



UTAH POLLINATOR HABITAT PROGRAM

HABITAT KITS MAINTENANCE GUIDE

BACKGROUND

Now that you have planted your pollinator habitat and have invested the time and effort into planning for and establishing your plants, it's time to think about a long-term maintenance plan to keep your habitat thriving. This maintenance guide serves as a reference to help you understand management strategies that will maintain or improve your habitat. Your chosen maintenance plan will likely depend on several factors including project size, location, timing, regional regulations, access to management tools and resources, and other considerations. The overall goal is to implement the most effective and efficient methods at your disposal that will help create a reliable habitat for native pollinators to utilize with a long-term vision.

It is important to note that planting and maintaining a native habitat is not a maintenance free journey. While it can be a rewarding experience in many ways, native plants generally take longer to establish and can bring a host of unexpected changes to your landscape. Be prepared for some fun surprises (such as plants re-seeding better than expected, new/different pollinators visiting your space, and improved water conservation), as well as challenges (an increase of non-desirable weeds, the need for creative problem solving). One thing you can be certain of is that your habitat will continue to evolve and change as your plants continue to establish, spread, and with careful attention, thrive. In the end, allowing your habitat the time and space it needs to reach its full potential will pay off with a hard-earned result that will benefit both you and local pollinators for many years to come.

MANAGING SMALL SPACES

Smaller habitats are those containing approximately $\frac{1}{4}$ acre to $\frac{1}{2}$ acre of dedicated pollinator space (applicable to minimum habitat size of 100ft²). They can support native seed, wetland, or upland habitats, but plants may be slightly more concentrated and will likely require a smaller scale management approach. Smaller habitats will often benefit from more hands-on maintenance including hand weeding, spot spraying, and possibly strategic mowing.

With habitats that have been fall planted, it is important to give plants enough time in the spring to fully emerge before determining success and beginning maintenance practices. This is especially important for smaller habitats that have incorporated native plant seed, as some may be easily mistaken for non-desirables during the initial leafy growth phase. Mature native plants may be slow to emerge and appear dead with above ground vegetation die-off from the previous winter. Given

adequate time, your pollinator space will eventually reveal what has successfully established to help you determine what might need replacing.

MANAGING LARGE HABITATS

Projects over ½ acre in size with or without varied habitats are considered large pollinator habitats. These habitats may be more spread out and perhaps have a more natural appearance or wild landscape that require broad scale management practices. In general, strategic mowing, grazing, or controlled burning may be more practical approaches to maintaining larger spaces. When implementing your chosen technique, timing, proper planning, and flexibility will be needed. Factors including seasonal bloom times, pollinator activity and resource use, and local weather events will influence the time of day and season when you will carry out these management practices.

MANAGEMENT PRACTICES

The following management practices are detailed below with suggestions on timing, impact, seasonal importance, and space considerations. Your selected method should primarily depend on the size of your habitat and high yield benefits for your local pollinator population (species present, lifecycle needs, etc.).

Mulching

Applied correctly, mulching can be a useful tool to help minimize weed pressure, retain soil moisture, and protect against temperature extremes within your native habitat. Regardless of whether your habitat is small or large, mulching should be considered during the establishment phase of awarded habitat kits. However, mulching should be avoided in areas where native seed packets are spread (as applying mulch can suppress seed germination). Once seeds have successfully germinated and fully emerged, you may wish to use mulch as a control tool around select plants or patches of habitat. Remember to always leave some exposed soil for ground nesting pollinators! Fall and early spring are the best times for mulch applications.

When mulching around newly planted starts, avoid direct contact with the plant stem (retain a 2" to 3" buffer per plant). Apply a 2"- 4" layer of mulch around the base of your new starts to help suppress weeds and encourage plant establishment. Drip irrigation should be placed under your mulching medium. Selecting what type of mulch is best for your habitat will depend on your plant community and nutrient needs within the soil. Keep in mind that native plants need fewer supplemental nutrients that result from the breakdown of organic mulch sources. Pine needles and pea gravel are appropriate selections for many native plants, although other mineral mulches or finely shredded tree mulches can also be used. Avoid the use of large chunks of bark or other coarse materials that may break down and provide an overabundance of organic matter, resulting in fungal problems. We highly discourage the use of all landscape fabrics or weed barriers as they limit ground nesting habitat for pollinators and can be detrimental to the overall soil structure in your habitat.

Weeding

Weeding is perhaps the most time intensive but selective method of maintaining your habitat. This method is highly recommended for smaller habitats where weeding can be practical and efficient. However, it can also be implemented on larger habitats with targeted species in mind (e.g., Dyer's Woad). One benefit of weeding is that due to its selective nature, weeding can be continuous throughout the growing season and conducted at any given time. If weeding in the early spring, make sure you can distinguish between weeds and desirable native plants during initial growth phase when blooms are lacking (especially with the emergence of seedlings). You can maximize your effort with the help of a forked weeding tool and gloves (important for avoiding skin irritation with some species). It is important to do your best to try to remove the entire root system of each weed. Future need for extensive weeding can be reduced by focusing your efforts on weed pulling before plants seed and have a chance to mature and disperse. Make sure to bag and properly dispose of pulled weeds (do not compost), as some plants may continue to mature and drop seed even after being pulled. For more information on noxious weeds of Utah, visit <https://utahweed.org/>.

Strategic Mowing

Timed mowing can be a highly beneficial tool to help improve seasonal habitat for pollinators. Many native plants have evolved with grazing pressure or burn cycles that can be mimicked through strategic mowing. This management strategy can be implemented on smaller or larger habitats, making it the most diverse tool at your disposal for habitat management.

The most important considerations for mowing are frequency and timing (both time of day and seasonal). Mowing should be conducted no more than twice during the growing season. Suggestions for most of Utah include mowing during mid-summer (July 15) and early fall (October 15) for central and northern parts of the state where bloom times are later, and targeted mowing times of late-spring and early fall for warmer parts of the state where bloom times happen earlier season (Southern Utah). In general, bloom abundance and pollinator use should be low when planning your mowing regime to reduce the risk of mortality, especially to larval stages.

Only 30% of your habitat should be mowed at any given time to leave refuge for pollinators in other parts of your habitat. Planned correctly, mowing can help maximize habitat use by creating variation in the structural diversity (plant height, density, and age structure) of your vegetation, increase access to nesting sites for bumblebees and other pollinating insects, and encourage new tender growth and bloom abundance for year-round nutritious forage. To minimize impacts to pollinators consider mowing in patches or strips, selecting no more than 1/3 of your habitat at a time. Blade height should be adjusted to the highest setting (12-16 inches) and mowing speeds should be reduced (no more than 8mph). On large mowers, flush bars can be used to encourage pollinators to escape and rotary or flail mowers will evenly distribute cuttings. Leaving cut debris (mulching) can serve as refuge for pollinators and help retain moisture in the habitat. Avoid early morning and evening mowing when pollinators are less active and therefore less likely to flush to avoid machine encounters.

Livestock Grazing

Some habitat managers may have access to grazing animals (goats, sheep, horses, cattle) that could serve as a method of landscape management. Historically speaking, many native plant species and landscapes have evolved with natural grazing pressure from wild herds so may respond well to this practice as a seasonal management tool. However, grazing can also alter the structure, diversity, and growth patterns of vegetation. Some key considerations when considering livestock grazing include keeping herd size small and implementing a rotational grazing system for short stints only to give pollinator resources a chance to rebound. No more than 50% of your habitat should be grazed at any given time to preserve adequate fuel resources for pollinators. Access to pollen, nectar and seed resources during important lifecycle and migration periods require special consideration when planning your grazing efforts. Grazing should only be conducted when blooms are abundant (to avoid fully depleting important pollinator resources) and butterfly larvae activity on host plants are low to minimize mortality rates. Temporary fencing or other may be used to focus grazing impacts and target desired sites and avoiding trampling of ground nesting sites.

Please keep in mind some plant species may contain low levels of toxicity that could potentially affect livestock, including milkweeds (*Asclepias* spp.) and sneezeweed (*Helenium autumnale* – noted toxicity issues with sheep). However, livestock will typically avoid these plants unless other forage is scarce. Careful observation and obstructing access to noted species may be needed if selecting this method as your preferred management practice.

Controlled Burning

Controlled burning may or may not be a management tool approved regionally for your habitat. Note that controlled burning should only be conducted by qualified and insured individuals or groups with specialized training. Please check regional guidelines before considering this as an option (<https://ffsl.utah.gov/fire/burn-permits-and-fire-code/>). While controlled burning can be a useful tool, it can also have extremely harsh impacts for many pollinator species. Select burning of smaller, controlled patches (30% or less of your habitat per year over a 3-year period) in rotation can provide safe havens for local pollinators and help avoid catastrophic impacts. It can also improve habitat quality for target species if done right. Early spring (April) or late fall (late October to early November) have been suggested as the most beneficial burn times for pollinator habitats in Utah. If early life stages (eggs or caterpillars) are detected, please avoid the use of controlled burning techniques in that region. Under the right conditions, this may be a more practical management application for larger, expansive habitats.

Herbicides/Pesticides

While generally discouraged for pollinator specific habitats, spot spraying select herbicides can be a potentially useful tool for managing highly invasive weeds that can outcompete native plants and impact the ultimate success of establishing your habitat. However, herbicides should be used sparingly in spot applications only during proper times in the plant life cycle. Herbicides have been known to adversely affect plant diversity, native plant productivity, and pollinator populations. ***Use of pesticides including (but not limited to) insecticides, larvicides, rodenticides, fungicides, bactericides, and pesticide mixes are highly discouraged.***

In general, early spring or late fall are the best times to apply targeted spray applications when weeds are most vulnerable in their life stages. Consider wind speed, potential vapor drift, and proximity to nontarget plant species when planning to spray. Selecting herbicides with short life spans and low soil persistence can help minimize residual contact, water table contamination or prolonged retention within your habitat. Please contact your county weed control program for information and/or assistance if needed (<https://utahweed.org/>).

Early morning or late evening applications of herbicide can help ensure pollinator activity is low and pollinators are not visiting potential nectar sources that have been treated. Ideal temperatures for post-emergence applications are between 65°F to 85°F. This targeted temperature range expedites uptake and translocation of the herbicide to the entirety of the plant. Do not spray if heavy wind or frost are in the forecast as applications during these times can have poor results. Additionally, avoid applying herbicide on hot days when temperatures are above 85°F as this can result in vapor drift. In some instances, results can take up to 10 days to a couple weeks to begin showing.

Please avoid the use of any insecticides on or near your pollinator habitat. While insecticides can be effective for targeting certain pests, they are almost always toxic and harmful to native pollinator at various times in their lifecycles. Neonicotinoids are of noted concern because of their systemic nature and persistence in the system (spanning multiple years). It is recommended to avoid the use of pesticides within designated habitats and instead, let natural predation pressures find a balance in the system (For more information about pesticides, please visit the National Pesticide Information Center at <http://npic.orst.edu/>).

Seasonal Cleanup

Many important native pollinators spend at least part of their lifecycle in the ground, nestled between leaf litter, in or under fallen debris (downed trees, branch piles, exposed grass clumps, between rocks) or in hollowed out plant stalks. Leaving part of your habitat undisturbed year-round as a host site for pollinators would be highly beneficial to a variety of valuable species. This means avoiding tilling, raking, clipping, or any other manicure practices throughout the year. In fall, the best way to help provide quality habitat is to “Leave the Leaves.” Pollinators will utilize these structures as refuge during the long winter months and emerge the following spring.

If you choose to ‘clean up’ your habitat on a yearly basis, seasonal cleanup is recommended in late spring after nighttime temperatures are consistently above 55 degrees for at least one week. This gives ground nesting pollinators the opportunity to emerge and disperse from protective overwintering ground cover and begin the next phase of their lifecycle. Seasonal cleanup can be paired with additional management practices to maximize the efficacy of your habitat.

ADDITIONAL RESOURCES

There are abundant online resources available that further explain the benefits of various management practices. Don’t be afraid to research further and find the management practice that works best for

you and your habitat. As we learn more about what techniques seem to work best regionally throughout Utah, we will continue to update and provide guidance for best practices. Thank you for planting for pollinators and joining the cause to maintain our wild landscapes!

**** Disclaimer: special considerations regarding management practices may be needed when managing habitats that host sensitive, threatened, or endangered species (plants or wildlife). Please refer to local, state, and federal protocols and guidelines when planning management actions in these areas.*