# Japanese beetle SURVEY 2015

All photos by Charles Elhard, NDDA.

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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 beetle 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.

In 2012, 139 beetles were caught in traps in Stark, Grand Forks, Cass, Burleigh, Ward, Dickey, and Griggs 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, and Grand Forks 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 about 50 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 Survey

With support from the North Dakota Nursery and Greenhouse association, NDDA applied for a USDA Specialty Crop Block Grant initially to perform delimiting and eradication activities around

the infestation areas. After it was determined that ND would be better served by a wide scale state-wide survey, with assistance from NDSU-Extension, NDDA sought out volunteers across the state to help with the survey to place 1700 traps in all counties. The initial goal was to place approximately 25 traps in every county, traps in several nurseries and grape vineyards across the state, as well as a higher concentration of traps in the cities where Japanese beetle traps had been positive in 2014 (Fargo, West Fargo, Grand Forks, and Bismarck). 130 people across the state volunteered to assist with the survey and 112 completed the survey. Each of them were asked to complete a survey at the beginning of the trapping season, and upon completion of this report, will be asked to do it again. This is a requirement of the grant to show that the volunteers gained awareness of Japanese beetle while participating in the survey. North Dakota Forest Service and NDSU-Extension also helped hang traps, covering 8 counties between the two groups.

All traps were baited with a lure to attract both male and female beetles. The lure is very effective and has been shown to attract Japanese beetles that are within 500 feet of the trap. Each trap was individually labeled with a 15-**** number. Traps were placed beginning in May and most traps were placed by June 30, 2015. The traps were collected starting in late August with the majority removed in October. All traps were removed by November 15, 2015. Traps were in place for an average of 110 days. Table 1 below shows the number of traps hung in various locations across the state. The map in Figure 1 shows the number of traps placed in each county.

Table 1.

| Site Type | Number of Traps Placed |
|---|---|
| Cemetery | 82 |
| Campground/Park | 811 |
| Golf Course | 89 |
| Nursery | 182 |
| Residential | 212 |
| Rural | 107 |
| Vineyard | 22 |
| Other/Unknown | 198 |
| **Total Traps Placed** | **1703** |

Figure 1.

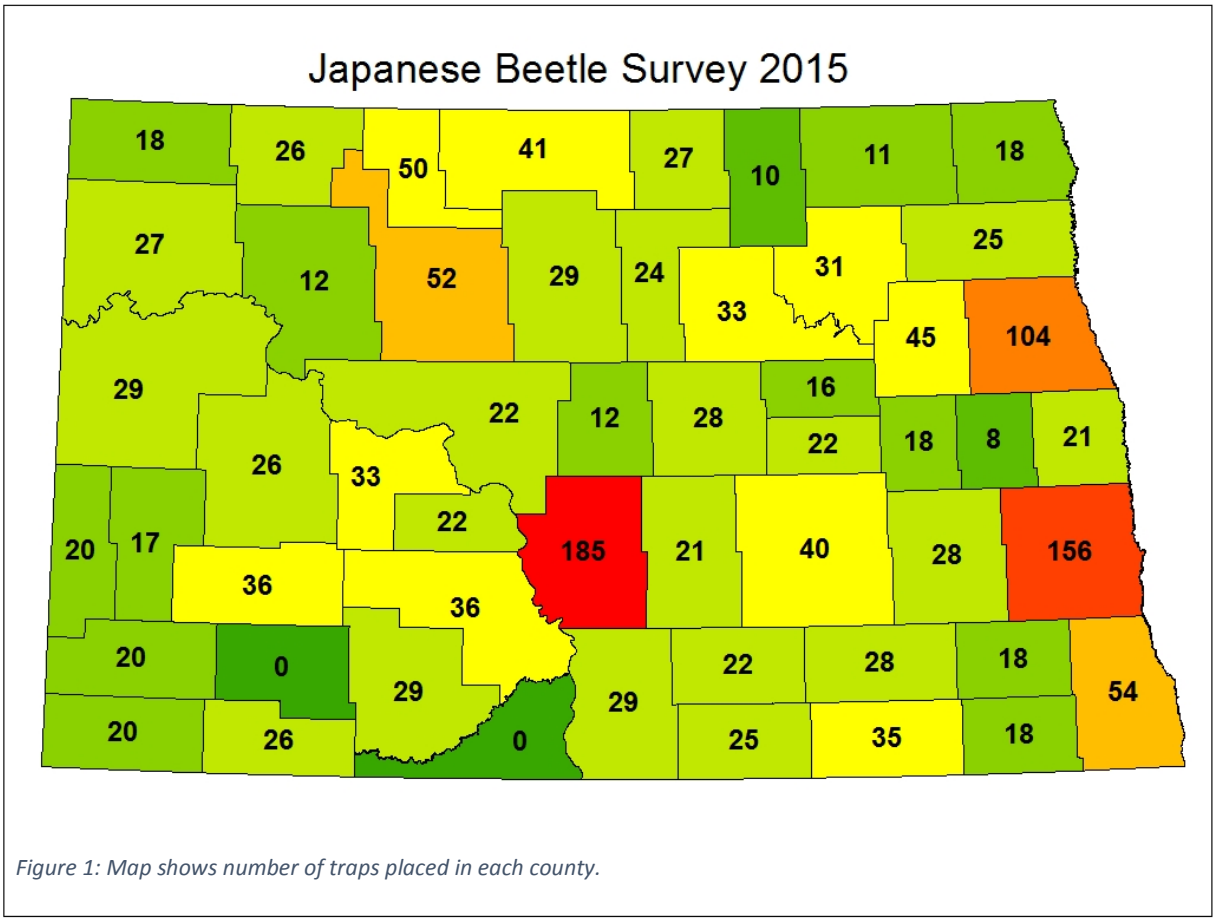


*Figure 1: Map shows number of traps placed in each county.*

## Results

After all traps were removed, the data was collected from all trappers. In all traps, 56 beetles were caught across the state. Ten counties had positive traps. These were Barnes (1 positive trap, 1 beetle), Burleigh (12, 15), Cass (10, 14), Grand Forks (2, 2), McKenzie (1, 1), Richland (1, 1), Stark (2, 3), Stutsman (1, 1), Ward (6, 10), and Williams (4, 8).

The map in Figure 2 below shows the results for each county.

Figure 2.

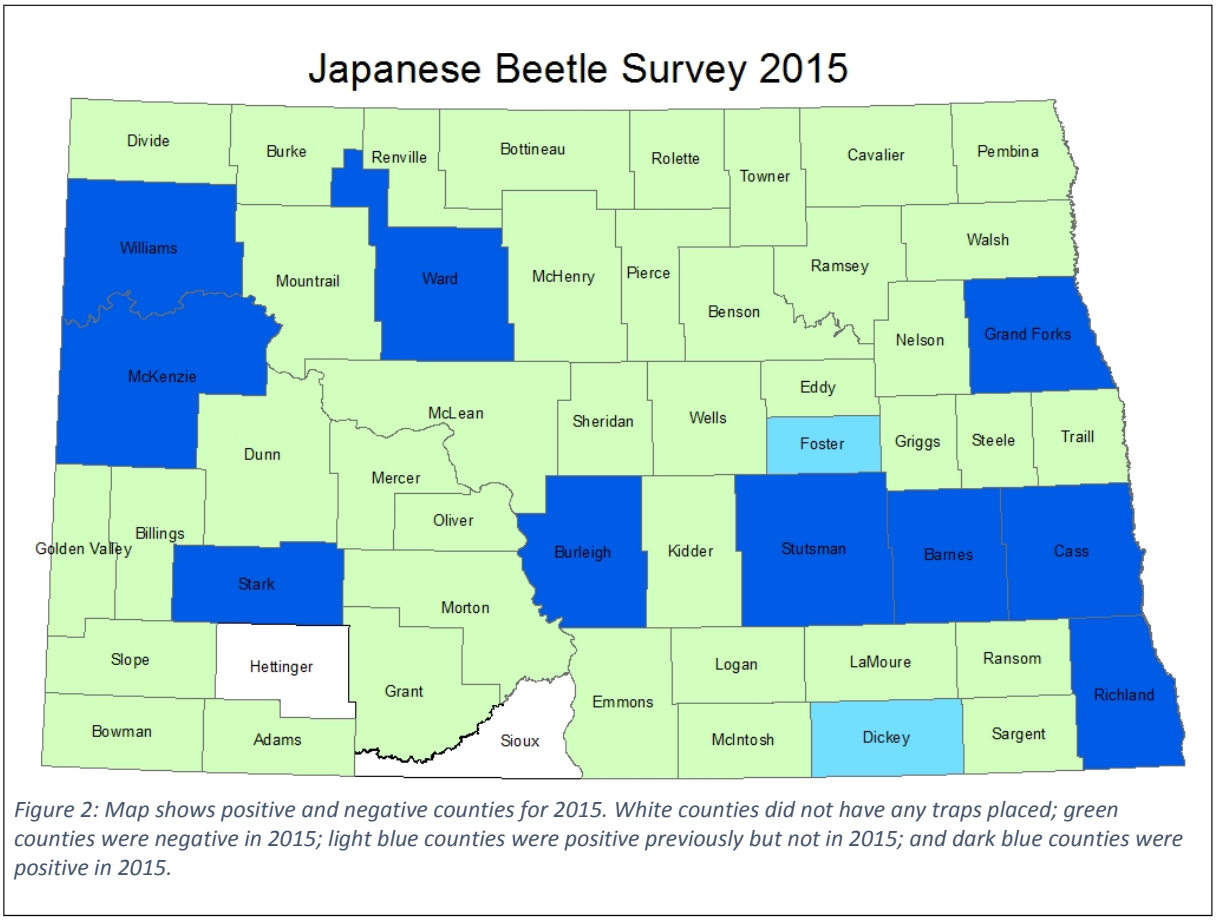


*Figure 2: Map shows positive and negative counties for 2015. White counties did not have any traps placed; green counties were negative in 2015; light blue counties were positive previously but not in 2015; and dark blue counties were positive in 2015.*

## Future Plans

Many discussions have been held on what kind of Japanese beetle activities NDDA would continue to participate in coming years. With the spread of Japanese beetle appearing imminent, and eradication efforts unfeasible due to cost, limitations of regulatory authority, and extent of suspect infestations, NDDA will likely be backing off survey work and focusing more on outreach activities to make the public more aware of Japanese beetle. We were able to extend the grant through 2016, and with the remaining funds we intend to do a smaller scale survey, using a few of the 2015 volunteers and high risk trap sites as well as sites that require trapping for shipment of nursery stock into un-infested Japanese beetle areas. The 2016 survey will include approximate 300-500 trap sites. We are also printing some outreach material to be handed out at outreach events. We will continue to work with our partners and stakeholders to

answer questions that remain in regards to North Dakota's Japanese beetle status and move forward with protection and outreach of North Dakota in regards to Japanese beetle.

For more information, check out the following links:

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

http://www.nd.gov/ndda/pest/japanese-beetle

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

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