Pollinator-friendly noxious weed control: How to have both

Alison Halpern

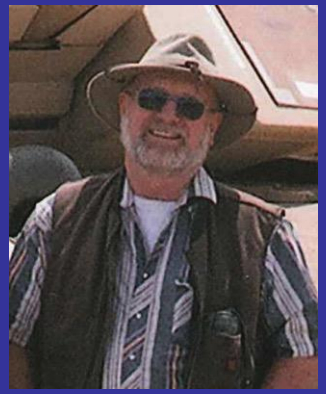
October 19, 2016

Washington State Noxious Weed Control Board

Today's talk

- Quick introduction to the State Weed Board
- The struggles of bees
- The problem with noxious weeds
- Bee-friendly weed control
- Planning ahead – providing non-invasive forage
- Questions

The State Weed Board



- Consists of 12 unpaid public officials
- 9 voting members
  - 4 elected by county boards
  - 1 elected by weed districts
  - 2 represent public interests
  - 1 represents WSDA
  - 1 represents Association of Counties
- 3 non-voting members
  - Scientific advisors

Our mission statement

Image by Emily Stevenson

- To serve as responsible stewards of Washington by aiding in the protection and preservation of the land, water, and resources from the degrading impacts of noxious weeds.

Noxious Weeds in Washington

- Plants are noted as aggressive and highly difficult to control
- Plants have significant ecological impacts, economic impacts and/or cause harm to humans and other animals
- 3 classes of noxious weeds

Class A Noxious Weeds RCW (17.10.10)

- Class A consists of those noxious weeds
  - not native to the state
  - that are of limited distribution or are unrecorded in the state and
  - that pose a serious threat to the state.
- Eradication is required of all Class A noxious weeds

Wild Four O'Clock,
Mirabilis nyctaginea

Class B Noxious Weeds

Scotch broom (*Cytisus scoparius)*

- Class B: not native to the state and are of limited distribution or are unrecorded in a region of the state and that pose a serious threat to that region.
- "Class B designate" means those Class B noxious weeds whose populations in a region or area are such that all seed production can be prevented within a calendar year. WAC 16-750.003(2g)

Class B Designate Weeds

- Automatically placed on county weed list
- Goal: Containment, control and eventual eradication

Class B Non-Designate Weeds

- County weed boards have ability to place on their weed list
- Goal: prevent spread to designated areas

Class B example

Scotch Broom, *"Cytisus scoparius"* Distribution 2011

Updated: 9/23/2011

Whatcom
San Juan
Skagit
Island
Snohomish
Clallam
Jefferson
Kitsap
King
Mason
Grays Harbor
Pierce
Thurston
Pacific
Lewis
Wahkiakum
Cowlitz
Skamania
Clark
Okanogan
Ferry
Stevens
Pend Oreille
Chelan
Douglas
Lincoln
Spokane
Kittitas
Grant
Adams
Whitman
Yakima
Franklin
Garfield
Benton
Walla Walla
Columbia
Asotin
Klickitat

Legend

Infested Acres

- No known infestations
- Present but extent unknown
- eradicated
- <10
- 10-100
- 100-1000
- >1000
- no data or insufficient data

WSDA
WASHINGTON STATE DEPARTMENT OF AGRICULTURE

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Class C Noxious Weeds (RCW 17.10.10)

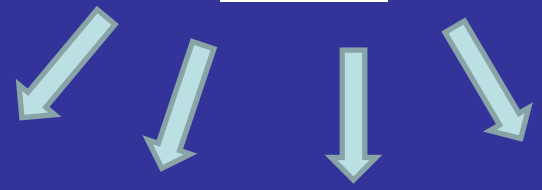
- Class C consists of any other noxious weeds.
- Counties may choose a Class C for control, many opt to provide education

Canada thistle, *Cirsium arvense*

The noxious weed listing process

- Nov-April: submission of proposals
- May: Noxious Weed committee begins to review requested changes
- September: Noxious Weed Committee makes recommendations to State Weed Board
- November: Public hearing, State Weed Board votes on changes
- January: New changes take effect in new Noxious Weed List

State List to County List



County List

- All Class A's
- Class B's designated by 16-750
- Class B's and Class C's counties mandate control
- Other B's and C's

Noxious Weed Control Responsibilities

All Washington Landowners

- Private landowners
- Public landowners
  - City
  - County
  - State

Owner's duty to control spread of noxious weeds.

- Eradicate all class A noxious weeds;
- Control and prevent the spread of all class B noxious weeds designated for control in that region; and
- Control and prevent the spread of all class B and class C noxious weeds listed on the county weed list.
- (RCW 17.10.140)

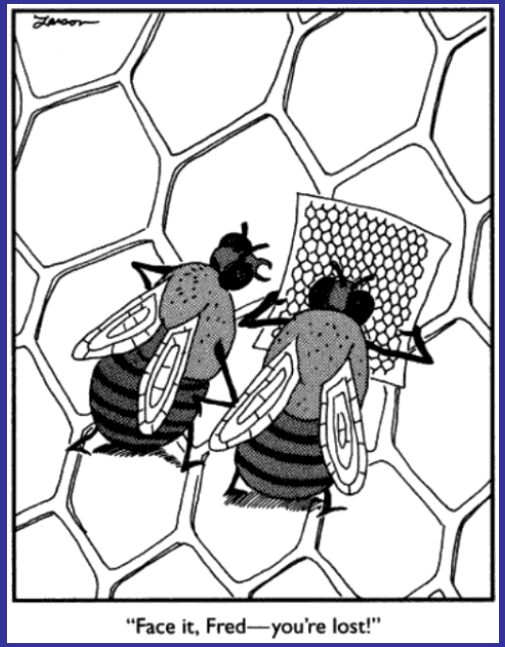
Noxious weeds are not all “bad” – nothing is black and white

- We weigh the beneficial uses with the detrimental impacts when vetting species for listing.
- Some plants provide erosion control, ornamental value, medicinal properties, or nectar and pollen for bees, but their ecological or economic impacts outweigh the beneficial uses.

Tim Miller

Sarah Doyle

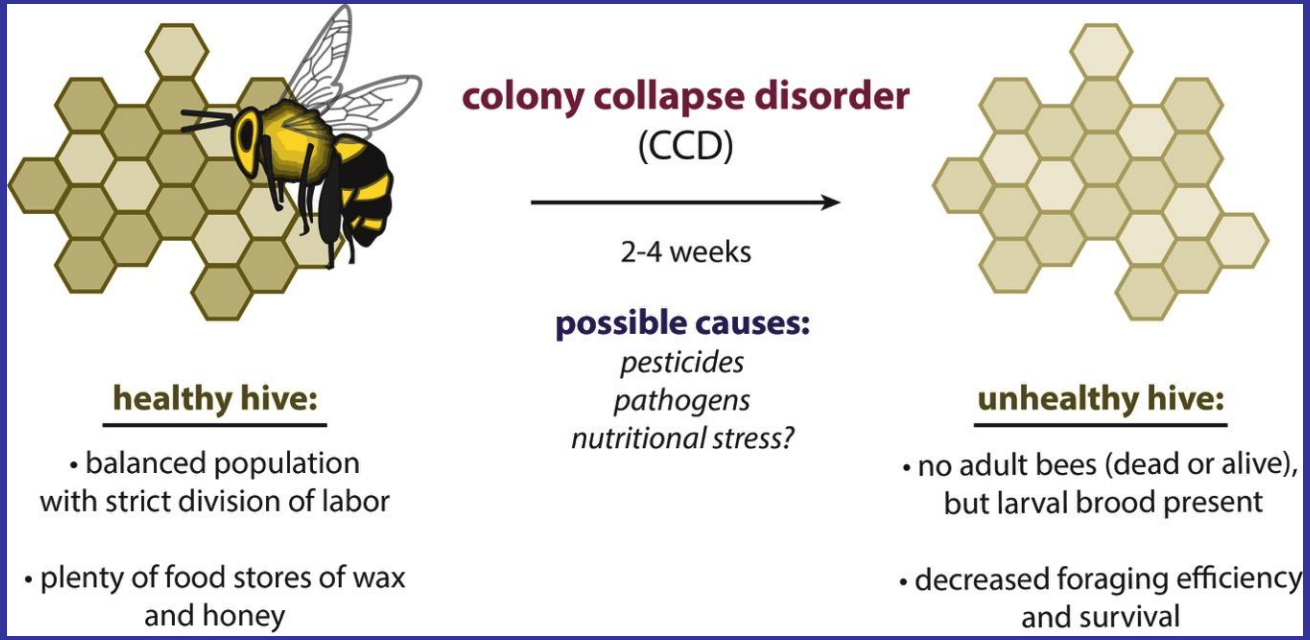
Butterfly bush



"Face it, Fred—you're lost!"

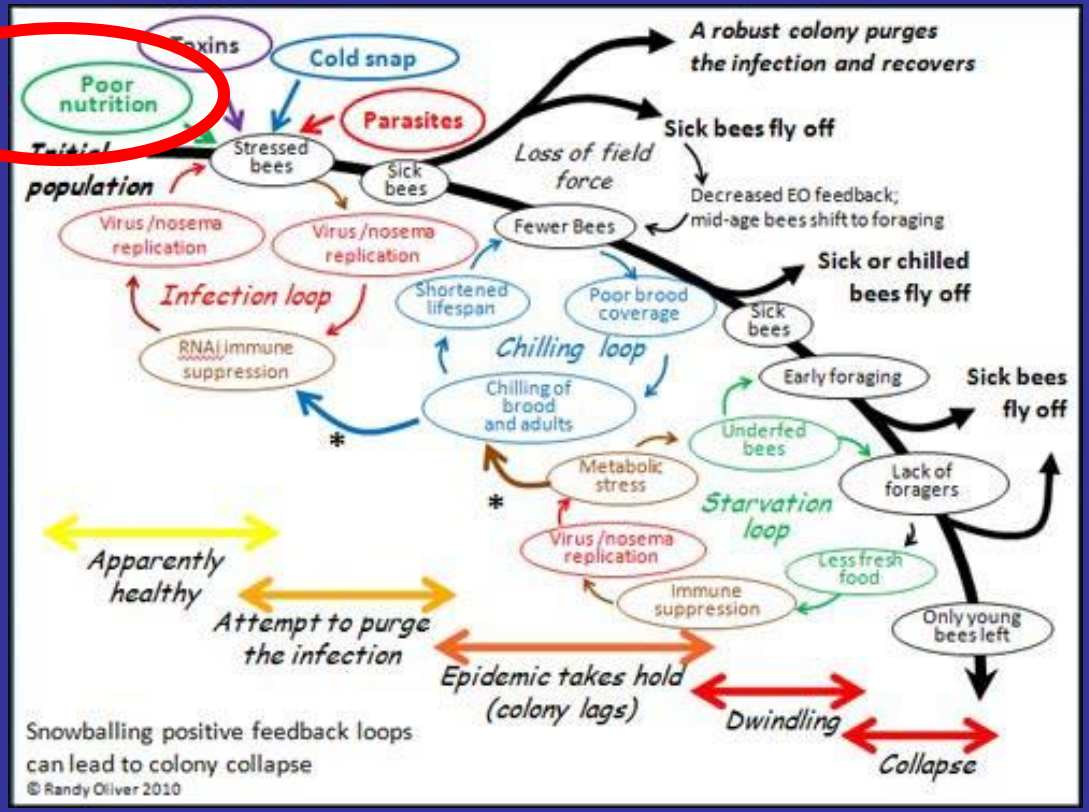
BEES HAVE BEEN HAVING A TOUGH TIME

Bee health and colony collapse



http://sitn.hms.harvard.edu/wp-content/uploads/2015/04/CCD.jpg

Bee health and colony collapse

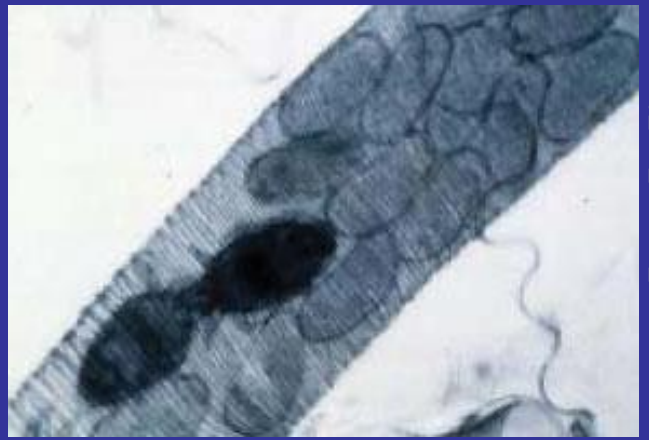


Parasites and disease

https://blogs.cornell.edu/jentsch/files/2015/03/Varroa-Mite-on-adult-honeybee-1nzdvs0.png

Honey bee with varroa mites

Nosema virus



Honey bee trachea with mites and eggs

http://www.clemson.edu/extension/beekeepers/factsheets/honey_bee_tracheal_mite.html

Pesticide exposure

- Mainly caused by exposure to insecticides, miticides, and fungicides.
- In some cases, hive die-off caused by off-label application of pesticide, especially insecticides.
- Neonicotinoids?

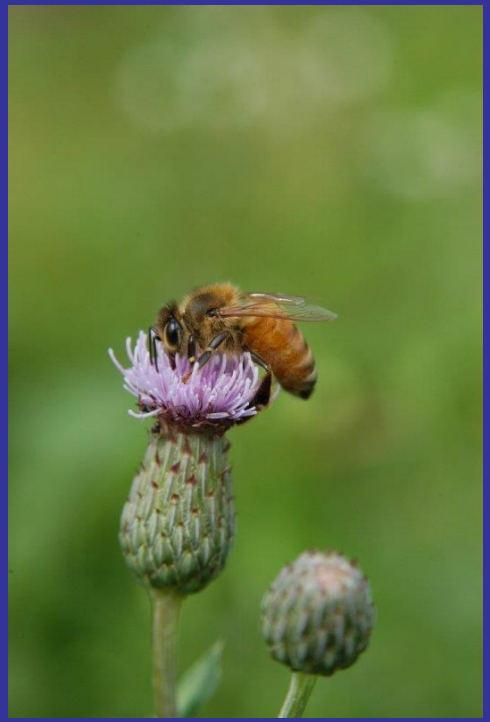
http://sackersonsagriculturepage.blogspot.com/2013/07/bee-deaths-linked-to-pesticides-new.html

Russian knapweed infestation

THE PROBLEM WITH NOXIOUS WEEDS

Honeybees and many noxious weeds are European

- And many noxious weeds provide nectar and pollen to both honeybees and native bumblebees.
- However….



https://shop2.amesfarm.com

Purple loosestrife

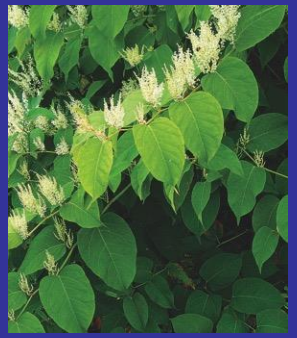
- Displaces native wetland species
- Reduces wetland habitat for waterfowl, wading birds, and other wildlife
- Can alter nutrient dynamics, impacting food webs

Yellow starthistle

- Reduces forage quality for livestock and contaminates crop fields and seed
- Outcompetes native plants for water
- Toxic – causes fatal chewing disease in horses
- Pollination by honeybees may contribute 50% to viable seed production

https://countrymerc.com/

Knotweed species



http://www.flickr.com/photos/urtica/2707655553/

- Displace native willow and other riparian species
- Alter nutrient cycle
- Degrade riparian habitat, including salmon habitat
- Increase erosion
- Extremely difficult and costly to control

Spotted knapweed

- Can reduce elk forage by 90%; reduces cattle grazing capacity by 63%
- Increases run-off and sediment erosion
- Reduces nutrient availability in soil

https://www.honeyridgefarms.com

Himalayan blackberry

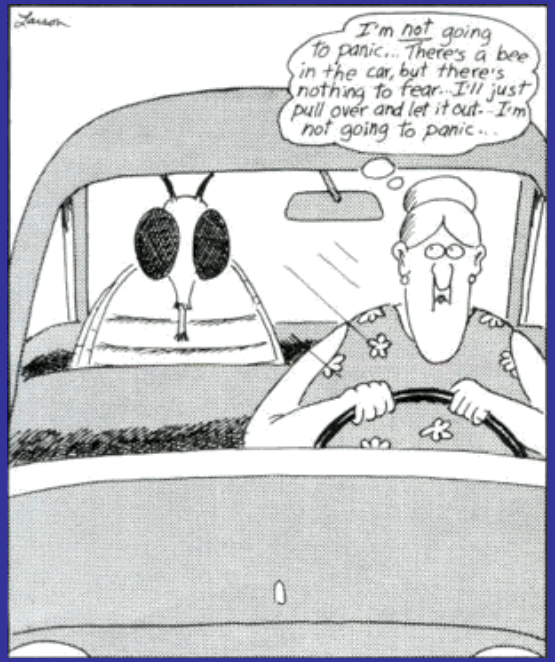
- Outcompetes native plants
- Forms dense thickets that block wildlife, livestock, and people, and may be a fire hazard
- Degrades habitat, can cause neighborly disputes
- Vector for fruit crop disease, including spotted-wing fruit fly

Tansy ragwort

- Invasive plant of pastures, yards, and disturbed areas
- Contains toxic alkaloids in flowers, as well as stems, leaves, and roots
- Bioaccumulates when consumed as fresh plants or dried in hay and causes chronic liver failure in livestock
- Taints honey (and milk), making it unpalatable and unsellable.

Blueweed

- Invasive noxious weed of pastures and disturbed areas
- Secondary host to various mosaic viruses and three types of wheat rust in Europe
- Hairs cause dermatitis
- Unpalatable and similar alkaloids found in tansy ragwort make it toxic to livestock
- Both nectar and pollen contain pyrrolizidine alkaloids, contaminating honey and milk.



BEE-FRIENDLY WEED CONTROL

Bee-sensitive noxious weed control

- As farmers, scientists, gardeners, and good stewards, the State Weed Board appreciates the importance of pollinators.
- Noxious weed control and pollinator conservation do not need to be mutually exclusive.

Follow the label when using herbicides

- Herbicides have not been shown to cause acute lethal effects on honeybees; however, it has not been established whether there are sub-lethal, chronic effects.
- Insecticides – particularly neonicotinoids – along with miticides and fungicides are considered a more serious concern.
- All pesticides should be applied carefully to minimize exposure to bees when possible.

http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-news.aspx

Timing weed control

- When possible, perform weed control when bees are less active
  - Dawn and dusk
  - This pertains to many types of control methods: chemical, digging, hand-pulling, mowing, etc.

http://www.skamaniacounty.org/noxious-weeds/files/2010/04/Presentation1.jpg

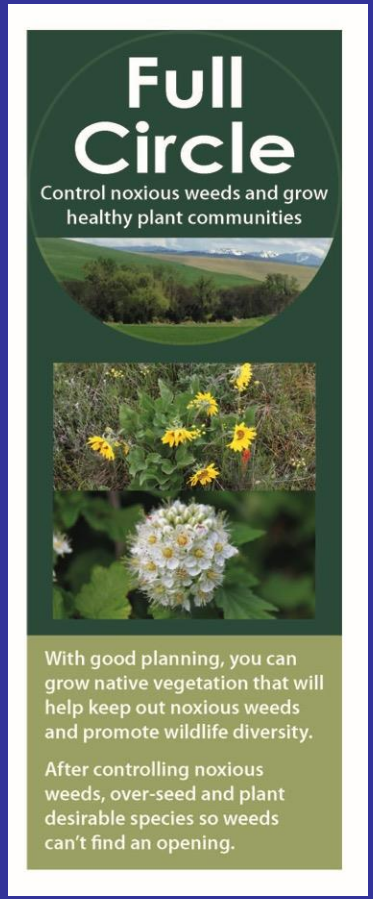
Timing weed control

- When possible, perform noxious weed control when plants aren't in bloom
  - Spring and fall
  - Ideal time to control noxious anyway (e.g. rosette stage, and fall for perennials)
  - If plants have already bloomed, target control after the flowers have wilted but before seed set.

Post-wildlife Scotch thistle rosettes, Yakima County NWCB

Long-term management plans

- For large infestations, stage control so that pollinators still have continuous forage.
- Remember that noxious weed control is just one step. Control weeds and make plans to revegetate when possible with native and/or non-invasive plants.
- Replanting helps to suppress new infestations and can provide additional habitat and forage.



Provide new forage patches for bees and other pollinators

- Use native and/or nonnative, non-invasive pollinator-friendly species.
- Choose a variety of annuals and perennials with different bloom times to provide forage throughout the season.

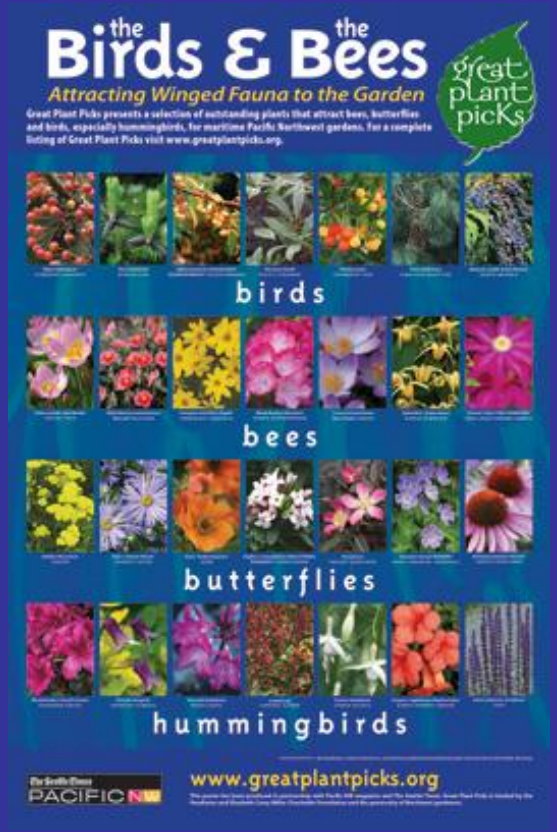
Provide new forage patches for bees and other pollinators

- Plant along fence lines, roadsides, barns and other structures.
- Surround orchards with a variety of nectar/pollen rich plants to improve pollination.
- Create gardens and incorporate into landscaping

Image courtesy of Ray Willard, WSDOT

Replace invasive ornamentals with non-invasive/native alternatives

- Native plantings typically need less care once established.
- Great opportunity to showcase new species in the landscape.
- Many resources available to help choose non-invasive alternatives, such as www.GreatPlantPicks.org.



Consider land uses when planting pollinator-friendly species

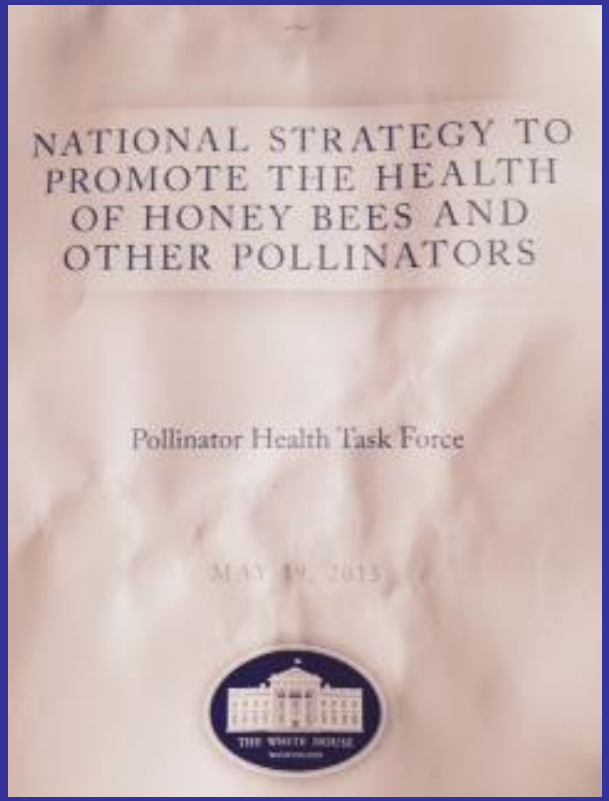
- Make sure you aren’t planting a potential problem such as plants that may be great for bees, but toxic to livestock.
- Do not plant fruit-producing species that may also provide a refuge for spotted-wing fruit flies around berry farms.
- Don’t attract bees to areas where bee-human interactions are undesirable, e.g., close to playgrounds, heavy traffic areas (foot, horse, bike, car).

Learn about nearby hives

- If you know there are hives nearby, consider planting replacement (or even new) forage sources, especially when nectar/pollen-rich noxious weeds are being controlled.
- Bees will travel up to a few miles to forage but will stay near hive if there are good resources close by.
- Consider reaching out to your local beekeeper's association for information.

Dance of the Beekeepers

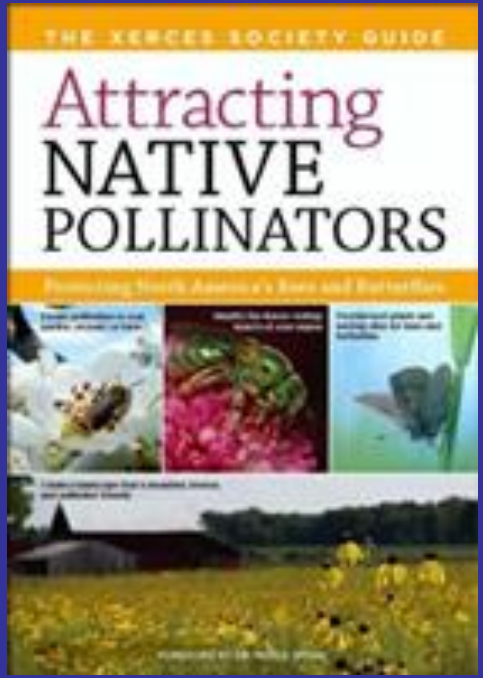
Many resources available



MP3s

(HB 2478– Bee Forage and Noxious Weeds)

Many resources available



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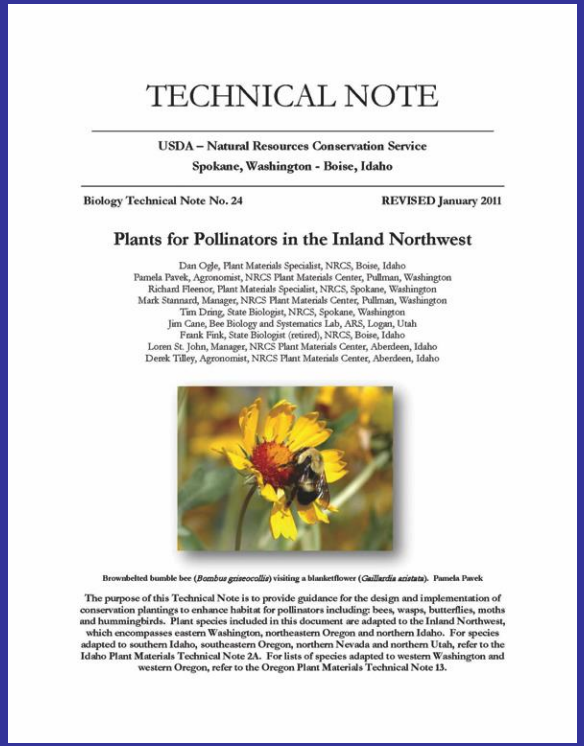

TECHNICAL NOTE

USDA – Natural Resources Conservation Service
Spokane, Washington - Boise, Idaho

Biology Technical Note No. 24 REVISED January 2011

Plants for Pollinators in the Inland Northwest

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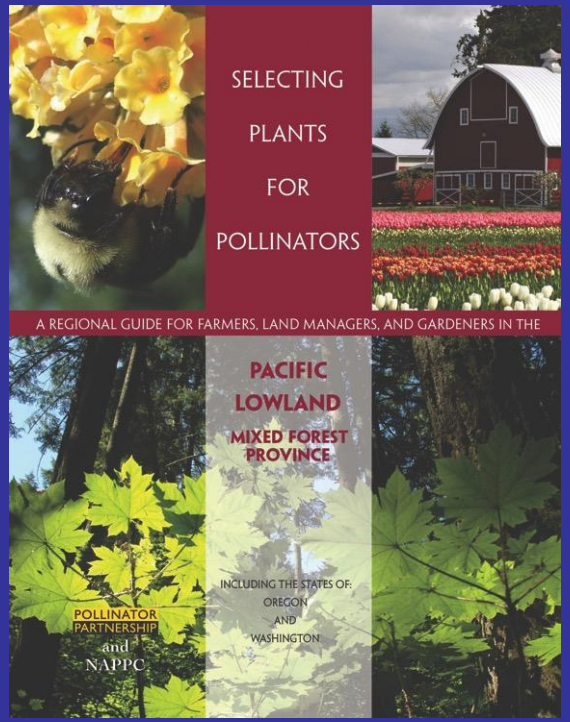
Brownbelted bumble bee (*Bombus griseocollis*) visiting a blanketflower (*Gaillardia aristata*). Pamela Pavek

The purpose of this Technical Note is to provide guidance for the design and implementation of conservation plantings to enhance habitat for pollinators including: bees, wasps, butterflies, moths and hummingbirds. Plant species included in this document are adapted to the Inland Northwest, which encompasses eastern Washington, northeastern Oregon and northern Idaho. For species adapted to southern Idaho, southeastern Oregon, northern Nevada and northern Utah, refer to the Idaho Plant Materials Technical Note 2A. For lists of species adapted to western Washington and western Oregon, refer to the Oregon Plant Materials Technical Note 13.



Questions?

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