



Idaho State Department of Agriculture 2020 Grasshopper and Mormon Cricket Suppression Program Summary

Introduction

As in years past, Grasshoppers and Mormon crickets continue to be one of the more serious pest problems for Idaho rangeland 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 timely control of grasshopper and Mormon cricket populations are high priorities for the Idaho State Department of Agriculture (ISDA) and our cooperators at USDA and APHIS. ISDA has made pesticides available to landowners 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" more commonly known as the Complaint Form, with ISDA. Once the Complaint form has been received, ISDA will evaluate their land to determine if the site has reached economic damage thresholds.

Background

Sixty-four percent of Idaho lands are managed by the Federal Government, with forty-three percent (21.8 million acres) of Idaho being classified as rangeland. The Bureau of Land Management (BLM) manages 11.8 million acres in Idaho, and much of that land is 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 across the state. Mormon crickets and grasshoppers are cyclical economic pest problems, particularly in Southwestern Idaho. In recent years, significant outbreaks have also occurred in Northern, North-Central, South-Central, and Eastern Idaho.

The grasshopper and Mormon cricket program are divided into four (4) regions: Northern (N), Southwestern (SW), South-Central (SC), and Eastern (E), with offices in Post Falls and Moscow (N), Boise (SW), Twin Falls (SC), and Idaho Falls (E). For fiscal years 2018-2021, ISDA has a statewide contract for Drexel 5% Carbaryl bait.

ISDA utilizes electronic data collection to maintain a digital record of incoming complaints and the evaluation of properties. The electronic complaint form continues to be posted on the ISDA Grasshopper/Mormon cricket website and has been utilized by many landowners. In 2018, ISDA transitioned from paper Bait Distribution Forms to recording this information on electronic tablets. The data collection tools used in the field have improved efficiency by allowing data to be entered into the system once and providing a structured way to track complaints, responses, and bait distribution. In addition, GIS points are available to identify known Threatened and Endangered Species locations that could impact treatment options.

Carbaryl 5% bait; referred to as "bait" hereafter; was the only insecticide distributed to landowners. 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.

University of Idaho Extension offices in Elmore, Franklin, Idaho, Nez Perce, Latah and Oneida counties continued to be strong partners in the program, fielding complaints using the ISDA grasshopper/Mormon cricket website. County Weed Control offices in Elmore, Franklin, Gem, and Oneida Counties agreed to store and distribute bait to approved landowners on behalf of the ISDA. In addition, bait was stored in ISDA facilities in Boise, Hayden (private facility), Moscow, and Twin Falls. The Covid pandemic created challenges during the 2020 season. Due to budget constraints, no seasonal staff was hired. Surveys, complaints, evaluations, and bait distribution were completed by ISDA permanent staff. APHIS and ISDA offices in Boise and Twin Falls continued to work together by sharing scouting information.

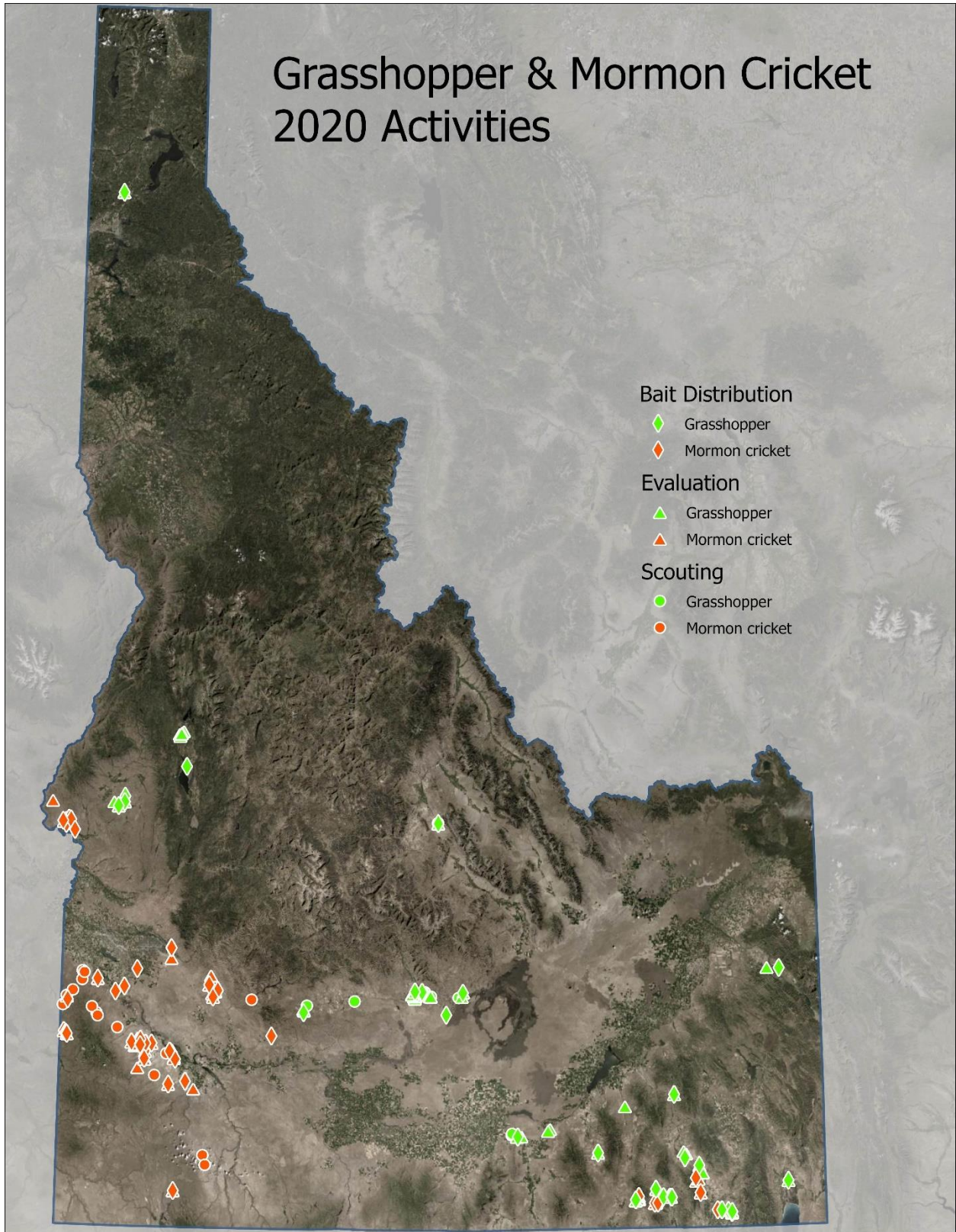
Summary of Grasshopper Actions Statewide

Statewide, there were 70 landowner complaints that resulted in 55,720 lbs. of bait that was distributed to landowners in 18 counties. This was an increase from the total of 29,320 lbs. that was distributed in 2019.

In addition to bait that was distributed through the ISDA, landowners were reimbursed for insecticides that they purchased and applied on their own. ISDA was able to scout 161 sites statewide and conduct surveys for both grasshoppers and Mormon crickets simultaneously. 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 Southwestern and South-Central Idaho, the three most common grasshoppers are: Clear-winged Grasshopper (*Camnula pellucida*), Two-striped Grasshopper (*Melanoplus bivittatus*) and Migratory Grasshopper (*Melanoplus sanguinipes*). The map below details the geographic location of surveying and evaluations of both grasshopper & Mormon cricket complaints combined.

Grasshopper & Mormon Cricket 2020 Activities



Summary of Grasshopper Actions by Region

Northern Idaho

The first day above 50 °F; the temperature at which grasshopper development begins; was on January 31st, which is earlier than the 30-year average of March 27th. The first grasshopper complaint was received on June 26th. There were 5 complaints across 2 counties, of those, 1 met the ISDA requirements and wished to receive assistance in the form of bait. Total bait distribution in Northern Idaho was 120 lbs.; which was a decrease from the 8,440 lbs. that were distributed in 2019.

Northern Idaho Private Landowner Grasshopper Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs.)
Kootenai	4	1	120
Lewis	1	0	0
Totals	5	1	120

Southwestern Idaho

The first day above 50 °F was on January 31st, which is earlier than the 30-year average of March 2nd. Scouting began in April and the first grasshopper complaint was received on May 11th in Elmore County.

There was a total of 32 complaints across 7 counties; with 28 of those complaints meeting the ISDA threshold requirement and wished to receive assistance in the form of bait. The total bait distribution in Southwestern Idaho was 35,160 lbs.; which was an increase from the 8,360 lbs. of bait that was distributed in 2019. In addition, there were 4 landowner reimbursements in the Southwestern Region.

Southwestern Idaho Private Landowner Grasshopper Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Adams	1	1	320
Boise	8	8	2,560
Elmore	3	3	3,560
Gem	6	5	5,920
Owyhee	3	3	11,240
Valley	5	2	4,080
Washington	6	6	7,480
Totals	32	28	35,160

South-Central Idaho:

The first day above 50 °F was on February 6th, which is earlier than the 30-year average of March 15th. Scouting began the first week of May and the first complaint was on June 6th in Blaine County.

There were 9 complaints across 3 counties, and 5 of those met the ISDA requirements and wished to receive assistance in the form of bait. Total bait distribution in South-Central Idaho was 7,120 lbs.; which was an increase of the 2019 total of 4,680 lbs. There were 4 landowner reimbursements in Blaine County and 1 in Custer County.

The state range-land in the Cotterell area, located adjacent to the junction of Highway 84 and Highway 86 in Cassia County (aerially treated in 2016 with Dimilin 2L, 6,626 acres) was surveyed in 2020. The grasshopper population in this area stayed well below the economic threshold.

South-Central Idaho Private Landowner Grasshopper Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Blaine	7	3	3,680
Cassia	1	1	2,000
Custer	1	1	1,440
Totals	9	5	7,120

Eastern Idaho:

The first day above 50 °F was March 4th, which is consistent with the 30-year average of March 2th. Scouting began in mid-May and the first complaint was received on June 10th in Swan Lake.

Bait was distributed from the Oneida County Road and Bridge facility and Franklin County Weed Control. There were 24 complaints in this region, and 17 landowners met the ISDA requirements and wished to receive assistance in the form of bait. The total bait distributed in Eastern Idaho was 13,320 lbs.; which was an increase of the 7,840 lbs. of bait distributed in 2019. There was 1 landowner reimbursement in Bannock County.

Eastern Idaho Private Landowner Grasshopper Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Bannock	6	4	2,560
Bear Lake	1	1	320
Bonneville	1	1	240
Franklin	4	3	1,520
Oneida	10	6	4,880
Power	2	2	3,800
Totals	24	17	13,320

In summary, the cost of insecticides to assist landowners statewide with grasshopper control increased in 2020; from \$54,554.57 in 2019 to \$111,409.04 for 2020. The amount of bait used in the 2020 season, 55,720 lbs., was an increase from the 29,320 lbs. that were distributed in 2019. Landowner reimbursement costs in 2020, \$60,703.84, was more than the 2019 total of \$27,873.37.

2020 Pesticides Distributed/Reimbursed Statewide for Grasshopper Control

Pesticides Distributed/Reimbursed Statewide for Grasshopper Control (method of application)	Lbs. (\$.91 lb.)	Value
Carbaryl 5% Bait, Ground	55,720	\$50,705.20
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application		\$60,703.84
Total		\$111,409.04

Summary of Mormon Cricket Actions Statewide

Southwestern and Eastern Idaho received Mormon cricket complaints. Statewide, there were 120 landowner complaints (this included 2 ROW complaints), and 122,120 lbs. of bait were distributed to landowners and Right-of-Ways in 6 counties, which was an increase from the total of 41,960 lbs. that was distributed in 2019.

Southwestern Idaho:

In Southwestern Idaho, the first day over 41°F, the temperature at which Mormon cricket development begins, was January 1st; which is earlier than the 30-year average of February 4th. Scouting began after the first complaint, March 23, 2020, Mormon cricket were 11 miles west of a farmer’s field in Grand View on BLM land.

There were 108 landowner complaints, of those, 93 landowners met the ISDA requirements and wished to receive assistance in the form of bait. The total bait distribution in Southwestern Idaho in 2020 was 118,360 lbs.; which was an increase from the 2019 total of 36,440 lbs. Owyhee and Elmore Counties were the most active in 2020. The Owyhee County outbreaks were concentrated near Grandview, Oreana, Murphy, Melba, Givens Hot Springs, Reynolds, and South Mtn Rd; which is south of Jordan Valley. Over 89,000 lbs. of bait were distributed in Owyhee County alone. In Elmore County outbreaks were concentrated in Mayfield and Mountain Home, where 17,800 lbs. of bait were distributed. There were 2 landowner reimbursement in Owyhee County.

There were two state highways (Hwy 78 & 51) in Owyhee County that needed treatment to prevent the Mormon crickets from becoming a road hazard (crushed insects create slick roads). Highway 78 was treated in Oreana on May 5th, 2020. The Duck Valley Indian Reservation contacted ISDA the first week of July with concerns of Mormon crickets on Highway 51 near Grassmere. Highway 51 was treated 3 times near Grassmere on July 17th, 23rd, and 28th.

Mormon crickets on Highway 78 in Oreana on 4-23-20



Jeremy Varley treating Mormon crickets near Grassmere on Highway 51 on 7-17-20



Mormon crickets in a Timothy grass pivot in Grand View, 5-18-20



APHIS conducted large acreage aerial and ground Carbaryl bait treatments on Federal lands in Owyhee County.

Eastern Idaho:

In Eastern Idaho, the first day over 41°F was January 16th, which is earlier with the 30-year average of February 4th. Scouting began in May, and the first complaint was received on May 8th in Soda Springs. There were 12 landowner complaints in Franklin and Oneida County, of those, 9 landowners met the ISDA requirements and wished to receive assistance in the form of bait, 3,760 lbs.

In summary, the cost of to assist landowners increased in 2020; from \$38,183.60 in 2019 to \$114,026.42 for 2020. The amount of bait used in 2020; 122,120 lbs.; was more than the 41,960 lbs. that were distributed in 2019. Landowner reimbursement costs in 2020, \$3,202.98, were more than the 2019 total of \$1,960.41.

Southwestern Idaho Mormon Cricket Complaints and Bait Distribution

County	Number of Landowners	Number of Distributions	Carbaryl Bait Distributed (lbs)
Ada	1	1	160
Elmore	24	23	17,800
Owyhee	75	65	89,040
Washington	6	4	8,000
Totals	108	93	115,000

Eastern Idaho Mormon Cricket Complaints and Bait Distribution

County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
Franklin	3	3	1,800
Oneida	9	6	1,960
Totals	12	9	3,760

Pesticides Distributed/Reimbursed Statewide for Mormon Cricket Control

	Lbs (\$.91 lb)	Value
Private Landowners	118,760	\$108,071.60
State Land and Right-of way Treatment	3,360	\$2,751.84
Landowner Reimbursement Program (this program reimbursed only the insecticide & adjuvant costs) Ground & Aerial Application		\$3,202.98
Total	122,120	\$114,026.42

Summary of ISDA Grasshopper and Mormon Cricket Program

In 2020, ISDA continued to suppress outbreaks of grasshoppers and Mormon crickets. There were 190 complaints, 154 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 table below. A landowner reimbursement program was again implemented for qualified landowners and 12 landowners (2,787 acres) participated in 6 counties.

For additional information, go to the ISDA website 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

Method of Application	Lbs (\$.91 lb)	Value
Carbaryl 5% Bait, Ground, Private Landowners, to control grasshoppers	55,720	\$50,705.20
Carbaryl 5% Bait, Ground, Private Landowners, to control Mormon crickets	118,760	\$108,071.60
Total Private	174,480	\$158,776.80
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	3,360	\$2,751.84
Total Lbs Carbaryl 5% Bait Distributed	177,840	\$161,528.64
Grasshopper Landowner Reimbursement Program	NA	\$60,703.84
Mormon cricket Landowner Reimbursement Program	NA	\$3,202.98
Total Cost of all Bait and Liquid Insecticide		\$225,435.46

Multi-Year Summary of Carbaryl Treatments on State and County Road Right-of-Ways 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
2017	2,760	276
2018	1,040	104
2019	0	0
2020	3,360	336

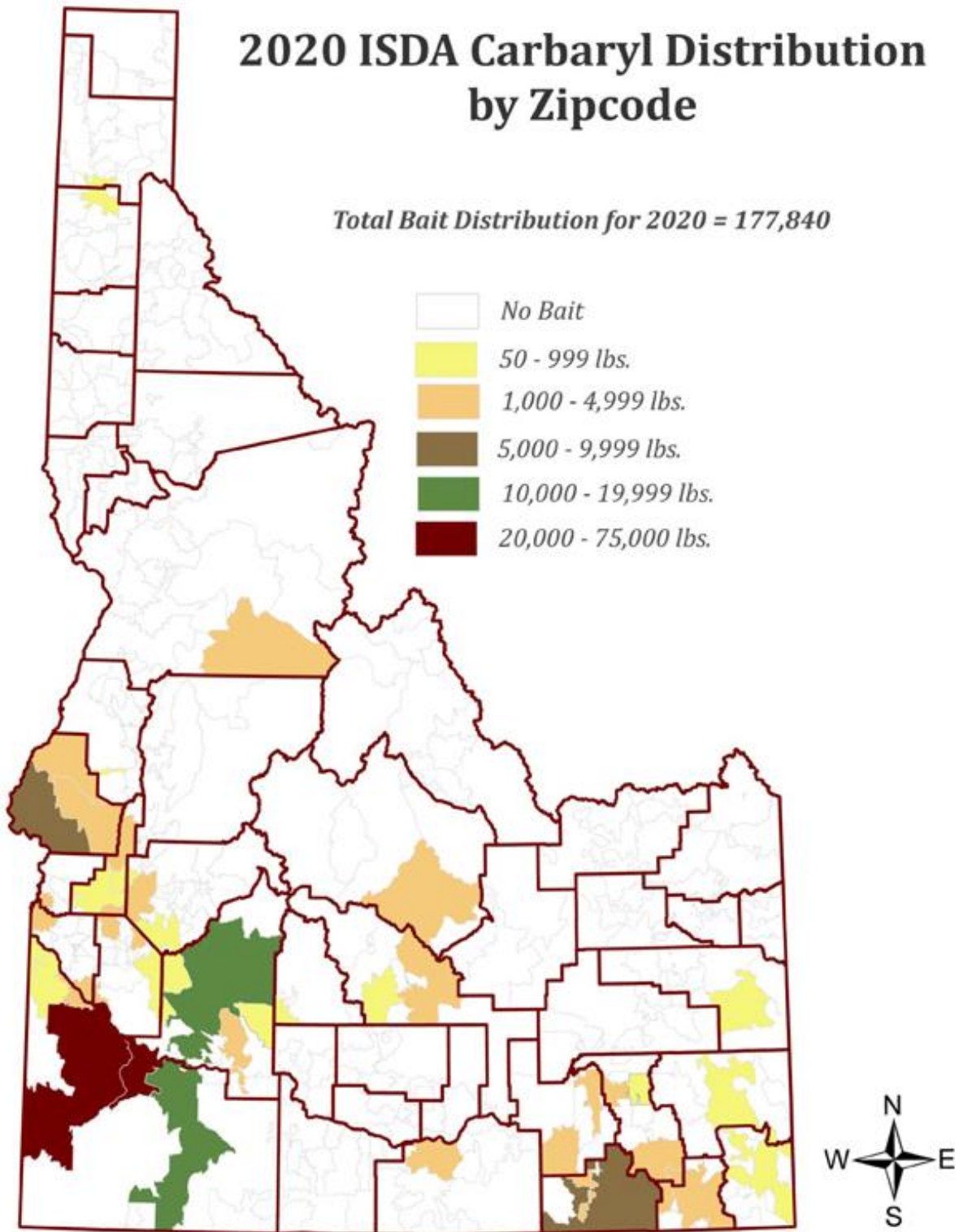
Acres Treated	Insecticides	Total Project Cost	Cost Per Acre
2,787	B-cyfluthrin (Sultrus) Chlorantraniliprole (Prevathon) Cypermethrin (Mustang Max) Dimethoate Diflubenzuron (Dimilin) Entrust Organic Insecticide Grizzly Too (Lambda Cyhalothrin) Province (synthetic pyrethroid)	\$63,906.82	\$22.93

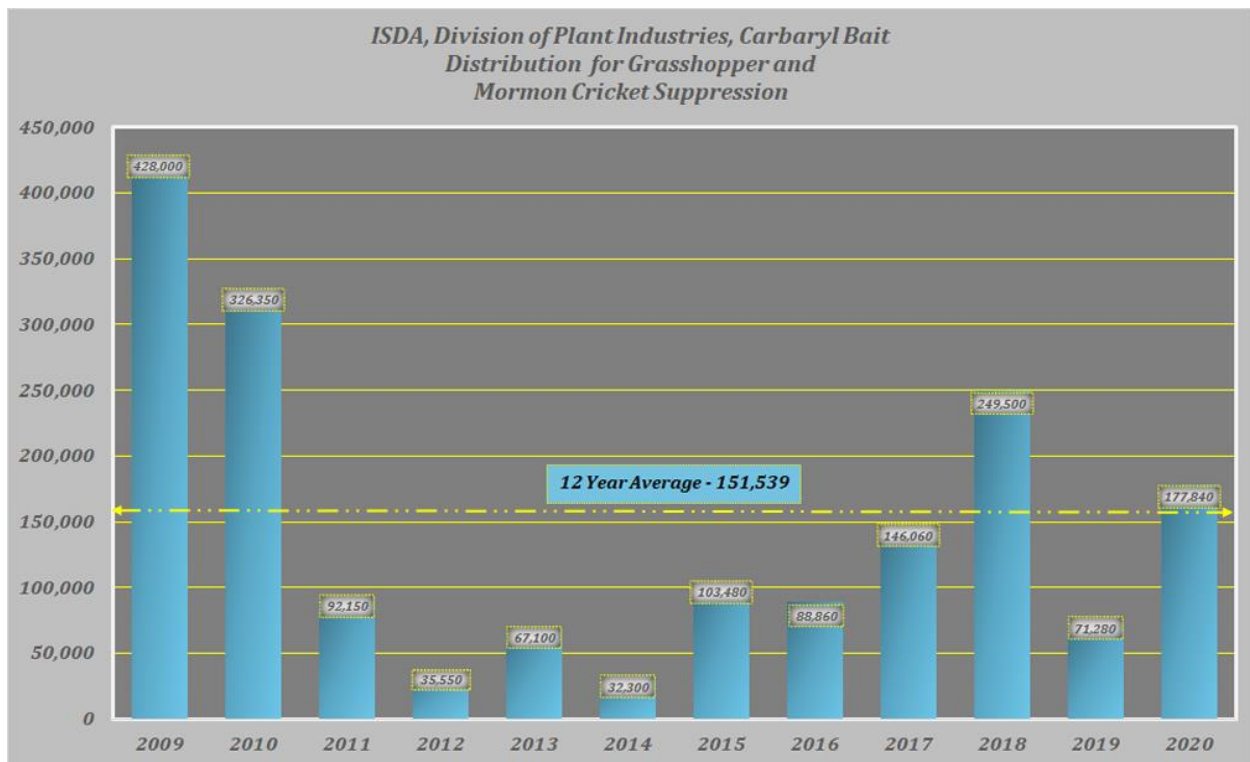
2020 Number of Complaints and Bait Distributions for Grasshopper and Mormon Cricket Suppression (this includes ROW and other State Land Applications, when applicable) in each County

Rank	County	Number of Complaints	Number of Landowners that received bait	Carbaryl Bait Distributed (lbs)
1	Owyhee	80	71	103,640
2	Elmore	27	26	21,360
3	Washington	12	10	15,480
4	Oneida	19	12	6,840
5	Gem	6	5	5,920
6	Valley	5	2	4,080
7	Power	2	2	3,800
8	Blaine	7	3	3,680
9	Franklin	7	6	3,320
10-Tied	Bannock	6	4	2,560
11-Tied	Boise	8	8	2,560
12	Cassia	1	1	2,000
13	Custer	1	1	1,440
14-Tied	Adams	1	1	320
15-Tied	Bear Lake	1	1	320
16	Bonneville	1	1	240
17	Ada	1	1	160
18	Kootenai	4	1	120
19	Lewis	1	0	0
Totals		190	156	177,840

2020 ISDA Carbaryl Distribution by Zipcode

Total Bait Distribution for 2020 = 177,840





2020 Grasshopper and Mormon Cricket Forecast

Northern Idaho: The below table is a 17-year history of Carbaryl 5% bait usage on private lands for both grasshopper and Mormon cricket suppression. The table shows a peak distribution in 2009, then again in 2015, and then a steady amount until 2019, with a significant decrease in 2020. Historical data indicates that a larger economic outbreak is probable at some point.

Northern Idaho

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

2017	6	7,040
2018	7	6,780
2019	4	8,440
2020	1	120
Avg.	4	32,748

Southwestern Idaho: The below table is a 17-year history of Carbaryl 5% bait usage on private lands for both grasshopper and Mormon cricket. Bait usage peaked in 2010 and then decreased for six years, however, Mormon cricket outbreaks in 2017, 2018 and 2020 has shown that larger economic outbreaks are reoccurring over time.

Southwestern Idaho

Year	Number of Counties	Lbs. Distributed
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
2017	7	125,540
2018	8	180,640
2019	8	44,800
2020	8	153,520
Avg.	7	108,756

South-Central Idaho: This region was created in 2015. Previous to that year, the area we have now designated as South-Central and Eastern Idaho was designated as Eastern Idaho (24 counties). Bait usage peaked in 2016 and decreased in 2017, and has been steady each year. Historical data indicates that a larger economic outbreak is probable at some point.

South-Central Idaho

Year	Number of Counties	Lbs. Distributed
2015	2	6,750
2016	6	29,690
2017	7	13,280
2018	5	13,520

2019	5	5,760
2020	3	7,120
Avg.	5	12,687

Eastern Idaho: The below table is a 17-year history of Carbaryl 5% bait usage on private lands for both grasshopper and Mormon cricket combined. Prior to 2015, this region included 24 counties, it now has 10 counties. Bait usage peaked in 2010, then dropped off dramatically for seven years, the grasshopper outbreak of 2018, showed that larger economic outbreaks are reoccurring over time. Mormon crickets have been significant in 2019 and 2020.

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
2017	1	200
2018	5	48,560
2019	7	12,280
2020	6	17,080
Avg.	4	24,628

Major Cooperators for the Grasshopper/Mormon Cricket Program

During the 2020 season, the following cooperators provided significant help in receiving complaints, bait storage, distribution, and overall program delivery:

- Elmore County Pest Abatement
- Franklin County Weed Control
- Gem County Weed Control
- Idaho Transportation Department, Boise (and field offices in Council, Marsing, Moscow, and Mountain Home)
- Oneida County Road and Bridge
- Oneida County Weed Control
- Payette County Weed Control
- Pineview Horticulture Services, LLC, Hayden
- Simplot Partners, Caldwell, Idaho

- S&P Enterprises, Twin Falls Storage Unit
- University of Idaho, Extension Service, Franklin County, Idaho
- University of Idaho, Extension Service, Idaho County, Idaho
- University of Idaho, Extension Service, Latah County, Idaho
- University of Idaho, Extension Service, Nez Perce County, Idaho
- University of Idaho, Extension Service, Oneida County, Idaho

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