

<i>Ratibida columnifera</i>				
(upright prairie coneflower)				
Phase	No. 1	No. 2	No. 3	No. 4
Initial Growth	Y N ?	Y N ?	Y N ?	Y N ?
Leaves	Y N ?	Y N ?	Y N ?	Y N ?
Flowers or flower buds	Y N ?	Y N ?	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?	Y N ?	Y N ?
Fruits	Y N ?	Y N ?	Y N ?	Y N ?
Ripe fruits	Y N ?	Y N ?	Y N ?	Y N ?
Recent fruit or seed drop	Y N ?	Y N ?	Y N ?	Y N ?

<i>Acer negundo</i>					
(boxelder)					
Phase	No. 1	No. 2	No. 3	No. 4	No. 5
Breaking leaf buds	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Leaves	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Increasing leaf size	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Colored leaves	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Falling leaves	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Flowers or flower buds	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Pollen release (non-conifers)	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Fruits	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Ripe fruits	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?
Recent fruit or seed drop	Y N ?	Y N ?	Y N ?	Y N ?	Y N ?

<i>Syringa vulgaris</i>			
(common lilac)			
Phase	No. 1	No. 2	No. 3
Breaking leaf buds	Y N ?	Y N ?	Y N ?
All leaf buds broken	Y N ?	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?	Y N ?
Full flowering	Y N ?	Y N ?	Y N ?
End of flowering	Y N ?	Y N ?	Y N ?

DENVER BOTANIC
GARDENS
Chatfield

Chatfield Phenology Walk

Part of Denver Botanic Gardens Phenology Trail

Distance: ~ 0.7 miles; Time: ~ 90 minutes

Match plant # to plant sign #.

Fill **ALL** boxes in that column.
(Phenophases described on other side.)

For each phase, circle: Y, N or ? (uncertain)

REMEMBER: Knowing when a plant is NOT in a phenophase is as important as knowing when it IS.

NOTE: Phenophases are not necessarily in order of occurrence

Date: _____

Time: _____ AM PM

Snow on ground?: YES NO

% of ground covered?: _____ %

Snow in treetops?: YES NO

<i>Yucca glauca</i>		
(soapweed yucca)		
Phase	No. 1	No. 2
Flowers or flower buds	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?
Fruits	Y N ?	Y N ?
Ripe fruits	Y N ?	Y N ?
Recent fruit or seed drop	Y N ?	Y N ?

<i>Amorpha canescens</i>		
(leadplant)		
Phase	No. 1	No. 2
Breaking leaf buds	Y N ?	Y N ?
Leaves	Y N ?	Y N ?
Increasing leaf size	Y N ?	Y N ?
Colored leaves	Y N ?	Y N ?
Falling leaves	Y N ?	Y N ?
Flowers or flower buds	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?
Fruits	Y N ?	Y N ?
Ripe fruits	Y N ?	Y N ?
Recent fruit or seed drop	Y N ?	Y N ?

<i>Buchloe dactyloides</i>	
(buffalograss)	
Phase	No. 1
Initial Growth	Y N ?
Leaves	Y N ?
Flower heads	Y N ?
Open flowers	Y N ?
Pollen release (non-conifers)	Y N ?
Fruits	Y N ?
Ripe fruits	Y N ?
Recent fruit or seed drop	Y N ?

<i>Populus tremuloides</i>		
(quaking aspen)		
Phase	No. 1	No. 2
Breaking leaf buds	Y N ?	Y N ?
Leaves	Y N ?	Y N ?
Increasing leaf size	Y N ?	Y N ?
Colored leaves	Y N ?	Y N ?
Falling leaves	Y N ?	Y N ?
Flowers or flower buds	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?
Pollen release (non-conifers)	Y N ?	Y N ?
Fruits	Y N ?	Y N ?
Ripe fruits	Y N ?	Y N ?
Recent fruit or seed drop	Y N ?	Y N ?

<i>Achillea millefolium</i>			
(common yarrow)			
Phase	No. 1	No. 2	No. 3
Initial Growth	Y N ?	Y N ?	Y N ?
Leaves	Y N ?	Y N ?	Y N ?
Flowers or flower buds	Y N ?	Y N ?	Y N ?
Open flowers	Y N ?	Y N ?	Y N ?
Fruits	Y N ?	Y N ?	Y N ?
Ripe fruits	Y N ?	Y N ?	Y N ?
Recent fruit or seed drop	Y N ?	Y N ?	Y N ?

FOR MORE INFORMATION, INCLUDING MAPS OF ALL WALKS, GO TO:
<http://www.botanicgardens.org/science/plant-fungi/phenology>

There is also a mobile app available on NPN's website.

For a map of this and the other Phenology Walks, scan this code:

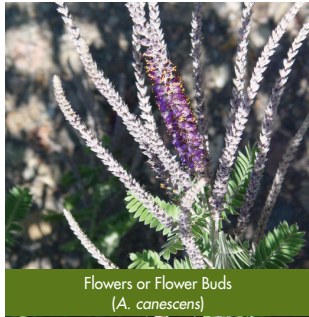


Look for this logo on plant signs



All leaf buds broken (*S. vulgaris*)

Photo © Peggy Hanson



Flowers or Flower Buds
(*A. canescens*)

Photo © Cristina Meyers



Open flowers (*A. millefolium*)

Photo © Mary VB Goshorn



Open Flowers (male-L, female-R)
(*B. dactyloides*)

Photo © Robert Soreng,
USDA-NRCS PLANTS Database



Open Flowers (male) (*P. tremuloides*)

Photo © Lorna Morris



Fruits (female) (*P. tremuloides*)

Photo © Paul Alaback

Code	Phenophase	Description — Note: Phenophases are <u>not</u> necessarily in order of occurrence —
LEAF PHASES	Initial growth	New growth visible after no growth (winter or drought); either buds with green tips, or new shoots breaking through the soil. Growth is considered "initial" <u>until</u> the first leaf has fully unfolded.
	Breaking leaf buds	One or more breaking leaf buds are visible. A leaf bud is considered "breaking" once a green leaf tip is visible at the end of the bud, but <u>before</u> the first leaf from the bud has unfolded to expose the leaf stalk (petiole) or leaf base.
	All leaf buds broken (lilac only)	For the whole plant, the widest part of a new leaf has emerged from virtually all (95-100%) of the actively growing leaf buds.
	Leaves	One or more live, fully unfolded leaves are visible. For seedlings, consider only true leaves and do not count the one or two small, round or elongated leaves (cotyledons) that are found on the stem almost immediately after the seedling germinates. Do not include fully dried or dead leaves.
	Increasing leaf size	A majority of leaves on the plant have not yet reached their full size and are still growing larger. Do not include new leaves that continue to emerge at the ends of elongating stems throughout the growing season.
	Colored leaves	One or more leaves (including any that have recently fallen from the plant) have turned to their late season colors. Do not include fully dried or dead leaves that remain.
	Falling leaves	One or more leaves are falling or have recently fallen from the plant.
FLOWER PHASES	Flower heads (grasses only)	One or more fresh flower heads (inflorescences) are visible. Flower heads, which include many small flowers arranged in spikelets, emerge from inside the stem and gradually grow taller. Include flower heads with unopened or open flowers, but do not include heads whose flowers are wilted or dried.
	Flowers or flower buds	One or more fresh open or unopened flowers or flower buds are visible. Include flower buds that are still developing, but do not include wilted or dried flowers. For <i>Populus tremuloides</i> , both male and female inflorescences are catkins, which are initially compact, but eventually unfold to become longer.
	Open flowers	One or more open, fresh flowers are visible. Flowers are considered "open" when the reproductive parts (male stamens or female pistils) are visible between or within unfolded or open flower parts (petals, floral tubes or sepals), or can be seen protruding from the spikelet (grasses). Do not include wilted or dried flowers. For <i>Populus tremuloides</i> , the flowers will open once the initially compact catkin has unfolded and is hanging loosely.
	Full flowering (lilac only)	For the whole plant, virtually all (95-100%) of the flower clusters no longer have any unopened flowers, but many of the flowers are still fresh and have not withered.
	End of flowering (lilac only)	For the whole plant, virtually all (95-100%) of the flowers have withered or dried up and the floral display has ended.
	Pollen release (non-conifers)	One or more flowers on the plant release visible pollen grains when gently shaken or blown into your palm or onto a dark surface.
FRUIT PHASES	Fruits	One or more fruits are visible. For <i>Acer negundo</i> , the fruit is two joined seeds in a "V" shape, each seed having a wing, that changes from reddish or green to tan and drops from the plant. For <i>Achillea millefolium</i> , the fruit is very tiny and seed-like and is crowded into a tiny spent flower head; the seed-like fruit changes from whitish-yellow or yellow-green to tannish and drops from the plant. For <i>Amorpha canescens</i> , the fruit is a very small, hairy pod that changes from green to dark brown. For <i>Buchloe dactyloides</i> , the fruit is a grain that is enclosed in a tiny hardened covering (a bur), grouped into tight clusters partially enclosed in bracts on the seed head, that changes from soft or watery to hard and drops from the plant. For <i>Populus tremuloides</i> the female catkins turn green and lengthen as the fruits develop, a tiny capsule that changes from green to brown and splits open to expose seeds with white fluff. <i>P. tremuloides</i> trees are either male or female, so you won't see fruit if the tree is male! For <i>Ratibida columnifera</i> , the fruit is very tiny and seed-like and is crowded into a spent flower head; the seed-like fruit changes from whitish-yellow or greenish-yellow to dark-gray or blackish and drops from the plant.
	Ripe fruits	One or more ripe fruits are visible. (See "Fruits" above for specific descriptions of ripe fruit.)
	Recent fruit or seed drop	One or more mature fruits or seeds have dropped or been removed from the plant since your last visit. Do not include obviously immature fruits that have dropped before ripening, such as in a heavy rain or wind, or empty fruits that had long ago dropped all of their seeds but remained.