

Aquatic and Riparian Effectiveness Monitoring Program Invasive Species Report 2010 Field Season



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Introduction

Invasive species have been identified as one of the four critical threats to the Nation's ecosystems by the Chief of the USDA Forest Service. The broad geographic area sampled by the Aquatic and Riparian Effectiveness Monitoring Program (AREMP) provides an excellent opportunity to detect the presence or absence of "high concern" invasive plants and animals (table 1) on federal lands while surveying stream reaches in randomly-selected watersheds in the Northwest Forest Plan area (NWFP; "west of the Cascades" from Point Reyes, California north to the Canadian Border).

Methods

Six to eight stream reaches varying from 160 to 480 m in length were sampled in each of 28 randomly selected watersheds. Searches for invasive terrestrial plants were performed at surveyed stream reaches between longitudes A-B, F-G, J-K (fig. 1). AREMP field crews began searches at the bankfull indicator of the upper transect (B, G, K) with one crew member on each bank. Crew members spent five minutes thoroughly searching downstream in a zigzag pattern no more than five meters in width from the wetted edge. When an invasive plant was encountered, the search time was paused and the longitude segment, species code, bank the plant was found on (left or right), and associated photo numbers were recorded.

Additionally, a global positioning system location was recorded. If a suspected invasive plant species was encountered but could not be clearly identified in the field, a specimen was collected and placed in a plant press for later verification.

To determine the presence of any non-native snails, mussels, or crayfish listed in table 1, AREMP crews collect eight benthic macroinvertebrate subsamples in the first four fast-water

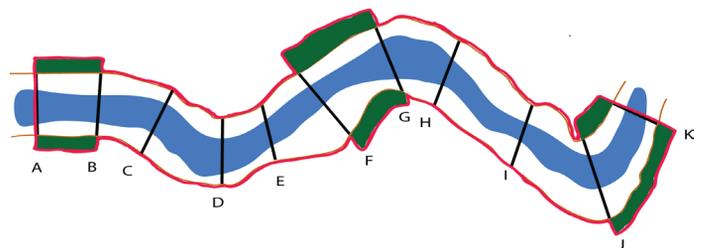


Figure 1. The orange polygon denotes the total area sampled in each stream reach. Green polygons denote areas surveyed for terrestrial plants. The total stream area sampled is from transect A to K.

Table 1. Invasive species surveyed for during the 2010 field season.

Type	Common Name	Genus Species
Aquatic Invertebrates	New Zealand mudsnails	<i>Potamopyrgus antipodarum</i>
	Zebra mussels	<i>Dreissena polymorpha</i>
	Quagga mussels	<i>Dreissena rostriformis bugensis</i>
	Rusty crayfish	<i>Orconectes rusticus</i>
	Red swamp crayfish	<i>Procambarus clarkia</i>
	Ringed crayfish	<i>Orconectes neglectus</i>
	Northern crayfish	<i>Orconectes virilis</i>
Aquatic plants	Yellow flag iris	<i>Iris pseudacorus</i>
	Hydrilla	<i>Hydrilla verticillata</i>
	Parrot feather watermilfoil	<i>Myriophyllum aquaticum</i>
	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
	Giant reed	<i>Arundo donax</i>
	Brazilian elodea	<i>Egeria densa</i>
Didymo	<i>Didymosphenia geminata</i>	
Terrestrial vertebrates	Feral swine	<i>Sus scrofa</i>
Terrestrial plants	Japanese knotweed	<i>Fallopia japonica</i>
	Cultivated knotweed	<i>Polygonum polystachyum</i>
	Giant knotweed	<i>Polygonum sachalinense</i>
	Old man's beard	<i>Clematis vitalba</i>
	Garlic mustard	<i>Alliaria petiolata</i>
	Giant hogweed	<i>Heracleum mantegazzianum</i>
	Himalayan blackberry	<i>Rubus discolor</i>
	English ivy	<i>Hedera helix</i>
	Reed canary grass	<i>Phalaris arundinacea</i>

riffles at each site using a kick net. After the field season those samples are sent to the Utah State National Aquatic Monitoring Center and processed under a microscope to ensure invasive species that may have been too small for field crews to identify are not present (results from the laboratory are still pending and any invasive species found will result in immediate notification of local managers). If a non-native snail, mussel or crayfish was suspected to be present in the field, photographs were taken and the specimen was preserved in 95% ethanol.



Cassie Whiteside

Student Conservation Association intern, Ian Higgins with reed canary grass

For invasive aquatic plants, AREMP crews searched the wetted portion of the channel and any off channel wetted areas during site layout. When a suspected aquatic invasive plant was encountered the longitudinal segment was recorded, photographs were taken and a specimen was collected and placed in a plant press for later verification.

Verified invasive species

During the 2010 field season (June through September) AREMP crews surveyed 185 sites in 28 watersheds for invasive species. Crews recorded eight detections of invasive terrestrial plant species in five watersheds, in which six of those detections were species found in table 1. Those six detections were represented

by only two species, reed canary grass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus discolor*). Two additional species listed on the Forest Service Natural Resource Information System (NRIS) Region 6 Invasive Species list, common mullein (*Verbascum Thapsus*) and Robert geranium (*Geranium robertianum*) were also found. Currently AREMP does not search for all of the species on the NRIS Region 6 Invasive Species list, as it is quite extensive and our current training program constrains the amount of days we can spend on invasive species. Two of the detected invasive species were in Washington (fig. 2a), six out of the eight detections occurred in Oregon (fig. 2b), and no detections occurred in California (fig. 2c).

Washington

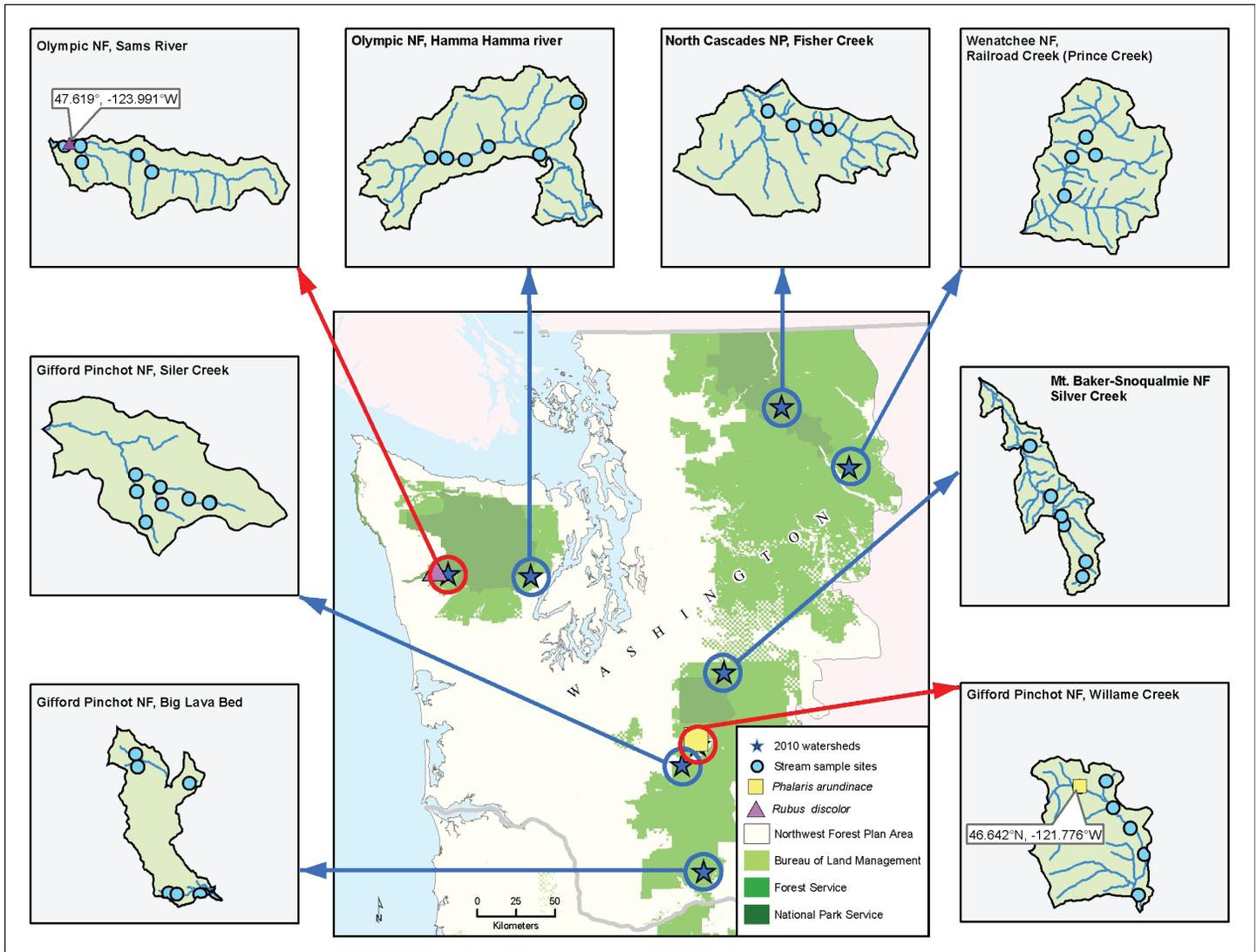


Figure 2a. Map of the Washington watersheds surveyed by Aquatic and Riparian Effectiveness Monitoring Program (AREMP) crews during the 2010 field season with blue lines representing watersheds where invasive species were not found and the red lines depicting watersheds where invasive species were detected along with the corresponding latitude and longitude of the site where the detection occurred. The triangles and squares represent invasive species from the AREMP list (see table 1).

Oregon

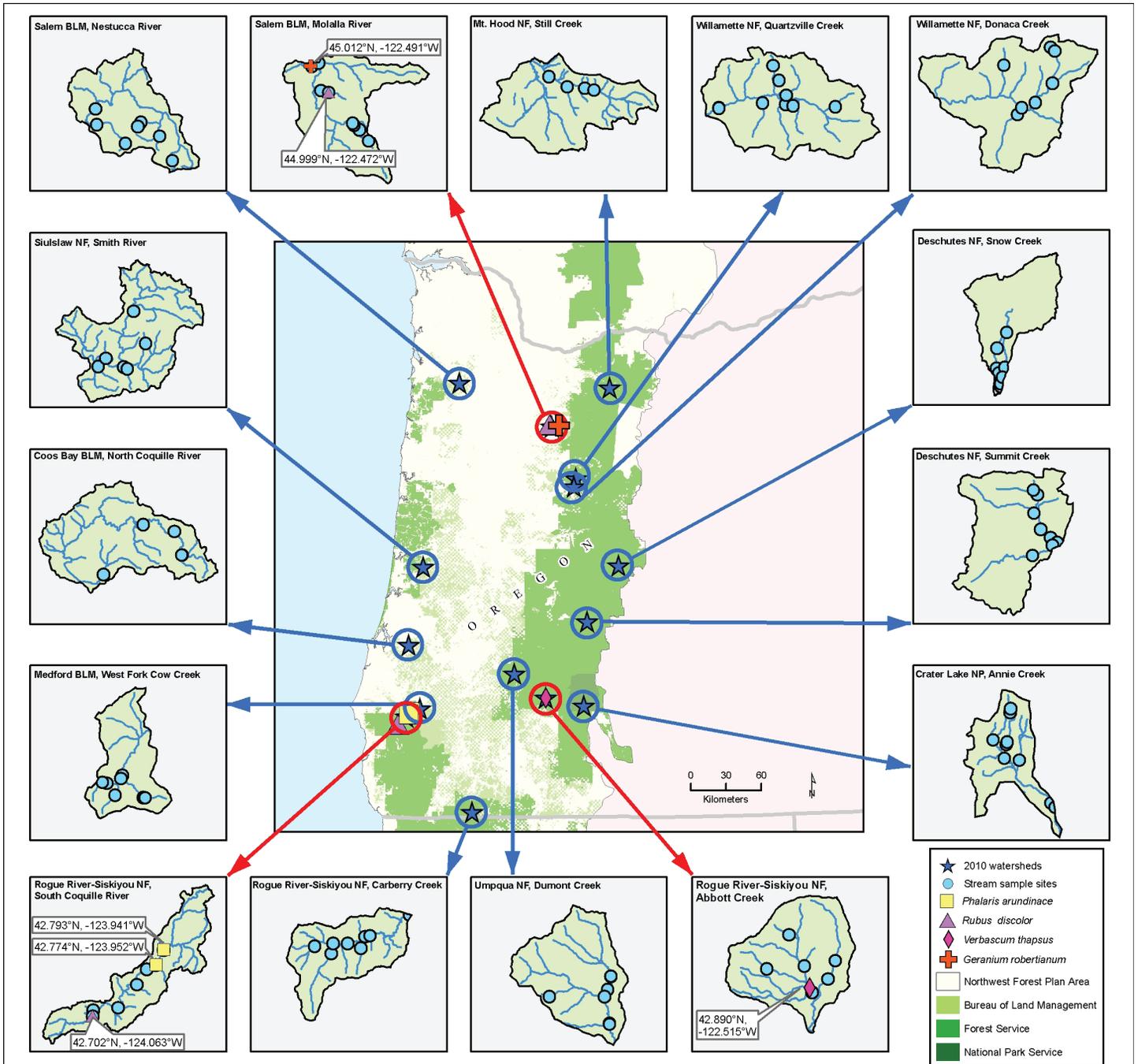


Figure 2b. Map of the Oregon watersheds surveyed by Aquatic and Riparian Effectiveness Monitoring Program (AREMP) crews during the 2010 field season with blue lines representing watersheds where invasive species were not found and the red lines depicting watersheds where invasive species were detected along with the corresponding latitude and longitude of the site where the detection occurred. The triangles and squares represent invasive species from the AREMP list (see Table 1) while the diamonds and crosses represent invasive species from the Forest Service Natural Resource Information System Region 6 invasive species list.

Northwestern California

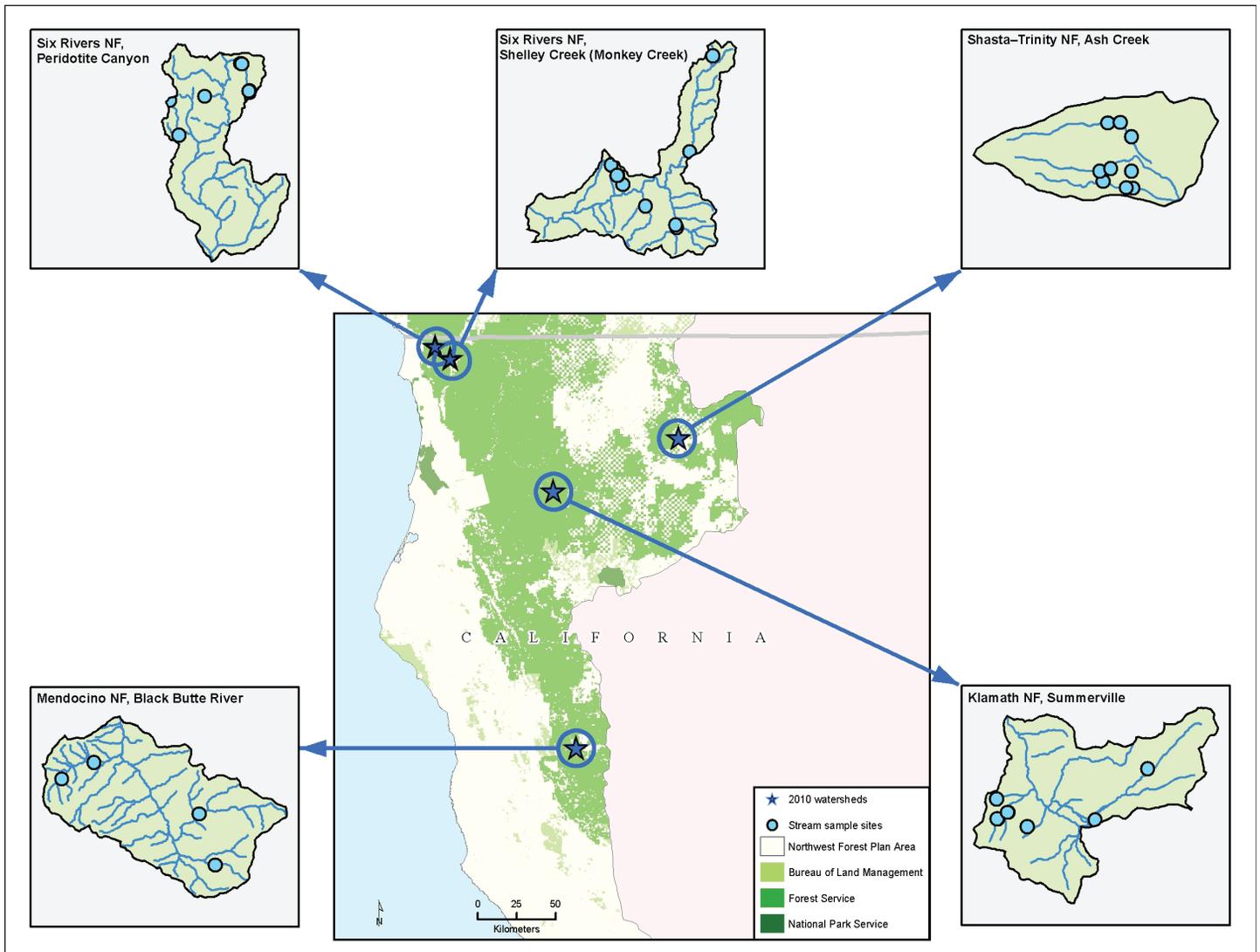


Figure 2c. Map of the California watersheds surveyed by Aquatic and Riparian Effectiveness Monitoring Program crews during the 2010 field season with blue lines representing watersheds where invasive species were not found.

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