HABITAT KITS

PLANTING GUIDE

BACKGROUND

Thank you for your interest in the Utah Pollinator Habitat Program! This planting guide has been developed to help answer questions and offer guidance to assist in the planting of your awarded habitat kit. By planting native plants, you are helping conservation efforts to benefit pollinators across the State. With pollinator populations experiencing drastic declines over the last decade, collective conservation efforts to increase available habitat are one proactive way we can help secure a future for pollinators. For ongoing maintenance of your pollinator habitat, please see the 'Maintenance Guide' and the 'Plant Information Sheets' available on the Utah Pollinator Habitat Program website: (https://ag.utah.gov/farmers/conservation-division/pollinator-program/)

KIT CONTENTS

Our team of biologists, native plant specialists, ecologists and conservationists have strategically designed habitat kits with a selection of native plants to benefit a wide array of native pollinators across the state. Selected plant combinations will provide needed food resources for spring, summer and fall as well as structural diversity that may benefit various species and provide overwintering habitat. All kits will contain native milkweeds, a host plant for monarch butterflies (used selectively for a portion of their lifecycle) which are nationally recognized as a species of concern. Kits may vary by region and differ slightly based on plant and seed availability. Kit contents may change by year as we learn of additional needs and gain access to desirable seed species. Local greenhouses, plant and seed producers are used whenever possible to acquire and grow-out needed species.

Currently, there are two different habitat kits available for planting in Utah: 1) Utah Upland Kit, and 2) Utah Wetland Kit. Upland kits will contain plants suitable for drier areas and well-draining soils. Wetland kits will contain plants suitable for moist to wet areas and/or water holding soils. Depending on your project needs, you may request and be awarded one or both types of habitat kits. You can find additional growing information for individual species on our website under 'Additional Resources.' (https://ag.utah.gov/farmers/conservation-division/pollinator-program/).

TIPS FOR PLANTING SUCCESS

Once awarded your plant kit, you will be responsible for properly preparing your site, ensuring irrigation is available until establishment, installing the plants, managing weed pressure, and documenting the progress of your project. The selected plants should be ideally suited for your region

but will need help getting started. During the initial establishment phase (1 - 2 years), plant growth is slow and young plants can be easily outcompeted by other established plants and weeds. Diligence and patience during this time is key. Once fully established, many of these native species are vigorous growers and will need little to no additional water to thrive. Please follow our suggested 'best practices' to help ensure your success.

When to Plant

All plant starts awarded in the fall should be placed in-ground during the fall months before they go dormant for winter. Regular watering for the first few weeks will help promote root growth and give plants a chance to establish before winter sets in. Seeds can be spread during the same time as many require Utah's cold, wet, winter conditions to germinate. Seeds do not need special preparations before fall planting but may need to be cold stratified if you are planning on a spring application
(for more information on cold stratification, see:
https://en.wikipedia.org/wiki/Stratification_(seeds)).

Site Preparation

Before planting your kit, you will want to adequately prepare your site to ensure the best chance of successful establishment. ***Site preparation and weed management may be the two most important aspects of successful plantings***. In general, your plants should be well suited for most soil types typically found in Utah, but soil amendments may be desired if you have had soil brought in or altered for developed sites (disclaimer: extremely alkaline soils found in some parts of Utah may be an exception and require additional amendments). If in doubt, a simple soil analysis can be conducted through USU Extension or other resource for a minimal processing fee (https://extension.usu.edu/utah/gardening/soil-testing).

Prepare your site by clearing unwanted weeds, plants and grasses from your planting area that may outcompete your new starts. Various techniques can be used to accomplish this depending on the size of your project, but in general the site can be made ready using smothering (sheet mulching), solarizing (killing vegetation and seeds with plastic, water and sun), sod removal, herbicide application (sparingly and spot treatments), or simply hand pulling smaller spots to incorporate plants into an existing landscape. Detailed descriptions and application for most of these methods can be found on the internet or in the following document:
https://xerces.org/sites/default/files/2018-05/16-027_02_XercesSoc_Organic-Site-Preparation-for-Wildflower-Establishment_web.pdf.

For smaller areas (~1000 square ft or under), smothering and solarizing are recommended as a highly effective, organic means of preparing your site. However, it should be noted that solarizing can require several weeks to months of application before the ground is ready for planting. For larger areas, spot clearing may be more appropriate for plant starts. Tilling is generally not recommended as it damages soil structure and encourages germination of weed seeds that can outcompete native species.

Now is also a good time to assess a water source for your new habitat. Determine where your water source is located and how that might be set up before you attempt to put plants in the ground. Drip lines can be placed before mulching for a cleaner look if desired. If irrigation is

limited or not possible for the selected site, try to determine natural water resources in the area and strategically place starts where they have the best chance for success. Hand-watering will still be needed for a time after planting to get the plants established post-planting.

Mulch if often recommended directly around planted starts to help minimize weed pressure, retain soil moisture, and protect root systems against harsh winter conditions. Decide if you will plan to use mulch or other organic material and where you might source these materials which can sometimes be difficult to obtain in the fall. For native drought-tolerant plants, gravel or pine needles are often recommended as more appropriate mulching materials. Weed fabric is generally not recommended for pollinator sites as it can be detrimental to soils structure and prevent beneficial ground nesting pollinator species from accessing exposed soil needed for overwintering.

Plant Spacing and Configuration

Once your site has been prepared, it is time to determine where to place your plants. The plants selected for your kit should be laid out in 3 ft to 6 ft spacing intervals. A single kit should have enough plants to cover approximately 300ft^2 of project space when placed at these intervals (3 kits awarded should cover approximately 900ft^2). It can be helpful to place potted plants in their preferred locations for visual reference and adjust as needed before placing permanently in the ground.

Referring to our plant descriptions page, you may prefer to strategically arrange plants based on height and bloom times. Taller plants may be placed towards the center or back of your planting space, while shorter plants may be placed towards the front. Similarly, in a meadow setting or wild habitat you may wish to plant taller species in areas with other tall plants and shorter species on edges or borders where they can be seen and adequately utilized by pollinators. Staggering plants appropriately to create varied structure and food resources will best benefit the species utilizing your habitat.

There may be multiples of some native varieties in your kit that can be planted in clump formation, if desired. Keep in mind that all starts should fill out and spread as they continue to establish. Noting how these plants primarily spread (rhizomes, seed production or both) is also important to consider when ultimately determining where to plant based on how the plants may expand and how vigorously they establish.

Once you feel comfortable with the placement of your plants, you can begin installing your starts. Planting is best done in the cooler parts of the day (morning or evening) but can be done at any time. It can be helpful to water plants in their pots prior to in-ground planting, as well as watering the hole in which the plant is to be placed. This helps soften and loosen the roots to ensure better soil contact once placed in the ground. Using a hand trowel or shovel, dig a hole in your desired location slightly larger than your potted plant. Gently remove your plant from the pot and spread out any roots that are concentrated towards the bottom of the pot. Place some loosened soil in the bottom of your hole so the roots have good soil-to-soil contact, adjust your plant height to be level with the surrounding landscape and fill in the hole. Firmly pat or step on the soil surrounding the plant to make sure it is snug in the ground and water thoroughly. You are now on your way to providing a pollinator-friendly habitat!

Seed Packets

Similar to plant starts, we recommend fall planting for all seed packets. Fall plantings typically have better germination rates when exposed to cold, wet, winter conditions that break the seed dormancy cycle. For smaller areas (less than an acre), seeds can be broadcast by hand onto lightly disturbed soils and then lightly covered by a topsoil scattering. The light soil covering will also help protect seeds from foraging animals. Native seeds for much of Utah generally do best when planted either on or just below the soil surface (1/16" to 1/8" depth), but please refer to our 'Plant Information Sheets' for species specific instructions (special considerations for lupine). In general, deep planting of seeds can decrease germination rates (https://ag.utah.gov/farmers/conservation-division/pollinator-program/).

In some instances, it may be helpful to add a courser material to your seed mix before broadcasting such as sand or vermiculite. This is especially useful if you need to increase your mix volume or are concerned about even distribution. Seeds should be spread at a rate of approximately 80-100 seeds per square foot or more. A light watering after seeds have been spread (or planting before a rain event) will help seeds work into the soil surface and result in better germination rates. If fall planting, additional waterings should not be necessary unless you are experiencing especially dry conditions. In that case, seeds should be watered 1-2 times per month.

If fall plantings are not possible, native seeds can be broadcast in the late winter or early spring. Many seeds contained in your given seed mixes will need cold stratification (exposure to cold temperatures for a given time) for best germination rates. Please refer to our 'Seed Information Sheets' to determine which seeds you have that may require stratification before planting (https://ag.utah.gov/farmers/conservation-division/pollinator-program/).

Instructions for cold stratification can be found here:
https://www.missouribotanicalgarden.org/Portals/0/Shaw%20Nature%20Reserve/PDFs/horticulture/Propagation.pdf

Irrigation

Regardless of whether you are planting seeds or starts, all kits and seed packets will require some form of consistent irrigation for the initial establishment phase (one to two years). Irrigation can be set up through drip irrigation, a sprinkler system, or consistent hand watering. Drip irrigation is often the preferred system for plant starts to best encourage selective growth in your habitat. A thick layer of mulch surrounding your starts can help retain soil moisture and is highly recommended. Riparian plants will be less tolerant of drying out and may need more consistent watering than upland plants, but both will require constant attention especially for the first fall post planting. Once plants are well established, you can gradually decrease watering during the fall and spring (which typically experience more frequent rainfall) and focus more on summer months when plants might need supplemental irrigation.

Weed Management

Managing weed pressure is a crucial part of ensuring your new pollinator plants have the best chance of survival to assure they do not get outcompeted by other plants. Weekly weeding will help ensure your new pollinator-friendly plants have the space they need to grow and spread. A thick layer of mulch (pine needles or pea gravel, preferred) applied around your plants can help with weed suppression. Please make sure mulch is not touching the stem of your newly planted start as this could cause rot and kill your plant. Some especially invasive species may require more drastic management approaches. Please refer to our 'Maintenance Guide' for additional information on suggested practices best suited for your site (Maintenance Guide).

Seasonal Maintenance

Annual upkeep will be necessary to keep your pollinator habitat functional and thriving. Leaving fall debris in place can be extremely beneficial to native pollinators that overwinter in hollowed plant stem, leaf debris, bunch grasses, and in the ground. It is highly recommended for all awarded projects to leave an area of your habitat undisturbed and available to pollinators, especially through the winter months. If you wish to 'clean up' your space annually, spring is the preferred time for site maintenance. Cleanup can begin once nightly temperatures stay consistently above 55 degrees for a minimum of one week. This gives pollinators an opportunity to fully emerge from their winter refuge.

In some instances, strategically timed mowing practices can improve pollinator habitat. Mowing has the potential to stimulate new tender growth and encourage additional fall blooms which can supplement resources to fuel pollinators through the long winter months. More detailed information on strategic mowing can found on our 'Maintenance Guide' which provides additional information for suggested management practices.

ADDITIONAL RESOURCES

You may find you need additional resources or support to help guide you on your Utah Pollinator Habitat journey. Information including plant kit availability, project timelines, kit contents and seed packet details can be found on our website (https://ag.utah.gov/farmers/conservation-division/pollinator-program/). There are also some great online resources that contain valuable information for planting native habitat that you may find useful. Please contact program leads if you have additional questions or comments not addressed herein or available online (mindy.wheeler@usu.edu, jdbowcutt@utah.gov).