

Oregon Grasshopper and Mormon Cricket Survey Summary for 2011

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Oregon Grasshopper and Mormon Cricket Survey Summary for 2011

Introduction

The 2011 Oregon grasshopper survey season, conducted by ODA in cooperation with USDA APHIS PPQ, was very similar to 2010 yet surpassed it as Oregon's greatest grasshopper challenge since the major outbreaks of the late 1980's. Initially, grasshopper numbers were slow in developing, delayed by unseasonable cool and wet weather in May and June but erupted in great numbers late in the season as the weather finally warmed up. Most of the rangeland in the eastern third of Oregon was generally infested with economic populations by season's end.

Surveying began on 23 May and ended on 1 September. Nymphal survey takes place early in the season and is used to locate potential outbreak areas. Adult survey (4 July - 1 September) is used by APHIS to make predictions for the next year, estimating economic levels of 8 or more grasshoppers per square yard. In 2011, a total of **3,150** sites were visited of which **11** were Mormon cricket (MC) locations and **3,139** grasshopper. Of the grasshopper stops **1,880** were nymphal, **914** adult survey, and **345** treatment-related sites (Table 1). Approximately 2.89 million acres were estimated to be economically infested across 18 counties in eastern Oregon ([Fig. 1](#), Table 1). Sixteen of these counties had greater than 10,000 economically infested acres: ([Fig. 2](#); [Table 2](#)).

Table 1. Oregon Grasshopper Survey Statistics from 2005 through 2011. Economic infestation ≥ 8 grasshoppers / yd².

Year	Number Counties Infested	Acres of Econ. Infest.	Grasshopper Sites Surveyed				Samples w/Econ Density	Mean GH / yd ^{2*}	Number of GH Surveyors
			Total	Nymph	Adult	Treatment			
2011	18	2,888,455	3,139	1880	914	345	1093	20	6
2010	12	1,910,222	1,905	795	750	360	488	21	6
2009	11	151,974	998	491	507		108	18	4
2008	12	1,129,820	2,722	1116	1606		360	29	6
2007	13	798,358	1,585	706	870		298	18	6 (+2)
2006	14	97,399	1,368	750	618		100	16	6
2005	9	64,751	859	306	423		115	15	5

*Mean of economically infested samples

Just as in 2010 the cool and wet May-June period delayed emergence which complicated our surveying efforts. Normally in outbreak years most grasshoppers are adults by early July since outbreaks are usually associated with hot, dry conditions. During these past two years we observed a unique situation where large populations of early instars were mixed in with a significant number of late instars to adult in mid to late July. Some grasshoppers hatched normally during the few warm periods we had during the spring, however when the bulk of the population hatched in late summer, control recommendations were complicated by the mix of young and older grasshoppers found together. Our preferred control product Dimilin, a growth regulator, is not effective on adult or late instar grasshoppers.

We participated in two suppression programs this season. For the first ODA and APHIS provided delimitation and consultation to the Burns-Paiute Tribe for protection of their riparian restoration program on the Jonesboro Ranch, Malheur County. They had mixed ages of immatures in their population, though biased toward the later instars. Carbaryl bait was thus selected for targeted ground applications. APHIS and ODA also delimited and baited ~ 240 acres in the Cow Hollow area of Malheur County. This effort was very successful.

Areas of Special Mention

Klamath Marsh National Wildlife Refuge.

Due to repeated outbreaks of the clear-winged grasshopper, *Camnula pelucida*, we continue to watch the area in and around the Klamath Marsh National Wildlife Refuge very closely. During the 2010 adult survey one isolated parcel of Refuge property, the "Buck Pasture", and several areas in the northeast region of Refuge, known as the "Lane Ranch," had high densities of *C. pelucida* mating and laying eggs. During 2011 nymphal and adult survey efforts economic, and very high densities, of the grasshoppers (predominately the clear-winged grasshopper), we found in both northern and southern areas of the Refuge and bordering private holdings ([Fig. 3](#)). Water levels receded very late this season and by the time treatment was possible most populations were beyond effective use of Dimilin. The Refuge administration decided to hold off on any chemical application during 2011 and plan for early scouting and consider the potential for aggressive treatment of nymphal populations in 2012.

Fort Klamath Basin.

Recently outbreaks have plagued the area around Fort Klamath. In 2010 a few of the private landowners in the basin made treatments. Survey of the Basin during 2011 indicated little development of significant populations until late in August ([Fig. 4](#)). Given the densities seen at the Klamath Marsh National Wildlife Refuge to the north, as well as reports from other areas in the county, land owners and managers would do well to monitor their holdings early in the 2012 season.

Cow Hollow Suppression.

Economic densities of grasshopper were found widely across Malheur county during 2011. The local BLM Office requested APHIS and ODA evaluate several areas where BLM rangeland borders irrigated cropland to determine if suppression was needed and feasible. Ultimately one suppression program was undertaken. Carbaryl bait was applied at a rate of 10lbs/A using ATVs to ~ 240 acres of BLM lands bordering private crop land in the Cow Hollow drainage. This suppression was made on 2 August with assistance of the PPQ group from Idaho. Densities were reduced to 5 / yd², a 70.6 % reduction.

Burns-Paiute Suppression.

The Burns-Paiute Tribe has a long-term riparian restoration project underway at the Jonesboro Ranch. During 2010 they suffered extensive damage to their riparian plants from the local grasshopper populations. ODA and APHIS were contacted for assistance in survey and delimitation of this year's populations before they could repeat the damage of 2010. Our survey work ([Fig. 5](#)) was used by the Tribe to ground treat selective areas associated with their riparian work using carbaryl bait.

Portland International Airport.

After successfully treating a problematic grasshopper population at the Portland International Airport (PDX) with a well timed Dimilin application in 2009 Port of Portland continues to enjoy the effects of that successful suppression. Very few grasshoppers were found in our 2011 survey and the densities were well under any level of economic or operational concern.

Umatilla Chemical Depot.

In 2010 at the request of the Department of Defense Umatilla Chemical Depot APHIS treated 4242 acres with Dimilin to prevent grasshoppers from migrating from the Depot to surrounding high value cropland. A similar but smaller outbreak in 2005 was not treated and resulted in heavy crop damage to fields bordering the Depot. The treatment in 2010 resulted in an 85 % reduction, and this year densities remained low in our survey ([Fig. 6](#)).

Malheur Wildlife Refuge.

Grasshopper densities from 2009 and 2010 resulted in complaints from ranchers bordering the NWR and suggested economic densities might be a problem again in 2011. However, probably do to the extremely wet conditions persisting well into the summer coupled with the early unseasonable cool temperatures, this situation did not materialize ([Fig. 7](#)).

Mormon Crickets

A low density migration of Mormon crickets were monitored in Gilliam County this year ([Fig. 8](#)). Another single sighting was noted in Umatilla County. We heard rumor of other MC activity but have no actual data to report. It appears MCs were not an issue this year in Oregon.

Summary

Based on continued increase in the grasshopper densities and expansion of the affected geographic area during 2011 we recommend landowners and managers be prepared for a much worse outbreak in Oregon in 2012. We cannot accurately predict where grasshopper outbreaks will occur because they depend greatly on many factors at the time of hatch and early development, variables that cannot be accurately forecast. However, we consider it likely that the patterns of increasing density and geographic spread will continue in 2012. If conditions cause the crash of this progressing outbreak we can consider ourselves fortunate, however, planning for a continuation of the patterns of the past few years ([Fig. 9](#)) is the only prudent course of action.

We encourage landowners in areas with high or building populations in 2011 to be especially proactive in early 2012 if they are concerned about grasshopper impacts to crops and rangeland. Control is most effective on young grasshoppers. Contact us or your local Extension Office for advice, assistance, or to report grasshopper populations.

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15 December 2011 http://www.oregon.gov/ODA/PLANT/IPPM/gh_mc.shtml

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

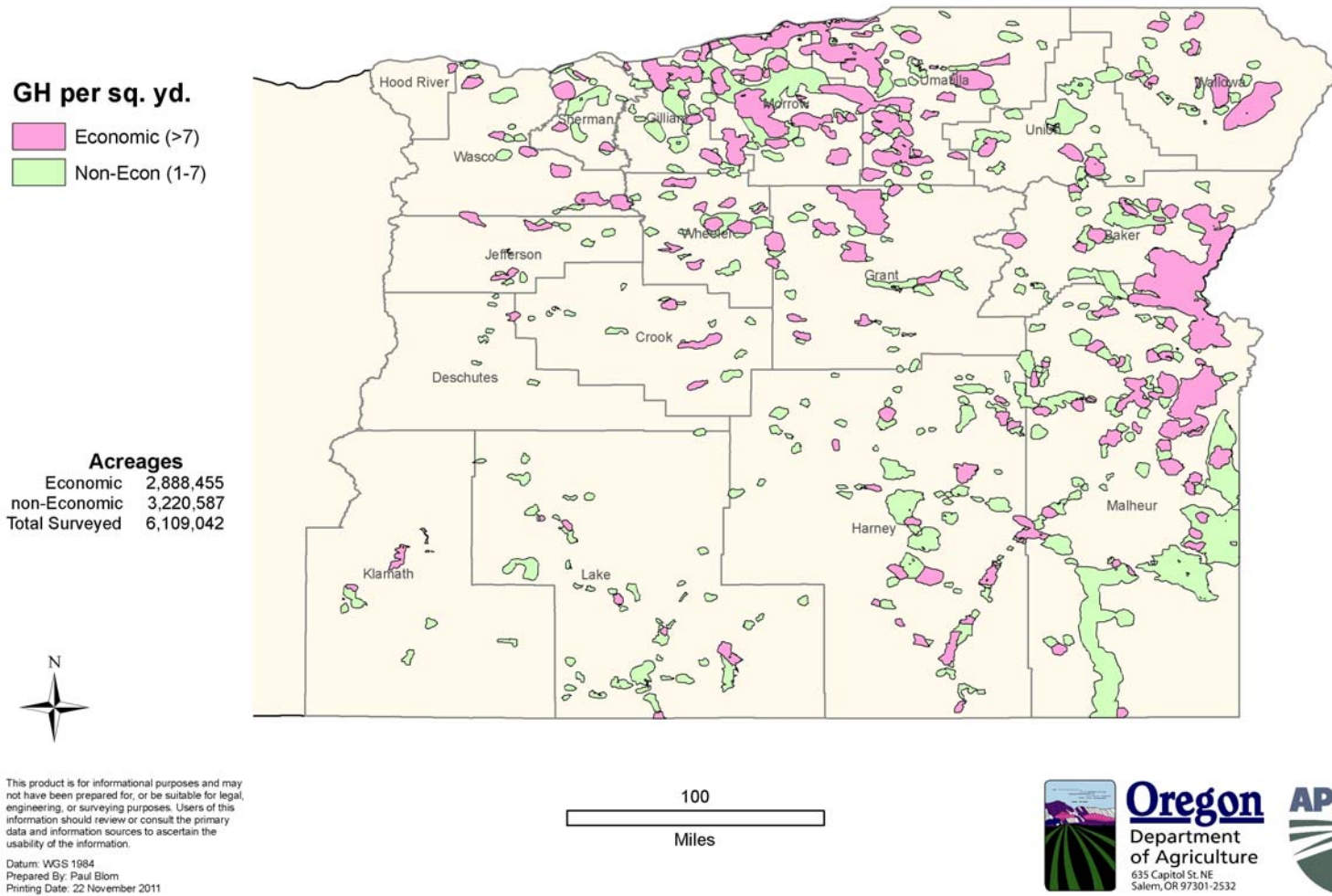


Figure 1. 2011 estimated areas of economic and sub-economic infestation.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

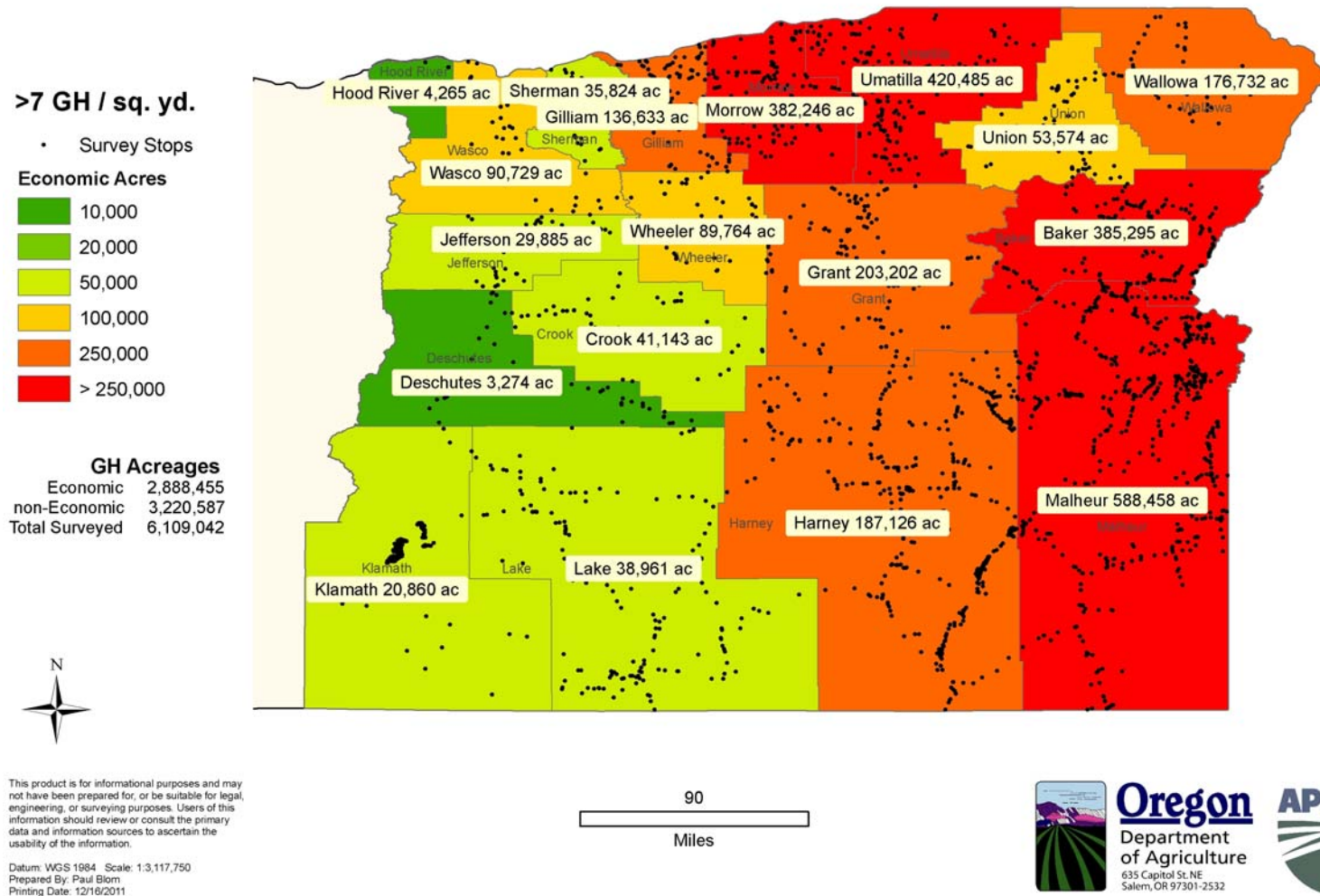


Figure 2. 2011 survey locations and areas of economic (> 7 yd²) infestation superimposed on counties ranked by economically infested acreage.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

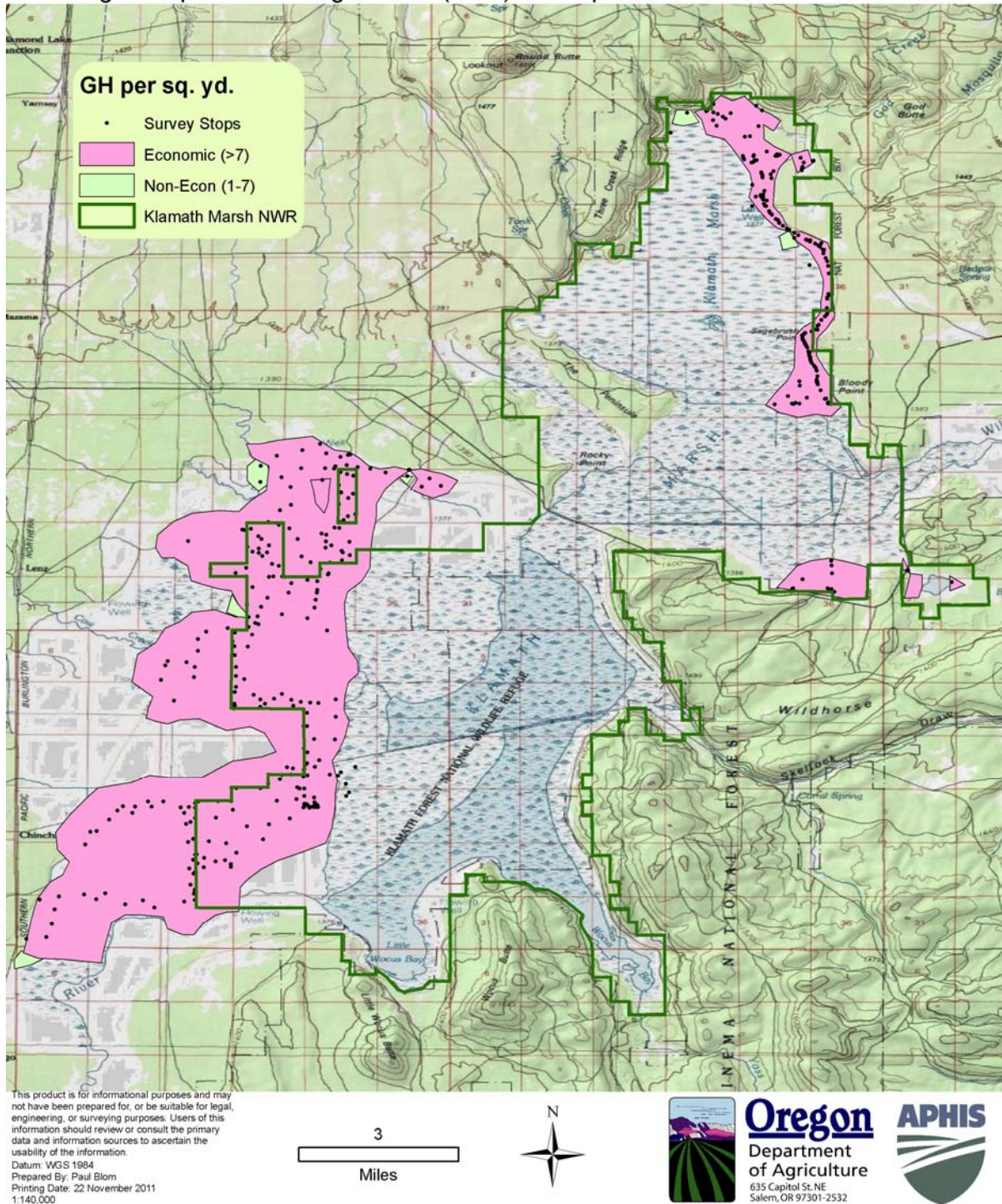


Figure 3. 2011 grasshopper survey for the Klamath Marsh National Wildlife Refuge.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

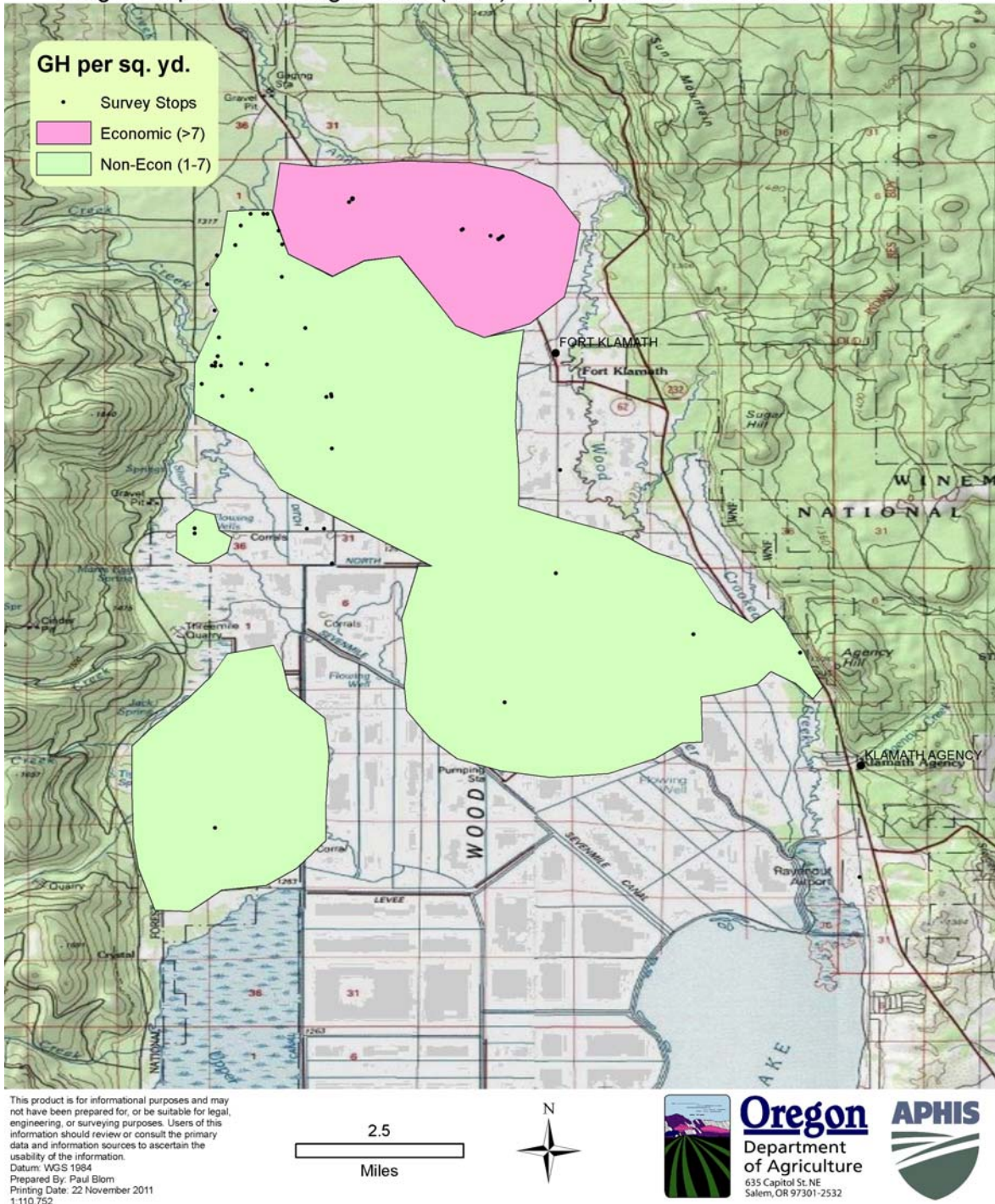


Figure 4. Survey locations and estimated areas of infestation in the Fort Klamath basin.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

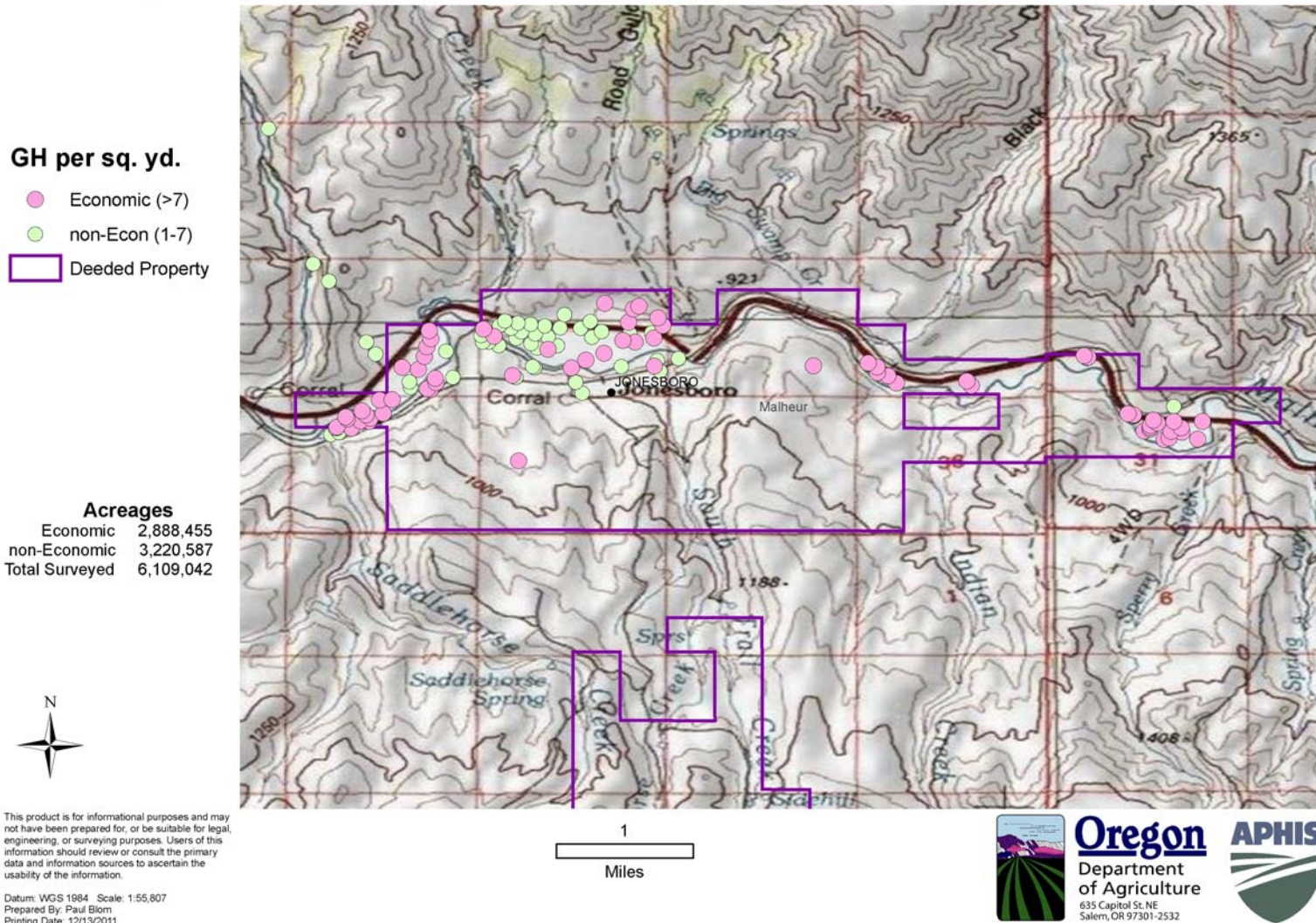


Figure 5. Delimitation survey on the Jonesboro Ranch of the Burns-Paiute Tribal lands 2011.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

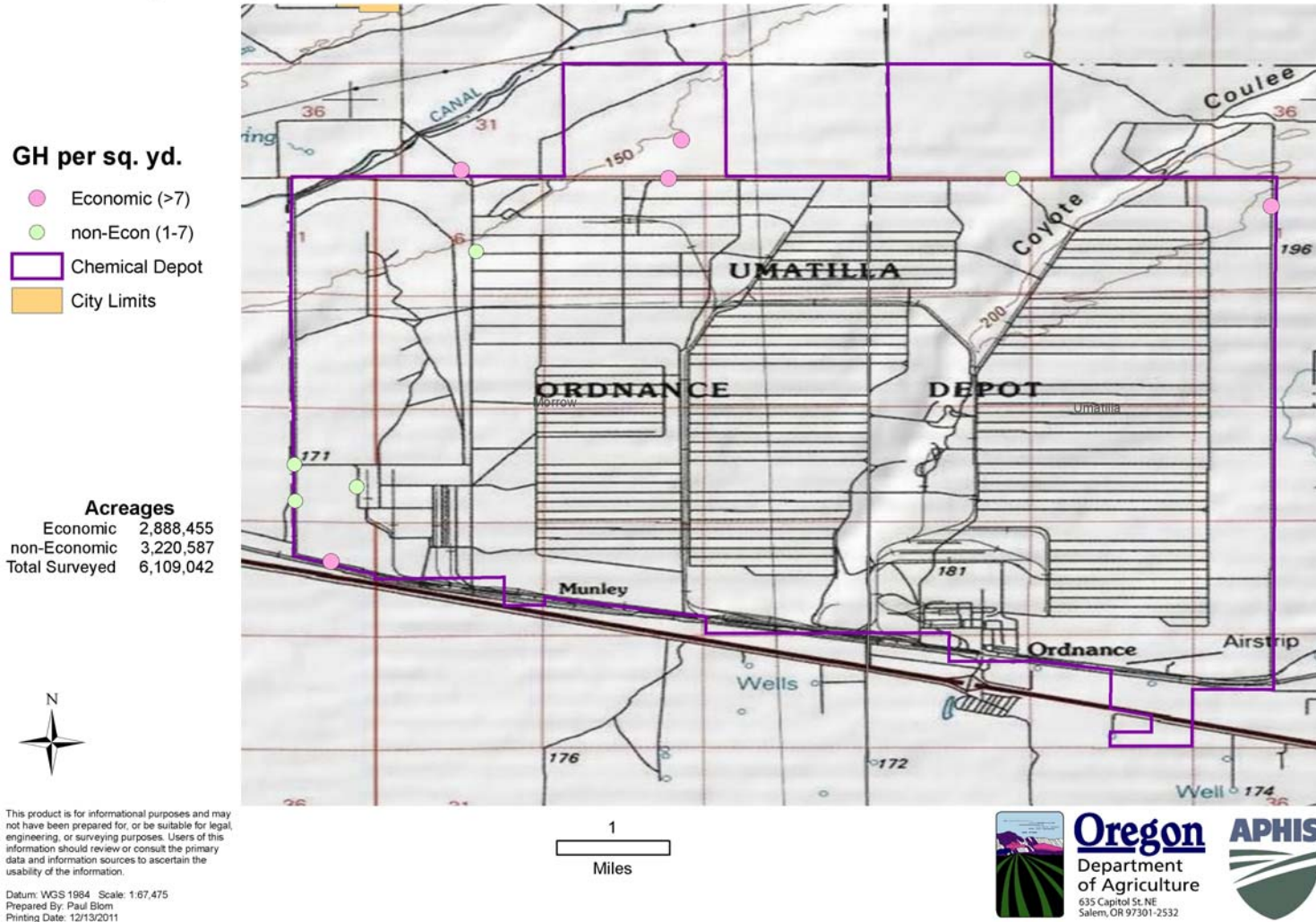


Figure 6. 2011 grasshopper densities on and near the Umatilla Chemical Depot.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

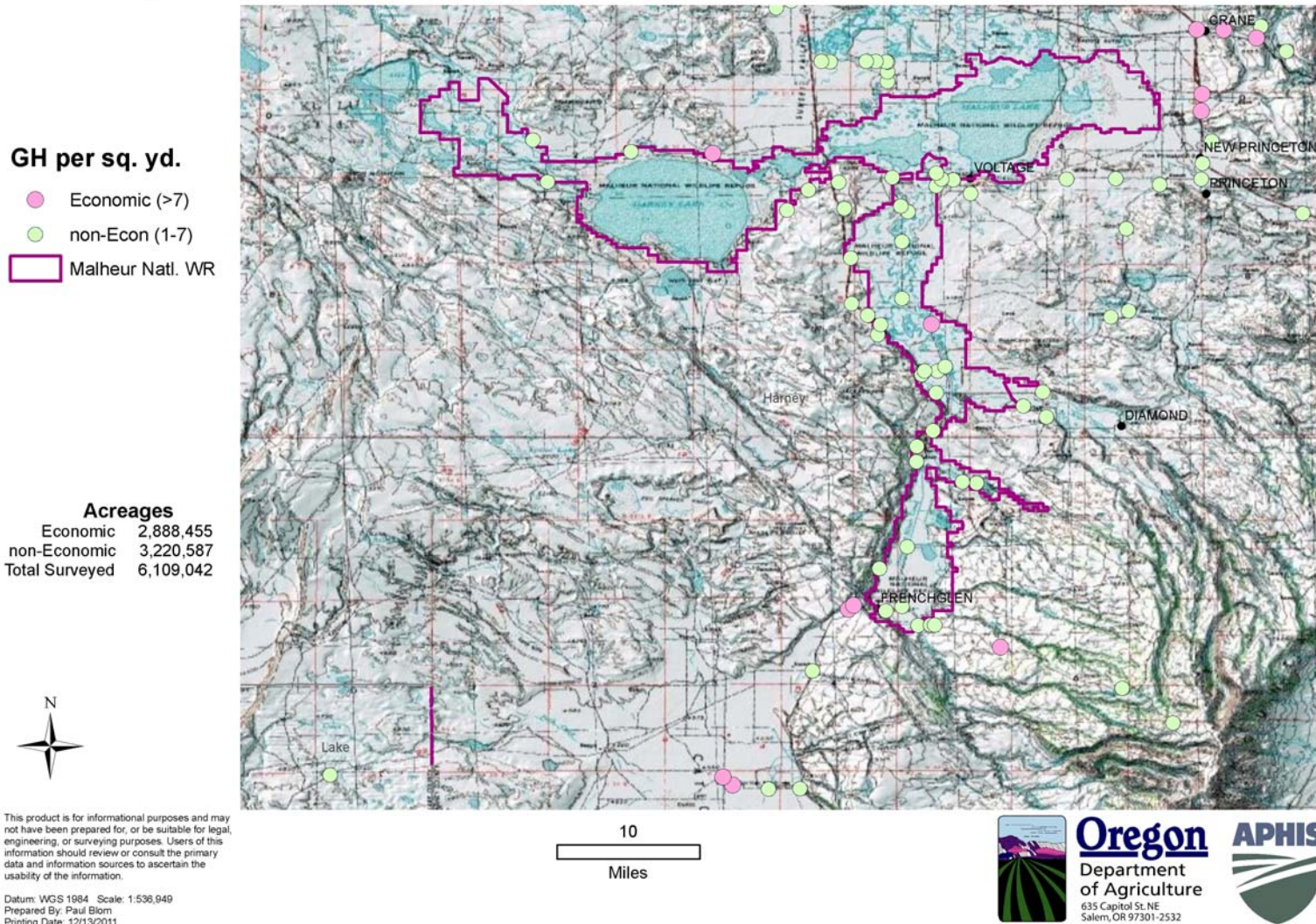


Figure 7. Grasshopper 2011 densities (GH / yd²) on and around the Malheur National Wildlife Refuge.

2011 Oregon Grasshopper and Mormon Cricket Survey Map

Oregon Department of Agriculture (ODA) in Cooperation with USDA-APHIS-PPQ

Density (/ sq. yd.)

MC Densities

- 0
- 1 - 2
- 3 - 7
- 7 - 14
- 15 +

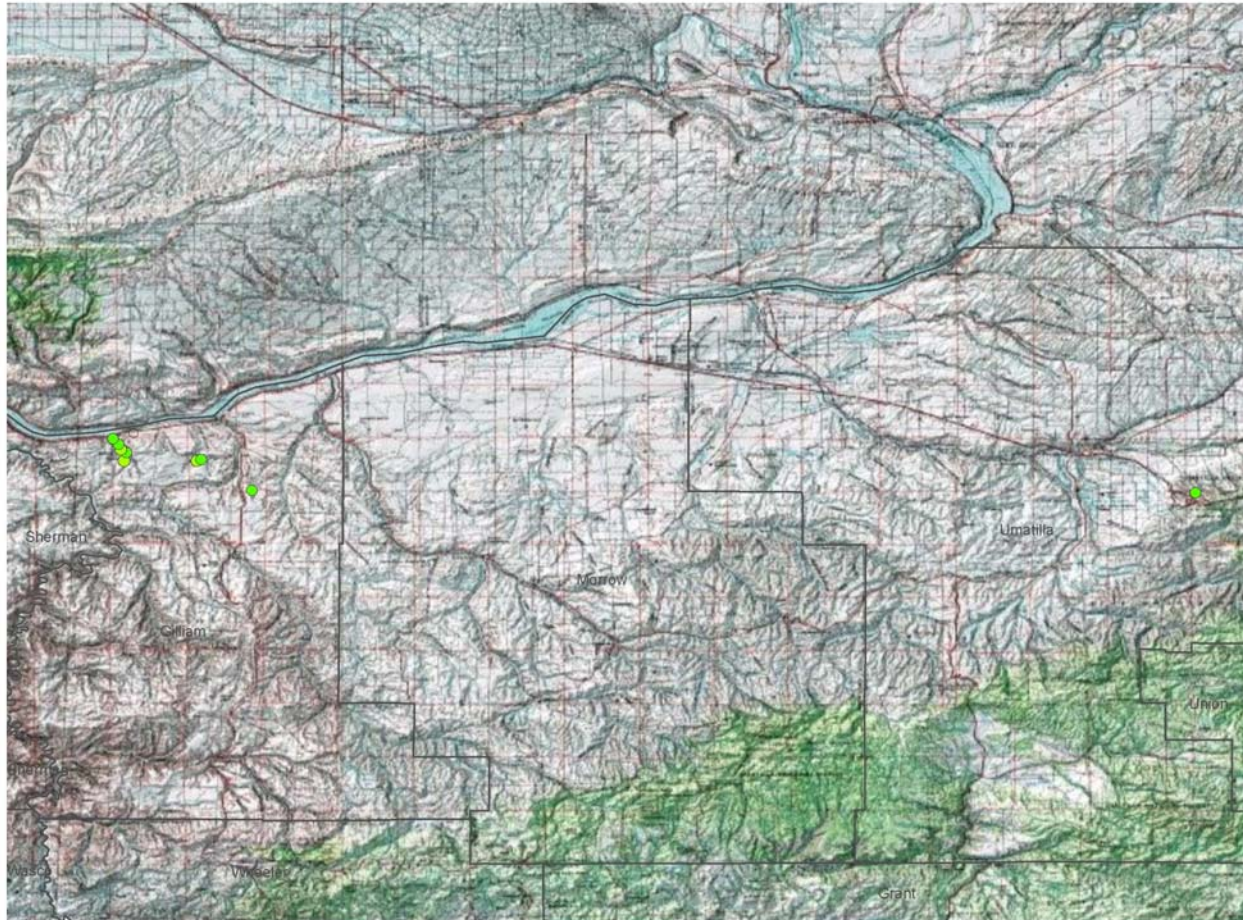
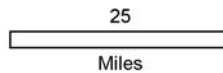
GH Acreages

Economic	2,888,455
non-Economic	3,220,587
Total Surveyed	6,109,042



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

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Figure 8. Mormon cricket densities found in the 2011 survey.

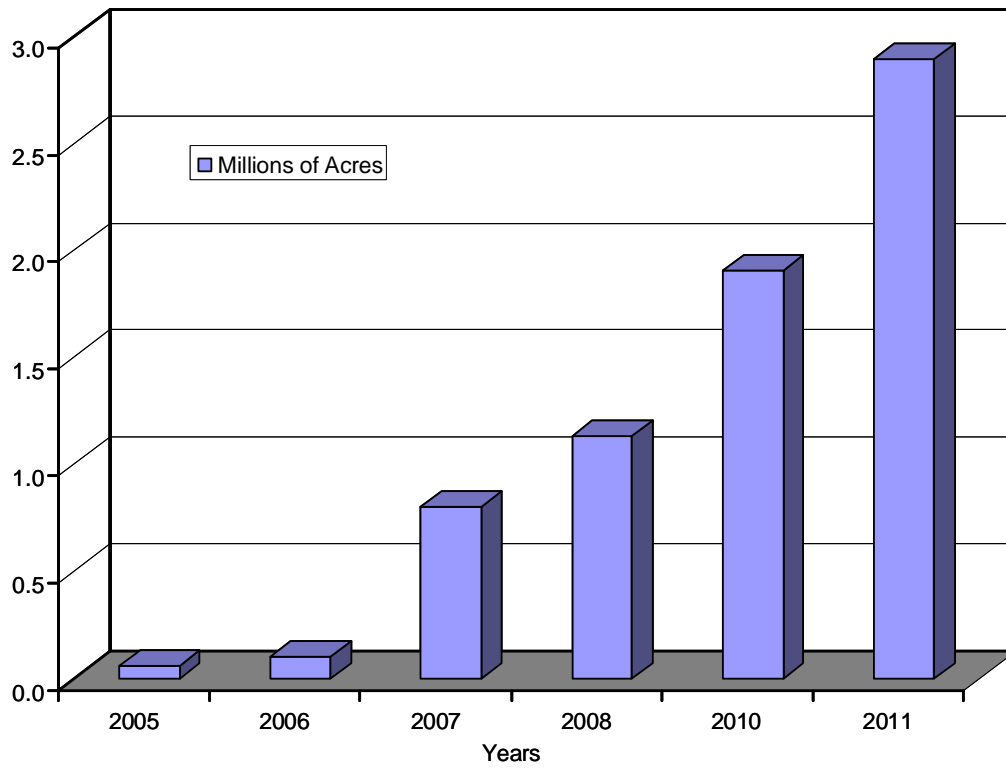


Figure 9. Millions of economically grasshopper infested acres in Oregon during the recent past.

Table 2. Estimate of the acreage with economic levels of grasshopper infestation (≥ 8 grasshoppers / yd²) based on the 2011 survey

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Baker		385,297			
	Big Creek	0	0.0	0.0	0.0
	Burnt River-Auburn Creek	590	0.0	100.0	0.0
	Burnt River-Big Creek	570	100.0	0.0	0.0
	Burnt River-Burnt River Canyon	3,410	0.0	100.0	0.0
	Camp Creek	1,602	100.0	0.0	0.0
	Eagle Creek	7,715	0.0	100.0	0.0
	Lower Burnt River	88,931	7.2	92.8	0.0
	Lower Powder River	67,566	72.2	27.8	0.0
	Middle Willow Creek	17,558	91.9	8.1	0.0
	North Fork Burnt River	3,376	10.8	89.2	0.0
	North Powder River	15,803	96.6	3.4	0.0
	Pine Creek	759	0.0	100.0	0.0
	Powder River-Baldock Slough	1,317	89.7	10.3	0.0
	Powder River-Love Creek	27,332	0.0	100.0	0.0
	Powder River-Rock Creek	15,796	67.7	32.3	0.0
	Powder River-Ruckles Creek	15,392	0.0	100.0	0.0
	Powder River-Sutton Creek	32,220	37.2	62.8	0.0
	Powder River-Wolf Creek	1,633	74.6	25.4	0.0
	Pritchard Creek	8,477	0.6	99.4	0.0
	Snake River-Birch Creek	26,049	29.6	70.1	0.3
	Snake River-Rock Creek	22,581	31.1	67.5	1.4
	South Fork Burnt River	26,620	100.0	0.0	0.0
	South Willow Creek	0	0.0	0.0	0.0
	Upper Middle Fork John Day River	0	0.0	0.0	0.0
	Upper Powder River	0	0.0	0.0	0.0
	Upper Willow Creek	0	0.0	0.0	0.0
Crook		41,144			
	Camp Creek	1,803	0.0	100.0	0.0
	Crooked River Irrigation Canals	385	96.1	3.9	0.0
	Crooked River-Watson Creek	10,110	22.4	77.6	0.0
	Grindstone Creek	1,839	100.0	0.0	0.0
	Lower Beaver Creek	5,210	0.0	100.0	0.0
	Lower Crooked Valley	1,467	100.0	0.0	0.0
	Lower Dry River	0	0.0	0.0	0.0
	Lower Ochoco Creek	0	0.0	0.0	0.0
	Lower South Fork Crooked River	1,507	0.0	100.0	0.0
	Mill Creek-Ochoco Reservoir	7,039	100.0	0.0	0.0
	Paulina Creek	2,360	0.0	100.0	0.0
	Prineville Reservoir	680	100.0	0.0	0.0
	South Fork Beaver Creek	0	0.0	0.0	0.0
	Twelvemile Creek	0	0.0	0.0	0.0
	Upper Beaver Creek	0	0.0	0.0	0.0
	Upper Crooked River	0	0.0	0.0	0.0
	Upper Dry River	0	0.0	0.0	0.0
	Upper North Fork Crooked River	2,862	0.0	100.0	0.0
	Upper Ochoco Creek	5,882	100.0	0.0	0.0
	Upper South Fork Crooked River	0	0.0	0.0	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Deschutes		3,274			
	Crooked River Irrigation Canals	592	0.0	100.0	0.0
	Crooked River-Crooked River Grassland	2,477	100.0	0.0	0.0
	Deschutes River-Fall River	0	0.0	0.0	0.0
	Deschutes River-McKenzie Canyon	204	0.0	100.0	0.0
	Deschutes River-Pilot Butte	1	100.0	0.0	0.0
	Kotzman Basin	0	0.0	0.0	0.0
	Long Prairie	0	0.0	0.0	0.0
	Lower Dry River	0	0.0	0.0	0.0
	Lower Little Deschutes River	0	0.0	0.0	0.0
	Middle Little Deschutes River	0	0.0	0.0	0.0
	Soldier Cap	0	0.0	0.0	0.0
	Upper Dry River	0	0.0	0.0	0.0
	Upper South Fork Crooked River	0	0.0	0.0	0.0
	Walker Creek	0	0.0	0.0	0.0
Gilliam		136,195			
	Butte Creek	0	0.0	0.0	0.0
	Eightmile Canyon	21,180	0.0	100.0	0.0
	Lower John Day River-Ferry Canyon	791	100.0	0.0	0.0
	Lower John Day River-McDonald Ferry	195	0.0	100.0	0.0
	Lower John Day River-Scott Canyon	2,347	47.5	52.5	0.0
	Lower Lake Umatilla	49,493	0.0	100.0	0.0
	Lower Rock Creek	27,635	3.0	97.0	0.0
	Lower Willow Creek	8,124	0.0	100.0	0.0
	Thirtymile Creek	9,765	11.3	88.7	0.0
	Upper Rock Creek	16,665	0.9	99.1	0.0
Grant		203,638			
	Bear Creek	436	100.0	0.0	0.0
	Beech Creek	43	0.0	100.0	0.0
	Big Creek	2,150	0.3	99.7	0.0
	Camp Creek	0	0.0	0.0	0.0
	Canyon Creek	0	0.0	0.0	0.0
	Cottonwood Creek	39,223	0.5	99.5	0.0
	Desolation Creek	110	100.0	0.0	0.0
	Fields Creek	62	100.0	0.0	0.0
	John Day River-Johnson Creek	5,469	0.0	100.0	0.0
	Laycock Creek	11,115	100.0	0.0	0.0
	Little Malheur River	0	0.0	0.0	0.0
	Long Creek	37,193	0.0	100.0	0.0
	Lower Middle Fork John Day River	49,981	0.2	99.8	0.0
	Lower North Fork John Day River	5,422	7.6	92.4	0.0
	Lower South Fork John Day River	2,568	19.5	80.5	0.0
	Middle South Fork John Day River	3,747	69.3	30.7	0.0
	Murderers Creek	6,173	100.0	0.0	0.0
	North Fork Burnt River	1,379	100.0	0.0	0.0
	North Fork John Day River-Big Creek	0	0.0	0.0	0.0
	North Fork John Day River-Potamus Creek	8,333	0.6	99.4	0.0
	Otis Creek	11,226	100.0	0.0	0.0
	Rock Creek	0	0.0	0.0	0.0
	South Fork Beaver Creek	49	100.0	0.0	0.0
	Strawberry Creek	11,129	0.0	100.0	0.0
	Trout Creek	0	0.0	0.0	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Grant, continued		203,638			
	Upper John Day River	0	0.0	0.0	0.0
	Upper Malheur River	0	0.0	0.0	0.0
	Upper Middle Fork John Day River	0	0.0	0.0	0.0
	Upper Middle John Day	0	0.0	0.0	0.0
	Upper Silvies River	6,305	0.0	100.0	0.0
	Upper South Fork John Day River	1,525	100.0	0.0	0.0
	Wall Creek	0	0.0	0.0	0.0
	Wolf Creek	0	0.0	0.0	0.0
Harney		187,129			
	Alvord Lake	8,256	0.0	99.9	0.1
	Big Alvord Creek	17,366	94.6	5.4	0.0
	Big Stick Creek	3,266	100.0	0.0	0.0
	Big Tank Creek	0	0.0	0.0	0.0
	Capehart Lake	0	0.0	0.0	0.0
	Chain Lakes	202	0.0	100.0	0.0
	Claw Creek	175	100.0	0.0	0.0
	Clover Swale	0	0.0	0.0	0.0
	Cottonwood Creek	1,407	0.0	100.0	0.0
	Crane Creek	5,533	73.5	26.5	0.0
	Emigrant Creek	521	100.0	0.0	0.0
	Headwaters Donner und Blitzen River	0	0.0	0.0	0.0
	Headwaters Silver Creek	0	0.0	0.0	0.0
	Home Creek	3,727	0.0	100.0	0.0
	Horse Mountain Spring	559	100.0	0.0	0.0
	Kiger Creek	0	0.0	0.0	0.0
	Little Malheur River	0	0.0	0.0	0.0
	Lower Donner und Blitzen River	176	0.0	100.0	0.0
	Lower North Fork Malheur River	7,323	100.0	0.0	0.0
	Lower Silver Creek	14	0.0	100.0	0.0
	Malheur Gap	2,043	93.5	6.5	0.0
	Malheur Lake	21,716	1.9	98.1	0.0
	Malheur Slough	3,330	89.0	11.0	0.0
	Middle Donner und Blitzen River	27	100.0	0.0	0.0
	North Basin	3,405	0.0	100.0	0.0
	Otis Creek	8,477	100.0	0.0	0.0
	Pine Creek	0	0.0	0.0	0.0
	Quail Creek	3,013	68.4	31.6	0.0
	Riddle Creek	5,091	100.0	0.0	0.0
	Rock Creek	0	0.0	0.0	0.0
	Silvies Canyon	0	0.0	0.0	0.0
	Silvies River-West Fork Silvies River	0	0.0	0.0	0.0
	Skull Creek	8,161	6.2	93.8	0.0
	Stinkingwater Creek	3,738	0.0	100.0	0.0
	Summit Creek	6,347	55.7	44.3	0.0
	Trout Creek	13,629	100.0	0.0	0.0
	Upper Donner und Blitzen River	2,240	1.0	99.0	0.0
	Upper Malheur River	25,708	100.0	0.0	0.0
	Upper Malheur River-Griffin Creek	2,092	0.0	100.0	0.0
	Upper Malheur River-Warm Springs Reservoir	1,203	22.6	77.4	0.0
	Upper North Fork Malheur River	9,237	100.0	0.0	0.0
	Upper Silver Creek	0	0.0	0.0	0.0
	Upper South Fork John Day River	1,742	100.0	0.0	0.0
	Upper South Fork Malheur River	4,198	87.8	12.2	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Harney, continued		187,129			
	Walls Lake Reservoir	3,158	1.1	98.9	0.0
	Whitehorse Creek	9,016	100.0	0.0	0.0
	Willow Creek	11	0.0	100.0	0.0
	Wolf Creek	1,022	100.0	0.0	0.0
Hood		0			
	RiverHood River	0	0.0	0.0	0.0
	RiverMiddle Columbia River-Grays Creek	0	0.0	0.0	0.0
	RiverMosier Creek	0	0.0	0.0	0.0
Jefferson		24,483			
	Antelope Creek	0	0.0	0.0	0.0
	Crooked River-Crooked River Grassland	340	0.0	100.0	0.0
	Deschutes River-Haystack	3,204	95.3	4.7	0.0
	Deschutes River-McKenzie Canyon	105	100.0	0.0	0.0
	Hay Creek	6,736	0.0	100.0	0.0
	Lower Crooked Valley	40	100.0	0.0	0.0
	Lower John Day River-Muddy Creek	0	0.0	0.0	0.0
	Lower Trout Creek	1,487	0.0	100.0	0.0
	Mill Creek-Warm Springs River	35	100.0	0.0	0.0
	Mud Springs Creek	2,618	0.1	99.9	0.0
	Upper Deschutes River	474	100.0	0.0	0.0
	Upper Trout Creek	7,944	100.0	0.0	0.0
	Willow Creek	1,500	0.0	100.0	0.0
Klamath		26,190			
	Buck Creek	5,403	100.0	0.0	0.0
	Klamath Lake	0	0.0	0.0	0.0
	Klamath Marsh-Crater Lake	12,444	0.0	100.0	0.0
	Klamath Marsh-Jack Creek	4,392	32.1	67.9	0.0
	Langell Valley	138	100.0	0.0	0.0
	Long Prairie	0	0.0	0.0	0.0
	North Fork Sprague River	0	0.0	0.0	0.0
	Pine	0	0.0	0.0	0.0
	Poe Valley-Yonna Valley	0	0.0	0.0	0.0
	South Fork Sprague River	0	0.0	0.0	0.0
	Sprague River Valley	0	0.0	0.0	0.0
	Sprague River above Williamson	0	0.0	0.0	0.0
	Swan Lake Valley	0	0.0	0.0	0.0
	Wood River	3,813	0.0	100.0	0.0
Lake		38,922			
	Alkali Lake	0	0.0	0.0	0.0
	Big Tank Creek	0	0.0	0.0	0.0
	Buck Creek	0	0.0	0.0	0.0
	Campbell Lake	0	0.0	0.0	0.0
	Christmas Lake Valley	0	0.0	0.0	0.0
	Crooked Creek	3,037	0.0	100.0	0.0
	Crump Lake	4,246	11.3	88.7	0.0
	Deep Creek	2,019	100.0	0.0	0.0
	Devils Garden	0	0.0	0.0	0.0
	Drews Creek	0	0.0	0.0	0.0
	Fire Lake	0	0.0	0.0	0.0
	Gerber Reservoir	0	0.0	0.0	0.0
	Goose Lake East Shore	3,886	0.0	96.7	3.3
	Goose Lake West Shore	354	100.0	0.0	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
	Lake, continued.	38,922			
	Hidden Lake	0	0.0	0.0	0.0
	Honey Creek	8,796	6.1	93.9	0.0
	Horse Mountain Spring	4,138	100.0	0.0	0.0
	Kotzman Basin	0	0.0	0.0	0.0
	Lake Abert	0	0.0	0.0	0.0
	Long Prairie	0	0.0	0.0	0.0
	Lower Chewaucan River	4,867	0.0	100.0	0.0
	McCarty	901	100.0	0.0	0.0
	Middle Chewaucan River	0	0.0	0.0	0.0
	Pine	0	0.0	0.0	0.0
	Post Lake	0	0.0	0.0	0.0
	Poverty Basin	0	0.0	0.0	0.0
	Rabbit Creek	0	0.0	0.0	0.0
	Rock Creek	0	0.0	0.0	0.0
	Silver Creek	673	0.0	100.0	0.0
	Silver Lake	821	0.2	98.7	1.1
	South Fork Sprague River	697	100.0	0.0	0.0
	Summer Lake	0	0.0	0.0	0.0
	Sycan River above Sycan Marsh	65	100.0	0.0	0.0
	Sycan River at Sycan Marsh	0	0.0	0.0	0.0
	Thomas Creek	0	0.0	0.0	0.0
	Thorn Lake	16	0.0	100.0	0.0
	Upper South Fork Crooked River	4,406	100.0	0.0	0.0
	Walker Creek	0	0.0	0.0	0.0
	Malheur	588,129			
	Antelope Creek	0	0.0	0.0	0.0
	Burnt River-Auburn Creek	0	0.0	0.0	0.0
	Camp Creek	2	100.0	0.0	0.0
	Clover Creek	2,856	0.0	100.0	0.0
	Cottonwood Creek	11,010	64.7	35.3	0.0
	Cow Creek	31,362	61.7	38.3	0.0
	Crowley Creek	9,378	75.8	24.2	0.0
	Dry Creek	0	0.0	0.0	0.0
	Jordan Creek-Dry Creek	0	0.0	0.0	0.0
	Jordan Creek-Sheep Spring Creek	4,237	0.0	100.0	0.0
	Jordan Creek-Trout Creek	3,781	100.0	0.0	0.0
	Little Malheur River	0	0.0	0.0	0.0
	Lower Bully Creek	6,198	0.0	100.0	0.0
	Lower Burnt River	11,223	100.0	0.0	0.0
	Lower Cow Creek	2,969	7.6	92.4	0.0
	Lower Crooked Creek	7,024	79.9	20.1	0.0
	Lower Dry Creek	1,493	99.7	0.3	0.0
	Lower Malheur River-Hog Creek	34,360	72.0	28.0	0.0
	Lower Malheur River-Hunter Creek	16,164	82.7	17.3	0.0
	Lower Malheur River-Johnston Gulch Reservoir	14,762	48.6	51.4	0.0
	Lower Malheur River-Little Sandy Reservoir	19,660	78.8	21.2	0.0
	Lower North Fork Malheur River	12,985	78.2	21.8	0.0
	Lower Succor Creek	9,388	95.3	4.7	0.0
	Lower Willow Creek	28,930	62.0	38.0	0.0
	McDermitt Creek	1,353	100.0	0.0	0.0
	Middle Willow Creek	15,769	0.0	100.0	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Malheur, continued		588,129			
	Oregon Canyon Creek	9,148	94.8	5.2	0.0
	Otis Creek	6,078	100.0	0.0	0.0
	Owyhee River-Jackson Creek	11	18.2	81.8	0.0
	Owyhee River-Ryegrass Creek	3,126	99.6	0.4	0.0
	Owyhee River-Sand Hollow Creek	10,089	0.0	97.6	2.4
	Owyhee River-Skull Creek	69,902	95.7	4.3	0.0
	Owyhee River-Three Fingers Gulch	1,599	68.9	29.4	1.8
	Quail Creek	45,063	91.7	8.3	0.0
	Rattlesnake Creek	6,275	100.0	0.0	0.0
	Sand Hollow Creek	7,895	0.0	100.0	0.0
	Snake River-Birch Creek	67,993	79.5	20.5	0.0
	Snake River-Hog Creek	20,391	80.4	19.6	0.0
	Snake River-Jacobsen Gulch	14,679	41.8	58.2	0.0
	Snake River-Locket Gulch	2,520	86.7	13.3	0.0
	Snake River-North Alkali Creek	1,531	94.4	5.6	0.0
	Soldier Creek	0	0.0	0.0	0.0
	South Willow Creek	0	0.0	0.0	0.0
	Twelvemile Creek	554	0.0	100.0	0.0
	Upper Bully Creek	9,397	87.3	12.7	0.0
	Upper Cow Creek	9,059	75.4	24.6	0.0
	Upper Crooked Creek	4,528	100.0	0.0	0.0
	Upper Dry Creek	3,724	86.0	14.0	0.0
	Upper Malheur River-Juniper Basin Creek	15,226	91.6	8.4	0.0
	Upper Malheur River-Warm Springs Reservoir	2,176	100.0	0.0	0.0
	Upper South Fork Malheur River	1,474	100.0	0.0	0.0
	Upper Succor Creek	0	0.0	0.0	0.0
	Upper Willow Creek	2,270	0.0	100.0	0.0
	West Tub Mountain Reservoir	10,562	8.8	91.2	0.0
	Whitehorse Creek	17,955	100.0	0.0	0.0
Morrow		378,766			
	Eightmile Canyon	21,802	0.0	100.0	0.0
	Juniper Canyon	13,689	1.9	98.1	0.0
	Lower Butter Creek	18,475	59.1	40.9	0.0
	Lower Camas Creek	128	0.0	100.0	0.0
	Lower Lake Umatilla	4,859	22.1	77.9	0.0
	Lower Rock Creek	5,510	3.8	96.2	0.0
	Lower Umatilla River	892	0.0	100.0	0.0
	Lower Willow Creek	28,911	0.0	100.0	0.0
	Middle Lake Umatilla	27,905	0.1	99.9	0.0
	Middle Willow Creek	60,458	17.9	82.1	0.0
	North Fork John Day River-Potamus Creek	2,726	26.0	74.0	0.0
	Rhea Creek	47,899	24.4	75.6	0.0
	Sand Hollow	9,890	10.3	89.7	0.0
	Sixmile Canyon	23,708	0.0	100.0	0.0
	Upper Butter Creek	34,287	7.9	92.1	0.0
	Upper Lake Umatilla	26,914	3.6	96.4	0.0
	Upper Rock Creek	16,043	53.3	46.7	0.0
	Upper Willow Creek	34,670	0.0	100.0	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Sherman		39,251			
	Buck Hollow Creek	3,919	87.4	12.6	0.0
	Grass Valley Canyon	526	0.0	100.0	0.0
	Lower Deschutes River	17,052	20.8	78.5	0.6
	Lower John Day River-Ferry Canyon	7,684	17.7	82.3	0.0
	Lower John Day River-McDonald Ferry	514	100.0	0.0	0.0
	Lower John Day River-Scott Canyon	0	0.0	0.0	0.0
	Middle Columbia River-Hood River	9,324	0.0	100.0	0.0
	Pine Hollow	232	7.3	92.7	0.0
Umatilla		420,365			
	Birch Creek	46,145	0.0	100.0	0.0
	Cold Springs Canyon	17,163	3.2	96.8	0.0
	Cottonwood Creek	824	100.0	0.0	0.0
	Lower Butter Creek	8,176	0.0	100.0	0.0
	Lower Camas Creek	51,448	1.3	98.7	0.0
	Lower Lake Wallula	26,327	39.6	60.4	0.0
	Lower Umatilla River	41,086	4.8	95.2	0.0
	Lower Walla Walla River	1,451	100.0	0.0	0.0
	McKay Creek	0	0.0	0.0	0.0
	Meacham Creek	24,940	100.0	0.0	0.0
	North Fork John Day River-Big Creek	2,319	100.0	0.0	0.0
	North Fork John Day River-Potamus Creek	10,417	2.3	97.7	0.0
	Pine Creek	1,691	100.0	0.0	0.0
	Sand Hollow	5,334	0.0	100.0	0.0
	Stage Gulch	19,248	0.3	99.7	0.0
	Umatilla River-Alkali Canyon	47,198	0.0	100.0	0.0
	Umatilla River-Mission Creek	0	0.0	0.0	0.0
	Upper Butter Creek	92,438	39.9	60.1	0.0
	Upper Camas Creek	7,600	0.5	99.5	0.0
	Upper Grande Ronde River	5,432	99.8	0.2	0.0
	Upper Lake Umatilla	7,478	1.4	98.6	0.0
	Upper Umatilla River	1,378	97.4	2.6	0.0
	Upper Walla Walla River	2,272	100.0	0.0	0.0
	Wildhorse Creek	0	0.0	0.0	0.0
Union		53,574			
	Big Creek	0	0.0	0.0	0.0
	Grande Ronde River-Beaver Creek	0	0.0	0.0	0.0
	Grande Ronde River-Cabin Creek	0	0.0	0.0	0.0
	Grande Ronde River-Five Points Creek	0	0.0	0.0	0.0
	Grande Ronde River-Indian Creek	0	0.0	0.0	0.0
	Ladd Creek	13,104	0.4	99.6	0.0
	Lower Catherine Creek	126	100.0	0.0	0.0
	Lower Wallowa River	0	0.0	0.0	0.0
	Meacham Creek	0	0.0	0.0	0.0
	Meadow Creek	6,940	0.0	100.0	0.0
	Minam River	7,073	100.0	0.0	0.0
	North Powder River	343	0.0	100.0	0.0
	Powder River-Wolf Creek	17,430	0.0	100.0	0.0
	Upper Catherine Creek	6,315	1.7	98.3	0.0
	Upper Grande Ronde River	1,245	1.6	98.4	0.0
	Willow Creek	998	100.0	0.0	0.0

Table 2, continued.

County	Region	Acres Infested	Ownership as a Percentage of Area		
			Public	Private	Undet.
Wallowa		176,594			
	Bear Creek	586	0.0	100.0	0.0
	Chesnimnus Creek	1,150	0.5	99.5	0.0
	Grande Ronde River-Grossman Creek	2,469	48.2	48.5	3.3
	Grande Ronde River-Mud Creek	10,826	13.3	86.7	0.0
	Lostine River	4,279	100.0	0.0	0.0
	Lower Big Sheep Creek	56,730	0.0	100.0	0.0
	Lower Grande Ronde River	28,141	50.2	49.8	0.0
	Lower Imnaha River	1,524	0.0	100.0	0.0
	Lower Joseph Creek	813	15.9	84.1	0.0
	Lower Wallowa River	7,659	0.1	99.9	0.0
	Middle Imnaha River	1,693	0.0	100.0	0.0
	Middle Wallowa River	6,929	47.5	52.5	0.0
	Minam River	0	0.0	0.0	0.0
	Upper Big Sheep Creek	5,954	0.0	100.0	0.0
	Upper Joseph Creek	37,661	22.1	77.9	0.0
	Upper Wallowa River	9,905	12.5	87.5	0.0
	Wenaha River	275	91.3	8.7	0.0
Wasco		90,872			
	Antelope Creek	19,707	0.7	99.3	0.0
	Bakeoven Creek	18,185	0.9	99.1	0.0
	Buck Hollow Creek	3,870	8.3	91.7	0.0
	Fifteenmile Creek	53	100.0	0.0	0.0
	Fivemile Creek	0	0.0	0.0	0.0
	Lower Deschutes River	2,870	9.0	90.1	0.9
	Lower John Day River-Clarno Rapids	8,550	10.6	89.4	0.0
	Lower John Day River-Muddy Creek	9,167	65.5	34.5	0.0
	Lower Trout Creek	1,741	100.0	0.0	0.0
	Middle Columbia River-Grays Creek	2	0.0	100.0	0.0
	Middle Columbia River-Mill Creek	7,051	0.0	100.0	0.0
	Middle Deschutes River	2,387	3.3	96.7	0.0
	Mill Creek-Warm Springs River	477	100.0	0.0	0.0
	Mosier Creek	6,275	12.4	87.6	0.0
	Pine Hollow	279	50.9	49.1	0.0
	Tygh Creek	6,236	45.0	55.0	0.0
	Upper Deschutes River	111	100.0	0.0	0.0
	Upper Trout Creek	3,911	100.0	0.0	0.0
	White River	0	0.0	0.0	0.0
Wheeler		89,765			
	Bridge Creek	6,904	0.0	100.0	0.0
	Butte Creek	21,271	34.0	66.0	0.0
	John Day River-Johnson Creek	4,431	1.9	98.1	0.0
	Lower John Day River-Clarno Rapids	5,738	100.0	0.0	0.0
	Lower John Day River-Kahler Creek	27,774	0.6	99.4	0.0
	Lower John Day River-Muddy Creek	2,238	100.0	0.0	0.0
	Lower John Day River-Service Creek	17,333	0.5	99.5	0.0
	Mountain Creek	987	59.7	40.3	0.0
	Rock Creek	0	0.0	0.0	0.0
	Thirtymile Creek	3,089	0.0	100.0	0.0
	Upper Middle John Day	0	0.0	0.0	0.0
	Upper Rock Creek	0	0.0	0.0	0.0
	TOTAL		35.6	64.4	0.0