



Japanese Beetle Survey 2016



All photos by Charles Elhard, NDDA.

Charles Elhard, Plant Protection Specialist
December 1, 2016

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. In 2015, numbers of total beetles was greatly reduced, but more counties became positive. Traps in 10 counties had beetle catches.

2016 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 in 2015. Funds remained after 2015 survey, so it was decided that the survey would continue until the funds were exhausted. The final survey will take place in 2017. In 2016, 69 people across the state assisted with the survey.

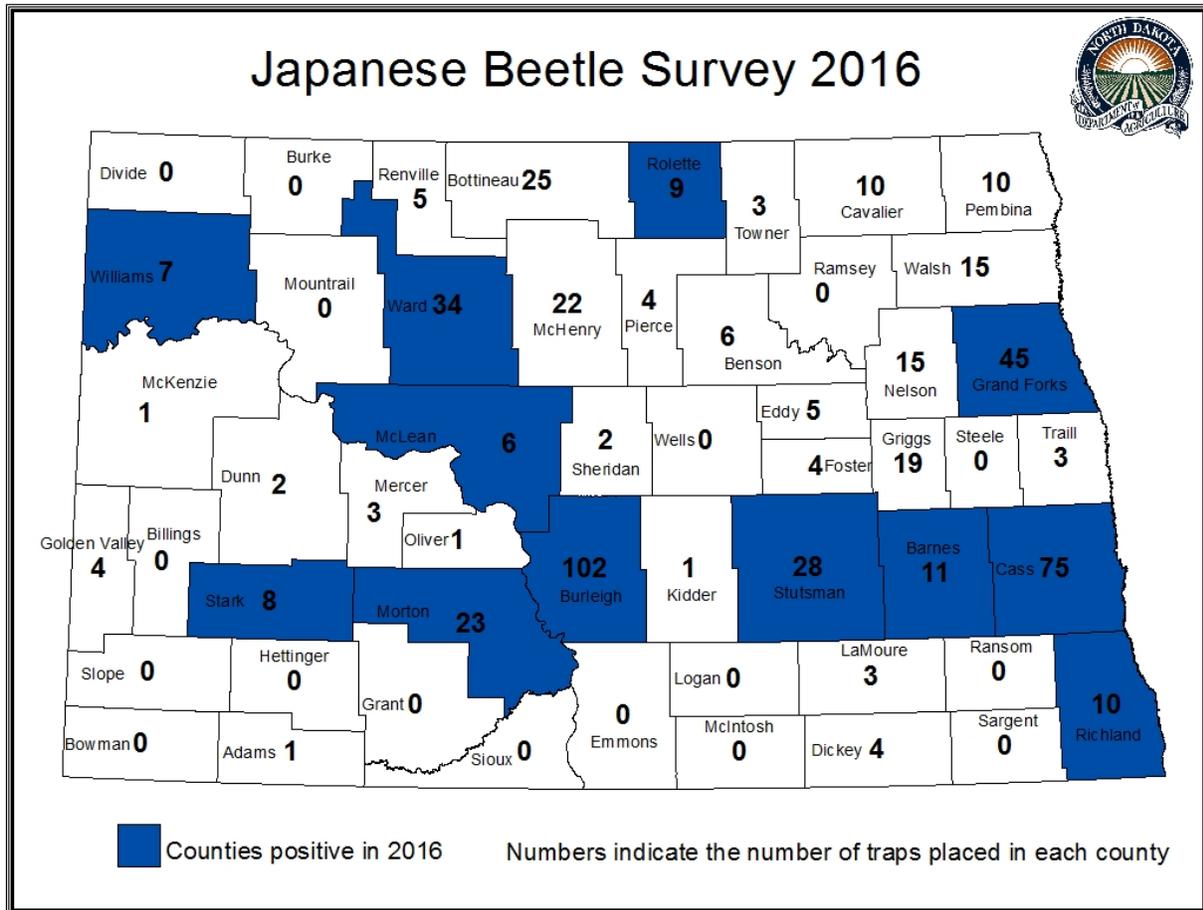
All traps were baited with a lure to attract both male and female beetles. The lure is very effective and has been shown to attract Japanese beetles that are within 500 feet of the trap. Each trap was individually labeled with a 16-**** number. Traps were placed beginning in May and most traps were placed by June 30, 2016. The traps were collected starting in late August with the majority removed in October. All traps were removed by November 15, 2016. Traps were in place for an average of 110 days. A total of 530 traps were placed across the state. The map in Figure 1 below shows the number of traps placed in each county.

Results

After all traps were removed, the data was collected from all trappers. In all traps, 386 beetles were caught across the state. Twelve counties had positive traps. These were Barnes (3 positive trap, 4 beetles), Burleigh (13, 33), Cass (31, 191), Grand Forks (10, 24), McClean (1, 1), Morton (1, 3), Richland (1, 1), Rolette (1, 2), Stark (3, 20), Stutsman (1, 1), Ward (11, 87), and Williams (3, 19).

The map in Figure 1 below shows the results for each county.

Figure 1.



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, NDDA will focus survey work on uninfested areas as well as areas that are picking up small numbers of beetles to determine if they are just transient beetles or if populations are establishing. We will be focusing more on outreach activities to make the public more aware of Japanese beetle. We were able to extend the grant through 2017, and with the remaining funds we intend to do a large scale survey, using a few of the 2015/2016 volunteers and high risk trap sites as well as sites that require trapping for shipment of nursery stock into uninfested Japanese beetle areas. We also anticipate applying for continued funding for future surveys. The 2017 survey will include approximately 1500 trap sites with intention to include all 53 counties. 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 as a Category 2 state 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>

Acknowledgements

I would like to thank many people and organizations that have assisted with the 2016 survey. Hopefully I do not miss anyone. North Dakota State University Extension (Thomas Kalb, Esther McGinnis, Janet Knodel, Patrick Beauzay, Deirdre Prischmann-Voldseth, and county agents), North Dakota Department of Agriculture Plant Industries Staff (Lane Kozel, Rachel Siefert-Spilde, Samantha Brunner, Chelsey Penuel, Darold Walls, Richard Weisz, Greg Machart, and Allan Aufforth), North Dakota Department of Agriculture Specialty Crop Grant Administrator Emily Edlund, North Dakota Nursery and Greenhouse Association and participating nurseries, city and park districts across the state, and the many volunteers (Amy Sand, Andrew Moe, Barb Anton, Barb Garceau, Beth Didier, Beverly Paluh, Wayne Beyer, Penny Seifert, Bill Miller, Bob and Edythe Cull, Renae Tokach, Cari Flores, Carleen Soule, Carol Helgren, Char McLaughlin, Chuck Weiser, Colleen Cousins, Dan Johnson, Dawn Alderin, Deanna Donnelly, Deb Ott, Deb Syvertson, Debbie Alber, Dennis & Lois Schott, Diana Tviet, Diane Bingeman, Diane Randle, Don Reimer, Donna Maston, Dwight Dockter, Eileen Stokkeland, Gail Kartes, Gloria Maragos, Janell Quinlan, Janice Mills, Jeanne Ahlers, Jessie Marshall, Jodi Peterson, John Eide, Julie Dostal, Karen Bonnet, Karen Jacobus, Karen Morrison, Ken Eraas, Laurie Podoll, Lillian Volochenko, Lindy Berg, Lois Pearson, Lori Keller, Lorraine Manz, Maggie Belle Herr, Marlys Albright, Martin Hochhalter, Martha Willyard, Michelle Willyard, Mike Rose, Paige Brummond, Pat Gates, Rachel Brag, Rena Mehlhoff, Sally Brovold, Sally Niessen, Sandy Birst, Sara Mittelsteadt, Sharon Leinen, Sheila Ostrem, Susan Nelson, Sylvia Hansen, Thom Sand, Tim Becker, Tish Skarloken, Trudy Kalstad and anyone I mistakenly forgot). This project was supported by the U.S. Department of Agriculture's (USDA) Agricultural Marketing Service through grant [14-SCBGP-ND-0038; NDDA Japanese Beetle]. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA. Sources used for data in this document include North Dakota Department of Agriculture Facts Sheets; NDSU Extension Japanese Beetle IPM Publication and the National Plant Board Japanese Beetle Harmonization Plan.