



BUMBLE BEE BRIGADE

2020 YEAR-IN-REVIEW

When the 2020 monitoring season began, we weren't sure what to expect. The previous two years had gotten B3 off to an amazing start, with volunteers and partners far exceeding our expectations in terms of numbers and effort. But with in-person trainings canceled and travel limited statewide, it seemed possible that we'd see a major dip in participation in 2020. Instead, the pattern from the previous two years continued, and new and returning B3 participants submitted more observations than ever before. We are extremely grateful to everyone who was part of the project this year. Your dedication to monitoring and conserving Wisconsin's bumble bees is inspiring. Thank you all!

-Eva, Jay, and Terrell (The B3 Team)



Male *Bombus pennsylvanicus* were confirmed for the first time in B3 in 2020. Photo: B3 volunteer APR

B3 Contributions	Number*
Volunteers	148
Species Observed	16
Observations	4113
Surveys	1925 (304 small area & 1621 incidental)
Sites	568
Counties with Surveys	63

*Includes 33 historical observations submitted in 2020



2020 Preliminary Results

- The first bee reported to B3 was a *B. impatiens* queen in Dane County on April 5. While most reports of April bees came from the southern half of the state, *B. ternarius* queens were observed in April in Ashland, Bayfield, Iron, and Marinette counties.
- The last bees reported to B3 were a *B. impatiens* male and *B. rufocinctus* queen in Dane County on November 9.
- *B. pensylvanicus* was verified at five sites, up from just one in both 2018 and 2019. The 2020 observations included the first B3 report of a male *B. pensylvanicus*.
- Participants added new county records for the federally endangered *B. affinis* in Ozaukee, Pepin and Winnebago counties, and *B. affinis* was reported in Vernon County for the first time since 1993, Fond du Lac County for the first time since 1975, and Door County for the first time since 1960. The map on the Page 4 depicts where and when *B. affinis* were last verified throughout the state, including observations from other sources.
- *B. pensylvanicus*, *insularis*, and *flavidus* were all verified at less than 10 sites, while *B. griseocollis* and *impatiens* were both reported at over 200. See the table on page 3 for a full list of the number of sites at which each species was found. Please note that these numbers don't fully represent how rare or common a species is. Reporting bias, location of volunteers, and difficulty in identifying some species in photos all play a role in the number of sites at which a species is verified.
- 25 bumble bee nests were verified, representing 10 species. This is a substantial increase from eight in 2019 and three in 2018. 11 of the 25 were found in below-ground holes; eight were found in human-made structures (e.g. shed, garage, bird house). Four were on the ground in dense vegetation, and two were exposed after apparent disturbance by animals.



An April *B. ternarius* in Iron County. Photo: Anonymous B3 Volunteer



One of the last bees of the year, a *B. Impatiens* male in Dane County. Photo: B3 Volunteer Judy Cardin

2020 Preliminary Results

Species	2020 Sites
<i>B. pensylvanicus</i> (American)	5
<i>B. flavidus</i> (Fernald cuckoo)	7
<i>B. insularis</i> (Indiscriminate cuckoo)	7
<i>B. perplexus</i> (Confusing)	18
<i>B. terricola</i> (Yellowbanded)	26
<i>B. borealis</i> (Northern amber)	45
<i>B. citrinus</i> (Lemon cuckoo)	70
<i>B. ternarius</i> (Tricolored)	72
<i>B. affinis</i> (Rusty Patched)	96
<i>B. fervidus</i> (Yellow)	112
<i>B. auricomus</i> (Black and gold)	114
<i>B. vagans</i> (Half-black)	139
<i>B. rufocinctus</i> (Redbelted)	173
<i>B. bimaculatus</i> (Twospotted)	177
<i>B. griseocollis</i> (Brownbelted)	201
<i>B. impatiens</i> (Common eastern)	278



B. affinis. Photo: Milwaukee County Parks Natural Areas Program

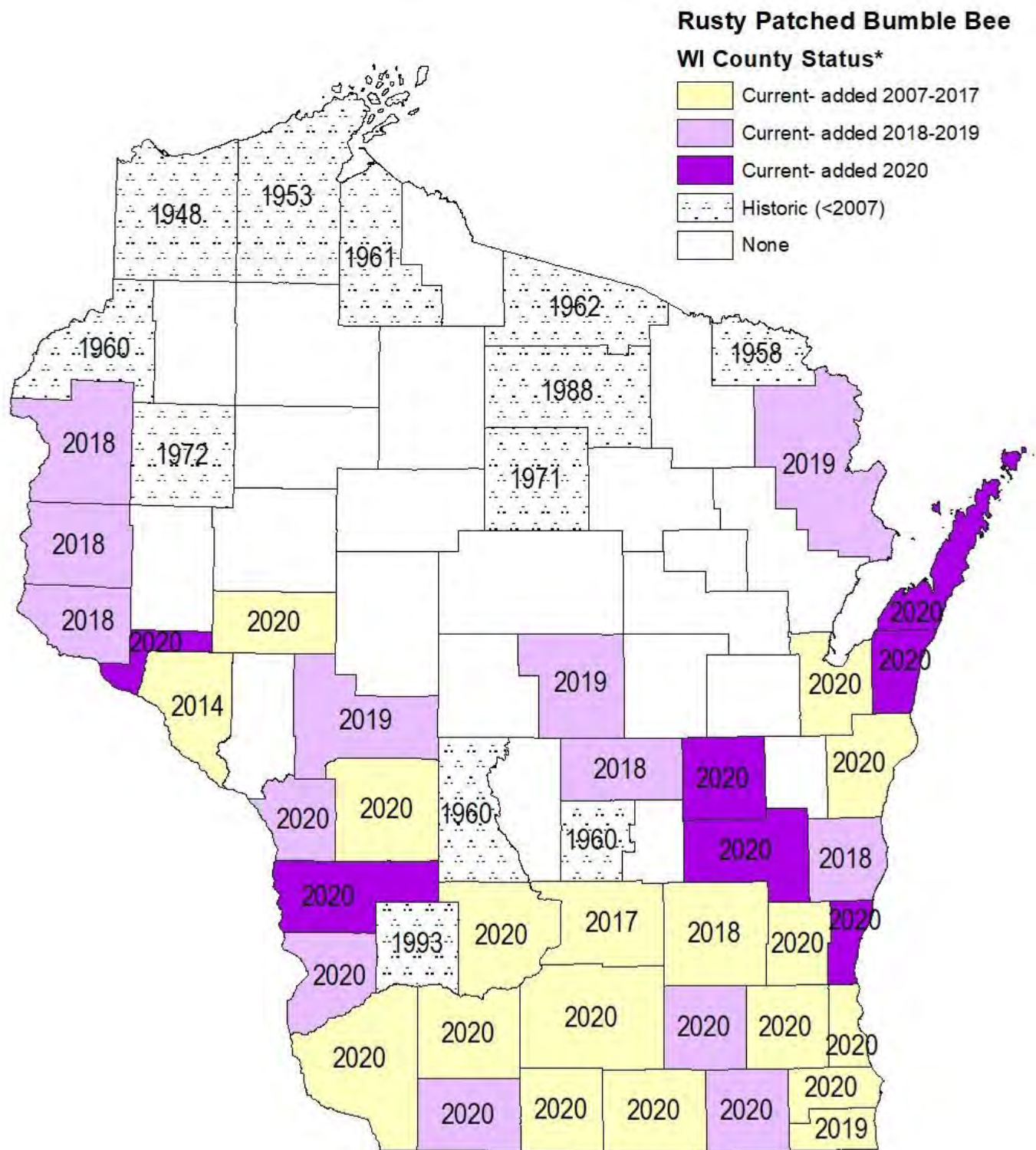


B. rufocinctus nest, perhaps disturbed by a predator. Photo: B3 Volunteer K8Baldwin



B. fervidus nest. Photo: B3 Volunteer Timothy P.

Known Distribution of the Rusty Patched Bumble Bee



Map: Wisconsin counties with current (>2006) and historic (<2007) observations of *B. affinis* (rusty patched). Dates on the map indicate year of most recent observation. Colors indicate timeframe in which the first current observation was added, with light and dark purple indicating years since B3 began. The majority of 2018-2020 observations come from B3 volunteers and DNR surveys.

2020 Participation by County

B3 participation varies a great deal by county, with the most populous counties tending to have more volunteers. The number of species verified in a county doesn't always represent the diversity of bumble bee species present. Instead, it often relates to the number of volunteers participating in that county or how often they survey.

County*	Participants	Sites	Surveys	Species Verified
Adams	1	1	8	6
Ashland	4	9	12	9
Barron	2	2	2	7
Bayfield	6	17	61	10
Brown	1	3	3	5
Burnett	1	1	1	1
Calumet	3	4	4	4
Chippewa	3	5	7	6
Columbia	1	1	1	1
Crawford	8	15	73	9
Dane	33	75	395	11
Dodge	2	2	7	6
Door	5	6	7	4
Dunn	3	6	8	8
Eau Claire	2	3	4	4
Fond du Lac	2	3	3	3
Forest	1	2	3	3
Grant	5	6	5	6
Green	4	4	5	7
Green Lake	2	2	6	5
Iowa	6	10	23	9
Iron	3	5	9	4
Jackson	4	11	14	7
Jefferson	2	6	40	10
Juneau	3	3	3	3
Kenosha	2	2	9	5
Kewaunee	1	1	1	1
La Crosse	7	20	73	11
Lafayette	1	1	1	1

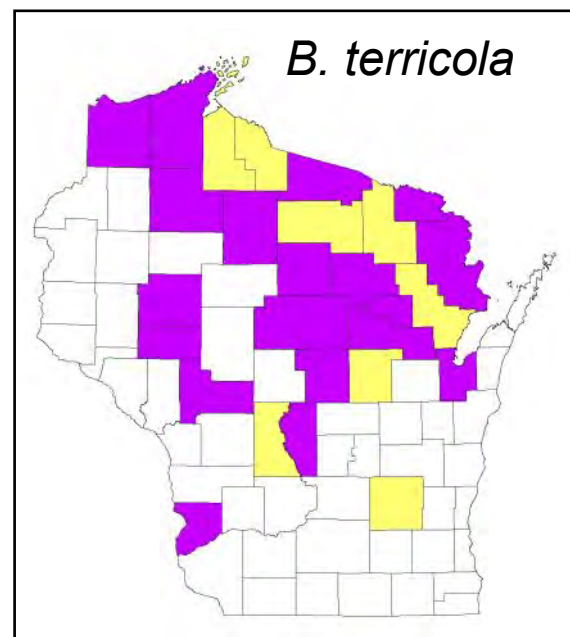
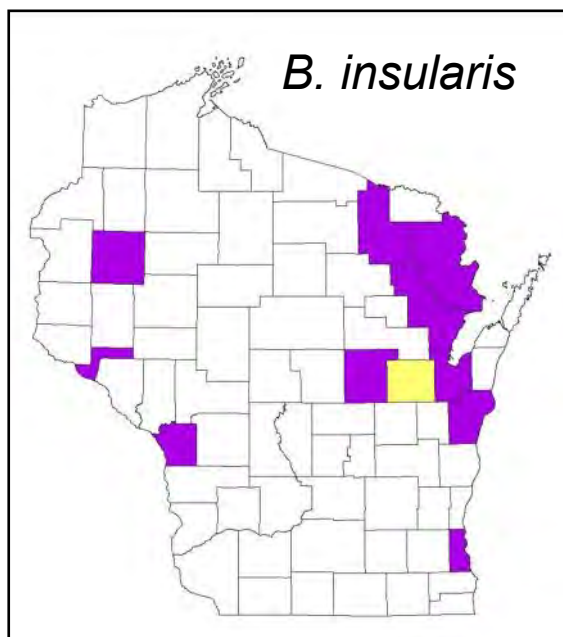
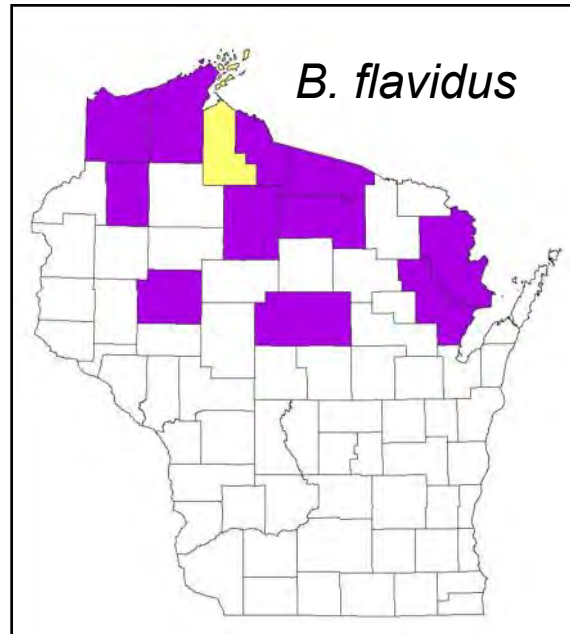
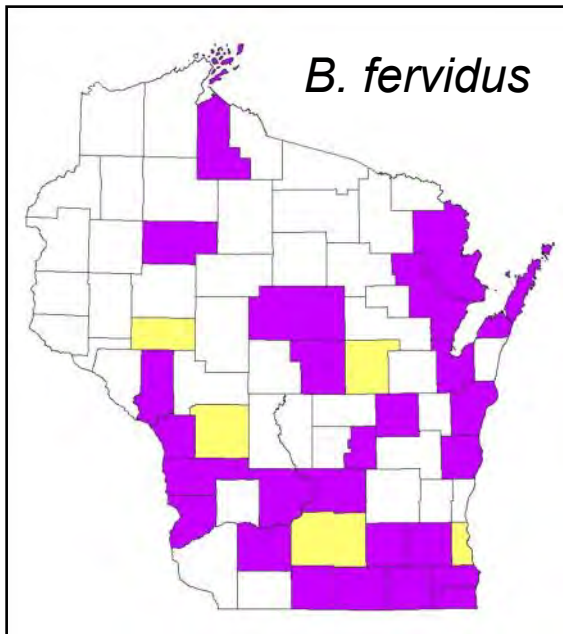
*Continued on Page 6; counties not listed did not have data submitted in 2020

2020 Participation by County, continued

County	Participants	Sites	Surveys	Species Verified
Langlade	1	20	28	9
Lincoln	2	11	15	6
Manitowoc	1	2	7	9
Marathon	5	7	13	7
Marinette	3	3	7	3
Milwaukee	25	132	418	11
Monroe	4	9	61	4
Oconto	2	4	20	12
Oneida	3	3	7	5
Outagamie	4	5	8	4
Ozaukee	4	5	6	5
Pepin	2	3	3	7
Polk	3	3	15	6
Portage	3	14	14	11
Price	1	2	2	2
Racine	3	3	32	7
Richland	1	1	1	1
Rock	4	8	53	10
Rusk	2	3	4	6
Sauk	4	9	95	11
Sawyer	2	2	3	5
Shawano	2	2	27	8
Taylor	1	10	13	5
Trempealeau	1	1	1	1
Vernon	6	11	21	9
Vilas	2	4	9	8
Walworth	6	6	77	9
Washburn	3	3	4	6
Washington	4	4	6	6
Waukesha	16	34	114	9
Waupaca	1	1	13	5
Waushara	2	3	4	4
Winnebago	4	13	25	10
Wood	1	1	1	2

Three Years of Survey Effort Expands Range Information

Prior to the pilot season of B3 in 2018, the current ranges of many of Wisconsin's bumble bees were unknown. Three years of statewide effort have added considerably to our understanding of where some of our rarest bumble bees are found. The maps below show counties with current (2000-2020) observations for each species. First current observations from before 2018 are shown in yellow, and first current observations from 2018-2020 are shown in purple. The majority of current observations come from B3 and DNR staff; for the species shown, the large number of purple observations shows the impact of recent monitoring efforts.



Counties with current observations (2000-2020).

Yellow first current observation before 2018.

Purple first current observation 2018-2020.

Monitoring Tips

Tips from the B3 Team and B3 Volunteers Judy Cardin, Jennifer Lazewski, and Ann Reilly

- Try the burst mode on your camera if it has one. It will quickly take 3 or more photos in a row, and oftentimes gives the best results!
- Take pre-measured nylon cord or sturdy rope to measure your small area circle. Thick, heavy duty material won't break or snag on plants.
- Look up and down when monitoring. Bumble bees can be up over your head in flowering trees or tall prairie plants, and they also can be down on the ground feeding on clover or dandelion.
- Learn the phenology for the significant bumble bee floral resources in your area, find the natural areas near you have these blooms, and then take daily walks where the flowers are blooming.
- Look at plants that are not blooming yet so you know when and where to come back to survey later that year or next year.
- Take up to 30 shots per bee, especially on windy days, to ensure a few good photos.
- Start each survey with a photo of a recognizable, usually human-made structure that identifies your location (e.g. a building or sign); this helps to sort your photos and keep track of survey locations.
- Develop a clear organizational system on your computer for your photos; use file or folder names that identify survey date, location, species, and sex.

Frequently Asked Questions

- **How do I update my account information, like email, display name, or expertise level?**
Log into B3. On the top right of your account page, click on "Edit Information." From there you can update your information.
- **How do I ask a question about one of my verification comments?**
If something is unclear, please email us with your question. Be sure to include the survey date, species, and sex so we can find the observation.
- **When my verification comment says more views are needed to confirm the sex or species, am I supposed to do something?**
No, we use that comment to help you understand why we could not confirm the identity of a bee and what to include next time. We follow up via email when we need additional photos of high priority species, but we are not able to re-verify the identity of common species at this time.
- **How can I keep track of the bees, and make sure my photos are of the same bee?**
Focus on details like the color or amount of pollen and amount of balding. If a bee leaves your sight and you aren't sure if you are seeing the same bee again, for identification purposes assume it is a different bee. Always take a spacer photo between bees (like your hand or the sky).

More FAQs available on the [B3 website](#)

Spring Food Sources

Spring can be a perilous time for bumble bees. The gynes that spent the winter underground emerge and need to find food quickly to support themselves and the colonies they will establish. Flowering plants are in short supply in April and early May, and bumble bees often rely on blossoms of cultivated fruit trees and dandelions to survive in areas lacking in native plants. You can support bumble bees by providing these native plants that bloom early:

- Black willow (*Salix discolor*)
- Columbine (*Aquilegia canadensis*)
- Dutchman's breeches (*Dicentra cucullaria*)
- Gooseberry, multiple native species (*Ribes*)
- Jacob's ladder (*Polemonium reptans*)
- Prairie smoke (*Geum triflorum*)
- Pussy willow (*Salix nigra*)
- Solomon's seal (*Polygonatum biflorum*)
- Virginia bluebells (*Mertensia virginica*)
- Wild geranium (*Geranium maculatum*)



Clockwise from top right: Prairie smoke (*Geum triflorum*), B3 Volunteer Amy C; Dutchman's breeches (*Dicentra cucullaria*), Jay Watson; Virginia bluebells (*Mertensia virginica*), B3 Volunteer Jennifer Lazewski; Solomon's seal (*Polygonatum biflorum*), B3 Volunteer Ed Buchs