Weed/invasive plant update RHI 2019

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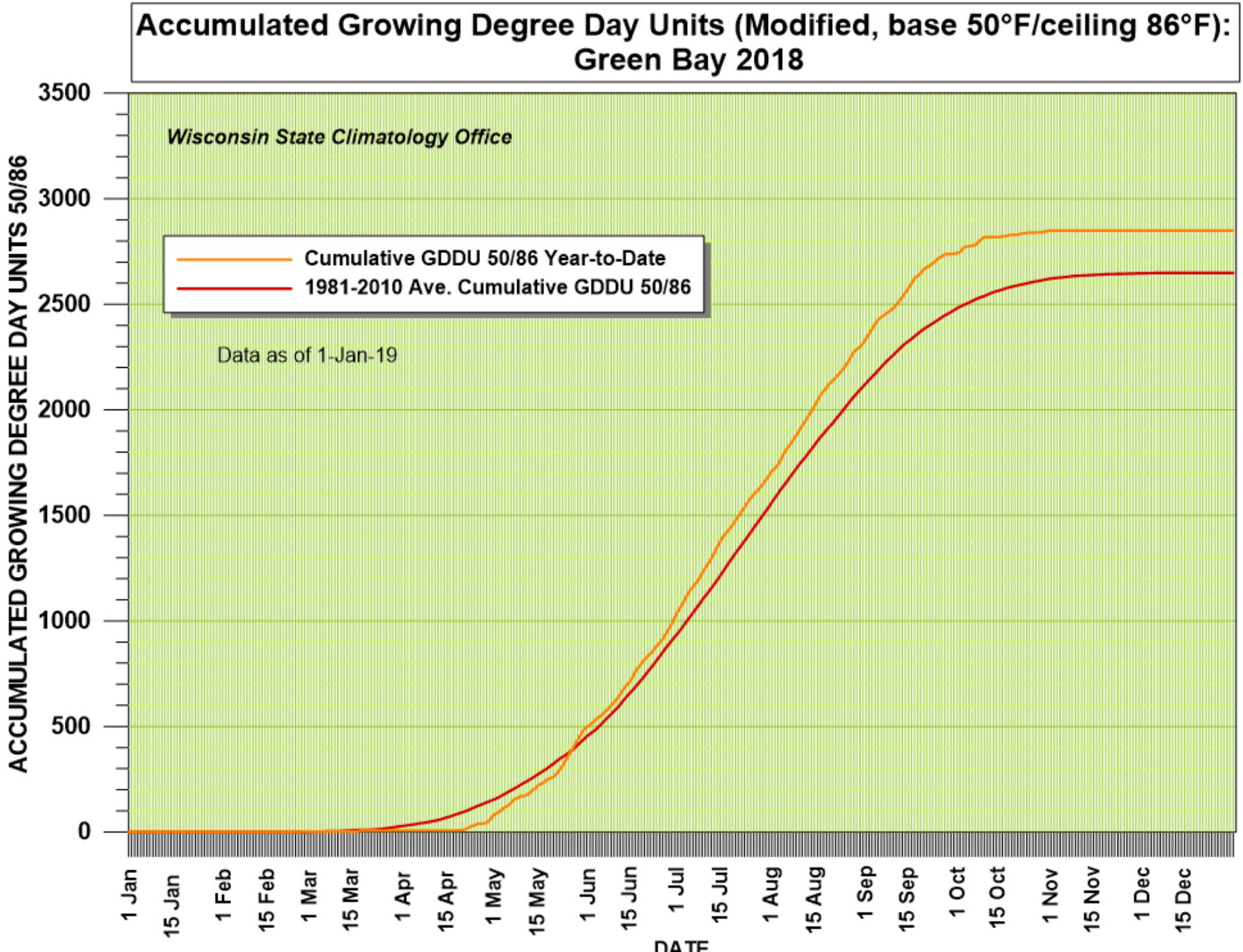
https://renzweedscience.cals.wisc.edu/

WEATHER DRIVES PLANT DEVELOPMENT

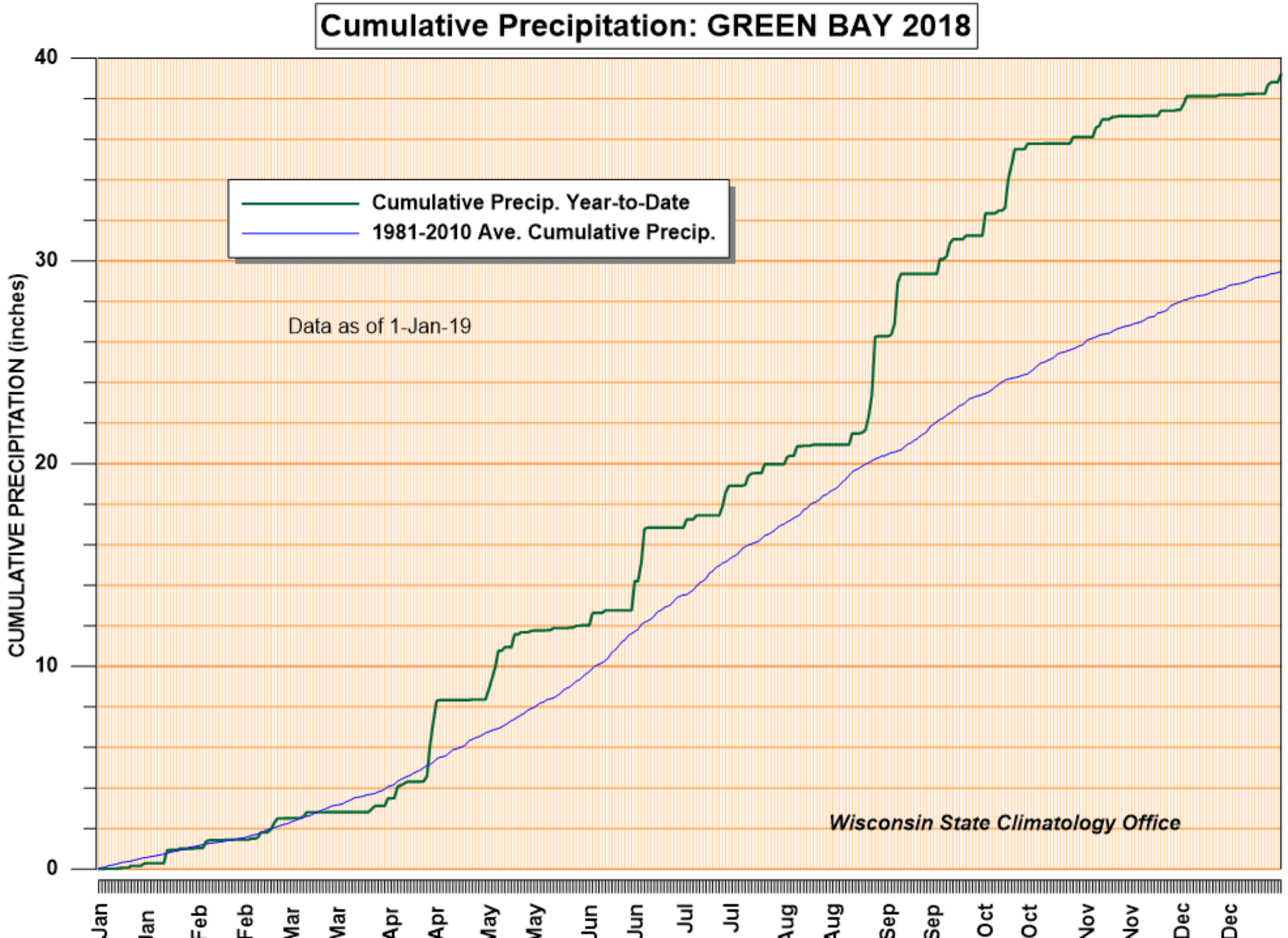
April 7th , 2017

April 11th 2018

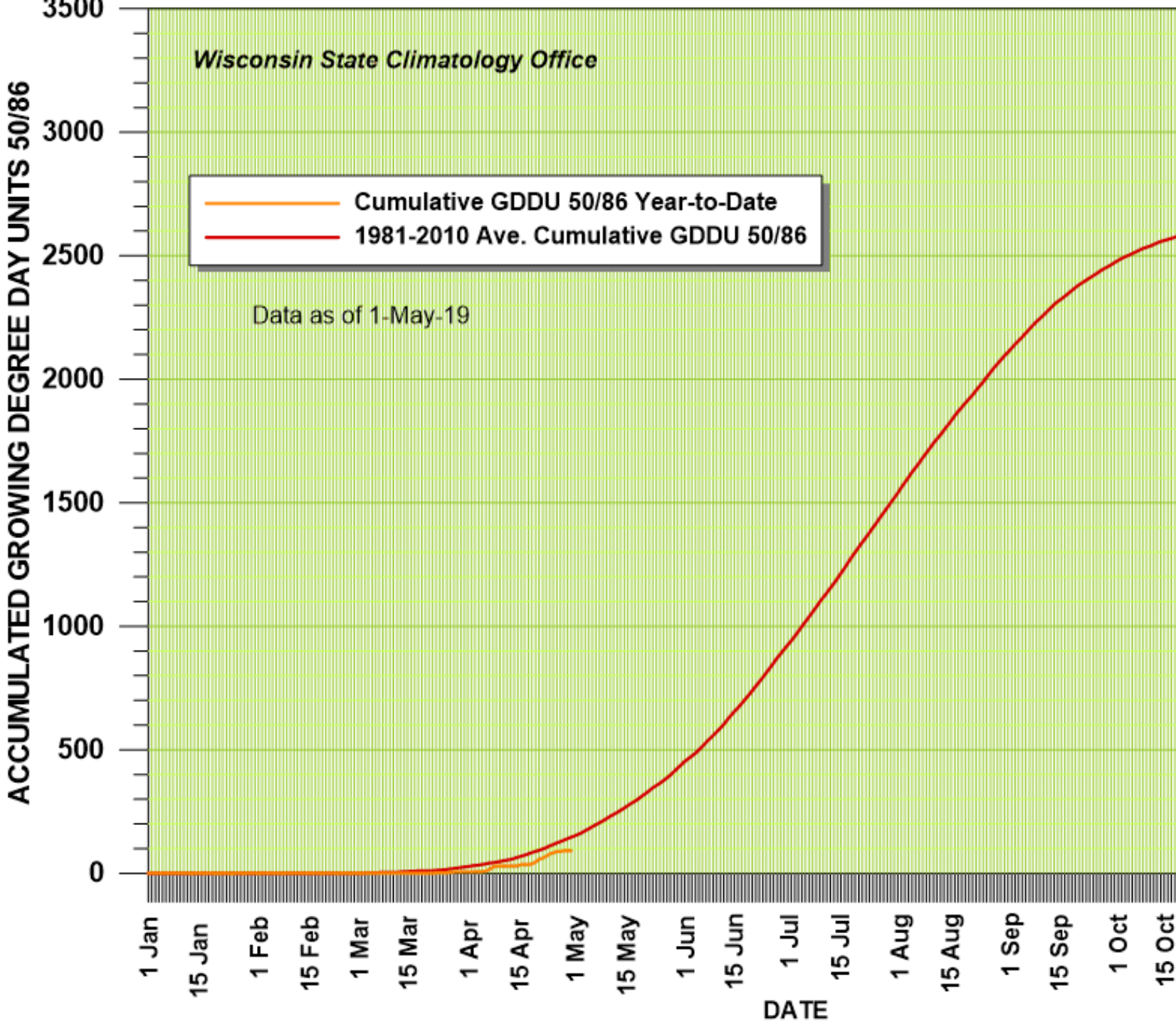
2018 Growing Degree Days Green Bay



Precipitation 2018



2019 Growing Degree Days Green bay

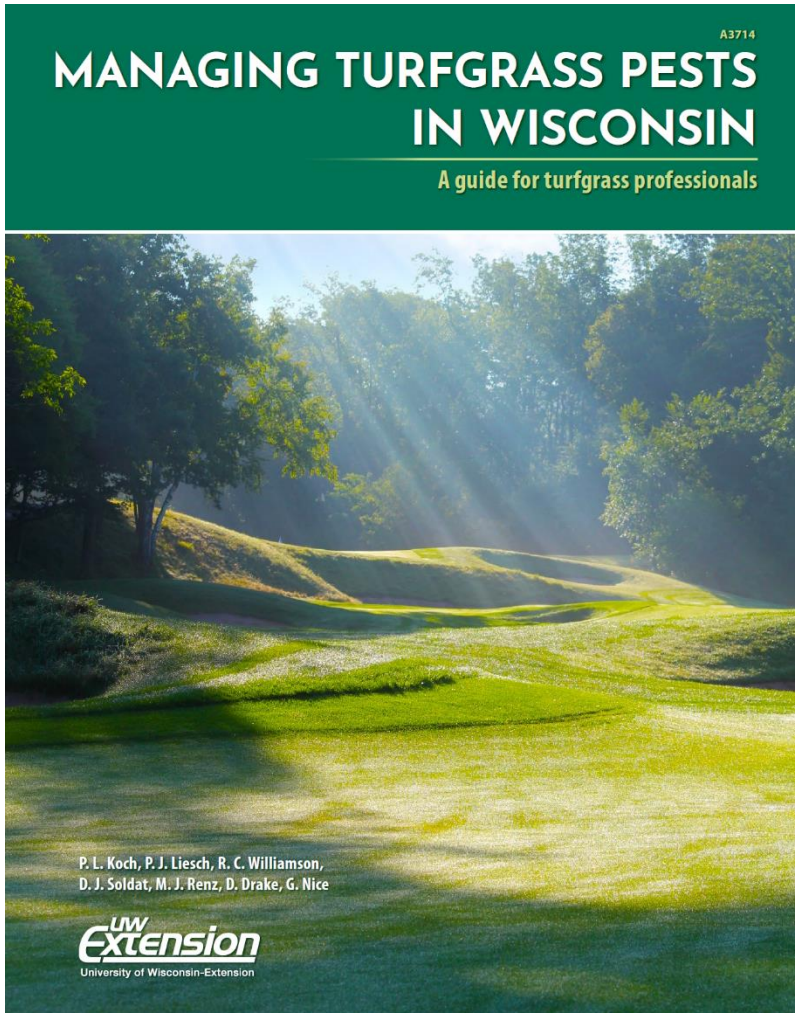


What happens to vegetation when weather is good and they have ample water?

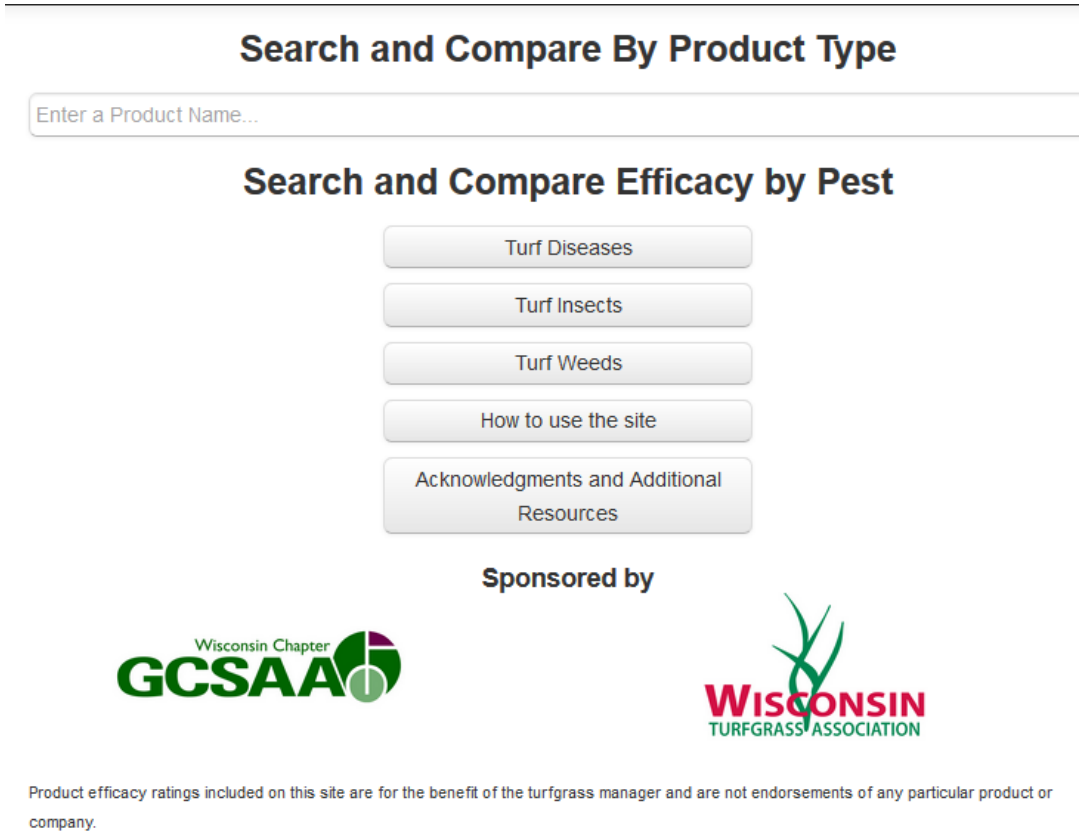
- Desirable plants thrive and grow well….
- If available space/nutrients weeds also thrive……

All things turf

Turfgrass pests (A3714)



https://turfpests.wisc.edu/



Weeds are/will fill in these areas

- Turf weeds that are emerged now
  - Annuals
    - Prostrate/common knotweed
    - Speedwell species
    - Chickweed species
  - Perennials
    - Quackgrass
    - Creeping charlie (ground ivy)
    - Dandelions

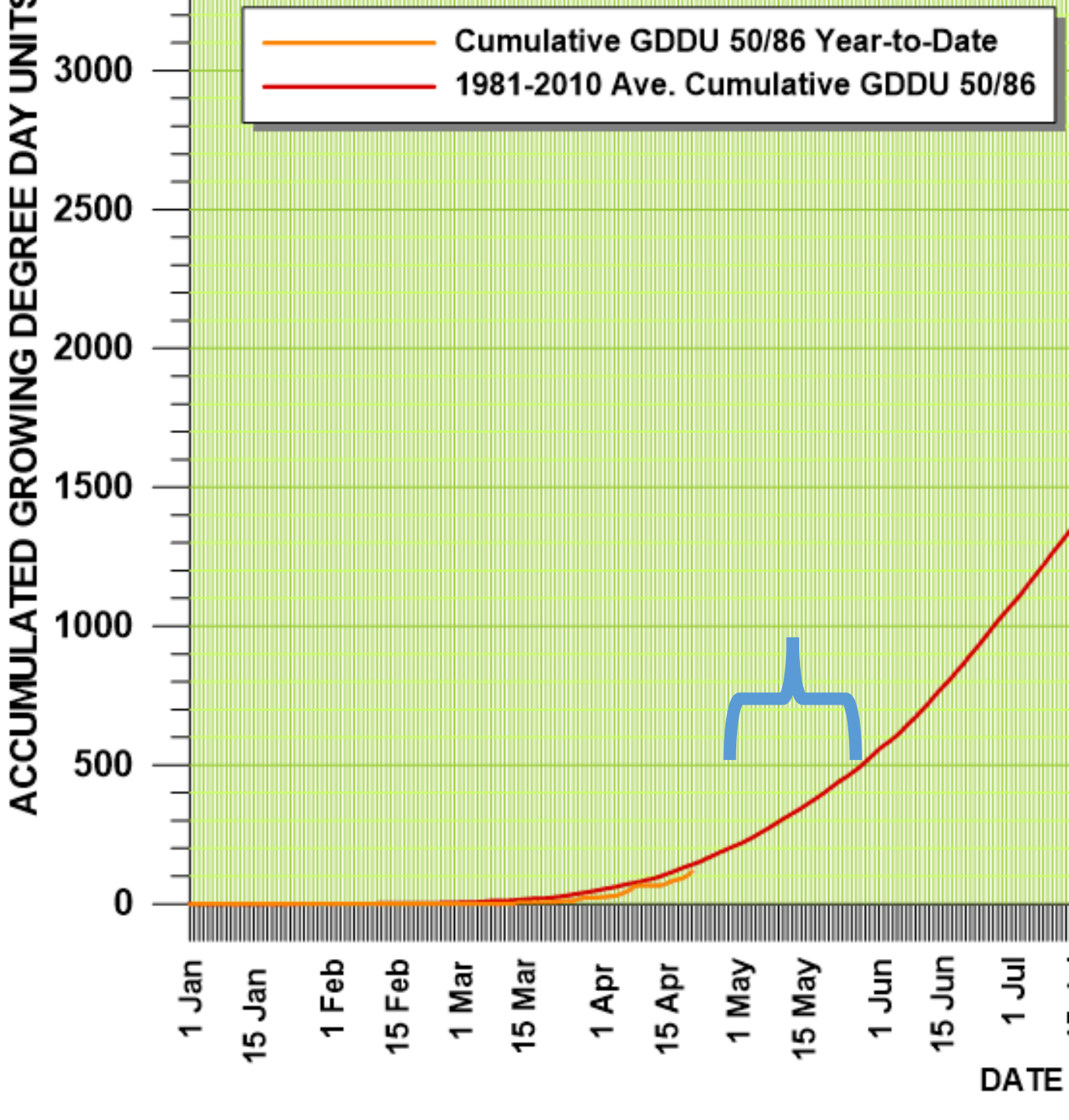
If you use herbicides check for replant interval before seeding grass

- Most of the herbicides *persist for days to weeks and can injure/kill* newly planted seeds and some transplants

- READ THE LABEL
  - Roundup (glyphosate): no restrictions
  - Trimec 1000: Reseed 3 weeks after application
  - Pendulum 3.3: Reseed 3 months after application

Controlling crabgrass with PRE herbicides?
time it right

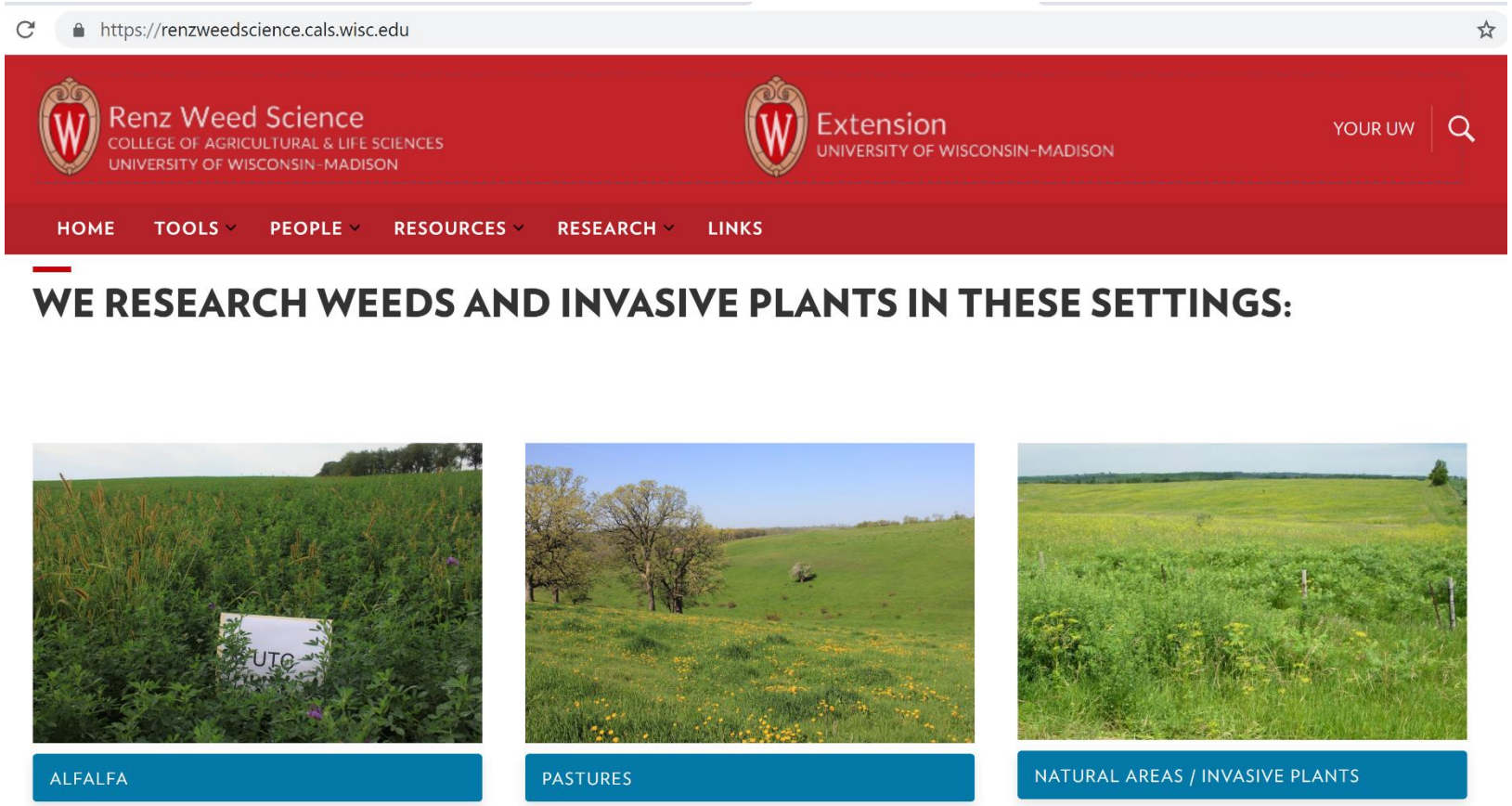
- Germination occurs when soil temperatures in the top two inches range from 60-70 degrees F.
- PRE herbicides should be applied when soil temps are 50-55 degrees F.
- GGD timing is 250-500 =



Resources

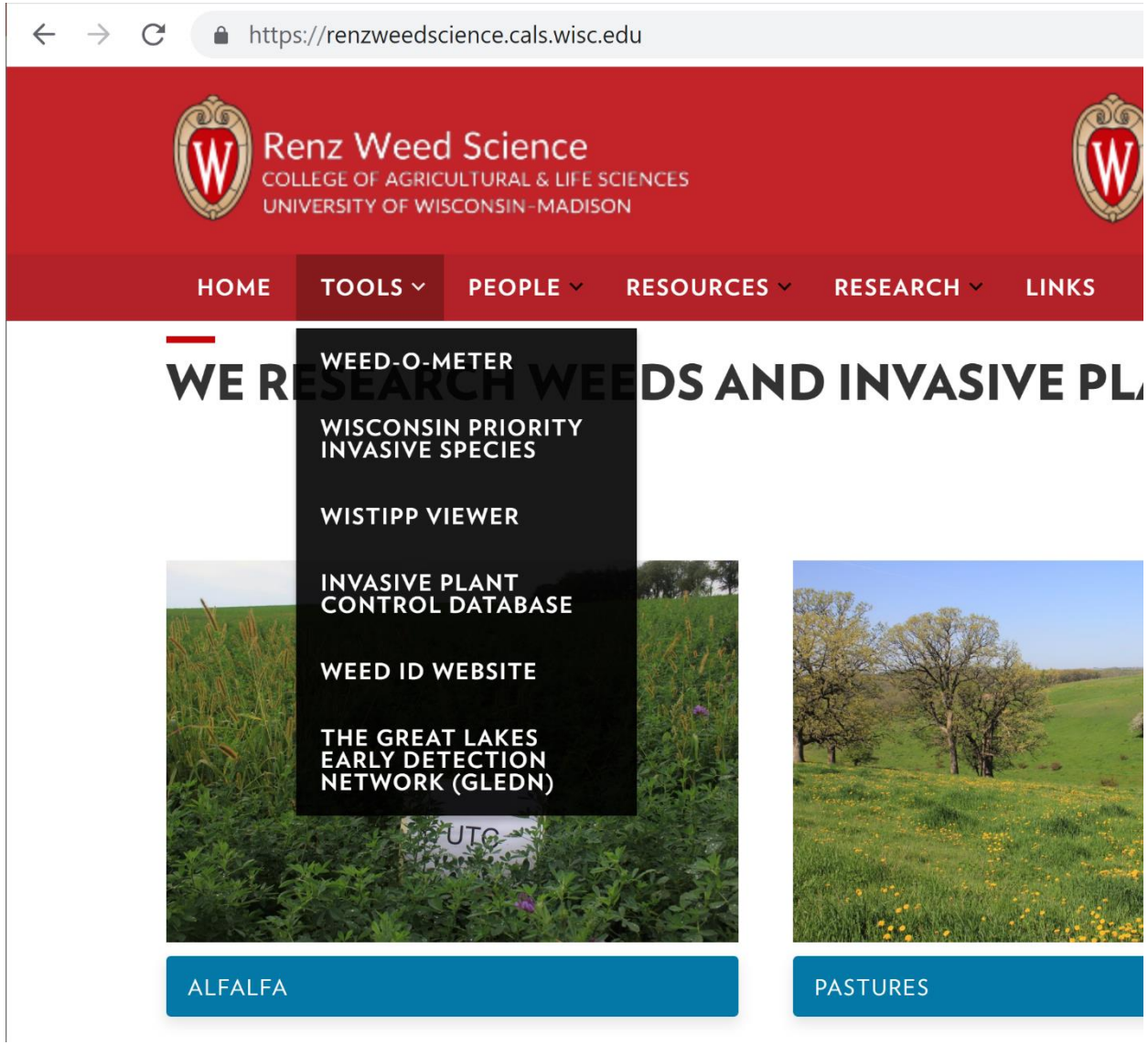
https://Renzweedscience.cals.wisc.edu

- General weed id/info
  - Factsheets on identification
  - Weedometer
  - Weed ID website
- Invasive Plants
  - Factsheets/videos
  - WISTIPP viewer
  - Phenology calendar
- Research summary/reports

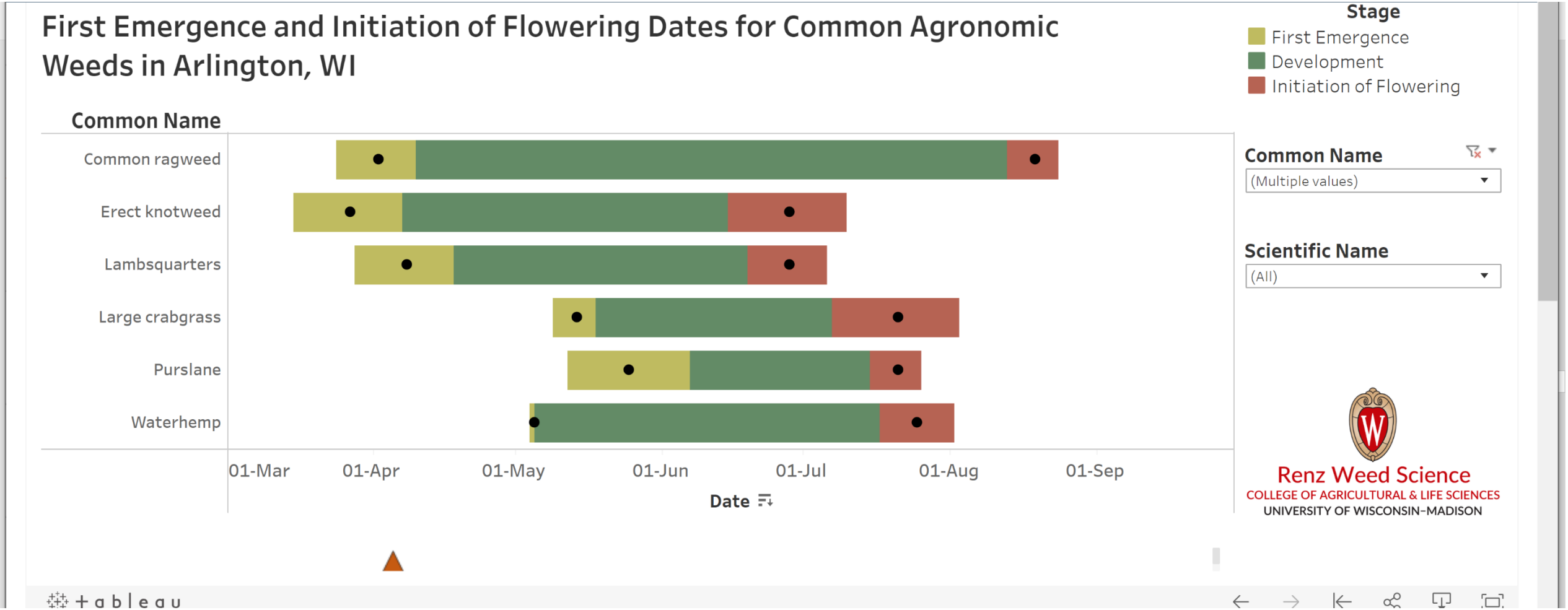


TOOLS

- Weed-o-meter
- Priority invasive species
- WISTIPP viewer
- WEED ID Website
- Great Lakes Early Detection Network



First Emergence and Flowering for Common Weeds



Priority Invasive Species Lists in Wisconsin

An Invasive

County Specific Priority Lists | Autumn Olive | Canada Thistle | Common Buckthorn | Crown Vetch | European Marsh Thistle | Exotic Hon

Invasive plants are a pervasive problem. The ability to detect an invasive species in the early stages of an invasion is critical to control and eradicate populations. The following map series depicts the results of efforts to model the suitable habitat of regulated invasive plants across the state of Wisconsin. This research was performed in the Renz Lab at the University of

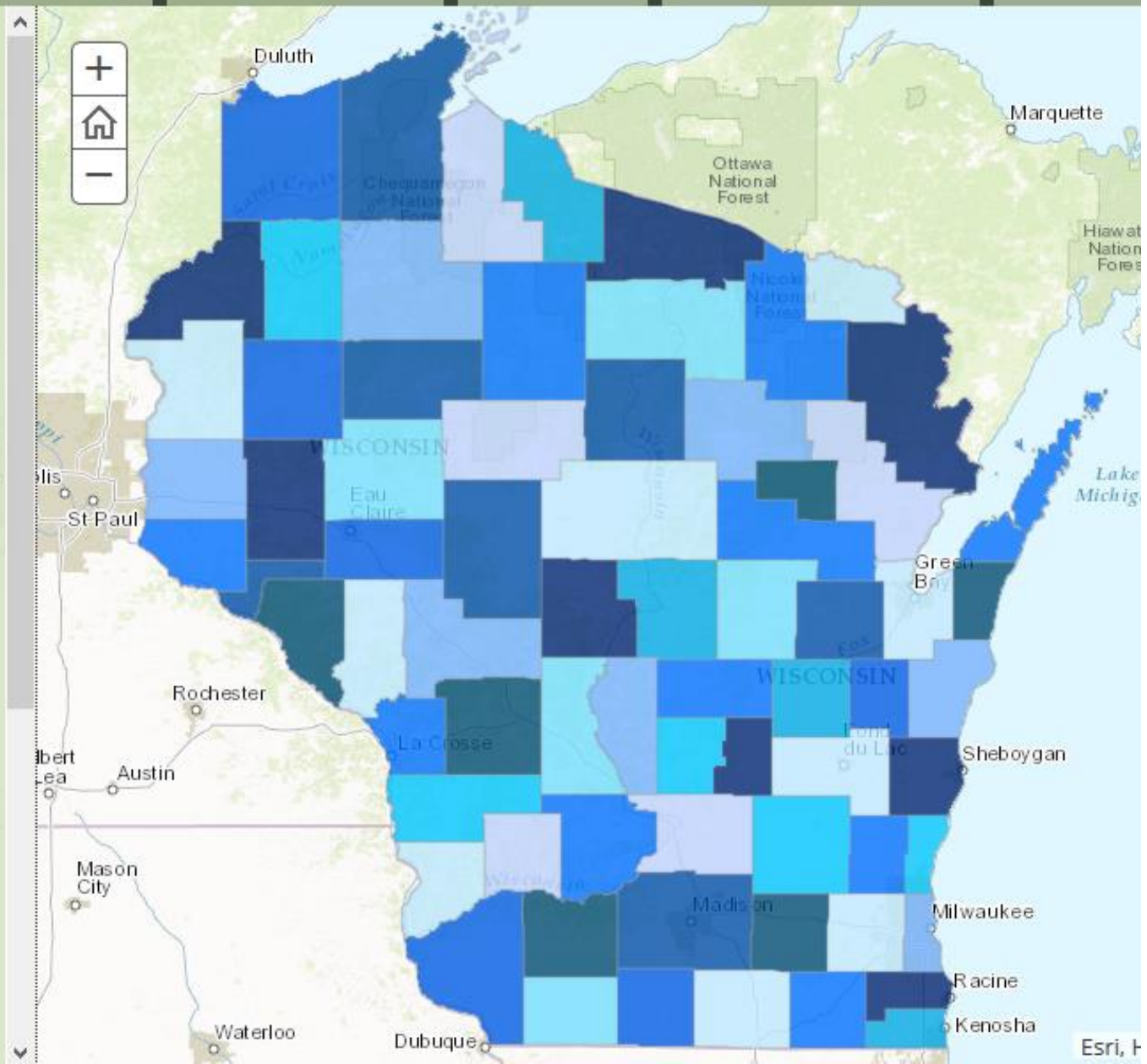
nsion.

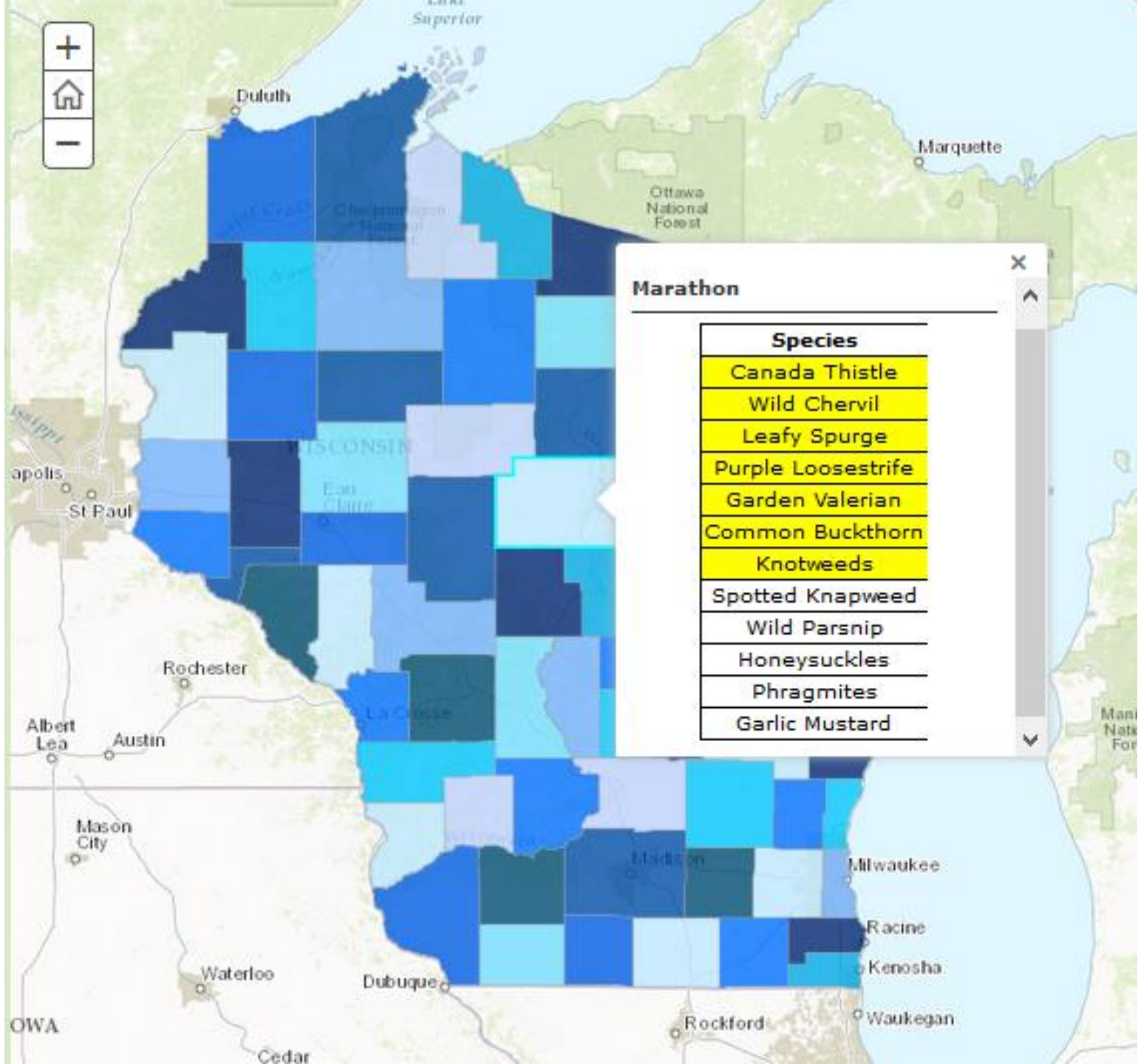
own

2. Display county-specific species lists for invasive species likely to be present (***10-15 species***)
3. Encourage reporting invasive species occurrences

If you are interested in getting involved with our project, we need help locating these (and other) species! Click on your county on the map to the right to find out which invasive plant species are of greatest priority. Species highlighted in ***yellow*** (high priority species) have been identified as those with large areas of suitable habitat in the county, but very few, if any, species occurrence records are currently available. If you are not sure if your location has been reported, click the tab that lists the species of interest to view a map of known locations and links to resources to aid in identification.

Access the story map at:
http://arcg.is/2ob5PdW

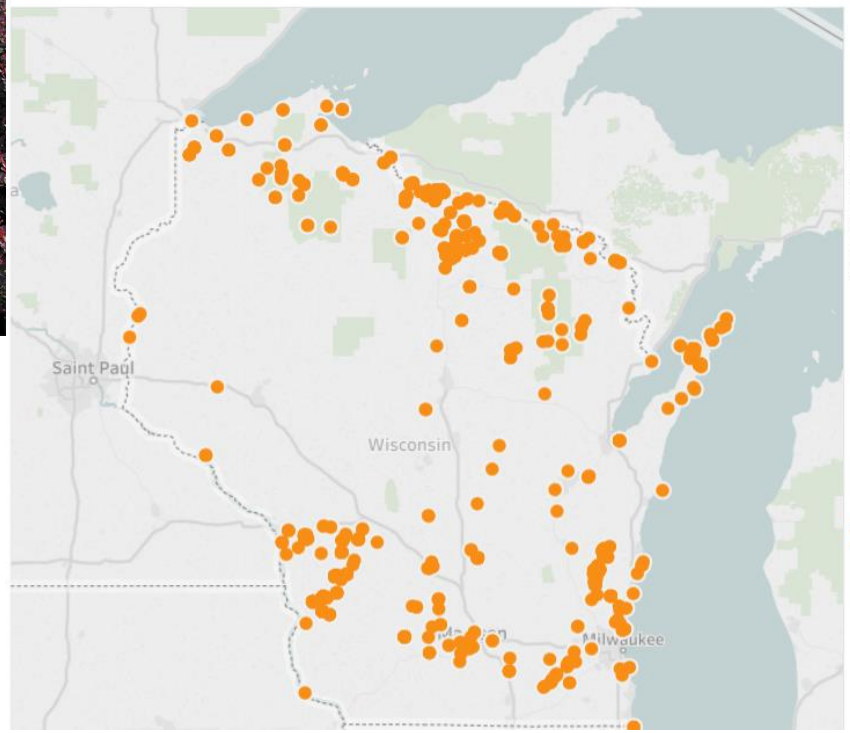


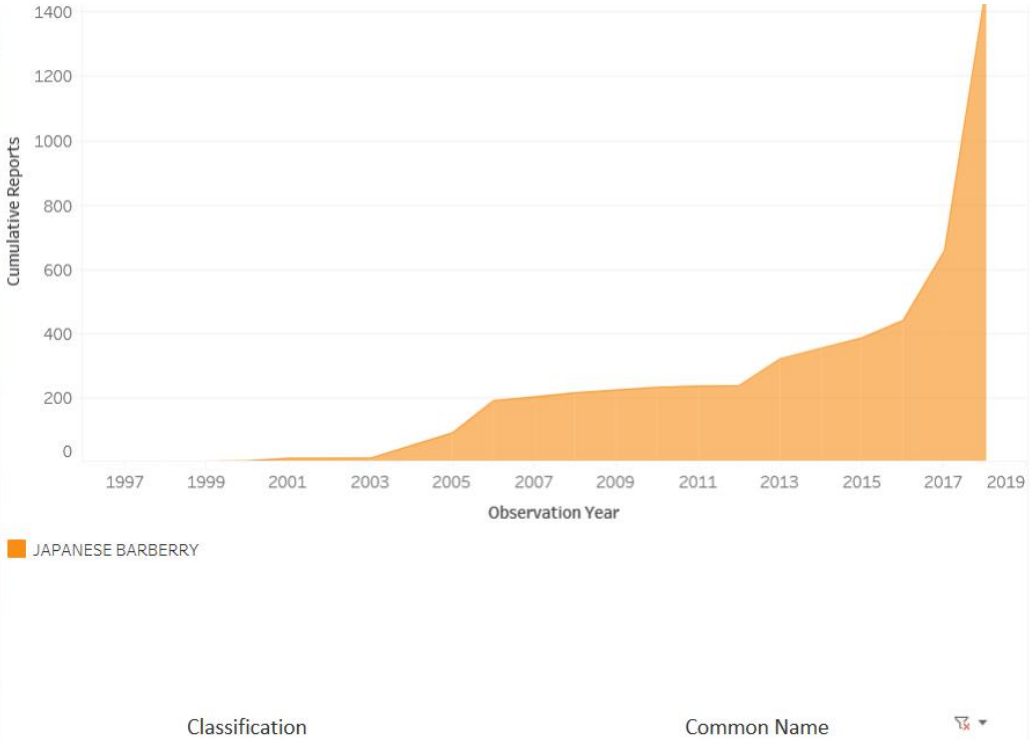


- Website viewed over 20,000 times per year
- New observations
  - 2016 to improve models
  - 2017 validate model

Exploring Current and Future Suitable Habitat for Japanese Barberry in Wisconsin

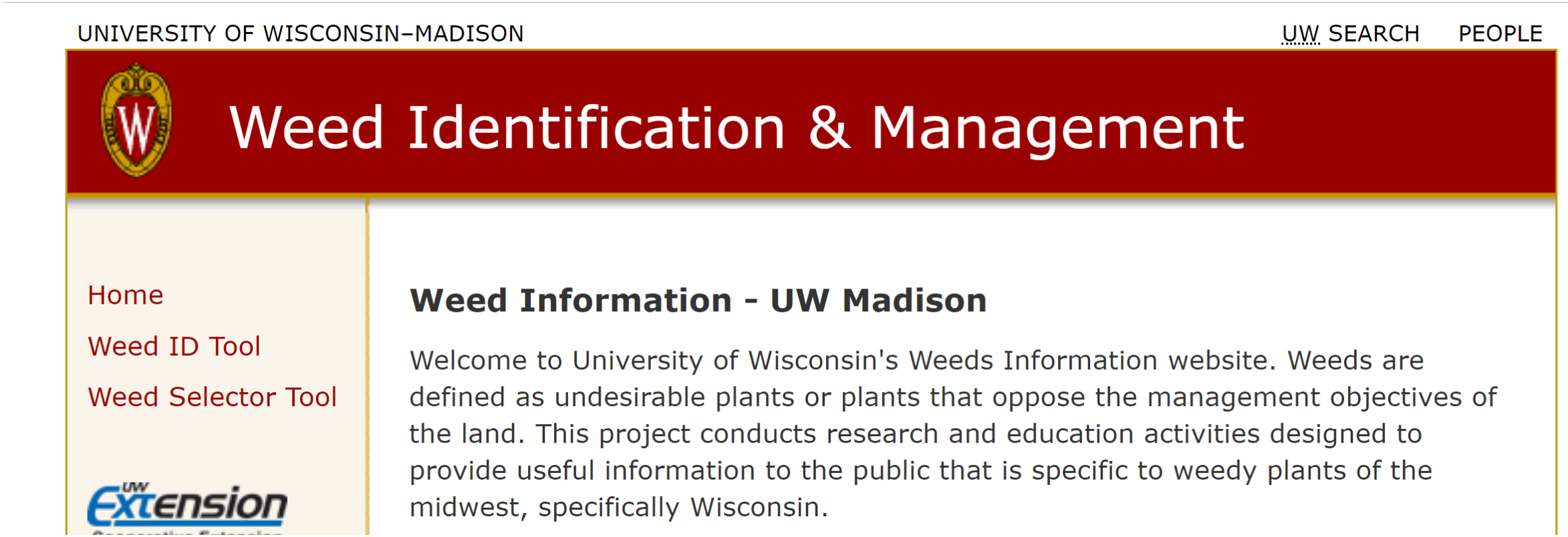
Japanese barberry distribution in Wisconsin





Niels Jorgensen

https://weedid.wisc.edu

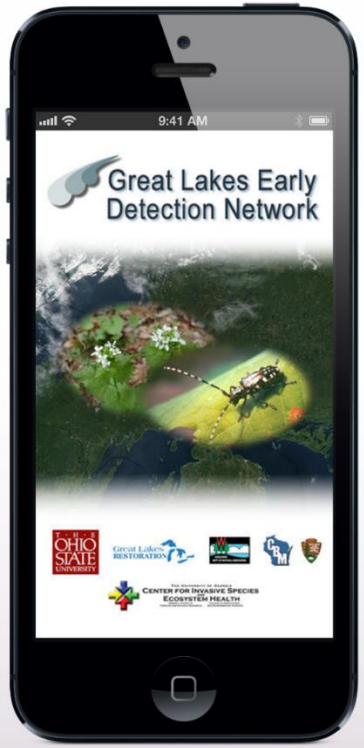


Great Lakes Early Detection Network = EddMapsMidwest

https://www.eddmaps.org/midwest/

GLEDN is an invasive species early detection and warning system for the Great Lakes region developed through funding provided by the National Park Service as part of the Great Lakes Restoration Initiative

GLEDN is an online system that collects invasive species reports from casual observers, verifies these reports and integrates them with others networks. The system then uses this integrated information to send customized early detection email alerts.

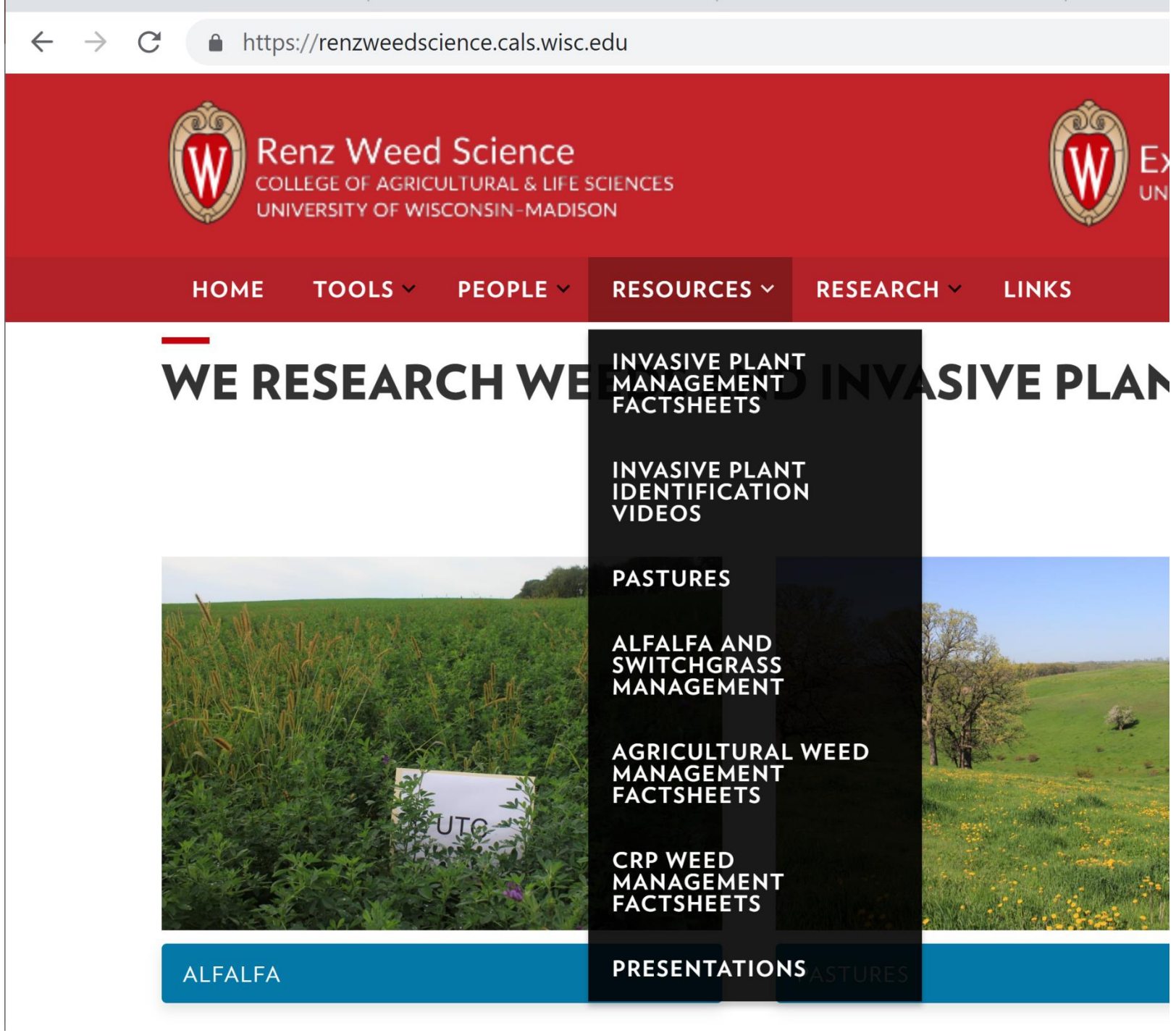


Available on the App Store

ANDROID APP ON Google play

RESOURCES

- Invasive plant factsheets
- Invasive plant videos
- Pasture resource
- Alfalfa/switchgrass resources
- AG Weed id factsheets
- CRP factsheets
- Presentations



AG ID FACTSHEETS

2017 Weed Identification Series

Common Chickweed

Common chickweed is an annual weed that germinates in fall or spring.

Leaves: opposite (0.3 – 1.2 inches long) that are pointed at the tip. No hairs are present except for a single line of hairs on the leaf margin.

Stems: grow mostly prostate and up to 2 ft long. Stems can root at the nodes and form dense patches. Stems are smooth except for a single band of hairs on one side of the stem.

Flowers: 5 petal white flowers that grow from where the leaf connects to the stem. Petals are deeply notched and thus may appear to have 10 petals. Flowers are 0.25 inches wide.

Biology: Fall germinating chickweeds are one of the first plants to emerge and flower in spring. While this is commonly thought of as a winter annual, in wet years seeds can germinate and flower throughout the entire summer.

Similar Plants: several other chickweeds are common to Wisconsin including mouseear chickweed and giant chickweed. Mouseear chickweed has very hairy leaves and stems with more pointed leaves and giant chickweed leaves and flowers are 3-5 times bigger than common chickweed.

2017 Weed Identification Series

Biennial Wormwood

Biennial Wormwood is an annual, common to sandy soils and roadsides.

Leaves: Young leaves develop around the base of the plant (rosette) which will alternate when a stem develops. Leaves (1-3 inches long) lack hairs, are pinnately divided/lobed, and sharply toothed.

Stems: Plants produce a single, hairless stem (3-7 ft tall) with little or no branching.

Flowers: Many small inconspicuous yellow-green flowers (1/8th inch wide) grow from where the leaf connects to the stem. Flowers in August – September depending on the date of germination.

Biology: This species, while present in Wisconsin since < 1900, has been spreading over the past decade. It can be difficult to control as it emerges through July and is naturally tolerant to several common herbicides.

Similar Plants: Biennial wormwood is often misidentified as common ragweed or other wormwood species. Common ragweed has a hairy stem and leaves have round edges. Other wormwood species have a strong odor when leaves are crushed, which biennial wormwood lacks.

RESEARCH

https://renzweedscience.cals.wisc.edu

Renz Weed Science
COLLEGE OF AGRICULTURAL & LIFE SCIENCES
UNIVERSITY OF WISCONSIN-MADISON

Extension
UNIVERSITY OF WISCONS

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- CURRENT RESEARCH PROJECTS
- HERBICIDE TRIALS
- PUBLISHED PAPERS

WE RESEARCH WEEDS AND [illegible]ANTS IN TH

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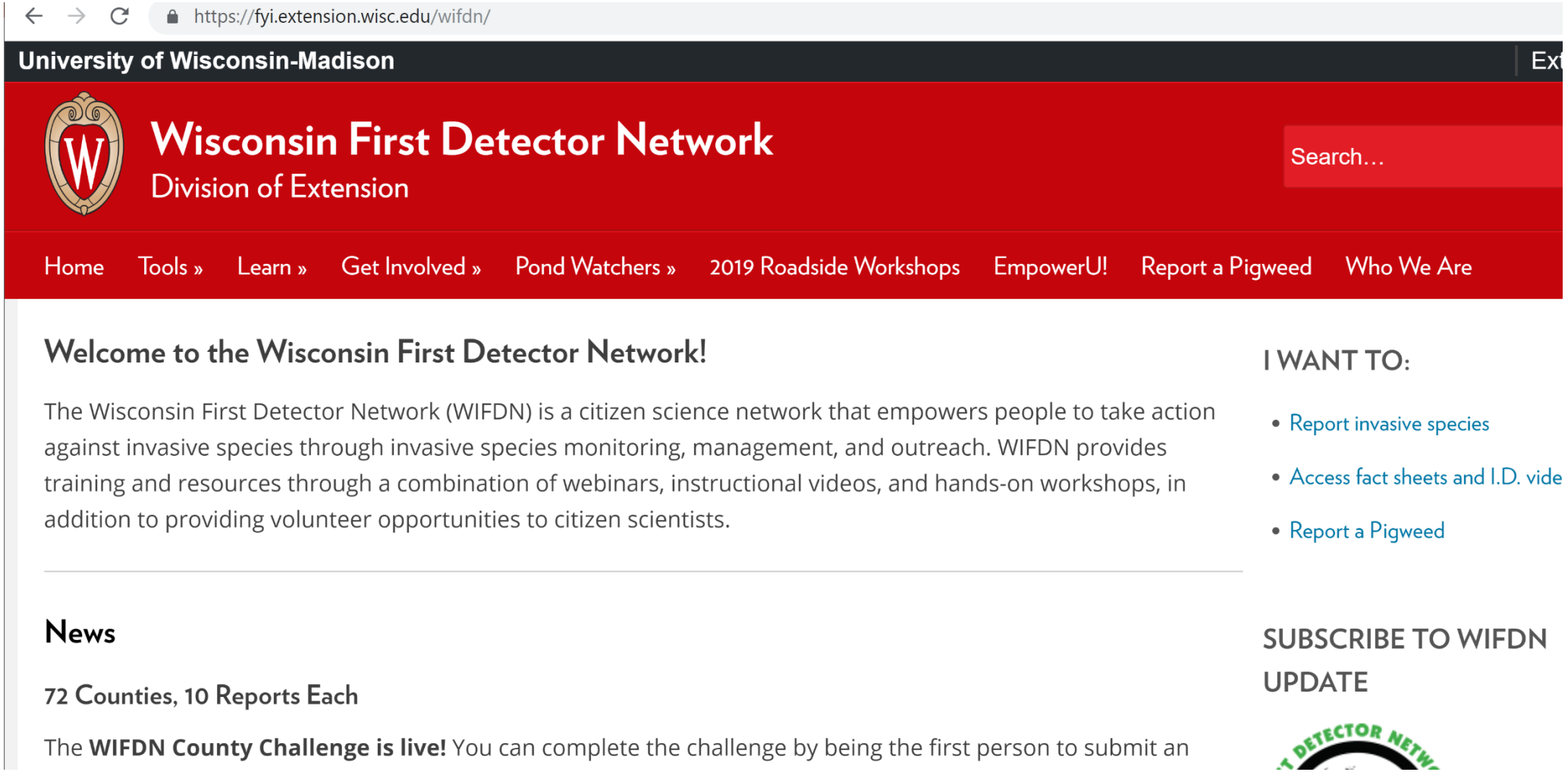
PASTURES

Citizen Science information on WIFDN website

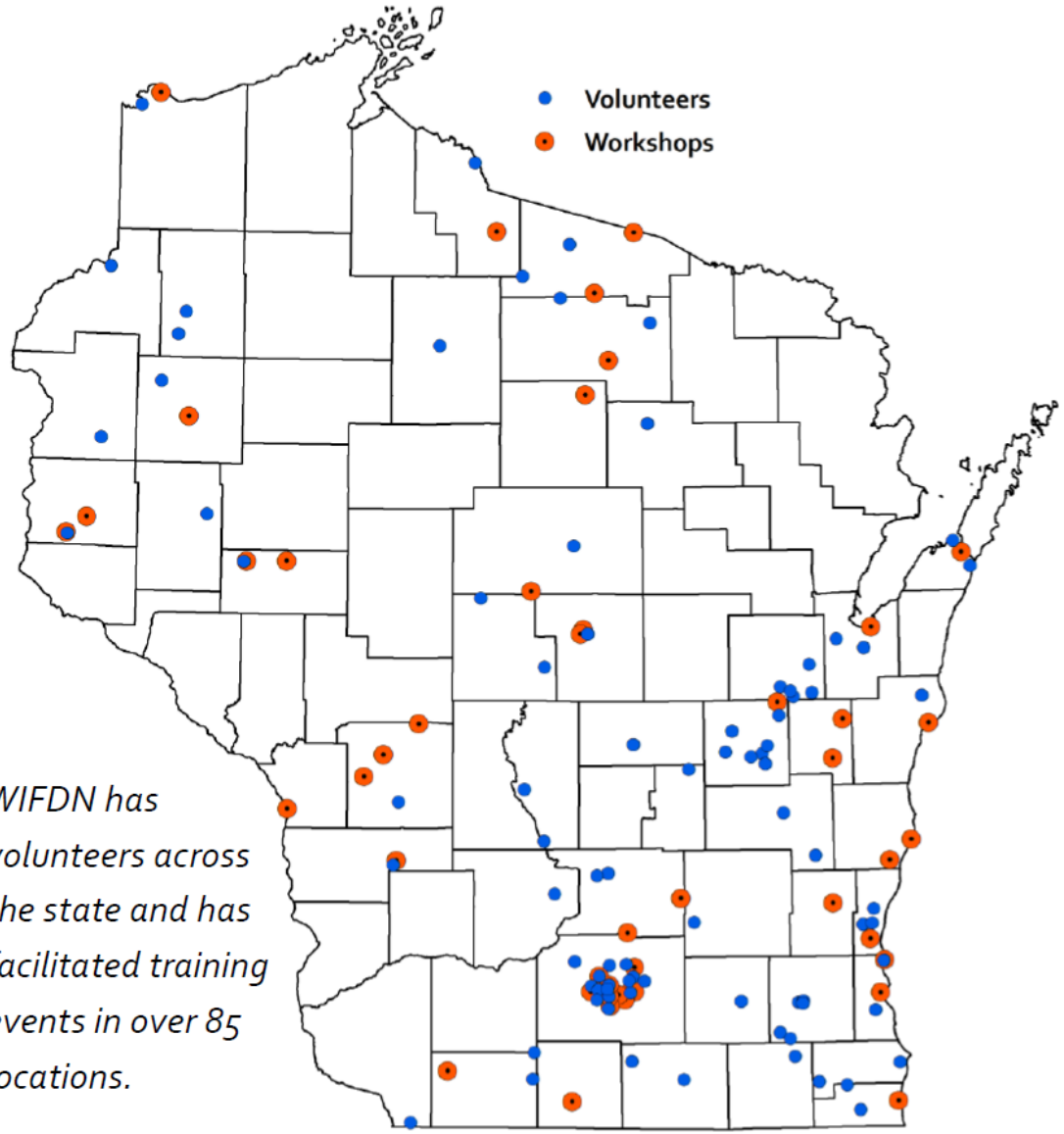
https://fyi.extension.wisc.edu/wifdn



Wisconsin First Detector Network

- Established in 2013, launched 2014
- trains citizen scientists to take action against invasive species by training individuals to identify and report observations

WIFDN Impacts 2014-2018



WIFDN has volunteers across the state and has facilitated training events in over 85 locations.

14,145

invasive species reports submitted via the GLEDN app, plus **>55,000** additional records added to EDDMapS by WIFDN partners

3,397

participants attended **> 100** workshops + webinars

27,563

views of WIFDN videos, totaling over **1,080** hours

2014-2018 WIFDN Volunteerism

12,905 reported volunteer hours

$24/hour (Independent Sector's 2017 WI volunteer value)

$309,720

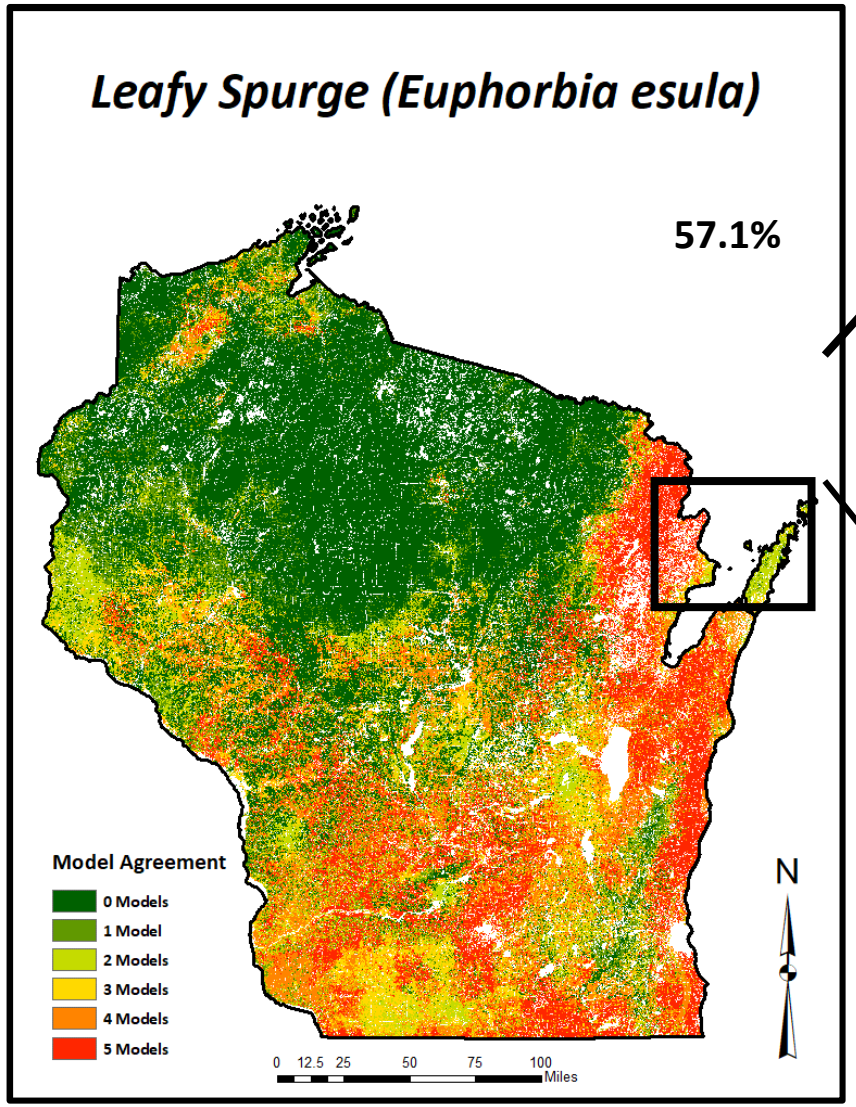
$316,462

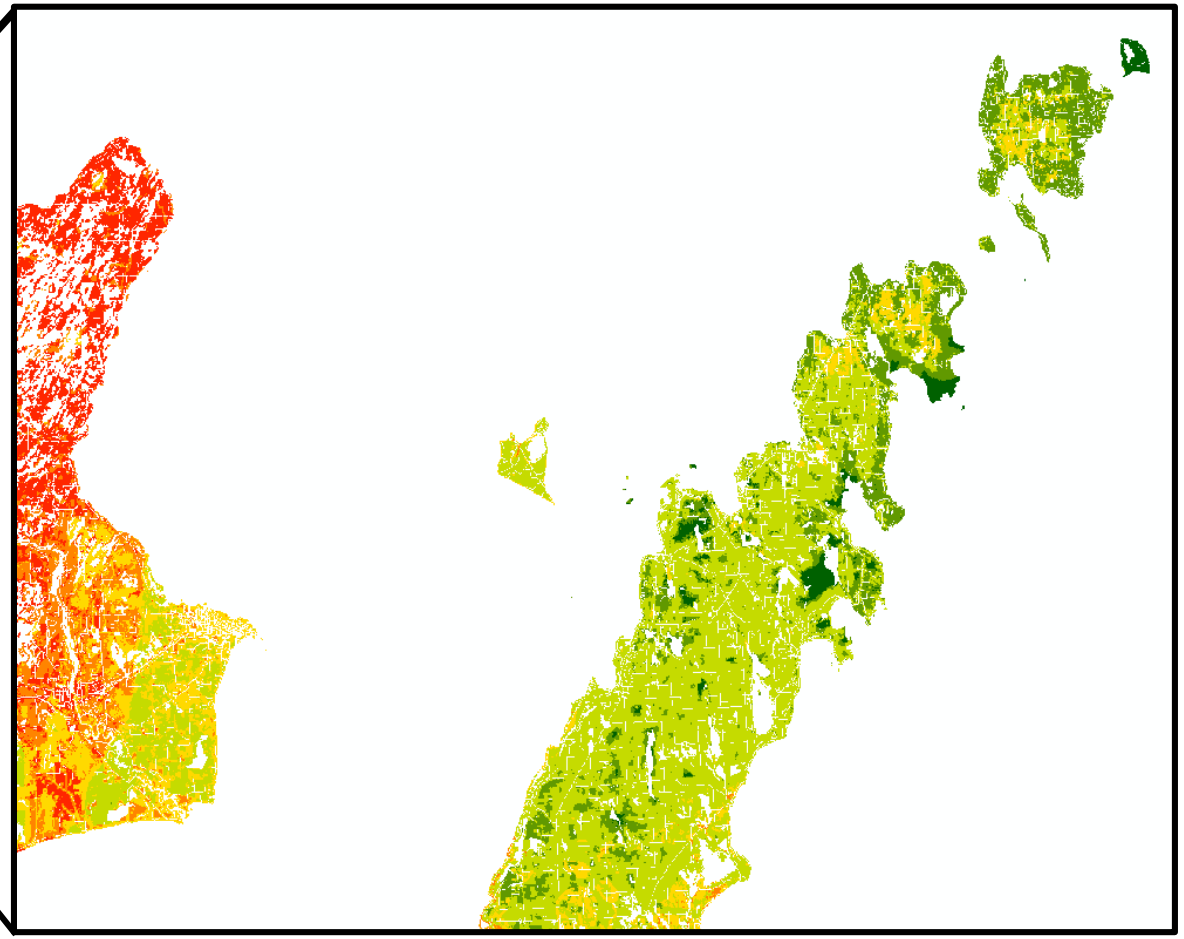
12,602 miles traveled to volunteer activities

$0.535/mi (2017 Federal mileage reimbursement rate)

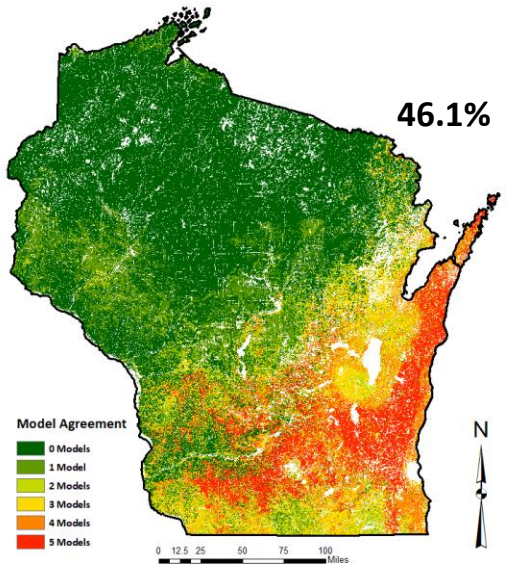
$6,742

What we do with all the data we collect…….

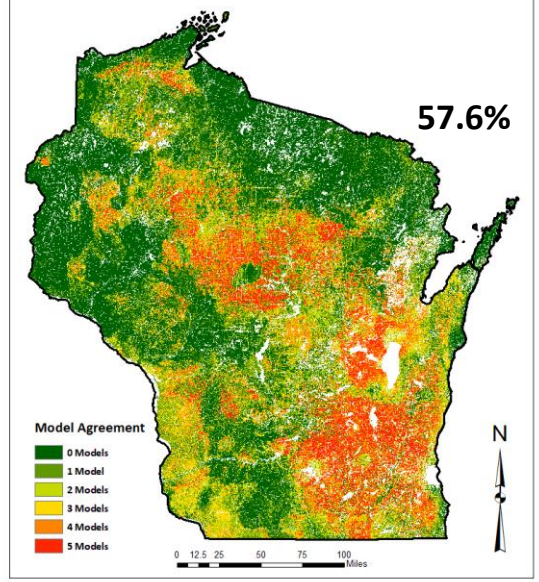




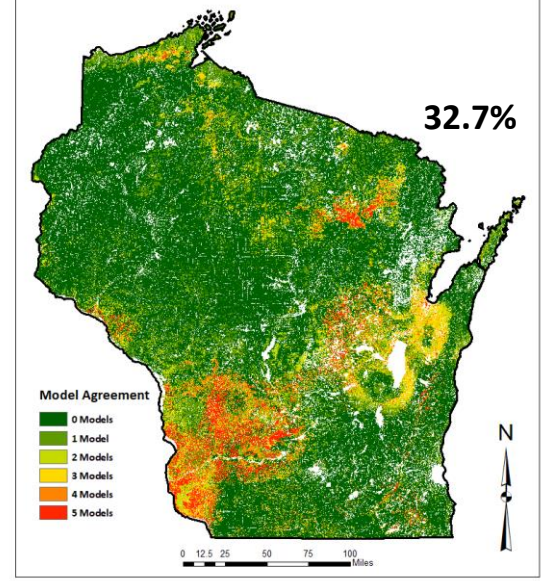
Autumn Olive (Elaeagnus umbellata)



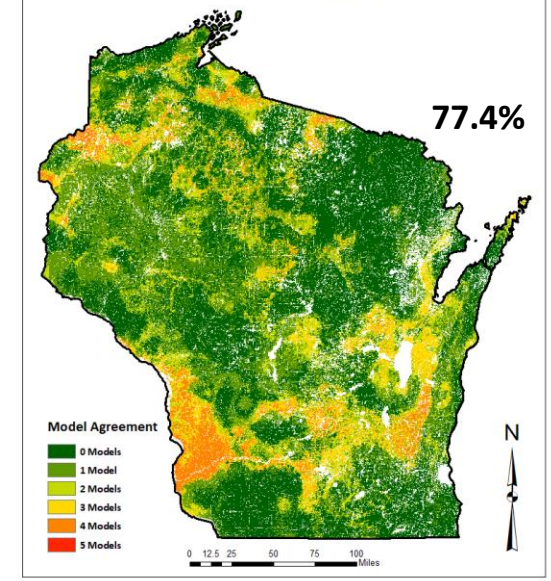
Canada Thistle (Cirsium arvense)



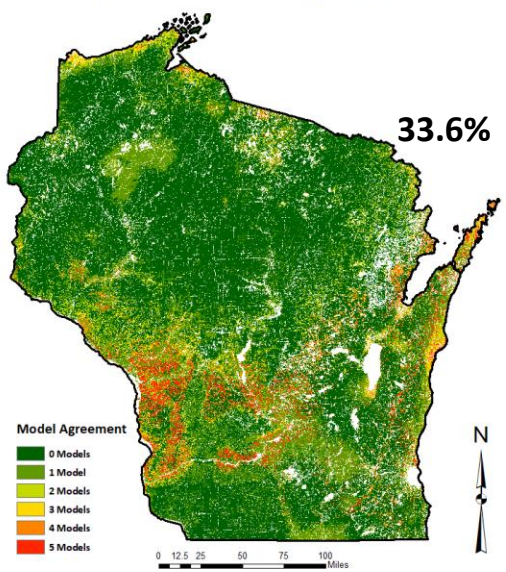
Garlic Mustard (Alliaria petiolata)



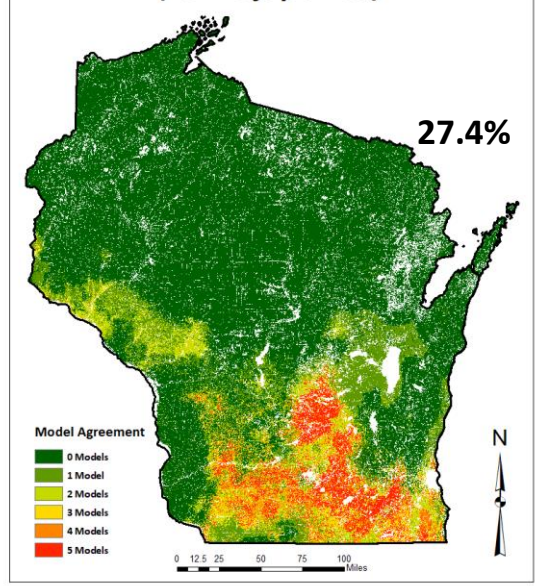
Exotic Bush Honeysuckles (Lonicera spp.)



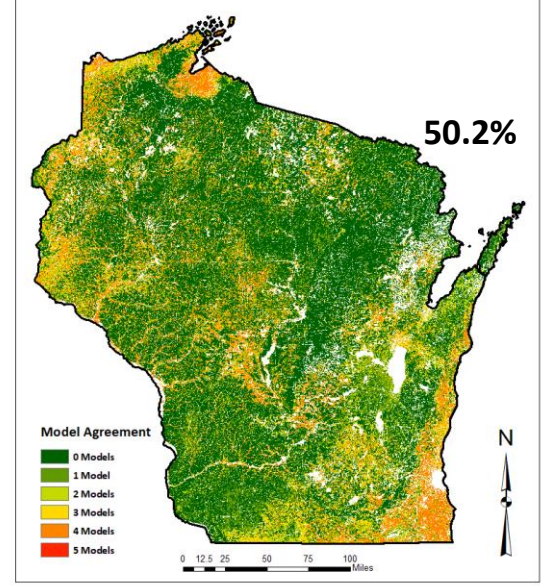
Japanese Barberry (Berberis thungbergii)



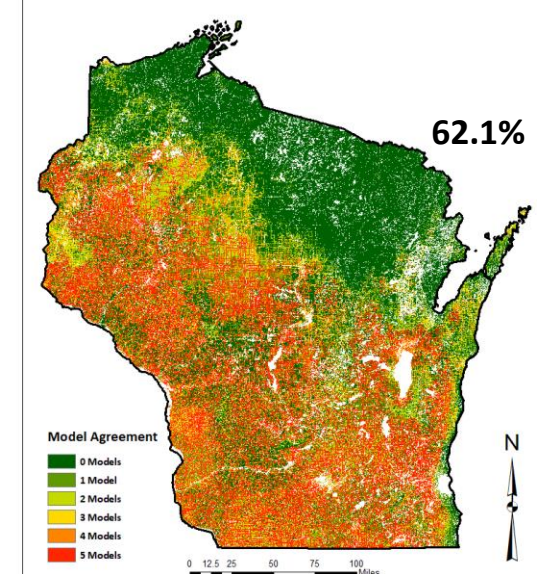
Japanese Hedge-Parsley (Torilis japonica)



Purple Loosestrife (Lythrum salicaria)

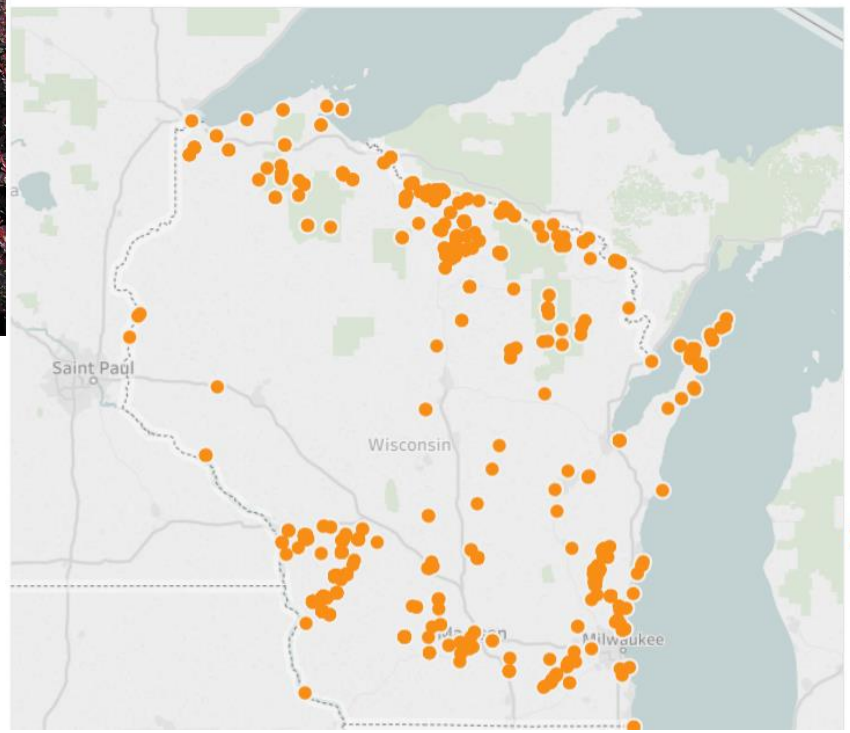


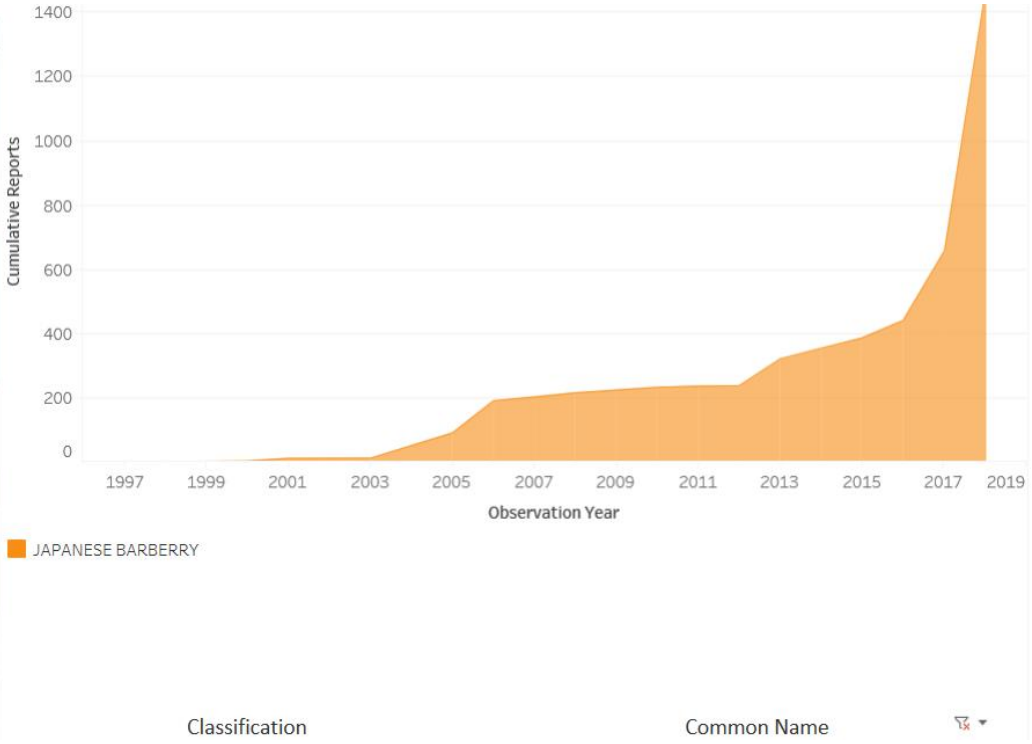
Wild Parsnip (Pastinaca sativa)



Exploring Current and Future Suitable Habitat for Japanese Barberry in Wisconsin

Japanese barberry distribution in Wisconsin

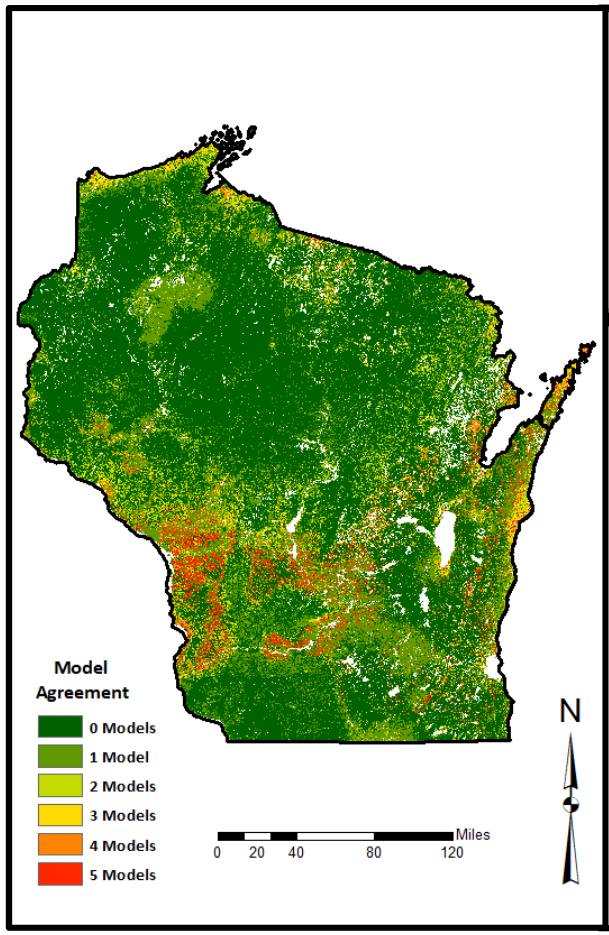




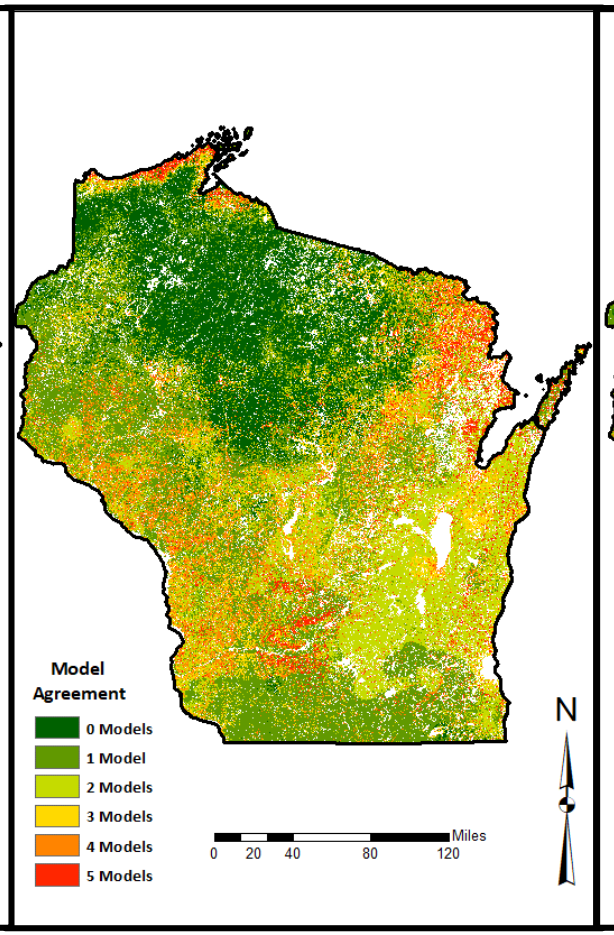
Niels Jorgensen

Current and Future Habitat Model Predictions

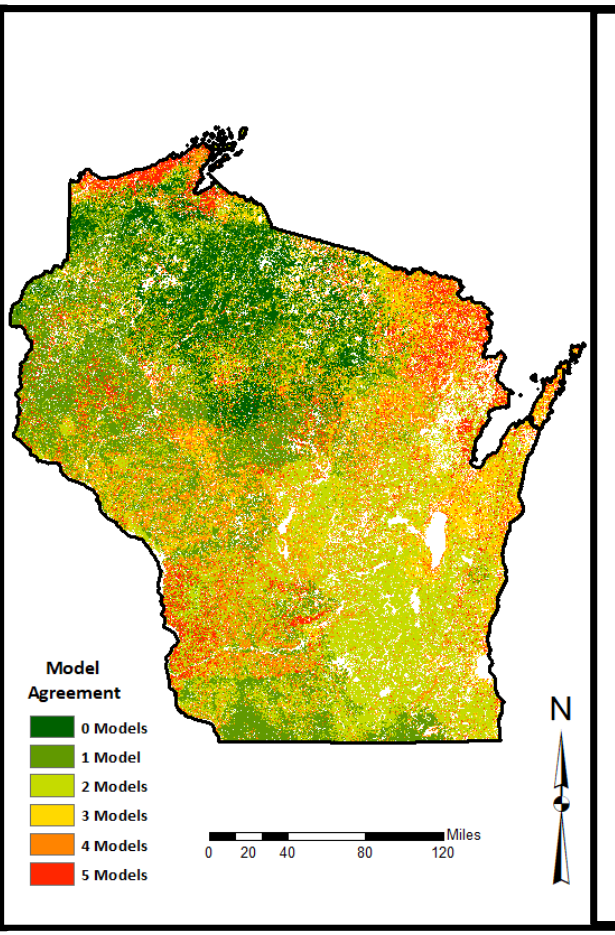
Current



2050s



2080s



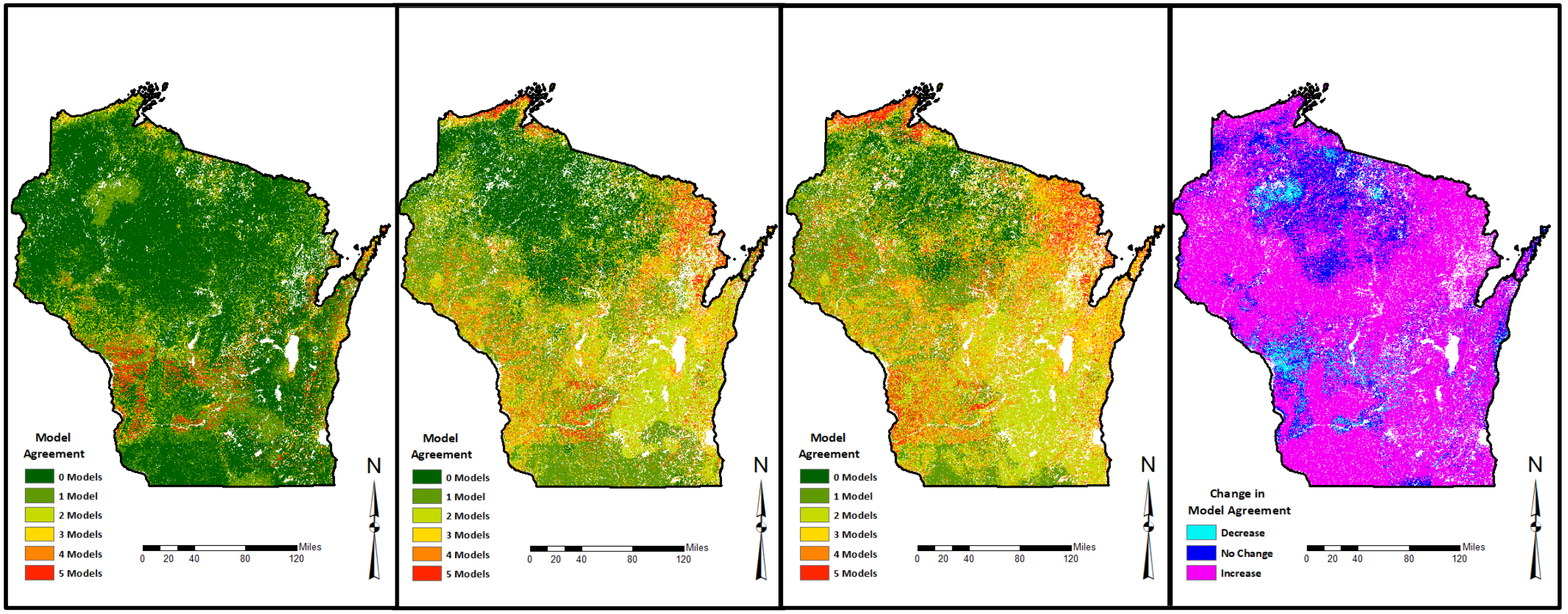
Current and Future Habitat Model Predictions

Current

2050s

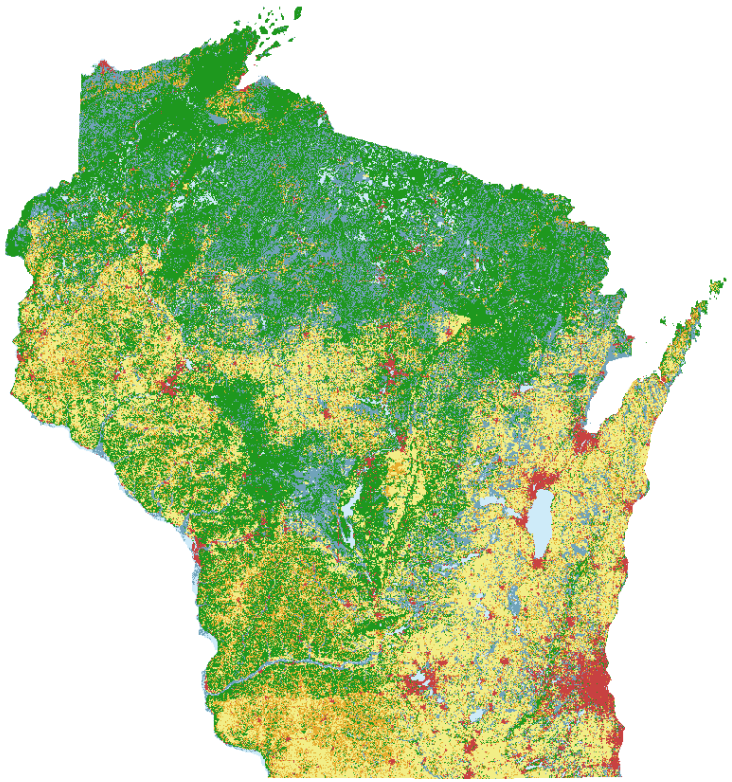
2080s

Change



Habitats most likely to be invaded by Japanese barberry

Land Cover Type	Current Suitability	Percent Change from Current Suitability	
		2050s	2080s
Urban/Developed	37.70%	7.31%	22.82%
Agriculture	19.86%	-9.92%	21.51%
Grassland	16.12%	34.76%	85.96%
Forest	38.86%	56.93%	92.76%
Wetland	29.84%	22.01%	60.09%
Barren	22.43%	-18.13%	5.64%
Shrubland	14.26%	88.20%	80.42%



Greatest potential impacted area:

- >2.5 million hectares of *current* forests
- >500,000 hectares of *current* wetlands

Glyphosate is in the news…….

- **US District Court awarded individual $289 Million for damages in relation to glyphosate/roundup**
  - The decision was made by a jury NOT SCIENTISTS
  - The core issues of the case were
    - **Does glyphosate causes cancer?**
    - Did Monsanto not disclose this added risk to clientele?
    - Did glyphosate exposure cause the plaintiff's cancer?

Glyphosate facts

- Most widely used pesticide in United States
  - >250 millions lbs applied annually
  - Agriculture accounts for 90% use
- is a herbicide that has low **acute** human toxicology
- **It is debated if glyphosate can cause cancer**,
  - **IF it is a carcinogen**, compare exposure to known carcinogens we voluntarily ingest like processed meat, alcohol, coffee

Be critical of things your read from the press

Details of the research

Mutation Research/Reviews in Mutation Research
Available online 10 February 2019
In Press, Accepted Manuscript

Review

Exposure to Glyphosate-Based Herbicides and Risk for Non-Hodgkin Lymphoma: A Meta-Analysis and Supporting Evidence

Luoping Zhang [a], Iemaan Rana [a], Rachel M. Shaffer [b], Emanuela Taioli [c], Lianne Sheppard [b, d]
Show more

https://doi.org/10.1016/j.mrrev.2019.02.001

- investigated if link between **high cumulative exposures** to glyphosate and cancer
  - Same dataset that found no link but excluded subjects with lower exposure
  - High exposure was due to not wearing PPE (e.g. gloves)

- suggests a compelling link between exposures to glyphosate and increased risk of cancer

When you read the paper you see this quote

9. Conclusions and Future Directions

The rise of glyphosate as the most widely used herbicide raises serious health concerns, given its potential links with NHL. Using our high-exposure *a priori* hypothesis and including the recently updated AHS cohort in a meta-analysis for the first time, we report that GBH exposure is associated with increased risk of NHL in humans. Our findings are consistent with results reported from prior meta-analyses but show higher risk for NHL because of our focus on the highest exposure groups. However, given the heterogeneity between the studies included, the numerical risk estimates should be interpreted with caution. Additionally, as noted above and depicted in Figure 3, the

Reality check on carcinogens

American Cancer Society

What causes cancer?

- Lifestyle factors
  - nutrition, tobacco use, physical activity
- Naturally occurring exposures
  - ultraviolet light, radon gas, infectious agents, etc.
- Medical treatments
  - radiation and medicines including chemotherapy, hormone drugs
- Workplace/Household exposures
- Pollution

carcinogen listings don’t have equal risk

1 hot dog per day increased the risk colon cancer by 1% (from 5% - 6%)

30% of all cancer deaths in the United States, 80% of all lung cancer deaths.

How do we deal with skin cancer?

MINIMIZE EXPOSURE

Australian guidelines

- **Slip** on some sun-protective clothing
- **Slop** on broad spectrum, water resistant SPF30 (or higher) sunscreen.
- **Slap on a hat** - to protect your face, head, neck and ears.
- **Seek** shade.
- **Slide** on some sunglasses

How to choose a herbicide

- Start with “to use or not to use”?
- Does it control the in questions?
- Is it registered where the weed is?
- Can I apply it safely?
- Can I apply it correctly?
- How much does it cost?