



## IDAHO STATE DEPARTMENT OF AGRICULTURE (ISDA) DIVISION OF PLANT INDUSTRIES

### 2016 SUMMARIES OF PLANT PESTS, INVASIVE SPECIES, NOXIOUS WEEDS, PLANT LAB, NURSERY AND FIELD INSPECTION PROGRAMS, WITH SURVEY RESULTS

#### INTRODUCTION

ISDA's Division of Plant Industries derives its statutory authority from multiple sections of Idaho Code, Title 22, including the Plant Pest Act, the Noxious Weed Law, the Nursery and Florist Law and the Invasive Species Act. These laws give the Division of Plant Industries clear directives to conduct pest surveys and manage invasive species and plant pests for the purpose of protecting Idaho's agricultural industries valued at over \$4 billion, which include crops, nursery and ranching. The Division of Plant Industries also cooperates with other agencies including the Idaho Department of Lands (IDL), the University of Idaho (UI), the United States Forest Service (USFS), the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Services (APHIS), Plant Protection and Quarantine (PPQ), county governments, Cooperative Weed Management Areas (CWMA), industry groups and other stakeholders to protect Idaho's landscapes and environments from invasive species. Finally, the Division of Plant Industries helps accomplish the ISDA's broader mission to "serve consumers and agriculture by safeguarding the public, plants, animals and the environment through education and regulation." This report summarizes the comprehensive and cooperative programs conducted during 2016 to enforce Idaho statutes and fulfill the mission of ISDA.

#### PEST SURVEYS

##### APPLE MAGGOT (AM) (*Rhagoletis pomonella* (Walsh))

In 1990, ISDA established by administrative rule an AM-free regulated area (the "Apple Maggot Free Zone" or AMFZ), encompassing the major apple production areas of the state. Every year, ISDA conducts an area-wide survey for AM using sticky yellow panel traps with ammonium carbonate bait.

##### 2016 Summary of trapping for apple maggot in Idaho



County	Total number of AM traps placed	Positive AM traps	Negative AM traps
Boise	20	6	14
Boundary	20	0	20
Canyon	130	0	130
Gem	71	8	63
Owyhee	35	0	35
Payette	56	0	56
Washington	94	9	85
<b>TOTAL</b>	<b>426</b>	<b>23</b>	<b>403</b>

In 2016, 426 traps were placed in commercial apple orchards and home landscape trees in Boise, Boundary, Canyon, Gem, Owyhee, Payette and Washington counties. Specimens suspected of being AM were confirmed by the ISDA entomologist. Twenty-one of the twenty-seven positive AM traps in Washington County were located within the established AMFZ and all four of the positive traps in Gem County were located within the AMFZ; however, all AM collected within the AMFZ were found on traps that had been placed in hawthorn trees or in undermanaged or neglected apple trees in non-commercial settings.

Gem and Washington counties are both considered partially infested and regulated under a state interior quarantine (<http://adminrules.idaho.gov/rules/current/02/0608.pdf>).

During 2017, ISDA will continue to conduct detection surveys in the seven-county area. In Gem and Washington counties, ISDA will set out supplementary detection traps around the positive locations. See page 45 of this report for a map of 2016 AM survey activity in Idaho.

**WESTERN CHERRY FRUIT FLY (WCFF) (*Rhagoletis indifferens* Curran)**

ISDA routinely conducts an annual trapping program to detect first emergence of Western Cherry Fruit Fly. In 2016, WCFF adults were first observed in ISDA sentinel traps on May 16 near Caldwell in Canyon County, and shortly thereafter on June 8 near Emmett in Gem County. The agency also tracks degree-day accumulation calculations as required by the California Department of Food and Agriculture (CDFA) to comply with their WCFF quarantine, which is aimed at states wishing to export fresh sweet cherries into or through California (see table below).

**2012-2016: Degree-day accumulations relevant to the start of pesticide treatments for WCFF**

Site	2016 Forecast for first treatment (recommended at 1060 degree-days)	2015	2014	2013	2012
		Historical 1060 degree day accumulation forecast dates			
Boise	May 17	June 4	June 1	June 2	May 26
Caldwell	May 19	May 29	June 1	May 26	May 26
Nampa	June 21	June 5	June 1	May 31	June 1
Ontario	May 17	May 25	June 1	May 30	May 30
Parma	June 2	June 4	May 30	June 4	May 25
Emmett	May 24	June 9	June 2	May 28	June 2

Degree-day calculations used to decide when to begin pesticide treatments for WCFF are determined using a degree-day computer model from the Department of Entomology at Oregon State University. Control applications are recommended on or prior to accumulations of 1,060 degree-days according to the publication “Orchard Pest Management” published by the Good Fruit Grower, Yakima, WA, in 1993. To comply with the California Quarantine, electronic notifications were sent out (with assistance from the University of Idaho Cooperative Extension Service via the PNW Pest Alert Network Web Site <http://www.pnwpestaalert.net/index.php>), shortly before it was believed 1060 degree-days would be reached in the major cherry producing areas of the state.

**EUROPEAN PINE SHOOT MOTH (EPSM)  
(*Rhyacionia bouliana* Denis & Schiffermuller)**

The Idaho European Pine Shoot Moth survey is conducted annually and complies with California and Montana quarantines. In 2016, ISDA staff placed 72 EPSM traps in nurseries and pine tree plantations throughout the 12 Idaho counties in which EPSM have never been detected to date. In addition, at the request of nurseries seeking phytosanitary data to allow export of nursery stock, traps were set out and monitored in two counties where EPSM had been captured in the past. No newly confirmed infested counties were reported in 2016. Finding effective control regimes and complying with Montana and California EPSM quarantines continue to challenge this segment of the Idaho nursery industry. A map of Idaho counties historically positive for EPSM is located on page 48 of this report.





### **GYPSY MOTH (GM) (*Lymantria dispar* (Linnaeus))**

During 2016, 3,880 Gypsy Moth survey traps were deployed throughout Idaho. The number of traps placed by each agency was:

- ❖ Idaho Department of Lands (IDL): 2,639 detection/36 delimit traps
- ❖ Idaho Department of Agriculture (ISDA): 672 detection traps
- ❖ United States Forest Service R-1(USFS): 84 detection traps
- ❖ United States Forest Service R-4 (USFS): 449 detection traps

Between May 1, 2016 and November 1, 2016, staff members from each participating agency completed the placement and subsequent removal of gypsy moth traps throughout the state. In 2016, one gypsy moth was captured in southern Idaho. This moth was determined by the OTIS Methods Development Lab to be of the European/North American strain (EGM) and was caught in Pocatello, Bannock County in one detection trap. Response to this capture will be delimitation trapping, where 36 traps will be set up in a square mile grid centered at the location of the 2016 catch. Delimit traps are checked once a month. In North Idaho delimitation trapping was conducted at one location this season. This delimit was surrounding the 2015 capture site of three male EGM in Wardner, Shoshone County. No moths were captured in the Wardner delimiting traps during 2016. Delimit trapping will occur for a second season during 2017.

The complete report on the 2016 Gypsy Moth Survey in Idaho may be viewed at the following IDL website: <https://www.idl.idaho.gov/forestry/forest-health/gm-report-2016.pdf> (Report provided by Stephani Penske of the IDL, Coeur d'Alene, Idaho).

### **JAPANESE BEETLE (JB) (*Popillia japonica* (Newman))**

The Japanese Beetle is a highly destructive invasive plant pest that, if established, can be very difficult and expensive to control. Feeding on grass roots, JB grubs damage lawns, golf courses, parks and pastures. JB adults attack the foliage, flowers or fruits of more than 300 different ornamental and agricultural plants. Originally from Japan, JB was first noticed in the U.S. in New Jersey in 1916. It is now known to occur in most states east of the Mississippi River while its presence in the West remains spotty. Quarantines for JB are maintained and vigorously enforced by the state governments of Arizona, Idaho, California, Colorado, Montana, Nevada, Oregon, Utah and Washington, as well as the Canadian Provinces of British Columbia and Alberta.



JB that show up in the west have usually arrived by “hitchhiking” on airplanes, other vehicles or nursery stock moving from an infested area. When suitable conditions are encountered, JB populations have been known to increase at a phenomenal rate. If JB were to become established in Idaho there could be large negative impacts, both economic and environmental, for the state.

Beginning in 1990, ISDA began setting out approximately 340 JB detection traps each year in high risk locations throughout Idaho. These routine surveys resulted in the capture of single specimens of JB in Ada County (1992), Gooding County (1997) and Twin Falls County (2011).

In late summer 2012, ISDA traps collected a total of 61 JB in Idaho: four near a nursery in Kootenai County, one near a nursery in Bannock County and 56 in Boise in Ada County. Extensive delimitation trapping was conducted in 2013, with trap numbers increased to 1,553. The only catches were in Boise, however, 3,058 beetles were caught there. Most were in a neighborhood on the city’s east side. Simultaneous with the 2013 survey, 95 residential properties and 14 city parks were treated with insecticides in an attempt to eradicate JB grubs and adults where they were found in the greatest numbers. During 2014 the number of survey traps were increased again, to 2,947, to more accurately determine where JB populations were located to aid in effective control efforts. Trap data from 2014 indicated that the 2013 insecticide treatments appeared to have a positive effect, with beetle numbers down overall about 60% (1,283 JB were captured in the traps) – and a 95% reduction in beetles in the area where the 95 residences had been treated. Pesticide

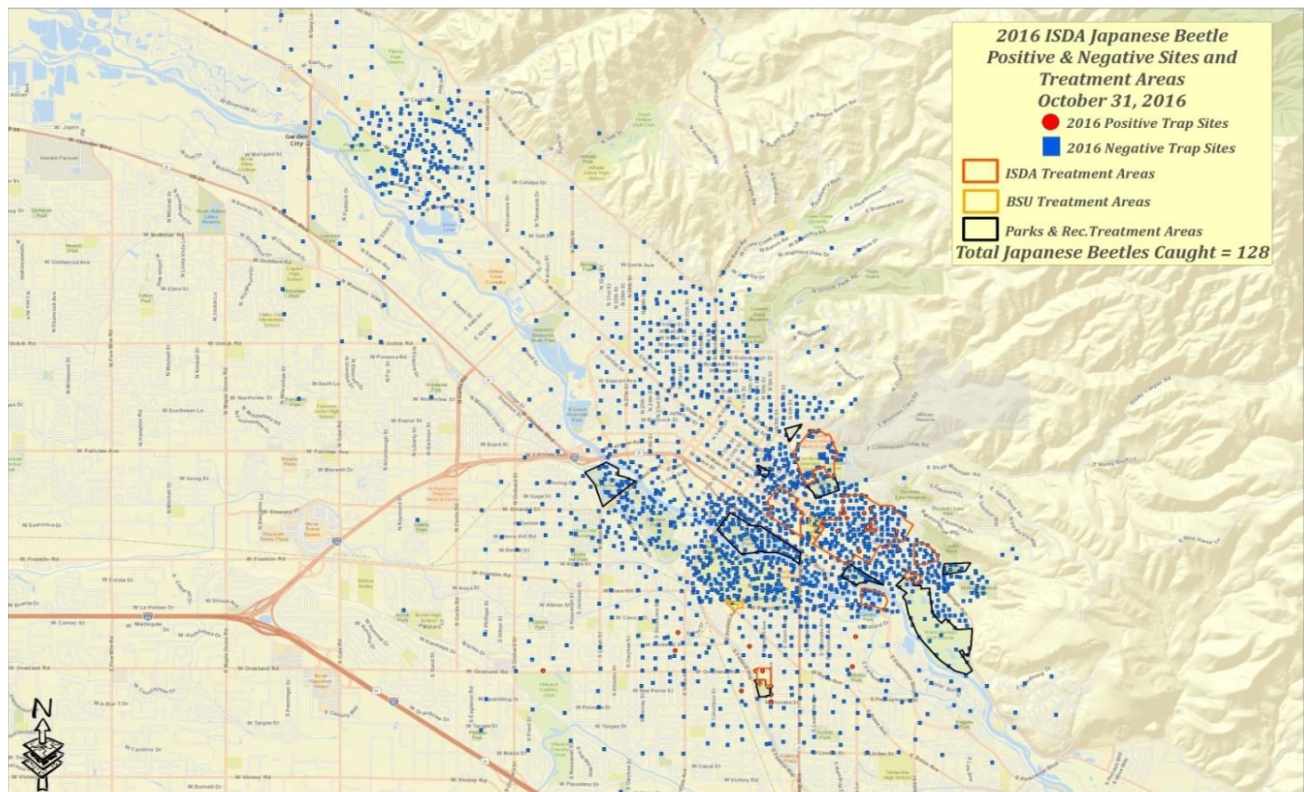
applications, under the direction of ISDA, were continued during 2014 with 400 new residential/commercial properties added to the treatment area.

In 2015, JB trap data again indicated that the insecticide treatments carried out the previous year resulted in another significant decrease in the pest population. Similar to 2013/2014, with monitor traps throughout the state, the only JB captured were in Boise, and that year's total number of beetles collected dropped to 365 (an 81% reduction from 2014). The original residential treatment area (95 properties), where 1,930 JB were trapped in 2013 and which dropped to 91 beetles in 2014, produced only 18 catches in 2015. Between 2013 and 2015, Municipal Park catches dropped from 219 to 4, Pioneer Cemetery from 122 to 1 and for the first time since 2011, JB traps in Ann Morrison Park and the West State Street neighborhood adjacent to Plantation Golf Course turned up no JB. Most locations receiving a pesticide application in 2014 were treated again in 2015 and, in an attempt to address just about every place in which one or more JB had been collected, approximately 1,500 new properties were targeted, making the 2015 eradication plan the most aggressive and thorough to date.

Because of effective pesticide treatments JB numbers continued to decline, with only 128 trapped during 2016. Many locations where JB were captured during 2013-2015 appeared to be beetle-free in 2016, and in places where they were found, JB density was dramatically reduced. The same insecticide-treatment program used in 2014/2015 was conducted in 2016, however, total treatment area was able to be reduced 40% from 550 acres (2015) to 340 acres (2016) in response to a diminished JB population presence.

Plans for 2017 include a continuation of the historical level of state-wide detection traps and a slightly reduced amount of delimitation trapping (decreasing trap density in some areas exhibiting no JB catches in recent years) compared to what was undertaken in 2016. Locations where JB were captured in traps during 2016 will again be targeted for granular pesticide treatment of turf, however, with the reduction in beetle numbers (and less places with positive traps), 2017 proposed treatment acreage will again decrease to approximately only 20% (70 acres) of what was treated in 2016.

**Map of Boise indicating locations of traps positive and negative for JB throughout the season and also location of 2016 treatment areas**



**Summary of 2016 JB catches in Idaho**

County	No. of negative traps	No. of positive traps	No. of JB caught in county
<b>Ada</b>	<b>1868</b>	<b>28</b>	<b>128</b>
Other Idaho Counties	340	0	0
<b>Total</b>	2208	28	128



**EMERALD ASH BORER (EAB) (*Agrilus planipennis* Fairmaire)**

The emerald ash borer was first identified in North America in southeastern Michigan and the Windsor, Ontario areas in 2002. Since then, it has been found in a total of 30 states, primarily in the eastern half of the U.S. and parts of Canada. Interceptions have been made as far west as Denver, Colorado. Larvae of this extremely destructive tree pest feed on tissues beneath the bark of ash trees (*Fraxinus* spp.), effectively girdling and consequently killing the trees. Adult EAB are generally active from mid-May to September.





As part of USDA’s 2016 National EAB Survey, a total of 9 purple sticky traps at 9 locations in 7 counties throughout Idaho were installed and monitored. Sites included ports of entry, parks, and urban ash plantings. In 2016, manuka oil lures used in the traps were supplemented with Z3 hexanol lures. As in previous years, no EAB were captured in Idaho in 2016. (Report provided by Brian Marschman, Idaho State Plant Health Director, USDA APHIS PPQ)

**CORN COMMODITY SURVEY**

Corn is a major agronomic crop in Idaho. The USDA National Agricultural Statistical Service reported 340,000 acres planted in the state in 2016. In addition to grain, Idaho corn is used for silage, processed sweet corn and sweet corn seed (Idaho ranks as the top production state for hybrid sweet corn seed varieties). Idaho sweet corn seed companies export to U.S. and international markets, making phytosanitary issues and data on freedom from exotic insects and pathogens of vital concern to the state’s corn industry.

In 2016, ISDA, in cooperation with the USDA APHIS PPQ’s Cooperative Agricultural Pest Survey program (CAPS), conducted surveys for three exotic organisms that could threaten Idaho corn crops. The 2016 Corn Commodity Survey is summarized in the following table:



Organism	Photo	No. of inspections performed in 2016	Results
<p><b>False Codling Moth (FCM)</b> (<i>Thaumatotibia leucotreta</i>)</p> <p>FCM is a potential threat to Idaho’s corn Industry which, if it were to become established in the state or in other parts of the U.S., could cause significant economic losses.</p> <p>Native to Ethiopia and sub-Saharan Africa the first U.S. detection was in Ventura County CA in 2008.</p> <p>Adult false codling moths are small, brownish-gray moths with an average wingspan of about 5/8 inches. FCM feed on more than 100 host plants including bean, corn, grape and peach.</p>		<ul style="list-style-type: none"> <li>260 traps were placed in corn fields in the following Idaho counties: Ada, Canyon, Cassia, Elmore, Gooding, Jerome, Owyhee and Twin Falls.</li> <li>Traps were set out by June 15, 2016 and removed by the end of September.</li> <li>Traps were serviced every two weeks and lures were replaced every 56 days.</li> </ul>	<p><b>All Negative</b></p>



<p><b>Old World Bollworm (OWB)</b> <i>(Helicoverpa armigera)</i></p> <p>OWB, a major pest of both field and horticultural crops in many parts of the world, has still not established in the U.S., but is considered to have the potential to survive in any state in the continental U.S. based on habitat and host suitability.</p> <p>OWB is known to attack more than 180 plant species and can cause serious crop losses, especially in corn. Damage occurs when the larvae bore into the host's flowers and fruit and feed within the plant. The larvae may also feed on the leaves of host plants.</p>		<ul style="list-style-type: none"> <li>260 traps were placed in corn fields in the following Idaho counties: Ada, Canyon, Cassia, Elmore, Gooding, Jerome, Owyhee and Twin Falls.</li> <li>Traps were set out by June 15, 2016 and removed by the end of September.</li> <li>Traps were serviced every two weeks and lures were replaced every 28 days.</li> </ul>	<p><b>All Negative</b></p>
<p><b>Cucurbit Beetle (CB)</b> <i>(Diabrotica speciosa)</i></p> <p>CB is an insect pest of small grain, corn, potato, grape, bean and soybean crops. Native to South America, the larvae feed on roots of wheat and various other crops and non-crop hosts, while the adults will feed on the leaves, stems, etc. of the host plants and move to other plants when necessary.</p> <p>Adult cucurbit beetles easily overwinter in cold climates and are known to be multi-generational.</p>		<ul style="list-style-type: none"> <li>2 visual surveys were conducted in 130 corn fields throughout the following counties: Ada, Canyon, Cassia, Elmore, Gooding, Jerome, Owyhee and Twin Falls.</li> <li>First visual survey in July and then four weeks later in August.</li> </ul>	<p><b>All Negative</b></p>
<p><b>Brown Stripe Downy Mildew (BSDM)</b> <i>(Sclerophthora rayssiae var zea)</i></p> <p>BSDM is a fungal-like disease of corn native to India, Myanmar, Nepal, Pakistan and Thailand which, if introduced into the U.S. (it is soilborne or seedborne), could probably survive in any corn-producing areas. Downy mildews of sorghum, maize and sugarcane are among the world's most destructive diseases typically causing 20-90% grain yield reduction in affected fields.</p>		<ul style="list-style-type: none"> <li>2 visual surveys were conducted in 130 corn fields throughout the following counties: Ada, Canyon, Cassia, Elmore, Gooding, Jerome, Owyhee and Twin Falls.</li> <li>First visual survey in July and then four weeks later in August.</li> </ul>	<p><b>All Negative</b></p>
<p><b>Tar Spot of Corn (TSC)</b> <i>(Phyllachora maydis)</i></p> <p>TSC was first confirmed in the U.S. in 2015 on corn in seven counties in northwest Indiana and ten counties in north-central Illinois.</p> <p>Initial symptoms of tar spot are brownish lesions on the leaves. Black, spore-producing structures called ascomata appear later, protruding from the leaf surface and giving the leaf a rough or bumpy feel.</p> <p>The structures can densely cover the leaf and may resemble mature, black pustules present on leaves due to infection by rust fungi.</p> <p>Symptoms and signs of tar spot might also appear on leaf sheaths and husks.</p>		<ul style="list-style-type: none"> <li>2 visual surveys were conducted in 130 corn fields throughout the following counties: Ada, Canyon, Cassia, Elmore, Gooding, Jerome, Owyhee and Twin Falls.</li> <li>First visual survey in July and then four weeks later in August.</li> </ul>	<p><b>All Negative</b></p>

## SMALL GRAINS COMMODITY SURVEY

Idaho wheat production is usually about 100 million bushels/year. The wheat production plays an important role in Idaho's economy. Wheat, which is grown in 42 of 44 Idaho counties, is a prominent crop in Idaho with its largest production areas in the eastern part of the state and the north central Palouse region. Wheat production plays an important role in Idaho's economy. After falling significantly the past two years, wheat production in Idaho returned to normal in 2016, largely due to record yields. Idaho wheat yields averaged a record 91.3 bushels per acre this year, beating the previous record of 85.5 bushels set in 2004. That resulted in Idaho Farmers producing 101.9 million bushels of wheat in 2016, up from 89.4 million bushels in 2015 and 93.7 million bushels in 2014.

The success of the Idaho wheat industry depends greatly on its ability to export crops to external markets, including the Asian market where a significant amount of the soft white wheat grown in the state is exported for use in pastry and noodle making. In 2016, ISDA, in cooperation with the USDA's Cooperative Agricultural Pest Survey Program (CAPS), conducted surveys for four exotic organisms that could threaten Idaho's small grains crops. The 2016 Small Grains Commodity Survey is summarized in the following table:

Organism	Photo	No. of inspections performed in 2016	Results
<p><b>Egyptian Cotton Leafworm (ECL)</b> (<i>Spodoptera littoralis</i>)</p> <p>ECL, also known as the African Cotton Leafworm and the Mediterranean Brocade, is native to Africa and Israel, and widely found in both Africa and Mediterranean Europe. It has been recorded several times in the U.K. and even though it has been intercepted at U.S. ports, it is not known to be established in North America.</p> <p>ECL is considered a pest of national concern and may result in quarantine and/or regulatory actions if detected. It is a pest of vegetables, fruits, flowers, and other crops. The establishment of ECL in the continental U.S. would negatively impact trade.</p>		<ul style="list-style-type: none"> <li>▪ 192 traps were placed in wheat fields in the following Idaho counties: Ada, Bingham, Bonneville, Canyon, Elmore, Fremont, Gooding, Jefferson, Latah, Madison, Minidoka, Owyhee, Power and Twin Falls.</li> <li>▪ Traps were set out by May 15, 2016 and removed by the end of August.</li> <li>▪ Traps were serviced every two weeks and lures were replaced every 42 days.</li> </ul>	<p><b>All Negative</b></p>
<p><b>Silver Y Moth (SYM)</b> (<i>Autographa gamma</i>)</p> <p>SYM is a migratory moth and is widespread across Europe and parts of Asia and North Africa.</p> <p>SYM is another potential threat to Idaho's grain industry which, if it were to become established in the state or in other parts of the U.S., could cause significant economic losses.</p> <p>SYM feeds on more than 200 different plant species, including several plants of economic importance to Idaho such as alfalfa, corn, grapes, dry beans, potato, sugar beets and wheat.</p>		<ul style="list-style-type: none"> <li>▪ 192 traps were placed in wheat fields in the following Idaho counties: Ada, Bingham, Bonneville, Canyon, Elmore, Fremont, Gooding, Jefferson, Latah, Madison, Minidoka, Owyhee, Power and Twin Falls.</li> <li>▪ Traps were set out by May 15, 2016 and removed by the end of August.</li> <li>▪ Traps were serviced every two weeks and lures were replaced every 28 days.</li> </ul>	<p><b>All Negative</b></p>

<p><b>Cucurbit Beetle (CB)</b> (<i>Diabrotica speciosa</i>)</p> <p>CB is an insect pest of small grain, corn, potato, grape, bean and soybean crops. Native to South America, the larvae feed on roots of wheat and various other crops and non-crop hosts, while the adults will feed on the leaves, stems, etc. of the host plants and move to other plants when necessary.</p> <p>Adult cucurbit beetles easily overwinter in cold climates and are known to be multi-generational.</p>		<ul style="list-style-type: none"> <li>2 visual surveys were conducted in 96 wheat fields throughout the following counties: Ada, Bingham, Bonneville, Canyon, Elmore, Fremont, Gooding, Jefferson, Latah, Madison, Minidoka, Owyhee, Power and Twin Falls.</li> <li>First visual survey in June and then four weeks later in July.</li> </ul>	<p><b>All Negative</b></p>
<p><b>Wheat Bug (WB)</b> (<i>Nysius huttoni</i>)</p> <p>WB is a polyphagous species which feeds on a large number of weeds and crops. It has been mainly reported as a pest of wheat and Brassicaceae, but it can feed on many plant species.</p> <p>Primarily a sap feeding insect which attacks many plant parts including seeds, both adults and nymphs can cause significant injury. On wheat, damage occurs primarily when the grains are at the milk-ripe stage.</p> <p>The establishment of this pest in Idaho's domestic and export wheat industries would result in increased management costs and potential crop losses.</p>		<ul style="list-style-type: none"> <li>2 visual surveys were conducted in 96 wheat fields throughout the following counties: Ada, Bingham, Bonneville, Canyon, Elmore, Fremont, Gooding, Jefferson, Latah, Madison, Minidoka, Owyhee, Power and Twin Falls.</li> <li>First visual survey in June and then four weeks later in July.</li> </ul>	<p><b>All Negative</b></p>

**IDAHO APIARY REGISTRATION FOR 2016 AND THE NATIONAL HONEY BEE HEALTH SURVEY**

ISDA registered 125 Beekeepers and 127,017 colonies during this period. This year Idaho was one of 40 states and territories to participate in USDA APHIS's national honey bee health survey. This survey is an attempt to document which diseases, parasites and pests of honey bees are and are not in the U.S. The survey is sponsored by APHIS in collaboration with ARS and the University of Maryland. The effort is primarily geared toward establishing the absence of exotic bee pests including, but not limited to, the parasitic mite *Tropilaelaps*, the Asian honey bee (*Apis cerana*) and Slow Bee Paralysis Virus in the U.S. To maximize the information gained from the survey effort, samples will be analyzed for other diseases and parasites known to be present in the U.S.



Honey bees contribute between \$15 and \$18 billion dollars annually to the value of the agricultural industry nationally due to their pollination efforts. It is imperative to have a healthy pollinator supply if we wish to continue to produce pollinator dependent fruit, nuts and vegetables in this country. A decline in honey bee health has been documented over the past 60 years. Honey bee health is at risk from factors such as parasites, diseases, poor nutrition, stress and environmental toxins. Over the last 8 years, winter losses have been unsustainably high ranging from 22% to 36% nationally.

There is real concern that the introduction and establishment of another exotic parasite (the *Tropilaelaps* mite) will increase already high loss rates, jeopardizing pollinator dependent food production. A need exists for a continued national honey bee health survey to quickly detect exotic pest introduction in order to prevent



spread. Baseline data on disease and toxin loads in honey bee populations also have utility in helping understand the causes of colony losses. Broad surveillance data over several years improves the quality of data needed to help tease apart complex drivers thought to contribute to colony collapse disorder (CCD) and poor colony health.

ISDA collected samples from 8 hives in each of 24 apiaries surveyed throughout Idaho this summer. All 24 surveys were completed by August 23, 2016. ISDA is waiting for diagnostic reports, to be supplied by APHIS from this year's survey. A map of counties where apiary surveys were conducted can be found on page 49.

#### 2016 National Honey Bee Health Survey in Idaho (Counties Sampled in Survey)

County	Number of Samples	County	Number of Samples
Ada	1	Kootenai	1
Bannock	1	Latah	1
Bingham	2	Lemhi	2
Bear Lake	1	Lewis	1
Camas	1	Nez Perce	1
Canyon	2	Oneida	1
Caribou	1	Owyhee	1
Gem	2	Twin Falls	2
Gooding	2	<b>Total</b>	<b>24</b>
Jefferson	1		



#### PALE CYST NEMATODE (PCN) (*Globodera pallida*)

Pale Cyst Nematode Eradication Program: Idaho

- Production Acres Surveyed: 677
- Seed Acres Surveyed: 803
- Number of Counties Surveyed: 7
- Fields Positive: 27 fields (3,047 acres total) are infested, 1 new (as of December 2016)

All twenty-seven known infested fields are located within an 8.5-mile radius that spans a portion of northern Bingham County and southern Bonneville County. The 27<sup>th</sup> infested field detected in December 2016 increased the area containing all infested fields from a 7.5 to an 8.5 mile radius. PPQ is investigating whether additional farmland will be added to the regulated area in 2017 as a result of the 27<sup>th</sup> field detection. The 27<sup>th</sup> field was under regulation as an associated field since February 2015, so its detection as an infested field did not add additional acreage to the regulated area. PPQ released 459 acres in 2016 that successfully completed the deregulation protocol, which consists of two full-field surveys, each following a host crop. The current regulated area is 9,540 acres. Of those total acres, 3,047 acres are infested fields.

Viability staining analyses of cysts from 20 infested fields originally detected between 2006 and 2013 show no detectable viability. Of these 20, 8 fields have successfully completed the greenhouse bioassay phase of evaluating eradication progress (1 field in 2015, 6 fields in 2014, and 1 field in 2012), enabling them to return to potato production with certain regulatory controls in place. The remaining 12 fields have greenhouse bioassays in progress, with final results expected in 2017 and/or 2018.

A previously infested field returned to potato production in 2015 when potatoes were planted to half the field (approximately 70 acres). The other half of the field was planted to red potatoes in 2016. No viable cysts were detected either year in post-harvest surveys of the potato-producing portions of the field. The grower plans to plant potatoes on half the field again in 2017.

The trap crop litchi tomato was planted (LT) on a 50-acre portion one field in 2016. Viable cysts are no longer detected on the field.

The soil fumigant Telone II was applied to 880 acres (8 fields) in 2016. Telone reduced PCN viability of cysts collected from one field, treated for the first time in 2016, from 30% to 9.3% viability. During 2012-2014, PPQ did not treat any infested fields with the nematicide Telone II due to lack of funds. Telone II had been used in the infested fields from 2007-2011, with the exception of 2009 when there was a worldwide shortage of the chemical.

In January 2017, PPQ held the 2016 PCN research review meeting in Pocatello, Idaho, which was attended by PPQ, Idaho State Department of Agriculture, Idaho Potato Commission, representatives of the Idaho infested field operators, representatives from New York and Scotland potato cyst nematode programs, researchers involved with PCN research projects from the University of Idaho (Moscow, Aberdeen, and Parma), and Agricultural Research Service (Oregon and Washington). The current research projects include developing non-chemical PCN eradication tools such as trap crops, hatching factors, bio-fumigants, bio-control, and developing a PCN resistant variety of Russet Burbank potato.

Stakeholder updates were published to the USDA APHIS PCN website in April, July, and December 2016.

Sampling Information: To date, the PCN Program has collected 496,000 soil samples in Idaho to ensure Idaho's freedom from PCN outside of the 27 known infested fields. More than 149,382 samples have been collected from the eradication fields since 2006 in order to monitor eradication progress and to provide cysts to several institutions for PCN research.

To date, the PCN laboratory in Idaho Falls has screened 580,793 soil samples collected in Idaho and 63,602 samples from other potato-producing states. An additional 63,862 samples collected in Idaho were screened at the Idaho Food Quality Assurance Laboratory and the University of Idaho Parma laboratory between 2006 and 2009. There have been no pale cyst nematode detections in the U.S. outside of Idaho. Since program inception, the PCN Program has analyzed the viability of 879 cyst samples collected from infested fields before and after fumigation treatments.

Since 2009, 86,976 soil samples have been collected and screened in support of the Idaho State Department of Agriculture's (ISDA) post-regulation survey of fields deregulated by the USDA.

**KARNAL BUNT (KB) (*Tilletia indica*)** Karnal Bunt is a disease of wheat caused by the fungus *Tilletia indica*. *T. indica* was found in the United States in 1996. It has not been found in Idaho. The US Department of Agriculture has attempted to eradicate the fungus via continuing surveys, along with quarantines. ISDA has conducted surveys in Idaho for KB since 1996. During 2016, ISDA collected 62 wheat samples from 17 counties in Idaho and sent them to a USDA APHIS PPQ lab to be tested for the pathogen. Results from this year's survey were negative. To date, KB has never been detected in Idaho.



**2016 Karnal Bunt CAPS Survey in Idaho (all samples negative)**

County	Number of Samples	County	Number of Samples
Bingham	14	Lincoln	1
Blaine	1	Madison	3
Boundary	1	Nez Perce	7
Canyon	3	Owyhee	1
Clearwater	1	Power	6
Cassia	7	Teton	1
Elmore	1	Washington	1
Fremont	3	<b>Total</b>	<b>62</b>
Jefferson	5		
Lewis	6		

## DISEASES AND PESTS FOUND DURING 2016 FIELD INSPECTIONS FOR EXPORT CERTIFICATION

In 2016, 62 seed companies submitted field inspection requests representing 38 crops. The total acres submitted for inspection were 31,093, with 67,930 acres actually inspected due to multiple inspections required for some crop diseases. This represents the same number of firms that participated in 2015, with an 8.4% increase in acreage from the 28,678 acres submitted in 2015.

Year	# Participating Firms	# of Crops	Submitted Acres	Inspected Acres
2004	44	27	46,282	79,671
2005	43	28	42,961	74,905
2006	47	30	37,859	70,692
2007	48	32	30,938	58,218
2008	50	32	34,439	66,114
2009	43	33	36,541	72,184
2010	46	35	32,495	62,608
2011	41	30	25,193	51,404
2012	50	30	24,102	50,045
2013	57	32	23,785	50,157
2014	62	36	26,620	55,846
2015	62	36	28,678	64,077
2016	62	38	31,093	67,930

**Alfalfa Seed:** A total of 1254.30 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from Alfalfa mosaic alfamovirus (AMV), Bacterial leaf spot (*Xanthomonas alfalfae*), Bacterial wilt of alfalfa (*Clavibacter michiganensis subsp. insidiosus*), Dodder (*Cuscuta spp.*), Leafy spurge (*Euphorbia esula*), Stem and bulb nematode (*Ditylenchus dipsaci*), Summer blackspot (*Cercospora medicaginis*) and Verticillium wilt (*Verticillium albo-atrum* and *Verticillium dahlia*). Spring black stem of alfalfa (*Phoma medicaginis*) was confirmed in 27 acres.

**Allium (excluding Garlic):** A total of 681.09 acres of onions, 85.20 acres of Welsh onions, and 8 acres of chives were submitted for inspection during the 2016 growing season. In total, there were 811.29 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Asparagus rust (*Puccinia asparagi*), Downy mildew of onion (*Peronospora destructor*), Onion yellow dwarf potyvirus, Smut (*Urocystis sp.*), Purple blotch (*Alternaria porri*), Sclerotinia rot (*Sclerotinia spp.*), Onion smudge (*Colletotrichum circinans*), Stem and bulb nematode (*Ditylenchus dipsaci*) and White rot of onion (*Sclerotium cepivorum*). Botrytis stalk rot (*Botrytis aclada*) was confirmed in 10.21 acres of onions; the remaining acres inspected were found apparently free from Botrytis stalk rot. Botrytis rot of onion (*Botrytis allii*) was confirmed in 15 acres of onions; the remaining acres inspected were found apparently free from Botrytis rot of onion.

**Beans, Azuki/Adzuki:** A total of 336 acres were submitted for inspection during the 2016 growing season. In total, there were 672 acres inspected due to multiple inspection requirements for certain diseases. To meet requirements of IDAPA 02.06.25, Rules Governing the Planting of Beans Other Than Phaseolus Species in Idaho, all fields inspected were found apparently free from Bean anthracnose (*Colletotrichum lindemuthianum*), Bean bacterial wilt (*Curtobacterium flaccumfaciens*), Brown spot (*Pseudomonas syringae pv. syringae*), Common blight (*Xanthomonas axonopodis pv. phaseoli*), Fuscus blight (*Xanthomonas phaseoli pv. fuscans*) Halo blight (*Pseudomonas savastanoi pv. phaseolicola*) and Asian soybean rust (*Phakopsora pachyrhizi*).

**Beans, Dry:** A total of 775.45 acres were submitted for inspection during the 2016 growing season. In total, there were 1,781.40 acres inspected due to multiple inspection requirements for certain diseases. To meet

requirements of IDAPA 02.06.06, Rules Governing the Planting of Bean Seed (*Phaseolus*) Species in Idaho, all fields inspected were found apparently free from Bean anthracnose (*Colletotrichum lindemuthianum*), Bean bacterial wilt (*Curtobacterium flaccumfaciens*), Brown spot (*Pseudomonas syringae* pv. *syringae*), Common blight (*Xanthomonas axonopodis* pv. *phaseoli*), Fuscus blight (*Xanthomonas phaseoli* pv. *fuscans*) and Halo blight (*Pseudomonas savastanoi* pv. *phaseolicola*).

**Beans, Garden:** A total of 12,875.33 acres were submitted for inspection during the 2016 growing season. In total, there were 32,262.93 acres inspected due to multiple inspection requirements for certain diseases. To meet requirements of IDAPA 02.06.06, Rules Governing the Planting of Bean Seed (*Phaseolus*) Species in Idaho, all fields inspected were found apparently free from Bean anthracnose (*Colletotrichum lindemuthianum*), Bean bacterial wilt (*Curtobacterium flaccumfaciens*), Common blight (*Xanthomonas axonopodis* pv. *phaseoli*), Fuscus blight (*Xanthomonas phaseoli* pv. *fuscans*) and Halo blight (*Pseudomonas savastanoi* pv. *phaseolicola*). Brown spot (*Pseudomonas syringae* pv. *syringae*), was confirmed in 63 acres of garden beans; the remaining acres inspected were found apparently free from Brown spot.

**Beans, Trial Ground – Non-Phaseolus:** A total of 1.94 acres were submitted for inspection during the 2016 growing season. In total, there were 9.70 acres inspected due to multiple inspection requirements for certain diseases. To meet requirements of IDAPA 02.06.25, Rules Governing the Planting of Beans Other Than *Phaseolus* Species in Idaho, all fields inspected were found apparently free from Bean anthracnose (*Colletotrichum lindemuthianum*), Bean bacterial wilt (*Curtobacterium flaccumfaciens*), Brown spot (*Pseudomonas syringae* pv. *syringae*), Common blight (*Xanthomonas axonopodis* pv. *phaseoli*), Fuscus blight (*Xanthomonas phaseoli* pv. *fuscans*) Halo blight (*Pseudomonas savastanoi* pv. *phaseolicola*) and Asian soybean rust (*Phakopsora pachyrhizi*).

**Beans, Trial Ground – Phaseolus sp.:** A total of 198.34 acres were submitted for inspection during the 2016 growing season. In total, there were 985.17 acres inspected due to multiple inspection requirements for certain diseases. To meet requirements of IDAPA 02.06.06, Rules Governing the Planting of Bean Seed (*Phaseolus*) Species in Idaho, all fields inspected were found apparently free from Bean anthracnose (*Colletotrichum lindemuthianum*), Bean bacterial wilt (*Curtobacterium flaccumfaciens*), Brown spot (*Pseudomonas syringae* pv. *syringae*), Common blight (*Xanthomonas axonopodis* pv. *phaseoli*), Fuscus blight (*Xanthomonas phaseoli* pv. *fuscans*) and Halo blight (*Pseudomonas savastanoi* pv. *phaseolicola*). Fusarium wilt (*Fusarium oxysporum* f. sp. *phaseoli*) was confirmed in 0.45 acres.

**Brassicas:** A total of 244 acres of brassicas (arugula, choy sum, kale, kohlrabi, mustard, and turnips) were submitted for inspection during the 2016 growing season (in total, there were 234 acres inspected). All fields inspected were found apparently free from Black leg (*Leptosphaeria maculans*) and Black rot of crucifers (*Xanthomonas campestris* pv. *campestris*). Kale, kohlrabi, mustard and turnip acres were also inspected for Crucifer bacterial leaf spot (*Pseudomonas syringae* pv. *maculicola*). Arugula acres were also inspected for Bacterial blight crucifers (*Pseudomonas cannabina* pv. *alisalensis*). Crucifer grey leaf spot (*Alternaria brassicae*) was confirmed in 25 acres of kale and 20 acres of turnip.

**Carrot:** A total of 1,655.19 acres were submitted for inspection during the 2016 growing season (in total, there were 1,655.09 acres inspected). All fields inspected were found apparently free from *Alternaria* leaf blight (*Alternaria dauci*). Bacterial blight of carrot (*Xanthomonas hortorum* pv. *carotae*) was confirmed in 13 acres; the remaining acres inspected were found apparently free from Bacterial blight of carrot. Black rot of carrot (*Alternaria radicina*) was confirmed in 23 acres, the remaining acres inspected were found apparently free from Black rot of carrot. Sclerotinia rot (*Sclerotinia* spp.) was confirmed in 66 acres.

**Clover, Red:** A total of 179 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from Alfalfa mosaic alfamovirus (AMV), Bacterial leaf spot (*Xanthomonas alfalfae*), Bacterial wilt of alfalfa (*Clavibacter michiganensis* subsp. *insidiosus*), Dodder (*Cuscuta* spp.), Leafy spurge (*Euphorbia esula*), Stem and bulb nematode (*Ditylenchus dipsaci*), Summer blackspot (*Cercospora medicaginis*) and Verticillium wilt (*Verticillium albo-atrum* and *Verticillium dahlia*).

**Coriander:** A total of 114.1 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from (*Pseudomonas syringae*), Stem gall of coriander (*Protomyces macrosporus*) and Bacterial blight of carrot (*Xanthomonas hortorum* pv. *carotae*).

**Corn:** A total of 4,855.32 acres were submitted for inspection during the 2016 growing season. In total, there were 8,852.91 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Brown spot (*Physoderma maydis*), Brown stripe downy mildew (*Sclerophthora rayssiae* var. *zeae*), Crazy top of corn (*Sclerophthora macrospora*), Eyespot (*Aureobasidium zeae*), Goss's bacterial wilt (*Clavibacter michiganensis* spp. *nebraskensis*), Green ear downy mildew (*Sclerospora graminicola*), Java downy mildew (*Peronosclerospora maydis*), Late wilt (*Harpophora maydis*), Northern corn leaf spot (*Cochliobolus carbonum*), Philippine downy mildew (*Peronosclerospora philippinensis*), Sorghum downy mildew (*Peronosclerospora sorghi*), Southern corn leaf blight (*Cochliobolus heterostrophus*), Spontaneum downy mildew (*Peronosclerospora spontanea*), Stewart's wilt (*Pantoea stewartii*), Sugarcane downy mildew (*Peronosclerospora sacchari*) and Yellow leaf blight (*Mycosphaella zeae-maydis*). Head smut (*Sporisorium reilianum*) was confirmed in 2.7 acres, the remaining acres inspected were found apparently free from Head smut. Common smut (*Ustilago maydis*) was confirmed in 1,609.99 acres. High plains virus was confirmed in 454.04 acres. Maize dwarf mosaic potyvirus was confirmed in 9 acres. Wheat streak mosaic tritimovirus was confirmed in 3.19 acres.

**Corn To Australia:** A total of 30 acres in 2 fields were submitted for inspection and testing for export to Australia during the 2016 growing season. In total, there were 60 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Brown spot (*Physoderma maydis*), Brown stripe downy mildew (*Sclerophthora rayssiae* var. *zeae*), Crazy top of corn (*Sclerophthora macrospora*), Eyespot (*Aureobasidium zeae*), Goss's bacterial wilt (*Clavibacter michiganensis* spp. *nebraskensis*), Green ear downy mildew (*Sclerospora graminicola*), Head smut (*Sporisorium reilianum*), High plains virus, Java downy mildew (*Peronosclerospora maydis*), Late wilt (*Harpophora maydis*), Maize dwarf mosaic potyvirus, Northern corn leaf spot (*Cochliobolus carbonum*), Philippine downy mildew (*Peronosclerospora philippinensis*), Sorghum downy mildew (*Peronosclerospora sorghi*), Southern corn leaf blight (*Cochliobolus heterostrophus*), Spontaneum downy mildew (*Peronosclerospora spontanea*), Stewart's wilt (*Pantoea stewartii*), Sugarcane downy mildew (*Peronosclerospora sacchari*), Wheat streak mosaic tritimovirus and Yellow leaf blight (*Mycosphaella zeae-maydis*). Common smut (*Ustilago maydis*) was confirmed in 30 acres.

**Dill:** A total of 26 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from Alternaria leaf blight (*Alternaria dauci*).

**Garlic:** A total of 23.42 acres were submitted for inspection during the 2016 growing season. In total, there were 23.67 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Asparagus rust (*Puccinia asparagi*), Botrytis rot of onion (*Botrytis allii*), Botrytis stalk rot (*Botrytis aclada*), Downy mildew of onion (*Peronospora destructor*), Smut (*Urocystis* sp.), Purple blotch (*Alternaria porri*), Sclerotinia rot (*Sclerotinia* spp.), Onion smudge (*Colletotrichum circinans*), Stem and bulb nematode (*Ditylenchus dipsaci*) and White rot of onion (*Sclerotium cepivorum*). Onion yellow dwarf potyvirus was confirmed in 0.50 acres; the remaining acres inspected were found apparently free from Onion yellow dwarf potyvirus.

**Grain:** A total of 333.28 acres of grains (barley, oats, rye, triticale, wheat) were submitted for inspection during the 2016 growing season. In total, there were 396.46 acres inspected due to multiple inspection requirements for certain diseases. Bacterial leaf streak (*Xanthomonas translucens*) was confirmed in 1.55 acres of barley. High plains virus was confirmed in 0.05 acres of barley. Wheat streak mosaic tritimovirus was confirmed in 12.20 acres of wheat.

**Lettuce/Endive:** A total of 172.5 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from Lettuce mosaic potyvirus (LMV).

**Mint, Peppermint:** A total of 112 acres were submitted for inspection during the 2016 growing season. In total, there were 224 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Mint root borer (*Fumibotys fumalis*), Mint stem borer (*Pseudobaris nigrina*) and Verticillium wilt of mint (*Verticillium dahliae*).

**Peas:** A total of 5,199.15 acres were submitted for inspection during the 2016 growing season. In total, there were 15,416.55 acres inspected due to multiple inspection requirements for certain diseases. Bacterial blight of peas (*Pseudomonas syringae* pv. *pisii*) was confirmed in 5 acres; the remaining acres inspected were found apparently free from Bacterial blight of peas. Fusarium wilt of pea (*Fusarium oxysporum* f. *sp. pisii*) was confirmed in 18 acres. Root and stem wilt (*Fusarium* spp.) was confirmed in 13 acres.

**Pepper, Bell & Hot:** A total of 0.25 acres of bell pepper and 0.52 acres of hot pepper were submitted for inspection during the 2016 growing season. In total, there were 1.54 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Angular leaf spot (*Pseudomonas syringae* pv. *lachrymans*), Bacterial canker (*Clavibacter michiganensis* pv. *michiganensis*), Bacterial spot (*Xanthomonas vesicatoria*), Cucumber mosaic cucumovirus (CMV), Pepper anthracnose (*Colletotrichum* spp.) and Phytophthora blight (*Phytophthora capsici*).

**Potato:** A total of 686 acres were submitted for inspection during the 2016 growing season.

**Pumpkin & Winter Squash:** A total of 4.55 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from Angular leaf spot (*Pseudomonas syringae* pv. *lachrymans*), Anthracnose (*Colletotrichum orbiculare*), Bacterial fruit blotch of watermelon (*Acidovorax avenae* subsp. *citrulli*), Bacterial leaf spot of cucurbits (*Xanthomonas cururbitae*) and Cucumber mosaic cucumovirus (CMV).

**Radish:** A total of 371.04 acres were submitted for inspection during the 2016 growing season. All fields were found apparently free from Bacterial blight of radish (*Xanthomonas campestris* pv. *raphani*), Black rot of crucifers (*Xanthomonas campestris* pv. *campestris*) and Turnip/radish anthracnose (*Colletotrichum higginsianum*).

**Sunflowers:** A total of 865.60 acres were submitted for inspection during the 2016 growing season. In total, there were 1,731.20 acres inspected due to multiple inspection requirements for certain diseases. All fields inspected were found apparently free from Downy mildew of Asteraceae (*Plasmopara halstedii*). Sclerotinia rot (*Sclerotinia* spp.) was confirmed in 34.6 acres.

**Thyme:** A total of 5 acres were submitted for inspection during the 2016 growing season. All fields inspected were found apparently free from Crucifer black leaf spot (*Alternaria brassicicola*) and Pepper anthracnose (*Colletotrichum* spp.).

ACREAGE SUBMITTED FOR INSPECTION UNDER THE IDAHO RULES FOR PHYTOSANITARY AND POST-ENTRY CERTIFICATION, RULES GOVERNING THE PLANTING OF BEANS, PHASEOLUS SPECIES, IN IDAHO AND RULES GOVERNING THE PLANTING OF BEANS, OTHER THAN PHASEOLUS SPECIES, IN IDAHO FOR THE 2016 FIELD SEASON

2016 Inspection Acres Report (compiled 01/27/2017)				
Crop	Number of Applications	Acres Submitted for Inspection	Number of Inspections Based on Diseases Requested	Actual acres Inspected
<b>Alfalfa Total</b>	<b>87</b>	<b>1,254.30</b>	1.00	<b>1,254.30</b>
<b>Arugula Total</b>	<b>1</b>	<b>15.00</b>	1.00	<b>15.00</b>
<b>Barley</b>	2	0.53	1.00	0.53
	32	52.37	2.00	104.74
<b>Barley Total</b>	<b>34</b>	<b>52.90</b>		<b>105.27</b>
<b>Beans, Azuki Total</b>	<b>13</b>	<b>336.00</b>	2.00	<b>672.00</b>
<b>Beans, Dry</b>	54	539.95	2.00	1,074.90
	8	235.50	3.00	706.50
<b>Beans, Dry total</b>	<b>62</b>	<b>775.45</b>		<b>1,781.40</b>
<b>Beans, Garden</b>	500	6,045.06	2.00	11,957.12
	165	6,830.27	3.00	20,305.81
<b>Beans, Garden Total</b>	<b>665</b>	<b>12,875.33</b>		<b>32,262.93</b>
<b>Beans Trial Ground – Non-Phaseolus Total</b>	<b>4</b>	<b>1.94</b>	5.00	<b>9.70</b>
<b>Beans Trial Ground – Phaseolus Total</b>	<b>38</b>	<b>198.34</b>	5.00	<b>985.17</b>
<b>Carrot Total</b>	<b>376</b>	<b>1,655.19</b>	1.00	<b>1,655.09</b>
<b>Chives Total</b>	<b>2</b>	<b>8.00</b>	2.00	<b>16.00</b>
<b>Choy Sum Total</b>	<b>1</b>	<b>5.00</b>	1.00	<b>5.00</b>
<b>Clover, Red Total</b>	<b>9</b>	<b>179.00</b>	1.00	<b>179.00</b>
<b>Coriander (Herb) Total</b>	<b>10</b>	<b>114.10</b>	1.00	<b>114.10</b>
<b>Corn</b>	80	857.73	1.00	857.73
	577	3,997.59	2.00	7,995.18
<b>Corn Total</b>	<b>657</b>	<b>4,855.32</b>		<b>8,852.91</b>
<b>Corn To Australia Total</b>	<b>2</b>	<b>30.00</b>	2.00	<b>60.00</b>
<b>Dill (Herb) Total</b>	<b>2</b>	<b>26.00</b>	1.00	<b>26.00</b>
<b>Endive Total</b>	<b>2</b>	<b>12.00</b>	1.00	<b>12.00</b>
<b>Garlic</b>	35	23.17	1.00	23.17
	1	0.25	2.00	0.50
<b>Garlic Total</b>	<b>36</b>	<b>23.42</b>		<b>23.67</b>
<b>Kale Total</b>	<b>5</b>	<b>78.00</b>	1.00	<b>68.00</b>
<b>Kohlrabi Total</b>	<b>1</b>	<b>17.00</b>	1.00	<b>17.00</b>
<b>Lettuce Total</b>	<b>18</b>	<b>160.50</b>	1.00	<b>160.50</b>
<b>Mustard Total</b>	<b>6</b>	<b>69.00</b>	1.00	<b>69.00</b>
<b>Oats</b>	2	0.05	1.00	0.05
	6	0.61	2.00	1.22
<b>Oats Total</b>	<b>8</b>	<b>0.66</b>		<b>1.27</b>
<b>Onion</b>	221	643.09	1.00	634.09
	2	38.00	2.00	76.00

<b>Onion Total</b>	<b>223</b>	<b>681.09</b>		<b>710.09</b>
<b>Peas</b>	32	67.70	1.00	67.70
	4	43.00	2.00	86.00
	286	5,088.45	3.00	15,262.85
<b>Peas Total</b>	<b>322</b>	<b>5,199.15</b>		<b>15,416.55</b>
<b>Pepper, Bell Total</b>	<b>1</b>	<b>0.25</b>	2.00	<b>0.50</b>
<b>Pepper, Hot Total</b>	<b>1</b>	<b>0.52</b>	2.00	<b>1.04</b>
<b>Peppermint Total</b>	<b>9</b>	<b>112.00</b>	2.00	<b>224.00</b>
<b>Potato Total</b>	<b>9</b>	<b>686.00</b>	1.00	<b>686.00</b>
<b>Pumpkin &amp; Winter Squash Total</b>	<b>3</b>	<b>4.55</b>	1.00	<b>4.55</b>
<b>Radish Total</b>	<b>26</b>	<b>371.04</b>	1.00	<b>371.04</b>
<b>Rye Total</b>	<b>2</b>	<b>0.03</b>	1.00	<b>0.03</b>
<b>Sunflower Total</b>	<b>12</b>	<b>865.60</b>	2.00	<b>1,731.20</b>
<b>Thyme (Herb) Total</b>	<b>1</b>	<b>5.00</b>	1.00	<b>5.00</b>
<b>Triticale Total</b>	<b>1</b>	<b>0.15</b>	1.00	<b>0.15</b>
<b>Turnip Total</b>	<b>3</b>	<b>60.00</b>	1.00	<b>60.00</b>
<b>Welsh Onion Total</b>	<b>6</b>	<b>85.20</b>	1.00	<b>85.20</b>
<b>Wheat</b>	72	267.34	1.00	265.34
	1	12.20	2.00	24.40
<b>Wheat Total</b>	<b>73</b>	<b>279.54</b>		<b>289.74</b>
<b>TOTALS</b>	<b>2,731</b>	<b>31,092.57</b>		<b>67,930.40</b>

### EXPORT CERTIFICATION FOR THE 2016 CALENDAR YEAR

During 2016, the Division of Plant Industries issued 4341 Federal and 232 State Phytosanitary Certificates for 223 different types of commodities to 85 countries. The Division of Plant Industries certified over 307,358,693 pounds of seed, grain, hay, lumber, plants and other commodities for export. The ISDA operates this program under a Memorandum of Understanding with the USDA.

### PLANT PATHOLOGY SUMMARY REPORT

In 2016 the Idaho State Department of Agriculture (ISDA) Plant Pathology Lab received a total of 1167 samples and ran 2706 tests on them. There was a 38% increase from last year in number of samples that the lab received, and a 12% increase in the number of tests run. A change in field regulations for crops being exported to Chile may have been the cause of the larger sample numbers. Additional field tests were required by this country.

Below is a table of the field samples that were received and tested during the 2016 growing season inspection program. The plant pathology lab ran a total of 1671 tests on 761 samples submitted by ISDA field inspector's across the state. Several organisms of concern were detected. Of particular note were the bean fields found positive for *Pseudomonas syringae pv syringae* (brown spot) and the carrot field found positive for *Xanthomonas hortorum pv carotae*.

For ISDA's bean program, 121 samples of Phaseolus and non-Phaseolus beans were tested prior to planting in Idaho. 613 tests were run on the samples. 10 lots came up positive for one or more of our prohibited organisms. Specifically 6 lots were positive for *Pseudomonas syringae pv syringae*, 2 lots were positive for *Xanthomonas axonopodis pv phaseoli*, 1 lot was positive for *Pseudomonas savastanoi pv phaseoli*, and 1 lot was positive for both *X. axonopodis pv phaseoli* and *P. syringae pv syringae*.

The Plant Pathology Lab received 174 seed samples for testing consisting of 13 different host species. ISDA ran 260 tests on these samples, looking for 29 different organisms. Seed samples were not all of Idaho origin. A total of 8 seed lots tested positive for organisms of interest. Three wheat samples were positive for



*Urocystis* sp., 2 pea samples were positive for *Ascochyta* sp., 1 alfalfa sample was positive for *Clavibacter michiganensis subsp insidiosus*, 1 corn sample was positive for Sugarcane Mosaic Virus, and a different corn sample was positive for High Plains Virus.

Idaho's program allowing potato growers to plant seed back to their own farms one year after the seed left the certification program requires potato growers to get their seed tested for 3 viruses and 1 bacterium. Our lab received 7 lots to test for this program, requiring 28 tests. A range of Potato Virus Y, Potato Virus A and Potato Leafroll Virus were found, but no bacterial ring rot (*Clavibacter michiganensis subsp sepidonicus*) was detected. Seed potatoes were also submitted for other tests during the year. Of these ISDA received 5 lots for 10 separate tests.

Finally the ISDA plant pathology lab ran 124 tests on 99 samples of miscellaneous origin (nursery samples, hay fields, home-owner questions etc.). Nothing of regulatory significance was detected during these tests.

Crop	Number of Samples	Number of Tests	Number of Positive Organism
Azuki Beans	3	7	
Alfalfa	17	31	1 <i>Phoma medicaginis</i>
Barley	12	20	1 High Plains Virus
			5 <i>Xanthomonas translucens</i>
Beans ( <i>Phaseolus</i> )	195	342	2 <i>Fusarium oxysporum f.sp. phaseoli</i>
			2 <i>Pseudomonas syringae pv. syringae</i>
Carrots	102	179	1 <i>Alternaria radicina</i>
			3 <i>Sclerotinia sp.</i>
			1 <i>Xanthomonas hortorum pv. carotae</i>
Chives	1	3	
Clover (Red)	2	2	
Corn	172	675	41 High Plains Virus
			2 <i>Maize Dwarf Mosaic Virus</i>
			1 <i>Sporisorium reilianum</i>
			1 <i>Sugarcane Mosaic Virus</i>
			27 <i>Ustilago maydis</i>
			2 <i>Wheat Streak Virus</i>
Dill	1	2	
Garlic	12	20	2 <i>Onion Yellow Dwarf Potyvirus</i>
Kale	6	7	1 <i>Alternaria brassicae</i>
Oats	2	2	
Onion	8	17	1 <i>Botrytis aclada</i>
			1 <i>Botrytis allii</i>
Ornamental Allium	1	1	
Pea	187	279	1 <i>Fusarium oxysporium f.sp. pisi</i>
			2 <i>Fusarium sp.</i>
			4 <i>Pseudomonas syringae pv. pisi</i>
Pepper	1	2	
Peppermint	8	14	
Potato	11	11	
Pumpkin/Squash	2	6	
Radish	1	2	
Sunflower	9	32	1 <i>Sclerotinia sp.</i>
Turnip	2	7	1 <i>Alternaria brassicae</i>
Welsh Onion	1	3	
Wheat	5	7	1 <i>Wheat Streak Mosaic Virus</i>

## SEED LAB SUMMARY

The Idaho State Seed laboratory (ISSL) received 4390 samples and completed 6585 service tests in fiscal year 2015/16. The most common crops submitted for service testing during this timeframe were alfalfa, grains, corn, onion, beans, peas, mixtures, turnip, lettuce, carrot, timothy, teff, sagebrush and other native species. In all, 171 regulatory enforcements were checked for licensing and truth-in-labeling requirements; 9 of these checks resulted in inspector actions. A total of 660 seed dealer licenses were issued.

An influx of sagebrush testing was created again this year because of the recent devastating range fires across the intermountain west. Reseeding projects with native seed has increased these testing requests. The lab continues to be very busy with agricultural crops as well. As many as 286 distinct species were tested.

## CULL ONION INSPECTIONS AND ACTIONS

In 2016, monitoring of cull onion sites began during the first week of March in Canyon, Washington, Payette and Owyhee counties. Monitoring and inspection of these sites was conducted to identify and keep areas of high concern in compliance with IDAPA 02.06.17 - Rules Governing the Disposal of Cull Onions and Potatoes. The deadline for disposal each year is March 15. Once the deadline was reached, visits were conducted and cull onion piles were then removed, resulting in compliance being reached. In 2016, there were fewer locations that required a visit, as compared to 2015.

## OTHER REGULATORY INSPECTIONS AND ACTIONS

ISDA, under the authority of Title 22, Chapters, 4, 5, 23 and 24 of the Idaho Code, and IDAPA defined pest quarantines, conducted 4,626 inspections and consequently took action against various pest threats and other violations. In 2016, there were 1,826 licensed nurseries in the state; of those, 613 were inspected for compliance under statutes of the Idaho Nursery and Florists Law and were examined for the presence of plant pests and noxious weeds. In addition, specific checks were made for compliance with other state laws, quarantines and pests of particular concern. The results of these inspections and regulatory actions are listed below.



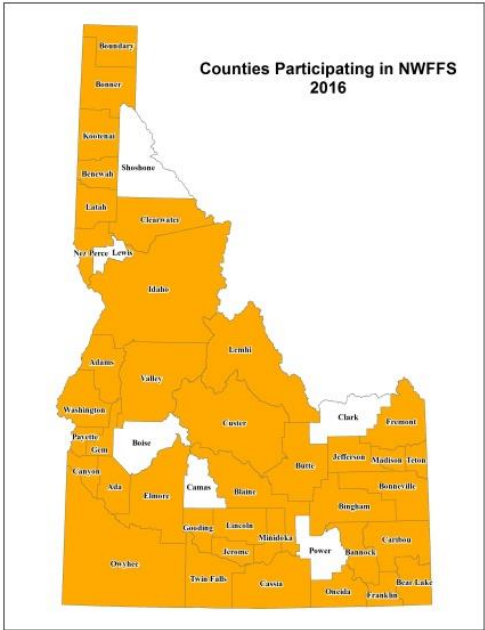
NWFFS Inspector Training at Nez Perce Biocontrol Center, Lapwai

## NOXIOUS WEED FREE FORAGE AND STRAW (NWFFS)

In 1996, the United States Forest Service (USFS) began requiring all forage and straw possessed on their lands in Idaho to be certified as noxious weed free (NWF) to prevent the introduction and spread of noxious weeds. In March of 2011, the Bureau of Land Management (BLM) implemented the same rule in Idaho. ISDA administers this program to facilitate compliance for equine users and re-vegetation managers.

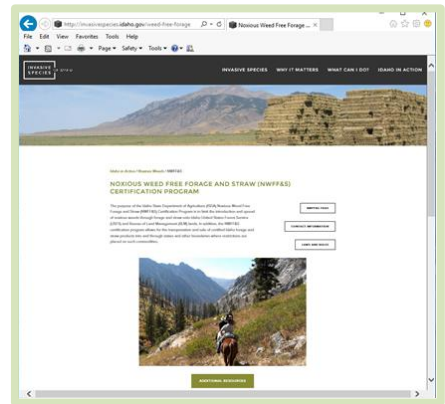
In 2016, ISDA trained seventy (70) people (the majority were NWFFS Inspectors) at seven (7) sites; Private landowners and agency partners were also invited to this event.

ISDA continues to partner with the Idaho Department of Fish and Game by supplying NWFFS information for their Big Game Hunting Regulations.



In 2016, 28,339 acres of forage and straw was inspected and certified NWF by trained County cooperators for a farm value of nearly \$7.7 million. NWF products such as hay and straw bales, forage cubes, pellets, twice-compressed forage and straw bales make NWF products increasingly more accessible and available to equine recreationalists and land rehabilitators. Education continues to be a focus of the NWFFS program. ISDA distributes a NWFFS brochure geared to equine users to all interested groups. ISDA has an in-depth NWFFS website; please Google "ISDA Weed Free Hay". The NWFFS program plays an important role in protecting Idaho's wild places from noxious weed introduction. To the left is a map of participating NWFFS counties.

ISDA continues to be a partner with the Idaho Hay and Forage Association (IHFA). ISDA has attended (and presented many times) their annual conference for the last twelve (12) years. In



ISDA updated its NWFFS website

addition, the ISDA NWFFS Program Manager has participated on its board, as an ex-officio member for twelve (12) years.

ISDA continues to be a partner with the College of Western Idaho Horticulture Program. ISDA presented its Invasive Species message to students this fall and has presented many times over the last twelve (12) years.

**ISDA NOXIOUS WEEDS AND INVASIVE SPECIES PROGRAMS**



Invasive species present a significant threat to the economy and environment of Idaho. The Idaho State Department of Agriculture (ISDA) administers the Invasive Species Program for the state, managing program

activities that include watercraft inspection, invasive species survey, invasive species education, and management of the state's Noxious Weed program.

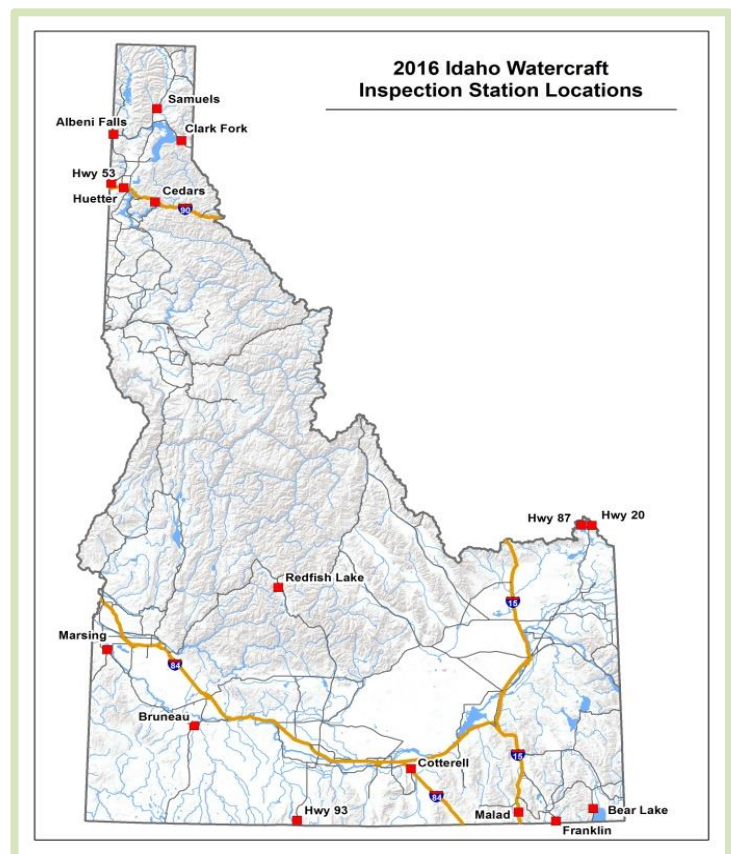
### Program highlights

- Over 89,390 watercraft inspections were conducted. This is a 41% increase in watercraft inspections over the previous season.
- Over 400,000 watercraft inspections have been conducted in Idaho since the program began in 2009.
- 19 zebra/quagga mussel fouled vessels were intercepted.
- 164 zebra/quagga mussel fouled vessels have been intercepted in Idaho since the program began in 2009.
- 879 veliger samples for zebra/quagga mussels early detection monitoring were collected from over 70 high-risk waterbodies throughout the state.
- To date, no evidence of zebra or quagga mussels has been found in the waters of Idaho.
- To date, zebra/quagga mussels have not been observed anywhere in the waters of the Columbia River Basin, including Oregon, Washington, Wyoming, British Columbia and Alberta.
- Over 180 acres of Eurasian watermilfoil were treated in 2016.
- The hydrilla eradication project has seen over a 95% reduction in plants in the last 4 years.
- The Noxious Weeds Cost Share program distributed \$1,266,237 to CWMA programs statewide.
- ISDA's Noxious Weeds Cost Share Program had participation from 29 CWMA's who treated over 167,000 acres of weed infestations throughout Idaho.
- Over 28,339 acres were certified under the Noxious Weed-Free Forage and Straw program.
- Iberian thistle and purple starthistle were added to the Noxious Weed list during the 2016 legislative session.

### Watercraft Inspection

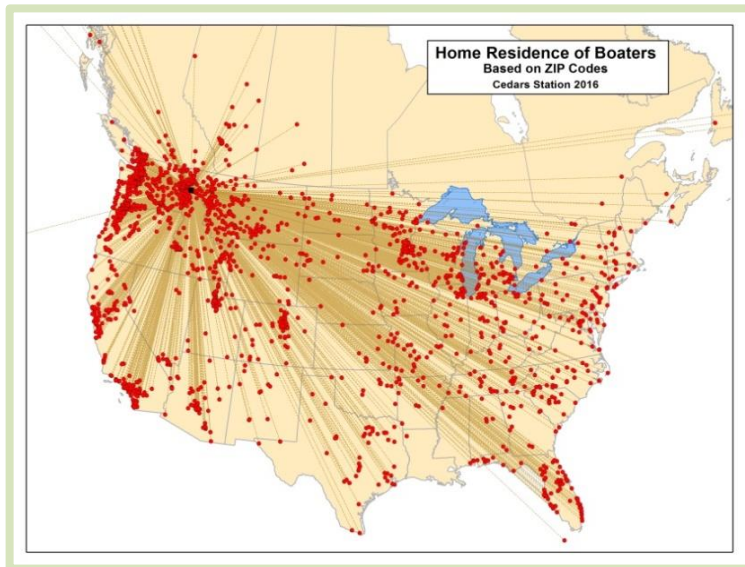
Prevention of aquatic invasive species (AIS) is a significant component of the program. The 2016 season was the eighth year of the watercraft inspection program, with 16 inspection stations operated statewide (Map 1). In 2016, stations inspected a record number of watercraft originating from all across North America (Map 2). Over 89,000 vessels were inspected, representing a 41% increase in inspections over the previous year (Figure 1, Appendix 1). The increase in inspection numbers was due, in part, to several factors including, extending station operation to cover daylight hours, and contracting with law enforcement to assist with station compliance.

**High Risk Inspections:** Over 1,200 high-risk vessels visited waters with zebra/quagga mussel infestations within the previous 30 days (Map 3). Watercraft traveling from these areas represent the highest risk for transporting live zebra/quagga mussels into the state. Only 44% of these vessels were inspected prior to coming to Idaho, and most were out of the water for a short period of time (Appendix 2). Watercraft inspection at mussel-impacted waters is the most efficient and effective way to prevent the introduction of mussels into Idaho. In the



Map 1: Watercraft inspection station location in 2016.

Southwest, Utah and Nevada watercraft inspectors regularly inspect boats leaving the mussel-infested waters of Lakes Powell and Mead. However, watercraft leaving the mussel-impacted waters of Lake Havasu and Lake Pleasant are not usually inspected until they reach Idaho.



Vessels that were found to have recently been in mussel-impacted waters received a thorough high-risk inspection and hot wash to ensure that they were free of AIS. Following inspection, over half of these boats traveled to destinations in Idaho, with the remainder destined to locations throughout the western region (Map 4).

Watercraft inspection information is available online at:  
<http://invasivespecies.idaho.gov/maps/>.

Map 2: Zip codes of watercraft inspected at the Cedars station (I-90 westbound) in 2016.

Figure 2: Watercraft inspected by Idaho watercraft inspection stations per year.

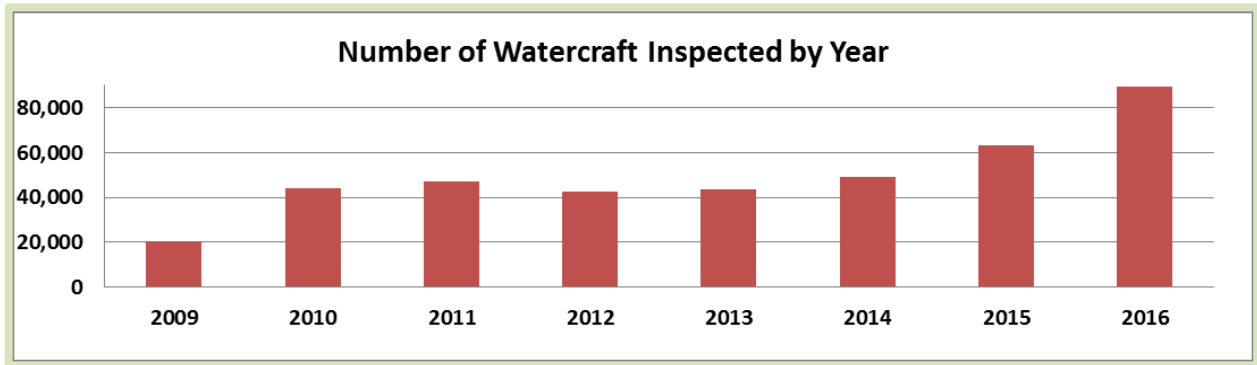
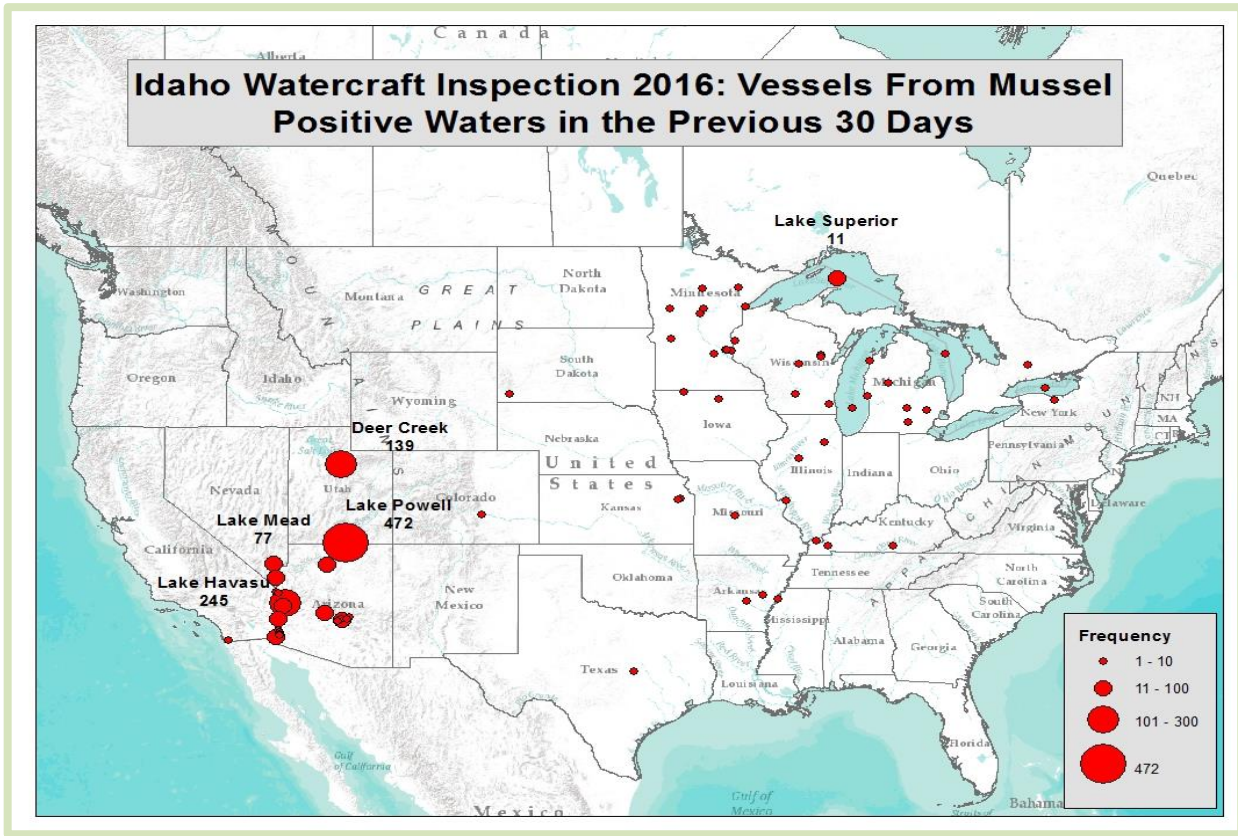
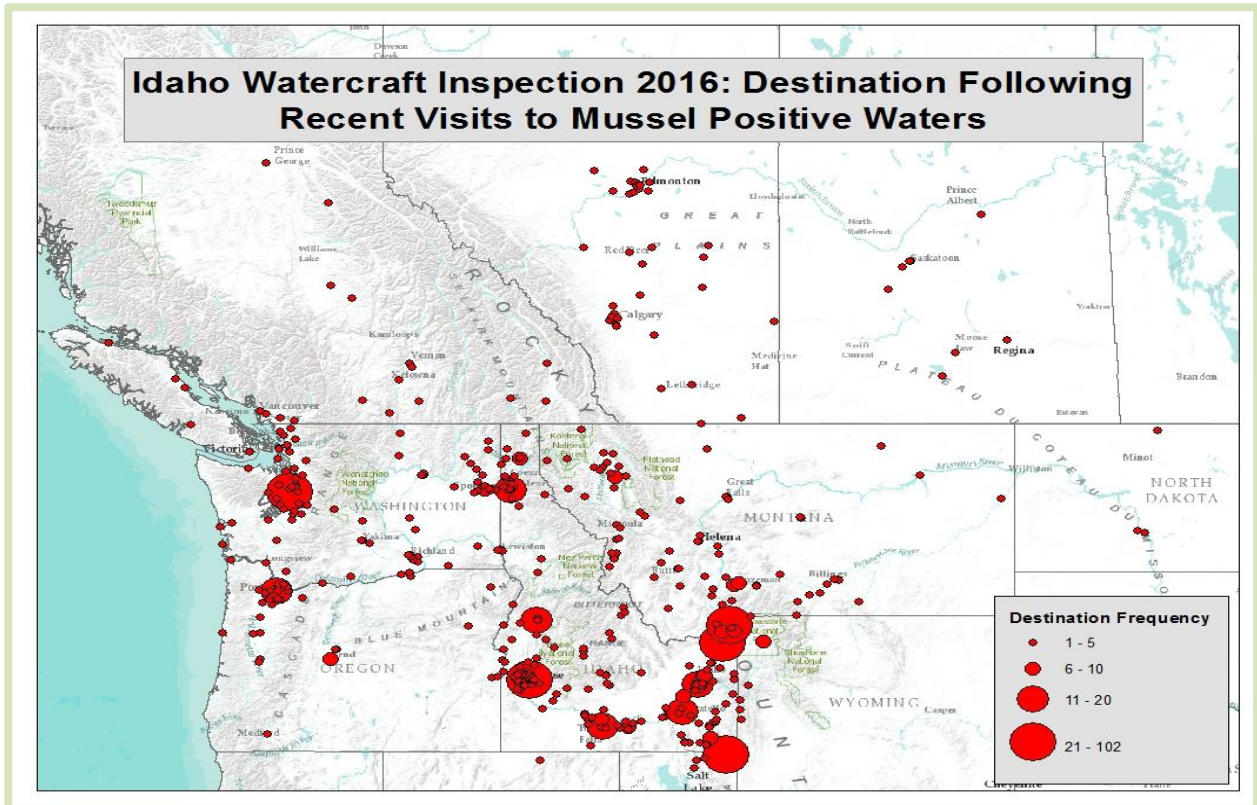


Table 1: 2016 watercraft inspection data summary.

2016 Inspections	Number of Watercraft
Vessels Inspected	89,390
Passport Inspections	15,419
Vessels Recently In Mussel Waters	1,247
Vessels Hot Washed	1,093
Vessels with Vegetation	480
Mussel-Fouled Vessels	19



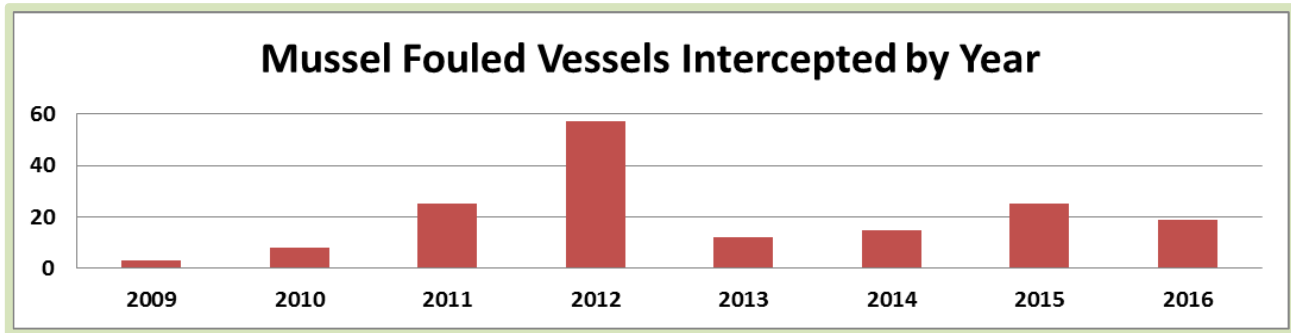
Map 3: Vessels from mussel impacted waters, 2016.



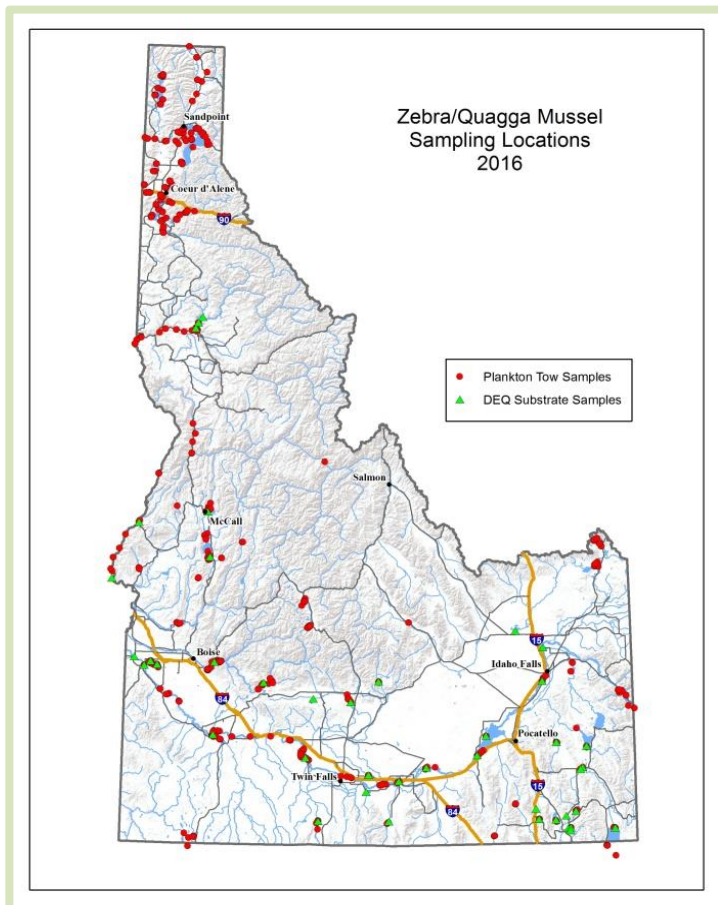
Map 4: Destination of vessels that visited mussel impacted waters, 2016.

**Mussel-Fouled Watercraft:** Nineteen vessels were intercepted transporting zebra or quagga mussels in 2016. These vessels originated from mussel-impacted waters in the Southwest, as well as from waters in Michigan, Wisconsin, and Texas (Appendix 3). Eight of these vessels were destined for Idaho, with the others heading to waters in the neighboring states. Vessels that were destined for Idaho were thoroughly decontaminated by ISDA staff, and remained out of the water for a minimum of 30 days. A total of 164 mussel-fouled vessels have been intercepted in Idaho since the program began in 2009 (Figure 2).

**Figure 2: Number of mussel fouled vessels intercepted by year by the Idaho Watercraft Inspection Program.**



Additional watercraft inspection data from the 2016 season is displayed on the ISDA Invasive Species Program website at: <http://invasivespecies.idaho.gov/watercraft-inspection-stations/>.



**Map 5: Zebra/quagga mussel sampling locations 2016.**

### Invasive Species Early Detection Monitoring

ISDA's early detection monitoring program collected 889 plankton samples from 70 waterbodies in Idaho in 2016 (Map 5). A number of partners also assist with mussel early detection monitoring including the Idaho Department of Environmental Quality (DEQ), The Shoshone Piute Tribe, The Coeur d'Alene Tribe, Idaho Power Company, US Army Corps of Engineers, US Forest Service, lake associations, and various canal companies and irrigation districts throughout the state. To date, no evidence of mussels has been found in Idaho or anywhere in the Columbia River Basin.

### Education

Education is a major component of the ISDA invasive species prevention program. Watercraft inspection stations play an important role in education through one-on-one interaction with the public, reinforcing the "Clean, Drain, Dry" message. Inspectors also provided a variety of invasive species-related educational materials to the public.

ISDA staff participated in a number of events this season which helped educate user groups and the boating public on invasive species issues and the importance of "Clean, Drain, Dry." Events included the Burley Boat

Regatta, the Saint Maries Jet Boat Races, the Twin Falls County Fair, the Idaho State Fair, the Idaho Horticultural Show, the Boise River Bash, and the American Falls Bowfishing Tournament. Staff provided 12 watercraft inspection trainings, educating over 100 individuals on the threats of invasive species and watercraft inspection protocols. Staff also presented on invasive species issues to noxious weed professionals, counties, tribes, master naturalists, angling groups, marine deputies, ITD Port of Entry staff, DEQ staff, IDFG staff, lake associations, and student groups.

### Idaho Invasive Species Council

The Idaho Invasive Species Council (IISC) was created by Executive Order in 2001 as a forum for coordinating invasive species related efforts and initiatives in the state. The IISC holds biannual meetings to discuss AIS issues and projects. In 2016, the IISC evaluated and contributed to updating the Idaho Invasive Species Strategic Plan.



### Other Programs

**Eurasian watermilfoil:** Eurasian watermilfoil (EWM) is one of the most problematic invasive aquatic plants in North America. EWM out-competes native vegetation and degrades aquatic habitats by reducing biodiversity. EWM forms dense canopies of growth throughout the water column which can make boating and fishing impossible, as well as degrade property values. In 2016, 181 acres of EWM were treated with herbicide in Hayden, Cocolalla, and Priest Lakes. ISDA also supported IDFG for EWM herbicide treatments in fishing ponds in southwestern Idaho. Low density EWM areas were treated by diver removal in Priest, Hayden, Coeur d'Alene, and Payette Lakes. To date, no EWM has been found in Eastern Idaho.

Eurasian x native milfoil hybrids have presented some treatment challenges in recent years. ISDA, working in cooperation with Montana State University and the Coeur d'Alene Tribe, investigated milfoil hybrids in Idaho. Milfoil hybrids were identified in four Idaho waterbodies and each waterbody was found to have a different hybrid genotype. This information will be used to improve milfoil management during the 2017 season.



**Water hyacinth:** Water hyacinth is an aggressive aquatic noxious weed that was first identified in the Hagerman area in 2012. An extensive survey found hyacinth in an area covering over 10 miles of the Snake River and a small source pond upstream. In response to the discovery of this population, the Director of ISDA designated an emergency EDRR listing of water hyacinth, and it was later added to the Noxious Weed Rule in 2013. Extensive hand removal was conducted on this population and, due to aggressive eradication efforts, no water hyacinth plants have been observed since the summer of 2013. With no observations of water hyacinth for three years, it appears this population has been eradicated. Partners that were involved with this effort include: Twin Falls, Cassia, Jefferson, and Madison counties; Idaho Power Company, IDFG, and U.S. Fish and Wildlife Service (USFWS).





**Hydrilla:** Hydrilla is considered the worst submersed aquatic plant in North America. It is an EDRR noxious weed in Idaho and an eradication program has been ongoing in the Bruneau and Boise area since 2008. Hydrilla densities have decreased significantly over the course of the program, and no downstream spread of hydrilla has been observed. Plant surveys in 2016 found a decrease of overall hydrilla occurrence of 95% in the Bruneau River population, and no plants were found in Boise population.



Several new populations of hydrilla were identified in the Twin Falls and Buhl area in 2015. These populations are associated with geothermally-influenced aquaculture facilities and these areas are currently undergoing monthly treatment. Hydrilla has not been found outside of the thermal water areas, including downstream in the Snake River. Survey and eradication efforts will continue in 2017.

**Flowering Rush:** Flowering rush is a submersed/emergent noxious weed that is expanding in Idaho. It forms dense growth and causes significant problems for boating and irrigation systems. ISDA has been involved with several flowering rush treatment projects, while attempting to identify effective treatment methods. In cooperation with County noxious weed staff, US Army Corps of Engineers, and USDA Agriculture Research Service, ISDA was involved with flowering rush treatment and evaluation projects in Lake Pend Oreille, and in ponds in Eastern Idaho in 2016. Effective treatment methods are currently being developed and refined to provide effective tools for flowering rush management.



**CWMA Cost Share Program**

ISDA has continued to provide leadership, training, and support to Cooperative Weed Management Areas (CWMAs) throughout the state. These CWMAs are comprised of county governments, federal partners, Native American tribes, and private landowners. CWMAs work cooperatively to combat noxious weed infestations across agency and jurisdictional boundaries. Their efforts help to protect wildland habitat, ecosystem diversity, recreational opportunities and agriculture in Idaho.

In 2016, ISDA awarded over \$1.2 million dollars in cost share grants to 30 participating CWMAs. The CWMA cost share participants provided over \$4 million dollars in matching contributions, and treated over 167,000 acres of noxious weed infestations. Cost share revenues also contributed to the mapping and monitoring of

over 590,000 acres of previously uncharted lands. The CWMAs also helped to educate citizens about the threat of noxious weeds, and they reached over 416,000 people in 2016.

There are two currently-formed CWMAs that did not participate in the Noxious Weed Cost Share program in 2016, and one CWMA that has yet to report accomplishments.

**Appendix 1: Idaho Watercraft Inspection Numbers by Station in 2016.**

Stations 2016	Total Inspections by Station	Weeds	Commercial	Hot Wash	Visited Mussel Impacted waters in Previous 30 Days	Previously Inspected
Albeni Falls	7,524	11	0	7	1	5
Bear Lake	4,947	2	1	63	98	1,502
Bruneau	3,393	13	1	7	5	27
Cedars	11,372	90	463	40	77	322
Clark Fork	4,847	71	4	9	2	296
Cotterell	3,717	8	343	245	291	378
Franklin	4,099	16	4	31	37	21
Huetter	12,758	83	108	9	4	107
Hwy 20	6,453	24	7	0	33	2,079
Hwy 53	4,173	21	1	1	0	6
Hwy 87	5,335	6	10	21	11	1,570
Hwy 93	1,801	22	36	242	219	137
Malad	6,029	33	13	376	451	250
Marsing	1,818	26	6	17	11	52
Redfish Lake	1,678	4	0	6	1	25
Samuels	3,852	30	2	15	3	272

**83,796      460      999      1,089      1,244      7,049**

Roving Crew 1	1,861	3	0	4	2	43
Roving Crew 2	1,483	17	97	0	0	70
Henry's Lake	2,250	0	0	0	1	828

**89,390      480      1,096      1,093      1,247      7,990**

**Appendix 2: Summary of High Risk Inspections in 2016.**

Waterbody	Total Number	Average Days In	Average Days Out	Over 20 Days In	Percent Non-Motorized	Percent Previously Inspected
Powell	472	6	5	4	14	58
Havasu	245	29	8	29	15	36
Grand Canyon	66	12	6	12	79	9
Pleasant / Mohave	46	15	12	4	24	28
Deer Creek	139	2	11	0	16	47

<b>Eastern Waters</b>	108	7	11	5	56	25
<b>Mead</b>	77	14	6	9	4	43

**Appendix 3: Summary of Mussel Fouled Vessels Intercepted in 2016.**

Date	Origin	Destination	Vessel Type	Out of Water for Less Than 30 Days	Vessel Recently Purchased	Commercial Transport	ISDA Notified Prior to Interception
3/9/16	Lake Havasu, AZ	Loon Lake, WA	Fishing Boat 18'	Y	N	N	
3/21/16	Lake Havasu, AZ	Hayden, ID	Pontoon Boat 24'	Y	N	N	
4/24/16	Lake Mead, NV	Boise, ID	Fishing Boat 19'	N	Y	N	
5/4/16	Lake Mohave, AZ	Billings, MT	Pontoon Boat 20'	N	Y	N	
5/5/16	Lake Michigan, MI	Velva, ND	Ski boat 19'	N	N	N	
5/16/16	Lake Mead, NV	Auburn, WA	Wakeboard boat	Y	Y	N	
5/20/2016	Lake Michigan, MI	Coeur d'Alene, ID	Cabin Cruiser 34'	N	Y	Y	Owner
6/1/2016	Lake Pleasant, AZ	Puget Sound, WA	Cabin Cruiser 36'	Y	Y	Y	AZ
6/14/2016	Louisville Lake, TX	Seattle, WA	Cabin Cruiser	N	N	N	
6/16/2016	Lake Mead, NV	Boulder, MT	Cabin Cruiser	N	N	N	NV
6/17/2016	Muskegon R, MI	Henrys Fork R, ID	Drift Boat	Y	N	N	
6/18/2016	Parker, AZ	Redfish Lake, ID	Pontoon Boat	N	N	N	
6/23/2016	Lake Mead, NV	Flathead Lake, MT	Pontoon Boat	N	N	N	NV
6/30/2016	Lake Mead, NV	Manville, AB	Pontoon Boat	Y	N	Y	
7/6/2016	Lake Powell, AZ	Coeur d'Alene, ID	Cabin Cruiser	N	N	N	
7/12/2016	Chain Lakes, WI	Hagerman, ID	Pontoon Boat	Y	N	N	WY
7/30/2016	Lake Mead, NV	Swan Valley, ID	Pontoon Boat	N	Y	N	
8/16/2016	Lake Powell, UT	Seattle, WA	Cabin Cruiser	N	Y	Y	
10/8/2016	Lake Powell, AZ	Macomer, WA	Cabin Cruiser	Y	Y	Y	



**ISDA AND USDA COOPERATIVE RANGELAND GRASSHOPPER AND MORMON CRICKET SUPPRESSION PROGRAM**

Grasshoppers and Mormon crickets continue to be one of the most serious pest problems for Idaho rangelands and adjacent croplands. Based on annual surveys conducted by the United States Department of Agriculture (USDA), Animal Plant Health Inspection Service (APHIS), Idaho has experienced very serious pest outbreaks in previous years. The management and the timely control of grasshopper and Mormon cricket populations are high priorities for

the Idaho State Department of Agriculture (ISDA) and our cooperators at USDA, APHIS. Congress has addressed this issue with special funding to the impacted states of Idaho, Utah and Nevada.

With this funding, ISDA has made available to landowners pesticides to control these pests. To qualify to receive these pesticides, a landowner must file a "Request for evaluation of need for suppression of grasshoppers or Mormon crickets in Idaho" commonly known as the "complaint form", with ISDA, and ISDA will evaluate their land to determine if the site has reached economic thresholds.

## **Background**

Sixty-four percent of Idaho lands are administered by the Federal Government. Forty-three percent, or 21.8 million acres, in Idaho is classified for use as rangeland. The Bureau of Land Management (BLM) administers 11.8 million acres in Idaho, much of it prime grasshopper/Mormon cricket habitat. There is a significant area of grasshopper and Mormon cricket habitat on federal lands that borders private rangeland and irrigated cropland in the state. Mormon crickets and grasshoppers (primarily about six species) are cyclical economic pest problems, particularly in southern Idaho. In recent years, however, significant outbreaks have also occurred in northern, north central, and southcentral Idaho.

The grasshopper and Mormon cricket program is divided into four (4) regions: North (N), South West (SW), South Central (SC), and Eastern (E), with offices in Coeur d' Alene (N), Boise (SW), Twin Falls (SC), and Idaho Falls (E). Formerly the area we now designate as SC and E Idaho was known as Eastern Idaho. ISDA awarded the bait contracted for Fiscal 2016 and 2017 to Simplot Partners and Drexel 5% Carbaryl was provided at a cost of \$0.819 per pound.

ISDA continued to use electronic devices (tablets & computers) to record complaint and evaluate properties. The electronic "Request for evaluation of need for suppression of grasshoppers or Mormon crickets in Idaho" form, A.K.A. the "Complaint form" was again posted on the ISDA Grasshopper/Mormon cricket site and many landowners, especially people that use smart phones, used this form. This form was previously was posted at the same site, however, the landowner was required to fax or mail to ISDA. The use of the tablets has proved to be a labor saving device, data that was once manually entered into databases, now could be inputted electronically. Tracking of complaints was enhanced. The program manager was able to supply Latitude and Longitude of complaint sites to the GIS Specialist, who in-turn, researched if any Threatened or Endangered Species were close enough to warrant set-backs or not provide insecticide to the landowner. Carbaryl 5% bait (referred as "bait" in the rest of the report) was the only insecticide distributed to landowners and was the only insecticide applied by ISDA ground treatment staff. The bait was stored at eight different storage sites around the state. When bait was not the most effective insecticide for grasshopper control, ISDA reimbursed landowners for insecticide and adjuvant costs on a case by case basis.

The University of Idaho Extension Service continued to be a strong partner in the program (especially the Latah & Cassia County offices), fielding complaints using the new electronic forms and forwarding to ISDA. County Weed Control offices in Cassia, Gem, Elmore, Franklin, and Kootenai County agreed to store and distribute bait to approved landowners. In addition, a sister agency, the Idaho Department of Transportation in Moscow allowed ISDA to park an enclosed trailer on their fenced property and distribute bait from their facility.

ISDA changed the name of seasonal scout employees to Pest Detection Specialist (PDS). One PDS was employed in North Idaho, one in Southwest Idaho, two in South Central Idaho, and one in Southeast Idaho.

ISDA continues to use personal survival beacons (SPOT) for each PDS and its full time employees working in this program.

APHIS and ISDA offices in Boise and Twin Falls continued to work together sharing scouting information.

Longtime Section Manager, Matt Voile, retired from ISDA and was replaced by Adam Schroeder. Administrative Assistant, Gail Jorgensen, left ISDA and was replaced by Chris DeWolf.

## **Summary of Grasshopper Actions Statewide**

In 2016, statewide, grasshopper emergence occurred about two to three weeks sooner than normal. Statewide, there were 133 landowner complaints, 76,090 lbs. of bait was distributed to 117 landowners in 19 counties. This was about 25% less bait than in 2015 (100,980 lbs.)

In addition, ISDA reimbursed four landowners for insecticides. ISDA scouted 610 sites (surveying for grasshoppers and Mormon crickets) statewide. No county or state road rights-of-way were treated by the ISDA for grasshopper infestations. ISDA continues to work with the United States Fish and Wildlife (USFW) Service and Idaho Fish and Game (IDFG) to avoid treatment near endangered species.

In Southwest and Southcentral Idaho, the three most common grasshoppers are: Clear-winged Grasshopper (*Camnula pellucida*), Two-striped Grasshopper (*Melanoplus bivittatus*) and Migratory Grasshopper (*Melanoplus sanguinipes*).

The two maps on page 39 and 40 show the detail geographic location of the complaints and surveying (grasshopper & Mormon cricket combined).

**Summary of Grasshopper Actions by Region**

North Idaho: North Idaho experienced wetter (especially March, 2.5” more than normal) and warmer winter/spring than normal weather conditions, which resulted in earlier grasshopper emergence. The first day above 50 °F (theoretical temperature at which grasshopper development begins to respond to temperature) was on 2-6-16 (the average high temperature for February was nearly six degrees higher than normal). The wet weather in March might explain why there was a decrease in grasshopper activity in 2016. There were 32 complaints in four different counties. Twenty-eight met the ISDA requirements of: their land was five acres or larger, it is used for agriculture, ISDA evaluated their land and grasshoppers were at or above the economic level (8 per yd<sup>2</sup>), and they wished to receive bait to control the grasshoppers in 2016 (5,920 lbs.). Several landowners declined assistance when they found out the assistance was a pesticide. This was a reduction in complaints (56) and baits distributed (18,120 lbs.) from 2015. The majority of the complaints were 20 acres or less. There was one large acre parcel (160 acres) in Kootenai County.

Bait was stored in Moscow and Coeur d’Alene. Scouting was limited due to other work demands. The first complaint was received on 5-17-16 in Athol (Kootenai Co.) about two weeks earlier than in 2015, and about five weeks earlier than 2013 and 2014 in Kootenai County. The Online Phenology and Degree Day Model (OPDDM) website reported in Coeur d’Alene (150 degree days equals hatching) 154 degree days on 5-2-16.

**North Idaho Private Landowner Complaints and Bait Distribution**

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
Bonner	1	1	160
Boundary	8	7	1480
Kootenai	22	19	4080
Latah	1	1	200
<b>Totals</b>	<b>32</b>	<b>28</b>	<b>5,920</b>

Southwest Idaho: South West Idaho experienced warmer than normal winter and spring and it was drier than normal, with the exception of March which had normal precipitation. The first day above 50 °F was on <sup>2</sup>-13-16, which is normal however the month of February was about 5 degrees higher than normal. Scouting began in Washington County on 4-11-16, in conjunction with a report of Mormon crickets. The first grasshopper complaint was on 5-5-16 in the Horseshoe Bend area, this was two to three weeks earlier than normal. The OPDDM website reported in Horseshoe Bend 155 degree days on 5-7-16.

There were 66 landowner complaints and 57 met the ISDA requirements and wished to receive bait. The amount of bait distributed in 2016 (40,080 lbs.) was about half what was distributed in 2015 (73,560 lbs.). Gem County and Washington County were the most active areas in Southwest Idaho. Gem County had a lot of small acreages complaints. Washington County only had eight complaints, however, they were large acreage ranches and a large amount of bait was distributed. There were two landowner reimbursements in Southwest Idaho, totaling 352 acres.

After two consecutive years of high grasshopper populations in Valley County in 2013 and 2014, ISDA did not distribute any bait or reimburse landowners in this county in 2015 or 2016. ISDA staff conducted early season monitoring and detected populations well below the economic threshold.

**South West Idaho Private Landowner Complaints and Bait Distribution**

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
Ada	4	4	600
Adams	8	6	4760
Boise	13	13	6960
Elmore	4	3	3000
Gem	23	19	12200
Idaho	1	1	720
Owyhee	3	3	1160
Washington	10	8	10680
<b>Totals</b>	<b>66</b>	<b>57</b>	<b>40,080</b>

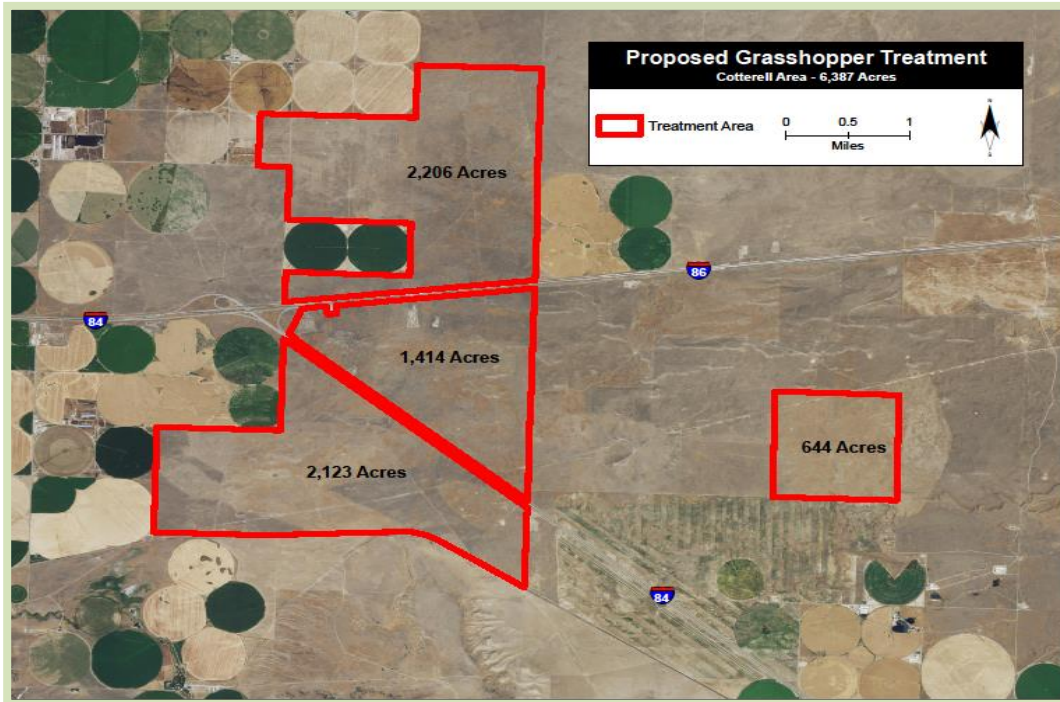
South Central Idaho: South Central Idaho experienced normal precipitation and warmer than normal winter-spring, which resulted in earlier grasshopper emergence than normal. The first day above 50 °F was on 2-12-16 (the average high temperature for February was six degrees higher than normal). Generally, this area doesn't reach 50 °F until the first of March.

Scouting began in May and the first complaint was received near American Falls on 6-16-16. The OPDDM website reported in American Falls 156 degree days on 5-13-16. There were 34 landowner complaints and 31 met the ISDA requirements and wished to receive bait in 2016 (29,690 lbs.). This was a large increase compared to 2015 (3 complaints and 6,750 lbs. bait). Many of the farms and ranches that received bait in 2015 and also received bait in 2016. The farming areas of Burley, Delco, Hollister, Rogerson, and Twin Falls had numerous complaints. Farmers that qualified received and applied bait on the unplanted pivot corners to protect their irrigated crops.

For the second consecutive year there were large populations of grasshoppers on the state range-land in the Cotterell area which is located adjacent to the junction of Highway 84 and Highway 86 in Cassia County. In 2015 this area had large populations, however, ISDA could not secure an aerial applicator, and instead ISDA treated the perimeter of this large tract of rangeland (about 7,000 acres) with bait. In 2015, ISDA provided landowner assistance to many adjacent landowners to control grasshoppers on their crops. In 2016, weekly surveying began in this area in Mid-May, and it reached economic thresholds about four weeks later. An application (see picture below) of Dimilin 2L was applied aerially on 6-16-16 to 6,626 acres, using the RAATS application method. A post-treatment survey revealed excellent control and ISDA did not receive any complaints from adjacent landowners. In addition, there were two landowner reimbursements in the Delco area, totally 529 acres.



Aerial application in Cotterell area of Dimilin 2L on State rangeland on 6/16/2016



Cotterell Treatment area Map

**South Central Idaho Private Landowner Complaints and Bait Distribution**

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
Cassia	9	7	11,700
Elmore	1	1	1,000
Gooding	2	2	700
Lincoln	1	1	320
Power	7	6	3,670
Twin Falls	14	14	12,300
<b>Totals</b>	<b>34</b>	<b>31</b>	<b>29,690</b>

Eastern Idaho: Eastern Idaho (Pocatello area) experienced the same dry and warm winter spring that South Central experience, which resulted in earlier grasshopper emergence than normal. The Twin Falls Scouts were assigned one complaint in Bannock County, with damage to dryland grazing lands. This complaint was filed very late in the summer, 8-15-16. The landowner received bait.

**Eastern Idaho Private Landowner Complaints and Bait Distribution**

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
Bannock	1	1	400
<b>Totals</b>	<b>1</b>	<b>1</b>	<b>400</b>

In summary, the cost of insecticides to assist decreased in 2016 (\$83,238.21) from 2015 (\$96,982). This decrease is a result of dramatically less bait being distributed in 2016 (45,680 lbs. less) in the North and Southwest regions of Idaho than in 2015.

**Pesticides Distributed/Reimbursed Statewide for Grasshopper Control**

	Lbs (\$.819 lb.)	Value
Carbaryl 5% Bait, Ground	76,090	\$62,317.71
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application	NA	\$5,680.70
Cotterell State Land Aerial Application		\$15,239.80
<b>Total Cost of Bait &amp; Liquid Insecticides</b>		<b>\$83,238.21</b>

**Summary of Mormon Cricket Actions Statewide**

In 2016, statewide, Mormon cricket emergence occurred about two to three weeks sooner than normal. In South West Idaho, the first day over 41°F (theoretical temperature at which Mormon cricket development begins to respond to temperature) was 1-5-16. Historically the Boise area reaches a high of 41° F about mid-January. The January through April temperatures were warmer than normal.

In Southwest Idaho, there were 26 landowner complaints and 21 landowners that met ISDA requirements of: their land was five acres or larger, it is used for agriculture, ISDA evaluated their land and Mormon crickets were at or above the economic level (3 per yd<sup>2</sup>), and they wished to receive bait to control the grasshoppers. These landowners received bait (12,770 lbs.) in three counties: Elmore, Gem, and Washington. The first complaint was received on 4-27-16 in Cambridge. The OPDDM website reported in Cambridge (125-199 degree day equals hatching) 124 degree days on 3-30-16 and 196 degree days on 4-6-16.

The majority of the bait went to Washington County in the Deer Creek, Keithly Creek, and West Pine Creek drainages near Cambridge. This is the same general area that APHIS treated BLM lands for Mormon crickets in 2016. ISDA ground treated 20 miles of right of way on Highway 71 (600 lbs. Drexel 5% Carbaryl), west of the town of Cambridge on 5-4-16. ISDA ground treated a state rangeland property (380 lbs Drexel 5% Carbaryl) in Gem County on 5-11-16. There were no other Mormon crickets complaints filed in the rest of the state in 2016.

In summary, the cost of insecticides to assist increased in 2016 (\$11,261) from 2015 (\$2,289). This increase is a result of outbreaks in Gem and Washington County in Southwest Idaho.



Heavy infestation of Mormon crickets on rangeland (Yellow Flowered Rush Skeleton weed) in Emmett



**Southwest Idaho Private Landowner Mormon Cricket Bait Distribution**

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
Elmore	4	3	750
Gem	13	9	2,200
Washington	9	9	9,820
<b>Totals</b>	<b>26</b>	<b>21</b>	<b>12,770</b>

**Pesticides Distributed/Reimbursed Statewide for Mormon Cricket Control**

	Lbs. (\$.819 lb)	Value
Private Landowners	12,770	\$10,458.63
State Land and Right of Way Treatment	980	\$802.62
<b>Total</b>	<b>13,750</b>	<b>\$11,261.25</b>

**Summary of ISDA grasshopper and Mormon cricket Program**

In 2016, ISDA continued to suppress outbreaks of grasshoppers and Mormon crickets. There were 159 complaints and 138 private landowners in 19 counties that received assistance in the form of bait. A breakdown of the pesticides distributed and/or reimbursed are in the below table.

A landowner reimbursement program was again implemented for qualified landowners and four landowners participated in three counties. ISDA contracted with an aerial applicator to protect about 6,600 acres of state grazing land and to prevent grasshoppers from migrating to adjacent crop lands.

ISDA applied Carbaryl bait along a state Right of Way (Hwy 71, Adams County) and on state land in Gem County in 2016. In summary, the total cost of insecticides and application to assist decreased slightly in 2016 (\$94,499.46) from 2015 (\$99,271.64).

For additional information, go to the ISDA website [www.agri.idaho.gov](http://www.agri.idaho.gov) and search under the Plants and Insects tab for the Grasshopper/Mormon Cricket Program.

**All Pesticides Distributed/Reimbursed Statewide to control Grasshoppers and Mormon Crickets**

	Lbs. (\$.819 lb.)	Value
Carbaryl 5% Bait, Ground, Private Landowners, to control grasshoppers	76,090	\$62,317.71
Carbaryl 5% Bait, Ground, Private Landowners, to control Mormon crickets	12,770	\$10,458.63
<b>Total Private</b>	<b>88,860</b>	<b>\$72,776.34</b>
Carbaryl 5% Bait, Applied to State Lands & Right of Way to control grasshoppers	0	\$0.00
Carbaryl 5% Bait, Applied to State Lands & Right of Ways to control Mormon crickets	980	\$802.62
<b>Total Lbs. Carbaryl 5% Bait Distributed</b>	<b>89,840</b>	<b>\$73,578.96</b>
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application	NA	\$5,680.70
Cotterell State Land Aerial Application (Insecticide & Application)		\$15,239.80
<b>Total Cost of all Bait, Liquid Insecticide, &amp; Application Costs</b>		<b>\$94,499.46</b>

**MULTI-YEAR SUMMARY OF CARBARYL TREATMENTS ON STATE AND COUNTY ROAD RIGHTS-OF-WAY AND STATE LANDS**

Year	Total Pounds Applied	Acres Treated
2005	12,175	1,218
2006	6,612	661
2007	3,906	340
2008	3,750	194
2009	21,200	1,446
2010	4,300	428
2011	900	92
2012	2,650	267
2013	0	0
2014	0	0
2015	3,550	355
2016	980	98

**2016 LANDOWNER REIMBURSEMENT WITH PRIVATE LANDOWNERS FOR GRASSHOPPER SUPPRESSION – FOUR (4) CONDUCTED IN 2016**

Acres Treated	Insecticides	Total Project Cost	Cost Per Acres
881	Carbaryl Chlorpyrifos Cobalt Silencer	\$5,680.70	\$6.45

**2016 BAIT DISTRIBUTIONS TO PRIVATE LANDOWNERS FOR GRASSHOPPER AND MORMON CRICKET SUPPRESSION**

Rank	County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
1	Washington	19	17	20,500
2	Gem	36	28	14,400
3	Twin Falls	14	14	12,300
4	Cassia	9	7	11,700
5	Boise	13	13	6,960
6	Adams	8	6	4,760
7	Kootenai	22	19	4,080
8	Elmore	8	6	3,750
9	Power	7	6	3,670
10	Boundary	8	1	1,480
11	Owyhee	3	3	1,160
12	Elmore	1	1	1,000
13	Idaho	1	1	720
14	Gooding	2	2	700
15	Ada	4	4	600
16	Bannock	1	1	400

17	Lincoln	1	1	320
18	Latah	1	1	200
19	Bonner	1	7	160
<b>Totals</b>		<b>159</b>	<b>138</b>	<b>88,860</b>

### **2016 Grasshopper and Mormon cricket forecast**

North Idaho: The below table is a 13 year history of Carbaryl 5% bait usage on private lands (grasshopper and Mormon cricket combined). There has not been a Mormon cricket complaint in the last four years. The table shows a peak distribution in 2009 and decreasing amounts since that year, with a spike in 2015. Historical data indicates that a larger economic outbreak may occur at some point.

#### **North Idaho**

<b>Year</b>	<b>Number of Counties</b>	<b>Lbs. Distributed</b>	<b>Year</b>	<b>Number of Counties</b>	<b>Lbs. Distributed</b>
<b>2004</b>	0	0	<b>2011</b>	5	23,500
<b>2005</b>	2	103,750	<b>2012</b>	5	11,600
<b>2006</b>	2	16,400	<b>2013</b>	5	5,350
<b>2007</b>	2	7,900	<b>2014</b>	6	4,250
<b>2008</b>	4	104,300	<b>2015</b>	6	18,120
<b>2009</b>	8	180,750	<b>2016</b>	4	5,920
<b>2010</b>	6	52,500	<b>Avg.</b>	<b>4</b>	<b>41,103</b>

Southwest Idaho: The below table is a 13 year history of Carbaryl 5% bait usage on private lands (grasshopper and Mormon cricket combined). The table shows a peak distribution in 2010 and decreasing amounts for since that year. The bait decrease in 2014 was primarily due to acres in Valley County that were treated with liquid insecticides instead of bait. Historical data indicates that a larger economic outbreak may occur at some point.

#### **Southwest Idaho**

<b>Year</b>	<b>Number of Counties</b>	<b>Lbs. Distributed</b>
2004	5	264,650
2005	6	48,950
2006	6	69,850
2007	7	150,440
2008	7	93,850
2009	7	205,350
2010	8	212,650
2011	9	68,100
2012	7	20,950
2013	2	58,400
2014	5	24,750
2015	8	73,560
2016	8	52,850
<b>Avg.</b>	<b>7</b>	<b>103,412</b>

South Central Idaho: This region was created in 2016. Previous to this year, all the area we have now designated as South Central and Eastern Idaho was designated as Eastern Idaho. In 2016, there was a large increase in bait usage.

**South Central Idaho**

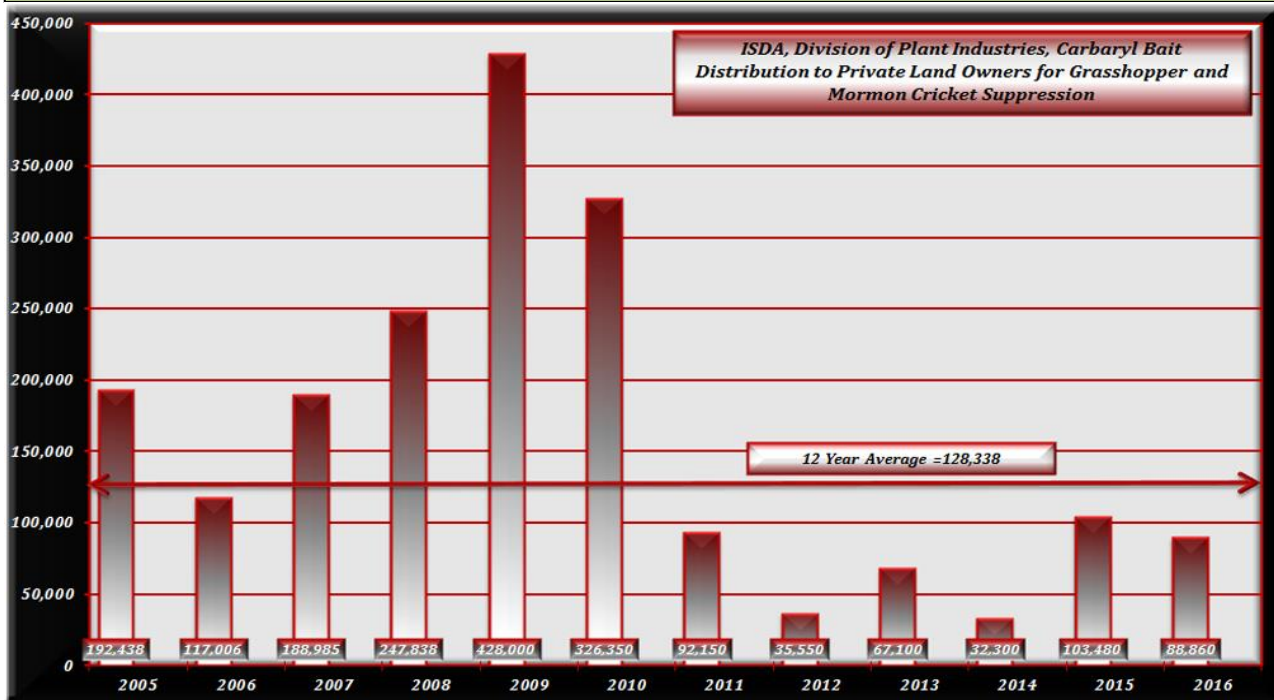
Year	Number of Counties	Lbs. Distributed
2015	2	6,750
2016	5	29,690
<b>Avg.</b>	<b>4</b>	<b>18,220</b>

Eastern Idaho: The below table is a 13 year history of Carbaryl 5% bait usage on private lands (grasshopper and Mormon cricket combined). The table shows a peak distribution in 2010 and a dramatic decrease since that year. Historical data indicates that a larger economic outbreak may occur at some point.

**Eastern Idaho**

Year	Number of Counties	Lbs. Distributed
2004	6	89,250
2005	2	34,700
2006	3	29,000
2007	3	26,500
2008	7	45,450
2009	5	39,200
2010	10	60,500
2011	2	550
2012	3	3,000
2013	4	3,650
2014	6	3,300
2015	2	5,050
2016	1	400
<b>Avg.</b>	<b>4</b>	<b>26,196</b>

## ISDA, Division of Plant Industries, Carbaryl Bait Distribution to Private Land Owners for Grasshopper and Mormon Cricket Suppression



### **MAJOR COOPERATORS FOR THE GRASSHOPPER/MORMON CRICKET PROGRAM**

During the 2016 season, the following cooperators provided significant help in bait storage, distribution, and overall program delivery:

- Cassia County Weed Control
- Clayville Insulation & Storage, Twin Falls, Idaho
- Elmore County Weed Control
- Franklin County Weed Control
- Gem County Weed Control
- Idaho State Department of Transportation, Moscow, Idaho
- Kootenai County Weed Control
- Simplot Partners, Caldwell, Idaho
- S&P Enterprises, Twin Falls Storage Unit
- University of Idaho, Extension Service, Cassia County, Idaho
- University of Idaho, Extension Service, Franklin County, Idaho
- University of Idaho, Extension Service, Latah County, Idaho
- University of Idaho, Extension Service, Oneida County, Idaho

**Program Contacts:** ISDA, Plant Industries Division

Lloyd Knight, Plants Administrator, [lloyd.knight@isda.idaho.gov](mailto:lloyd.knight@isda.idaho.gov), 208.332.8664

Adam Schroeder, Section Manager, [adam.schroeder@isda.idaho.gov](mailto:adam.schroeder@isda.idaho.gov), 208.332.8667

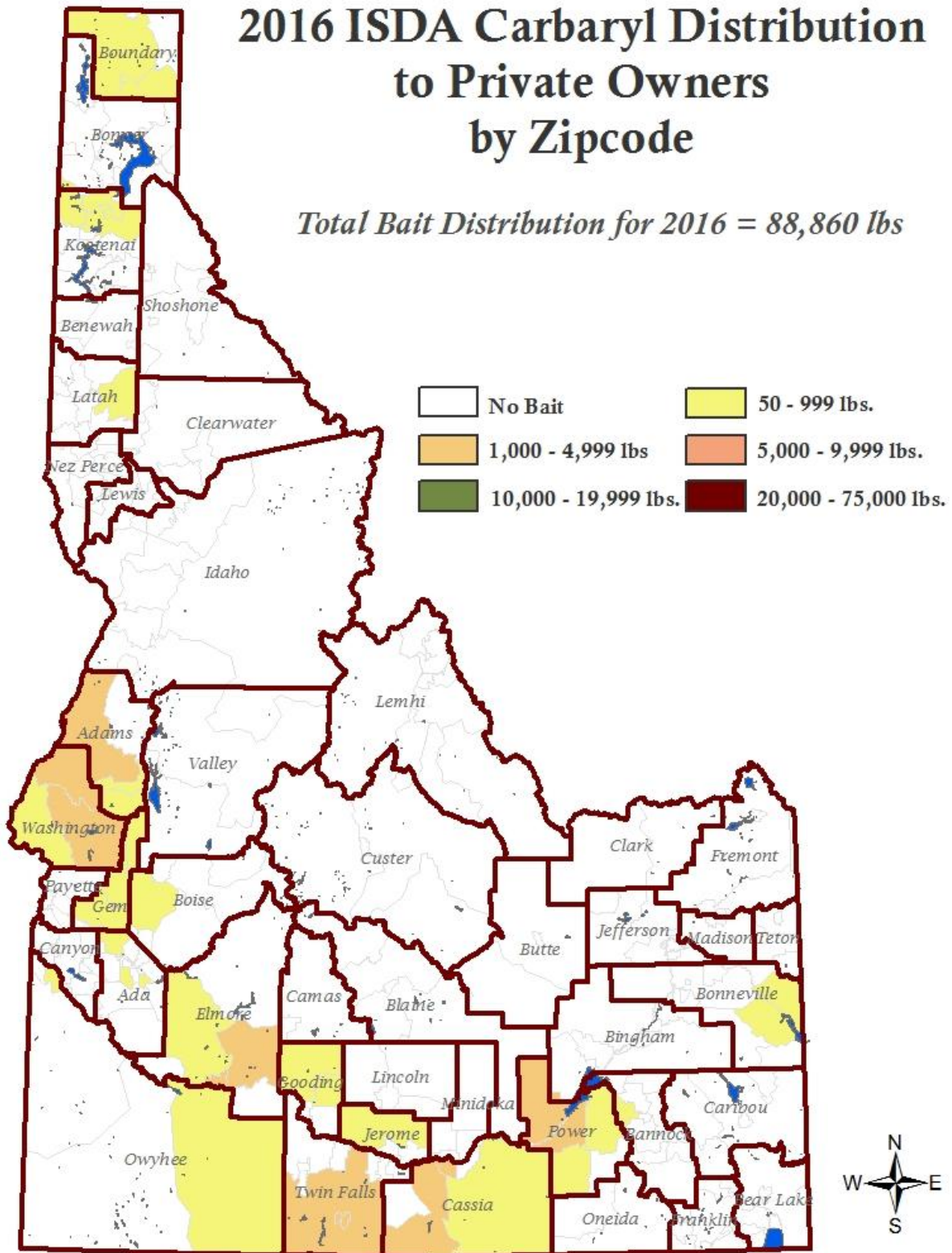
Dan Safford, Program Specialist, [dan.safford@isda.idaho.gov](mailto:dan.safford@isda.idaho.gov), 208.332.8592

Tina Eiman, Program Specialist, [tina.eiman@isda.idaho.gov](mailto:tina.eiman@isda.idaho.gov), 208.736.2195

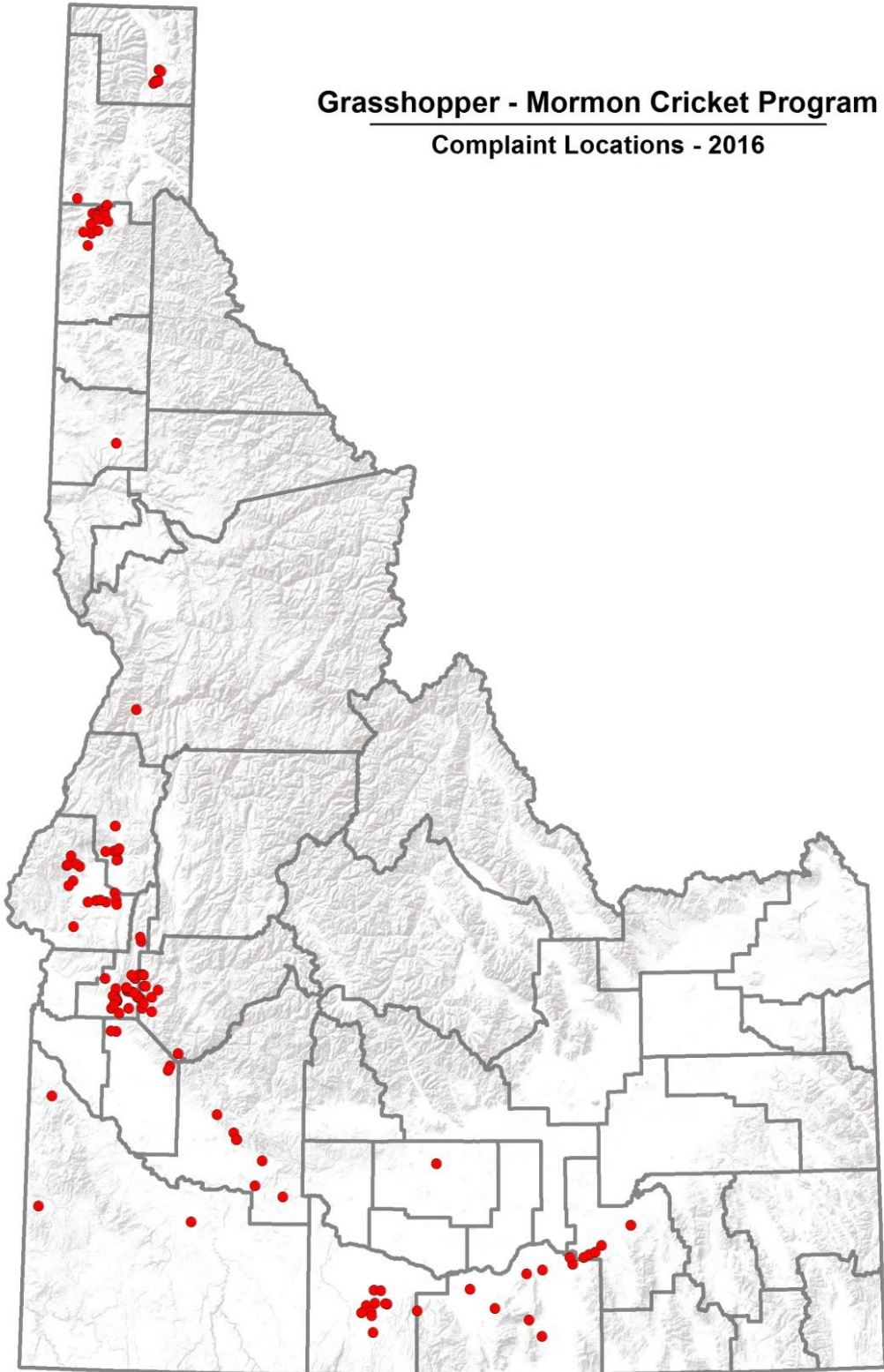
Chris DeWolf, Administrative Assistant, [chris.dewolf@isda.idaho.gov](mailto:chris.dewolf@isda.idaho.gov), 208.332.8626

# 2016 ISDA Carbaryl Distribution to Private Owners by Zipcode

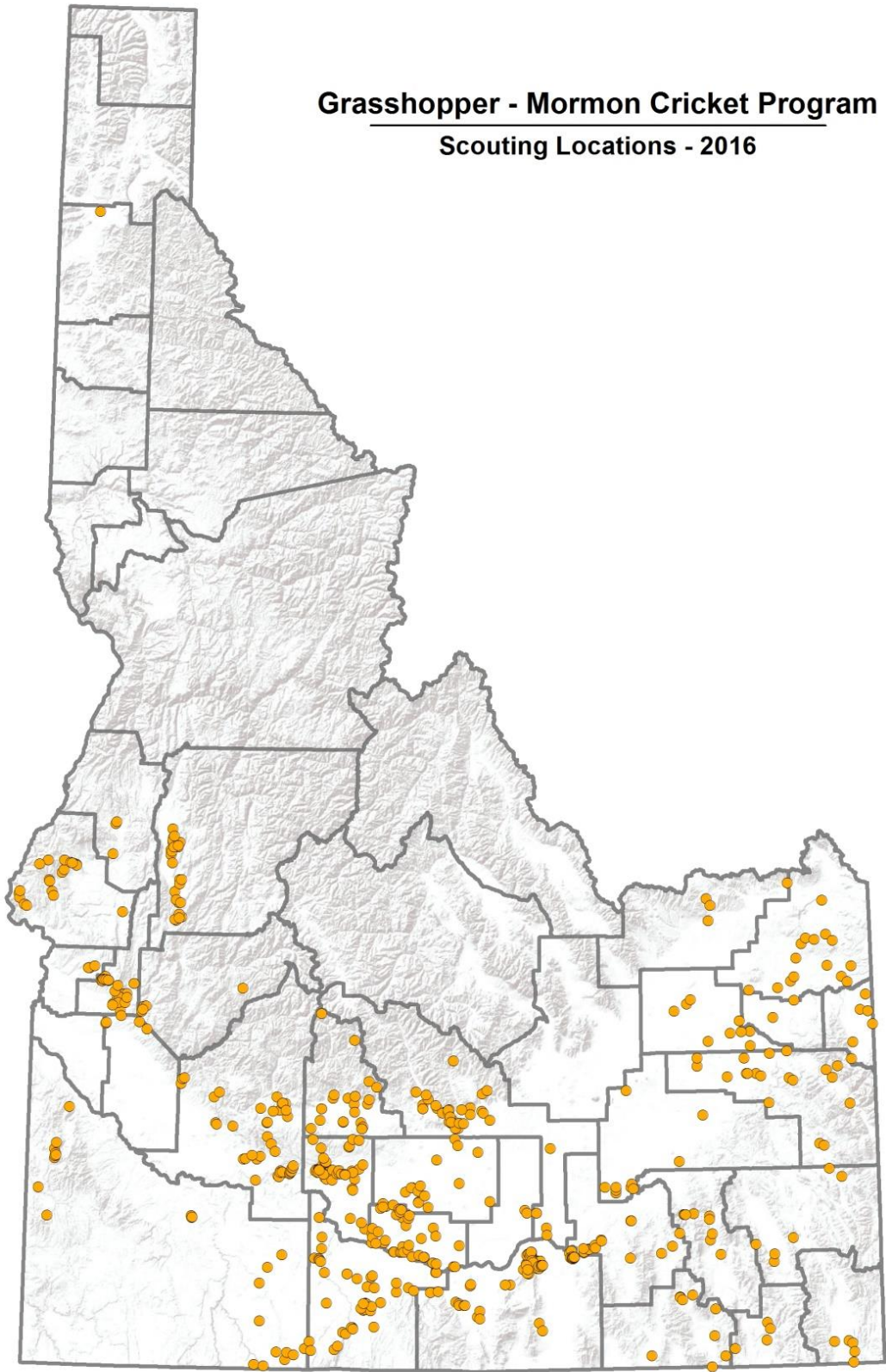
Total Bait Distribution for 2016 = 88,860 lbs



**Grasshopper - Mormon Cricket Program**  
**Complaint Locations - 2016**



**Grasshopper - Mormon Cricket Program**  
**Scouting Locations - 2016**





**2016 PUBLIC OUTREACH AND EDUCATIONAL PRESENTATIONS ON INVASIVE SPECIES, PEST SURVEY AND DETECTION, AND GRASSHOPPER MANAGEMENT PROGRAMS**

**Presentations given in 2016 by ISDA staff**

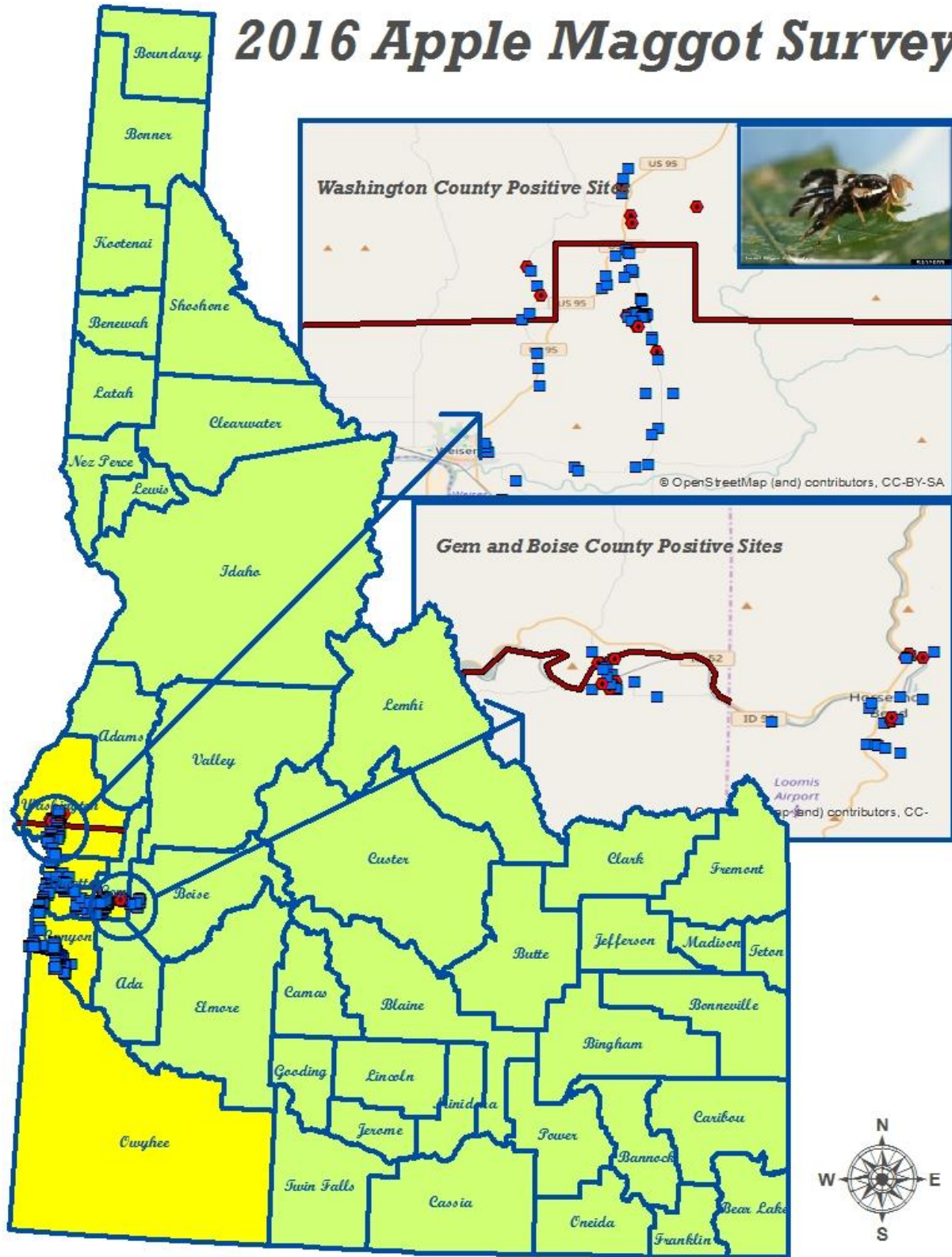
<b>Date</b>	<b>ISDA Staff</b>	<b>Event</b>	<b>Target Audience</b>
January 7-10	Nicholas Zurfluh	Boise Valley Fly Fishing Expo. Boot wash station booth	Public
January 20	Bethany Muffley	Invasive Species Presentation	Science Olympiad Club – St. Marks Middle School
January 20	Dan Safford	National Grasshopper Management Conference	Grasshopper Professionals
January 20-22	Nicholas Zurfluh	Idaho Horticulture Show. Invasive Species/ Noxious weeds Booth	Public
January 21	Paul Castroville	Idaho Horticulture Expo: Japanese Beetle and Other Invasive Insect Pests that Keep Us Awake at Night	Public
January 28	Thomas Woolf	Idaho Noxious Weed Conference: New Aquatic Invaders.	Noxious Weed Professionals
February 1	Paul Castroville	Sharing the World with Bugs/ISDA's War on Invasive Insect Pests	Boise Master Naturalists
February 2-3	Nicholas Zurfluh	CWMA Review Committee	Noxious Weeds and Invasive Species Managers
February 6	Nicholas Zurfluh	Western Whitewater Association Banquet. Invasive Species Booth	Recreation Managers
February 6	Thomas Woolf	Eastern Lakes Conference: AIS Program Update	General Public
February 11-14	Nicholas Zurfluh	Treasure Valley Boat Show. Invasive Species Booth	Public
February 18	Nicholas Zurfluh	Lower Weiser CWMA recertification seminar	Private Applicators (Farmers & Ranchers) Professional Applicators
February 20	Paul Castroville	Gypsy Moth TAC Meeting: Update on OR/WA Asian Gypsy Moth Eradication Program	ISDA, USDA, FS personnel
February 23-24	Nicholas Zurfluh	Cottrell WIT	Water Craft Inspectors
February 25-26	Nicholas Zurfluh	Malad WIT	Water Craft Inspectors
March 1-2	Nicholas Zurfluh	Hwy 93 WIT	Water Craft Inspectors
March 3-4	Nicholas Zurfluh	Bruneau/Marsing WIT	Water Craft Inspectors
March 3-5	Nicholas Zurfluh	Treasure Valley Sportsman Expo. Invasive Species Booth	Public
March 3	Dan Safford	Idaho Power, Pesticide Safety	Field Personnel
March 8	Paul Castroville	College of Western Idaho: Sharing the World with Bugs/ISDA's War on Invasive Insect Pests	Insect and Disease Horticulture Class
March 10	Paul Castroville	ISDA's 2016 Invasive Insect Pest Surveys	ISDA Field Investigators and staff
March 12	Nicholas Zurfluh	USCG Auxiliary meeting	Recreation Managers
March 15	Bethany Muffley	Invasive Species Presentation	Timberline High school Science Class
March 15	Nicholas Zurfluh	Idaho Master Naturalist	Master Naturalists

March 16	Nicholas Zurfluh	IISC. New population Hydrilla Update	
March 16	Paul Castrovillo	Update on Japanese Beetle Eradication Program/Background on Asian Gypsy Moth in US	Idaho Invasive Species Council
March 17	Paul Castrovillo	ISDA's War on Invasive Insect Pests	Public
March 18-19	Nicholas Zurfluh	Northern Idaho Fly Fishing Expo. Boot wash station booth	Public
March 29	Paul Castrovillo	Sharing the World with Bugs/ISDA's War on Invasive Insect Pests	McCall Master Naturalists
April 5	Thomas Woolf	East Kootenai Invasive Species Council: Idaho AIS update.	Natural Resource Managers
April 11	Thomas Woolf	Bonner County Aquatic Noxious Weed Workshop: ISDA's Aquatic Plant Projects	General Public
April 14	Bethany Muffley	Noxious Weeds and Invasive Species Presentation	Purple Sage Elementary School
April 22	Paul Castrovillo	Insects in the Ecosystem and the Effects of Invasive Pests	Grade School/High School Students, Parents, Teachers
April 28	Thomas Woolf	US Customs Border Protection: Watercraft Inspection Training.	USCBP Staff
May 5	Nicholas Zurfluh	IDPR Marine Deputy Training	Recreation Managers
May 5	Thomas Woolf	ANS Taskforce: Idaho's Watercraft Inspection Program	Invasive Species Managers
May 16	Nicholas Zurfluh	National Outdoor Recreation Leadership Conference. Invasive species program poster presentation.	Recreation Managers
May 16	Thomas Woolf	Marine Deputy Training Academy: Invasive Species and Watercraft Inspection.	Northern Idaho Marine Deputies
May 17	Paul Castrovillo	ISDA's Participation in the National Honey Bee Health Survey	Mosquito Control Personnel
May 17	Paul Castrovillo	ISDA's War on Invasive Insect Pests	Mosquito Control Personnel
May 19	Paul Castrovillo	ISDA's Participation in the National Honey Bee Health Survey	Mosquito Control Personnel
May 19	Paul Castrovillo	ISDA's War on Invasive Insect Pests	Mosquito Control Personnel
May 20	Matt Kreizenbeck/ Bethany Muffley	Rocky Mountain Bowfishing Tournament/ Invasive Species Update	Public
May 24	Thomas Woolf	Columbia River Basin Team: Idaho AIS Program Update	Invasive Species Managers
June 1	Thomas Woolf	Nez Perce Tribe Invasive Species Workshop: Idaho's AIS Program	Natural Resource Managers
June 6	Matt Kreizenbeck	Invasive Species Update	Idaho Falls Master Naturalists
June 7	Bethany Muffley	Weed Warrior Workshop - Aquatic Invasive Species ID	Noxious weed managers and personnel
June 16-17	Nicholas Zurfluh	Redfish WIT	Water Craft Inspectors
June 28	Nicholas Zurfluh	Adams CWMA Weed Tour. Invasive Species Update	Noxious Weeds and Invasive Species Managers
June 29	Paul Castrovillo	Keeping Invasive Insect Pests Out of Your Neighborhood	Kuna Park Rangers Program - ages 9-16
June 29	Thomas Woolf	Pend Oreille Basin Commission: Idaho AIS Program Update	General Public
July 7	Paul Castrovillo	The CAPS Program and ISDA's Invasive Insect Pest Surveys	Western Region IPM University Coordinators annual meeting

			attendees
July 21	Thomas Woolf	Hayden Watershed Association: Watercraft Inspection and Hayden Milfoil Treatment	General Public
July 26	Thomas Woolf	East Idaho AIS Workshop and Tour	General Public
July 28	Thomas Woolf	Coeur d'Alene Aquatic Plant Workshop	General Public
August 1	Paul Castrovillo	Keeping Invasive Insect Pests Out of Your Neighborhood	Nampa 4-H children and adults
August 9	Thomas Woolf	Coeur d'Alene Chamber of Commerce: Idaho AIS Program Overview	General Public
August 20	Paul Castrovillo	Ask an Entomologist	Bug Day attendees (public)
August 20-30	Nicholas Zurfluh	Western Idaho Fair. Invasive Species/ Noxious weeds Booth	Public
August 30	Thomas Woolf	Idaho Invasive Species Working Group: Aquatic Invasive Species: Understanding the Threat to Idaho.	Idaho Legislators, General Public
September 6	Thomas Woolf	Avista Staff Training: Idaho's AIS Program	Avista Field Staff
September 21	Nicholas Zurfluh	Boise Watershed Watch. Invasive species identification workshop	Noxious weed and invasive species managers
September 21	Paul Castrovillo	Sharing Our World With Bugs - But Not the Invasive Pests	Grade School/High School Students in Jr. Master Naturalist Club
September 22	Paul Castrovillo	Sharing Our World With Bugs - But Not the Invasive Pests	Grade School Students
September 23-25	Nicholas Zurfluh	Clearwater Spey Gathering. Boot wash	
September 28	Nicholas Zurfluh	Boise Watershed Watch. Invasive species identification workshop	Noxious weed and invasive species managers
October 8	Bethany Muffley	Boise River Bash - Invasive Species Booth	Assisted Boise River Enhancement Network with public outreach
October 13	Nicholas Zurfluh	USCG Auxiliary meeting	
October 20	Paul Castrovillo	ISDA's War on Invasive Insect Pests	Pest Control Operators/Plant Nursery Owners
October 27	Paul Castrovillo	Update on ISDA's Invasive Insect Pest Surveys	Idaho Invasive Species Council
October 27	Nicholas Zurfluh	IISC. Drawdown survey ppt	IISC member update
October 27	Bethany Muffley	Idaho Invasive Species Council - Hydrilla Update	IISC member update
November 2	Paul Castrovillo	Status of the ISDA Japanese Beetle Eradication Program in Boise	ID Association of Plant Protection Mtg attendees
November 2	Thomas Woolf	Inland Empire CWMA: Idaho AIS Program Update	Noxious Weed Professionals
November 8	Bethany Muffley	Eastern Idaho Weed Conference - Hydrilla Eradication and Control.	Noxious weed managers and personnel
November 16	Nicholas Zurfluh	Mid Snake Regional Water Resources Commission	
November 29	Dan Safford	SW Idaho Weed Association fall meeting	Weed professionals
November 30	Dan Safford/ Nicholas Zurfluh	College of Western Idaho Horticulture Class	Horticulture students
December 1	Nicholas Zurfluh	SW Idaho Weed Control Association	Noxious Weeds and Invasive Species Managers

December 2	Nicholas Zurfluh	Upper Payette CWMA meeting	Noxious Weeds and Invasive Species Managers
December 5	Paul Castrovillo	Do Honey Bees Need a Vet?	One Health Consortium attendees
December 6	Paul Castrovillo	2016 ISDA Surveys for Invasive Pests and an Update on the Japanese Beetle Eradication Program	Environmental Care Association Pest Expo attendees (pesticide applicators)
December 6	Thomas Woolf	Columbia River Basin Team: Idaho AIS Program Update	Invasive Species Managers
December 7	Dan Safford	University of Idaho Extension Service pesticide recertification course	Farmers
December 8	Paul Castrovillo	2016 ISDA Surveys for Invasive Pests and an Update on the Japanese Beetle Eradication Program	Environmental Care Association Pest Expo attendees (pesticide applicators)
December 8	Dan Safford	University of Idaho Extension Service pesticide recertification course	Farmers
December 10	Nicholas Zurfluh	Elmore County Recertification Seminar Invasive species update	Noxious Weeds and Invasive Species Managers
December 14	Dan Safford	Elmore County Recertification Seminar	Farmers
December 14	Paul Castrovillo	Boise Japanese Beetle Eradication Program	Portland Japanese Beetle Briefing meeting attendees

# 2016 Apple Maggot Survey



# 2016 Corn Commodity Survey

## Corn Commodity Survey

ISDA staff surveyed 130 corn field in 8 Idaho counties.

Two trap per pest were placed in each field.

Traps were set out for:

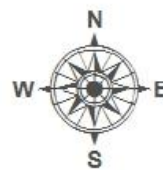
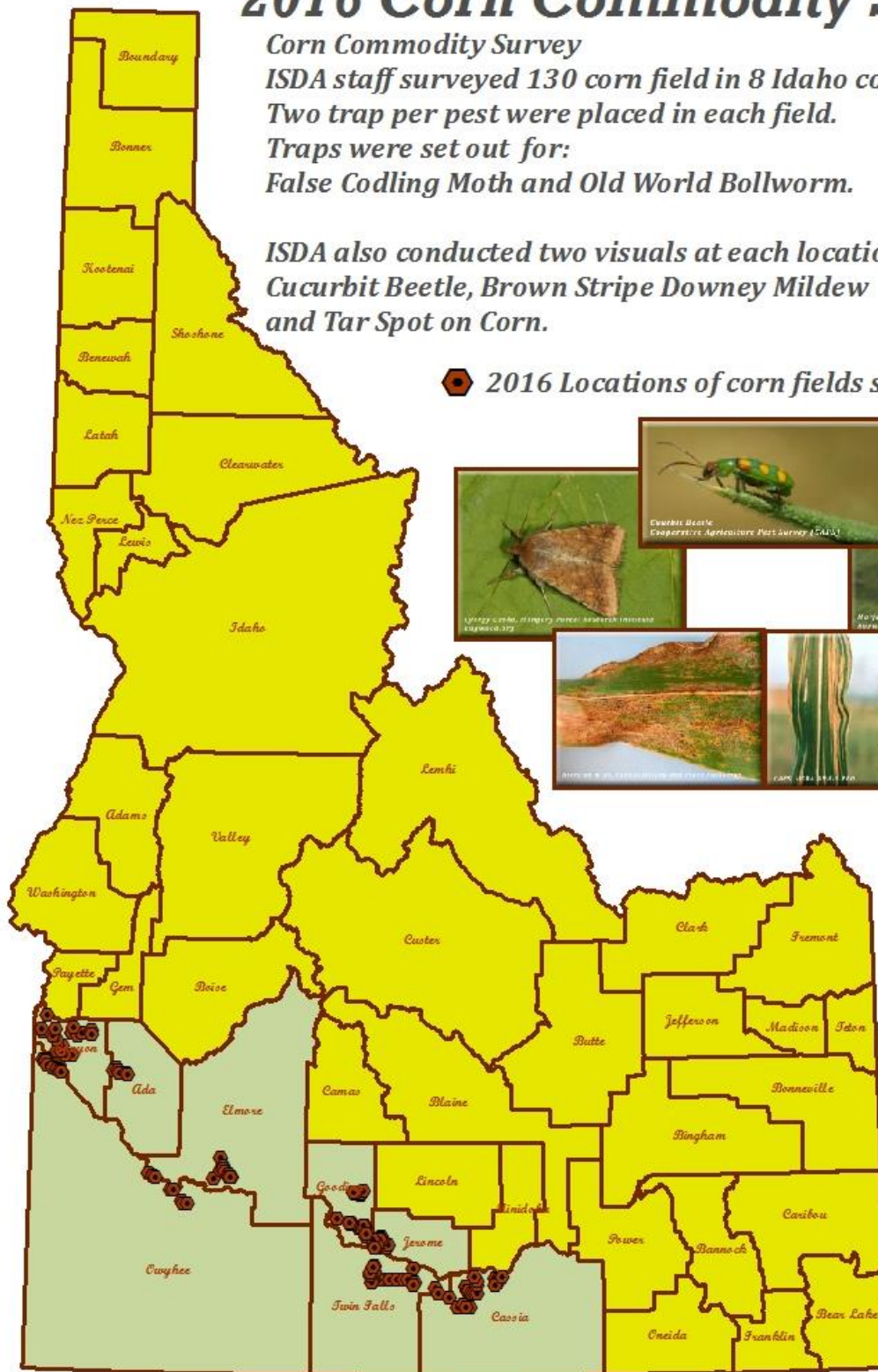
False Codling Moth and Old World Bollworm.

ISDA also conducted two visuals at each location for:

Cucurbit Beetle, Brown Stripe Downey Mildew

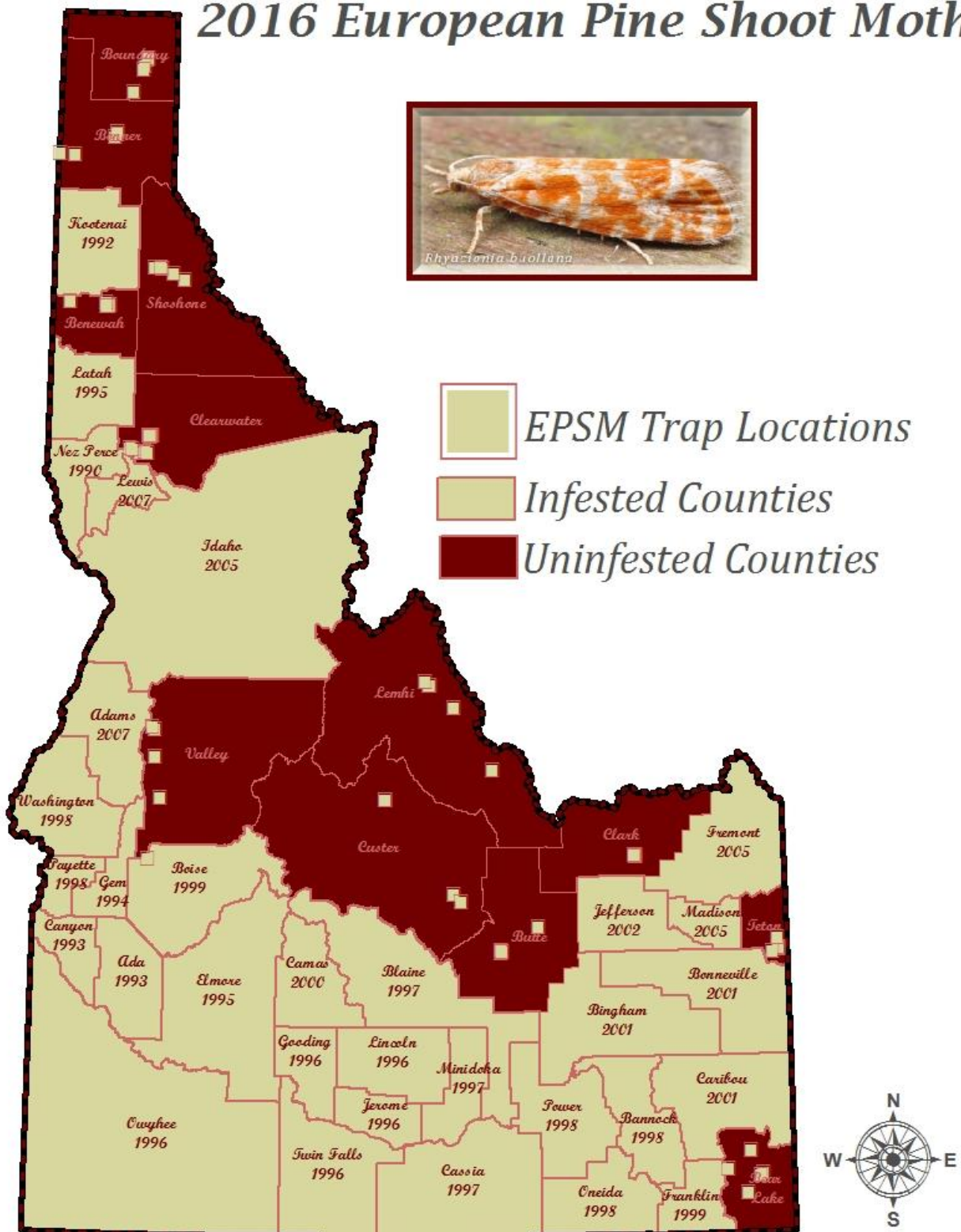
and Tar Spot on Corn.

 2016 Locations of corn fields surveyed.



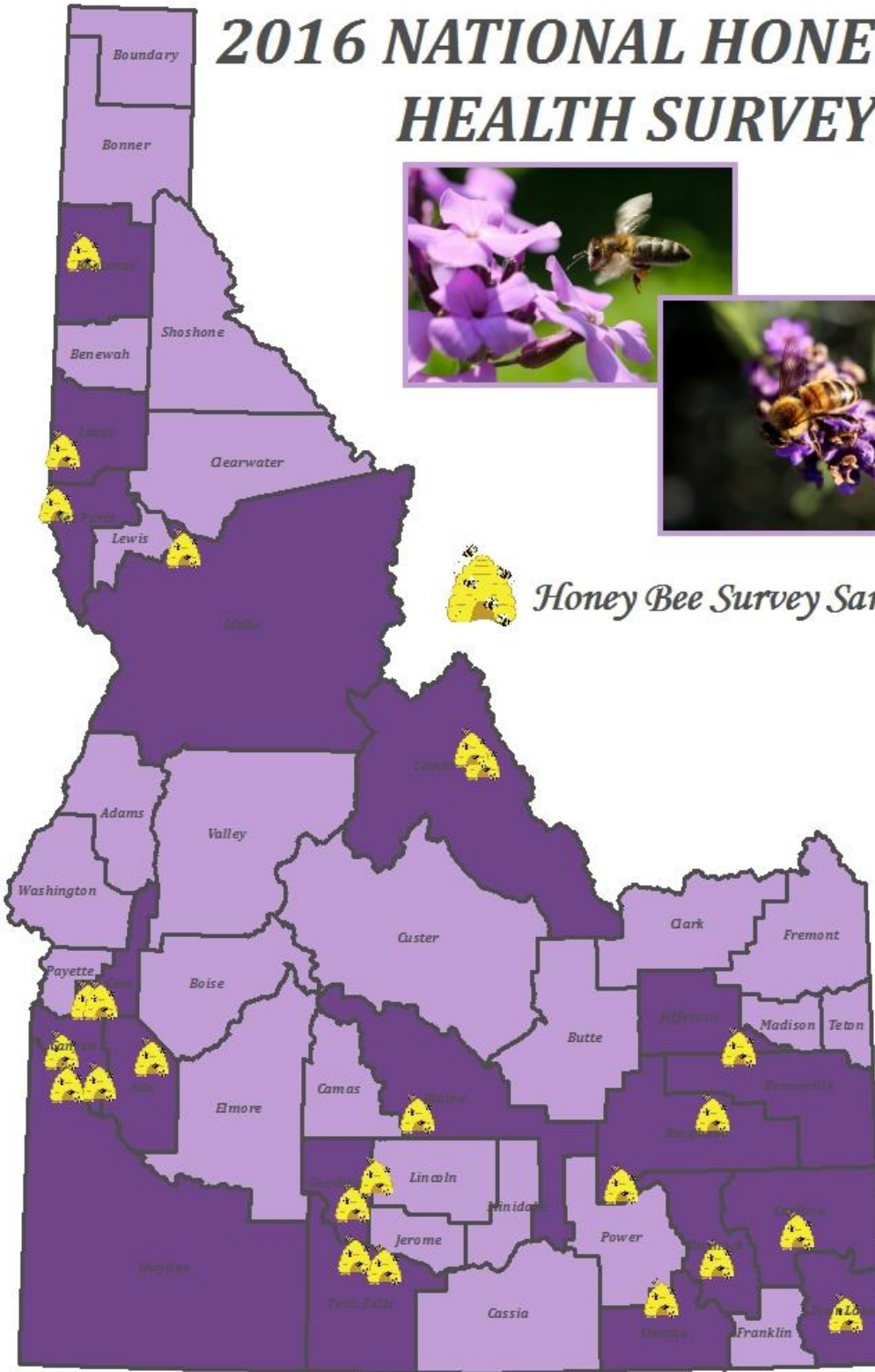


# 2016 European Pine Shoot Moth





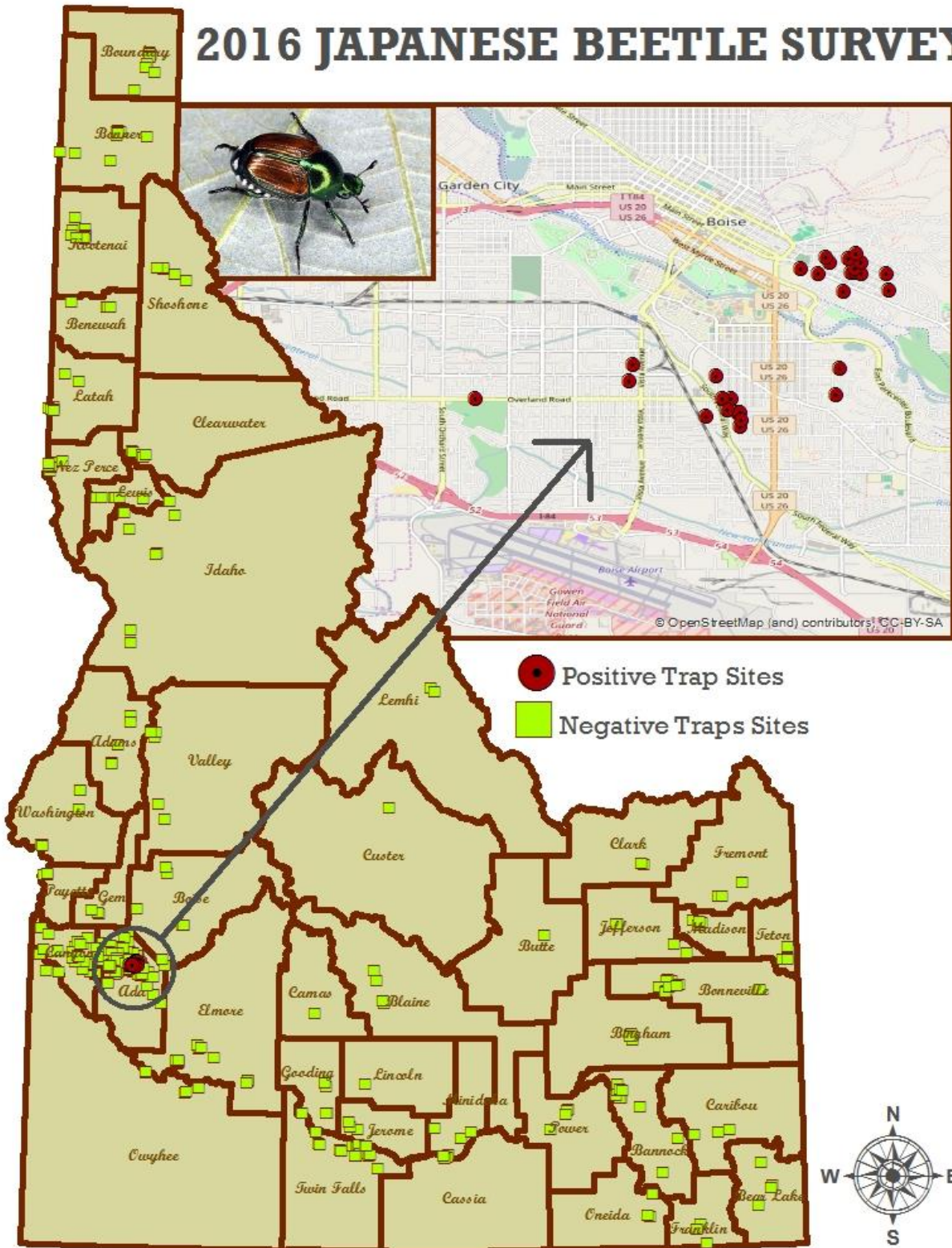
# 2016 NATIONAL HONEY BEE HEALTH SURVEY



*Honey Bee Survey Sample Sites*



# 2016 JAPANESE BEETLE SURVEY



**PROGRAM CONTACTS: ISDA DIVISION OF PLANT INDUSTRIES**

Lloyd Knight, Plants Administrator, 208-332-8620 [Lloyd.knight@isda.idaho.gov](mailto:Lloyd.knight@isda.idaho.gov)

Jared Stuart, Agriculture Section Manager, 208-332-8620 [Jared.Stuart@isda.idaho.gov](mailto:Jared.Stuart@isda.idaho.gov)

Adam Schroeder, Noxious Weeds Section Manager, 208-332-8620 [Adam.Schroeder@isda.idaho.gov](mailto:Adam.Schroeder@isda.idaho.gov)

Paul Castrovillo, Program Manager and Entomologist, 208-332-8620 [Paul.Castrovillo@isda.idaho.gov](mailto:Paul.Castrovillo@isda.idaho.gov)

Tina Eiman, Agriculture Program Specialist, 208-736-2195 [Tina.Eiman@isda.idaho.gov](mailto:Tina.Eiman@isda.idaho.gov)

Andrea Thompson, Agriculture Program Specialist, 208-8620 [Andrea.Thompson@isda.idaho.gov](mailto:Andrea.Thompson@isda.idaho.gov)

Darcy Heckathorne, Pest Survey Coordinator, 208-332-8620 [Darcy.Heckathorne@isda.idaho.gov](mailto:Darcy.Heckathorne@isda.idaho.gov)

Dan Safford, Agriculture Program Specialist, 208-332-8592 [Dan.Safford@isda.idaho.gov](mailto:Dan.Safford@isda.idaho.gov)

Liz Vavricka, Program Manager and Plant Pathologist, 208-332-8640 [Liz.Vavricka@isda.idaho.gov](mailto:Liz.Vavricka@isda.idaho.gov)

Tom Woolf, Aquatic Program Manager, [Thomas.Woolf@isda.idaho.gov](mailto:Thomas.Woolf@isda.idaho.gov)

Chris DeWolf, Administrative Assistant, 208-332-8620 [Chris.DeWolf@isda.idaho.gov](mailto:Chris.DeWolf@isda.idaho.gov)

ISDA Website: [www.agri.idaho.gov](http://www.agri.idaho.gov) This report, as well as past years' summary reports, are available at the ISDA Website:

<http://www.agri.idaho.gov/AGRI/Categories/PlantsInsects/RegulatedAndInvasiveInsects/Insectsformreports.php>