

Agents recommended for FS use

Agent	Order	Family	Weed	APHIS status	EA?	Sites/Recommendations	Priority for use	Collection Notes	Effectiveness
Aceria malherbae	Acarina	Eriophyidae	Field bindweed	approved	have APHIS records	Spotty, isolated sites, Unlikely on USFS, doesn't do well in R6 climate, poss on Admin or Grasslands; warm sites; Not approved in CA due to presence of closely related natives.	mod priority	Transfer infested leaves/galls during growing season	Stunts plants, reduces flowering, reduces plant density in Texas.
Agapeta zoegana	Lepidoptera	Cochylidae	knapweeds	approved	have APHIS records	Widespread in OR, possible gaps; prefers large plants, cooler knapweed sites	low priority	Adults, early July-September, short adult lifespan	Reduces biomass and density.
Agrilus hyperici	Coleoptera	Buprestidae	St. Johnswort	approved	mod priority	Spotty in E OR & WA, disperses well; would use on west side if could establish, prefers warm dry with large stems; prone to fungus on wet sites; may want to redistribute; found on native Hyperici concinnum in CA; will attack plants in shade undamaged by Chrysolina hyperici.	mod priority	Sweep adults, June-July; release 100 on well-established plants.	Most infested plants die; will attack plants in shade undamaged by Chrysolina hyperici.
Aphthona lacertosa	Coleoptera	Chrysomelidae	leafy spurge	approved	have EA	Widespread, most effective; more mesic than other Aphthona spp.; do not redistribute from area where parasitic protozoan Nosema is present	low priority	Sweep adults June-July.	Most effective agent on leafy spurge. When it establishes, reductions in cover, density, aboveground and root biomass in 3-5 years. Expected to do well in northern US but not southern.
Aphthona nigricutis	Coleoptera	Chrysomelidae	leafy spurge	approved	have APHIS records	Widespread, may want to move within few miles; larvae need 4 month cold period	low priority	Sweep adults June-July.	Particularly effective in Canada.
Bradyrrhoa gilveolella	Lepidoptera	Pyralidae	Rush skeletonweed	approved	have EA	Recent release, not established; permit issued 5/02.	mod priority	Unknown	Can kill aboveground parts, general effectiveness unknown.
Bruchidius villosus	Coleoptera	Bruchidae	Scotch broom, maybe French	approved	have APHIS records	recent intro, very limited avail in W OR & WA, accid in Carolinas, OR wrote petition & tested in OR & WA	mod priority	Unknown	Reduces seed production and may reduce spread.

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Calophasia lunula	Lepidoptera	Noctuidae	toadflax	approved	low,low priority	Widespread near Spokane, ineffective,not recovered in OR; strong flier; most common on roadside stands, low density in large stands.	low, low priority	One to three generations/yr; transfer larvae.	Widespread near Spokane, ineffective,not recovered in OR; strong flier; most common on roadside stands, low density in large stands.
Chaetorellia acrolophi	Diptera	Tephritidae	knapweeds	approved	have APHIS records	Spotty distribution,Lane Co, Hood R.; moist habitats in OR; dry, south-facing slopes, scattered plants in Brit.Col.	high priority	Clip larvae-infested seed heads in fall or early spring; best to rear adults and separate from other emerging insects, esp predators.	Clip larvae-infested seed heads in fall or early spring; best to rear adults and separate from other emerging insects, esp predators.
Chamaesphracia hungarica	Lepidoptera	Sessiidae	leafy spurge	approved	have EA	not yet established, possible future introductions	mod priority	Unknown	May be effective in moist sites.
Cyphocleonus achates	Coleoptera	Curculionidae	knapweeds	approved	have APHIS records	Prefers lg stems & monoculture stands,well-drained, low, hot, dry, gravel pits	high priority	Collect adults Aug-Sept or rear from roots.	Reduces biomass and density.
Diorhabda elongata	Coleoptera	Chrysomelidae	tamarix	approved	have EA	Recent release, lots of use in E OR in '03: Snake and Owyhee R	high priority	Unknown	Defoliated plants dieback, severe defoliation for 2 years killed some large plants.
Eteobalea intermediella	Lepidoptera	Cosmopterigidae	toadflax	approved	have EA	released and recovered in MT, unavail yet for redistribution	mod priority	Sweep in late summer	Unknown.
Eteobalea serratella	Lepidoptera	Cosmopterigidae	toadflax	approved	have EA	released and recovered in MT, unavail yet for redistribution	mod priority	Sweep in late summer	Unknown.
Eustenopus villosus	Coleoptera	Curculionidae	yellow starthistle	approved	have EA	Widespread,spreads well,if site w/o, FS should put; cool climates unfavorable.	low priority	Sweep or hand pick adults in June or July.	Feeding on flower heads and buds can cause 90-100% seed reduction in a head.
Exapion fuscirostre	Coleoptera	Apionidae	Scotch broom	approved	low priority	Widespread W OR & WA,mod effect,affect 50% seeds; prefers meadows and hills w/S exposure; damp and cold, N face undesirable.	low priority	Adults, April and May; release 100-250 adults.	May retard the spread of the plant but does not reduce established density; 30-95% of seedpods attacked.

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Galerucella californiensis	Coleoptera	Chrysomelidae	purple loosestrife	approved	have APHIS records	Widespread, effective, FS may want; apparent synergism between two Galerucella spp.; alone G. pusilla density too low for control, G. californiensis poss limited by dispersal; G. californiensis attack transfers nutrients to regrowth, which allows G. pusilla to attain high densities. No direct toxic effect of triclopyr amine.	mod priority	Small releases tend to remain small, releases of 2000 larvae or adults produce outbreaks. Place larval-infested foliage on plants in the new stand.	Widespread, effective, FS may want; biomass at several sites in Oregon and Washington has been reduced by 90%.
Galerucella pusilla	Coleoptera	Chrysomelidae	purple loosestrife	approved	have APHIS records	Widespread, effective, spreads, FS may want	mod priority	Releases of 2000 produce outbreaks. Place larval-infested foliage on plants in the new stand.	Widespread, effective, FS may want; biomass at several sites in Oregon and Washington has been reduced by 90%.
Gymnaetron antirrhini	Coleoptera	Curculionidae	toadflax	approved	have APHIS records	biotype approved intro in WA & MT, may want to spread; 40-60% infested seed heads, limited effect on stand density; does not withstand extreme winter cold; avoid releasing where flower feeding beetle (B. pulicarius) is abundant.	mod priority	Sweep adults in July and August.	40-60% infested seed heads, limited effect on stand density
Gymnetron linariae	Coleoptera	Curculionidae	toadflax, Dalmatian	approved	have EA	Recent release, not established	mod priority	Sweep or hand pick in summer.	Unknown.
Hylobius transversovittatus	Coleoptera	Curculionidae	purple loosestrife	approved	have APHIS records	Spotty, expensive to rear and collect; stands with Galerucella may be unsuitable.	low priority	Cut path through infested stand, collect adults with flashlight for 2 hours after sunset along path. Weevils drop when disturbed. Release 25 at sites with large plants.	Feeds on root storage reserves, believed to complement leaf beetle damage.
Larinus curtus	Coleoptera	Curculionidae	yellow starthistle	approved	have APHIS records	Widespread in E OR & WA, does poorly on westside, may need redistribution in spots in E; cool climates unfavorable.	low priority	Sweep or hand pick adults late June to early August.	Larval feeding can reduce seed production by 100%.

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Larinus minutus	Coleoptera	Curculionidae	knapweeds	approved	have APHIS records	Widespread,may want to move within few miles;hot, dry areas; larvae consume entire flower head contents.	low priority	Adult sweep net, hand pick, aspirate in early summer	Heavy defoliation can result in stunting and death; larvae consume entire flower head contents. Dramatic reductions in MT,OR & WA.
Larinus obtusus	Coleoptera	Curculionidae	knapweeds	approved	have APHIS records	Limited distribution,priority on meadow in E OR; prefers spotted knap.; prefers slightly moist sites.	high priority	Move larvae and pupae in seed heads in late July-early August, or sweep adults.	Defoliation and seed feeding; populations increase slowly.
Mecinus janthinus	Coleoptera	Curculionidae	toadflax	approved	have EA	Limited distribution,priority E OR; hot, dry forest and grassland, large stemmed plants.	high priority	Light sweep net in May to July, earlier better; release 200.	Sig plant density reduction in BC and WA.
Microlarinus lareynii	Coleoptera	Curculionidae	puncturevine, also attacks Tribulus cistoides and some Kallstroemia spp.	approved	not needed	Isolated sites, limited by cold winter temps., can use inundative in other areas.	mod priority	Collect adults from soil litter with vacuum or aspirator or put plants and litter in bag in sun and collect crawling adults.	Very effective in warm climates.
Nanophyes marmoratus	Coleoptera	Curculionidae	purple loosestrife	approved	have EA	Widespread,effective, 1000's per plant; sites without prolonged flooding; tolerates wide range of conditions, excellent host-finding	low priority	Adults with beating tray and beat stick; release 100-200 adults per site.	Widespread, effective, 1000's per plant;
Oberea erythrocephala	Coleoptera	Cerambycidae	leafy spurge	approved	mod priority	Limited distribution;larvae bore down stem with large pith ≥ 3 mm, ineffective in western Canada prob due to small pith; warm, well-drained sites.	mod priority	Sweep and hand pick adults at peak flowering, release 100+, may need to cage to establish.	Ineffective in western Canada prob due to small pith; attacks only specific biotypes of spurge
Pelochrista medullana	Lepidoptera	Tortricidae	knapweeds	approved	have APHIS records	Just released, difficult to establish,soon use unlikely; prefers dry; damage identical to Agapeta.	low priority	Collect infested roots in fall, winter or early spring.	Reduces plant biomass.
Phrydiuchus tau	Coleoptera	Curculionidae	Mediterranean sage	approved	low priority	Widespread,may want to move within few miles if Med sage becomes est around John Day; best on warm, dry sites.	low priority	Sweep adults in late spring and early summer.	Effective on sites with strong perennial component and little grazing, little effect on salt-desert scrub or annual dominated.

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Psylliodes chalconera	Coleoptera	Chrysomelidae	musk thistle	approved	have EA	approved, possible future introductions	mod priority	Unknown	Unknown.
Puccinia jacea var. solstitialis	Uridinales	Pucciniaceae	Pucciniaceae	yellow starthistle	approved	Established in limited sites in OR, not yet in WA	mod priority	Possibly avail for redistrib 2010.	Recom for sites with seasonal fog.
Subangiuna picridis	Nematoda	Tylenchidae	Russian knapweed	approved	have APHIS records	nematode, isolated sites, need better dissemination; difficult to establish and ineffective; does not do well in dry areas, best in misty areas.	low, low priority	Collect galls in fall and place on soil. Nematodes will emerge from disintegrating galls and move to shoots in wet spring.	Disperses very slowly; some sites now have native grasses but if area too small, weed will reinvade from edges.
Terellia virens	Diptera	Tephritidae	knapweeds	approved	have APHIS records	Prefers spotted knap.; isolated sites, higher elev. than weevils; does not survive well in seedheads with L. minutus.	high priority	Collect infested seedheads in fall or early spring; must be kept moist; best to separate out parasitoids.	Reduces seed production; limited availability so effect still not determined.
Tetranychus lintearius	Acarina	Tetranychidea	gorse	approved	have EA	Widespread W OR & WA, now attacked by accid pred mite from greenhouse industry	low priority	Not needed	Now attacked near Bandon, OR by accid pred mite from greenhouse industry; at many other sites attacked by ladybird beetle and rendered ineffective.
Tyta luctuosa	Lepidoptera	Noctuidae	Field bindweed	approved	have APHIS records	Recent releases, recovered, unlikely on FS; difficult to establish; recorded to feed on native Calystegia spp.	low, low priority	Transfer larvae and adults, can black light; not approved in CA	Does not significantly damage hedge bindweed (<i>Calystegia sepium</i>), effect on field bindweed unk.
Urophora solstitialis	Diptera	Tephritidae	musk thistle	approved	have APHIS records	Recent release, not established in US, difficult to establish	mod priority	Collect thistle heads after galls harden in August-September.	Unknown.