

APPENDIX B
BIOLOGICAL WEED CONTROL
AGENTS

Current Status of Biological Weed Control Agents in Oregon, Washington, and Idaho

Weed	Agent	Distribution			Infestation			Control			Availability		
		OR	WA	ID	OR	WA	ID	OR	WA	ID	OR	WA	ID
Bindweed, field	<i>Aceria malherbae</i>	—	U	—	—	O	—	—	U	—	—	O	—
Broom, Scotch	<i>Agonopterix nervosa</i>	W	W	—	H	M	—	P	U	—	M	M	—
	<i>Apion fuscirostre</i>	W	L	—	H	L	—	G	F	—	M	L	—
	<i>Leucopetra spartolofeta</i>	W	L	—	M	M	—	F	U	—	M	L	—
Gorse	<i>Agonopterix nervosa</i>	W	W	—	M	M	—	U	U	—	M	M	—
	<i>Exapion ulicis</i>	W	L	—	H	H	—	G	G	—	M	L	—
	<i>Tetranychus integerius</i>	W	L	—	H	M	—	U	U	—	M	L	—
Hemlock, poison	<i>Agonopterix alstroemeriana</i>	W	W	W	M	H	M	G	E	G	M	M	M
Knapweed, brown	<i>Urophora quadrifasciata</i>	L	L	U	L	M	U	U	U	U	L	M	O
Knapweed, diffuse	<i>Bangasternus fausti</i>	L	U	U	M	U	U	G	U	U	L	O	O
	<i>Larinus minutus</i>	L	L	—	M	H	—	—	—	—	L	M	—
	<i>Pterolonche inspersa</i>	F	F	U	—	—	U	—	—	U	O	—	O
	<i>Sphenoptera jugoslavica</i>	W	W	W	H	H	H	G	G	G	M	M	M
	<i>Urophora affinis</i>	W	W	W	M	H	M	G	G	F	M	M	M
	<i>Urophora quadrifasciata</i>	W	W	W	H	H	M	G	G	F	M	M	M
Knapweed, meadow	<i>Urophora quadrifasciata</i>	L	L	—	L	M	—	U	F	—	L	M	—
Knapweed, Russian	<i>Subanguina picridis</i>	L	L	—	S	U	—	F	U	—	O	O	—
Knapweed, spotted	<i>Agapeta zoegana</i>	L	L	L	H	M	U	G	U	U	M	L	O
	<i>Bangasternus fausti</i>	L	U	U	L	U	U	G	U	U	L	O	O
	<i>Chaetorelia acrolaphi</i>	L	U	—	L	L	—	U	U	—	L	O	O
	<i>Cyphocleonus achates</i>	L	L	U	L	L	U	U	U	—	L	O	O
	<i>Larinus minutus</i>	L	L	U	H	H	U	G	G	U	M	M	O
	<i>Larinus obtusus</i>	U	L	—	U	L	—	U	U	—	O	O	—
	<i>Metzneria paucipunctella</i>	W	W	W	H	H	M	G	U	G	M	M	M
	<i>Pterolonche inspersa</i>	F	—	—	—	—	—	—	—	—	O	—	—
	<i>Taraxia virens</i>	L	U	—	L	U	—	U	U	—	O	O	—
	<i>Urophora affinis</i>	W	W	W	M	H	M	G	G	G	M	M	M
Knapweed, squarrose	<i>Urophora affinis</i>	L	—	—	S	—	—	U	—	—	L	—	—
	<i>Urophora quadrifasciata</i>	L	—	—	M	—	—	U	—	—	L	—	—
Loosestrife, purple	<i>Galerucella calmanensis</i>	L	L	L	H	M	S	E	F	U	L	L	O
	<i>Galerucella pusilla</i>	L	L	L	H	M	S	E	F	U	L	L	O
	<i>Hyllobius transeverovittatus</i>	L	L	U	M	L	—	F	U	—	L	L	O
	<i>Nanophyes marmoratus</i>	L	U	—	M	U	—	F	U	—	L	O	—
Puncturevine	<i>Microlarinus laevis</i>	L	F	F	L	—	—	G	—	—	L	—	—
	<i>Microlarinus typhiformis</i>	L	F	F	L	—	—	F	—	—	L	—	—
Ragwort, tansy	<i>Longitarsus jacobaeae</i>	W	W	—	H	H	—	E	F	—	M	M	—
	<i>Pegomya seneciella</i>	W	W	—	H	H	—	E	F	—	M	M	—
	<i>Tyria jacobaeae</i>	W	W	—	H	H	—	E	F	—	M	M	—
Sage, Mediterranean	<i>Phrydichus laur</i>	W	—	W	H	—	H	G	—	U	M	—	M
St. Johnswort	<i>Agnilus hyperici</i>	L	L	W	H	H	H	E	E	E	M	L	M
	<i>Apocera plagiata</i>	L	W	W	M	M	M	G	F	F	M	M	M
	<i>Chrysolina hyperici</i>	W	W	W	H	H	H	E	E	E	M	M	M
	<i>Chrysolina quadrigemina</i>	W	W	W	H	H	H	E	E	E	M	M	M
Skeletonweed, rush	<i>Cystophora schmidtii</i>	L	W	W	L	H	H	F	E	G	L	M	M
	<i>Eriophyes chondrillae</i>	L	W	W	L	H	H	G	E	E	L	M	M
	<i>Puccinia chondrillina</i>	L	W	W	L	H	H	F	E	F	M	M	M
Spurge, leafy	<i>Aphthona abdominalis</i>	U	—	—	U	—	—	U	—	—	O	—	—
	<i>Aphthona cyparissiae</i>	L	L	L	M	M	L	G	F	U	L	L	O
	<i>Aphthona czwalinae</i>	L	L	U	M	L	U	F	U	U	L	L	O
	<i>Aphthona fovea</i>	L	L	L	M	M	L	F	F	U	L	L	O
	<i>Aphthona lacertosa</i>	L	L	U	M	M	U	F	U	U	L	L	O
	<i>Aphthona nigrescens</i>	L	L	L	M	M	L	G	F	U	L	L	O
	<i>Chamaesphacia crassicornis</i>	U	—	—	U	—	—	U	—	—	O	—	—

Distribution within host range: W = widespread; L = limited sites; F = failed to establish; U = unknown status; — = not released
 Infestation of hosts: H = heavy (> 70%); M = medium (> 30%); L = light (> 10%); S = slight (< 1%); O = none detected; U = unknown status
 Control ability on seeds and/or plant density: E = excellent; G = good; F = fair; P = poor; U = undetermined
 Availability for redistribution: M = mass collections; *L = limited; O = not collectable at present
 *Limited availability indicates agent populations are slow in building or are recently introduced. Work on these species should be coordinated through biological control specialists at the state department of agriculture or state university. Collection and/or transportation of biological control agents may require special permits and procedures.

CURRENT STATUS OF BIOLOGICAL WEED CONTROL AGENTS—continued

Weed	Agent	Distribution			Infestation			Control			Availability		
		OR	WA	ID	OR	WA	ID	OR	WA	ID	OR	WA	ID
Spurge, leafy (cont'd)	<i>Oberaea erythrocephala</i>	L	U	U	S	U	U	U	U	U	L	O	O
	<i>Spurgia esulæ</i>	F	U	U	—	U	U	—	U	U	—	O	O
Thistle, yellow	<i>Bangasternus orientalis</i>	W	W	W	H	H	M	G	G	G	M	M	M
	<i>Chaetorella australis</i>	L	W	W	H	H	M	E	G	G	M	M	M
	<i>Chaetorella succinea</i>	L	U	—	H	U	—	E	U	—	M	O	—
	<i>Eusteropus villosus</i>	L	W	L	H	H	H	E	E	U	M	O	—
	<i>Larinus curtus</i>	L	L	L	H	L	M	E	E	U	L	M	L
	<i>Urophora sinuaseva</i>	W	L	L	M	M	L	G	F	F	M	O	L
Thistle, bull	<i>Urophora stylata</i>	W	L	—	H	M	—	G	F	—	M	L	—
Thistle, Canada	<i>Ceutorhynchus litura</i>	L	F	L	L	—	M	G	—	U	L	—	L
	<i>Larinus planus</i>	L	W	—	H	M	—	F	F	F	M	M	—
	<i>Rhinocyclus conicus</i>	L	W	L	M	H	L	F	G	F	L	M	L
	<i>Urophora cardui</i>	L	L	U	M	M	U	F	F	F	M	M	O
Thistle, Italian	<i>Rhinocyclus conicus</i>	W	—	L	H	—	H	G	—	U	M	—	L
	<i>Trichosirocalus homidus</i>	U	—	—	U	—	—	U	—	—	O	—	—
Thistle, milk	<i>Rhinocyclus conicus</i>	W	—	—	H	—	—	G	—	—	M	—	—
	<i>Trichosirocalus homidus</i>	U	—	—	H	H	H	G	E	G	M	M	M
Thistle, musk	<i>Rhinocyclus conicus</i>	W	W	W	—	—	—	—	—	—	—	—	—
	<i>Trichosirocalus homidus</i>	U	—	—	H	H	H	U	—	—	O	—	—
Thistle, plumeless	<i>Rhinocyclus conicus</i>	—	W	W	—	H	H	—	E	G	—	M	M
	<i>Trichosirocalus homidus</i>	—	L	—	—	L	—	—	U	—	—	O	—
Thistle, slenderflower	<i>Rhinocyclus conicus</i>	W	—	—	H	—	—	G	—	—	M	—	—
Toadflax, Dalmatian	<i>Calophasia lunula</i>	U	W	L	U	H	L	U	G	U	O	M	L
Toadflax, yellow	<i>Brachyterolus pulicarius</i>	L	L	L	M	M	M	F	F	F	L	L	L
	<i>Calophasia lunula</i>	—	—	L	—	—	M	—	—	F	—	—	L
	<i>Gymnetron artemisi</i>	L	L	L	M	H	H	U	G	U	L	L	L

Biological Agents and Their Roles

The biological agents introduced into the Pacific Northwest for the biological control of weeds, the general role of each agent, and type of introduction (C = classical and A = accidental).

Species	Role	Species	Role
<i>Aceria malherbae</i>	bud/leaf gall mite C	<i>Gymnetron artemisi</i>	seed head weevil A
<i>Agapeta zoegana</i>	root boring moth C	<i>Hylobius transversovittatus</i>	root boring weevil C
<i>Agonopterix altoaemariana</i>	defoliating moth A	<i>Larinus curtus</i>	seed head weevil C
<i>Agonopterix nervosa</i>	shoot tip moth A	<i>Larinus minutus</i>	seed head weevil C
<i>Agnus hyperici</i>	root boring beetle C	<i>Larinus obtusus</i>	seed head weevil C
<i>Apocaris plagiata</i>	defoliating moth C	<i>Larinus planus</i>	seed head weevil A
<i>Aphthona abdominalis</i>	root/defoliating flea beetle C	<i>Leucopiera spartifoliae</i>	twig mining moth A
<i>Aphthona cyparissiae</i>	root/defoliating flea beetle C	<i>Longitarsus jacobaeae</i>	root/defoliating flea beetle C
<i>Aphthona czwalinae</i>	root/defoliating flea beetle C	<i>Melzeria paucipunctata</i>	seed head moth C
<i>Aphthona flava</i>	root/defoliating flea beetle C	<i>Microtanus lareyni</i>	seed weevil C
<i>Aphthona lacertosa</i>	root/defoliating flea beetle C	<i>Microtanus tyrimis</i>	stem boring weevil C
<i>Aphthona nigrescens</i>	root/defoliating flea beetle C	<i>Nanophyes marmoratus</i>	flower bud weevil C
<i>Apion fuscostris</i>	seed weevil C	<i>Oberaea erythrocephala</i>	stem boring beetle C
<i>Bangasternus faustii</i>	seed head weevil C	<i>Pegohylemyia senecioides</i>	seed head fly C
<i>Bangasternus orientalis</i>	seed head weevil C	<i>Phrydichus litu</i>	crown/root weevil C
<i>Brachyterolus pulicarius</i>	flower beetle A	<i>Pterolonche inspersa</i>	root boring moth C
<i>Calophasia lunula</i>	defoliating moth C	<i>Puccinia chondillina</i>	rust fungus C
<i>Ceutorhynchus litura</i>	crown/root weevil C	<i>Rhinocyclus conicus</i>	seed head weevil C
<i>Chaetorella acrolophi</i>	seed head fly C	<i>Sphenoptera jugoslavica</i>	root boring/gall beetle C
<i>Chaetorella australis</i>	seed head fly C	<i>Spurgia esulæ</i>	shoot tip gall midge C
<i>Chaetorella succinea</i>	seed head fly A	<i>Subanguina picoides</i>	stem/leaf gall nematode C
<i>Chamaesphacia crassicomis</i>	root boring moth C	<i>Taraxia vires</i>	seed head fly C
<i>Chrysolina hyperici</i>	defoliating beetle C	<i>Tetanymachus lintearius</i>	spider mite C
<i>Chrysolina quadrigemina</i>	defoliating beetle C	<i>Trichosirocalus homidus</i>	root/crown weevil C
<i>Cyphocleonus achates</i>	root boring/gall weevil C	<i>Tyria jacobaeae</i>	defoliating moth C
<i>Cystiphora schmidtii</i>	stem/leaf gall midge C	<i>Urophora affinis</i>	seed head gall fly C
<i>Eriophyes chondilliae</i>	bud gall mite C	<i>Urophora cardui</i>	stem gall fly C
<i>Eusteropus villosus</i>	seed head weevil C	<i>Urophora quadrifasciata</i>	seed head gall fly A
<i>Erapiion ulicis</i>	seed weevil C	<i>Urophora sinuaseva</i>	seed head gall fly C
<i>Galerucella californiensis</i>	leaf beetle C	<i>Urophora stylata</i>	seed head gall fly C
<i>Galerucella pustilla</i>	leaf beetle C		