
TERR 2 INVASIVE/EXOTIC PLANT SPECIES

1.0 EXECUTIVE SUMMARY

The occurrence and abundance of invasive/exotic plant infestations near Project facilities and recreation features in the 2004 study area were determined by reviewing existing information, conducting agency consultation, and completing surveys during the spring and summer of 2004. The 2004 study area encompasses locations that had not been surveyed in 2002 and 2003. Refer to TERR 3, Special-status Plants, Appendix C for a list of these facilities. An exotic plant species is any species growing outside of its native range. Invasive plants are defined as those exotic species, which are not native to a region, that persist without human intervention, and potentially have serious impacts on their new environment (Simberloff et al. 1997; Davis and Thompson 2000). Noxious weed is a term used by government agencies to apply to invasive plants that have been defined as pests by law or regulation (California Department of Food and Agriculture (CDFA) 2000). The term invasive/exotic as used in this report, applies to those exotic plant species that have been defined as invasive or noxious weed species by the agencies concerned.

Eight invasive/exotic plant species with a total of 34 infestations were identified in the 2004 study area. This includes two California Invasive Plant Council (Cal-IPC) 'List A-1' invasive species (Himalayan blackberry (*Rubus discolor*) and cheatgrass (*Bromus tectorum*)); and six Cal-IPC 'List B' invasive species ((periwinkle (*Vinca major*), woolly mullein (*Verbascum thapsus*), black mustard (*Brassica nigra*), tocalote (*Centaurea melitensis*), bull thistle (*Cirsium vulgare*), and ox-eye daisy (*Leucanthemum vulgare*)). None of these species are rated by the CDFA.

2.0 STUDY OBJECTIVES

Document the occurrence and abundance of invasive/exotic plant infestations adjacent to Project facilities, including recreation features that were not surveyed during the spring and summer of 2002 and 2003. The 2004 study area, as used in this report, includes a survey boundary around facilities and features using the criteria agreed upon by the Terrestrial Working Group.

3.0 STUDY IMPLEMENTATION

3.1 STUDY ELEMENTS COMPLETED

Completed invasive/exotic plant surveys at Project facilities and recreation features during the spring and summer of 2004.

3.2 OUTSTANDING STUDY ELEMENTS

There are no outstanding study elements.

4.0 STUDY METHODOLOGY

4.1 REVIEW OF EXISTING INFORMATION

Information on invasive/exotic plant species that could potentially occur in the 2004 study area was compiled, reviewed, and analyzed. This included a review of: (1) *SNF Noxious Weed and Invasive Plants List* (USDA-FS 1999); (2) the California Department of Food and Agriculture's *Noxious Weed List* (CDFA 2000); (3) California Invasive Plant Council's *List of Exotic Pest Plants of Greatest Ecological Concern in California* (Cal-IPC 1999); and (4) the *SNF Plan Amendment* (USDA-FS 2001). A description of each invasive/exotic plant species potentially occurring in the entire study area was developed and included in the 2002 TERR 2, Invasive/Exotic Plant Species Technical Study Report (TSR) (SCE 2003).

4.2 FIELD SURVEYS

The presence and absence of invasive/exotic plant species near Project facilities was recorded during field surveys conducted in the spring and summer of 2004 in conjunction with the special-status plant surveys. Refer to Appendix C in the 2004 TERR 3, Special-status Plant Populations (TSR) (SCE 2005) for a list of facilities surveyed. Levels of infestation were reported consistent with Section 2083 of the *Forest Service Manual, Information and Reporting Guidelines for Noxious Weeds* (USDA-FS 1995). Refer to the 2002 TERR 2 Invasive/Exotic Plants (TSR) (SCE 2003) for detailed survey methodology. The lower elevation surveys were conducted April 19-21 and July 6-7, middle elevation surveys were conducted May 10-12 and July 19-21, and higher elevation surveys were conducted June 7-11 and August 11-13. The surveys were floristic and nomenclature was based on *The Jepson Manual of Higher Plants of California* (Hickman 1993).

5.0 STUDY RESULTS AND ANALYSIS

5.1 REVIEW OF EXISTING INFORMATION

A list of invasive/exotic plant species that have the potential to occur in the study area was compiled in 2002 and is provided as part of the 2002 TERR 2, Invasive/Exotic Plant Species (TSR) (SCE 2003).

5.2 INVASIVE/EXOTIC PLANT SURVEY RESULTS

Eight invasive/exotic plant species were identified in the study area during surveys completed in 2004 (Appendix A). This includes two Cal-IPC 'List A-1' invasive species (Himalayan blackberry and cheatgrass) and six Cal-IPC 'List B' invasive species (bull thistle, ox-eye daisy, black mustard, tocolate, woolly mullein, and periwinkle). Appendix A also includes the results of the surveys conducted in 2004, including descriptions of the locations of invasive/exotic species identified in the study area, with species arranged by Cal-IPC listing status in descending order. Figures TERR 2-1a through TERR 2-1d show the location of invasive/exotic plant infestations observed in the study area.

Himalayan blackberry. Two infestations of Himalayan blackberry were identified in the study area including an infestation along the creek between the Canyon Road and Adit 1, Tunnel 8. This infestation is composed of a high percent cover (approximately 95%) over an approximately 600 square-foot area. Another infestation was identified along Big Creek below the Cascada 12 kV (Project Power Line Less Than 33kV). This infestation extends over an approximately 400 square-foot area with a high percent cover (approximately 70%).

Cheatgrass or downy brome. Fourteen infestations of cheatgrass were identified within the Project area. One infestation of cheatgrass was found scattered along the entire Cascada 12 kV (Project Power Line Less Than 33kV) with low percent cover. Two infestations were identified at the Shaver Lake Fishing Club. One infestation is interspersed along the access roads and lakeshore consisting of low percent cover. The other infestation extends over an approximately 200 square-foot area with a high percent cover (approximately 70%). Two infestations of cheatgrass were found along the Eagle Point Boat Only Day Use Area and the access road. There is a low coverage of cheatgrass interspersed throughout the day use area. The infestation on the access road extends along a segment of the road with about 85% cover. An approximately 300 square-foot patch of cheatgrass was identified near the Shaver Lake Dam Tenders Cabin with high percent cover. Two infestations were found along the access road to Eastwood Tailrace (off of 9S58), both with high percent cover over approximately 200 square-foot areas. An approximately 200 square-foot area with high percent cover of cheatgrass is located along the access road to the trail to Pitman Domestic Water Diversion from Huntington Lake Road. Two infestations of cheatgrass are located along the West Portal Rail Line. One infestation is adjacent to the surge chamber, comprised of an approximately 450 square-foot area with high percent cover and the second infestation is interspersed along the rail line with low percent cover. There is one infestation with low percent cover interspersed along Road 6S83, the access road to Bear Diversion from 5S80, Kaiser Pass Road. Another infestation of cheatgrass was identified along Road 27E26, the access road to the South Fork San Joaquin River gaging station northwest of Hooper Diversion. This infestation extended along the entire road with moderate coverage. There is a 25 square-foot patch of cheatgrass with high percent cover located adjacent to the Hooper sediment lay-down area.

Bull thistle. Four infestations of bull thistle are located along the access road to Eagle Point Boat Only Day Use Area (off of 9S58). All four infestations have a low percent cover. The infestations are composed of 3, 8, 50, and 25 plants respectively. Another infestation is located adjacent to the access road to Eastwood Tailrace (off of 9S58). The infestation covers an approximately 100 square-foot area with low percent cover.

Ox-eye daisy. Three infestations of ox-eye daisy were identified within the 2004 study area. Two infestations are located along Road 8S305 from Hwy 168 to 8S12 and 8S12A, the access roads to the Huntington-Shaver Siphon. One infestation is an approximately 900 square-foot area and the other is an approximately 100 square-foot area, both with moderate coverage. Another infestation is located along Road 8S12, and is comprised of one plant.

Black mustard. Two infestations of black mustard were found during 2004 surveys. One infestation is moderate in coverage with an approximately 12,000 square-foot area, located at the parking area near Mammoth Powerhouse Gate. Another infestation is located at the top of the access road from 8S03 to the Mammoth Pool Penstock. This infestation is comprised of three plants.

Tocalote. Two infestations of tocalote were identified within the 2004 study area. One infestation of tocalote is located between the Angler Access Stairway at Mammoth Powerhouse and the Mammoth Powerhouse Gate. This infestation is comprised of five plants. Another infestation with an approximately 800 square-foot area and moderate coverage is located at the Mammoth Pool Powerhouse Tunnel Muck Site.

Woolly mullein or common mullein. Four infestations of woolly mullein were identified within the 2004 study area. Two infestations are located along Road 27E26, the access road to the SF San Joaquin River gaging station northwest of Hooper Diversion. One infestation consists of one plant adjacent to the road. The other infestation is comprised of an approximately 3,000 square-foot area with moderate percent cover. There is also an approximately 100 square-foot area with moderate coverage of woolly mullein located on the north side of Mono Diversion Pool. Another infestation of woolly mullein is located at the end of the Pitman Creek Diversion Access Road near the diversion. This infestation covers approximately 40,000 square-feet with moderate coverage.

Periwinkle. Two infestations of periwinkle were identified within the 2004 study area. One infestation is located adjacent to the Cascada 12kV (Project Power Line Less Than 33kV) and the other is located at the Shaver Lake Dam Tenders Cabin. Both infestations have high percent cover and extend approximately 300 square-feet.

6.0 LITERATURE CITED

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FIGURES

Placeholder for Figures

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APPENDIX A

Location of Invasive/Exotic Plant Species in the Big Creek ALP 2004 Study Area

Appendix A. Location of Invasive/Exotic Plant Species in the Big Creek ALP 2004 Study Area.

Scientific Name/ Common Name	Location	Level of Infestation	Map Label ¹	Cal-IPC List	CDFA List	USFS List
<i>Rubus discolor</i> Himalayan blackberry	Adit 1, Tunnel 8 (Along the creek between the road and the adit)	High (95% cover in an approximately 600 square-foot area)	1-1	List A-1	–	P
<i>Rubus discolor</i> Himalayan blackberry	Cascada 12 kV Project Power Line Less Than 33kV (Along Big Creek below the power line)	High (70% cover in an approximately 400 square-foot area)	1-2	List A-1	–	P
<i>Vinca major</i> periwinkle	Cascada 12 kV Project Power Line Less Than 33kV	High (85% cover in an approximately 300 square-foot area)	2-1	List B	–	
<i>Vinca major</i> periwinkle	Shaver Lake Dam Tenders Cabin	High (95% cover in an approximately 300 square-foot area)	2-2	List B	–	
<i>Bromus Tectorum</i> cheatgrass	Cascada 12 kV Project Power Line Less Than 33kV (Along entire power line)	Moderate (20% cover)	P3-1	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Shaver Lake Fishing Club	High (70% cover in an approximately 200 square-foot area)	3-2	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Access road to Eagle Point Boat Only Day Use Area (off of 9S58) (Interspersed along this segment of road)	High (85% cover)	3-3	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Shaver Lake Dam Tenders Cabin	High (95% cover in an approximately 25 square-foot area)	3-4	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Access road to Eastwood Tailrace (off of 9S58)	High (85% cover in an approximately 200 square-foot area)	3-5	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Access road to Eastwood Tailrace (off of 9S58) (In a patch near the end of the road)	High (60% cover in an approximately 200 square-foot area)	3-6	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Eagle Point Boat Only Day Use Area (Interspersed throughout day use area)	Low (5% cover)	P3-7	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Access road to the trail to Pitman Domestic Water Diversion from Huntington Lake Road (On all four corners halfway up the road where it turns to the north)	High (80% cover in an approximately 200 square-foot area)	3-8	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	West Portal Incline Rail Line (not in service)(Adjacent to the surge chamber)	High (50% cover in an approximately 450 square-foot area)	3-9	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Road 6S83, access road to Bear Diversion from 5S80, Kaiser Pass Road (Interspersed along the entire road)	Low (5% cover)	P3-10	List A-1	–	P

Appendix A. Location of Invasive/Exotic Plant Species in the Big Creek ALP 2004 Study Area.

Scientific Name/ Common Name	Location	Level of Infestation	Map Label ¹	Cal-IPC List	CDFA List	USFS List
<i>Bromus Tectorum</i> cheatgrass	Road 27E26, access road to SF San Joaquin River gaging station NW of Hooper Diversion (Interspersed along entire road)	Moderate (30% cover)	P3-11	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Hooper Sediment Lay-Down Area	High (90% cover in an approximately 25 square-foot area)	P3-12	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	Shaver Lake Fishing Club (Scattered along access roads and lakeshore)	Low (2 acres)	3-13	List A-1	–	P
<i>Bromus Tectorum</i> cheatgrass	West Portal Incline Rail Line (not in service) (Scattered along rail line)	Low (Approximately 250 square-foot area)	P3-14	List A-1	–	P
<i>Verbascum thapsus</i> woolly mullein	Pitman Creek Diversion Access Road (Adjacent to the diversion)	Moderate (20% cover in an approximately 40,000 square-foot area; 25 plants)	4-1	List B	–	P
<i>Verbascum thapsus</i> woolly mullein	Road 27E26, access road to SF San Joaquin River gaging station NW of Hooper Diversion	Moderate (Approximately 3,000 square-foot area; 55 plants)	4-2	List B	–	P
<i>Verbascum thapsus</i> woolly mullein	Road 27E26, access road to SF San Joaquin River gaging station NW of Hooper Diversion	Low (1 plant)	4-3	List B	–	P
<i>Verbascum thapsus</i> woolly mullein	Mono Diversion Pool (North side of pool)	Moderate (Approximately 100 square-foot area; 10 plants)	4-4	List B	–	P
<i>Brassica nigra</i> black mustard	Parking area near Mammoth Powerhouse Gate and Angler Access Stairway at Mammoth Powerhouse	Moderate (Approximately 12,000 square-foot area; 40-50 plants)	5-1	List B	–	P
<i>Brassica nigra</i> black mustard	Access road from 8S03 to Mammoth Pool Penstock (At the top of the road near the penstock)	Low (3 plants)	5-2	List B	–	P
<i>Centaurea melitensis</i> tocalote	Parking area near Mammoth Powerhouse Gate and Angler Access Stairway at Mammoth Powerhouse (On the east side of the road, adjacent to the gate between the road and the river, near the top of the stairway)	Low (5 plants)	6-1	List B	–	P
<i>Centaurea melitensis</i> tocalote	Mammoth Pool PH Tunnel Muck Site (Adjacent to the pile)	Moderate (Approximately 800 square-foot area; 40-50 plants)	6-2	List B	–	P
<i>Cirsium vulgare</i> bull thistle	Access road to Eastwood Tailrace (off of 9S58)	Low (Approximately 100 square-foot area; 6 plants)	7-1	List B	–	P
<i>Cirsium vulgare</i> bull thistle	Access road to Eagle Point Boat Only Day Use Area(off of 9S58)	Low (3 plants)	7-2	List B	–	P

Appendix A. Location of Invasive/Exotic Plant Species in the Big Creek ALP 2004 Study Area.

Scientific Name/ Common Name	Location	Level of Infestation	Map Label ¹	Cal-IPC List	CDFR List	USFS List
<i>Cirsium vulgare</i> bull thistle	Access road to Eagle Point Boat Only Day Use Area(off of 9S58)	Low (8 plants)	7-3	List B	–	P
<i>Cirsium vulgare</i> bull thistle	Access road to Eagle Point Boat Only Day Use Area (off of 9S58) (Wet meadow area)	Low (Approximately 1 acre; 50 plants)	7-4	List B	–	P
<i>Cirsium vulgare</i> bull thistle	Access road to Eagle Point Boat Only Day Use Area (off of 9S58) (At a bend in the road, in a seep)	Low (Approximately 1 acre; 25 plants)	7-5	List B	–	P
<i>Leucanthemum vulgare</i> ox-eye daisy	Road 8S12, access road to Huntington-Shaver Siphon from Hwy 168	Low (1 plant)	8-1	List B	–	N
<i>Leucanthemum vulgare</i> ox-eye daisy	Road 8S305 from Hwy 168 to 8S12 to 8S12A, access road B2	Moderate (Approximately 900 square-foot area; 15 -200 plants)	P8-2	List B	–	N
<i>Leucanthemum vulgare</i> ox-eye daisy	Road 8S305 from Hwy 168 to 8S12 to 8S12A, access road to Huntington-Shaver Siphon	Moderate (Approximately 100 square-foot area)	P8-3	List B	–	N

Cal-IPC List

List A-1: Most Invasive Wildland Pest Plants; Widespread

List A-2: Most Invasive Wildland Pest Plants; Regional

List B: Wildland Pest Plants of Lesser Invasiveness

Red alert: Species with potential to spread explosively; infestations currently restricted

CDFR Rating

A-rated: Eradication, containment, rejection, or other holding action at the state-county level.

B-rated: Eradication, containment, control or other holding action at the discretion of the commissioner.

C-rated: State endorsed holding action and eradication only when found in a nursery.

USDA-FS List

P: Present on Sierra National Forest

N: Near Sierra National Forest, reasonable to expect within next 5 years

% cover/Cover Classes:

Low (<6% cover)

Moderate (6-25% cover)

High (>25% cover)

¹Species and population number as indicated on Figure TERR 2-1a through 1d