

# INVASIVE SPECIES ACTION PLAN

## Black Hills National Forest

*Three Year Actions  
For the Prevention and Management of Invasive Species*



FY 2010 - 2012

Rocky Mountain Region  
USDA Forest Service

June 2010

Signed */s/ Craig Bobzien*

CRAIG BOBZIEN  
Forest Supervisor

Date *June 16, 2010*

## Introduction:

This Action plan is designed to serve as a strategic tool for implementation of the invasive species management program on the Black Hills National Forest, and is prepared for use in:

- Project scheduling in a Forest-wide, strategic manner in line with Forest priorities.
- Allocating Forest-wide resources for the invasives program.
- Establishing an invasive species program growth rate appropriate for the Forest, with leadership team concurrence.
- Monitoring and evaluation of progress on planned activities.

This action plan is meant to be reviewed and adjusted annually as needed to reflect emerging needs, shifting priorities, or changes in available funding. Much of the information in this strategy comes from the Forest Plan as amended, and the Black Hills National Forest Noxious Weed Management Plan Environmental Assessment and Decision Notice signed January 18, 2003.

### 1) Critique of the 2010 Action Plan and Summary of Activities:

- a) Accomplishments from the 2002 -2009 action plan;
  - i) Treatment acres have been up over the past few years, in 2009 treatment acres dropped largely because of reduced amounts of restoration dollars.

<u>Year of Treatment</u>	<u>Acres Treated</u>
2002	7,515
2003	14,700
2004	15,744
2005	13,882
2006	15,685
2007	11,649
2008	11,523
2009	10,206
2010	8,700 planned

- ii) Additional accomplishments;
  - (1) Northern Hills monitored 464 acres of treatment in 2009.
  - (2) Through our monitoring on other districts we are seeing an increase in and new locations of:
    - (a) Oxeye Daisy, Common Tansy, St. Johnwort, Yellow Toadflax, Spotted Knapweed and Leafy Spurge.
  - (3) We continue to work on the KV Weed Study with Rocky Mountain Research Station..

### 2) Priority Species and Populations on the Black Hills NF

The species listed below are priority invasive species, based on criteria in the “Black Hills National Forest Noxious Weed Management Plan Environmental Assessment”, signed in FY03: 1) Abundance is low, 2) control is mostly feasible, 3) the ability to establish dominance in plant communities, and 4) capable of invading a variety of relatively healthy ecosystems.

Known locations of these species are shown on Appendix A, Maps 1-8.

COMMON NAME	SCIENTIFIC NAME	FOREST PRIORITY	ACRES * INVENTORIED
Sulphur cinquefoil	<i>Potentilla recta</i>	High	T**
Leafy spurge	<i>Euphorbia esula</i>	High	7,151
Russian knapweed	<i>Centaurea repens</i>	High	1
Yellow toadflax	<i>Lineria vulgaris</i>	High	4605
Dalmation toadflax	<i>Linaria genistifolia</i>	High	193
Spotted knap-weed	<i>Centaurea maculosa</i>	High	2877
Saltcedar	<i>Tamarix ramosissima</i>	High	32
Oxeye daisy	<i>Chrysanthemum leucantheman</i>	New found after 2002	1612

\* Acre figure are updated with 2008 data.

\*\*Trace less than 1 acre.

Aquatic nuisance species are an emerging issue requiring more management awareness and response. Additional information and the complete ANS Plan are in Appendix B.

### 3) Priority treatment areas 2010-2012

The table below identifies planned priority projects and desired annual acreage treatment levels, by major project area. Acreage is subject to change. New Forest Plan direction set the priority for management of invasive species. Control noxious-weeds using the following priority order:

- i) R2 sensitive and species of local concern occurrences of snails and plants.
- ii) Research Natural Areas.
- iii) Botanical Areas.
- iv) New invaders.
- v) New areas of infestation.
- vi) Spreading or expanding infestations.
- vii) Existing infestations.

Year	Location	Treatment
2010	Campgrounds and trailheads	40 acres
	Treatment supported by other projects	264 acres
	Target assignment (NFVW)	785 acres
	Timber sale areas (KV)	6840 acres
	K2	No Funding
	Other	832 acres
	<b>FOREST TOTAL</b>	<b>8761 acres</b>
2011	Campgrounds and trailheads	200 acres

	Treatment supported by other projects	745 acres
	Target assignment (NFVW-NW)	1,500 acres
	Timber sale areas (KV)	10,000 acres
	K2 -Other	2000 acres
	Fire restoration (NFN3 and BAER)	500 acres
	<b>FOREST TOTAL</b>	<b>14,445 acres</b>
2012	Campgrounds and trailheads	230 acres
	Treatment supported by other projects	795 acres
	Target assignment (NFVW-NW)	2,000 acres
	Timber sale areas (KV)	10,500 acres
	K2	2,000 acres
	Fire restoration (NFN3 and BAER)	500 acres
	<b>FOREST TOTAL</b>	<b>16,025 acres</b>

### Several New Invasives have been found on or near the National Forest

1. Northern Hills - Meadow Knapweed (Tyrol).
2. Northern Hills - Giant knotweed.
3. Hell Canyon \_ Whitetop near the Forest (Custer County have over 400 Acres).

#### 4) Road Corridor Invasive Species Inventory/Treatment Schedule (Early Detection/ Rapid Response)

The Black Hills National Forest has an estimated 5,238 miles of system road, this includes 979 miles of Level 3, 4, and 5 roads and the remaining 4,259 miles in Level 1 and 2 type roads (information from Forest-Wide Roads Analysis Report October 2005). These numbers will be changing as Forest Travel Management is implemented. The guideline from the R-2 Strategy to conduct inventory and/or treatment of Levels 3, 4, and 5 roadways on a three-year cycle and inventory and/or treat Level 1 and 2 roads on a five-year cycle is a good idea, but may be cost prohibitive on the Hills. To accomplish the Strategy's goal we would need to inventory and/or treat 1,179 miles of road each year. If funding were available we would strive to do this work. Unless additional funds were available we would propose to do this work within timber sale areas funded by KV and in conjunction with our other projects in a 10-year cycle on at least 524 miles per year.

<b>Roads: Inventory Treatment timetable</b>		
<b>Frequency</b>	<b>Road Number</b>	<b>Primary watch species if known / suspected</b>
2010	Explore idea of a complete survey over 2-3 years (Look for funding). Districts are working on this as Time and dollars are available.	All species
2011 & 2012	Continue survey as funded	All species

#### 5) Trail Corridor Invasive Inventory /Treatment Schedule (Early Detection/ Rapid Response)

<b>Trails: Inventory/ Treatment timetable</b>		
<b>Frequency</b>	<b>Trail Number</b>	<b>Primary watch species</b>
2010	All trails	Continue to train recreation and trail folks to recognize weeds and collect information.
Annually	Any trails	Collect weed data on all trails worked by crews. Hell Canyon continues to collect trail information.
Every 3 years	Un-inventoried trails	Starting in 2011, schedule trails that have not been inventoried.

#### 6) Invasive species inventories and database

- a) Ensure all future inventories (including county, volunteers, etc) contain minimum fields for FS data standards per TERRA database.

<b>When</b>	<b>Data sets to evaluate / migrate New inventory Needs</b>	<b>Action / Who</b>
Spring 2010	Existing Forest weed data sets	Migration in progress, with RO
2010	Ensure county(s) is aware of required fields for USFS inventory	District Program lead
FY2010 - 2012	Work to attain funding for additional survey listed below in b).	Staffs and SO specialist.

- b) Additional areas needing survey as funding becomes available.

<b>Inventory Gaps</b>			
<b>District</b>	<b>Location</b>	<b>Reason</b>	<b>Action/Who/When</b>
Bearlodge	No. End Bearlodge		
Bearlodge	Addition	Little activity	
Hell Canyon	Southern end of District	Little timber activity	Working on closing these gaps
Mystic *	Area near Mystic	Rough terrain	
Mystic	Along Ditch Creek Rd	Steep terrain	
Mystic	Along Rapid Creek	Semi-vertical slope	
Mystic	Along Slate Creek	Semi-vertical slope	
No. Hills	Runkle/Elk		
No. Hills	Pillar Peak	Little activity	
No. Hills	Wildcat		

\* Mystic has treated in these areas but not completed full inventories.

## 7) Coordinated Weed Management

Upon recommendation of the Black Hills National Forest Advisory Board's Invasive Species Subcommittee, we developed a coordination group in 2006 and 2007 involving many partners in the greater Black Hills area (Black Hills Invasive Weed Management Coalition). Since that time the South Dakota Invasive Species Management Association (SISMA) has become active (<http://www.sisma-sd.org/>). We are planning a meeting in October to see if The Black Hills Group can be rolled into the SISMA as an information sharing sub-group. We are also seeking additional Weed Management Areas to be involved in, and are particularly committed to those that encompass or are adjacent to NFS lands. We strive to expand on and add to the existing agreements listed below:

- a) Weed Management Areas (MA)

<b>District</b>	<b>Name</b>	<b>Acres</b>	<b>Weeds</b>
Hell Canyon	Beaver Creek MA	300,000/29,000 NFS	State listed

Hell Canyon	French Creek MA	Approximately 100,000	State listed
Mystic *	Deerfield/Hill City MA (looking for funding)	100,000	Canada thistle Leafy spurge
Mystic	Doty Springs MA	75	Spotted knapweed
Northern Hills	Titon WMA	8199	St.Johns wort, Spotted Knapweed, Houndstounge, Toadflax, Canada Thistle, Tansy

b) Unofficial Weed Management Areas/County Agreements

District	Name
Hell Canyon	Custer County
Hell Canyon	Custer Co. Conservation District
Hell Canyon	Fall River County
Hell Canyon	Jewel Cave (NPS)
Hell Canyon	Wind Cave (NPS)
Hell Canyon	WY State Weed Team
Hell Canyon	Custer State Park
Mystic	McIntosh Fen
Mystic	Battle Creek Fire Area
Mystic	Pennington County
No. Hills	Lawrence County
No. Hills	Spearfish Canyon
No. Hills	Bruno Gulch
No. Hills	Miller Creek
No. Hills	Mt. Roosevelt
No. Hills	Grizzly Gulch
No. Hills	Camp 5

c) Biological Weed Management Areas

District	Location
Hell Canyon	Cascade
Hell Canyon	Flynn Creek
Hell Canyon	Layton Canyon
Mystic	Upper Spring Creek
Mystic	Battle Creek Fire Area
No. Hills	Miller Creek

d) Needs for agreements

Year	Partnership Activity	Who
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<b>2010</b>	<ol style="list-style-type: none"> <li>1. Update strategy as additional info becomes available.</li> <li>2. Attend annual weed supervisors meeting in SD and WY to improve coordination</li> <li>3. Continue work on KV administrative study with RMRS.</li> <li>4. Meet with counties to update agreements</li> <li>5. Continue work on Crook County agreement.</li> </ol>	<p>All</p> <p>At least one person from the Forest</p> <p>SO specialist District leads District lead</p>
<b>2011</b>	<ol style="list-style-type: none"> <li>1. Meet with DOT and Counties to address needed increases in roadside work adjacent to or through USFS lands.</li> <li>2. Check with other agencies that function in and around the Hills (are seed mixes native and weed free).</li> <li>3. Continue work on coordination group(s).</li> </ol>	<p>District leads or through Coordination Group</p> <p>SO specialist/District staff</p> <p>SO specialist/District staff</p>
<b>2012</b>	Continue to look for additional opportunities for weed groups	All

## 8) Administrative sites and recreation facilities

Continue current efforts and strive to complete inventories and increase treatments in 2010 through 2012. Our list of sites can be found in appendix C.

We currently get funding from our concessionaire to treat weeds within the campgrounds; this funding though helpful is considerably less than is needed. Some district recreation programs have assisted with funding when available but again we need to work on a steady stream of funding to treat in high use recreation areas, both to treat existing weed and reduce the spread.

## 9) Assessment and Development of Organizational Capacity:

National Forests and Grasslands within R-2 will work towards adequate staffing and skills to plan and implement effective programs.

- a) The Black Hills has a large program and each district has an Invasive Weed Coordinator. The current level of district staffing is adequate;
- b) The NFAB weed board has suggested a position at the Supervisor's level that is dedicated to the invasive weed program.

<b>Unit</b>	<b>Staffing</b>	<b>Responsibilities</b>
SO	Craig Beckner	Forest Program Lead
Bearlodge	Julie Wheeler	District Staff for Invasive Weed Program
Bearlodge	Mark Lambert	District Invasive Weed Coordinator
Bearlodge	Rob Negel	District Invasive Weed Crew Lead
Hell Canyon	Jeff Tomac	District Staff for Invasive Weed Program

Hell Canyon	Sheila French	District Invasive Weed Coordinator
Mystic	David Slepnikoff	District Staff for Invasive Weed Program
Mystic	Gene Bolka	District Invasive Weed Coordinator
No. Hills	Tom Smith	District Staff for Invasive Weed Program
No. Hills	Marty Pedersen	District Invasive Weed Coordinator

**10) Funding needed (from Item #3)**

- a) Weeds targeted acres can be found in the table in Section 3 under years 2011 & 2012..
- b) Reflect the estimated cumulative cost of the program (Items 1-8 above)

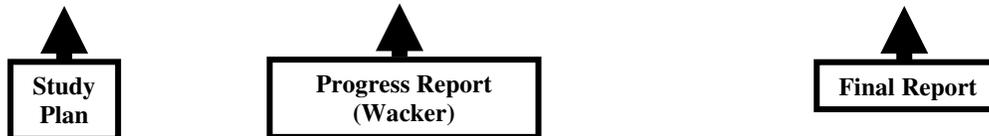
	NFVW-NW		KV		Other		GRANTS	
	\$ *	AC	\$*	AC	\$*	AC	\$*	AC
2011	250	1500	**		575	3450	28	165
2012	334	2000			589	3525	28	165

\* Dollars in Thousands  
 \*\* Listed in Item 3 above.

**11) Research and Administrative Study**

Black Hills National Forest and Rocky Mountain Research Station staff have developed an administrative study to review rate of spread after disturbance, the effectiveness of treatments, responses to treatments (including no treatment), and priorities for treatment actions. The study is planned to at least 2012. The study was begun in 2007 with 95 transects in 5 timber sales being put in. Below is a schedule of the study at this time we are on track for 2010 and will likely be adding additional sites in area that are underrepresented.

2007	2008	2009	2010	2011	2012	Beyond (?)
Timber Sale Pre-treatment	1 <sup>st</sup> Year Post- Treatment	2 <sup>nd</sup> Year Post- Treatment	3 <sup>rd</sup> Year Post- Treatment	4 <sup>th</sup> Year Post- Treatment	5 <sup>th</sup> Year Post- Treatment	
	Timber Sale Pre-Treatment	1 <sup>st</sup> Year Post- Treatment	2 <sup>nd</sup> Year Post- Treatment	3 <sup>rd</sup> Year Post- Treatment	4 <sup>th</sup> Year Post- Treatment	
	Herbicide Efficacy Pre-Treatment	1 <sup>st</sup> Year Post- Treatment	2 <sup>nd</sup> Year Post- Treatment	3 <sup>rd</sup> Year Post- Treatment	4 <sup>th</sup> Year Post- Treatment	



Annual Reports – December of Each Year

# Appendix A

Current known locations of weeds are show on the following maps (see attachments), for the Black Hills National Forest.

<b>COMMON NAME</b>	<b>* ACRES INFESTED</b>	<b>MAP NUMBER</b>
Canada thistle	175,483	1
St, Johnswort	6300	8
Sulphur Cinquefoil	T	Not on Map
Leafy Spurge	14,747	4
Diffuse Knapweed	13	6
Yellow Toadflax	4605	6
Dalmation Toadflax	193	6
Spotted Knapweed	2877	7
Russian Knapweed	1	6
Saltcedar	32	6
Common tansy	9287	2
Common mullein	36,756	6
Whitetop/Hoary cress	4	6
Henbane	702	6
Hounds tongue	71,179	3
Musk Thistle	48,133	5
Oxeye daisy	1612	6

\*Acre figures are updated using 2008 data.

Add Maps Here 8 Pages

APPENDIX B

# AQUATIC NUISANCE SPECIES ACTION PLAN

## Black Hills National Forest

*Three Year Actions  
For the Prevention and Management of Aquatic Nuisance Species*



FY 2010 – 2012

Rocky Mountain Region  
USDA Forest Service

Signed */s/ Craig Bobzien* Date *June 16, 2010*  
CRAIG BOBZIEN  
Forest Supervisor

## Introduction:

This action plan is designed to serve as a strategic tool for implementation of the aquatic nuisance species (ANS) management program on the Black Hills National Forest (BKF). This plan becomes Part Three of the Forest's Invasive Species Action Plan. This plan should be reviewed and adjusted as necessary each year to reflect emerging needs, shifting priorities, or changes in available funding.

### 12) Overview of Current Forest ANS Program and Expected Changes:

The overall strategy is to work closely with the State Resource Agencies and other partners to provide a well coordinated response for the prevention, early detection and control of ANS, in the most cost-effective manner. Prevention of additional ANS introductions or the spread of existing ANS on the BKF is a primary goal. Several isolated populations of ANS currently exist on the Forest. The potential for new ANS introductions is an ongoing threat. The primary vectors and pathways to address are people and their recreational watercraft (boats, jet skis, etc) and equipment (fishing waders, nets, etc.) as well as equipment used in Forest Service specific activities, such as fire suppression or aquatic habitat enhancement, e.g., lake dredging.

### 13) Priority Species and Populations on the Black Hills NF

The species listed below are priority invasive species, based on the following criteria:

- i) Currently low in abundance or nonexistent.
- ii) Control is feasible.
- iii) Potential to disrupt the aquatic ecosystem, degrade aquatic habitat, impact municipal water supplies, or reduce recreational opportunities.

The South Dakota Department of Game, Fish and Parks (SDGFP) completed a risk assessment as part of the South Dakota ANS Management Plan (SDGFP 2008). That assessment identified 13 ANS that pose the greatest threat in South Dakota and was the primary basis for ANS risks on the Black Hills. The Forest Service Rocky Mountain Region ANS strategy also identified ANS risks pertinent to the Black Hills. Species identified as aquatic invasive species by the Wyoming Game and Fish Department were also considered. The following table presents ANS of concern on the BKF. ANS identified in the table below that are not currently present are considered a threat because the vector or pathway exists for introduction into the Black Hills.

Species and Location	Priority (#)	Total Occurrences (miles, acres, #)	Past Treatment, Inventory or Monitoring	Expected Impacts
Didymo ( <i>Didymosphenia geminata</i> ); Rapid Creek	high	21 miles	SDGFP & SD DENR monitoring; SDSU/SDSM&T research projects	Degradation of stream habitat & fisheries; Reduced aesthetics

Species and Location	Priority (#)	Total Occurrences (miles, acres, #)	Past Treatment, Inventory or Monitoring	Expected Impacts
Zebra and Quagga Mussels ( <i>Dreissena</i> spp)	high	none	Limited inventory (Stephen 2008); Monitoring by SDGFP and USBR is ongoing.	Disruption of native food web; Fouling of water control infrastructure.
New Zealand Mud Snail ( <i>Potamopyrgus antipodarum</i> )	high	none	Limited inventory (Stephen 2008)	Disruption of native food web and alteration of aquatic habitat.
Curlyleaf Pondweed ( <i>Potamogeton crispus</i> ); Sheridan Lake	medium	380 acres	Limited annual treatment at swim beaches at Sheridan Lake	Competes with native vegetation; dense mats impact recreation uses.
Eurasian watermilfoil ( <i>Myriophyllum spicatum</i> )	medium	none		Competes with native vegetation; dense mats impact recreation uses.
Brittle Naiad ( <i>Najas minor</i> )	medium	none		Competes with native vegetation; dense mats impact recreation uses.
Chytrid Fungus ( <i>Batrachochytrium dendrobatidis</i> )	medium	none	provided swab samples to Univ of SD in 2009	Possible agent in decline/extinction of amphibian populations
Viral Hemorrhagic Septicemia (VHS)	medium	none	SDGFP monitoring at Belle Fourche Reservoir (2007-08)	Causes fish abnormalities & death
Whirling Disease ( <i>Myxobolus cerebralis</i> )	medium	none		Causes deformities/death in trout
Rusty Crayfish ( <i>Orconectes rusticus</i> )	medium	none		Displace native crayfish; reduce aquatic vegetation and diversity
<b>Red-rimmed Melania (<i>Melanoides tuberculata</i>); Cascade Creek</b>	medium	1 site; limited abundance	SDGFP/FS monitoring on 8/13/09 Stephen (2008)	Competition with and displacement of native species.

Species and Location	Priority (#)	Total Occurrences (miles, acres, #)	Past Treatment, Inventory or Monitoring	Expected Impacts
European Rudd ( <i>Scardinius erythrophthalmus</i> ); Pactola and Sheridan Reservoirs	low	1,230 acres	SDGFP occurrence monitoring	Competes with other desirable fish species.
Opossum Shrimp ( <i>Mysis relicta</i> ); Pactola Reservoir	low	850 acres	SDGFP occurrence monitoring	Disruption of native food web.
Common Carp and Asian Carps (black, grass, silver and	low	none, common carp occur off-Forest	SDGFP occurrence monitoring	Competition with and displacement of native species.

14) **Management area maps for each priority species.**

See Figures 1, 2 and 3 after the references.

15) **Priority treatment areas 2010-12**

The table below identifies priority projects that address prevention, early detection and rapid response (EDRR), control and management measures, or restoration efforts. Many of these Forest Service activities are administrative in nature, which reflects the continuing development of the ANS management program on the Forest.

FY	Location	Action	Target*	Partner, Cooperator, Permittee, Stakeholder, or Functional Area
2010	Rapid Creek	Ongoing evaluation	21 miles	SD DENR, SDGFP & SDSU, SDSM&T
	Castle Crk	Ongoing evaluation	< 1 mile	SDGFP
	Sheridan Lake	Curlyleaf pondweed control	6 acres	Mystic Ranger District
	BKF	Outreach & Education	Meetings/presentations	Interested partners, District staff
	BKF	ANS Awareness Training	Presentation at BKF University on March 16, 2010	BKF employees
	BKF - SO	Complete Job Hazard Analysis	Prior to 6/01/10	BKF Safety Officer
	Cascade Springs	Monitor for red-rimmed melania	< 1 acre	SDGFP, Hell Canyon District
	BKF	Inspect ANS signage at recreation sites	≈7 sites; ≈13 access points	Mystic Ranger District
	<b>TOTAL</b>			

<b>FY</b>	<b>Location</b>	<b>Action</b>	<b>Target*</b>	<b>Partner, Cooperator, Permittee, Stakeholder, or Functional Area</b>
2011	BKF	Designate District ANS Contact	One person per District	Ranger District
	Rapid Creek	Ongoing evaluation	21 miles	SD DENR, SDGFP & SDSU, SDSM&T
	Castle Crk	Ongoing evaluation	< 1 mile	SDGFP
	Sheridan Lake	Curlyleaf pondweed control	6 acres	Mystic Ranger District
		Cascade Springs	Monitor for red-rimmed melania	< 1 acre
		BKF	Inspect ANS signage at recreation sites	≈7 sites; ≈13 access points
	BKF	Outreach & Education	Meetings/presentations	All interested partners
	<b>TOTAL</b>			
2012	Rapid Creek	Ongoing evaluation; potential restoration	21 miles	SD DENR, SDGFP & SD State University
	Castle Crk	Ongoing evaluation	< 1 mile	SDGFP
	Sheridan Lake	Curlyleaf pondweed control	6 acres	Mystic Ranger District
	BKF	Outreach & Education	Meetings/presentations	All interested partners
	Cascade Springs	Monitor for red-rimmed melania	< 1 acre	SDGFP, Hell Canyon District
	BKF	Inspect ANS signage at recreation sites	≈7 sites; ≈13 access points	Mystic Ranger District
	<b>TOTAL</b>			

\* Treatment and restoration of streams and lakes are identified under NFWF as a legitimate target accomplishment (see FY09 budget narrative).

## 16) Lake and Stream Corridor Invasive Species Monitoring Schedule

The Black Hills provide a variety of water-related recreational opportunities along streams and at reservoirs. These opportunities are enjoyed by both the local population as well as the visiting public. These activities provide possible vectors and pathways for ANS introduction and spread. Forest Service activities also have the potential to introduce or spread ANS.

The SDGFP surveyed Black Hills streams for other occurrences of Didymo in June 2005. Twelve sites were surveyed where angler use is high, but no additional Didymo occurrences were found. In 2006, SD DENR reported Didymo on lower Castle Creek near Mystic (Larson pers. comm. 2006, SDGFP 2006). Snail surveys funded by SDGFP in 2001 reported red-rimmed melania in Cascade Creek. Freshwater snail surveys, funded by SDGFP, occurred at nine sites in the Black Hills in 2008, including Cascade Springs (Stephen 2009). No non-indigenous species were discovered. The absence of red-rimmed melania in the 2008 survey may be explained by a difference in sampling locations. Ongoing monitoring of Black Hills waterbodies should continue on a cyclical schedule to promote the early detection of ANS and a rapid response.

<b>FY</b>	<b>Location</b>	<b>Target Species</b>
2010	Rapid Creek Castle Creek (0.25 mile east of Mystic on Pennington County C318.) Cascade Creek	Didymo Didymo Red-rimmed Melania
2011	Black Hills Reservoirs Cascade Creek	ANS snails (zebra, quagga, New Zealand mudsnails) & ANS plants Red-rimmed Melania
2012	Black Hills Reservoirs Cascade Creek	ANS snails (zebra, quagga, New Zealand mudsnails) & ANS plants Red-rimmed melania

### 17) Coordinated Management Activity

The following table identifies external partners or other stakeholders that are important in the management of ANS on the BKF. Entities may be added and contacts may change over time.

<b>Partner/Stakeholder</b>	<b>Contact Name</b>	<b>Location</b>	<b>Phone Number</b>
SD Game, Fish & Parks	Andy Burgess	Pierre, SD	(605) 773-2743
SD DENR	Aaron Larson	Pierre, SD	(605) 394-6869
WY Game & Fish Department	Beth Bear	Cheyenne, WY	(307) 777-4600
Nat'l Forest Advisory Board	Chairman Blair		
U.S. Bureau of Reclamation	Cindy Larom	Rapid City, SD	(605) 394-9757
Pennington County Weed and Pest Management	Scott Guffey	Rapid City, SD	(605) 394-5320
Black Hills Flyfishers	Mike Lees	Rapid City	(605) 342-7885
Forest Recreation Management	Ty Gerbracht	Hill City	(605) 574-4402
Other Stakeholders	TBD		

The Black Hills National Forest has been aware of and involved with ANS issues; however, ANS management response has been undertaken primarily by State resource agencies, such as the South Dakota Department of Game, Fish and Parks (SDGFP) and the South Dakota Department of Environment and Natural Resources (SD DENR). Periodic updates are provided to the National Forest Advisory Board (NFAB) to maintain and increase awareness of ANS issues. NFAB has an Invasive Species subcommittee that has dealt primarily with noxious weed issues, but ANS issues could logically be within the scope of this subcommittee. Increased coordination with the U.S. Bureau of Reclamation (USBR) should occur related to ANS and the operation of Deerfield and Pactola Reservoirs (on-Forest) and Angostura and Belle Fourche Reservoirs (off-Forest)..

<b>FY</b>	<b>Coordination Activity</b>	<b>Responsibility</b>
2010	ANS Inventory (Streams & Reservoirs)	SDGFP, SD DENR, BKF, USBR(?)
	ANS Awareness Outreach	BKF and other partners
2011	ANS Inventory (Streams & Reservoirs)	SDGFP, SD DENR, BKF, USBR(?)
	ANS Awareness Outreach	BKF and other partners
2012	ANS Inventory (Streams & Reservoirs)	SDGFP, SD DENR, BKF, USBR(?)
	ANS Awareness Outreach	BKF and other partners

## 18) Organizational Capacity

The Forest has identified an ANS Coordinator (see table below) in reply to a July 3, 2008 Regional Office request. These duties are primarily funded under the Wildlife and Fish Program in the Supervisor's Office. Increased involvement at the District level would be beneficial for on-the-ground implementation of an ANS strategy. These individuals are yet to be identified and may or may not differ from the currently designated District Invasive Species Coordinators.

Staff	Responsibilities	Skills/Training Needed (By Year)
Craig Bobzien (Forest Supervisor)	Forestwide leadership, implementation & prioritization	Ongoing situational awareness
District Rangers	District leadership, implementation & prioritization	Ongoing situational awareness
Dave Thom (Natural Resources Staff Officer)	Forestwide leadership, implementation & prioritization	Ongoing situational awareness
Kerry Burns (Forest Biologist)	Initial prioritization of NFWF funds	Ongoing situational awareness
Steve Hirtzel (Fisheries Biologist)	Forest ANS Coordinator	ANS management training
District ANS Coordinators	District implementation	ANS identification and prevention training

## 19) Funding

Implementation of the Forest ANS strategy will largely be funded through the Wildlife, Fish and Rare Plants (NFWF), Recreation (NFRW), Vegetation and Watershed Management (NFVW) or the Inventory and Monitoring (NFIM) programs. Funding through other programs, such as Cooperative Work (CWFS01) may also be available on an opportunistic basis.

Implementation of the South Dakota and Wyoming ANS plans are likely to result in additional partnership funding that has not been specifically identified to date.

FY	NFWF/NFVW/NFIM	CWFS01	Grants	Partnership	TOTAL
2010	\$5,000	\$1,500	-	TBD	\$6,500
2011	\$5,000	\$1,500	-	TBD	\$6,500
2012	\$6,000	\$1,500	-	TBD	\$7,500

FY	Prevention	EDRR	Control	Restoration	TOTAL
2010	\$2,500	\$2,500	\$1,500	-	\$6,500
2011	\$2,500	\$2,500	\$1,500	-	\$6,500
2012	\$3,000	\$3,000	\$1,500	-	\$7,500

## References

Larson, Aaron. 2006. June 21, 2006 e-mail RE: Didym found in Castle Creek near Mystic.

SDGFP. 2006. Troublesome diatom spreads in Black Hills streams. Game, Fish and Parks news releases for July 14, 2006.

SDGFP. 2008. State of South Dakota. Aquatic Nuisance Species Management Plan. Online:  
<http://www.sdgifp.info/Wildlife/AquaticNuisance/SDANSManagementPlan.aspx>

Shearer, Jeff. 2005. E-mail dated May 8, 2006, RE: Didymo inventory results from last year.

Stephen, Bruce. J. 2009. Freshwater snails of South Dakota within the Middle Rockies, Western Corn Belt Plains, Northern Glaciated Plains and Lake Agassiz Plains Ecoregions.

MAPS

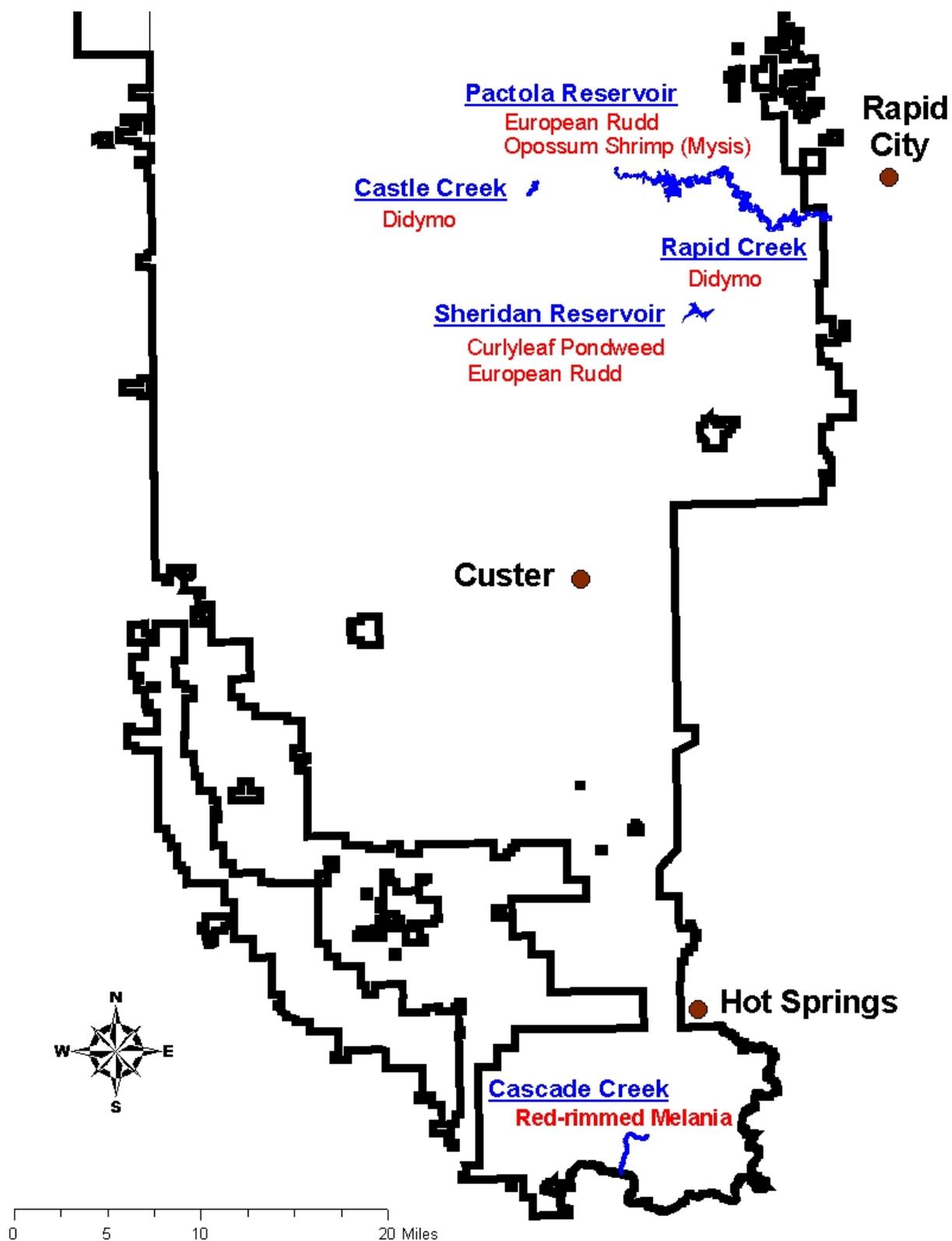


Figure 1. Waterbodies with aquatic nuisance species on the Black Hills National Forest.

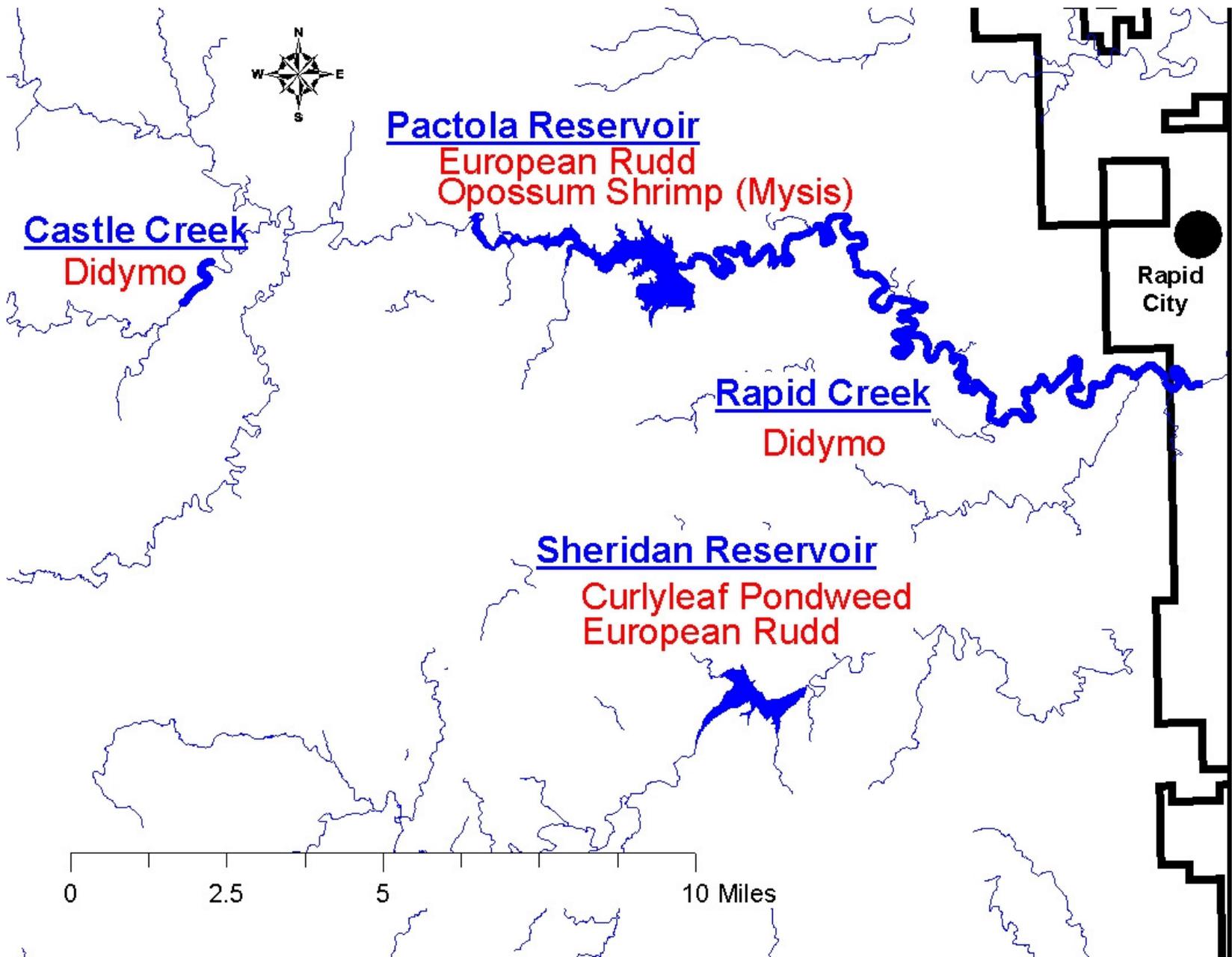


Figure 2. Waterbodies with aquatic nuisance species on the Mystic Ranger District.

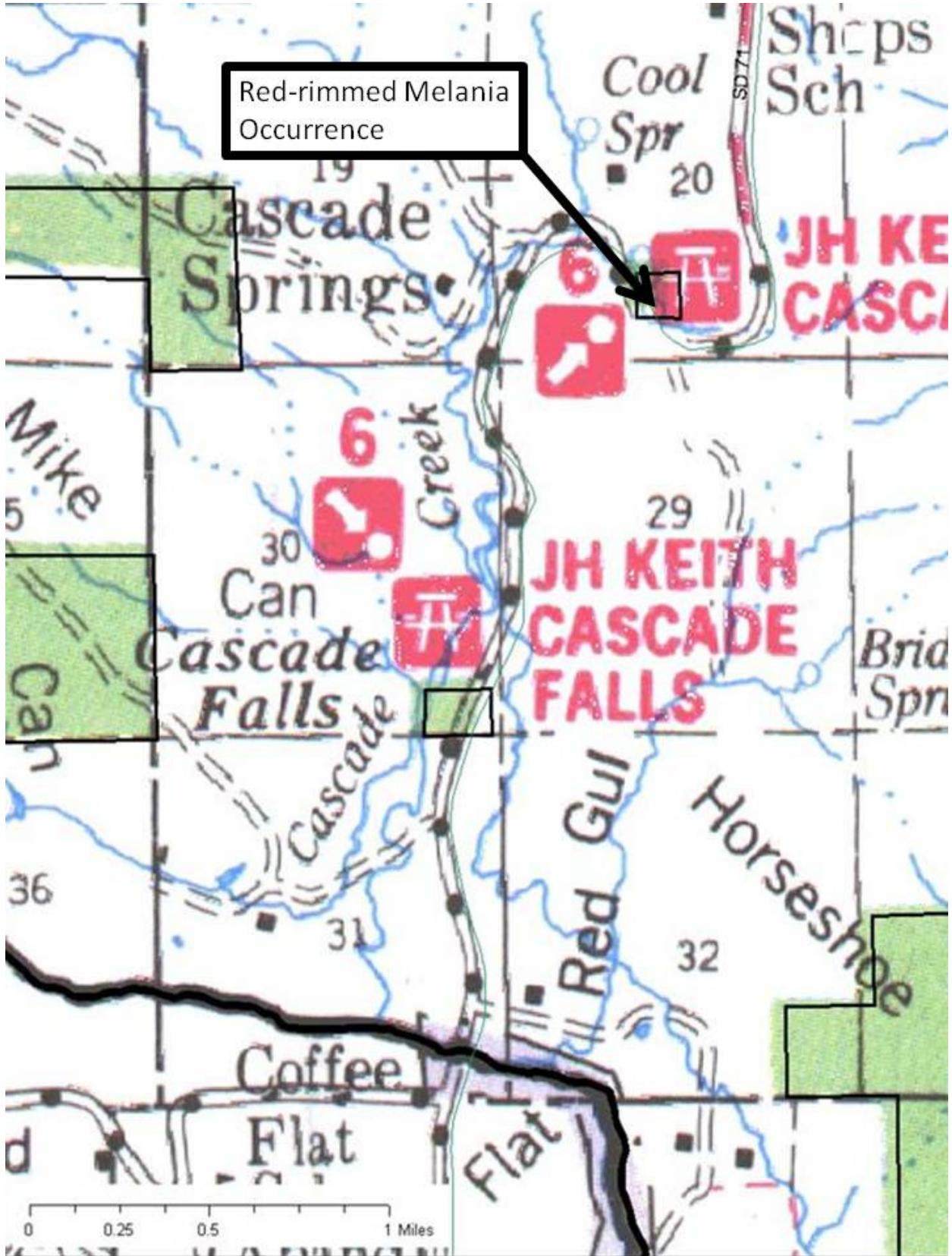


Figure 3. Red-rimmed Melania (*Melanoides tuberculata*) – a common aquarium snail species released into Cascade Springs and reproducing along Cascade Creek.

## *Aquatic Disinfectant Guidelines*

These Forest Service guidelines are **not meant to be implemented by just biologists**, but by all resource managers coming in contact with infected or potentially infected waters. SDGFP is currently developing an ANS disinfection procedure for boats and gear that may be an alternative in the future.

1. Before leaving the waters edge wash and remove all organic material.

Choose one of the following options for complete disinfection of water related equipment:

- A. Completely dry all equipment for 4 to 5 days before re-use.
- B. Submerge all equipment in boiling water for a minimum of 10 minutes.
- C. Store all equipment at temperatures below freezing for at least 24 hours.
- D. Submerge equipment in a 7% bleach solution for 10 minutes AND then spray down equipment with Commercial Solutions Formula 409® cleaner degreaser disinfectant. Let 409 sit for 10 minutes. Rinse all equipment with tap water. Discard bleach solution in accordance with local and state laws. Most bleach solutions may be disposed of in municipal waste water drains. **DO NOT** discard into water bodies or storm drains. **7% bleach solution = 9 liquid oz. bleach per 1 gallon of water.**
- E. Submerge equipment in a 3% Sparquat 256® solution for a minimum of 15 minutes. After soaking rinse all equipment with tap water and discard solution in accordance with local and state laws. This solution is safe for municipal waste water drains. **DO NOT** discard into water bodies or storm drains. **3% Sparquat solution = 4 oz sparquat per 1 gallon of water.**
- F. Expose equipment for 10 – 15 minutes to 100% Formula 409 or 3.5% Sparquat 256 ([Schisler et al. 2008](#))

## *Aquatic Disinfectant Guidelines (Watercraft)*

1. Before leaving the waters edge wash and remove all organic material.
2. Before leaving the waters edge empty all standing water from watercraft.

Choose one of the following options for complete disinfection of watercraft:

- A. Completely dry all equipment for 4 to 5 days before re-use.
- B. Clean watercraft with a 7% Clorox® bleach solution. Use sponge or towel to completely clean all surfaces of the watercraft with the bleach solution.\*\* After cleaning rinse watercraft and towel or air dry. Most bleach solutions may be disposed of in municipal waste water drains. DO NOT discard into water bodies or storm drains. **7% bleach solution = 9 liquid oz. bleach per 1 gallon of water.**
- C. Clean watercraft with a 3% Sparquat 256® solution. Use sponge or towel to completely clean all surfaces of the watercraft with the sparquat solution.\*\* After cleaning rinse watercraft and towel or air dry. This solution is safe for municipal waste water drains. DO NOT discard into water bodies or storm drains. **3% Sparquat solution = 4 oz sparquat per 1 gallon of water.**

\*\* It generally takes 10 to 15 minutes of submersion in these solutions to be completely effective. It is not practical or possible to submerge watercraft in chemical solutions. The act of scrubbing boats with these chemicals will kill chytrid fungus and greatly reduce the chance of spreading any other aquatic nuisance and invasive species.

## *On-line Resources for ANS*

### **General Information**

Topic (source)	Link
Region 4 ANS program	<a href="http://www.fs.fed.us/r4/resources/aquatic/index.shtml">http://www.fs.fed.us/r4/resources/aquatic/index.shtml</a>
Lake Tahoe Basin Mgmt Unit program	<a href="http://www.fs.fed.us/r5/ltbmu/invasive-species/quagga.shtml">http://www.fs.fed.us/r5/ltbmu/invasive-species/quagga.shtml</a>
Region 9 ANS framework	<a href="http://www.fs.fed.us/r9/wildlife/nnis/documents/r9_nnis_framework.pdf">http://www.fs.fed.us/r9/wildlife/nnis/documents/r9_nnis_framework.pdf</a>
ANS (CO State Parks)	<a href="http://parks.state.co.us/NaturalResources/ParksResourceStewardship/AquaticNuisance">http://parks.state.co.us/NaturalResources/ParksResourceStewardship/AquaticNuisance</a>
Invasive species program (USFS)	<a href="http://www.fs.fed.us/invasivespecies/">http://www.fs.fed.us/invasivespecies/</a>
Aquatic nuisance species (NOAA)	<a href="http://www.research.noaa.gov/oceans/t_invasivespecies.html">http://www.research.noaa.gov/oceans/t_invasivespecies.html</a>
Aquatic nuisance species (F&WS)	<a href="http://www.fws.gov/contaminants/ANS/ANSSpecies.cfm">http://www.fws.gov/contaminants/ANS/ANSSpecies.cfm</a>
Aquatic invasive species (USDA)	<a href="http://www.invasivespeciesinfo.gov/aquatics/main.shtml">http://www.invasivespeciesinfo.gov/aquatics/main.shtml</a>
Aquatic nuisance species (USGS)	<a href="http://nas.er.usgs.gov/">http://nas.er.usgs.gov/</a>
ANS, a Canadian perspective	<a href="http://www.invadingspecies.com/indexen.cfm">http://www.invadingspecies.com/indexen.cfm</a>
ANS Task Force	<a href="http://www.anstaskforce.gov/default.php">http://www.anstaskforce.gov/default.php</a>
National Invasive Species Node	<a href="http://invasivespecies.nbi.gov/index.html">http://invasivespecies.nbi.gov/index.html</a>
ANS experts database	<a href="http://www.anstaskforce.gov/experts/search.php">http://www.anstaskforce.gov/experts/search.php</a>

### **Education, Awareness, and Outreach**

Topic (source)	Link
ANS prevention (Forest Service)	<a href="http://www.fs.fed.us/invasivespecies/documents/Aquatic_is_prevention.pdf">http://www.fs.fed.us/invasivespecies/documents/Aquatic_is_prevention.pdf</a>
“Zap The Zebra” brochure	<a href="http://www.100thmeridian.org/ZTZ2007.asp">http://www.100thmeridian.org/ZTZ2007.asp</a>
“Don’t Move A Mussel” online video	<a href="http://wildlife.state.co.us/NewsMedia/Videos/Mussel.htm">http://wildlife.state.co.us/NewsMedia/Videos/Mussel.htm</a>
Education, prevention, and BMPs	<a href="http://www.protectyourwaters.net/">http://www.protectyourwaters.net/</a>
Education and prevention	<a href="http://www.habitattitude.net/">http://www.habitattitude.net/</a>
Whirling disease education	<a href="http://fwp.mt.gov/fishing/etiquette/whrlpt01.html">http://fwp.mt.gov/fishing/etiquette/whrlpt01.html</a>
Education	<a href="http://www.anstaskforce.gov/education.php">http://www.anstaskforce.gov/education.php</a>
Educational materials	<a href="http://parks.state.co.us/NaturalResources/ParksResourceStewardship/AquaticNuisance">http://parks.state.co.us/NaturalResources/ParksResourceStewardship/AquaticNuisance</a>
Communicating Effectively About Aquatic Nuisance Species, workshop	<a href="http://www.fishwildlife.org/science_ANSworkshop.html">http://www.fishwildlife.org/science_ANSworkshop.html</a>
Aquatic Invasive Species Education Handbook	<a href="http://www.uwex.edu/erc/pdf/AI/AquaticInvasivesHandbook.pdf">http://www.uwex.edu/erc/pdf/AI/AquaticInvasivesHandbook.pdf</a>
Education and outreach materials	<a href="http://www.clr.pdx.edu/projects/edoutreach/content/browse.php?table=title">http://www.clr.pdx.edu/projects/edoutreach/content/browse.php?table=title</a>
Eurasian watermilfoil control	<a href="http://fwcb.cfans.umn.edu/research/milfoil/milfoilbc.html">http://fwcb.cfans.umn.edu/research/milfoil/milfoilbc.html</a>
Wildlife Forever threat campaign 2007	<a href="http://www.wildlifeforever.org/documents/WEB-THREATCAMPAIGN2007.pdf">http://www.wildlifeforever.org/documents/WEB-THREATCAMPAIGN2007.pdf</a>

### **Inventory and Monitoring**

Topic (source)	Link
Monitoring recommendations for zebra mussels (100 <sup>th</sup> Meridian)	<a href="http://www.100thmeridian.org/component4.htm">http://www.100thmeridian.org/component4.htm</a>
Monitoring protocols for ANS (USGS)	<a href="http://nas.er.usgs.gov/queries/protocols/protocollister.asp">http://nas.er.usgs.gov/queries/protocols/protocollister.asp</a>
Early detection and rapid response links (USDA)	<a href="http://www.invasivespeciesinfo.gov/aquatics/detection.shtml">http://www.invasivespeciesinfo.gov/aquatics/detection.shtml</a>
Collecting water samples for veligers (100 <sup>th</sup> Meridian)	<a href="http://www.100thmeridian.org/Documents/Dreissena%20Collection%20Protocol%20">http://www.100thmeridian.org/Documents/Dreissena%20Collection%20Protocol%20</a>

### **Laws, Regulation, and Authorities**

Topic (source)	Link
State of Colorado	<a href="http://www.100thmeridian.org/Laws/StateInfo.asp?state=Colorado">http://www.100thmeridian.org/Laws/StateInfo.asp?state=Colorado</a>
State of Kansas	<a href="http://www.100thmeridian.org/Laws/StateInfo.asp?state=Kansas">http://www.100thmeridian.org/Laws/StateInfo.asp?state=Kansas</a>
State of Nebraska	<a href="http://www.100thmeridian.org/Laws/StateInfo.asp?state=Nebraska">http://www.100thmeridian.org/Laws/StateInfo.asp?state=Nebraska</a>

State of South Dakota	<a href="http://www.100thmeridian.org/Laws/StateInfo.asp?state=South%20Dakota">http://www.100thmeridian.org/Laws/StateInfo.asp?state=South%20Dakota</a>
State of Wyoming	<a href="http://www.100thmeridian.org/Laws/StateInfo.asp?state=Wyoming">http://www.100thmeridian.org/Laws/StateInfo.asp?state=Wyoming</a>
Federal laws and regulations	<a href="http://www.invasivespeciesinfo.gov/laws/federal.shtml">http://www.invasivespeciesinfo.gov/laws/federal.shtml</a>
Executive Order 13112	<a href="http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&amp;docid=fr0">http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&amp;docid=fr0</a>
Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990	<a href="http://www.anstaskforce.gov/Documents/nanpca90.pdf">http://www.anstaskforce.gov/Documents/nanpca90.pdf</a>
CFR 261.58, Occupancy and Use of Areas Designated by Order	<a href="http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi">http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi</a>

### Species Specific Information

Topic (source)	Link
Chytrid fungus (Amphibian Ark)	<a href="http://www.amphibianark.org/chytrid.htm">http://www.amphibianark.org/chytrid.htm</a>
Didymo (EPA)	<a href="http://www.epa.gov/Region8/water/didymosphenia/">http://www.epa.gov/Region8/water/didymosphenia/</a>
Didymo prevention (Quebec)	<a href="http://www.mddep.gouv.qc.ca/eau/eco_aqua/didymo/didymo-en.pdf">http://www.mddep.gouv.qc.ca/eau/eco_aqua/didymo/didymo-en.pdf</a>
Eurasian watermilfoil (Washington)	<a href="http://www.ecy.wa.gov/Programs/wq/plants/weeds/milfoil.html">http://www.ecy.wa.gov/Programs/wq/plants/weeds/milfoil.html</a>
Eurasian watermilfoil (UMN)	<a href="http://fwcb.cfans.umn.edu/research/milfoil/milfoilbc/milfoil.html">http://fwcb.cfans.umn.edu/research/milfoil/milfoilbc/milfoil.html</a>
New Zealand Mud Snail (PYW)	<a href="http://www.protectyourwaters.net/hitchhikers/mollusks_new_zealand_mudsnail.php">http://www.protectyourwaters.net/hitchhikers/mollusks_new_zealand_mudsnail.php</a>
New Zealand Mud Snail (MSU)	<a href="http://www.esg.montana.edu/aim/mollusca/nzms/">http://www.esg.montana.edu/aim/mollusca/nzms/</a>
Whirling Disease Initiative	<a href="http://whirlingdisease.montana.edu/">http://whirlingdisease.montana.edu/</a>
Whirling disease (Trout Unlimited)	<a href="http://www.tu.org/site/c.kkLRJ7MSKtH/b.3596607/">http://www.tu.org/site/c.kkLRJ7MSKtH/b.3596607/</a>
Whirling disease (PYW)	<a href="http://www.protectyourwaters.net/hitchhikers/others_whirling_disease.php">http://www.protectyourwaters.net/hitchhikers/others_whirling_disease.php</a>
Whirling disease (CDOW)	<a href="http://wildlife.state.co.us/Research/Aquatic/WhirlingDisease/">http://wildlife.state.co.us/Research/Aquatic/WhirlingDisease/</a>
Zebra mussels (CO State Parks)	<a href="http://parks.state.co.us/Zebra+Mussels.htm">http://parks.state.co.us/Zebra+Mussels.htm</a>
Zebra and quagga (100 <sup>th</sup> Meridian)	<a href="http://www.100thmeridian.org">http://www.100thmeridian.org</a>
Zebra and quagga control measures (Cornell EIS)	<a href="http://www.utilities.cornell.edu/utl_lseis_mussels.html">http://www.utilities.cornell.edu/utl_lseis_mussels.html</a>
Zebra and quagga FAQs (USGS)	<a href="http://fl.biology.usgs.gov/Nonindigenous_Species/Zebra_mussel_FAQs/Dreissena_FA">http://fl.biology.usgs.gov/Nonindigenous_Species/Zebra_mussel_FAQs/Dreissena_FA</a>
Zebra and quagga infestation prevention and response planning guide	<a href="http://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3875">http://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3875</a>

### State Resources

Topic	Link
Colorado	<a href="http://www.invasivespeciesinfo.gov/unitedstates/co.shtml">http://www.invasivespeciesinfo.gov/unitedstates/co.shtml</a>
Colorado Division of Wildlife	<a href="http://wildlife.state.co.us/WildlifeSpecies/Profiles/InvasiveSpecies/WatercraftCleaning">http://wildlife.state.co.us/WildlifeSpecies/Profiles/InvasiveSpecies/WatercraftCleaning</a>
Kansas	<a href="http://www.invasivespeciesinfo.gov/unitedstates/ks.shtml">http://www.invasivespeciesinfo.gov/unitedstates/ks.shtml</a>
Kansas Department of Wildlife and Parks	<a href="http://kdwp.state.ks.us/Fishing/Aquatic-Nuisance-Species">http://kdwp.state.ks.us/Fishing/Aquatic-Nuisance-Species</a>
Nebraska	<a href="http://www.invasivespeciesinfo.gov/unitedstates/ne.shtml">http://www.invasivespeciesinfo.gov/unitedstates/ne.shtml</a>
South Dakota	<a href="http://www.invasivespeciesinfo.gov/unitedstates/sd.shtml">http://www.invasivespeciesinfo.gov/unitedstates/sd.shtml</a>
SD Department of Game, Fish and Parks ANS website	<a href="http://www.sdgfp.info/Wildlife/AquaticNuisance/AquaticNuisanceSpecies.aspx">http://www.sdgfp.info/Wildlife/AquaticNuisance/AquaticNuisanceSpecies.aspx</a>
Wyoming	<a href="http://www.invasivespeciesinfo.gov/unitedstates/wy.shtml">http://www.invasivespeciesinfo.gov/unitedstates/wy.shtml</a>
Wyoming Game and Fish Department	<a href="http://gf.state.wy.us/fish/AIS/index.asp">http://gf.state.wy.us/fish/AIS/index.asp</a>

# Appendix C

These are locations needing efforts to address invasives, including administrative sites.

<b>Administrative Sites</b>			
<b>District</b>	<b>Location</b>	<b>Site Acres/Weed Acres</b>	<b>Weeds</b>
Bearlodge	Office, District	40/15	Canada thistle
Hell Canyon	Lookout, Bear Mt	41/<1	Canada thistle
Hell Canyon	Lookout, Elk Mt	40/10	Canada thistle
Hell Canyon	Lookout, Summit Ridge	42/<1	Canada thistle
Hell Canyon	Office, Supervisors	163/15	Canada thistle Leafy spurge
Hell Canyon	Workcenter, Tepee	188/<1	Canada thistle
Mystic	Housing, Allen Gulch	22/3	Canada thistle Leafy spurge
Mystic	Office, District New	33/15	Houndstongue, Dalmatian toadflax and others.
Mystic	Shop, Hill City	?/5	Canada thistle Leafy spurge Common mullein
Mystic	Visitor Center, Black Hills (Not under District control anymore)	5/5	Canada thistle Hoary cress Common mullein
Mystic *	Workcenter, Pactola	101/6	Yellow toadflax Dalmatian toadflax Common mullein Spotted knapweed Leafy spurge
Mystic *	Housing, Reeder	8/8	Canada thistle Leafy spurge
No. Hills	Hardy Guard Station	188/?	
No. Hills	Workcenter, Spearfish		
No. Hills	Workcenter, Nemo	23/?	

\* All or parts of these will be sold likely in 2009

<b><i>Other Sites</i></b>			
<b>District</b>	<b>Location</b>	<b>Site Acres/Weed Acres</b>	<b>Weeds</b>
Bearlodge	CG, Bearlodge	5/1	Leafy spurge Spotted knapweed
Bearlodge	CG, Cook Lake	20/15	Canada thistle
Bearlodge	CG, Rueter	10/10	Spotted knapweed
Bearlodge	Quarry, Ada Mae Pit	10/1	Canada thistle
Bearlodge	Quarry, Bald Mountain Pit	10/1	Canada thistle
Bearlodge	Quarry, Bearlodge Pit	10/1	Canada thistle
Bearlodge	Quarry, Buckley Canyon Pit	10/1	Canada thistle
Bearlodge	Quarry, Hain Spring Pit	10/1	Canada thistle
Bearlodge	Quarry, Hemler Pit	10/1	Canada thistle
Bearlodge	Quarry, Whitman Pit	10/1	Canada thistle
Bearlodge	TH, Sundance	15/1	
Hell Canyon	CG, Bismarck Lake	23/1	Canada thistle
Hell Canyon	CG, Comanche Park	34/<1	Canada thistle
Hell Canyon	CG, Grizzly Bear	20/2	Canada thistle
Hell Canyon	CG, Horsethief Lake	36/7	Canada thistle Spotted Knapweed
Hell Canyon	CG, Iron Creek	9/9	Canada thistle Common mullein Yellow toadflax
Hell Canyon	CG, Oreville	26/<1	Canada thistle
Hell Canyon	CG, Willow Creek	25/18	Canada thistle Leafy spurge Common mullein Yellow toadflax
Hell Canyon	CG, Wrinkled Rock	7/<1	Canada thistle
Hell Canyon	OS, Norbeck Memorial	4/<1	Canada thistle
Hell Canyon	PA, Bismarck Lake	10/2	Canada thistle
Hell Canyon	PA, Hazelrodt	7/5	Canada thistle
Hell Canyon	PA, Breezy Point	8/1	Canada thistle
Hell Canyon	PA, Cascade	15/1	Canada thistle
Hell Canyon	PA, Iron Mountain	12/<1	Canada thistle
Hell Canyon	PA, Lakota Lake	6/1	Canada thistle
<b><i>Other Sites (continued)</i></b>			

District	Location	Site Acres/Weed Acres	Weeds
Hell Canyon	Quarry, Bear Mt	10/7	Canada thistle Black henbane Common mullein
Hell Canyon	Quarry, Dry Beaver	10/2	Canada thistle Black henbane Common mullein
Hell Canyon	Quarry, Stapp	10/2	Canada thistle Black henbane Common mullein
Hell Canyon	Quarry, Stearns	10/1	Canada thistle Black henbane Common mullein
Hell Canyon	TH, Centennial #89	5/2	Canada thistle
Hell Canyon	TH, Norbeck #3	3/1	Canada thistle
Hell Canyon	TH, Willow Creek	2/2	Canada thistle Leafy spurge Common mullein Yellow toadflax
Hell Canyon	TH, Big Pine	2/<1	
Mystic	Airtanker Base	?/9	
Mystic	Boat Launch, Pactola CG and South	20/4	Canada thistle Musk thistle Common mullein
Mystic	Boat Launch, Pactola North	10/2.5	Canada thistle Musk thistle Common mullein Yellow toadflax Houndstongue
Mystic	Boat Launch, Sheridan Lake North	158/3.5	Canada thistle Common mullein Spotted knapweed
Mystic	CG, Black Fox	80/1.5	Canada thistle Musk thistle
Mystic	CG, Castle Peak	160/.5	Canada thistle
Mystic	CG, Custer Trail	2/1	Canada thistle Musk thistle
Mystic	CG, Ditch Creek	20/1.5	Canada thistle
Mystic	CG, Dutchman	?/1.5	Canada thistle Musk thistle
<b><i>Other Sites (continued)</i></b>			

<b>District</b>	<b>Location</b>	<b>Site Acres/Weed Acres</b>	<b>Weeds</b>
Mystic	CG, Sheridan Lake Recreation Area	1609/17	Canada thistle Musk thistle Common mullein
Mystic	CG, Whitetail	?/5	Musk thistle
Mystic	Dam, Major Lake	?/3	Canada thistle Leafy spurge Common mullein
Mystic	Dam, Mitchell Lake	?/3	Canada thistle Houndstongue Common mullein
Mystic	Dam, Sheridan Lake	?/5	Canada thistle Houndstongue Common mullein
Mystic	Fisherman Parking, Hwy 385	1/5	Common tansy
Mystic	Fishing Site, Custer Camp	1/5	Canada thistle
Mystic	Fishing Site, Little House	?/5	Canada thistle
Mystic	Fishing Site, Miller	?/5	Canada thistle
Mystic	Fishing, Site Silver	?/5	Canada thistle
Mystic	Mine, Spokane	?/1.5	Canada thistle Musk thistle
Mystic	Overlook, North	?/0	None at survey time.
Mystic	Overlook, South	?/5	Common mullein
Mystic	Parking, Upper Rapid Creek Overflow	?/5	Common tansy
Mystic	PA, Bear Gulch	?/1.5	Canada thistle Musk thistle
Mystic	PA, Dakota Point	?/5	Musk thistle
Mystic	PA, Jenney Gulch	?/1	Canada thistle
Mystic	PA, Lake Shore	?/1.5	Canada thistle Musk thistle
Mystic	PA, Pactola Point	?/1	Canada thistle Common mullein
Mystic	PA, Spring Creek	47/2.5	Common mullein Common tansy
<b><i>Other Sites (continued)</i></b>			

<b>District</b>	<b>Location</b>	<b>Site Acres/Weed Acres</b>	<b>Weeds</b>
Mystic	Quarries, 5	?/60	Canada thistle Houndstongue Common mullein
Mystic	TH, Brush Creek	?/5	Canada thistle
Mystic	TH, Deer Creek	?/5	Common mullein
Mystic	TH, Gold Run	?/5	Musk thistle
Mystic	TH, Rapid Creek	?/1.5	Canada thistle Common mullein
Mystic	TH, Samelius	?/5	Common tansy
Mystic	TH, Spring Creek	?/5	Common tansy
Mystic	TH, Tamarack	?/1	Musk thistle Common mullein
Mystic	Veterans Point	?/1.5	Canada thistle Common mullein Yellow toadflax
Mystic	Walk-in-Fishery, Castle Creek	?/1	Canada thistle Common mullein
Mystic	Walk-in-Fishery, Rapid Creek	?/5	Common mullein
No. Hills	CG, Boxelder	60/10	Canada thistle Yellow toadflax
No. Hills	CG, Dalton	40/10	Canada thistle Common tansy
No. Hills	CG, Hanna	90/5	Canada thistle
No. Hills	CG, Rod & Gun	56/5	Canada thistle
No. Hills	CG, Roubaix	223/5	Canada thistle Yellow toadflax
No. Hills	CG, Timon	40/5	Canada thistle Yellow toadflax
No. Hills	PA, Botany Bay	/5	Canada thistle St. Johnswort
No. Hills	PA, Dead Ox		
No. Hills	PA, Hellsgate		
No. Hills	PA, Long Valley	/2	Canada thistle St. Johnswort
No. Hills	PA, Mt. Roosevelt		
No. Hills	PA, Steamboat	33/5	Canada thistle
No. Hills	PA, Strawberry	69/20	Canada thistle Yellow toadflax
<b><i>Other Sites (continued)</i></b>			

<b>District</b>	<b>Location</b>	<b>Site Acres/Weed Acres</b>	<b>Weeds</b>
No. Hills	TH, Big Hill	/1	Common mullein
No. Hills	TH, Crow Peak	/1	Canada thistle Common mullein
No. Hills	TH, Dalton	/1	Canada thistle Common tansy
No. Hills	TH, Eagle Cliff		
No. Hills	TH, Elk Creek	/1	Canada thistle Common mullein
No. Hills	TH, Little Spearfish		
No. Hills	TH, Old Baldy	/1	Spotted Knapweed
No. Hills	TH, South Boxelder	/1	Canada thistle Yellow toadflax
No. Hills	TH, Pilot Knob	/1	Canada thistle
No. Hills	TH, Roughlock		Canada thistle
No. Hills	TH, Spearfish Canyon Portals	/2	St. Johnswort Common tansy
No. Hills	Quarry, Bear Gulch	10/2	Hounds tongue Common mullein
No. Hills	Quarry, Benchmark	10/10	Canada thistle Common tansy
No. Hills	Quarry, Besant	Approx. 10	
No. Hills	Quarry, Clayton II	10/10	Canada thistle Common tansy
No. Hills	Quarry, Custer Peak	20/20	Hounds tongue Common mullein Canada thistle
No. Hills	Quarry, Limestone A	Approx. 10	
No. Hills	Quarry, Limestone B	10/10	Hounds tongue Spotted knapweed Canada thistle
No. Hills	Quarry, Limestone C	10/10	
No. Hills	Quarry, Meadow Creek	10/02	Spotted knapweed Common mullein
No. Hills	Quarry, Vanocker Cyn	10/10	Hounds tongue Canada thistle