National Fire Plan Project Synopsis:

Influence of Wildfires and Post-Fire Management on Invasive Species and Native Plant Communities of Dry Interior Forests

Eastside Forest Health Restoration Team
Wenatchee Forestry Sciences Laboratory
USDA Forest Service, PNW Research Station

Principal Investigators: Ed DePuit, Wenatchee Forestry Sciences Lab (Admin. Lead)
Catherine Parks, LaGrande Forest & Range Sciences Lab
Nan Vance, Corvallis Forestry Sciences Lab

Broad Goals

1. To improve understanding of the impacts of and interrelationships among wildfires and non-native invasive (i.e., weedy) plant species as expressed upon native vegetation in dry forest types of the interior Pacific Northwest

2. To evaluate the influence of fuel reduction and other management practices on invasive species/populations and native plant species/communities

3. *(Deferred during Year 1, with pursuit contingent upon continued NFPfunding):* Based upon the above, to develop and evaluate risk assessment protocols and management tools to aid land managers in pursuing the dual objectives of improved fire management and weed control in the study region

Project work toward these broad goals will be designed to provide answers to several **central research questions**:

a) What are the *effects of varied fire regimes* (frequencies, intensities, patterns, etc.) on dynamics of invasive species (incursion or emigration; increase or decrease; etc.; over time)?, and

b) What are the *effects of fuel reduction (and other management) practices* on dynamics of invasive species (incursion or emigration; increase or decrease; etc.; over time)?

c) What are the effects of varying fire regimes, weed infestations and post-fire management practices on native plant species and communities?, and

d) What are the rates, patterns and trajectories of secondary plant succession following wildfires and post-fire management techniques?

Answers to all the above questions will be sought as influenced by varying:
- Habitat and landscape characteristics
- Native plant species and community characteristics
- Individual invasive species presence/proximity, population levels and autecological/synecological characteristics

Specific Research

The following array of specific studies will be implemented to address the two broad goals of this project for FY 2001; *detailed descriptions of each study are available upon request*:

Study A: Analysis of spatial distribution relationships between invasive species and fire regimes in the Blue Mountains of southeastern Oregon and eastern Washington Cascades.

Principal Investigators: Catherine Parks, LaGrande; and Ed DePuit, Wenatchee
Support Personnel: Bridget Read, LaGrande; and Bonnie Shanafelt, Wenatchee
Approximate FY01 Funding: $89,000

Study B: Effects of fuel reduction and forest restoration activities on forest understory composition and diversity.

Principal Investigators: Charles Halpern and Jim Agee, University of Washington, under a 3-5 year cooperative agreement with UW.
Cooperating Project Scientists: Ed DePuit (and John Lehmkuhl), Wenatchee; Catherine Parks, LaGrande; Nan Vance, Corvallis
Approximate FY01 Funding: $75,000 from Invasives Project (plus $110,000 from J. Lehmkuhl's NFP Strategies Project)

Study C: Effects of wildfire and prescribed burns on invasive species and native plant communities in Wilderness management areas of the Salmon River Canyon in central Idaho.

Principal Investigator: Nan Vance, Corvallis
Support Personnel: New GS7/9 term plant ecologist, seasonal field technician
Collaborating personnel: Leonard Lake and Bill Shields, Nez Perce NF.
Approximate FY01 Funding: $92,400

Study D: Effects of fire on the filter mechanisms to invasive species establishment in dry forest types of the interior Pacific Northwest.

Principal Investigator: Benjamin Zamora, Washington State University, under 3-5 year joint venture agreement with WSU.
Collaborating Project Personnel: Ed DePuit and Bonnie Shanafelt, Wenatchee
Approximate FY01 funding: $60,000

Study E: Fire effects on invasive plant species:pollinator systems

Principal Investigators: Jim McIver and Jane Hayes, LaGrande
Cooperating Project Scientist: Catherine Parks
Approximate FY01 funding: $10,000

Study F: Effects of thinning and prescribed burning fuel reduction treatments on invasive species in the Blue Mountains and eastern Washington Cascades

Principal Investigators: Catherine Parks, LaGrande, and Ed DePuit, Wenatchee; in concert with Richie Harrod (OWNF) and other Fire/Fire Surrogate and Pendleton Project scientists
Support Personnel: Bonnie Shanafelt, Wenatchee
Approximate FY01 Funding: $6,000 from Invasive Project funds

Study G: Effects of prescribed fire and other treatments on yellow starthistle control

Principal Investigators: Catherine Parks, LaGrande, and Umatilla NF personnel
Collaborating Scientists: Ed DePuit, Wenatchee, Ben Zamora, WSU
Approx. FY01 Funding: $10,000

Study H: Effects of prescribed fire and other treatments on control of Dalmatian toadflax.

Principal Investigators: Brenda Lundberg, WWU, Ed DePuit, Wenatchee, and Brigitte Ranne, OWNF
Support Personnel: Bonnie Shanafelt, Wenatchee
Approx. FY01 Funding: $5,000

Other *Potential* Studies: A number of additional studies may be initiated/pursued during FY01 contingent upon further analysis of opportunities, available resources and time, including:

> A large potential study in the Twisp Ranger District, Okanogon-Wenatchee National Forest, within the Hungry Hunter Pilot Project area, wherein invasive and other understory species responses to a wide array of fuels reduction treatments (mechanical and burning) would be assessed under varying site conditions.

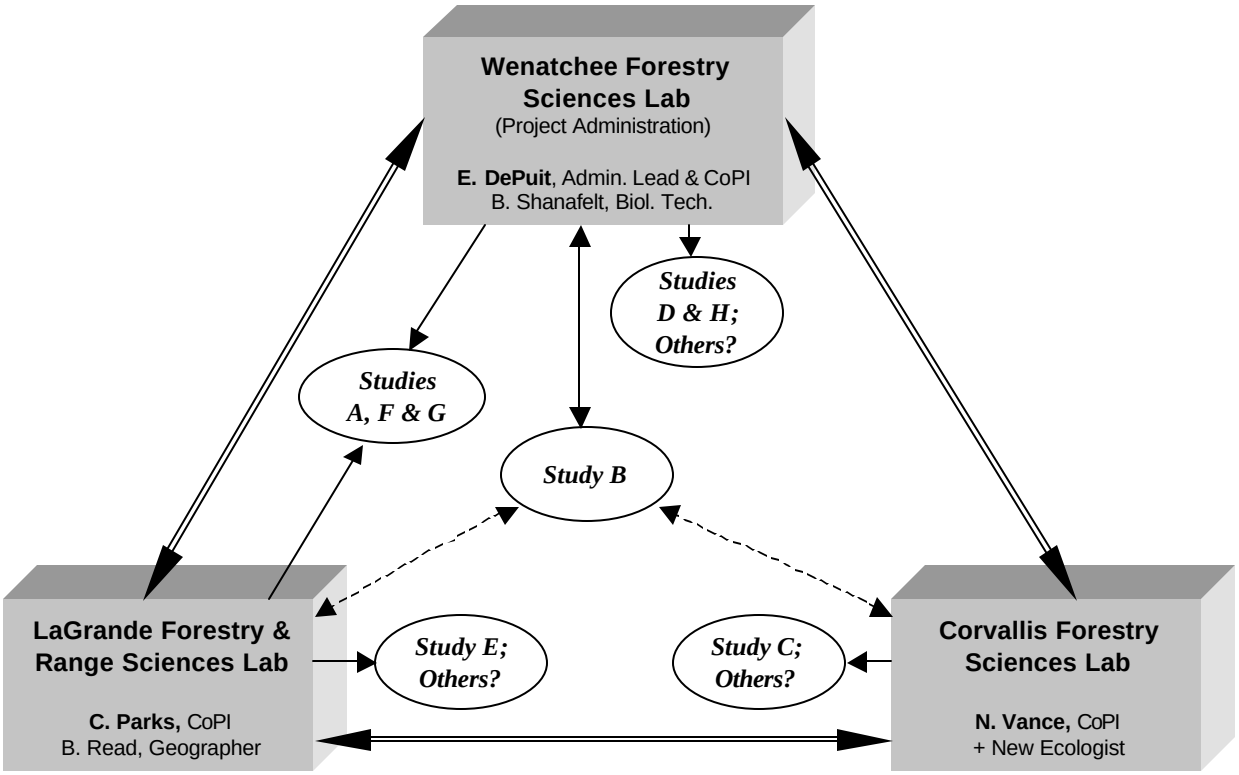
> Several possible studies on the Naches, Leavenworth, Entiat and Chelan Ranger Districts, Okanogon-Wenatchee National Forest, focusing upon effects of dry site management practices on spread of invasive species; effectiveness control treatments targeted to specific invasive species; effects of ungulate grazing on invasive species and native vegetation; and primary dispersal agents for invasive species.

Research Framework/Project Organization

The above studies comprise and will be integrated into an overall research framework as indicated in the following table:

	Study A	Study B	Study C	Study D	Study E	Study F	Study G	Study H	+ Other Potential Studies
Goal 1: Ecological Relationships among Fire, Invasive Species & Native Species									
a) Landscape Level/Spatial relationships	X	X							
b) Community Level relationships		X	X	X	X	X	X		
Goal 2: Influence of management Practices on Invasive & Native Species									
a) Prescribed Fire/Fuel Reduction Treatments		X	X	X		X	X	X	X
b) Other Management Treatments/Strategies							X	X	X

Organizational relationships for the Invasive Species Project and its component studies are summarized in the figure below:



Research Timeline:

Study	FY01-3rd Qtr.	FY01-4th Qtr.	FY02	FY03	FY04	FY05
A	>>?>>>>>>>>>>>?					
B		>>>>>>>>>>>>>>>>>>>>