



Japanese Beetle Survey 2022



All photos by Charles Elhard, NDDA.

Charles Elhard, Plant Protection Officer
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Background

Japanese beetle (*Popillia japonica*) was first discovered in the United States in New Jersey in 1916. A native of Japan, the beetle occurs in all states east of the Mississippi River and in some counties and partial states west of the Mississippi River. Nearest to us, South Dakota, Minnesota, and Montana have established populations in some areas. Japanese beetles attack a broad range of host material including nearly 300 species of plants. The adult beetle will feed on field crops, ornamentals, trees, shrubs, and garden plants, severely defoliating, and skeletonizing the host plants. The larvae will feed on the roots of turf grasses and field crops (especially corn and soybeans) as well as organic matter in the soil, severely damaging golf courses, lawns, and pastures. Japanese beetles prefer irrigated turf sites such as golf courses and lawns for reproduction. The Japanese beetle is a highly destructive plant pest that can be very difficult and expensive to control. Japanese beetle is regulated by USDA-APHIS-PPQ only at airports to prevent artificial spread by aircraft. All other regulatory arrangements are decided state-to-state in cooperation with the Japanese Beetle Harmonization Plan.

Japanese beetle adults are about ½ inch long with the male slightly smaller than the female. The insects are metallic green in color with bronze wing covers called elytra. Adults begin to emerge mid-June with peak emergence occurring approximately 3 to 4 weeks after initial emergence. The female beetle will burrow into the soil during the day to lay eggs, laying up to 60 eggs in her 4-6-week lifespan. Eggs will hatch in about two weeks. Larvae, which are about 1 inch long and cream colored with a brown head, will live in the soil, feeding on plant roots. The insect will overwinter as third instar larvae below the frost line and will pupate and emerge the following spring. Flight period for Japanese beetles is recognized as June through October.

Japanese beetle trapping has been ongoing in North Dakota since the early 1960s. Traps are typically deployed in June and removed in October. Two transient beetles were first intercepted in North Dakota in 2001 in Bismarck, but not again until 2012. Since 2012, beetles have been caught every year. Beetles were first caught in nurseries that were importing nursery stock from infested areas of Minnesota. Figure 3 on page 5 illustrates the historical Japanese beetle trapping data since 2012.

Review of 2012 through 2018 Surveys

In 2012, 139 beetles were caught in traps in Stark, Grand Forks, Cass, Burleigh, Ward, Dickey, and Foster counties. All of these were at or near nurseries that imported nursery stock from Minnesota suppliers. In 2013, over 400 beetles were caught, but only Burleigh, Cass, Grand Forks and Ward counties had positive traps. In 2014, after a large supplier of nursery stock to North Dakota implemented safeguarding protocols, numbers of beetles caught decreased to 41 beetles also in Burleigh, Cass, and Grand Forks counties. The difference with 2014 positives were in locations caught. Along with nurseries, several parks and golf courses had positive traps in Burleigh and Cass counties. 2015 was the biggest trapping year, as we placed 1,703 traps. The number of total beetles was greatly reduced, but more counties became positive. Traps in 10 counties had beetle catches. In 2016, beetle numbers increased. In all, 530 traps were placed with 386 beetles caught in 79 traps across 12 counties. A total of 1,203 traps were placed across the state. In all traps, 1,467 beetles were caught

across the state, 1,181 in nurseries. Twenty-two counties had positive traps. 2017 had a large increase in beetle interceptions due to an accidental introduction of larva and pupating beetles in nursery stock containers, sent to nurseries across the state. In 2017, 80% of all beetles caught were at nurseries that received potentially infested nursery stock. A total of 825 traps were placed across the state. In all traps, 412 beetles were caught across the state, 255 in nurseries. Only twelve counties had positive traps, compared to 22 in 2017. Beetle counts and positive counties decreased significantly. Cass County overall was down 46% from 2018 and Burleigh County was down over 88% from last year.

2019-21 Surveys Reviewed

In 2019, 62 volunteers participated as well as several nurseries. A total of 778 traps were placed across the state and 765 of those were retrieved at the end of the season. In all traps, 345 beetles were caught across the state, 176 in nurseries. Eleven counties had positive traps. Beetle counts and positive counties decreased. All counties trapped less than 50 beetles total, except for Cass and Burleigh counties. In 2020, 60 volunteers and our staff placed 516 traps. At the end of the season 509 traps were retrieved. 402 beetles were caught across the state, 120 in nurseries (two nurseries caught 88 or 73% of those beetles). Only nine counties had positive traps. Four of the traps placed caught 53% of all the beetles caught and only 11 traps caught 75% of all beetles caught. In 2021, 65 volunteers and our staff placed 590 traps. At the end of the season 566 traps were retrieved. 282 beetles were caught across the state, 83 in nurseries (nurseries in two counties caught 93% of beetles caught in nurseries). A total of 11 counties had positive traps. More than 50% of the beetles caught in all of 2021 were in Cass County.

2022 Survey

In 2022, NDDA was again able to implement a successful JB survey. As is the case annually, each trap was individually labeled with an ND-**** number and baited with lure. Traps were placed beginning in early May through early end of June. All traps were removed by early November. Traps were in place for an average of 121 days. A total of 528 traps were placed across the state and 528 of those were retrieved at the end of the season. After all traps were removed, the data was collected from all trappers. The map in Figure 1 shows the number of traps placed in each county with positive counties highlighted in blue. In all traps, 481 beetles were caught across the state, 83 in nurseries (one nursery in one county caught 60 of the 83 beetles). Of note, 92% of all beetles were caught in Cass and Grand Forks counties, with 62% caught in 4 traps in the Grand Forks. This is under investigation as a possible nursery stock introduction. A total of eight counties had positive traps. This is the smallest number of positive counties since 2014.

As shown in the map in figure 2, these were Barnes (1 positive trap, 3 beetles, <1% of all beetles caught), Burleigh (7, 14, 3%), Cass (28, 132, 27%), Grand Forks (10, 311, 65%), Morton (2, 3, <1%), Oliver (1, 12, 3%), Richland (2, 5, 1%), and Walsh (1, 1, <1%).

The map in Figure 1 below shows the number of traps positive compared to the total number traps placed in each county.

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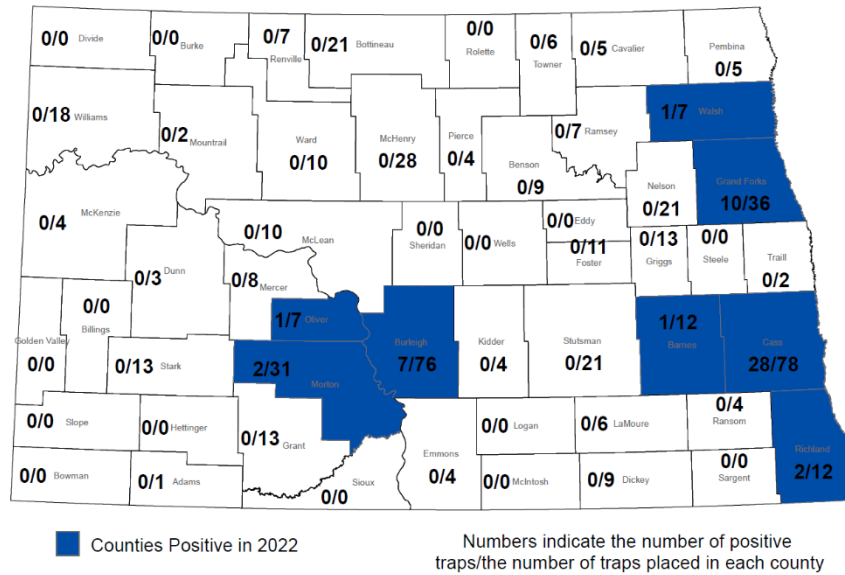


Figure 1.

The map below should the number of beetles caught in each county.

Japanese Beetle Survey 2022

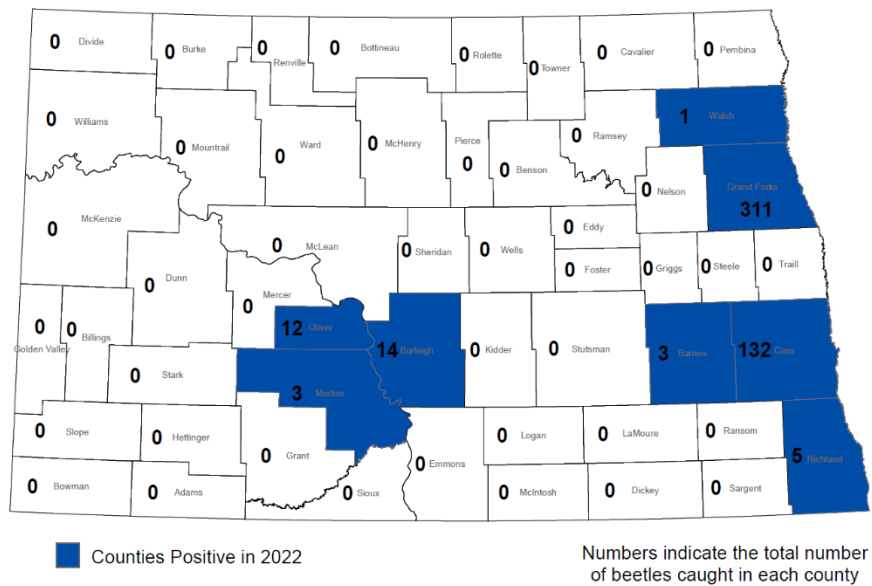


Figure 2.

The below table shows historical Japanese beetle trapping data, including number of beetles, traps, and positive counties.

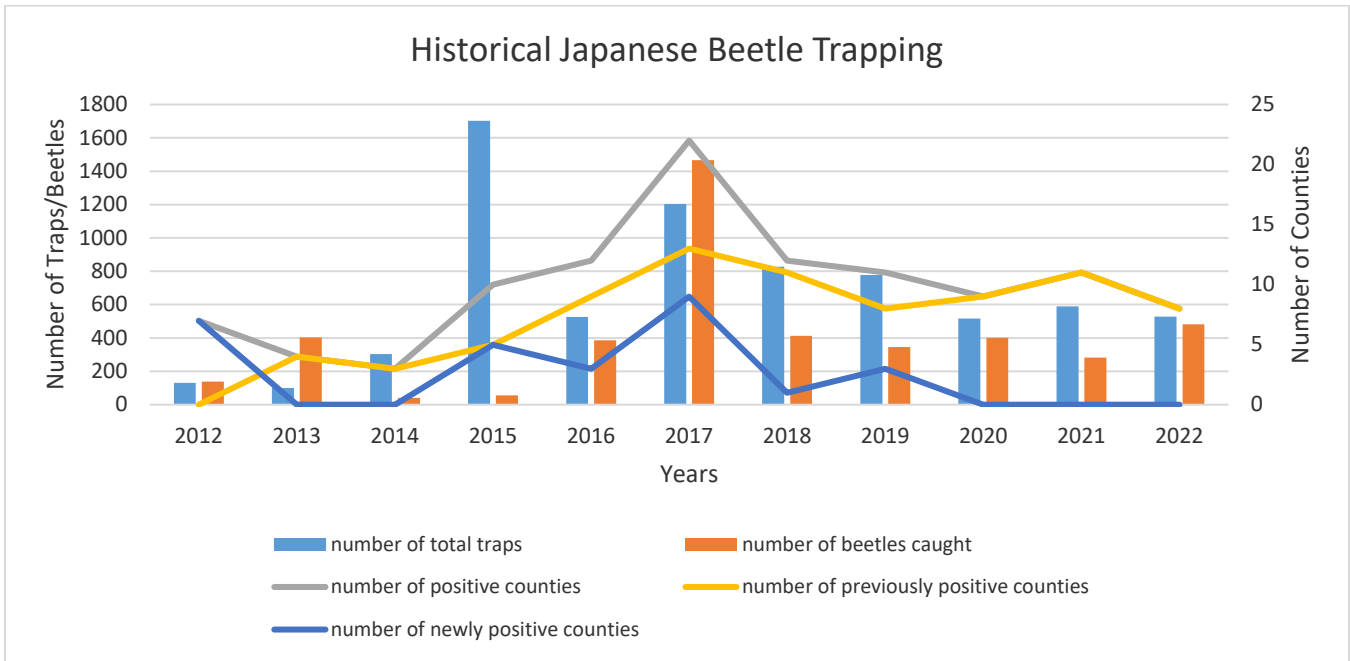


Figure 3.

Future Plans

NDDA will continue to focus survey work on uninfested areas as well as areas that are picking up low numbers of beetles to determine if they are hitchhiking beetles or if populations are becoming established. We also continue outreach efforts to make the public more aware of Japanese beetles and the damage they can cause. We will also continue to monitor uninfested counties to maintain their negative status.

For more information, visit these websites.

<http://nationalplantboard.org/wp-content/uploads/docs/Japanese-beetlecolumn.pdf>

<https://www.nd.gov/ndda/plant-industries/pest-survey-and-outreach/japanese-beetle>

<https://www.ag.ndsu.edu/pubs/plantsci/pests/e1631.pdf>