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Project Identifier: 01.PNW.B.1 – *Predicting the Spread of Invasive Species After Fuel Reduction Treatments and Postfire Disturbance*

Project Narrative
2003 Highlights, Accomplishments and Activities

This project focuses upon understanding and managing the interrelationships of invasive plant species with the increasing incidence of wildfire and fire management efforts (including fuels reduction) in the Pacific Northwest, including whether invasive species problems may or may not be exacerbated by fire and fire management. Substantial progress was made during FY03 in four broad areas of emphasis:

1) *Fundamental biology and ecology of key regional invasive plant species.* Ongoing and new studies are focusing upon autecology (including reproductive biology/ecology), population ecology, synecology (including fire ecology) and distribution of several invasive plant species of key concern in the interior northwest, including sulfur cinquefoil, ventenata, cheatgrass, diffuse knapweed and Dalmatian toadflax. Outcomes of these studies are informing related work in the other three areas of emphasis that follow.
2) *Impacts and interrelationships among wildfires, other disturbances, invasive plant species and native vegetation.* Ongoing research in central Idaho continues to increase understanding of responses of invasive and native plant species/communities to both wild (and prescribed) fire, as well as the influence of invasive species on native vegetation. Another project has elucidated relationships among fire intensity (as influenced by fuel conditions) and timing, and germination/establishment ecology of regionally important invasive plant species. Outcomes of these and related studies in emphasis areas 1) and 3) are being utilized to inform emphasis area 4), leading to improved modes of risk assessment and management tools.
3) *Influence of fuel reduction and other management practices on invasive and native plant species.* In the eastern Washington Cascades, field data collection was completed on a retrospective analysis of understory vegetation (both native and invasive introduced plant species) to prescribed fire and other fuel reduction treatments on an array of habitat types, while another study continued to evaluate responses of invasive species to current prescribed fire fuel reduction treatments. In central Oregon, a new cooperative study was initiated to examine the interactions of livestock grazing, fuels reduction, livestock grazing and invasive species, and another ongoing study analyzed first-year responses of invasive species to combinations of spring vs. fall prescribed burning. Outcomes of these and other studies are being used to inform the risk assessment/management tool research highlighted below.
4) *Developing risk assessment protocols and management tools that concurrently address fire, fuel and invasive species concerns.* Progress was made in refining forest growth transition models (using FVS), including incorporation of effects of large ungulate herbivory; and work began on refinement of an invasive plant module based upon results

of a pilot field study of a northeastern Oregon watershed. Results of these modeling efforts (as informed by results of research in preceding emphasis areas) will ultimately contribute to a method, or protocol, for invasive plant species risk assessment that will assist managers in designing fuels reduction and other fire management strategies that address invasive species concerns from stand to landscape spatial scales, and from short to long-term temporal scales. Other work during FY03 included development and initial field testing of a new approach for landscape-scale sampling/monitoring of invasive plant species (during which and coincidentally a major, to-date largely unnoticed infestation of a new invasive species was detected in northeastern Oregon).