RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

# Research Update

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## Bottom Line

**The overall cost to treat nuisance aquatic plants keeps increasing, and chemical treatments are becoming more difficult to implement given the strict environmental regulation associated with the herbicides.**

## Better, Faster, Cheaper

**By understanding the conditions that influence the growth of aquatic weeds, more comprehensive solutions to the problem can be found, allowing irrigation districts and canal operators to control nuisance aquatic plants without severe offsite and nontarget impacts or high labor and material costs.**

## Principal Investigators

**Dale Lindeman**
**Information Technology Specialist**
**GIS and Remote Sensing Group**
**Pacific Northwest Region**
**208-378-5320**
**dlindeman@usbr.gov**

**Clyde Lay**
**Water Quality Specialist**
**Ecosystems Analysis Office**
**Pacific Northwest Region**
**208-685-6926**
**clay@usbr.gov**

# Controlling Nuisance Aquatic Plants in Canals

*Controlling the conditions to prevent aquatic weed growth in water delivery systems*

## Problem

The Western United States depends on a network of reservoirs and canals to distribute water—the lifeblood of agriculture, cities, and industry. Aquatic weeds (from algae to rooted plants like pondweeds) are a growing problem in these systems—reducing flow, impairing the performance of intake structure and pumps, and even damaging systems. These nuisance aquatic plants are widespread and can be very costly to control. Canal operators and irrigation districts must expend their budget on physical labor to continuously remove plant material from the systems and/or purchase and apply aquatic herbicides. It is also becoming increasingly time-consuming to obtain use permits for the aquatic herbicides.

*Intake structure blocked by Hydrilla and water hyacinth.*

## Solution

This Reclamation Science and Technology Program research scoping project assembled a team of resource specialists and managers who have practical experience with aquatic weed issues and represent Reclamation's broad geographic extent to outline a systematic approach to studying this issue. The team provided information (reports, records, and discussion) describing the current state of aquatic weeds control and the primary issues they were encountering.

A resounding need for a combined set of tools, technology, and resources that could answer the "what, when, where, and how" considerations that must be addressed in optimizing the treatment effect on aquatic weeds was universally apparent.

## Application and Results

The team reviewed several previously published investigations showing that while relationships between environmental variables and proliferation of aquatic weeds can be made, translating these findings into cost-effective and practical methods for controlling aquatic weeds is problematic. The team decided that tracking and mapping aquatic weed growth in water delivery systems would provide more useable information that could be directly applied to improving aquatic weeds control. To gather this information, researchers would need to collect field data to monitor growth, and distribution could provide the information to help address that need. The scoping project proposal recommended:

- Identifying water quality and physical characteristics of canals that may influence the growth of aquatic weeds in water delivery systems
- Determining ways to manage the underlying influences that promote and/or discourage the aquatic weed growth for alternative or complementary control measures to herbicidal treatments

## Future Plans

This Reclamation Science and Technology Program research scoping project (Project ID 6688) focused on identifying alternative solutions to aquatic weeds control using mechanical removal and herbicides. Based on the results of this research scoping project, future work will focus on making current treatment methods more efficient and effective.

An ongoing Reclamation Science and Technology Program research study project (Project ID 1725) is developing a suite of tools to track the growth and distribution of nuisance aquatic plants. These tools will provide irrigation managers the information required to make treatments more targeted and timely. Products will include:

1. Spreadsheet(s) template(s) designed to track location, condition, and treatment of aquatic weeds throughout their annual life cycles
2. A how-to guide to convert data for viewing in Google Earth or geographic information systems (GIS)
3. Instructions on assembling an affordable vegetation biomass mapping unit (preferably remote-controlled) from readily available parts and components
4. A report assessing how to use measurements of dissolved oxygen levels during the day and night to estimate the quantity of aquatic vegetation in irrigation canals
5. A full report of the completed 3-year study with findings and recommendations, including benefit-cost ratio for using the proposed tools to schedule aquatic weeds control treatments

*Aquatic weeds and algae congesting water column.*

***"Many districts 'treat when we see the plants appear on trashracks,' but this proves to be expensive and difficult. A better approach would be to monitor vegetation and to treat when plants are easier to remove. Like taking care of dandelions in your yard, treat when you see the first one—not the field"***

**Clyde Lay**
**Water Quality Specialist,**
**Reclamation's Pacific Northwest Region**


### Research Office Contact

**Joe Kubitschek, P.E.**
**Invasive Mussels**
**Research Coordinator**
**303-445-2148**
**jkubitschek@usbr.gov**


### More information

**www.usbr.gov/research/projects/detail.cfm?id=6688**

**2015 Research:**

**www.usbr.gov/research/projects/detail.cfm?id=1725**



For printable version see: www.usbr.gov/research/docs/updates/2015-17-nuisance-aquatic.pdf