MEMORANDUM
VILLAGE OF NORTHBROOK
DEVELOPMENT AND PLANNING SERVICES DEPARTMENT

TO: ENVIRONMENTAL QUALITY COMMISSION

FROM: TESSA MURRAY, GREENEST REGION CORPS MEMBER

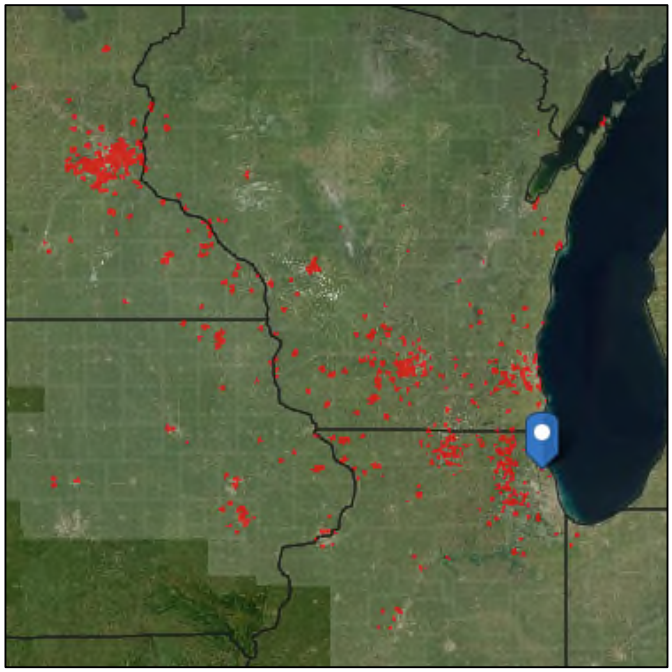
DATE: APRIL 2021

SUBJECT: SAVE THE BEES IN OUR BACKYARDS

INTRODUCTION:

As homeowners begin to renew landscaping contracts or dust off last year's equipment from the back of the garage, it might be time to reconsider our traditional methods of lawn maintenance. In Northbrook, we share our environment with the critically endangered rusty patched bumblebee: the chemicals we use in our backyards impact the fate of this species. Beyond global climate change, scientists have cited reasons for its decline such as environmental degradation and contamination from petro-chemicals, pesticides, and inorganic fertilizers. Bumblebees can absorb toxins directly through their exoskeleton and through contaminated nectar and pollen. Rusty patched bumble bees nest in the ground and may be susceptible to compounds that persist in agricultural soils, lawns and turf.

Rusty patched bumblebee on Wild bergamot flower. Courtesy of US Fish and Wildlife Service



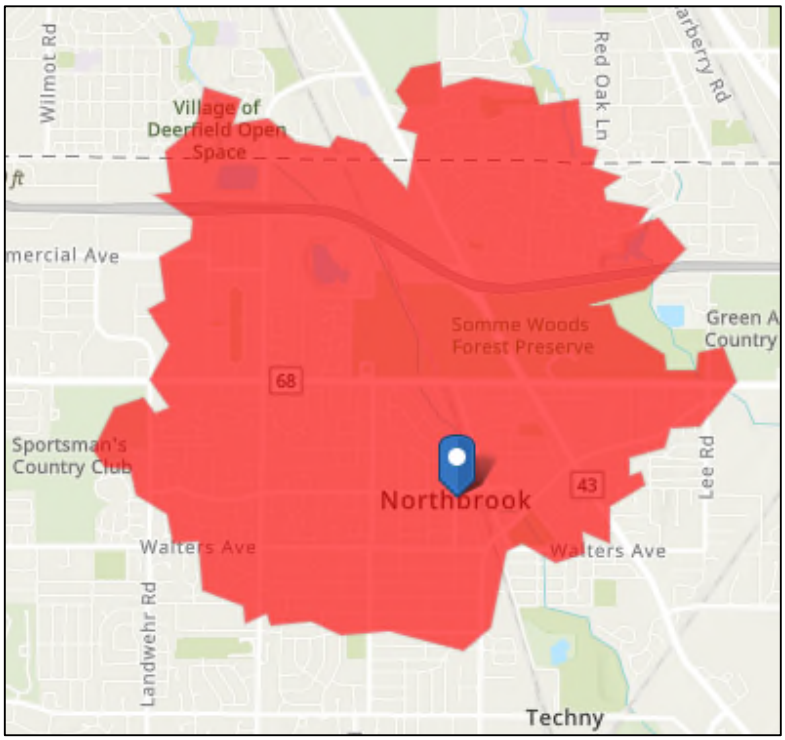
Map 1: Red = zones where the Rusty patched bumblebee is likely present. Courtesy of US Fish and Wildlife Service

Bombus affinis, commonly known as the rusty patched bumble bee, is a species of bumblebee historically native to Midwestern and eastern North America. Its numbers have declined in 87% of its original habitat range. In 2017, the United States Fish and Wildlife Service placed it on the list of endangered species, making the rusty patched bumblebee the first bee to be added to the list in the continental United States. Today the species is not just endangered but considered critically threatened and near extinction. The US Fish and Wildlife Service is monitoring the remnant populations of the rusty patched bumble bee. According to their findings, Northbrook is one of the only hotspots of this species left in Cook County and the world (see Map 1).

CHEMICAL ALTERNATIVES:

As seen in Map 2, the endangered bee is present in Northbrook's natural areas and has the ability to forage for nectar within a 3-mile range of its nesting site. Given all we know about the rusty patched bumble bee, what can Northbrook residents do to help? The most important action to take is to avoid pesticide usage within our community. Pesticides are herbicides and insecticides used to control weeds and nuisance or disease-carrying bugs. While meant to target unwanted wildlife, these compounds can also have lethal effects on beneficial insects such as bees and butterflies.

Map 2: Red = zones where the Rusty patched bumblebee is likely present
Courtesy of US Fish and Wildlife Service



To curb the decline of pollinator populations, it is best to leave mosquito control up to the public health experts. At the North Shore Mosquito Abatement District (NSMAD), Executive Director Dr. Mark Clifton sits on the Endangered Species Act subcommittee of the American Mosquito Control Association where he helps monitor the rusty patched bumblebee population in Northbrook. NSMAD employs a variety of surveillance, public outreach, and organic control methods before resorting to chemical sprays of adult mosquitoes when human health is at risk from observed high prevalence of West Nile Virus. As a result, Northbrook has not been sprayed in over two years. Rather than hiring a private barrier treatment company, residents can contact NSMAD at 847-446-9434 for a service request to help with the mitigation of mosquitoes in your area for free. If you are concerned about mosquitoes, the best way to control them is to eliminate their breeding habitat. Any standing water pool, as small as a bottle cap, provides space for mosquitoes to reproduce. See table 1 for NSMAD's checklist to ensure mosquito habitat prevention.

Table 1: Courtesy of North Shore Mosquito Abatement District

MAINTAIN A MOSQUITO-FREE BACKYARD:

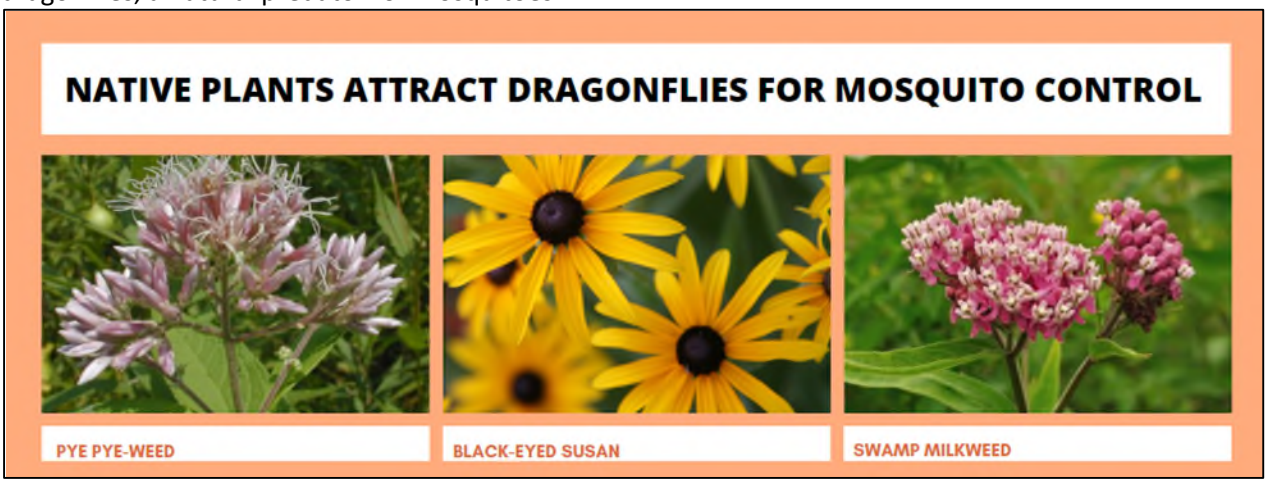
-- Dump out or drain toys, garden equipment, plant pots, buckets and other containers that can hold water once per week
-- Cover rain and water barrels with fine-meshed screens to prevent adult mosquito access for egg-laying
-- Clean clogged gutters
-- Regularly clean pool covers, grill and furniture covers, swimming pools, hot tubs, birdbaths and other permanent water fixtures
-- Pick up trash and discarded debris
-- Stock ornamental ponds with fish that eat mosquito larvae or use a bubbler to keep water moving
-- Change the water in pet bowls daily
-- Remove hollow tree stumps or tree rot holes
-- Fix leaky outdoor faucets
-- Drill a hole in the bottom of tire swings to allow drainage

Herbicides are less of a threat to pollinators as they target plants, however peer-reviewed research upholds the notion that these chemical compounds can have cascading effects on an ecosystem's health. Homeowners who regularly use herbicides on their lawns to weed out invasive plants may consider mechanical removal alternatives. There is no "one-size fits all" method to organic weed control practices. It is useful to identify the specific plants causing trouble using free web applications like iNaturalist. Once you know the plant, researching its seasonal schedule of flowering, seeding, and propagation habits will help to create a plan of action. In general, invasive plants are less likely to come back when their entire population is removed, replaced with fresh soil, and replanted with natives.

Illustrations of a rusty patched bumble bee queen (left), worker (center), and male (right). Courtesy of Xerces Society

PROVISIONS FOR BUMBLEBEE HABITAT:

Native plants have a multitude of benefits to our local ecosystem. The rusty patched bumblebee is more likely to come out of endangerment with more native plant nectar and pollen available to them as a food source. The US Fish and Wildlife Service list native wildflowers such as Coneflower, Milkweed, Aster, Prairie Clover, Goldenrod, Wild bergamot, and Serviceberry as known host plants for the rusty patched bumblebee. Native plants such as Joe pye-weed, Swamp milkweed, and Black-eyed susan will also attract dragonflies, a natural predator for mosquitoes.



In addition to providing a food source for the endangered rusty patched bumblebee, mindful homeowners will take bee habitat into consideration while tending to outdoor spaces. In winter, bumblebees burrow under the ground and need leaves atop soil for protection from the cold. Rather than using a leaf blower, leaving the leaves protects insects hibernating in leaf litter. This prevents weeds and encourages native plant growth as well. According to scientists, inorganic fertilizer can also penetrate the exoskeleton of bees and harm bodily functions. Alternatively, leaf mulch is essentially an organic method of fertilizing plants. The blast of a leaf blower can reach 200 miles per hour: these tiny bees likely cannot survive the pollutants and power from a traditional leaf blower. Because we share our community with rare wildlife, Northbrook has a special opportunity to help reverse insect decline in our own yards!