



INVASIVE SPECIES POLICY  
for  
Lassen Forest, Red River Forests,  
& Shasta Forests



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## 1.0 Introduction

The W. M. Beaty & Associates, Inc. Invasive Species Policy is a program to assess the risk of invasive species, prioritize, and, as warranted, develop and implement a strategy to prevent or control invasive species. This is accomplished through assessment, management practices, control, and monitoring. Known populations of invasive species are present on the forest.

This policy has been developed and implemented in compliance with the FSC Standard for Principle 6, Environmental Impact, and Principle 7, Management Plan. Additionally, the policy relies on and is supported by the associated Sustained Yield Plan (SYP).

The intent of this policy is to reduce the risk of introduction, establishment, and spread of invasive plant species. The goal of this risk reduction is to minimize the damages associated with invasive species to native ecosystems and to conserve the biological diversity found on the forest. By maximizing positive environmental impacts and minimizing adverse environmental impacts resulting from forest management operations, the damages to water resources, soils, landscapes, and unique and fragile ecosystems from invasive species can be minimized.

A noxious weed is any species of plant that the California State Department of Food and Agriculture has determined to be "troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate" (CDFA section 5004 Oct. 2015).

([http://ca.regstoday.com/law/fac/ca.regstoday.com/laws/fac/calaw-fac\\_DIVISION4\\_PART1\\_CHAPTER1.aspx](http://ca.regstoday.com/law/fac/ca.regstoday.com/laws/fac/calaw-fac_DIVISION4_PART1_CHAPTER1.aspx))

All noxious weeds are invasive and non-native; however, not all invasive or non-native weeds are noxious.

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## 2.0 Assessment

A combination of methods is used to determine the extent of invasive species populations on the forest. W. M. Beaty & Associates, Inc. strives to provide education to foresters regarding detection of invasive species. Forestry personnel are expected to document field observations of invasive species and report these findings to the W. M. Beaty & Associates, Inc. Reforestation Department.

### 2.1 Education

Foresters will be trained in the identification of invasive species that are likely to occur on the forest. Reference information is contained in the W. M. Beaty & Associates, Inc. files and are made available to foresters. Additionally, foresters are encouraged to participate in training courses related to invasive species. The following sources are used to aid in the identification and recognition of invasive species known or likely to occur within the forest.

- All Weed XID CD (purchase from Cal-IPC website)
- CA-California Invasive Plant Council. <http://www.cal-ipc.org/>
- CA-California Weed Management Areas. <https://www.cdfa.ca.gov/plant/index.html>
- CA-CalPhotos. <http://calphotos.berkeley.edu/>
- CA-CalWeed Database

- CA-Encyclopededia (CDFA). <https://www.cdfa.ca.gov/plant/index.html>
- California Department of Food and Agriculture, Integrated Pest Control, Weeds Alphabetical by Scientific Name: [http://www.cdfa.ca.gov/phpps/ipc/weedinfo/wininfo\\_list-synonyms.htm](http://www.cdfa.ca.gov/phpps/ipc/weedinfo/wininfo_list-synonyms.htm)
- California Invasive Plant Council (Cal-IPC). <http://www.cal-ipc.org/>
- California Invasive Plant Council: California Invasive Plant Inventory Database: <http://www.cal-ipc.org/ip/inventory/weedlist.php>
- CA-Practical Guidebook for Invasive Aquatic Identification & Control. <http://www.sfei.org/nis/NISguidebooklowres.pdf>
- CA-UC Davis Integrated Pest Management. <http://www.ipm.ucdavis.edu/>
- CA-UC Davis Weed Research and Information Center. <http://wric.ucdavis.edu/>
- CA-UC IPM Online Weed Photo Gallery. [http://ipm.ucanr.edu/PMG/weeds\\_intro.html](http://ipm.ucanr.edu/PMG/weeds_intro.html)
- Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of forests and Woodlands: <http://www.na.fs.fed.us/pubs/detail.cfm?id=9822>.  
<http://www.fs.fed.us/ne/morgantown/4557/cindy/InvasiveSpeciesFieldGuide.pdf>
- Joseph M. DiTomaso and Evelyn A. Healy. 2007. Weeds of California and Other Western States.
- Noxious Weeds...A Serious Threat to Shasta County's Resources, Shasta County Weed Management Area.
- Selected Noxious Weeds of Northeastern California, A Field Identification Guide.
- The Nature Conservancy: Wildland Invasive Species Program
- Tom D. Whitson, Parker, Dewey, Burrill. 2000. Weeds of the West.
- U.S. Department of Agriculture, Invasive and Noxious Weeds: <http://plants.usda.gov/java/noxious?rptType=State&statefips=06>
- U.S. Department of the Interior Bureau of Land Management, Noxious Weeds of the Alturas Field Office. <http://www.blm.gov/ca/st/en/fo/alturas/altweed.html>.  
<http://www.blm.gov/ca/st/en/fo/surprise/altweed.html>
- University of California, Agriculture and Natural Resources, UC IPM Online, Statewide Integrated Pest Management Program: How to Manage Pests, Exotic and Invasive Pests: <http://www.ipm.ucdavis.edu/EXOTIC/exoticpestsmenu.html>
- University of California, Growers Weed Identification Handbook.
- Weed Research and Information Center, UC Davis, <http://www.wric.ucdavis.edu/ca>. <http://wric.ucdavis.edu/>

## ***2.2 Detection***

All forestry personnel should be vigilant in their observation of invasive species during field activities including: informal observations, tract inspection, screening sites during harvest planning and THP preparation, botanical searches/surveys, archaeological searches/surveys, monitoring activities, forest inventory cruising, timber marking, etc. Contract botanists may also be used for searches, field surveys, and identification when necessary. Foresters should communicate with adjacent landowners regarding known or potential invasive species occurrences. State listings of invasive species locations should be utilized as sources of information.

The Shasta Forests SYP describes invasive species conditions in Section FW.II.D.a, Invasive and Noxious Plants. This section is not included in the Red River Forests SYP; however, all W. M. Beaty & Associates, Inc. managed lands will be treated similarly.

Known invasive species on the forest that were targeted with control methods or assessed in the previous 10 years include, but are not limited to:

Common Name	Scientific Name	CDFA Weed Rating	Cal-IPC Weed Rating	County	Tract
Dyer's woad	<i>Isatis tinctoria</i>	B	Mod	Modoc	Adin/Canby, Egg Lake, Glass Mountain
Hounds tongue	<i>Cynoglossum officinale</i>	B	Mod	Shasta	Pondosa, Jimmerson
Klamath weed	<i>Hypericum perforatum</i>	C	Mod	Shasta	Shasta
Musk thistle	<i>Carduus nutans</i>	A	Mod	Shasta	Pondosa
Purple loosestrife	<i>Lythrum salicaria</i>	B	High	Shasta	Pondosa
Scotch broom	<i>Cytisus scoparius</i>	C	High	Shasta	Shasta
Scotch thistle	<i>Onogordum acanthium ssp.</i>	A	High	Modoc	Adin Canby, Glass Mountain, Jimmerson
Spotted knapweed	<i>Centaurea maculosa</i>	A	High	Modoc	Adin/Canby, Glass Mountain, Jimmerson
Squarrose knapweed	<i>Centaurea squarrosa</i>	A	Mod	Modoc	Jimmerson, Pondosa
Tall whitetop (Perennial pepperweed)	<i>Lepidium latifolium</i>	A	High	Lassen	Harvey
Yellow star thistle	<i>Centaurea solstitialis</i>	C	High	Shasta	Pondosa, Shasta

### 2.3 Reporting

Foresters should report observations of invasive species to the Project Forester. Observations should include species name, descriptive location, legal description, mapped location, geographic positioning system (GPS) coordinates, extent, and photograph (if available). Known occurrences of invasive species will be added to the invasive species database as they are discovered. An invasive species layer has been developed and is maintained in the W. M. Beaty & Associates, Inc. geographic information system (GIS).

### 2.4 Weed Ratings

Methods to determine the degree of threat to native species and ecosystems include two widely recognized and accepted weed area rating systems.

#### **California Department of Food and Agriculture (CDFA)**

[http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo\\_list-synonyms.htm](http://www.cdfa.ca.gov/phpps/ipc/weedinfo/winfo_list-synonyms.htm)

The CDFA weed rating system includes five classes (A, B, C, D, or Q). The ratings are policy guidelines that indicate the most appropriate action to take against a pest under general circumstances. Local conditions may dictate more stringent actions at the discretion of the county agricultural commissioners, and the rating may change as circumstances change. The following are the definitions of the weed ratings:

- "A"** 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. A-rated pests are prohibited from entering the state because, by virtue of their rating, they have been placed on the of Plant Health and Pest Prevention Services Director's list of organisms "detrimental to agriculture" in accordance with the FAC Sections 5261 and 6461. The only exception is for organisms accompanied by an approved CDFA or USDA live organism permit for contained exhibit or research purposes. 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"** A pest of known economic or environmental detriment and, if present in California, it is of limited distribution. B-rated pests are eligible to enter the state if the receiving county has agreed to accept them. If found in the state, they are subject to state endorsed holding action and eradication only to provide for containment, as when found in a nursery. At the discretion of the individual county agricultural commissioner they are subject to eradication, containment, suppression, control, or other holding action.
- "C"** 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. There is no state enforced action other than providing for pest cleanliness.
- "D"** An organism known to be of little or no economic or environmental detriment, to have an extremely low likelihood of weediness, or is known to be a parasite or predator. There is no state enforced action.
- "Q"** An organism or disorder suspected to be of economic or environmental detriment, but whose status is uncertain because of incomplete identification or inadequate information.

### **California Invasive Plant Council (Cal-IPC)**

<http://www.cal-ipc.org/ip/inventory/weedlist.php>

The Cal-IPC weed rating includes three categories (High, Moderate, or Limited). The following are the definitions of the weed ratings:

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **Moderate** – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

### **Natural Resources Conservation Service (NRCS)**

<http://plants.usda.gov/java/noxious?rptType=State&statefips=06>

The NRCS weed rating system relies on the CDFA rating system and includes additional qualifiers.

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## **3.0 Management**

Vectors to invasive species distribution include humans, animals, mulch, equipment, wind, vehicles, tools, etc. Numerous management practices are used to minimize the risk of invasive species establishment,

growth, and spread. Practices to be considered and implemented by W. M. Beaty & Associates, Inc. include:

- Wash or clean equipment, vehicles, tools, and clothing of weed seeds prior to moving to or from sites with invasive species
  - Avoid seed mixes that contain potential invasive species
  - Use native logging slash
  - Use certified weed free seed
  - Use certified weed-free mulch (*more costly than native logging slash, not always 100% weed free, does not hold up as well as slash, supply is variable, and requires hauling in*)
  - Seed landings and other disturbed areas with native species
  - Alter silvicultural treatments
  - Effective forest monitoring and early detection
  - Invasive species identification training
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## 4.0 Control

In prioritizing control of invasive species populations, W. M. Beaty & Associates, Inc. will consider the relative risk of invasive species infestations relative to other threats to the forest (e.g., fire, insects, disease, etc.). Control measures should match the scale of the infestation and the potential risks and/or actual impacts to native species and ecosystems. Where eradication is not feasible, efforts shall focus on control of existing populations to prevent further spread. Efforts should focus on controlling the seed bank (minimize new seed production and deplete existing seed). Where invasive species are extremely aggressive, mitigation, repair, and restoration of native species is often difficult, more costly, and sometimes impossible. Resources shall be allocated both to eradication and control of established invasive species populations when feasible and the prevention of new species occurrences.

W. M. Beaty & Associates, Inc. will use in-house foresters, outside contractors, and local government resources to control populations as appropriate. W. M. Beaty & Associates, Inc. has been a cooperator in the Lassen, Modoc, Plumas-Sierra, Shasta, and Siskiyou County weed management area (WMA) groups. These WMAs are cooperators in county-wide weed control under the California Food and Agricultural Code §7272(b). W. M. Beaty & Associates, Inc. maintains annual cooperative agreements (Weed Eradication Agreement Memorandum of Understanding) with Shasta and Modoc Counties to treat noxious weeds. The primary purpose of the WMAs is to cooperate on projects in order to seek and obtain funding. Unfortunately, funding for the WMA Program has been eliminated from the CDFA budget as of June 30, 2011. The Terrestrial Noxious Weed Program and Weed Biological Control Programs at CDFA will also be eliminated on June 30, 2011.

Control methods to be considered include physical/cultural (mechanical and manual), chemical, thermal (prescribed fire), and biological (natural enemy). Non chemical control will be used where it can be effective.

Mechanical control will be used where feasible and may include mastication, hand pulling, and removal of seed heads along with bagging and disposal of collected material.

Chemical control will be used in compliance with the W. M. Beaty & Associates, Inc. Vegetation Management Policy and Pesticide Use Guidelines and Section WA.I.E.6, Chemical Contamination of the associated SYP. A pest control advisor (PCA) will prepare a pest control recommendation for all pesticide

use. Herbicides that have been effectively used include: Accord XRT II (glyphosate), Milestone (a.i. aminopyralid), Transline (a.i. clopyrard), Garlon 4 (a.i. triclopyr), Weedone LV6 EC (2,4-D), etc. These herbicides are generally tank mixed with adjuvants and may include a water carrier. Herbicides are generally applied by hand crews equipped with backpack sprayers to control small populations.

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## 5.0 Monitoring

Monitoring of control measures and management practices will be used to assess their effectiveness in preventing or controlling invasive species. The following types of monitoring will be used:

- Implementation monitoring will be conducted during and immediately after treatment to ensure the treatment was in compliance with the prescription.
- Effectiveness monitoring will be conducted the year following herbicide application to determine if the control measures produced satisfactory results.
- Trend monitoring will be used to determine if known populations of invasive species are expanding or new populations are occurring.

Monitoring may be conducted in conjunction with other monitoring activities described in Section WA.I.F, Monitoring Plan of the SYP. The metric of success is if existing populations are not increasing and new populations are controlled.

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## 6.0 Invasive Species Photographs

The following invasive species occur or have the potential to occur on WBA managed lands.



Wavyleaf Thistle



Plumless Thistle





Canada Thistle



Scotch Thistle



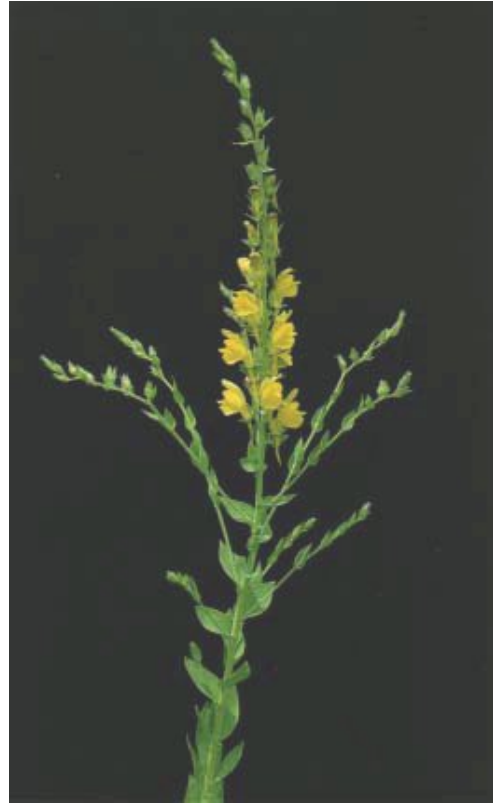
Yellowspine Thistle



Musk Thistle



Yellow Starthistle



Dalmatian Toadflax



Dyer's Woad



Dyer's Woad



Halogeton



Klamath Weed (St. Johnswort)



Hoary Cress



Leafy Spurge



Mediterranean Sage



Medusahead



Purple Loostripe



Tall Whitetop (Perennial Pepperweed)



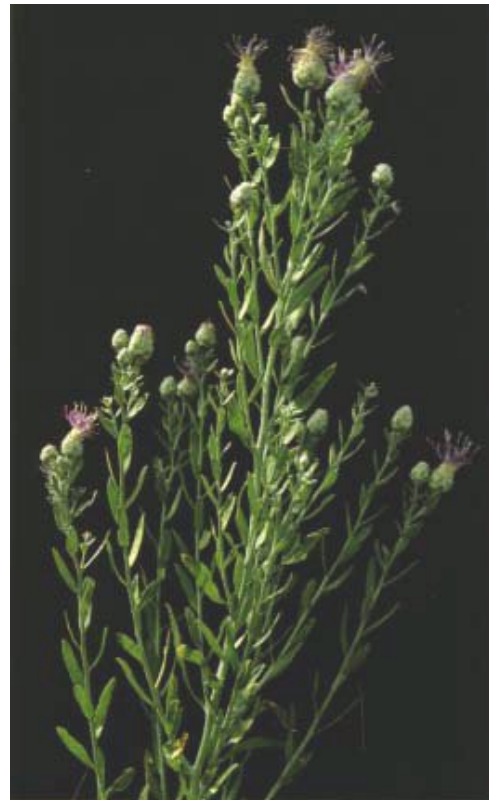
Diffuse Knapweed



Squarrose Knapweed



Spotted Knapweed



Russian Knapweed



Houndstongue



Scotch Broom



Common Crupina