

Establishing Pollinator Habitat on Department of Defense Installations

Background

Department of Defense Natural Resource(NR) Program managers are responsible for providing oversight for the management of natural resources for approximately 25 million acres of land, air, and water resources owned or operated by the Department of Defense (DOD). The NR Program's goal is to support the military's combat readiness mission by ensuring continued access to realistic habitat conditions, while simultaneously working to ensure the long-term sustainability of our nation's priceless natural heritage.

On June 20, 2014, the President of the United States issued a memorandum to the heads of the executive departments and agencies establishing a federal strategy to promote the health of honey bees and other pollinators. Section 3 of that memorandum deals with how DOD NR Program managers will implement the following in order to increase and improve pollinator habitat. For most managers, this will mean establishing the habitats on the installations. The following guidance comes directly from the memorandum:

(a) Task Force member agencies shall develop and provide to the Task Force plans to enhance pollinator habitat, and subsequently implement, as appropriate, such plans on their managed lands and facilities, consistent with their missions and public safety. These plans may include: facility landscaping, including easements; land management; policies with respect to road and other rights-of-way; educational gardens; use of integrated vegetation and pest management; increased native vegetation; and application of pollinator-friendly best management practices and seed mixes. Task Force member agencies shall also review any new or renewing land management contracts and grants for the opportunity to include requirements for enhancing pollinator habitat.

(b) Task Force member agencies shall evaluate permit and management practices on power line, pipeline, utility, and other rights-of-way and easements, and, consistent with applicable law, make any necessary and appropriate changes to enhance pollinator habitat on Federal lands through the use of integrated vegetation and pest management and pollinator-friendly best management practices, and by supplementing existing agreements and memoranda of understanding with rights-of-way holders, where appropriate, to establish and improve pollinator habitat.



Where do we go from here?

The popular focus is on the loss of honey bees and their value as pollinators in U.S. agriculture, which is, conservatively, estimated at \$3 billion annually. DOD NR Program managers need to decide how to implement and manage the tasking from this memorandum.

As NR Program managers, it should be very easy to integrate native pollinators into current wildlife conservation practices. Focus must shift to adapting current habitat practices to accommodate the species that make wildlife successful, as they are the important pollinators of all native flowering trees and plants. These pollinators include the many species of bumble bees and what are often referred to as solitary bees. They are pollen bees because their main value, in relation to people, is not the production of honey, but the collection and transfer of pollen for the fertilization of plants.

The services of pollen bees most often go unrecognized and their value for agriculture, and especially for unmanaged ecosystems, is probably much higher than documented. For most bee species, the lack of long-term population data and the incomplete knowledge of basic life history and ecological roles make assessing their value and possible declines in some regions very difficult.

Early Successional Habitats

The best pollinator habitats on DOD installations are early successional habitats such as old fields with a diversity of flowering plants, pine-oak forests, and wetland areas. These areas are important for protecting populations of insect pollinators. In areas where these habitats have become overgrown, it is often beneficial to mow them periodically to prevent them from reverting to forest.

It is necessary to remove invasive species such as Tartarian honeysuckle, autumn olive, and multiflora rose, and, in Southeast Virginia, to keep native species such as sweet gum and red maple from re-establishing in these habitats. Most importantly, establishing a diversity of good nectar sources is important in supplementing these habitats with native flowering trees and shrubs. Transitional habitats along forest edges, offering plenty of nesting habitat for wood-nesting bees or ground nesters, should also be maintained and protected. Pollinators, such as butterflies and early spring bees, are also dependent on these transitional forest habitats, as they forage on wild trees as well as ephemeral wildflowers.

Catonment Area.

It is helpful to step back and look at habitat availability in the larger landscape. This is important because many pollinators do not use just one habitat patch, but rather commute across the landscape looking for floral patches. For example, some large-bodied bees, such as bumble bees and honey bees, can fly more than one kilometer (.6 mile) from their nest, so they can potentially visit multiple green spaces to forage from flowers. Other bees fly shorter distances from the nest and may be influenced by factors on a smaller spatial scale. Butterflies also vary in mobility from a few feet to hundreds of miles using small habitat patches transiently to refill on nectar as they move through developed landscapes.

Create or Maintain Habitat Corridors Through Developed Areas

Sometimes one habitat provides everything a particular insect pollinator needs to complete its life cycle. An example is the lifecycle of the Karner blue butterfly. A small, blue butterfly with a wingspan of only about one inch, the Karner's lifecycle revolves exclusively around the wild lupine flower (*Lupinus perennis*). The adult lays its eggs on the lupine leaves where it over winters in the leaf litter; in the spring, they hatch out. The larvae feed exclusively on wild lupine leaves and pupate, and the lifecycle starts all over again.

Other times, more than one habitat is necessary to meet special needs for food or nesting. In developed areas, these patches are often separated by inhospitable habitat that insects cannot cross, and it's important to connect them.

By working with PPV housing partners, additional linkages can be provided through the common areas when they are managed as pollinator habitats. Installation playgrounds, picnic areas, and ball-fields are places that can be managed to provide habitat connectivity for pollinators.

When properly managed, installation roadsides can become effective pollinator corridors by allowing flowering, weedy species, such as goldenrod and Queen Anne's lace to grow along the semi and unimproved roads. Providing native nectar- and pollen-producing trees, shrubs, and other native flowering perennials keeps pollinators busy foraging along these roadsides.

Within the DOD, NR Program managers need to work with the contracting officers and grounds maintenance contract pest management assessment representatives in developing the grounds maintenance contract specifications for roadway maintenance in semi- and unimproved areas on the installation. For fire prevention, only the shoulder of the road needs to be maintained with a minimum of two mowings a year with the full right-of-way mowing delayed until mid- September (zone 5) to late November (zones 8 and 9) after the growing season has wound down. This practice enables various butterfly species to use these road edge habitats in the spring as well as other species that may use the same area in late summer and early fall.

Maintaining roadway butterfly habitat is particularly important in these semi- and unimproved areas because butterflies, which are active pollinators, play a crucial role in establishing wildflowers each growing season. In addition, many butterfly species that inhabit forest edge in semi- to unimproved habitats are rarely seen in the improved areas of the installation.

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Some Suggested Native Trees, Shrubs, and Perennials for Pollinators and Wildlife:

Swamp Milkweed (<i>Asclepias incarnata</i>)	American holly (<i>Ilex opaca</i>)
Butterfly Milkweed (<i>Asclepias tuberosa</i>)	Inkberry (<i>Ilex glabra</i>)
Common Milkweed (<i>Asclepias syriaca</i>)	Winterberry (<i>Ilex verticillata</i>)
Speckled alder (<i>Alnus rugosa</i>)	Youpon (<i>Ilex vomitoria</i>)
Serviceberry (<i>Amelanchier canadensis</i>)	Eastern red cedar (<i>Juniperus virginiana</i>)
Eastern paw-paw (<i>Asimina triloba</i>)	Mountain laurel (<i>Kalmia latifolia</i>)
Ironwood (<i>Carpinus caroliniana</i>)	Spicebush (<i>Lindera benzoin</i>)
Hop hornbeam (<i>Ostrya virginiana</i>)	Sweetbay magnolia (<i>Magnolia virginiana</i>)
Buttonbush (<i>Cephalanthus occidentalis</i>)	Waxmyrtle (<i>Myrica cerifera</i>)
Redbud (<i>Cerciscanadensis</i>)	Northern Bayberry (<i>Myrica pensylvanica</i>)
Fringetree (<i>Chioanthus virginicus</i>)	Sourwood (<i>Oxydendron arboretum</i>)
Yellowwood (<i>Cladrastus lutea</i>)	Swamp honeysuckle (<i>Rhododendron viscosum</i>)
Silky dogwood (<i>Cornus amomum</i>)	Black cap raspberry (<i>Rubus occidentalis</i>)
Flowering dogwood (<i>Cornus florida</i>)	Elderberry (<i>Sambucus canadensis</i>)
Red-osier dogwood (<i>Cornus sericea</i>)	White Meadowsweet (<i>Spiraea alba</i>)
American hazelnut(<i>Corylus americana</i>)	Goldenrod (<i>Solidago spp.</i>)
Washington hawthorn (<i>Crataegus phaeopyrum</i>)	Virginia rose (<i>Rosa virginiana</i>)
Queen Anne's lace (<i>Daucus carota</i>)	Pussy willow (<i>Salix discolor</i>)
Joe-Pye weed (<i>Empatorium purpureum</i>)	Arrowwood viburnum (<i>Viburnum dentatum</i>)
Carolina silverbell (<i>Halesia Carolina</i>)	Blackhaw viburnum (<i>Viburnum prunifolium</i>)
American witchhazel (<i>Hamamelis virginiana</i>)	Sassafras (<i>Sassafras albidum</i>)

