Burned Area Emergency Response Plan
Vegetation Resource Assessment
Coffee Complex Fire

21 August 2014

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OBJECTIVES

- Identify known locations and extent of/impacts to rare plant populations and special habitats.
- Identify noxious weed populations and pre- and post-fire suitable habitat for weeds.
- Provide management recommendations for reducing impacts from noxious weed introductions as a result of the fire.
- Provide management recommendations, where warranted, for repair of impacts to rare plants or special habitats.

GENERAL ISSUES

- Impacts of damage to special habitats and rare plants from wildfire and fire suppression activities on ecosystem stability.
- Impacts of noxious weeds on ecosystem stability and soil productivity.

Background Information

The Coffee Complex Fire started on August 2, 2014 at 0100 hours from a series of lightening fires in northern California. Approximately 6,250 acres burned in the fire. The fire was contained on xxx. The fire is located within the eastern portion of the Trinity Alps Wilderness which is characterized by high granite peaks, alpine meadows, and alpine lakes.

Soil Burn Severity Acres Within Fire Perimeter		
Severity	**Acres**	**Percentage**
Very Low or Unburned	780	12%
Low	1727	28%
Moderate	2605	42%
High	1136	18%
Total	6250	100%

Land Management Designations
The Trinity Alps Wilderness was designated and added to the National Wilderness Preservation System (NWPS) by Congress in 1984. The NWPS is a network of public lands designated in perpetuity to protect the wilderness character of the land and to offer primitive recreation opportunities, valuable scientific and educational uses, benchmarks for ecological studies, and the preservation of historical and natural features (USDA Forest Service 2007). The guiding principle in management of these areas is to maintain wilderness ecosystems in such a manner that they are affected primarily by forces of nature, rather than human manipulation and influence; however, wilderness designation alone does not always ensure the integrity of natural resources or ecological processes.

Increasingly, nonnative invasive plants pose a threat to the integrity of wilderness resources due to their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure (Bossard et al. 2000). Nonnative invasive plant species have the potential to affect native plant species through direct competition for nutrients, light, and water (Bossard et al. 2000) as well as indirectly through mycorrhizal interactions, soil biochemical alterations (Bossard et al. 2000), or allelopathy (Bais et al. 2003). Nonnative invasive plant species infestations can also greatly reduce the recreational and aesthetic values of wilderness areas.

Wilderness Management Direction
The Wilderness Act (1964) Section 2(c): A wilderness, in contrast with those areas where man is and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Forest Service Manual 2320.2: provides Forest Service policy for Wilderness Management and includes the objective to maintain wilderness in such a manner that ecosystems are unaffected by human manipulation and influences so that plants and animals develop and respond to natural forces.

Forest Service Manual 2150.3: limits the use of pesticides in wilderness only when necessary to protect or restore significant resource values within wilderness or on public or private lands bordering wilderness after receipt of the public or private landowner's permission.

California Wilderness Act of 1984 Section 103(b)
(2) as provided in subsection 4(d)(1) of the Wilderness Act, the Secretary concerned may take such measures as are necessary in the control of fire, insects, and diseases, subject to such conditions as he deems desirable; and

(3) as provided in section 4(b) of the Wilderness Act, the Secretary concerned shall administer such areas so as to preserve their wilderness character and to devote them to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.

Non-native Invasive Plant Management Direction
Executive Order 13112 (1999) -directs federal agencies working on public lands to prevent the introduction of invasive species; detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and

reliably; and provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

Forest Service Manual 2900 (USDA Forest Service 2011)-provides direction for the prevention, detection, control, and restoration of effects from aquatic and terrestrial invasive species. Direction relevant to management of nonnative invasive plant species in wilderness includes the following:

- Management activities for aquatic and terrestrial invasive species (including vertebrates, invertebrates, plants, and pathogens) will be based upon an integrated pest management approach on all areas within the National Forest System, prioritizing prevention and early detection and rapid response actions as necessary.
- Initiate, coordinate, and sustain actions to prevent, control, and eliminate priority infestations of invasive species in aquatic and terrestrial areas of the National Forest System (NFS) using an integrated pest management approach, and collaborate with stakeholders to implement cooperative invasive species management activities in accordance with law and policy.
- Incorporate when applicable, invasive species management actions and standards into resource management plans.
- Determine the vectors, environmental factors, and pathways that favor the establishment and spread of invasive species in aquatic and terrestrial areas in the NFS, and design management practices to reduce or mitigate the risk for introduction or spread of invasive species in those areas.
- Determine the risk of introducing, establishing, or spreading invasive species associated with any proposed action, as an integral component of project planning and analysis, and where necessary provide for alternatives or mitigation measures to reduce or eliminate that risk prior to project approval.
- Ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the NFS, or to adjacent areas. Integrate visitor use strategies with invasive species management activities on aquatic and terrestrial areas of the NFS. At no time are invasive species to be promoted or used in site restoration or re-vegetation work, watershed rehabilitation projects, or other management activities on national forests and grasslands.

Shasta-Trinity National Forest Land and Resource Management Plan

- Implement an integrated pest management (IPM) program to maintain or reduce forest pest impacts to acceptable levels and to maintain or enhance forest health and vigor. Any decision to use pesticides will require site-specific environmental analysis.
- Permitted activities in wilderness include integrated pest management (Forest Plan p. 4-33)
- “Pest management activities will only be conducted to prevent the unnatural loss of Wilderness resources or to protect timber and other valuable resources adjacent to Wildernesses.” (Forest Plan p. 4-34)
- "Resource inventory is performed periodically to determine that impacts remain within the acceptable limits. Where the acceptable limits are exceeded, mitigation is instituted immediately.” (Forest Plan, Trinity Alps Wilderness, p. 4-94)

Plant Communities in the Coffee Complex

Plant Communities	mixed conifer/hardwood with Jeffreyi and Western White pine, Douglas fir and/or white fir
	montane chaparral
	alder/willow shrubland in riparian areas
Special Habitats	shaded riparian above 3000 feet elevation
	mixed conifer or conifer/oak forest, especially on ridgetops & old road cuts. 2000-5200 feet elevation
	rock outcrops. 1300-6000 feet elevation
	hardwood trees primarily white oak

Forest Sensitive Botanical Species

No federally listed Threatened or Endangered plant species or their habitats are known to occur in the Coffee Complex fire. There was one Forest Service Sensitive species observed on the East Fork of the Coffee Creek trail and no other sensitive species or watch list botanical species are known within the Coffee Complex fire.
Information on rare plant habitat and populations was derived from Shasta-Trinity National Forest file records, the California Natural Diversity Database, and the California Native Plant Society Inventory of Rare and Endangered Plants, and from visits to the fire area between August 4-13th 2014.

Scientific Name	**Common Name**	**Symbol**	**No. of Locations**
Sedum paradisum	Canyon Creek Stone Crop	SEPA15	1

Canyon Creek stonecrop (*Sedum paradisum*) is a perennial herb that grows on granitic, rocky substrates in chaparral or subalpine, yellow pine, or mixed evergreen forest types at elevations between 900 to 6,200 feet. It is ranked G4G5T1 S1.3. **Note – the subspecies T rank due to a nomenclature change in CNPS - Sedum obtusatum ssp. paradisum*. Possible threats include foot traffic and logging. There are16 occurrences on Forest – all of which are in Trinity Co.
The mountain rocky substrates along East Fork of Coffee Creek Trail where I observed an established population was unaffected by the fire as these rocky outcrop habitats do not burn contiguously through an area.

Invasive plants and Noxious Weeds

Invasive plants observed and/or documented to occur within the Coffee Complex fire are shown in the following table.

Scientific Name	**Common Name**	**Symbol**	**CDFA Weed List**
Isatis tinctoria	Dyers woad	ISTI	B
Cirsium vulgare	bull thistle	CIVU	-
Hypericum perforatum	Klamath weed, St. Johnswort	HYPE	C
Verbascum thapsus	mullein	VETH	-

CDFA Ranking

A-rated is a pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment. If found entering or established in the state, A-rated pests are subject to state or commissioner (when acting as a state agent) enforced action involving eradication, quarantine regulation, containment, rejection, or other holding action.

B-rated is a pest of known economic or environmental detriment and, if present in California, it is of limited distribution. At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action.

C-rated is a pest of known economic or environmental detriment and, if present in California, it is usually widespread. C-rated organisms are eligible to enter the state as long as the commodities with which they are associated conform to pest cleanliness standards when found in nursery stock shipments. If found in the state, they are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner.

The survey of the Trinity Center Helibase on August 8th, resulted in finding three noxious weed species, Dyers woad, starthistle and sweat pea directly in the dirt area by the tarmac the crews were using to stack supplies and load the mesh sling loads for transfer into the wilderness. I went out to the Trinity Airport to meet with Larry Hood and Kelvin, the Helibase managers on August 9th, where we brainstormed together to put down tarps on the current location to put supplies on and to use the adjacent tarmac nearest the supplies for the sling loads. The seed bank and existing above ground plants that were senescing at the site had a high potential of transferring to any areas helicopters landed in the fire area.

Findings/Description of Emergency

Value at Risk: Ecosystem Stability of Native Plant Communities, Wilderness Area.
Priority Threats: Hand line construction, transport of noxious weed seed contamination from Trinity Center Helibase from sling load deliveries and from transportation vehicles to fire from Coffee Creek base camp.

Weed infestations will displace valuable native plant species, reducing wildlife habitat, and can result in increased soil erosion because these species are less capable of stabilizing soil than their native counterparts.

Many roadsides in the Bagley fire are occupied to varying degrees by noxious weeds, in particular yellow star thistle, bull thistle, Himalayan blackberry, common mullein and Klamath weed.

Equipment washing was instituted near the end of the fire and will undoubtedly helped reduce the spread of weeds from the fire and Coffee Creek base camp to the fighter fighters perspective home units. However, preventing noxious weeds from the base camp and helibase was not instituted early enough to prevent the establishment and spread into the wilderness where suppression activities were taking place such as drop points and helispots. Also, roadways are the primary conduit of noxious weed introduction as weed seeds and plant parts are carried on the tires and underbellies of vehicles. Noxious weeds are typically introduced closest to the road and spread along disturbed or suitable habitat if left unchecked.

VALUE AT RISK	Description Of Risk: *road overtop,debris plug,siltation,inadequate roadside drainage,erosion of roadway embankment,land movement,hazard tree,other*	Probability of Damage or Loss	Magnitude of Consequences	Risk	Treatment
Noxious weed invasion	Spread of noxious weeds	Likely	Moderate	**High**	Detection monitoring and treatment as needed

Current Noxious weed Direction and Sideboards

Forest Service Manual (FSM) 2523.02 allows treatments "…to stabilize and prevent unacceptable degradation to natural and cultural resources". Noxious and invasive weeds are recognized as a serious threat to ecosystems.

Monitoring direction (FSM 2523.3) related to noxious/invasive weeds states that "during the one-year emergency stabilization period, monitoring may be done to determine the post-fire presence of invasive species when there is a likelihood of introduction or expansion of invasive species. After one year, any additional invasive species detection monitoring will be conducted using regular program funds". In addition, manual direction (FSM 2523.03.5) allows for monitoring of BAER-treated weed areas for up to 3 years to ensure eradication/prevention treatments are effective.

Seeding and Mulching Treatments

No dozers were utilized during this fire and no areas along the trails, hand lines, and staging areas have a low risk and do not require treatments. Coffee Creek road is in good condition and the staging areas in DIV A by engines, buses and water tenders had little impact by parking on existing durable surfaces. Therefore, no seeding or mulching treatments are proposed.

TREATMENT COSTS

Cost Summary

	Units	Unit Cost	# of Units	BAER $
Land Treatments				
Seeding & Mulching Dozer Line - Road Intersections	acres	0	0	0
Monitoring				
Noxious Weed Detection Surveys & treatment	miles	1200	18	$21,600
TOTAL ALL LINE ITEMS				**$21,600**

Each unit cost per mile includes cost to government, supplies, vehicle, and travel costs for two people. This unit cost is a standard cost used in Northern California Province National Forests and Parks as of 2012 for BAER noxious survey work.

LONG TERM RECOVERY OPTIONS

Other fire suppression affected areas such as drop points, helicopter landings, and staging areas, both outside and within fire perimeter, should be monitored in the next few years to determine if new noxious weed infestations have occurred, hand-treated as infestations are detected during surveys, and mapped to facilitate evaluation of subsequent treatments. It would be especially important to prioritize monitoring on the area north of the fire in the vicinity Hodges Cabin where there are invasive populations of Cirsium vulgare outside the fire perimeter that will likely colonize the burn areas. That area had experienced many retardant drops, which promotes growth of invasive grasses and forbes.

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Appendix A - Global Rank (G-) and State Rank (S-) and Rare Plant Rank Listed

Rank	Meaning (at species or Natural Community level)
G1 or S1	Less than 6 Element Occurrences (EO) OR less than 1,000 individuals OR less than 2000 acres
G2 or S2	6 - 20 EOs OR 1,000 - 3,000 individuals OR 2,000 - 10,000 acres
G3 or S3	21 - 100 EOs OR 3,000 - 10,000 individuals OR 10,000 - 50,000 acres
G4 or S4	Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.
G5 or S5	Population or stand demonstrably secure to ineradicable due to being commonly found in the world
Sx.1	very threatened
Sx.2	Threatened
Sx.3	no current threats known
Additional Ranks: (GH, GX, GXC, G1Q, T)	(All sites are historical, All sites are extirpated, Extinct in the wild- exists in cultivation, taxonomic questions associated with the species, Rank applies to a subspecies or variety)

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