Presence/Absence Boat Ramp Survey for Invasive Aquatic Plants within the River to River Cooperative Weed Management Area.

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Introduction:
• The SIU Plant Biology Department recently conducted a project for the USFS to compile all records of exotic plants in the River to River Cooperative Weed Management Area (CWMA). Due to an emphasis on upland habitats, little data exists about the distribution of aquatic invasive plants within the CWMA. Before initiation of this project only 20 records of Brittleleaf naiad (Najas minor), 6 records of Brazilian Waterweed (Elodea densa), 1 record of Curlyleaf pondweed (Potamogetom crispus), 5 records of Purple Loosestrife (Lythrum salicaria), 82 records of Moneywort (Lysimachia nummularia), and 3 records of European water-clover (Marsilea quadrifolia) existed out of 10,000 records from the Inventory of Non-Native Specie (Gibson et al. 2006).

• Invasive aquatic plants are transported via the horticultural trade and transference from infested areas to non-infested areas (Maki and Galatowitch 2003). Boat ramps are an ideal point of introduction for such plants due to the transfer of boats to various bodies of water; thus, these points are best selected for initial survey efforts. Our goal was to establish a presence/absence map as baseline data for future management practices.

• We focused on eleven main species that would most likely be found in this area:
  Alligatorwater (Alternanthera philoxeroides), Brazilian Waterweed (Figure 1), Waterhyacinth (Eichhornia crassipes), Hydrilla (Hydrilla verticillata), Parrotfeather watermilfoil (Myriophyllum aquaticum), Eurasian watermilfoil (Myriophyllum spicatum) (Figure 2), Brittleleaf naiad (Figure 3), Curlyleaf pondweed (Figure 4), Purple Loosestrife, European water-clover, and Moneywort which is considered a noxious weed by some, but not necessarily an invasive.

Methods:
• Two qualitative measures for invasive aquatic vegetation: visual sampling and rake sampling (Figure 5)

• Visual sampling, we assessed overall plant abundance and invasive plants present surrounding the entire ramp/dock.
  • Used a scale (0-4) to rate the overall plant abundance and invasive plant presence (0=Absent, 1=Single plant, 2=scattered plants, 3=3-scattered dense patches, 4=non monoculture).

• Rake sampling, we threw the rake a total of 6 times in a fan pattern surrounding the boat ramp/dock to cover all representative habitats (Figure 6).

• Sorted plants from all six throws according to species and estimated the representative percentage of each pulled up into the survey

Results:
• 64 boat ramps were surveyed on 27 different bodies of water

• Due to excessive flooding this spring and summer, boat ramps on rivers were not surveyed (Figure 8)

• Discovered unrecorded plant in the Plant Biology USFS survey, Eurasian Watermilfoil

• Of the eleven species we focused on, six were found at various locations. Eurasian Watermilfoil was the most commonly found specie at 16 boat ramps (Figure 9), followed by Curlyleaf pondweed found at 7 boat ramps (Figure 10), Moneywort at 4 boat ramps (Figure 9), Brittleleaf naiad at 3 boat ramps (Figure 11), Purple Loosestrife at one boat ramp (Figure 11), and Brazilian Waterweed at one boat ramp (Figure 10).

• Rake surveys discovered species not observed in visual surveys

Conclusion:
• To further understand and better manage the distribution of invasive aquatics, a more extensive survey needs to be conducted in infested bodies of water as well as bodies of water not surveyed due to flooding

• By using the two methods of sampling, we demonstrated that visual surveys are not completely accurate, but are a good supplemental to rake surveys

• Future research should assess whether boats are serving as a vector of spread between bodies of water

• An extensive follow up study to determine the rate of detection would assess how well the boat ramp surveys represent invasive aquatics presence within a body of water

• Our data will be used as baseline data for location of boat ramp education signs from CWMA

• Our detection of Brazilian Waterweed elicited an EDR (Early Detection Rapid Response) from the CWMA

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Literature Cited:
