ATTACHMENT 4b

Lower Columbia CWMA

LOWER COLUMBIA RIVER

2011

INVASIVE SPECIES SURVEYS

BACKGROUND

The Columbia River provides essential habitats for a variety of wildlife dependent on this watershed. From its estuaries, which provide crucial nursery and rearing environments for a number of fish species and crabs, to the shallow sub tidal and intertidal areas that support oysters, clams, and mussels, the lower Columbia River is a vital key in need of protection from invasive plant species. The once abundant anadromous fish stocks of the Columbia River have declined significantly in recent decades despite hatchery programs. Last numbers estimate the overall populations at less than 10% of their historic size. In this time, there has been dramatic degradation and loss of estuarine and other wetland habitats whose effects and contribution to fish stock declines is unknown. Additionally, pollution and diking of tidal marshes, sedimentation and dredging have substantially reduced the biological productivity of the estuaries and the quantity and value of the habitat it provides for anadromous fish (Lower Columbia River, 1994)

The Lower Columbia Cooperative Weed Management Area (LC CWMA) has adopted the Lower Columbia from the Lewis River confluence to the mouth of the Columbia at Astoria. The agencies and concerned parties involved in the formation of the LC CWMA agree that there are wildlife, fisheries and riparian habitat concerns that need to be addressed, but no one organization has complete data on this area. A baseline survey of the area was needed to determine the presence and extent of invasive plant species (Purple loosestrife, Phragmites and Knotweed ssp.). Invasive plant species do and can effect water quality and sediment load on tributaries, estuaries and wetlands. Identifying these plant species is the first step in establishing a successful management plan to address these impacts.

PROJECT

The LC CWMA submitted a grant proposal to the Wahkiakum Coastal Marine Resource Committee Program Working Group approved to survey the Lower Columbia River in an attempt to collect baseline data on the invasive plant species primarily in the vicinity of Wahkiakum County. The grant period was very short, with the grant award approval in late April and a completion date of June 30th, 2011.

Our grant proposal intended to achieve the following WDFW MRC Benchmarks:

- ✓ Marine Habitats - to understand what is affecting these habitats and to restore marine estuaries, and near-shore habitats, prevent loss and achieve healthy habitat areas-invasive species involved in the destruction of these habitats must be quantified and addressed appropriately.
- ✓ Marine Life - invasive species introduction and spread is a bench-mark affecting protection and restoration of species of interest and concern.
- ✓ Marine and Fresh Water Quality - invasive species do and can effect water quality and sediment load on tributaries, Estuaries and Wetlands. Identifying the problem weeds is essential.

- ✓ Education and Outreach - Developing educational information about invasive species, stewardship and ownership of community resources is one of our primary goals. Also, we are working hard at building lasting partnerships and coordinating outreach programs with other organizations, local businesses and promoting the involvement of local schools.

Our survey work included Columbia River Kayaking LLC, to provide kayaks and guide services on the lower Columbia River and Jeff Rooklidge, Wahkiakum High School teacher. Mr. Rooklidge has an environmental club where he teaches students about habitats, wildlife and invasive species. He recruited eight students (for each day of surveys) from his classes to do the hands-on field work on the Columbia River as a supplemental teaching opportunity. Students were paired in teams of two individuals to maneuver a two man kayak for survey purposes. Each team of two were given a GPS unit and a clip board with water proof paper to collect species name, waypoint id number, quantity on infestations and additional notes to describe finding. Both Jeff Rooklidge and one member of the Cowlitz County Noxious Weed Control Board accompanied the group to help with proper identification of invasive plant species and for supervision.

The survey work began on May 18th, 2011 and concluded on June 3rd, 2011. There was a total of 6 days of survey work performed during this period of time. An additional two days of survey work could not be completed because students had mandatory curriculum testing for the school district. Complicating this period of surveys, two more factors made this work more difficult; the Columbia River was at flood stage and presented safety concerns, and Purple loosestrife sites were underwater, making it difficult for the crew to find plant infestations and determine quantity.

INVASIVE PLANTS

Washington State's noxious weed list includes 144 invasive plant species, both aquatic and terrestrial. For the purpose of the lower Columbia River surveys, we were primarily looking for three invasive plant species that can significantly impact riparian habitats. The priority weed species included: purple loosestrife, knotweed spp. and Phragmites spp.

Purple loosestrife (Lythrum salicaria) is an herbaceous, semi-aquatic plant that infests habitats such as wet meadows, pasture wetlands, cattail marshes, stream and river banks, lake shores, irrigation ditches, drainage ditches, and storm water retention basins. This plant harms wetlands by crowding out native wetland plants and by eliminating nutrient food sources and shelter for wetland wildlife adapted to these plant communities. Purple loosestrife sprouts from cut-off stems, underground roots and plant fragments as well as seed. Each plant may have several stalks per plant and each stalk can produce between 100,000 to 300,000 seeds.

Photo by: Barry A. Rice, The Nature Conservancy, Davis, CA

Photo: Agriculture and Agri-Food Canada Archives, Agriculture and Agri-Food Canada, www.forestryimages.org.

Purple loosestrife site on the lower Columbia River during the May 2011 surveys with Columbia River Kayaking LLC and Wahkiakum High School Environmental Class (Mr. Rooklidge's students).

Knotweed species present in Washington and Oregon States include: Japanese knotweed (Polygonum cuspidatum), Giant knotweed (Polygonum sachalinense), Bohemian knotweed (Polygonum bohemicum) and Himalayan knotweed (Polygonum polystachyum). The knotweed complexes are perennial plants native to Asia that were introduced into the United States as ornamentals in the late 1800's. Plants spread by rhizomes and plant parts that break off main parent plant. Knotweeds are destructive plants that invade and degrade streams and river banks, causing erosion, bank collapses and disruption of the local ecosystems. The aggressive and fast growing nature of these plants severely impacts stream beds and degrades spawning habitat for salmon. Knotweeds easily spread from site to site during flooding events, beaver activity, mowing, digging or improper disposal of stems and roots.

Knotweed site on the lower Columbia during May 2011 survevs.

Common reed (Phragmites australis) is a tall perennial grass that can grow to over 15 feet in height. Plants form dense network of roots and rhizomes which can go down several feet in depth and can grow 10 or more feet in a single growing season. Phragmites invades quickly and can take over a marsh community, crowding out native plants, changing marsh hydrology, altering wildlife habitats, increasing fire potential and the large biomass that is produced blocks light to other vegetation. This plant can spread both by seed and by vegetative fragments of rhizomes.

Kayaking photos are from the May 2011 lower Columbia surveys.

PRELIMENARY SURVEY FINDINGS

The preliminary data collected on the lower Columbia River indicates the presence of all three species. Prior to the invasive plant surveys, there was only one known infestation site of Phragmites, but indication now show that this plant species is more widely spread than first thought. Several large sites of Phragmites were located along the banks of the Columbia River within the boundaries of Wahkiakum County. Purple loosestrife is widely spread throughout the wetlands and estuaries of the main land and the satellite islands. The sizes of the infestations are significant. Only a few sites of knotweed spp. were located by the crew. The GPS units were downloaded and a preliminary map was constructed with the data. (Attachment 4b1)

Survey information collected by this crew indicates that the purple loosestrife numbers are larger than anyone expected. Many of the estuaries and wetlands are considerably infested with large numbers of loosestrife. Even with data on biological insect releases since the late 1990's, the size of the patches found seems to indicate that the biological insect releases, which consisted mostly of Galerucella spp., did little to control these plants on the lower Columbia River. Current studies on Galerucella spp. finds that these biological insects do not do well in tidally influence wetlands and estuaries. As to the discovery of the large Phragmites infestations along the Columbia River, it is speculated that the number of infestations are still at a minimal amount and controlling this species is critical before the number of sites and the size of the infestations grow to an unmanageable amount.

Additional survey work will begin in July 2011 to complete the data collection on these species from Cowlitz at the Lewis River confluence and Pacific county to the Astoria Bridge. Supplemental surveys of inland areas in Wahkiakum County along with tributaries of the Columbia River will also be performed in July by Columbia Land Trust under a WSDA grant. The goal is to have a more complete picture of invasive species within the Lower Columbia Cooperative Management Area.

BIOLOGICAL INSECT RELEASES

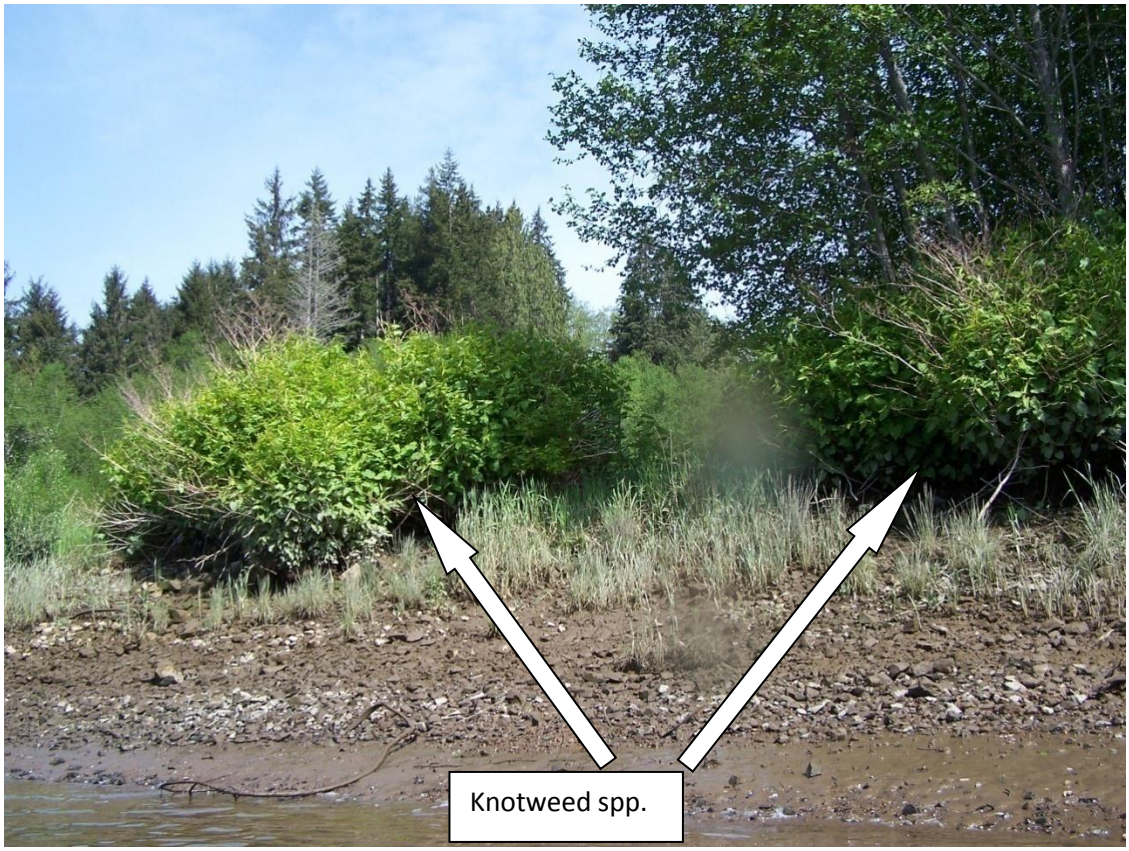
On June 10, 2011 the biological insect *Hylobius transversovittatus* was released near the Julia Butler Hansen Wildlife Refuge in Cathlamet. Two release sites were identified along the Columbia River, next to the refuge as the first wave of introduction for this biological agent. (Attachment B)

The LC CWMA plans on releasing more *H. transversovittatus* along the lower Columbia River when biological insects are available. Currently, this biological insect is reared in labs and is only available on a limited basis. Studies show that this biological agent does better in tidally influenced areas where Galerucella spp. had difficulty escaping rising waters.

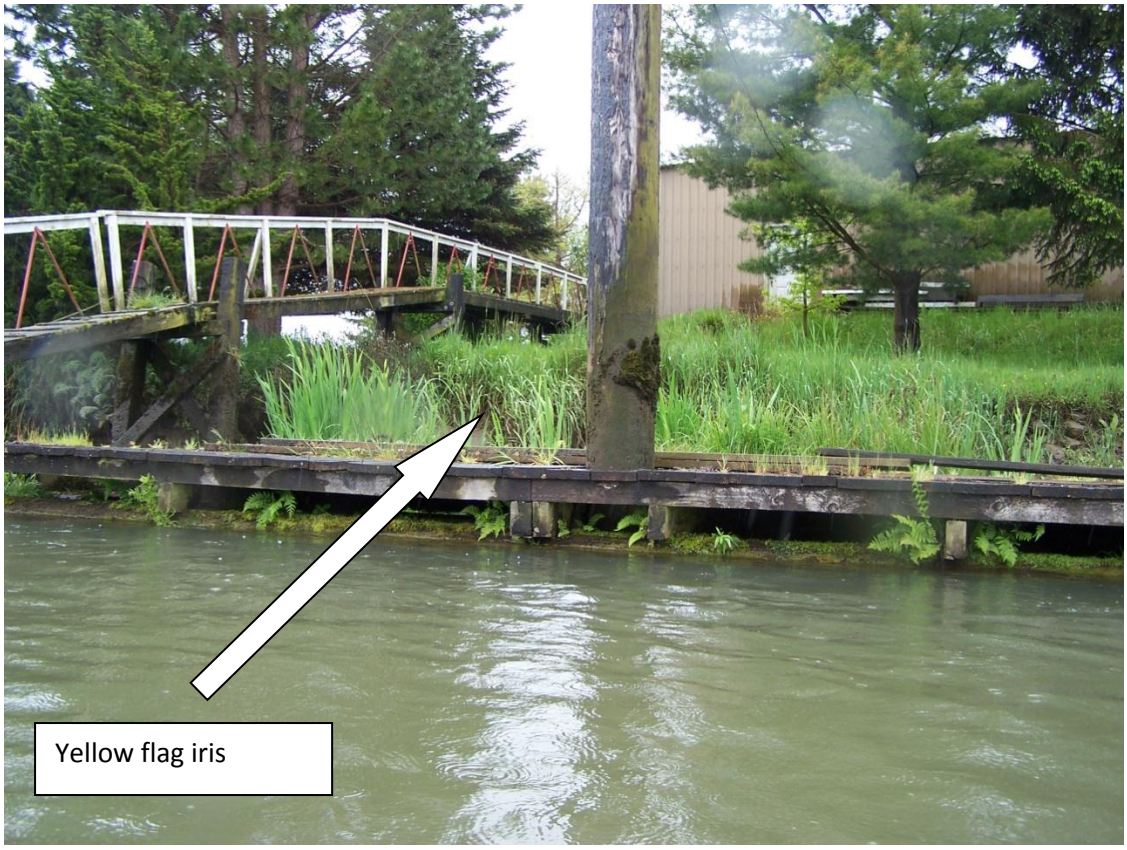
Purple loosestrife site -closer look


Phragmites site


Yellow flag iris (*Iris pseudacorus*)


Knotweed spp.


Knotweed spp.


Yellow flag iris