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About the Authors

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Cover Photos

Release of the seed-head moth *Metzneria paucipunctella* on spotted knapweed.



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Biological Control of Weeds in Idaho: Bioagent Release Records

Bradley L. Harmon and Joseph P. McCaffrey

Since 1948, more than 30 biological control agents have been released against 15 different noxious weeds in Idaho. The status of these agents is summarized in Table 1. The most intensive period of activity in bioagent releases has been since 1960. Records of individual releases were kept, but they have not been readily available. With this in mind, we have compiled an extensive list of release records dating from the 1960's to the 1980's (Table 2). **These records summarize initial bioagent releases and not subsequent large scale redistribution efforts.**

Until very recently, most bioagent releases and redistributions in Idaho were conducted by University of Idaho personnel. Dr. William F. Barr, professor emeritus, of the Department of Plant, Soil and Entomological Sciences, University of Idaho, was for many years responsible for the development of biological weed control programs in Idaho. Most of the bioagent releases reported in this document are a result of the dedicated efforts of Dr. Barr and his associates.

Federal, state and county personnel have become more involved, particularly in large-scale redistribution efforts, since the availability of some bioagents has increased and appropriate collection and redistribution methodology developed. A new program is being developed by the Plant Pest Quarantine and Protection unit of the United States Department of Agriculture, Animal Plant Health Inspection Service (USDA-APHIS-PPQ) to redistribute throughout the western region, natural enemies of weeds collected in the U.S., Canada and Europe. In Idaho, APHIS-PPQ is conducting these programs in cooperation with the University of Idaho, the Idaho State Department of Agriculture, various federal agencies such as the USDA-BLM (Bureau of Land Management) and USDA-FS (Forest Service), individual counties and other interested parties. The APHIS program will facilitate large-scale redistribution activities which in the past have been difficult to undertake.

The category "Agent Source" in Table 2 refers to either the in-state source location of collection sites (usually county) or the agency that supplied the bioagents. The USDA-ARS Biological Weed Control Lab

in Albany, CA, historically has been a source of bioagents collected directly from Europe and other foreign sites. Personnel at the lab process the insects to ensure that parasites or diseases of the insects are not unintentionally released and then shipped to cooperating states. A new USDA-ARS lab has been established in Bozeman, MT. Although efforts at the Montana lab will be focused toward research, those researchers, along with USDA-APHIS personnel, will also be a source of bioagents in the future.

Scientists from the University of Idaho will continue to release newly identified bioagents. This is an important research effort. It is usually necessary to determine the specific environmental requirements of individual bioagents and their interactions with other bioagents and organisms to allow for efficient redistribution and eventually impact evaluation.

Anyone can collect and redistribute biological control agents. Several publications have been developed to facilitate these efforts. They include:

Campbell, C. L., J. P. McCaffrey and H. W. Homan. 1987. Collection and redistribution of biological control agents of St. Johnswort. Current Information Series 798, College of Agriculture, Univ. of Idaho, Moscow.

McCaffrey, J. P., R. P. Wight, R. L. Stoltz and D. W. Kidder. 1988. Collection and redistribution of biological control agents of diffuse and spotted knapweed. Ext. Bull. 680, College of Agriculture, Univ. of Idaho, Moscow.

These publications can be obtained from the Cooperative Extension System office in your county.

Finally, it should be noted that permits are required to ship bioagents across state or country (i.e. Canada) lines. Contact the Idaho State Department of Agriculture should you have specific questions concerning permit acquisition. When possible obtain bioagents from in-state sources. They are already climatically adapted, there is less chance of introducing parasites and diseases of the natural enemies and there is no need for permits.

Table 1. List of noxious weeds and biological control agents that have been released in Idaho.

Weed	Bioagent	Bioagent ¹ distribution	Bioagent ² infestation	Weed ³ control	Bioagent ⁴ availability
<i>Carduus acanthoides</i> (Plumeless Thistle)	<i>Rhinocyllus conicus</i>	L	L	G	M
<i>Carduus nutans</i> (Musk Thistle)	<i>Rhinocyllus conicus</i>	W	H	G	M
<i>Centaurea diffusa</i> (Diffuse Knapweed)	<i>Pteroloche inspersa</i>	U	U	U	O
	<i>Sphenoptera jugoslavica</i>	L	M	U	L
	<i>Urophora affinis</i>	W	M	F	M
	<i>Urophora quadrifasciata</i>	W	M	F	M
<i>Centaurea maculosa</i> (Spotted Knapweed)	<i>Metzneria paucipunctella</i>	L	S	U	L
	<i>Urophora affinis</i>	W	M	F	M
	<i>Urophora quadrifasciata</i>	W	M	F	M
<i>Centaurea solstitialis</i> (Yellow Starthistle)	<i>Bangasternus orientalis</i>	L	S	U	O
	<i>Urophora sirunaseva</i>	U	U	U	O
<i>Chondrilla juncea</i> (Rush Skeletonweed)	<i>Eriophyes (= Aceria) chondrillae</i>	W	H	G	M
	<i>Cystiphora schmidti</i>	W	H	G	M
	<i>Puccinia chondrillina</i>	W	H	F	M
<i>Cirsium arvense</i> (Canada Thistle)	<i>Ceutorhynchus litura</i>	L	M	U	L
	<i>Haltica carduorum</i>	F	O	O	O
	<i>Urophora cardui</i>	U	U	U	O
<i>Euphorbia esula</i> (Leafy Spurge)	<i>Aphthona flava</i>	U	U	U	O
	<i>Chamaesphecia empiformis</i>	F	O	O	O
	<i>Hyles euphorbiae</i>	U	U	U	O
	<i>Oberea erythrocephala</i> *	F	O	O	O
<i>Halogeton</i>	<i>Coleophora parthenica</i>	F	O	O	O
<i>Hypericum perforatum</i> (St. Johnswort)	<i>Agrilus hyperici</i> *	W	M	U	M
	<i>Chrysolina hyperici</i> *	L	M	U	M
	<i>Chrysolina quadrigemina</i> *	W	H	E	M
	<i>Zeuxiplosis giardi</i>	F	O	O	O
<i>Linaria dalmatica</i> (Dalmation Toadflax)	<i>Calophasia lunula</i>	U	U	U	O
	<i>Gymnaetron antirrhini</i> *	U	U	U	U
	<i>Brachypterolus pulicarius</i> *	U	U	U	U
<i>Linaria vulgaris</i> (Yellow Toadflax)	<i>Calophasia lunula</i>	U	U	U	O
	<i>Gymnaetron antirrhini</i> *	U	U	U	U
	<i>Brachypterolus pulicarius</i> *	U	U	U	U
<i>Onopordum acanthium</i> (Scotch Thistle)	<i>Rhinocyllus conicus</i>	F	O	O	O
<i>Salsola australis</i> (Russian Thistle)	<i>Coleophora kimeschiella</i>	L	L	U	L
	<i>Coleophora parthenica</i>	F	O	O	O
<i>Salvia aethiopsis</i> (Mediterranean Sage)	<i>Phrydiuchus tau</i>	L	H	U	M
<i>Tribulus terrestris</i> (Puncturevine)	<i>Microlarinus lareynii</i> *	U	U	U	O
	<i>Microlarinus lypriformis</i> *	U	U	U	O

¹Bioagent distribution within host range: W = widespread, L = limited sites, F = failed to establish, U = unknown status.

²Bioagent infestation: H = heavy >70%, M = medium >30%, L = light >10%, S = slight <10%, O = none detected, U = unknown status.

³Weed control (seeds and/or plant density): E = excellent, G = good, F = fair, P = poor, U = undetermined, O = no control

⁴Bioagent availability for redistribution: M = mass collections, **L = limited, O = not collectible at present.

*Release predates the 1960-80's time period of Table 2.

**Limited collectibility indicates populations are slow in building or recently introduced. Work on these species should be coordinated through biological control specialists at the University of Idaho. Transportation of biological control agents across state or country (i.e. Canada) lines requires special permits and procedures.

Table 2. Specific bioagent release records for the period 1960-88.

Weed	Agent	Release date (mo/da/yr)	County	Coordinates ¹	Approximate location	# released and stage	Agent source ²	Status ³
<i>Carduus acanthoides</i>	<i>Rhinocyllus conicus</i>	6/14/84	Nez Perce	T35N,R2W,S19	1.5 mi. S. Culatesac	200 adults	Lemhi Co., ID	+
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	8/10/72	Jefferson	NA	2 mi. S.E. Rigby	750 adults	USDA-ARS Albany, CA	-
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	5/22/74	Caribou	T95,R41,S18	6 mi. W. Soda Springs	422 adults	USDA-ARS Albany, CA	?
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	6/17/75	Bingham	T35,R34E,S26	7 mi. N.W. Fort Hall	NA	USDA-ARS Albany, CA	+
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	5/26/77	Caribou	T105,R40E,S26	2 mi. S.S.W. Grace	500 adults	USDA-ARS Bozeman, MT	+
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	5/26/77	Caribou	T105,R40E,S27	2.5 mi. S.W. Grace	500 adults	USDA-ARS Bozeman, MT	+
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	5/26/77	Caribou	T95,R40E,S24	8 mi. W. Soda Springs	500 adults	USDA-ARS Bozeman, MT	+
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	5/27/77	Lemhi	T23N,R22E,S36	5 mi. E. Carmen	500 adults	USDA-ARS Bozeman, MT	+
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	6/7/80	Lemhi	NA	4.7 mi. E. Carmen	60 adults	NA	?
<i>Carduus nutans</i>	<i>Rhinocyllus conicus</i>	6/2/81	Teton	T5N,R46E,S7	3.5 mi. N.E. Driggs	NA	NA	?
				T5N,R46E,S30	2 mi. E. Driggs	NA	NA	?
				T4N,R45E,S13	2 mi. N. Driggs	NA	NA	?
				T4N,R45E,S14	2 mi. N. Driggs	NA	NA	?
				T4N,R45E,S14	2 mi. N. Driggs	NA	NA	?
<i>Centaurea diffusa</i>	<i>Pterolonche dispersa</i>	8/5/86	Camas	T1N,R16E,S20	11 mi. N.E.E. Fairfield	20 adults, 265 eggs	USDA-ARS Albany, CA	+?
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/25/80	Camas	T1N,R16E,S17	12 mi. N.E.E. Fairfield	29 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/29/80	Camas	T1N,R16E,S17	12 mi. N.E.E. Fairfield	22 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/12/84	Blaine	T3N,R18E,S7	5.5 mi. N. Hailey	47 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	6/21/85	Gooding	T3S,R15E,S2	4 mi. W. Thorn Crk. Reservoir	60 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/11/85	Camas	T1N,R16E,S20	11 mi. N.E.E. Fairfield	39 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/12/85	Lincoln	T6S,R17E,S10	1.3 mi. S. Shoshone	28 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	8/1/85	Camas	T1N,R16E,S20	11 mi. N.E.E. Fairfield	19 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/18/86	Lincoln	T6S,R17E,S10	1.3 mi. S. Shoshone	130 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Sphenoptera jugoslavica</i>	7/20/87	Blaine	T2N,R17E,S25	4 mi. S.W. Hailey	200 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/23/74	Camas	T1N,R16E,S17	12 mi. N.N.E. Fairfield	NA	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	7/27/79	Camas	T1N,R16E,S32	10 mi. N.E.E. Fairfield	25 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/27/80	Blaine	T2N,R18E,S26	Bellevue	50 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/27/80	Blaine	T3N,R18E,S8	5.8 mi. N. Hailey	50 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	7/7/80	Blaine	T2N,R18E,S10	Hailey	100 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	7/7/80	Blaine	T2N,R18E	2.4 S. Hailey	100 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	7/17/80	Blaine	T1N,R19E,S20	4 mi. S. Bellevue	155 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	7/25/80	Camas	T1N,R16E,S8	12 mi. N.E.E. Fairfield	150 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/26/81	Blaine	T3N,R18E,S8	5.8 mi. N. Hailey	400 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/26/81	Blaine	T2N,R18E	2.4 mi. S. Hailey	400 adults	USDA-ARS Albany, CA	+
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/26/81	Blaine	T2N,R18E,S10	Hailey	400 adults	USDA-ARS Albany, CA	+

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Table 2 (cont'd).

Weed	Agent	Release date (mo/da/yr)	County	Coordinates ¹	Approximate location	# released and stage	Agent source ²	Status ³
<i>Centaurea diffusa</i>	<i>Urophora affinis</i>	6/26/81	Blaine	T2N,R18E,S19	2.5 mi. W. Hailey	1,028 adults	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/9/81	Bonner	T54N,R3W,S27	Granite Lake	188 adults	USDA-ARS Albany, CA	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/9/81	Kootenai	T54N,R3W,S34	2 mi. N. Athol	190 adults	USDA-ARS Albany, CA	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/15/81	Bonner	T56N,R2E,S26	2 mi N. Clark Fork	190 adults	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/15/81	Idaho	T33N,R7E,S11	7 mi. N.E. Lowell	185 adults	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/25/81	Nez Perce	T37N,R3W,S29	4 mi. S. Juliaetta	356 adults	USDA-ARS Albany, CA	-
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	5/22/87	Latah	T37N,R3W,S9	.4 mi. S. Juliaetta	122 adults	USDA-APHIS Twin Falls	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	5/22/87	Idaho	T33N,R7E,S11	7 mi. N.E. Lowell	105 adults	USDA-APHIS Twin Falls, ID	+
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	5/30/87	Latah	T37N,R3W,S9	.4 mi. S. Juliaetta	257 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	5/30/87	Idaho	T33N,R7E,S11	7 mi. N.E. Lowell	230 adults	USDA-APHIS Twin Falls, ID	+
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	5/31/87	Lemhi	T24N,R20E,S26	4.3 mi. W. North Fork	345 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	5/31/87	Lemhi	T20N,R22E,S31	12 mi. S. Salmon	476 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/9/87	Kootenai	T35N,R2W,S8	4.2 mi. E. Athol	1,607 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/9/87	Kootenai	T51N,R5W,S30	1.5 mi. S. Hauser	632 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/13/87	Latah	T37N,R3W,S9	.4 mi. S. Juliaetta	1,200 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/26/87	Bonner	T56N,R2W,S29	6 mi. S. Sandpoint	230 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/26/87	Bonner	T61N,R5W,S23	1.7 mi. S. Nordman	600 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/26/87	Kootenai	T50N,R4W,S15	.5 mi. S. Coeur d'Alene	510 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/8/87	Kootenai	T50N,R4W,S14	.5 mi. S. Coeur d'Alene	1,300 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/10/88	Latah	T38N,R3W,S13	.8 mi. N. Kendrick	430 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	6/17/88	Latah	T38N,R3W,S13	.8 mi. N. Kendrick	425 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/6/88	Kootenai	T53N,R2W,S8	4.2 mi. E. Athol	400 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/6/88	Latah	T38N,R3W,S13	.8 mi. N. Kendrick	200 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/13/88	Kootenai	T48N,R1W,S14	4 mi. S. Cataldo	300 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/13/88	Kootenai	T53N,R2W,S8	4.2 mi. E. Athol	200 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/15/88	Latah	T38N,R3W,S13	.8 mi. N. Kendrick	200 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Metzneria paucipunctella</i>	7/20/88	Kootenai	T53N,R2W,S8	4.2 mi. E. Athol	150 adults	USDA-APHIS Twin Falls, ID	?
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/17/74	Bonner	T56N,R2W,S29	Round Lake	NA	USDA-ARS Pullman, WA	+
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/16/75	Bonner	T54N,R3W,S27	Granite Lake	656 adults	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/23/75	Bonner	T54N,R3W,S27	Granite Lake	303 adults	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/17/75	Latah	T37N,R3W,S29	3.7 mi. S. Juliaetta	417 adults	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/18/75	Latah	T37N,R3W,S29	3.7 mi. S. Juliaetta	204 adults	USDA-ARS Albany, CA	+

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Table 2 (cont'd).

Weed	Agent	Release date (mo/da/yr)	County	Coordinates ¹	Approximate location	# released and stage	Agent source ²	Status ³
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/15/76	Lemhi	NA	Carmen	NA	USDA-ARS Albany, CA	+
<i>Centaurea maculosa</i>	<i>Urophora affinis</i>	7/15/76	Lemhi	NA	11 mi. N. Salmon	630 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/14/85	Nez Perce	T35N,R2W,S18	3.2 mi. N.E. Culdesac	50 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/14/85	Nez Perce	T37N,R4W,S19	4 mi. N.E. Hatwai	120 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/10/86	Nez Perce	T36N,R3W,S6	7 mi. N.N.E. Lapwai	176 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/11/86	Nez Perce	T31N,R3W,S32	15 mi. S.S.E. Lake Waha	172 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/11/86	Nez Perce	T31N,R3W,S28	15 mi. S.S.E. Lake Waha	149 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/16/86	Nez Perce	T36N,R3W,S6	7 mi. N.N.E. Lapwai	96 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/18/86	Nez Perce	T31N,R3W,S32	15 mi. S.S.E. Lake Waha	96 adults	USDA-ARS Albany, CA	+
<i>Centaurea solstitialis</i>	<i>Bangasternus orientalis</i>	6/18/86	Nez Perce	T35N,R1W,S26	12 mi. E. Culdesac	204 adults	USDA-ARS Albany, CA	?
<i>Centaurea solstitialis</i>	<i>Urophora sirunaseva</i>	8/24/84	Nez Perce	T37N,R1W,S30	3.2 mi. E.N.E. Lenore	67 adults	USDA-ARS Albany, CA	-
<i>Centaurea solstitialis</i>	<i>Urophora sirunaseva</i>	7/12/85	Nez Perce	T36N,R5W,S27	2 mi. E. Lewiston	164 adults	USDA-ARS Albany, CA	?
<i>Chondrilla juncea</i>	<i>Cystiphora schmidtii</i>	5/25/76	Boise	T9N,R6E,S29	11 mi. E. Garden Valley	800 galls	USDA-ARS Albany, CA	+
<i>Chondrilla juncea</i>	<i>Cystiphora schmidtii</i>	6/8/76	Boise	T8N,R3E,S8	2 mi. S. Banks	4,000 galls	USDA-ARS Albany, CA	+
<i>Chondrilla juncea</i>	<i>Cystiphora schmidtii</i>	6/13/76	Boise	T8N,R3E,S8	2 mi. S. Banks	8,000 galls	USDA-ARS Albany, CA	+
<i>Chondrilla juncea</i>	<i>Cystiphora schmidtii</i>	6/13/76	Boise	T9N,R6E,S29	11 mi. E. Garden Valley	11,000 galls	USDA-ARS Albany, CA	+
<i>Chondrilla juncea</i>	<i>Eriophyes chondrillae</i>	6/17/77	Boise	T8N,R3E,S8	2 mi. S. Banks	NA	USDA-ARS Albany, CA	+
<i>Chondrilla juncea</i>	<i>Eriophyes chondrillae</i>	5/5/79	Kootenai	NA	5 mi. W. Post Falls	150 galls	Boise Co.	+
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	8/9/72	Blaine	NA	1 mi. S.W. Bellevue	100 adults	USDA-ARS Albany, CA	+
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	7/26/73	Latah	T40N,R5W,S24	5 mi. N.E. Moscow	124 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	8/8/73	Latah	T40N,R4W,S24	5 mi. N.E. Moscow	65 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	7/21/75	Latah	T40N,R4W,S24	5 mi. N.E. Moscow	260 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	9/19/73	Bonner	NA	7 mi. W. Kelso Lake	39 adults	USDA-ARS Albany, CA	+
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	8/2/74	Kootenai	NA	5 mi. N.E. Harrison	200 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Ceutorhynchus litura</i>	8/15/74	Gooding	NA	1 mi. W. Gooding	200 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Haltica carduorum</i>	4/29/66	Latah	T41N,R5W,S2	1 mi. W. Pottlatch	200 adults	USDA-ARS Albany, CA	?
<i>Cirsium arvense</i>	<i>Haltica carduorum</i>	5/9/67	Latah	T39N,R4W,S12	1 mi. W. Troy	175 adults	USDA-ARS Albany, CA	?
<i>Cirsium arvense</i>	<i>Haltica carduorum</i>	5/23/68	Bonner	NA	E. Hope	100 adults	USDA-ARS Albany, CA	?
<i>Cirsium arvense</i>	<i>Urophora cardui</i>	6/21/78	Latah	NA	7 mi. S.E. Princeton	31 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Urophora cardui</i>	6/11/81	Nez Perce	T36N,R4W,S35	.5 mi. N. Lapwai	58 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Urophora cardui</i>	6/21/82	Bingham	T55,R31E,S34	Aberdeen	180 adults	USDA-ARS Albany, CA	-
<i>Cirsium arvense</i>	<i>Urophora cardui</i>	7/8/83	Bingham	T55,R31E,S34	Aberdeen	200 adults	USDA-ARS Albany, CA	?

(cont'd on next page)

Table 2 (cont'd).

Weed	Agent	Release date (mo/da/yr)	County	Coordinates ¹	Approximate location	# released and stage	Agent source ²	Status ³
<i>Cirsium arvense</i>	<i>Urophora cardui</i>	7/2/84	Nez Perce	T35N,R2W,S19	1.5 mi. S. Culdesac	200 adults	USDA-ARS Albany, CA	-
<i>Euphorbia esula</i>	<i>Aphthona flava</i>	7/8/86	Elmore	T3N,R11E,S10	6 mi. E. Featherville	200 adults	USDA-ARS Albany, CA	+
<i>Euphorbia esula</i>	<i>Aphthona flava</i>	7/24/86	Kootenai	T52N,R4W,S30	1 mi. N.E. Rathdrum	210 adults	USDA-ARS Albany, CA	?
<i>Euphorbia esula</i>	<i>Chamaesphecia empiformis</i>	7/31/75	Elmore	T3N,R11E,S10	6 mi. E. Featherville	45 larvae	USDA-ARS Albany, CA	?
<i>Euphorbia esula</i>	<i>Chamaesphecia empiformis</i>	6/13/76	Elmore	T3N,R11E,S10	6 mi. E. Featherville	36 larvae	USDA-ARS Albany, CA	?
<i>Euphorbia esula</i>	<i>Hyles euphorbiae</i>	8/13/75	Elmore	T3N,R11E,S10	6 mi. E. Featherville	925 pupae	USDA-ARS Albany, CA	-
<i>Euphorbia esula</i>	<i>Hyles euphorbiae</i>	6/14/85	Elmore	T3N,R11E,S12	8 mi. E. Featherville	496 larvae	USDA-ARS Bozeman, MT	?
<i>Euphorbia esula</i>	<i>Hyles euphorbiae</i>	7/23/86	Elmore	T3N,R11E,S12	8 mi. E. Featherville	401 larvae	USDA-ARS Bozeman, MT	?
<i>Halogeton</i>	<i>Coleophora parthenica</i>	7/8/75	Cassia	NA	N.E. Malta	77 adults	NA	-
<i>Hypericum perforatum</i>	<i>Zeuxidiplosis giardi</i>	1981	Kootenai	T53N,R2W,S9	5.5 mi. E. Athol	40 adults	USDA-ARS Albany, CA	?
<i>Hypericum perforatum</i>	<i>Zeuxidiplosis giardi</i>	6/25/82	Kootenai	T53N,R2W,S9	5.5 mi. E. Athol	6 plants with galls containing larvae & pupae	USDA-ARS Albany, CA	?
<i>Linaria dalmatica</i>	<i>Calophasia lunula</i>	1968	Kootenai	NA	N. edge Twin Lakes	200 larvae	NA	?
<i>Linaria dalmatica</i>	<i>Calophasia lunula</i>	6/10/68	Kootenai	NA	N. edge Twin Lakes	280 larvae, 15-25 pupae	NA	?
<i>Linaria dalmatica</i>	<i>Calophasia lunula</i>	5/29/69	Kootenai	NA	N. edge Twin Lakes	190-230 larvae	USDA-ARS Albany, CA	?
<i>Linaria dalmatica</i>	<i>Calophasia lunula</i>	6/29/82	Kootenai	T51N,R5W,S24	5.5 mi. W. Hayden	300 larvae	USDA-ARS Albany, CA	?
<i>Linaria dalmatica</i>	<i>Calophasia lunula</i>	7/15/83	Kootenai	T51N,R5W,S24	5.5 mi. W. Hayden	350 larvae	USDA-ARS Albany, CA	?
<i>Linaria vulgaris</i>	<i>Calophasia lunula</i>	1968	Bonner	NA	5.5 mi. W. Dover	100 larvae	NA	?
<i>Linaria vulgaris</i>	<i>Calophasia lunula</i>	6/30/69	Adams	NA	New Meadows	175 larvae	USDA-ARS Albany, CA	?
<i>Onopordum acanthium</i>	<i>Rhinocyllus conicus</i>	6/23/82	Nez Perce	T36N,R4W,S23	.2 mi. E. Spalding Park	200 adults	NA	-
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	7/78	Owyhee	NA	Murphy	NA	NA	?
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	8/10/78	Lincoln	T5S,R18E	6.5 mi. E. Dietrich	155 adults	USDA-ARS Albany, CA	?
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	6/22/79	Owyhee	NA	10 mi. W. Grandview	98 adults	USDA-ARS Albany, CA	+
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	7/29/80	Owyhee	NA	10 mi. W. Grandview	15 adults	USDA-ARS Albany, CA	+
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	8/22/80	Owyhee	NA	10 mi. W. Grandview	43 adults	USDA-ARS Albany, CA	+
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	7/31/81	Payette	T6N,R4W,S12	8 mi. S.S.E. New Plymouth	500 adults	USDA-ARS Albany, CA	+
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	8/6/82	Latah	T39N,R5W,S7	Moscow	100 adults	USDA-ARS Albany, CA	?
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	8/8/82	Nez Perce	T36N,R5W,S27	2 mi. E. Lewiston	100 adults	USDA-ARS Albany, CA	?
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	7/18/73	Owyhee	NA	Eagle Cove	158 adults	USDA-ARS Albany, CA	-
<i>Salsola australis</i>	<i>Coleophora klimeschiella</i>	6/22/79	Owyhee	NA	10 mi. W. Grandview	99 adults	USDA-ARS Albany, CA	+
<i>Salvia aethiopsis</i>	<i>Phrydiuchus tau</i>	11/9/79	Idaho	T25N,R1E,S2	Lucile	183 adults	USDA-ARS Albany, CA	+
<i>Salvia aethiopsis</i>	<i>Phrydiuchus tau</i>	11/14/79	Idaho	T32N,R4E	3 mi. E. Stites	235 adults	USDA-ARS Albany, CA	+

¹T = Township, R = Range, S = Section; NA = not available²County or agency³+ = established, - = failed to establish, ? = status unknown