genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for monarch and queen butterflies

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias syriaca	Common milkweed	butterflies, native bees, bumble bees, honey bees	S	M	Jun - Aug	Pu	2-5’	Y	Plants in genus *Asclepias* are somewhat toxic to animals and humans. Larval host plant for Monarch butterfly. Common in southern part of ecoregion.
Cleome serrulata	Rocky Mountain beeplant	native bees, honey bees, butterflies, moths	S, PS	D	Jul - Sep	W, Pi	3-6’	Y	Annual. Larval host for checkered white.
Dalea purpurea	Purple prairie clover	butterflies, native bees, bumble bees, honey bees	S	D	Jun - Aug	Pu	8-36”	Y	None.
Echinacea angustifolia	Black-samson echinacea	bees, butterflies	S, PS	D	May - Jul	Pi, Pu	8-24”	Y	None.
Echinacea purpurea	Purple coneflower	native bees, butterflies	S, PS	D, M	Jun - Aug	Pi, Pu	2-4’	Y	None.
Helianthus maximiliani	Maximilian sunflower	bees	S	D, M	Aug - Nov	Y	4-6’	Y	Perennial sunflower that self seeds. Special value to native bees.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Helianthus pauciflorus	Stiff sunflower	native bees	S	D	Jul - Sep	Y	1-7’	ND	Forms colonies via rhizomes (roots).
Liatris punctata	Dotted gayfeather	native bees, bumble bees, butterflies	S	D	Aug - Oct	Pu	1-3’	Y	None.
Oenothera biennis	Common evening primrose	moths, hummingbirds	S, PS, Sh	D	Jul - Sep	Y	3-6’	Y	Biennial. Does well in newly landscaped areas, but generally does not persist in undisturbed sites.
Prunus virginiana	Choke cherry	butterflies, native bees	S, PS	D, M	Apr - Jul	W	12-36’	Y	Perennial shrub. Larval host plant of tiger swallowtail. Not recommended for native grassland reconstruction or restoration.
Ratibida columnifera	Prairie coneflower	bees, butterflies	S	D, M	May - Oct	O, Y	1-3’	Y	None.
Rhus glabra	Smooth sumac	butterflies, native bees, honey bees	S	D	Apr - May	W	6-12’	Y	Perennial shrub. Larval host plant of hairstreak butterfly. Naturally occurs sparsely scattered in prairie landscape.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Schizachyrium scoparium	Little bluestem	butterflies, native bees	S, PS	D	Jun - Dec	W, G, Br	3’	Y	Larval host plant for many skippers. Provides nesting material for native bees.
Solidago missouriensis	Missouri (Prairie) goldenrod	butterflies, native bees, honey bees	S	D	Jul - Sep	Y	1-3’	Y	None.
Solidago rigida	Stiff (-leaved) goldenrod	native bees, honey bees	S	D, M, W	Aug - Oct	Y	1-5’	Y	None.
Sorghastrum nutans	Indiangrass	butterflies, native bees	S, PS, Sh	D, M	Aug - Oct	Y	3-8’	Y	Sod-forming grass. Larval host plant for some skippers. Provides nesting material for native bees.
Symphotrichum ericoides	Many-flowered or White heath aster	native bees	S	D	Aug - Oct	W	1-3’	Y	One of the last plants to remain in flower in autumn.
Verbena stricta	Hoary vervain	butterflies	S	D	Jul - Sep	Pu	3-6’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amorpha canescens	Leadplant	native bees	S, PS	D	Jun - Jul	Pu	1-3’	Y	Subshrub. Claypan Summit Prairie.
Asclepias sullivantii	Prairie (Sallivant) milkweed	butterflies, bumble bees and other native bees, honey bees	S	M, W	Jun - Aug	Pi	1-3’	Y	Larval host plant for monarch. Wet Footslope and Claypan Summit Prairies.
Asclepias tuberosa	Butterfly milkweed	butterflies, bumble bees and other native bees, honey bees, hummingbirds	S	D, M	May - Jul	Y, O	1-2’	Y	Larval host plant for grey hairstreak, monarch, and queen butterflies Claypan Summit Prairie.
Baptisia alba	White wild indigo	bumble bees and other native bees	S	D, M	Apr - Jul	W	1-3’	Y	Wet Footslope and Claypan Summit Prairies.
Baptissia bracteata	Long-bract wild indigo	native bees, bumble bees	PS	M	Mar - Jun	Y	1-3’	Y	Claypan Summit Prairie.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ceanothus americanus	New Jersey tea	butterflies, native bees	PS, S	D, M	May - Apr	W	1-3’	Y	Shrub. Larval host plant for spring azure (*Celastrina ladon*), mottled duskywing (*Erynnis martialis*), and summer azure (*C. neglecta*). Claypan Summit Prairie.
Chamaecrista fasciculata	Partridge pea	butterflies, bumble bees and other native bees	S, PS	D, M	Jun - Oct	Y	1-3’	Y	Annual. Larval host plant for cloudless giant sulpher, orange sulphur, and sleepy orange butterflies. Claypan Summit Prairie.
Cornus racemosa	Gray dogwood	butterflies	S, PS, Sh	M	May - Jun	W, G	16’	Y	Larval host plant for spring azure (*C. ladon*). Claypan Summit Prairie.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Dalea candida	White prairie-clover	butterflies, bumble bees and other native bees, honey bees	S	D	May - Sep	W	1-2’	Y	Larval host plant for the dogface butterfly. Wet Footslope Prairie.
Desmodium illinoensis	Illinois bundleflower	butterflies	S	M	May - Sep	W	1-3’	Y	Wet Footslope and Claypan Summit Prairies.
Eryngium yuccifolium	Rattlesnake master, Button eryngo	native bees	S	M	May - Aug	W	3-6’	Y	Wet Footslope and Claypan Summit Prairies.
Eupatorium perfoliatum	Boneset	butterflies, native bees	S, PS, Sh	M, W	Jun - Oct	W	3-6’	Y	Wet Footslope Prairie.
Helenium autumnale	Sneezeweed	butterflies, native bees	S	M	Jul - Oct	Y	2-5’	Y	Poisonous to humans. Wet Footslope Prairie.
Liatris pycnostachya	Thickspike gayfeather, Prairie blazingstar	butterflies, native bees	S	D, M	Jul - Oct	Pu	2-5’	Y	Wet Footslope and Claypan Summit Prairies.
Panicum virgatum	Switchgrass	butterflies	S, PS	D, M	Aug - Nov	G, B	3-6’	Y	Larval host plant for the Delaware skipper, most banded skippers, and most satyrs. Wet Footslope and Claypan Summit Prairies.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Penstemon digitalis	Smooth penstemon	bumble bees, hummingbirds	S, PS	D, M, W	May - Jul	W	2-5’	Y	Wet Footslope Prairie.
Phlox pilosa	Downy phlox	butterflies, skippers, long-tongued bees	S, PS	D	Mar - May	W, Pi, Pu	1-2’	Y	Claypan Summit Prairie.
Physostegia virginiana	False dragonhead	butterflies, hummingbirds	S, PS, Sh	M	Aug - Nov	Pi, Pu	3-6’	Y	Wet Footslope Prairie.
Pycnanthemum tenuifolium	Narrow-leaf mountain-mint	butterflies, bumble bees and other native bees, honey bees	S, PS	D, M	Jun - Sep	W	20-30”	Y	Wet Footslope and Claypan Summit Prairies.
Quercus palustris	Pin oak	butterflies, hummingbirds	S, PS, Sh	M, W	Mar - May	Y, G, Br	60-100’	Y	Larval host plant for gray hairstreak. Wet Footslope Prairie.
Rosa Carolina	Carolina rose	bumble bees and other native bees	S, PS	D, M, W	May - Jun	Pi	1-3’	Y	Plant has thorns or prickles. Provides nest materials for native bees. Wet Footslope and Claypan Summit Prairies.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Rudbeckia hirta	Black-eyed Susan	butterflies	S	D, M	Jun - Oct	Y	1-3’	Y	Larval host plant for Gorgone checkerspot and bordered patch butterfly. Wet Footslope Prairie.
Ruellia humilis	Wild (Prairie) petunia	butterflies	PS	M	May - Sep	Pu	1-2’	Y	Larval host plant for buckeye. Wet Footslope Prairie.
Rudbeckia subtomentosa	Sweet coneflower	native bees	PS	M	Jul - Sep	Y	1-4’	Y	Wet Footslope Prairie.
Schizachyrium scoparium	Little bluestem	butterflies	S, PS	D	Jun – Dec	W, G, Br	3’	Y	Larval host plant for skippers (Ottoe, Indian, crossline, dusted and Dixie) and cobweb butterfly. Provides nesting material for native bees. Wet Footslope and Claypan Summit Prairies.
Silphium laciniatum	Compassplant	butterflies, bumble bees and other native bees	S	D	Jun - Sep	Y	3-12’	Y	Wet Footslope Prairie.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Solidago missouriensis	Missouri goldenrod	butterflies, native bees, honey bees	S	D	Jul - Sep	Y	1-2’	Y	Wet Footslope and Claypan Summit Prairies.
Sorghastrum nutans	Indiangrass	butterflies, native bees	S, PS, Sh	D, M	Aug - Oct	Y	3-8’	Y	Sod-forming. Provides nest material for native bees. Larval host plant for pepper- and salt- skipper. Wet Footslope and Claypan Summit Prairies.
Sporobolus heterolepis	Prairie dropseed	native bees (nest material)	S	D	Jun - Aug	Pi, Y, G, Br	1-3’	Y	Provides nest material for native bees. Wet Footslope and, Claypan Summit Prairies.
Symphyotrichum ericoides	White heath aster	butterflies, native bees	S, PS	D, M	Aug - Oct	W, Pi, Y, B	1-3’	Y	Wet Footslope Prairie.
Symphyotrichus oolenangiense	Skyblue aster	butterflies, native bees	S, PS, Sh	D, M	Sep - Nov	B, Pu	1-3’	Y	Wet Footslope Prairie.
Teucrium canadense	American germander	butterflies	PS	M	May - Aug	W, Pi	1-3’	Y	Wet Footslope Prairie.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Tripsacum dactyloides	Eastern gamagrass	butterflies	PS	M	Apr - Jun	Br	2-3’	Y	Larval host plant for bunchgrass skipper. Wet Footslope and Claypan Summit Prairies.
Tradescantia ohiensis	Bluejacket, Ohio spiderwort	bumble bees and other native bees	PS	D	Mar - Aug	Pu	2-3’	Y	Wet Footslope Prairie.
Vernonia baldwinii	Baldwin ironweed	butterflies, native bees	S	M	Jul - Nov	Pu	3-5’	Y	Claypan Summit Prairie.
Ziza aurea	Golden alexanders	butterflies, native bees	S, PS	M	Apr - Aug	Y	16-24”	Y	Larval host plant for the black swallowtail butterfly. Wet Footslope Prairie.

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1. B. 26. Sierran Steppe-Mixed Forest-Coniferous Forest-Alpine Meadow Province (#32 on Figure 1)

ECOREGION DESCRIPTION

Temperatures average 35 to 52°F, but decrease with increasing elevation. The base of the west slope receives about 10 to 15 inches of rainfall annually and has a long dry summer. At higher elevations, the dry summer season is shorter. Precipitation at higher elevations is as much as 70 inches, with mostfalling as snow. Winter precipitation makes up 80 to 85 percent of the total. Slopes between 3,000 and 7,000 feet support the luxuriant mixed conifer forests of the montane zone and have the most precipitation. The subalpine zone has the greatest snowfall, with precipitation of 40 to 50 inches annually. This region encompasses 68,300 square miles within California and Southern Oregon. Elevations range from 1,500 to over 14,000 feet. Common tree species include blue oak, digger pine, ponderosa pine, Jeffrey pine, sugar pine, Douglas-fir, California red fir, incense cedar, lodgepole pine, whitebark pine, and western white pine. Much of this region has been glaciated. Sierran ecosystems are impacted by loggers, miners, ranchers, water diverters, off-road-vehicle enthusiasts, and resort developers. The soils in this region are Ultisols, Entisols and Alfisols. Ultisols are extensive on mountain slopes where air is humid. Dry Alfisols predominate at lower elevations. Entisols occupy the narrow floodplains and alluvial fans of the valleys.

In the Bailey's classification system this Province is given code M261.

NATIVE PLANT LIST

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea millefolium	Yarrow	bees, butterflies	S, PS	D, M	Mar - Nov	W, Pi	1-2'	N	None.
Aconitum columbianum	Western monkshood	bees	PS, Sh	D, M	Jun - Aug	B-Pu	1-6'	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Aquilegia formosa	Red columbine	bees, hummingbirds, moths	PS, S	M, W	Apr - Aug	R	1-4’	Y	None.
Arbutus menziesii	Pacific madrone	bees, hummingbirds,	S, PS	D, M	Apr - May	W	20-50’	Y	Needs well-drained soils.
Arctostaphylos uva-ursi	Bearberry	bees, hummingbirds	S	D	Dec - May	W, Pi	6”-1.5’	Y	Tree/shrub. Other native *Arctostaphylos* (manzanita) species would also support pollinators.
Arctostaphylos viscida	White sticky leaf manzanita	bees, hummingbirds	S	D	Dec - May	W, Pi	2-16’	Y	Tree/shrub. Other native *Arctostaphylos* (manzanita) species would also support pollinators.
Asclepias speciosa	Showy milkweed	bees, beetles, butterflies	S	D, M	May - Aug	W, Pi	1-3’	Y	Host plant for monarch larvae.
Aster chilensis	Western aster	bees, butterflies	S	M, W	Jul - Nov	Pu	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Ceanothus cordulatus	Mountain whitethorn, Snowbush	bees, butterflies	S	M, D	Mar - Jun	W	6”-10’	Y	Tree/shrub. Needs moisture in winter/spring. Tolerates dry summer. Requires good drainage. Other native species of *Ceanothus* would also support pollinators.
Ceanothus cuneatus	Buckbrush	bees, butterflies	S	M, D	Mar - Jun	W, B, Pu	6”-10’	Y	Tree/shrub. Needs moisture in winter/spring. Tolerates dry summer. Requires good drainage. Other native species of *Ceanothus* would also support pollinators.
Cercis occidentalis	Western redbud	bees, moths, hummingbirds	S, PS	D, M	Mar - May	Pi	10-18’	Y	None.
Cirsium andersonii, C. occidentalis	Native thistles	butterflies, hummingbirds	S	D	Jun - Aug	R	2-4’	N	Host plant for painted lady.
Cornus nuttallii	Pacific dogwood	bees	S, PS, Sh	D, M	Apr - Jun	W	20-50’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Dicentra formosa	Western bleeding heart	bees, hummingbirds	PS, Sh	M, W	Mar - Jul	Pi	1-2’	Y	Host plant for clodius parnassian.
Delphinium nudicaule	Canyon larkspur	bees, hummingbirds	PS	M	Mar - Jun	R	1-3’	Y	None.
Epilobium canum	California-fuchsia	hummingbirds	S	D	Jul - Oct	R	1-2’	Y	None.
Eriogonum elongatum	Long stem buckwheat	bees, beetles, butterflies	S	D	May - Nov	W, Pi, Y	4”-4’	N	Host plant for some butterflies. Other species of native buckwheat will also support pollinators.
Eriogonum dasyanthemum	Chaparral buckwheat	bees, beetles, butterflies	S	D	May - Nov	W, Pi, Y	4”-4’	N	Host plant for some butterflies. Other species of native buckwheat will also support pollinators.
Fremontodendron californicum	Flannel bush	bees	S, PS, Sh	M	Apr - May	Y	8-20’	Y	Tree/shrub. Found in well-drained soils.
Rhamnus californica	California coffeeberry	bees	S, PS	D, M	May - Jun	G	3-15’	Y	Tree/shrub.
Rhododendron occidentale	Western azalea	bees, butterflies	Sh, PS, S	M, W	Jun - Jul	W, Pi, Y	6-10’	Y	Tree/shrub.

Scientific name	Common name	Pollinators expected	Light preference	Moisture preference	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Rosa californica	Wild rose	bees, butterflies	S, PS	D, M	May - Jun	Pi	3-6’	Y	Tree/shrub.
Sambucus mexicana	Blue elderberry	bees, butterflies	S, PS	M	May - Oct	W	8-20’	Y	Tree/shrub.
Spiraea densiflora	Mountain spiraea	butterflies	S, PS	M, W	Jun - Jul	Pi	2-3’	Y	Tree/shrub. Host plant for spring azure.
Styrax officinalis	Western snowdrop bush	bees, butterflies	S, PS	D	Apr - Jun	W	3-14’	Y	Tree/shrub.

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1. B. 27. Southeastern Mixed Forest Province (#33 on Figure 1)

ECOREGION DESCRIPTION

This province includes the Piedmont and the irregular Gulf Coastal Plains. Relief in the Piedmont is 300 to 1,000 feet. The flat coastal plains have gentle slopes rising less than 100 feet. The climate is fairly uniform with mild winters and hot humid temperatures. The growing season is long, but frosts occur nearly every winter. Precipitation, averaging 40 to 60 inches, is mostly evenly distributed throughout the year, but peaks slightly in early spring and midsummer. Snow is rare. Climax communities are dominated by broadleaf deciduous and needle leaf evergreen trees, including oak, hickory, sweetgum, black gum, red maple, and winged elm, loblolly shortleaf pine and southern yellow pine. Common understory shrubs include dogwood, viburnum, haw, blueberry, American beautyberry, yaupon and numerous woody vines. The West Gulf coast is characterized by marsh grass.

In the Bailey's classification system this Province is given code 231.

NATIVE PLANT LIST

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Aesculus parviflora	Bottlebrush buckeye	butterflies, bees, hummingbirds	PS	M	Apr - May	Y, G, W	6-12'	Y	Shrub/small tree. Beautiful flowers that bloom well into summer.
Aquilegia canadensis	Eastern red columbine	butterflies, bees, hawk moths, hummingbirds	S, PS	D, M	Feb - Jul	R, Y	20-30"	Y	Showy. Drought tolerant. Propagates for years.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias amplexicaulis	Clasping milkweed	butterflies, bumble bees and other native bees, honey bees	S	D	May - Aug	Pi, G, Pu	3’	Y	Host plant for monarch butterfly larvae.
Asclepias tuberosa	Butterfly weed	butterflies, native bees, honey bees, hummingbirds	S	D, M	May - Sep	O, Y	1-2’	Y	Showy. Tolerates drought. Host plant for monarch, queen, and grey hairstreak butterfly larvae.
Aster novae-angliae	New England aster	butterflies, bees	PS	M	Aug - Oct	Pu, B, W	3-6’	Y	Host plant for pearl crescent and checkerspot butterfly larvae.
Baptisia australis var australis	Blue wild indigo	butterflies, bumblebees and other native bees	S, PS	D	Apr - Jul	B, Pu	2-4’	Y	Host plant for wild indigo duskywing. Can substitute *B. alba* (white).
Ceanothus americanus	New Jersey tea	butterflies, bees, wasps, beetles,flies, hummingbirds	S	D	Jun - Jul	W, B	1-4’	W	Drought tolerant. Host plant for mottled duskywing, spring azure, and summer azure.
Coreopsis verticillata	Threadleaf coreopsis	butterflies, syphrid flies, honey bees	S, PS	D	May - Jul	Y	18-24”	Y	High drought tolerance. Can substitute *C.auriculata or C. lanceolata.*

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Echinacea purpurea	Purple coneflower	butterflies, bees, hummingbirds	S, PS	D	Apr - Sep	Pi, Pu	1-3’	Y	Attracts large numbers of native bees. Host plant for silvery checkerspot butterfly.
Eupatorium fistulosum	Joe pye weed	butterflies, bees	S	M	Aug - Sep	Pi	5-8’	y	Great rain garden plant. Butterfly magnet.
Eupatorium hyssopifolium	Hyssop-leaf eupatorium	butterflies, bees	S, PS	D	Aug - Oct	W	18-36”	Y	Does well in a grassy meadow.
Helianthus resinosus	Hairy sunflower	butterflies, bees	S, PS	D	Jun - Sep	Y	1-4’	Y	Other native sunflower species can be substituted.
Ilex opaca	American holly	butterflies, bees	S, PS,	D, M	Mar - Jun	W, G	25-60’	Y	Red berries in winter. Important to native bees. Host plant for Henry’s elfin butterfly.
Liatris spicata	Blazing star	butterflies, bees, hummingbirds	S, PS	M, W	Jul - Aug	Pu, W	1-46’	Y	Tall, showy flowers. Tidy appearance.
Liriodendrum tulipifera	Tulip poplar	butterflies, bees, hummingbirds	S, PS	M	Apr - Jun	Y, O	150’	Y	Larval host plant for tiger swallowtail butterfly.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Monarda didyma	Bee balm	butterflies, bees, moths, hummingbirds	S, PS	M, W	May - Sep	R	2-4’	Y	Could substitute *Monarda fistulosa*. Host plant for hermit sphinx moth and orange mint moth.
Monarda punctata var. punctata	Eastern horsemint, Spotted bee balm	butterflies, bees, moths, wasps, hummingbirds	S	D, M	Apr - Aug	Pu, Pi, W,Y	1-3’	Y	Showy, fragrant flowers. Drought tolerant.
Passiflora incarnata	Purple passion vine	butterflies bees	S, PS	D, M	Apr - Sep	Pi, B, Pu	Vine	Y	Show. Can use on fence or trellis. Host plant for Gulf fritillary variegated fritillary, zebra longwing, plebian sphinx.
Rudbeckia hirta	Black-eyed Susan	butterflies, bees, beetles,	S	D, M	Jul - Aug	Y	1-3.5’	Y	Host for silvery checkerspot butterfly larvae.
Schizachyrium scoparium	Little bluestem	butterflies	S	D, M	Aug - Feb	W, G, Br	2-4’	Y	Native, warm season grass. Larval host plant for swarthy, cobweb, Meske’s, crossline, arogos, and dusted skippers.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Solidaago odora	Goldenrod	butterflies, bees	S	M	Jul - Oct	Y	3-6’	Y	Showy fall bloomer. Can look weedy, but is easily kept in bounds. Attracts birds.

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1. B. 28. Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow Province (#34 on Figure 1)

ECOREGION DESCRIPTION

This 102,300 square mile province includes parts of six states and covers the southernmost portion of the Cascade Mountains, the northern Coast Range, the Klamath Mountains, and the Sierra Nevada. Most of the area is covered with steeply sloping to precipitous mountains crossed by many valleys with steep gradients. The west slope of the Sierra Nevada rises gradually from 2,000 to over 14,000 feet. The east slope drops abruptly to the floor of the Great Basin at about 4,000 feet. Much of this region has been glaciated.

Temperatures average 35 to 52°F, but fall with increasing elevation. The base of the west slope receives about 10 to 15 inches of rainfall annually and has a long, dry summer. At higher elevations, the dry summer is shorter, and there is up to 70 inches of precipitation, with most falling as snow. Prevailing west winds influence climatic conditions for the whole region. East slopes are much drier than west slopes. Most (80 to 85 percent) precipitation occurs in the winter. The greatest total precipitation reported is on slopes between 3,000 and 7,000 feet. These slopes support the mixed conifer forests of the montane zone. The subalpine zone has the greatest snowfall with 40 to 50 inches of precipitation annually.

Vegetation zones are distinct. The lower slopes and foothills, from about 1,500 to 4,000 are covered by conifers and shrubs. On higher slopes, digger pine and blue oak dominate, forming open or woodland stands. Most low hills are covered by close-growing evergreen scrub, or chaparral, with buckbrush and manzanita predominant. Several oaks are common associates. The montane zone is between about 2,000 and 6,000 feet in the Cascades, 4,000 and 7,000 feet in the Central Sierras, and 5,000 and 8,000 feet or more in the south. The most important trees in this zone are ponderosa pine, Jeffrey pine, Douglas-fir, sugar pine, white fir, red fir, and incense cedar. The giant sequoia grows only in a few groves on the western slope. Dense chaparral communities of manzanita, buckbrush, and buckthorn may appear after fire, sometimes persisting for years. Within the Sierran rain shadow, on the dry eastern slopes, Jeffrey pine replaces ponderosa pine. At lower elevations, pine forests are replaced by sagebrush-pinyon forest, part of the Intermountain Desert Province. The subalpine zone begins at 6,500 to 9,500 feet, depending on latitude and exposure, and extends upslope about 1,000 feet. Mountain hemlock, California red fir, lodgepole pine, western white pine, and whitebark pine are important. Conditions are severe in the subalpine zone, and timberline varies from about 7,000 feet in the north to 10,000 feet in the south. Lodgepole pine is said to have climax characteristics near the upper limits of this zone. The alpine zone covers the treeless areas above timberline. Plant bloom times will vary with climatic factors and elevations.

In the Bailey's classification system this Province is given code M331.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea millefolium var.occidentalis	Western yarrow	native bees, beetles, butterflies, flies	S, PS	D	Jun - Aug	W	2-3’	Y	Available, but not commonly available for landscaping.
Anaphalis margaritacea	Western pearly everlasting	bees, butterflies	S, PS	M, D	Jul - Sep	W with Y	3’	Y	Food plant or painted lady and American lady butterflies. Larval host plant for skippers and American painted ladies.
Aquilegia caerulea	Colorado blue columbine	hawksmoths and other long tongued insects, hummingbirds	Sh	M	Jun - Sep	B with W and Y	2’	Y	None.
Arctostaphylos uva-ursi	Kinnikinnick	bees, butterflies, hummingbirds	PS, Sh	D, M	Mar - Jul	Pi-W	6-8”	Y	Special value to native bees. Larval host plant for hoary elfin, freija fritterlary, brown elfin, and elf. Adult food source for Rocky Mountain clearwing.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Arnica cordifolia	Heartleaf arnica	bees, beetles	PS, Sh	M	May - Aug	Y	6-24”	Y	None.
Calochortus gunnisonii	Gunnison’s mariposa lily	bees, moths	S	M	May - Aug	W-Pu	18”	Y	None.
Campanula rotundifolia	Bluebell bellflower	bees	S, PS, Sh	D, M	May - Sep	B	15”	Y	None.
Castilleja integra	Wholeleaf Indian paintbrush	hummingbirds	S	D	May - Aug	R-O	20”	Y	Larval host plant for fulvia checkerspot
Chamerion angustifolium	Fireweed	bees, moths, hummingbirds	S, PS	D, M	Jun - Sep	Pi, R-O	4-6’	Y	May become a weed. Larval host plant for white lined sphinx moth.Special value to native and honey bees.
Delphinium nuttallianum	Twolobe larkspur	bees, hummingbirds	S, PS	D, M	Jun - Jul	B, Pu, W	1-3’	Y	Plants can be fatally poisonous to humans and animals.
Ericameria parryi	Parry’s rabbitbrush	bees, butterflies	S	D	Jul - Sep	Y	8-24”	Y	None.
Erigeron peregrinus	Subalpine fleabane	bees, butterflies	PS	M	Jul - Aug	W, Pi, B, Pu	30”	Y	None.
Erigeron speciosus	Aspen fleabane	bees, butterflies	S	D, M	Jun - Aug	B with Y	1-3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Gaillardia aristata	Common gaillardia	bees, butterflies, moths	S	D, M	May - Sep	Y with O	10-24”	Y	Special value to native bees.
Geranium richardsonii	Richardson’s geranium	bees, beetles	S, PS	M	May - Aug	Pi, W, Pu	4-36”	Y	None
Heterotheca villosa	Hairy false golden aster	flies, butterflies, wasps, native bees, bumble bees, honey bees	S	D, M	May - Sep	Y	2-4’	Y	None
Ipomopsis aggregate	Scarlet gilia	moths, hummingbirds	PS	D, M	May - Sep	R, W	3’	Y	Plant blooms red in May to early Jul and is hummingbird pollinated. Blooms white in late Jul to Sep and is moth pollinated.
Jamesia americana	Fivepetal cliffbush	bees, butterflies	S	D	Apr - Jun	G-W	6’	Y	None
Ligusticum porteri	Porter’s licorice-root	flies, beetles, bees, wasps	Sh	M	Jun - Oct.	W, R, Y	2-6’	Y	Plant blooms white in Jun through Aug, red in Sep and yellow in Oct.
Linum lewisii	Lewis flax	bees, flies	S, PS	D, M	Apr - Aug	B	2-3’	Y	Special value to native bees.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Lonicera involucrate	Twinberry honeysuckle	bees, butterflies, hummingbirds	S, PS	M, W	Jul - Aug	Y	10’	Y	Special value to bumble bees.
Lupinus argenteus	Silvery lupine	bees, birds, hummingbirds	S, PS, Sh	D, M	Jun - Sep	B, W, Pi	1.5’	Y	Special value to bumble bees and other native bees. Host plant for several butterflies.
Mahonia repens	Creeping barberry	butterflies, native bees	S, PS, Sh	D, M	Apr - Jul	Y	6-24”	Y	Special value to native bees.
Mertensia lanceolata	Prairie bluebells	bees	PS	M	Jun - Jul and Sep - Oct	B, B-W	2’	Y	Blooms blue-white in Septmber only.
Monarda pectinate	Pony beebalm	bees, wasps	S	M	May - Aug	Pi, B, Pu	1.5’	Y	Special value to bumble bees and other native bees.
Oxytropis lambertii	Purple locoweed	bees	S	M	May - Jul	Pu	1.4’	Y	None.
Pedicularis procera	Giant lousewort	bees	PS	M	Jul - Aug	W, Pi, Y	3.5’	Y	None.
Penstemon strictus	Rocky Mountain penstemon	bees, hummingbirds	S, PS	D, M	May - Jul	B, Pu	1’-3’	Y	Special value to native bees. Host plant for anucia checkerspot
Phacelia sericea	Silky pacelia	bees, flies	PS	M	Jun - Aug	W, B, Pu	6-16”	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Physocarpus monogynus	Mountain ninebark	bees, beetles	S, PS, Sh	D, M	Jun - Aug	W	6’	Y	Special value to native bees.
Purshia tridentata	Antelope bitterbrush	moths	S, PS	D	Apr - Jul	W, Y	2-6’	Y	Special value to native bees.
Ratibida columnifera	Prairie coneflower	bees, butterflies	S	D, M	Jun - Sep	O, Y	18-24”	Y	Occurs in plains and foothills.
Ribes montigenum	Gooseberry currant	bees, birds, butterflies	PS	M	Jun - Aug	R, Pi, O	1’		None.
Rosa woodsii	Woods’ rose	bees, beetles, hummingbirds	S, PS, Sh	D, M	May - Jul	Pi	4-5’	Y	Special value to bumble bees and other native bees; Provides nesting material for native bees.
Rudbeckia hirta	Black-eyed Susan	butterflies	S	D, M	Jun - Aug	Y with Br	1-3’	Y	Larval host plant for bordered patch, Gorgone checkerspot, and silvery checkerspot.
Sambucus racemosa	Red elderberry	bees, moths, beetles, butterflies, hummingbirds	S, PS, Sh	M, W	May - Jun	W	10-20’	Y	Provides nesting material for native bees.
Symphoricarpos rotundifolius	Roundleaf snowberry	bees	Sh	M	Jun - Aug	Pi-W	3’	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Symphotrichum laeve	Smooth blue aster	bees, butterflies	S, PS	M	Jul - Sep	B with Y	2-3’	Y	Special value to native bees.
Thermopsis montana	Mountain goldenbanner	bees	S, PS	D, M, W	May - Aug	Y	2’	Y	None.
Vicia americana	American vetch	bees	S	M	May - Sep	Pu	vine	Y	Special value to native bees.

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1. B. 29. Southwest Plateau and Plains Dry Steppe and Shrub Province (#35 on Figure 1)

ECOREGION DESCRIPTION

The Southwest Plateau and Plains Dry Steppe and Shrub Ecoregion extends from temperate, semi-arid plains of northeast New Mexico, southward to the subtropical, semi-arid Rio Grande delta. Major subdivisions within this range include the Llano Estacado – Playa Lakes of the Texas Panhandle and eastern New Mexico; the Edwards Plateau, Post-Oak Savanna, and Blackland Prairies of central Texas; Gulf Coast Marshes and Grasslands; and the Rio Grande Plains, South Texas Sand Plain, and Tamaulipan Shrublands of south Texas. Climate, soils, and underlying geology are extremely variable, and elevations range from sea level to about 5,000 feet The ecoregion lies entirely east of the Rocky Mountains and Sierra Madre Oriental of Mexico. The region has no uplifted mountains with the exception of an arc of small, Cretaceous-era extinct volcanoes along the southeast edge of the Edwards Escarpment. The Edwards Plateau is characterized by exposed limestone and areas of steep, karst topography. Elsewhere, alluvial soils predominate.

In the Bailey's classification system this Province is given code 315.

The list of plants provided below is best suited for Cannon Air Force Base (Cannon AFB) and Melrose Air Force Range (Melrose AFR). The Notes column indicates indicates Air Force lands where use of the plant would be appropriate.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Amorpha fruticosa	False indigo bush	bees	S	M	Apr	Pu	4-8’	Y	Shrub with long stems. Very attactive flower spikes. Cannon AFB, Melrose AFR.
Asclepias asperula	Antelope horns	butterflies, bees, bumblebees, wasps	S	D, M	Mar - Apr	W with Pu	1-2’	Y	Needs well-drained soil. Primary growth in spring. May emerge in late summer with rain. Periodically emerges from perennial tubers, then dies back during dry weather. Host plant for monarch butterfly. Latex is toxic - isolate plants from small children. Cannon AFB, Melrose AFR.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Asclepias oenotheroides	Zizotes milkweed	butterflies, bees, bumblebees, wasps	S	D	Aug - Oct	W-Y-G	1-3’	Y	Needs well-drained soil. Primary growth in late summer and fall. Periodically emerges from perennial tubers, then dies back during dry weather. Host plant for monarch butterflies. Latex is toxic - isolate plants from small children. Cannon AFB, Melrose AFR.
Berlandiera lyrata	Texas green-eyes	bees, wasps, flies	S	M	May - Jul	Y with G	2-4’	Y	Cannon AFB, Melrose AFR.
Callirhoe involucrata	Purple poppymallow	bees	S	D	Mar - May	R-Pu	1’	Y	A perennial winecup. Needs well-drained soil. Cannon AFB, Melrose AFR.
Ceanothus herbaceus	Jersey tea	butterflies	S	D	Mar - May	W	3.5’	Y	Rounded sub-shrub. Needs well-drained soil. Drought tolerant. Cannon AFB, Melrose AFR.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Dalea candida	White prairie clover	bees	S	D	Jun - Aug	W	2-3’	Y	Needs well-drained soil. Palatable to deer. Cannon AFB, Melrose AFR.
Dalea frutescens	Black dalea	bees	S	D	Jul - Oct	Pu with W	1-3’	Y	Rounded shrub. Needs well-drained soil. Very drought resistant. Several other Daleas to consider include D. *aurea* (Y flowers) and *D. multiflora* (W flowers). Cannon AFB, Melrose AFR.
Dalea aurea	Golden prairie clover	bees, butterflies	S	D	Jun - Jul	Y	0.5-2.5	Y	Needs well-drained soil. Palatable to deer. Cannon AFB, Melrose AFR.
Engelmannia peristenia	Engelmann daisy	butterflies	S	D	Mar - Jul	Y	0.5-2’	Y	Needs well-drained soil. Browsed by deer. Cannon AFB, Melrose AFR.
Gaillardia suavis	Pincushion daisy	butterflies	S	D	Mar - May	Y, O	1-2.5’	Y	A perennial *Gaillardia.* Needs well-drained soil. Cannon AFB, Melrose AFR.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Liatris mucronata	Cusp blazing star	bees, bumblebees	S	D	Aug - Oct	Pu-B	2-3’	Y	Needs well-drained soil. Drought resistant. Excellent late nectar for bees. Cannon AFB, Melrose AFR.
Lobelia cardinalis	Cardinal flower	hummingbirds	S	M	Jul - Oct	R	1-4’	Y	Good for rain gardens. Cannon AFB, Melrose AFR.
Melampodium leucanthum	Plains blackfoot	bees, wasps, flies	S	D	Apr - Oct	W	0.5-1.5’	Y	Needs well-drained soil. Blooms thorughout growing season. Cannon AFB, Melrose AFR.
Nyctaginia capitata	Scarlet musk-flower	moths	S	D	Mar - Nov	R-O	0.5-1.5’	Y	Needs well-drained soil. Sprawling stems from perennial rootstock. Cannon AFB, Melrose AFR.
Penstemon cobaea	Foxglove beardtongue	bees, bumblebees	S, PS, Sh	D	Apr - May	W-Pu	1-2.5’	Y	Needs well-drained soil. One of several native Penstemons. All have beautiful flowers. Browsed by deer. Cannon AFB, Melrose AFR.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Salvia azurea	Giant blue sage	bees	S, PS, Sh	D	Sep - Oct	B	3-6’	Y	Good shade plant. Cannon AFB, Melrose AFR.
Salvia farinacea	Mealy blue sage	bees	S, PS, Sh	M	Apr - Sep	B	1-3’	Y	Good shade plant. Cannon AFB, Melrose AFR.
Solidago canadensis	Canada goldenrod	bees	S, PS, Sh	D, M	Jul - Oct	Y	7’	Y	Good plant for moist soils. Spreads aggressively by rhizomes. Cannon AFB, Melrose AFR.
Thelesperma simplicifolium	Navajo tea	butterflies	S	D	May - Nov	Y	1-3’	Y	Rounded, leafless sub-shrub with green stems. Needs well-drained soil. Drought tolerant. Cannon AFB, Melrose AFR.

These plants are best suited for plantings in Central Texas, including Joint Base San Antonio (JB-SA); Seguin Auxiliary Field (Seguin); Canyon Lake Recreational Area (Canyon Lake); Goodfellow AFB (Goodfellow); and Dyess Air Force Base (Dyess). The Notes column indicates indicates Air Force lands where use of the plant would be appropriate.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Ageratina havanensis	Havana snakeroot	butterflies	S, PS, Sh	D	May - Nov	W	1-5’	Y	Needs well-drained soil. Shade tolerant. Excellent butterfly plant. JB-SA, Seguin, Canyon Lake.
Allowissadula holosericea	Velvet-leaf mallow	butterflies	S, PS, Sh	M	Jun - Oct	Y, O	2-6’	Y	Sub-shrub with arching stems. Needs well-drained soil. JB-SA, Seguin, Canyon Lake.
Amorpha fruticosa	False indigo bush	bees	S	M	Apr	Pu	4-8’	Y	Shrub with long stems. Very attractive flower spikes. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Asclepias asperula	Antelope horns	butterflies, bees, bumblebees, wasps	S	D, M	Mar - Apr	W with Pu	1-2’	Y	Needs well-drained soil. Host plant for monarch butterfly. Primary growth in spring. May emerge in late summer with rain. Periodically emerges from perennial tubers, and dies back during dry weather. Latex is toxic - isolate plants from small children. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Asclepias oenotheroides	Zizotes milkweed	butterflies, bees, bumblebees, wasps	S	D	Aug - Oct	W-Y-G	1-3’	Y	Needs well-drained soil. Host plant for monarch butterfly. Primary growth in late summer and fall. Periodically emerges from perennial tubers, and dies back during dry weather. Latex is toxic - isolate plants from small children. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Callirhoe involucrata	Purple poppymallow	bees	S	D	Mar - May	R-Pu	1’	Y	A perennial winecup. Needs well-drained soil. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Conoclinium coelestinum	Blue mist-flower	butterflies	S, PS, Sh	M	Jul - Oct	Pu-B	1-4’	Y	Shade tolerant. Excellent butterfly plant. JB-SA, Seguin, Canyon Lake.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Dalea frutescens	Black dalea	bees	S	D	Jul - Oct	Pu with W	1-3’	Y	Rounded shrub. Needs well-drained soil. Very drought resistant. Other Daleas to consider are *D. aurea* (Y flowers) and *D. multiflora* (W flowers). JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Echinacea angustifolia	Narrow-leaf coneflower	bees	S	D	May - Jun	Pu-B	1-2.5’	Y	Needs well-drained soil. Browsed by deer. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Engelmannia peristenia	Engelmann daisy	butterflies	S	D	Mar - Jul	Y	0.5-2’	Y	Needs well-drained soil. Browsed by deer. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Eysenhardtia texana	Texas kidneywood	bees	S	D	May - Sep	W	4-10’	Y	Rugged, drought-resistant shrub. Needs well-drained soil. Blooms after rain. Flowers pleasantly fragrant. JB-SA, Seguin, Canyon Lake.
Helianthus maximiliani	Maximilian sunflower	butterflies	S	M	Aug - Oct	Y	4-8’	Y	Needs well-drained soil. Forms colonies through rhizomes. Excellent nectar plant for fall monarchs. Browsed by deer. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Liatris mucronata	Cusp blazing star	bees, bumblebees	S	D	Aug - Oct	Pu-B	2-3’	Y	Needs well-drained soil. Drought resistant. Excellent late nectar for bees. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Nyctaginia capitata	Scarlet musk-flower	moths	S	D	Mar - Nov	R-O	0.5-1.5’	Y	Needs well-drained soil. Sprawling stems from perennial rootstock. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Penstemon cobaea	Foxglove beardtongue	bees, bumblebees	S, PS, Sh	D	Apr - May	W-Pu	1-2.5’	Y	Needs well-drained soil. One of several *Penstemons* native to area. All have beautiful flowers. Browsed by deer. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Salvia azurea	Giant blue sage	bees	S, PS, Sh	D	Sep - Oct	B	3-6’	Y	Good shade plant. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.
Salvia coccinea	Tropical sage	bees	S, PS, Sh	D, M	Feb - Oct	R	1-3’	Y	Good shade plant. JB-SA, Seguin, Canyon Lake.
Salvia farinacea	Mealy blue sage	bees	S, PS, Sh	M	Apr - Sep	B	1-3’	Y	Good shade plant. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Senna lindheimeriana	Lindheimer senna	butterflies, bumble bees	S	D, M	Sep - Nov	Y	2-4’	Y	Arching stems with velvety foliage. JB-SA, Seguin, Canyon Lake.
Silphium simpsonii var. wrightii	Simpson rosinweed	butterflies	S	D, M	Jul - Sep	Y	2-6’	Y	Probably not widely available, but highly desirable. JB-SA, Seguin, Canyon Lake.
Solidago nemoralis	Gray goldenrod	butterflies, bees, bumblebees	S	D	Sep - Oct	Y	2-3’	Y	Needs well-drained soil. Excellent fall nectar plant. Substitute *Solidago altissima* (up to 6 ft tall) on moist sites. JB-SA, Seguin, Canyon Lake.
Verbesina virginica	Frostweed	butterflies	S, PS, Sh	D, M	Aug - Nov	W-G	3-6’	Y	Good understory plant. Excellent nectar for fall monarchs. JB-SA, Seguin, Canyon Lake.
Vernonia lindheimeri	Woolly ironweed	bees	S	D	Jul - Sep	Pu-B	2-3’	Y	Rounded sub-shrub. Needs well-drained soil. Drought-resistant. JB-SA, Seguin, Canyon Lake, Goodfellow, Dyess.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for land-scaping?	Notes
Viguiera dentata	Goldeneye	butterflies	S, PS, Sh	D	Sep - Oct	Y	3-6’	Y	Needs well-drained soil. Good understory plant. JB-SA, Seguin, Canyon Lake.
Wedelia texana	Orange zexmenia	butterflies	S	D	Apr - Nov	Y	2-3’	Y	Needs well-drained soil. Drought resistant. JB-SA, Seguin, Canyon Lake.

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1. B. 30. Upper Yukon Tayga - Meadow Province (#48 on Figure 2)

ECOREGION DESCRIPTION

This section covers the Yukon flats portion of the Province. "The vegetation pattern in the area is complex. Forests of white spruce, paper birch, and quaking aspen cover most lower slopes in the south and southfacing slopes in the north. Black spruce forest vegetation grows at higher elevations, on all northfacing slopes in the south, on all but steep southfacing slopes in the north, and on lower slopes with impeded soil drainage throughout the area. Above the black spruce forest, the vegetation is alpine meadow characterized by sedges on poorly drained sites and by low-growing shrubs on drier sites" (Bailey, 1995).

In the Bailey's classification system this Province is given code M139.

NATIVE PLANT LIST

Note that this list is most appropriate for the southcentral portion of this province near Eielson Air Force Base and Birch Lake Recreation Annex.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Achillea borealis	Common yarrow	bees, butterflies, beetles, moths	S	D	Jun - Aug	W	3-36"	Y	Forb. May not be commercially available.
Aquilegia formosa	Western columbine	bees, butterflies, hummingbirds	PS	D, M	May - Aug	R with Y	1-3"	Y	Forb.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Arctostaphylos uva-ursi	Kinnikinnik	bees, butterflies, moths, ants	S, PS	D, M	May - Jun	W with Pi	3-8'	Y	Low growing shrub. May not be commercially available.
Chamaedaphne calyculata	Leatherleaf	bees	S	M	May	W	36"	Y	Shrub. May not be commercially available.
Cornus canadensis	Dwarf dogwood	bees, beetles, flies, moths	PS	D, M	Jun	W	4-8"	Y	Low growing shrub.
Epilobium angustifolium	Fireweed	bees, butterflies	S	D, M	Jun - Aug	Pi	2-5'	Y	None.
Ledum palustre	Labrador tea	bees, beetles, flies	PS	D, M	Jun	W, Pi-W	10-30"	Y	Shrub.
Lupinus arcticus	Arctic lupine	bees, butterflies	S	D, M	Jun - Jul	B	15-36"	Y	None.
Mertensia paniculata	Blue bells	bees, butterflies	PS	D, M	May - Jul	B	2'	Y	None.
Myrica gale	Sweet gale	birds	S, PS, Sh	M	Jul - Aug	Y-G	6'	Y	Shrub. Wetland species. Provides food and nesting habitat for native birds.
Polemonium acutiflorum	Jacob's ladder	bees, butterflies	S	D	Jul - Aug	B-Pu	10-36"	Y	None.
Ribes triste	American red currant	bees	S, PS	M	May - Jun	R	12-36"	Y	Shrub. May not be commercially available.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Rubus chamaemorus	Cloudberry	bees, flies	PS, Sh	M	May - Jun	W	1-3'	Y	Low growing shrub. May not be commercially available.
Salix bebbiana	Bebb willow	bees	S	M	May	Y	2-23'	Y	Shrub. Used as riparian forest buffers to reduce stream bank erosion. May not be commercially available.
Shepherdia canadensis	Russet buffalo berry	flies	S, PS, Sh	D	May	Y	36"	Y	Slow growing shrub. Good for erosion control. May not be commercially available.
Spiraea beauverdiana	Spiraea	bees, beetles, flies, moths	PS	D, M	Jun - Aug	W	10-30"	Y	None.
Vaccinium uliginosum	Bog berry	bees	S	M	May - Jun	W	6-16"	Y	Shrub.
Vaccinium vitis-idaea	Lingonberry	bees, ants	PS	D, M	May - Jun	Pi	3-8"	Y	Low growing shrub. May not be commercially available.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Flower color	Height	Suitable for landscaping	Notes
Viburnum edule	Highbush cranberry	bees, flies, moths	S, PS, Sh	M	Jun - Jul	W	2-8'	Y	Shrub. Important food source for over-wintering birds.

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1. B. 31. Yukon Intermontane Plateaus Tayga Province (#49 on Figure 2)

ECOREGION DESCRIPTION

"The major river bottoms support dense white spruce- cottonwood-poplar forests on floodplains and southfacing slopes up to about 1,000 ft. The undergrowth is dense shrubbery formed by green and thinleaf alder, willow, dogwood, and berries. The outer valley edges support evergreen and coniferous forests, often with pure stands of black spruce. The undergrowth consists of willow, dwarf birch, crowberry, fern, blueberry, lichens, and mosses. Upland areas are generally covered by a rather dense white spruce-birch-aspen-poplar forest. Pure stands of white spruce grow near streams. Typical undergrowth includes willow, alder, fern, berries, grasses, and mosses. Root systems are shallow. Water balance is likely the factor limiting growth in most of these areas because of the hot, dry summer climate. Old river terraces, ponds, and sloughs contain scattered but extensive bogs where the vegetation is chiefly sphagnum and other mosses, sedges, bog rosemary, and Labrador-tea. Marginal areas may support willow and alder" (Bailey, 2005).

In the Bailey's classification system this Province is given code 131.

Note that this list is most appropriate for the (Interior Alaska) eastern portion of this province near Clear Airforce base.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Achillea borealis	Common yarrow	bees, butterflies, beetles, moths	S	D	Jun - Aug	W	3-36"	Y	May not be commercially available.
Aconitum delphinifolium	Monkshood	bees, butterflies	S	D, M	Jun - Aug	Pu	2-4'	Y	May not be commercially available.
Arctostaphylos uva-ursi	Kinnikinnik	bees, butterflies, moths, ants	S, PS	D, M	May - Jun	W with Pi	3-8'	Y	Low growing shrub. May not be commercially available.
Cornus canadensis	Dwarf dogwood	bees, beetles, flies, moths	PS	D, M	Jun	W	4-8"	Y	Low growing shrub.
Delphinium glaucum	Mountain larkspur	bees, butterflies	S	D, M	Jun - Aug	Pu	4-6'	Y	May not be commercially available.
Dodecatheon frigidum	Shooting stars	bees	S	D, M	Jun	Pu-Pi with Y or W	10-15"	Y	None.
Epilobium angustifolium	Fireweed	bees, butterflies	S	D, M	Jun - Aug	Pi	2-5'	Y	None.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Hedysarum alpinum	Alpine sweet vetch	butterflies	S, PS, Sh	M	Jun - Jul	Pi, Pu	1-2'	Y	Special value to native bees. May not be commercially available.
Ledum palustre	Labrador tea	bees, beetles, flies	PS	D, M	Jun	W, Pi-W	10-30"	Y	Shrub.
Lupinus arcticus	Arctic lupine	bees, butterflies	S	D, M	Jun - Jul	B	15-36"	Y	None.
Mertensia paniculata	Blue bells	bees, butterflies	PS	D, M	May - Jul	B	2'	Y	None.
Polemonium acutiflorum	Jacob's ladder	bees, butterflies	S	D	Jul - Aug	B-Pu	10-36"	Y	None.
Potentilla fruiticosa	Shrubby cinquefoil	bees, butterflies, beetles, flies	S	D, M	Jun - Jul	Y	18-36"	Y	Shrub.
Pulsatilla patens	Pasque flower	bees, butterflies	PS	D, M	May - Jun	Pu	6-8"	Y	May not be commercially available.
Rosa acicularis	Wild rose	bees, butterflies, beetles, flies	S	D, M	Jun - Jul	Pi	2-6'	Y	Shrub.
Spiraea beauverdiana	Spiraea	bees, beetles, flies, moths	PS	D, M	Jun - Aug	W	10-30"	Y	None.
Vaccinium ovalifolium	Oval-leaf blueberry	bees	S, Sh	M	May	Pi	3-6'	Y	Shrub.

Scientific name	Common name	Pollinators expected	Light preference	Soil moisture	Bloom time	Bloom color	Height	Suitable for landscaping?	Notes
Vaccinium uliginosum	Bog berry	bees	S	M	May - Jun	W	6-16"	Y	Shrub.
Vaccinium vitis-idaea	Lingonberry	bees, ants	PS	D, M	May - Jun	Pi	3-8"	Y	Low growing shrub.

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SECTION 2: SUPPLEMENTAL INFORMATION ON PLANTING

SECTION 2. A. PREPARING FOR PLANTING

HIGHLIGHTS

- Basic methods for vegetation removal are:
  - Mow and cover
  - Till repeatedly
  - Alternate tilling and use of a non-persistent herbicide
  - Use horticultural vinegar or a non-persistent broad-spectrum herbicide

Some or all of the existing vegetation may need to be removed before planting native species for a restoration or landscaping project. If all of the vegetation on a site must be removed, there are four basic methods for doing this:

1. ***Mow and cover*** - It may be feasible to mow a relatively small area, then cover the area with cardboard, newspaper or uv-stabilized plastic. Leave the covering in place for a growing season or year to smother and/or solarize all existing vegetation. If using plastic, water the area before laying down the plastic. Be sure to weight down the edges to prevent air flow, which would reduce the temperature and increase the time necessary to kill all of the existing on-site vegetation (Lee-Mäder, et al., 2013; Mader, et al., 2011).

2. ***Till repeatedly*** - Use sod cutter or roto-tiller to till the vegetation once or twice a month, depending on the amount and persistence of the vegetation, for a growing season. After tilling smooth and tamp the area with a soil rake or turf roller. If using a sod cutter, remove the sod and re-use elsewhere or compost it. If using a rototiller, a spring tilling (up to six inches) is recommended to break up perennial weeds, followed by monthly shallow tilling (one inch) to kill germinating weeds. More weeds may germinate, and thus be removed by tilling, if the area is watered. By fall, the area should be ready for planting. Remember to call the local utility before tilling (Mader, et al., 2011).

3. ***Alternate tilling and use of a non-persistent herbicide*** - Tilling and herbicide use should be done periodically throughout the growing season. Follow label instructions for herbicide amounts and application frequency; applications that do not follow label recommendations can be ineffective and thus prolong the time needed to properly prepare an area for planting or seeding (Mader, et al., 2011).

4. ***Use horticultural vinegar or a non-persistent broad-spectrum herbicide*** - Horticultural vinegar and herbicides must be used on actively growing plants. Follow label instructions for herbicide amounts and application frequency. Applications that do not follow label recommendations can be ineffective and thus prolong the time needed to properly prepare an area for planting or seeding (Lee-Mäder, et al., 2013; Mader, et al., 2011).

Remember with these more extensive treatments, the goal is to remove the vegetation as well as any invasive plant seeds in the soil.

SECTION 2. B. STANDARD PLANTING TECHNIQUES

2. B. 1. Using plants

HIGHLIGHTS

- Spring and fall are ideal times to plant
- Winter planting is best in the west
- Fall seeding is usually ideal
- Sources of technical assistance on planting:
    - USDA Extension
    - Master Gardeners
    - USDA Plant Material Centers

HELPFUL WEBLINKS

- USDA Extension Offices: https://nifa.usda.gov/land-grant-colleges-and-universities-partner-website-directory?state=All&type=Extension&=Apply
- USDA Plant Material Centers: https://www.nrcs.usda.gov/wps/portal/nrcs/main/plantmaterials/pmc/

Planting can take place throughout the growing season. Spring and fall are ideal as plants will not dry out as quickly. In the west, especially in the desert, winter planting is best so plants can utilize winter rains to establish before the heat of summer begins. Place plants deep enough in the ground so that the roots are entirely covered. Watering may be needed during the first season or two until the plants are well-established. Mulching will reduce but not eliminate the need for watering. See *Technical Guidance* Section 2.B.1 for additional details (Galea, et al., 2016; Hopwood, et al., 2015; Mader, et al., 2011; USDA and DOI, 2015).

2. B. 2. Using seed

HIGHLIGHTS

- Fall seeding is usually ideal
- Common seeding methods include:
  - Hand-scattering
  - Mechanical broadcasting
  - Use of seed drills
  - Hydro seeding
  - Interseeding
- After seeding, keep area moist until germination
- Fencing may be needed if deer are abundant

Planting seed during the fall is usually ideal since some perennial plant seeds require exposure to cold temperature or moisture to germinate. Some species, such as legumes, may do better in the spring. Habitat restoration strategies need to consider the potential for reinvasion and competition with non-native species at different times during the growing season. Review species-specific treatment requirements before planting, such as sowing in flats, storage in a cold (with or without moisture) or a warm area environment (called stratification), breaking the seed coat (called scarification), or inoculation with nitrogen-fixing bacteria (for legumes). Plant at seeding rates recommended by the seed supplier or other expert. Consider site-specific objectives in determining seeding rates. Relatively high proportions of grass seed can inhibit forb establishment and survival (Anderson and Bailey, 2010; Hopwood, et al., 2015; Mader et al., 2011).

Several methods can be used for planting seeds, including:

1. ***Hand-scattering*** - If an entire area is to be seeded, make two perpendicular passes over the area for more even coverage. Then cover the seeds with a thin layer of mulch to prevent them from washing away. A covering of mulch is not needed if seeds are scattered over snow on a sunny day in the late winter as the seeds will move through the melting snow into the soil. Hand-scattering is the most appropriate for landscaping (Hopwood, et al., 2015; Mader, et al., 2011).

2. ***Mechanical broadcasters*** - Make two perpendicular passes over the area for more even coverage. Cover the seeds with a thin layer of mulch. Use of mechanical broadcasters is appropriate for larger, more natural restoration areas (Hopwood, et al., 2015; Mader, et al., 2011).

3. ***Seed drills*** - Seed drills can be used at sites with some stubble, require less seed than scattering, and can better control the planting depth and spacing of seeds. Use of seed drills is appropriate for larger, more natural restoration areas (Hopwood, et al., 2015; Mader, et al., 2011).

4. ***Hydro seeding*** - Spray area with a mix of water, mulch, and seed. This method may be useful on slopes, in culverts, and in wet areas because it reduces erosion. Hydro mulch is expensive and makes it more difficult to control seeding rate (Hopwood, et al., 2015).

5. ***Interseeding*** - Seeds are planted into an area with existing vegetation using one of the methods above. The area is not cleared of vegetation prior to seeding. This method is most suitable if the project area already has a healthy stand of native flowering plants or grasses, and needs to be enhanced with a few more species (e.g., to have blooms in early spring). It will take longer for interseeded species to establish. Interseeding is easy and inexpensive compared to other methods. Planting by this method can even be part of a public Earth Day event using "seed balls" (See box) (Anderson and Bailey, 2010).

How to make "seedballs"

- Mix clay with native seeds in a 3:1 ratio
- Moisten and form into one half inch balls
- Let dry overnight
- Toss into area to be interseeded

Common seeding techniques for restoration in arid and semi-arid western rangelands include: (1) using minimum till drills with small seed boxes built to deliver small forb seeds; (2) seeding forbs and grasses at different times, in separate rows, and in recommended amounts to avoid competition between native forbs and grasses; and (3) covering newly planted seed with weed-free hay to capture moisture, where practicable. Adjustments may be needed depending on the habitat being restored and the plant species mix (USDA and DOI, 2015).

Keep the soil moist until the seeds germinate. Plants may need supplemental water during the first growing season or two. If water is not available at the site time the planting to be before annual rainfall or late spring snowfalls. Reseeding or interseeding may be needed after the second season to increase the variety of plant species or if there is too much bare, exposed soil. If deer are abundant in the area, it may be necessary to fence the area or otherwise protect the more vulnerable plants until they are well-established (Anderson and Bailey, 2010; Galea, et al., 2016; Hopwood, et al., 2015; Mader, et al, 2011; USDA and DOI, 2015).

Seeding (photo: USFWS)

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