

## **Old Growth Item 6**

**OBJECTIVE:** Ensure that old growth is being inventoried through project planning. Determine compliance with old growth standards in the Forest Plan (acres by habitat type, land class, and management area).

**DATA SOURCE:** Timber Stand Management Record System (TSMRS), aerial photography, FIA data, and inventory.

**FREQUENCY:** 100 percent every three years.

**REPORTING PERIOD:** 2010-2013

**VARIABILITY:** +/- 20 percent over three years.

### **EVALUATION:**

The intent of old growth management in the Forest Plan (1987) is stated in the Forest-wide resource standard on page II-19, "The amount and distribution of old growth will be used to ensure sufficient habitat for the maintenance of viable populations of existing native and desirable vertebrate species, including two indicator species, the pine marten and pileated woodpecker." Each management area (MA) that contains land suitable for timber management has a standard for retention of old growth habitat. Old growth stands should generally be 40 acres or larger and distributed over the management area. MA 1 requires about three percent old growth retention, while MAs 2 and 3 require about eight percent. In MA 3b, the standard is to maintain 50 percent in fisheries areas and 25 percent in non-fisheries areas. The weighted average of Forest Plan Management Area standards was intended to maintain about 10 percent old growth habitat in suitable lands within management areas 1, 2, 3a, 3b, and 3c.

The Plan sets no old growth retention standards for MAs 5 through 11. The Forest Plan allows for very little management that could impact the amount of old growth in those management areas. Natural processes such as growth, succession, and disturbances including wind and wildfire will continue to regulate the amount of old growth habitat in management areas 5 through 11, as is intended by the Forest Plan.

We have been inventorying old growth habitat for each project based on Regional old growth definitions, the Old Growth Forest Types of the Northern Region (Green et al. 1992) and the Forest Plan standard. The Forest Plan expects old growth to be distributed by third-order drainage and management area. During the inventory, we collect data on vegetation habitat type groups for western Montana, minimum age, minimum number of trees per acre above a certain diameter, live basal area per acre, snags per acre larger than nine inches in diameter, dead or broken-topped trees, down woody material, percent decay, and number of canopy layers. This information is compared with criteria in the Forest Plan and regional old growth definitions to determine old growth status.

The Forest's inventory of old growth is never completed because project planning is ongoing and the requirements of old growth having to be inventoried for project planning in MA 1, 2, 3a, and 3c is continual. About 10 percent of MAs 1, 2, 3a and 3c has old growth habitat characteristics. Total current old growth habitat exceeds Forest Plan Standards for most management areas. Old growth has decreased 7 percent between 2006 and 2013 which is within the Forest Plan variability and requires no further evaluation.

**MONITORING RESULTS:**

Table 1 shows a summary of the old growth inventory, which is complete for all Forest lands with a numerical old growth standard.

**Table 1- Old Growth Habitat Area and Distribution by Ranger District and Forest Plan Management Area for All Lands Outside Roadless and Wilderness Management Areas.**

District	Management Area <sup>1</sup>	Total MA Acres	Old Growth Habitat Area (acres)	Old Growth Habitat Area (percent)	Forest Plan Standard (percent)
Stevensville	1	16,509	1,849	11	3
Stevensville	2	9,800	530	5	8
Stevensville	3a	30,864	2,894	9	8
Stevensville	3c	3,502	728	21	8
<b>Stevensville Total</b>		<b>60,675</b>	<b>6,001</b>	<b>10</b>	
Darby	1	64,015	4,633	7	3
Darby	2	39,965	1,814	5	8
Darby	3a	34,758	2,523	7	8
Darby	3c	8,073	847	10	8
<b>Darby Total</b>		<b>146,811</b>	<b>9,817</b>	<b>7</b>	
Sula	1	54,546	5,065	9	3
Sula	2	44,884	5,419	12	8
Sula	3a	26,754	2,380	9	8
<b>Sula Total</b>		<b>126,184</b>	<b>12,864</b>	<b>10</b>	
West Fork	1	72,679	8,727	12	3
West Fork	2	47,135	6,638	14	8
West Fork	3a	30,033	4,749	16	8
West Fork	3c	253	0	0	8
<b>West Fork Total</b>		<b>150,100</b>	<b>20,114</b>	<b>1326</b>	
<b>Forest Totals</b>		<b>483,770</b>	<b>48,796</b>	<b>10</b>	

<sup>1</sup> Management Area 3b is a linear inclusion (riparian) in each of these Management Areas and has not been separated for display here. The Forest Plan intends that 50% of 3b fisheries riparian, and 25% of the 3b non-fisheries riparian be old growth habitat.

<sup>2</sup> No MA 3c occurs on the Sula District.

**Table 2– Old Growth Habitat by Management Area**

<b>Forest Plan Management Area<sup>1</sup></b>	<b>Forest Plan Minimum (%)</b>	<b>2006 Inventoried Old Growth as a % of MA</b>	<b>2013 Inventoried Old Growth as a % of MA</b>	<b>% Change from 2006 to 2013</b>
1	3	20	10	-10
2	8	14	10	-4
3a	8	16	10	-6
3c	8	21	13	-8
<b>Total</b>		<b>17</b>	<b>10</b>	<b>-7</b>

<sup>1</sup> Management Area 3b is a linear inclusion (riparian) in each of these Management Areas and has not been separated for display here. The Forest Plan intends that 50% of 3b fisheries riparian, and 25% of the 3b non-fisheries riparian be old growth.

**FINDINGS:**

Total current old growth habitat exceeds Forest Plan standards in some management areas and in others is below the standard. **Table 2** above implies that old growth decreased between 2006 and 2013 in all management areas. The Forest is within the Forest Plan variability across the combined management areas. No further evaluation is needed.

When the old growth information is compared between 2006 and 2013, it appears there has been some reduction in old growth amounts in the management areas. The decrease can be attributed to wildfire, bark beetles, and increased number of stand exams. The decrease in old growth can be contributed to old growth lost to fire starting in 2008 up to 2012 which was the last year any old growth was lost to wildfire. Also, the reduction of old growth has been due to updated stand exams. Some stands were previously classified as old growth, approximately 25,714 acres and were removed from that category due to extensive stand exams. Also, 14,136 acres that were inventoried changed their status from not being old growth to being designated as old growth.

Even though old growth habitat standards are clearly met in Management Areas Forest-wide, the Forest Plan standards need to be carefully evaluated for each third order drainage where vegetation management projects are planned.

Based on our knowledge of old growth habitat distribution on the Forest, we can conclude that old growth associated species are not currently threatened by current management practices.

**REFERENCES:**

Green, P., J. Joy, D. Sirucek, W. Hann, A. Zack, and B. Naumann. 1992. Old-Growth types of the Northern Region. Unpublished Report. Northern Region, USDA Forest Service.

## **Invasive Plants Item 10**

**OBJECTIVE:** Monitor infestations of leafy spurge, dalmatian toadflax, goatweed and knapweed. New invader emphasis for early detection/eradication of rush skeletonweed, yellow starthistle and all taxonomic aquatic invasive species

**DATA SOURCE:** Inventory of infestations and treatments. FACTS and TERRA computer databases

**FREQUENCY:** 100% every three years.

**VARIABILITY:** Increase in area infested.

**REPORTING PERIOD:** 2010-2013

### **EVALUATION:**

As in previous years, the Forest monitored for all known and suspected invasive plant species, not just the four species identified for monitoring in the Forest Plan.

The objective for invasive plant control on the Forest is a coordinated and effective Integrated Pest Management (IPM) program. Prevention of new invaders through education and awareness, quick eradication of new invaders, and protection of weed-free areas remain high priorities. The Forest has expanded its invasive plant awareness, education, and prevention efforts. The control components of the IPM approach include chemical, manual, and biological measures which are used singly or in combination.

The Forest has initiated several Participating Agreements with partners dedicated to an all taxonomic invasive species management campaign. The partners include: the Montana Conservation Corps (MCC) Invasive Species Strike Team program; the National Fish and Wildlife Foundation (NFWF); Ravalli County Noxious Weed Management District; and the Wilderness Institute of the University of Montana.

The MCC Invasives Species Strike Team program has proved particularly successful in carrying out their detection and treatment assignments in the Selway-Bitterroot, Anaconda-Pintler and Frank Church River of No Return Wildernesses. The Forest has used the program to bolster our highest priority early detection/eradication efforts against the pioneering invasion of rush skeletonweed along the Idaho-Montana border in the upper West Fork Bitterroot River watersheds. These are remote rugged areas that require a well-trained and self-sufficient crew in order to achieve success. Monitoring results from 2010-2013 indicate that the strike teams have performed well in all areas. The NFWF and Ravalli County Agreements have enhanced the early detection/eradication effort against rush skeletonweed in the Frank Church Wilderness and in cross-boundary areas of the West Fork Bitterroot River.

The Forest has worked closely and effectively with the Ravalli County Weed District on a vigorous prevention/education program that focuses on land owners and recreationists in the area.

### **MONITORING RESULTS:**

#### **Noxious Weed Treatment Record of Decision:**

The Bitterroot National Forest invasive plant management program increased ten-fold in scope with the signing of the 2003 Forest Noxious Weed Treatment Project Record of Decision. The document identified new expanded objectives for the Forest and provided a road map for achieving those objectives over the next ten years. It emphasized application of the progressive principles of Integrated Pest Management. The Selway Bitterroot Wilderness Invasive Plant Management Project Record of Decision was signed in the fall of 2009 and allowed invasive plant treatments to begin in wilderness areas that had never been treated before. Table 1 below summarizes the key invasive plant activities that occurred on the Forest between 2010 and 2013.

**Table 1- Program highlights**

Project	Description
1) Backcountry contract – Frank Church Wilderness	2010 was the final year of the on-going (2007-2010) backcountry treatment, mapping, and monitoring project for new invaders and expanding established invaders on trails and remote areas including the FCRNR Wilderness, west side canyon trails, and at-risk grassland sites. A new contract for the FCRNR and West Fork trails was created in 2011 and continues treatments through 2015.
2) Backcountry contract – Selway Bitterroot Wilderness	A new contract for the Selway-Bitterroot Wilderness and surrounding back country areas was created in 2011. Inventory, treatment and monitoring will continue through 2015.
3) Participating Agreement between Ravalli County and Bitterroot Forest	The Forest continually contributes fund to the existing agreement(s) that implement an integrated invasives strategy including: cooperative treatment of high priority invasive plants such as leafy spurge, Dalmatian toadflax, hawkweeds and common bugloss across Forest / private land boundaries; biological control release and monitoring program with the Victor and Darby schools science departments; mapping of new invaders; and improving and delivering invasive weed education to groups in the county. The agreements included fire recovery special funding and regular appropriations.
4) Resource Advisory Committee (RAC)	On Going RAC project: New invaders: Rush skeletonweed, blueweed, common bugloss and hawkweeds. Funding was provided for mapping and treatment. Aquatic invaders project. Provided funds to assist with education. Selway Wilderness initiative – Provided funds for mapping and treatment.
5) Participating Agreement with the Wilderness Institute	2010 was the final year with the WI for mapping, monitoring, and hand pulling invasive plants in the Selway-Bitterroot and Anaconda-Pintler Wildernesses in conjunction with planned NEPA analysis and inventory needs. The program involves the use of volunteers through the WI and promotes education and training about invasive plants.
6) Participating Agreement with Montana Conservation Corps (MCC) Invasive Species Strike Team program	On-going 2010-2014 with the MCC Invasive Species Strike Team program for mapping and treatment work in remote areas and trails on the Bitterroot Forest. Collaborative theater of operations with this program now includes the Nez Perce-Clearwater, Salmon-Challis, Gallatin and Lolo National Forests. The program also promotes education and training for the participants about invasive plants.
7) Participating Agreement with the Western Agricultural Research Center	This project provided funding in 2010, through a pre-existing agreement, to the WARC for the rearing and release of biological control insects on spotted knapweed. The program head retired in 2011 and the program was not funded beyond that.
8) General Invasive Plant Education and Training	a) Wilderness Rangers inspect and enforce weed-free feed/hay requirements in the backcountry throughout the field and hunting seasons. In addition, they inform users about best practices to prevent the increase and spread of invasive weeds. b) Invasive plant awareness and prevention is a major theme in the conservation education program. The Forest continued to develop working relationships with groups like the Bitterroot Garden Club, county schools, and Backcountry Horsemen. c) Forest and County specialists trained permanent and seasonal employees on each ranger district in the identification of new invaders and in the basic weed prevention measures outlined in the Region One supplement to the Forest Service Manual 2080 (R1 2000-2001-1).

Project	Description
9) Roadside and ATV treatment	On-going multi-year contracts in which numerous weed-vector roads were treated throughout the Forest and selected low relief grassland terrain compatible with ATV treatment for a wide variety of invasive plant species.
10) Biocontrol Program	This program involves: releasing biological control insects for several target invasive plant species at priority sites; recording the GPS locations of the release sites; and pre / post release measurements of plant community features and insect establishment.
11) Post-treatment Plant Monitoring	Grassland plant trend plots were reread on Reimel and Sula Peak aerial treatments in 2010.
12) BAER program	2010 was the final year of treatment and monitoring work funded for the 2007 Rombo Fire area. In 2012, funding was provided for treatment and monitoring for the Saddle fire. In 2013, funds were provided for treatment and monitoring for the Mustang, Crandall, Goat/Ditch and SBW fires.
13) Selway-Bitterroot Wilderness EIS	The four national forests involved in managing the SBW completed work on the SBW Invasive Plant Management EIS in fall 2009 and implementation of weed treatments started the following spring.
14) NRIS Database	On-going entry of newly found weed sites in the NRIS database. This database serves the purpose of allowing the quick generation of maps by species and location of invasive weeds. The database allows the program manager to target work objectives and timing for maximum effect and efficiency.
14) Continental Divide Barrier Zone Project	Agencies located along and near the Continental Divide continued joint efforts to determine and stop spread of new invaders from one side of the Divide to the other.
15) Montana Dept of Fish, Wildlife and Parks	The Forest has partnered with MDFWP in an all taxa early detection and education program focused on aquatic invasive species including: zebra mussel, quagga mussel; New Zealand mud snail, Eurasian watermilfoil and curleaf pondweed among others.

### Noxious Weed Inventory and Mapping

The species listed in table 2 are listed as Priority 1A, 1B, 2A, 2B and 3 noxious weed species in the State of Montana. Priority 1A weeds are not present in Montana. Management criteria will require eradication if detected, education and prevention. Priority 1B weeds have limited presence in Montana. Management criteria will require eradication or containment and education. Priority 2A weeds are common in isolated areas of Montana. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts. Priority 2B weeds are abundant in Montana and widespread in many counties. Management criteria will require eradication or containment where less abundant. Management shall be prioritized by local weed districts. Priority 3 weeds are not Montana listed noxious weeds. These regulated plants have the potential to have significant negative impacts. The plant may not be intentionally spread or sold other than as a contaminant in agricultural products. The state recommends research, education and prevention to minimize the spread of the regulated plant. In Idaho there are three categories of weeds. They are EDRR; early detection, rapid response; control and containment.

**Table 2- Noxious Weed Infestation Information**

Montana Priority	Idaho list	Scientific Name	Common Name	FY 2013 Inventory
1A	Contain	<i>Centaurea solstitialis</i>	Yellow starthistle	0.3
	EDRR	<i>Egeria densa</i>	Brazilian Elodea	0
	EDRR	<i>Hydrcharis morsus-ranae</i>	Common/European Frogbit	0

Montana Priority	Idaho list	Scientific Name	Common Name	FY 2013 Inventory
	EDRR	<i>Cobomba caroliniana</i>	Fanwort	0
	EDRR	<i>Azolla pinnata</i>	Feathered Mosquito Fern	0
	EDRR	<i>Heracleum mantegazzianum</i>	Giant Hogweed	0
	EDRR	<i>Salvinia molesta</i>	Giant Salvinia	0
	EDRR	<i>Impatiens glandulifera</i>	Policeman's Helmet	0
	EDRR	<i>Centaurea triumfetti</i>	Squarrose Knapweed	0
	EDRR	<i>Zygophyllum fabago</i>	Syrian Beancaper	0
	EDRR	<i>Hieracium piloselloides</i>	Tall Hawkweed	0
	EDRR	<i>Myriophyllum heterophyllum</i>	Variable-Leaf-Milfoil	0
	EDRR	<i>Trapa natans</i>	Water Chestnut	0
	EDRR	<i>Hieracium glomeratum</i>	Yellow Devil Hawkweed	0
	EDRR	<i>Nymphoides pelata</i>	Yellow Floating Heart	0
1B	Control	<i>Isatis tinctoria</i>	Dyer's woad	0
1B	Contain	<i>Butomus umbellatus</i>	Flowering rush	0
1B	Control	<i>Polygonum cuspidatum</i>	Japanese knotweed complex	.003
1B	Contain	<i>Lythrum spp.</i>	Purple loosestrife	0
1B	Contain	<i>Chondrilla juncea</i>	Rush skeletonweed	122
1B	Control	<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	0
1B	Control	<i>Cytisus scoparius</i>	Scotch broom	.03
1B	Contain	<i>Potamogeton crispus</i>	Curlyleaf pondweed	0
	Control	<i>Hyoscyamus niger</i>	Black Henbane	1
	Control	<i>Polygonum bohemicum</i>	Bohemian Knotweed	0
	Control	<i>Solanum rostratum</i>	Buffalobur	0
	Control	<i>Crupina vulgaris</i>	Common Crupina	0
	Control	<i>Phragmites australis</i>	Common Reed (Phragmites)	0
	Control	<i>Polygonum sachalinense</i>	Giant Knotweed	0
	Control	<i>Sorghum halepense</i>	Johnsongrass	0
	Control	<i>Nardus stricta</i>	Matgrass	0
	Control	<i>Centaurea debeauxii</i>	Meadow Knapweed	0
	Control	<i>Salvia aethiopsis</i>	Mediterranean Sage	0
	Control	<i>Carduus nutans</i>	Musk Thistle	240
	Control	<i>Myriophyllum aquaticum</i>	Parrotfeather Milfoil	0
	Control	<i>Sonchus arvensis</i>	Perennial Sowthistle	0
2A	Contain	<i>Senecio jacobaea</i>	Tansy ragwort	0
2A	Control	<i>Hieracium caespitosum</i>	Meadow/yellow hawkweed	25
2A	Control	<i>Hieracium aurantiacum</i>	Orange hawkweed	26
2A		<i>Ranunculus acris</i>	Tall buttercup	393
2A	Contain	<i>Lepidium latifolium</i>	Perennial pepperweed	0
2A	Contain	<i>Iris pseudacorus</i>	Yellowflag iris	0
2A	Control	<i>Echium vulgare</i>	Blueweed (Vipers Bugloss)	10
	Control	<i>Anchusa arvensis</i>	Small Bugloss	.07
2A	Contain	<i>Berteroa incana</i>	Hoary alyssum	53
2B	Contain	<i>Cirsium arvense</i>	Canada thistle	1,030
2B	Contain	<i>Convolvulus arvensis</i>	Field bindweed	0
2B	Contain	<i>Euphorbia esula</i>	Leafy spurge	119
2B	Contain	<i>Cardaria draba</i>	White top	1
2B	Control	<i>Centaurea repens</i>	Russian knapweed	0
2B	Contain	<i>Centaurea biebersteinii</i> *	Spotted knapweed *	274,000*

Montana Priority	Idaho list	Scientific Name	Common Name	FY 2013 Inventory
2B	Contain	<i>Centaurea diffusa</i>	Diffuse knapweed	.06
2B	Contain	<i>Linaria dalmatica</i>	Dalmatian toadflax	89
2B		<i>Hypericum perforatum</i>	St. Johnswort	1,490
2B		<i>Potentilla recta</i>	Sulfur cinquefoil	1,260
2B		<i>Tanacetum vulgare</i>	Common tansy	510
2B	Contain	<i>Chrysanthemum leucanthemum</i>	Oxeye daisy	4,710
2B	Contain	<i>Cynoglossum officinale</i>	Houndstongue	2,176
2B	Contain	<i>Linaria vulgaris</i>	Yellow toadflax	17
2B	Contain	<i>Tamarix spp.</i>	Saltcedar	0
	Contain	<i>Aegilpos cylindrica</i>	Jointed Goatgrass	0
	Contain	<i>Milium vernale</i>	Milium	0
	Contain	<i>Carduus acanthoides</i>	Plumeless Thistle	0
	Contain	<i>Conium maculatum</i>	Poison Hemlock	17
	Contain	<i>Tribulus terrestris</i>	Puncturevine	0
	Contain	<i>Onopordum acanthium</i>	Scotch Thistle	0
	Contain	<i>Bryonia alba</i>	White Bryony	0
3		<i>Bromus tectorum*</i>	Cheatgrass*	10,000
3	EDRR	<i>Hydrilla verticillata</i>	Hydrilla	0
3		<i>Elaeagnus angustifolia</i>	Russian olive	0

\*Estimated acres as these species are found profusely throughout the Forest and have not been a priority for inventory.

### Control Efforts

The Forest monitored and treated with herbicides approximately 6,052 acres of invasive plants in 2010; 4,064 acres in 2011, 6,703 acres in 2012 and 8,180 acres in 2013. All treatments complied with the environmental protection measures itemized in Table 14 of the 2003 Noxious Weed Treatment Project Record of Decision, the Selway Bitterroot Wilderness Invasive Plant Management Project Record of Decision and the Record of Decision for the Frank Church-River of No Return Wilderness Noxious Weed Treatment Final Supplemental Environmental Impact Statement. MCC Invasive Species Strike Teams (two teams of 4 individuals), two contracting operations and one Forest Service force account two-person crew accomplished all the treated acres in each of the treatment years.

**Yellow starthistle:** Years ago, a small infestation was located along the Selway road, between Paradise and the Magruder crossing and was treated and mapped. One plant was found in 2004 and again treated but none has been found since.

**Knotweed complex:** A couple of knotweed plants have been found in landscaping around the government housing at both Darby and Sula districts. These plants have been treated and none have been found since.

**Rush skeletonweed:** Several new plants were found at the existing Chicken Creek infestation in the fall of 2010 but no new plants have been found since. No new plants were found in the Coal Creek drainage just a couple of miles from the 2006 Deer/Chicken Creek infestation. The site located at Fawn Ridge has received steady attention with chemical treatment since its discovery. The known site, treated in past years, is contained at 57 acres and appears to be diminishing in size. The Rush Skeletonweed polygons along the Dwyer/Smith trail were treated on the multi-year backcountry contract. Existing sites are slowly diminishing in size but to the use of Milestone and surfactant, but new sites have been found near these over the years. One new site was found on Black Ridge in 2013. MCC Invasive Strike Teams were instrumental in the successful containment of these infestations and in the early detection/survey work for new pioneering infestations.

**Scotch broom:** In 2003 one plant was found along the roadside near the main Lake Como campground. The plant was dug up, the site treated and no plants have been found since.

**Black Henbane:** A few plants have been found northeast of Critter Crossing in the Medicine Tree area which have been treated. There is a great deal of it on private adjacent to the forest boundary.

**Musk thistle:** Commonly found on disturbed sites such as timber sale landing area. A biocontrol weevil moves on its own to most of these areas so large patches are not usually found. This plant is listed as noxious in Idaho but not Montana.

**Hawkweed complex:** Yellow hawkweed was found in the Martin Creek area a number of years ago. It was treated and not seen again until 2011. An infestation of Orange Hawkweed was found off the Skalkaho Rye road that same year and treated with milestone. In 2013, a large mixed infestation of orange and meadow hawkweed was found off of several East Fork roads and was treated with Milestone herbicide. A few other small infestations have been found across the forest in the past few years. MCC Strike Teams were instrumental in the containment and control efforts of this specie in proposed timber sale areas in the East Fork Bitterroot River watershed and along trail systems leading into the A-P Wilderness. Mapped infestations have been reduced by 80-90% after two years of treatment by the strike teams.

**Tall buttercup:** Found mostly on the Westside canyons and in some meadows. It responds well to Milestone herbicide treatment.

**Blueweed:** The first known infestations of blueweed on the Forest were found in McCoy Creek. Since that time several more small patches have been found in the North Fork of Rye Creek, Harlan Gulch, Deer Mountain areas and one plant on the Two Bear road north of Sleeping Child Creek. All sites have been sprayed with metsulfuronmethyl and monitored annually.

**Small/Common bugloss:** One plant was found at the end of a road in the Rocky Knob area and other in the field behind the Supervisors Office. Both plants were pulled and treated and have not been found since.

**Hoary Alyssum:** is a new invader that has exploded over the last few years. It's found mostly along roadsides in the valley bottom, but has been found on the Forest around Paradise, a few plants at Magruder pasture and at the bottom of Prospect Ridge in the Frank Church Wilderness. All sites have been treated and are monitored regularly.

**Canada thistle:** This species has been associated with timber sales and roadside areas. It is typically treated only when found with other weed species. The one-acre patch in Blue Joint Meadows continues to be monitored and treated when necessary.

**Leafy spurge:** In past years there were an increasing number of new infestations, however due to diligent spraying over the years, the number of plants at each site has greatly been reduced and no new infestations have been found. The Little Sleeping Child, main Sleeping Child and Skalkaho drainages supports several small infestations that have been receiving treatments—both chemical and biological. Eradication of this weed species continues to be the goal. Aphona beetles are established on these sites.

**Whitetop:** This species occurs in Ravalli County, and has only been identified at one site on the forest. It was treated and repeated monitoring has not turned up any new plants.

**Spotted knapweed:** Milestone at a rate of 6 ounces of herbicide per acre was used and good containment results are apparent in areas due to the diligent efforts of District spray crews and contractors. Spotted knapweed was treated on most forest trails and roads, and consequently a reduction in occurrence and plant density is resulting from these spray efforts.

**Diffuse knapweed:** This species was located during field surveys being conducted in the burned areas for sensitive plant populations in 2001. It is a small infestation (0.1 acre) in the Whiskey Gulch area and turned out to be on private land.

**Dalmatian toadflax:** The largest infestation of this species occurs along the Sweeney Creek road. Smaller infestations have been found in the Gold Creek and Sawmill drainages.

**St. Johnswort:** Infestations occur along the Magruder Corridor, and along many of the west side canyon trails. The largest infestation is in the Camas Creek area along the road sides. Beetles have been established. Efforts are aimed at keeping this species from becoming widely established in the Selway-Bitterroot Wilderness.

**Sulfur cinquefoil:** This species has been treated with Milestone and has been found near roads and trails, as well as in areas far removed from roads or trails. It has been commonly associated with knapweed and in some instances has out-competed knapweed.

**Common tansy:** This species was added to the State of Montana noxious weed list a few years ago. Many roadsides have been treated along with knapweed.

**Oxeye daisy:** This species is found mostly along roadsides, trails and riparian areas. It typically occurs with spotted knapweed. Treatments are ongoing in an attempt to keep it from spreading off of roads and trails.

**Houndstongue:** Found along road sides, trail sides, timber sales, and other disturbed areas particularly within grazing allotments. This plant began expanding in 2009 and spray treatments have been expanded in an attempt to reduce spread. MCC Invasive Species Strike Teams have proved highly effective in containing the expansion of HT populations in the Sula Basin, Camp Creek watershed and East Fork Bitterroot River watersheds with mechanical (hand-logging/bagging) and chemical treatments. Investations have been reduced in these areas by 70-80% as a result of their efforts.

**Yellow toadflax:** A few small infestation of yellow toadflax have been found on the Forest such as the one located on the Sula Ranger District compound. Yellow toadflax is often found in small patches along the highway and is easier to kill than dalmatian toadflax. It's been treated in all locations on the Forest.

**Poison Hemlock:** This species is listed in Idaho but not Montana. It is found in the campground at Paradise and has been treated over the last several years. The population is greatly decreased, but still present.

**Cheatgrass:** It is not formally listed at this time as a noxious weed in Montana. Cheatgrass is an invasive species of annual grass that has demonstrated the ability to form replacement monocultures on sites where effective herbicide (and in a few instances biocontrol) treatment has eliminated a former monoculture of spotted knapweed. This species has shown that, under certain conditions, it can derail the objective of reinstalling a vigorous native plant community.

**Aquatic Invasive Species:** A collaborative effort between the Forest

### Biological Control

A former contract, a cooperative working relationship with the Montana State University Agricultural Experiment Station, Ravalli County's Victor and Darby school programs and the MCC Invasive Species Strike Team program have contributed to the expansion and effectiveness of the biological control program. Although target species for biological agent introductions in the past have been leafy spurge, Canada thistle, and spotted knapweed, in recent years they have only been for spotted knapweed. Table 3 describes the biological control accomplishments for the 2010 – 2103 seasons.

**Table 3- Biological Control Agent Releases**

Agent (species)	Target weed spp.	Year released	Number released	Acres treated
<i>Cyphocleonus achates</i>	Spotted knapweed	2010	9190	290
<i>Cyphocleonus achates</i>	Spotted knapweed	2011	2050	205
<i>Cyphocleonus achates</i>	Spotted knapweed	2012	2700	75
<i>Cyphocleonus achates</i>	Spotted knapweed	2013	3000	55

Monitoring of biological control releases is ongoing. Effectiveness and population survival are monitored with the goal of looking at long-term survival. New releases are typically given two years to transition into new environments before monitoring is conducted. Good results are being seen on knapweed where biocontrols have been established in the valley bottoms for many years. Knapweed is difficult to find on many of these sites.

### Invasive Plants in Wilderness

A basic weed-monitoring program (visual observations) has been in place for many years along trails and at campsites in the Anaconda-Pintler Wilderness, Selway-Bitterroot Wilderness and the Frank Church River of No Return Wilderness areas. Wilderness rangers have filled out weed location cards and/or have mapped weed locations. Recent observations are summarized below.

**Anaconda-Pintler Wilderness:** Invasive plants identified in the Anaconda-Pintler Wilderness include knapweed on the East Fork Trail near the trailhead and knapweed, Canada thistle, and tall buttercup in the Kurtz Flat area and beyond Star Falls. The trail and campsites have been treated every few years on a rotation bases.

**Selway-Bitterroot Wilderness:** An EIS for weed treatment in the Selway Bitterroot Wilderness (SBW) was completed in the fall of 2009 allowing treatment for Idaho trails as well as the Montana trails formerly analyzed in the 2003 Forest EIS. Weed treatments in the White Cap and Canyon Creek drainages were done in 2010. In 2011 a backcountry contract was let for treatment and inventory of all trails in the SBW. By 2013, all trails in the wilderness had been inventoried, and initial treatments started. The contract is ongoing through 2015.

Invasive plants identified along trails leading directly into the SBW include:

- Ø Knapweed -present for many years along trail corridors, sometimes in isolated patches. Also present on south facing slopes some distance above the trail especially along the Kootenai, Bass and Big Creek drainages as well as Indian Creek and all trails out of Paradise in Idaho. South facing slopes along the west side canyons have been treated with good results and greatly reduced the populations to a few scattered plants.
- Ø Canada Thistle -found in small patches trailside.
- Ø Tall Buttercup - found scattered in trace amounts on most trails on the west side of the Bitterroot Valley.
- Ø Common Tansy-found in trace amounts along Bass Creek Trail growing in trailside clumps.
- Ø Sulfur Cinquefoil- found in similar habitat to knapweed. It is not limited to the trailside, but tends to run up the hillside. It is found on many of the trails out of Paradise.
- Ø St. Johnswort – found along Sweathouse Trail before the wilderness boundary and in an isolated 1/2 acre patch in the South Fork of Sweeney Creek as well as White Cap trail out of Paradise.
- Ø Oxeye Daisy -Scattered trailside plants.

Monitoring of efforts to spot spray knapweed along trails<sup>1</sup> indicates that the canopy coverage of knapweed has been reduced by over 95%. Non-target species do not appear to have been affected by spot treatments (dead or wilting plants not observed).

All wilderness trailhead bulletin boards have a sign informing users of weed free feed regulations. Most Wilderness trailheads have noxious weed education posters.

**Frank Church-River of No Return Wilderness:** In 2010, over 650 acres of spotted knapweed and rush skeletonweed were monitored and treated in the Frank Church Wilderness. 221 acres were monitored and treated in 2011, 1,355 acre in 2012 and 2,126 acres in 2013. Treatment areas included the Upper Selway Trails, the Salmon River trail from Horse Creek to Lantz Bar and Fawn Ridge and the Prospect to Dwyer Trails. Trails between the Elk City road and the Main Salmon River trail were also monitored for invasives. Only a few small infestations of spotted knapweed were found in the later area and have been found and treated to date.

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<sup>1</sup> Monitoring consisted of visual observations by a wilderness ranger.

## Sensitive Plant Species Inventories

**OBJECTIVE:** To update inventory information on sensitive plant species in order to expand our knowledge of species' distribution and habitat.

**DATA SOURCE:** Sensitive plant species inventories.

**FREQUENCY:** Annually.

**REPORTING PERIOD:** 2004.

**EVALUATION:**

Inventories in 2004 emphasized the Middle East Fork fuel reduction and salvage project on the Sula Ranger District. Other projects, including smaller fuel reduction and salvage projects were also surveyed for sensitive plants. A total of about 10,000 acres were surveyed, 4,500 of which were within the Middle East Fork analysis area. The turkey-peas (*Orogenia fusiformis*) population in the Tepee Creek area of the Middle East Fork was expanded with several new subpopulations located. Two other turkey-peas populations were found on the West Fork District in areas where small salvage sales were proposed. Mitigations for all these populations were documented in the project analyses and included helicopter harvest, winter harvest, or avoidance during skyline harvest.

Two populations of hollyleaf clover (*Trifolium gymnocarpon*) and two populations of woolly-head clover (*Trifolium eriocephalum*) were found on the West Fork Ranger District in a proposed fuel reduction project in the Coal Creek drainage. Activities proposed in areas where plants are located will include winter timber harvest or hand-thinning.

In addition two new dwarf onion (*Allium parvum*) populations were found within the Middle East Fork area. These populations are not in areas where activities are proposed. Monitoring of some of the sensitive plant populations burned in the 2000 fires was continued.

Populations of Lemhi penstemon (*Penstemon lemhiensis*), hollyleaf clover (*Trifolium gymnocarpon*), woolly-head clover and candystick (*Allotropa virgata*) will be monitored for several years to determine post-fire effects. Monitoring results are disclosed in a separate document within this monitoring report.

Table 1 displays the sensitive species and species of special concern we found as a result of surveys in 2004.

**Table 1 - New Populations of Sensitive Plants and Species of Special Concern Found in FY2004**

Common Name	Scientific Name	# New Populations
Dwarf onion	<i>Allium parvum</i>	2
Turkey-peas	<i>Orogenia fusiformis</i>	3
Hollyleaf clover	<i>Trifolium gymnocarpon</i>	2
Woolly-head clover	<i>Trifolium eriocephalum</i>	2

**SPECIES INFORMATION (for species found in FY2004):**

**SENSITIVE PLANT SPECIES**

**Dwarf onion (*Allium parvum*)**

Dwarf onion is a perennial herb in the Lily (*Liliaceae*) Family. It occurs in dry, open forests and grasslands in the montane zone. Dwarf onion is found in California, Oregon, Nevada, Idaho, Utah and Montana (where it is on the periphery of its range). Before 1993, dwarf onion was known from only three locations in the state, all in Ravalli County. Project associated field surveys have found 20 new populations since then. All of these populations are located in the southern end of the Bitterroot National Forest. The main threat to dwarf onion is spotted knapweed

competition, because both species prefer bare soil on open, south-facing slopes. Because of this, the Region added dwarf onion to the sensitive plant list in the spring of 1999 and has retained it on the 2004 list revision. Two new populations of dwarf onion were found during the 2004 field season.

**Turkey-peas** (*Orogenia fusiformis*)

Turkey-peas is a perennial herb in the Parsley (*Apiaceae*) Family. It is associated with a variety of dry site habitats from grasslands to open ponderosa pine to Douglas-fir/pinegrass types. Turkey-peas is found in California, Oregon, Idaho and Montana (where it is on the periphery of its range). There are currently 12 known populations of turkey-peas in Montana; seven of these are on the Bitterroot National Forest. In 2002 two populations were found in the North Fork of Rye Creek extending the range of turkey-peas north into the Darby Ranger District. Before that it was only known on the Bitterroot National Forest from the Sula and West Fork Ranger Districts. The new populations were found in an area burned in 2000, leading us to speculate that there may be a dormant seed bank stimulated by fire or other disturbances. Turkey-peas has also been found growing in old roadbeds and along the edges of trails. Since turkey-peas is a small plant with fine, linear leaves it is also possible that it has been overlooked in past surveys. There is a short window of opportunity for surveying turkey-peas since it is only apparent above ground for a couple of months in late spring, early summer. Three new populations were found in 2004 one of which consisted of several subpopulations, resulting in an expansion of an existing population.

**Woolly-head clover** (*Trifolium eriocephalum*)

Woolly-head clover is a native perennial in the Pea (*Fabaceae*) Family. It is found in dry ponderosa pine, Douglas-fir, or mixed conifer stands, as well as moist draws and stream terraces. Woolly-head clover is often associated with disturbance—populations occur at a campground, trailheads and along old skid trails, roads, and trails. It is on the periphery of its range in Montana, occurring in southeast Washington, northeast Oregon, Idaho, and Montana. There are eight known populations on the Bitterroot National Forest all occurring in the West Fork Ranger District. Two of these populations were found during surveys in the summer of 2004.

**Hollyleaf clover** (*Trifolium gymnocarpon*)

Hollyleaf clover is a native perennial in the Pea Family and is found in grasslands, open ponderosa pine and Douglas-fir/pinegrass habitats. In Montana it is on the periphery of its range, which is from northeastern Oregon south to northeastern California, Arizona, New Mexico, and east to Montana. Populations in the southwest are often associated with sagebrush (*Artemisia tridentata*) habitats. There are seven populations of hollyleaf clover on the Bitterroot NF, two of these were found during 2004 surveys.

**POPULATION INFORMATION**

In October 2004, the Northern Region of the Forest Service revised its sensitive species list. Changes on the Bitterroot National Forest included taking off candystick (*Allotropa virgata*), marsh felwort (*Lomatogonium rotatum*), the lichen species *Cetraria subalpina*, and the Montana distribution of poor sedge (*Carex paupercula*). Poor sedge remains on the list for Idaho, which includes a portion of the Bitterroot National Forest.

Table 2 includes 28 of the sensitive plant species and the number of known locations on the Bitterroot NF. It compares numbers of known populations in 1991, when the Forest's Sensitive Plant Program began, to numbers of presently known populations. These numbers have been adjusted from previous years based on combining adjacent populations. An additional five species are suspected to occur on the Forest and are not included in this table.

**Table 2 - Bitterroot National Forest Sensitive Plant Species Sites  
(Vascular and Non-Vascular Species)**

SPECIES	KNOWN IN 1991	KNOWN IN 2004	DISTRICT
Bitterroot bladderpod ( <i>Lesquerella humilis</i> )	3	4	Stevensville
Bryoria subdivergens (lichen)	1	1	Stevensville
California false hellebore ( <i>Veratrum californicum</i> )	0	1	Sula
Crested shield-fern ( <i>Dryopteris cristata</i> )	0	2	Darby
Dwarf onion ( <i>Allium parvum</i> )	3	23*	Darby, Sula, West Fork

SPECIES	KNOWN IN 1991	KNOWN IN 2004	DISTRICT
Dwarf purple monkeyflower ( <i>Mimulus nanus</i> )	1	2	West Fork
English sundew ( <i>Drosera anglica</i> )	1	1	Sula
Evermann's fleabane ( <i>Erigeron evermannii</i> )	2	2	Darby, West Fork
Giant helleborine ( <i>Epipactus gigantea</i> )	0	1	West Fork
Spiny greenbush ( <i>Glossopetalon nevadense</i> )	1	3	West Fork
Hollyleaf clover ( <i>Trifolium gymnocarpon</i> )	2	7*	West Fork
Idaho goldenweed ( <i>Haplopappus aberrans</i> )	2	4	West Fork
Lemhi penstemon ( <i>Penstemon lemhiensis</i> )	4	28	Darby, West Fork, Sula
Meesia triquetra (moss)	0	1	Darby
Payette penstemon ( <i>Penstemon payettensis</i> )	2	2	West Fork
Poor sedge ( <i>Carex paupercula</i> )- now only listed in Idaho	0	1	Darby
Primrose monkeyflower ( <i>Mimulus primuloides</i> )	1	3	Sula
Puzzling halimolobos ( <i>Halimolobos perplexa</i> )	0	8	West Fork
Rocky Mountain paintbrush ( <i>Castilleja covilleana</i> )	6	28	West Fork, Sula
Rough fleabane ( <i>Erigeron asperugineus</i> )	1	1	Stevensville
Sandweed ( <i>Athysanus pusillus</i> )	3	7	Stevensville, Darby
Scalepod ( <i>Idahoia scapigera</i> )	1	4	Stevensville
Storm saxifrage ( <i>Saxifraga tempestiva</i> )	3	3	Darby, West Fork, Sula
Tapertip onion ( <i>Allium acuminatum</i> )	1	1	Sula
Turkey-peas ( <i>Orogenia fusiformis</i> )	3	7*	West Fork, Sula, Darby
Western boneset ( <i>Eupatorium occidentale</i> )	3	8	All
Western pearl flower ( <i>Heterocodon rariflorum</i> )	1	3	Darby
Woolly-head clover ( <i>Trifolium eriocephalum</i> ssp. <i>arcuatum</i> )	3	8*	West Fork

\*New locations were found in 2004

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- Hitchcock, C.L., A. Cronquist, and M. Ownbey. 1959. Vascular Plants of the Pacific Northwest (Part 4: Ericaceae through Campanulaceae). University of Washington Press, Seattle, WA.
- Lackschewitz, K. 1991. Vascular Plants of West-Central Montana--Identification Guidebook. Gen. Tech. Rep. INT-277, Ogden, UT, U.S. Dept. of Agriculture, Forest Service.
- MTNHP (Montana Natural Heritage Program). 2002. Internet Field Guide. <http://nhp.nris.state.mt.us/>
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## Rare Plant Species Inventories and Monitoring

**OBJECTIVE:** To update inventory information on rare plant species, found on the Bitterroot National Forest, in order to expand our knowledge of species' distribution and habitat.

**DATA SOURCE:** Rare plant species inventories.

**FREQUENCY:** Annually.

**REPORTING PERIOD:** 2010-2013

**MONITORING:** Several species have been monitored during this time period and continue to be monitored yearly or every other year.

- English Sundew, *Drosera anglica*
- Rocky Mountain Paintbrush, *Castilleja covilleana*
- Lemhi Penstemon, *Penstemon lemhiensis*

**EVALUATION:**

**MONITORING RESULTS:**

**Table 1 – Rare Plant Species Inventories Found between 2010-2013**

Rare Plant Species Inventories found between 2010-2013	
Vascular Sensitive Species	
Species	Habitat
<i>Allium parvum</i> Dwarf onion	Grasslands and open ponderosa pine.
<i>Castilleja covilleana</i> Rocky Mountain paintbrush	Grasslands, ponderosa pine, and Rocky alpine.
<i>Eupatorium occidentale</i> Western boneset	Talus sites.
<i>Idahoia scapigera</i> Scalepod	Vernally moist rocky areas.
<i>Mimulus ampliatus</i> Stalk-leaved monkeyflower	Open seeps and vernal moist soil along slopes, cliffs, and streams from the valleys to the subalpine zones.
<i>Penstemon lemhiensis</i> Lemhi penstemon	Grasslands, Ponderosa pine stands, and Sagebrush areas.
<i>Pinus albicaulis</i> White bark pine	Mixed conifer stands at treeline.
<i>Trifolium gymnocarpon</i> Hollyleaf clover	Grasslands, Ponderosa pine, and Doug fir stands.

Rare Plant Species Inventories found between 2010-2013	
<b>Vascular Species Of Concern</b>	
<i>Allium columbianum</i> Columbian onion	Found in moist swales along vernal ponds and streams in valleys.
<i>Allium simillimum</i> Dwarf Onion	Found in meadows and grasslands in montane and lower subalpine zones in moist gravelly soil.
<i>Pedicularis contorta</i> var. <i>rubicunda</i> Selway Coil-beaked Lousewort	Ridgetops and meadows in the upper subalpine and alpine zones.
<b>Fern And Fern Allies Species Of Concern</b>	
<i>Botrychium lunaria</i> Common Moonwort	Montane meadows and grasslands in disturbed sites from low to moderate elevations.
<i>Botrychium simplex</i> Least Moonwort	Montane meadows and grasslands in disturbed sites from low to moderate elevations.

**POPULATION INFORMATION:**

The Northern Region of the Forest Service revised its sensitive species list. Changes on the Bitterroot National Forest included taking off the species Turkey -peas (*Orogenia fusiformis*).

In addition to locating several new populations of several rare plant species on the Forest, there were many populations of species that were revisited between 2010-2013. The populations were reexamined to determine trends for those populations.

**Table 2 – Rare Plant Species that were revisited between 2011-2013**

Rare Plant Species that were revisited between 2011-2013	
Species	Habitat
<i>Arctostaphylos patula</i> Greenleaf Manzanita	Rocky soil in open coniferous forests in the montane zone.
<i>Athysanus pusillus</i> Sandweed	Vernally moist rocky areas.
<i>Castilleja covilleana</i> Rocky Mountain paintbrush	Grasslands, ponderosa pine, and Rocky alpine.
<i>Glossopetalon spinescens</i> Green-bush	Granite outcrops.
<i>Idahoia scapigera</i> Scalepod	Vernally moist rocky areas.
<i>Mimulus nanus</i> Dwarf purple monkey flower	Grasslands, Sagebrush, and Open Ponderosa pine stands.
<i>Pedicularis contorta</i> var. <i>rubicunda</i> Selway Coil-beaked Lousewort	Ridgetops and meadows in the upper subalpine and alpine zones.

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