Brief Background

The California State Parks, Division of Boating and Waterways (DBW), Aquatic Invasive Species (AIS) Branch operates a control program for invasive aquatic plants over a geographic area of approximately 68,000 acres of the Sacramento-San Joaquin Delta, its tributaries and the Suisun Marsh.

DBW began a control program in 1982 for Floating Aquatic Vegetation (FAV), which currently includes Water Hyacinth and Spongeplant[1]. DBW also began a control program in 1997 for Submersed Aquatic Vegetation (SAV), which currently includes *Egeria densa* and Curly Leaf Pondweed.

The AIS control programs maintain environmental clearances from the National Oceanic and Atmospheric Administration-National Marine Fisheries Service, U.S. Fish and Wildlife Service, State Water Resources Control Board and the California Department of Fish and Wildlife. DBW is currently undertaking permit consultation with the U.S. Department of the Army-Corps of Engineers, Central Valley Flood Protection Board and Delta Reclamation Districts.

2015 Progress Report

The AIS Branch continues process improvements by addressing mission critical functions through Tactical, Operational, and Strategic approaches.

Tactical Examples

Across several locations within the control area DBW has made significant gains to appropriately and effectively manage both FAV and SAV species. For example, DBW significantly decreased SAV in Site 93 in eastern Contra Costa County in 2015.

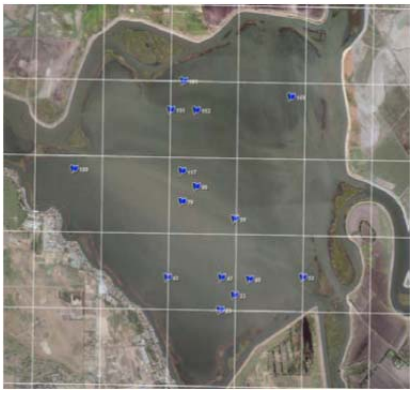
[1] In 2013, Assembly Bill 763 further authorized the California State Parks, Division of Boating and Waterways to undertake management and control of invasive aquatic plants, in lieu of requesting legislative action for each new problematic plant species that arises.

Frank's Tract State Recreation Area

Frank's Tract is an AIS treatment area that includes sites 173, 174, 175 in eastern Contra Costa County. The AIS program has worked diligently to control *Egeria densa* at manageable populations in Frank's Tract to afford safe navigation and for recreational boating and fishing. Another key outcome of this treatment effort creates is a rich diversity of SAV species that provide critical food sources of seeds and habitat for many species of birds migrating via the Pacific Flyway. The AIS will continue to effectively manage and control this 3,500-acre plus wetland in the Delta.

2013 – Dense Egeria

2014 – Less Dense Egeria



2015 – Increasing Egeria

Point intercept sampling using 200 rake throws at geo-referenced locations. Image courtesy of SePro and DBW

Middle River

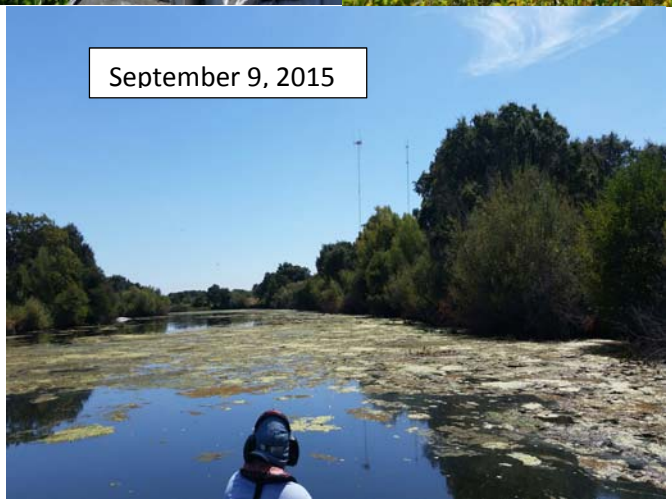
Middle River at Tracy Blvd Bridge continues to show marked improvement with more open water, less completely blocked channels and reduced dense mats of hyacinth.

Old River

Old River at Mountain House Creek, Site 78, is another indicator site of the continued intensity of chemical treatments that have occurred along this river corridor to significantly bring down the large volumes of hyacinth biomass that has plagued this area. Much work remains.

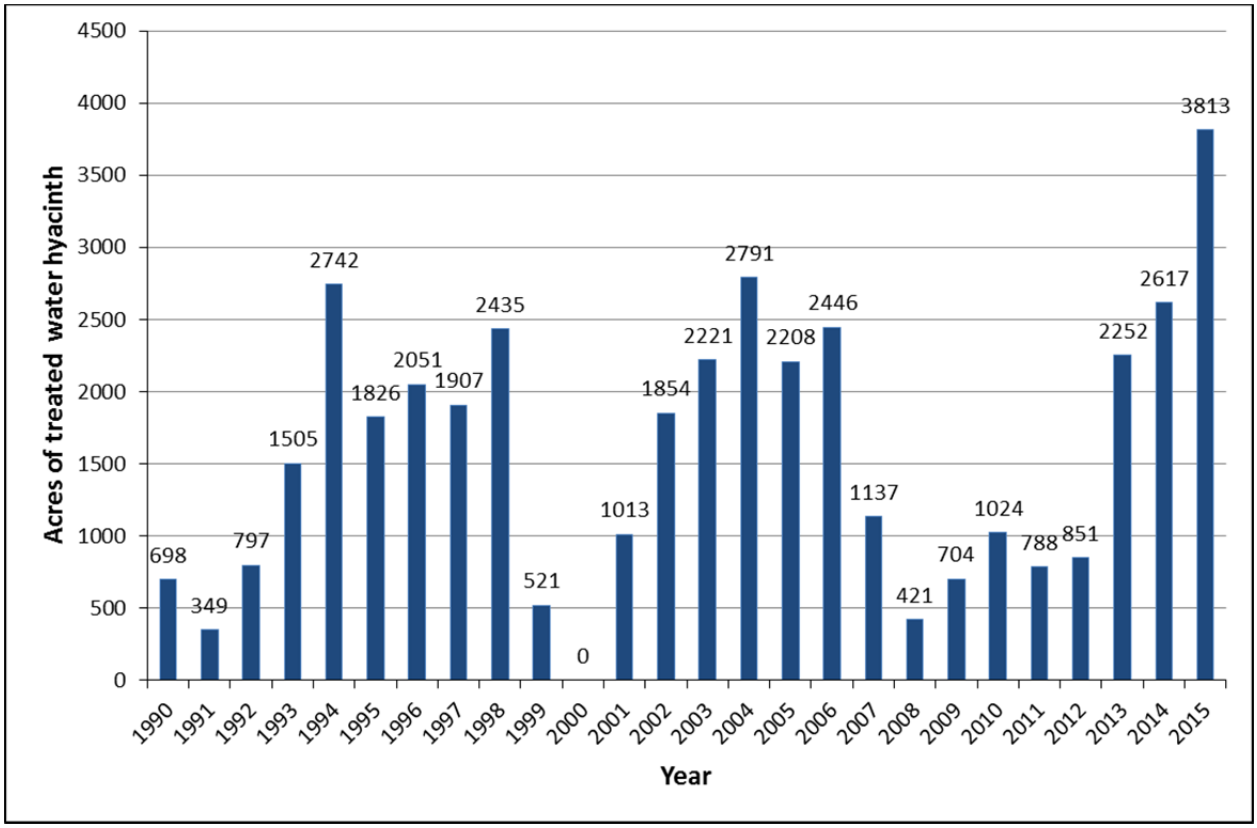
The Meadows Slough

In the North Delta, AIS managed Site 214 very successfully due to favorable water and wind conditions. Round-Up was used to control this site. The turn-around time was very rapid given the young plants were not very tall and despite the blossoming, the die back was quick as well as the subsequent submersion of dying biomass.



Operational Examples

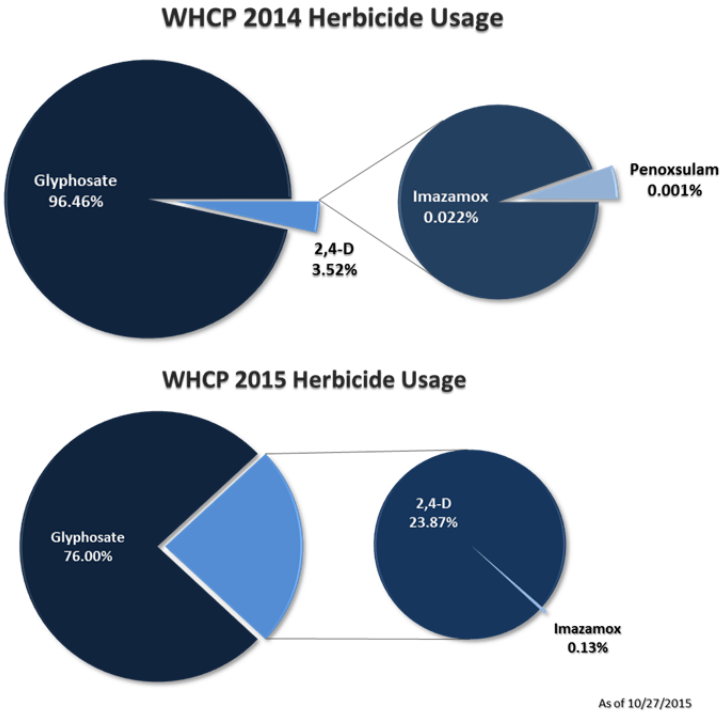
In 2015, the Aquatic Invasive Species Branch treated 3,813 acres of Water Hyacinth and Spongeplant as of October 27th compared to a total of 2,617 treated acres treated in 2014. The AIS Branch has treated more invasive FAV acreage in 2015 than any other time in the history of the program.



DBW has been successful in keeping Water Hyacinth under better control in the Central and Southern Delta and in some regions of the Northern Delta such as Snug Harbor and the Meadows. However, some locations in the Northern Delta, such as Lost Slough, Hog Slough, and Sycamore Slough have increased growth of water hyacinth because 1) these regions could not be treated until June 1, and 2) 2,4-D the faster acting herbicide could not be used in the northern Delta.

The stronger herbicide 2,4-D cannot be used in 1/3 of our entire control area because of Federal Fishery Agencies requirements of Parks pursuant to the federal Endangered Species Act.

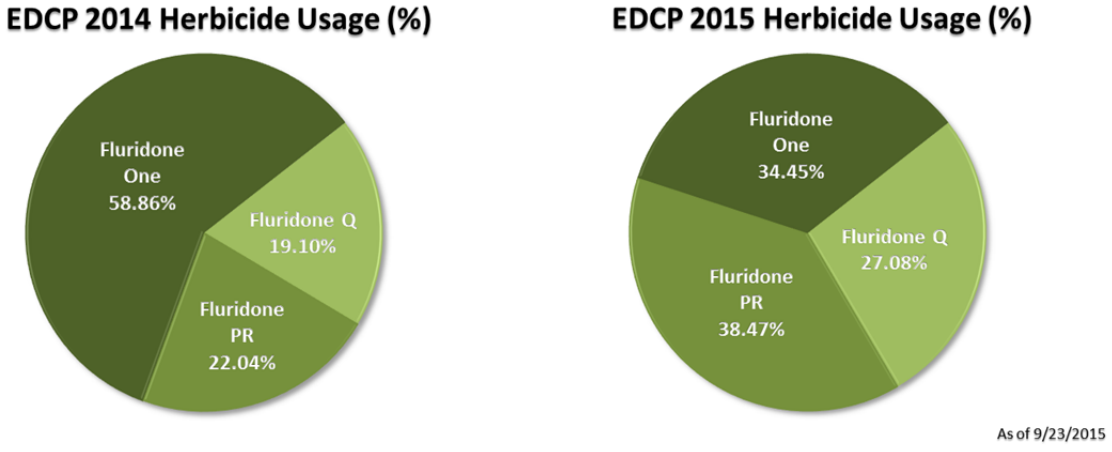
Water Hyacinth Comparative Analysis 2014 vs 2015



DBW will be introducing a new Water Hyacinth and Spongeplant herbicide called Galleon to increase efficacy by mid-season 2016. We are currently awaiting some product label amendments in order to begin utilizing the product.

The Egeria Densa Control Program (EDCP) has concluded the 2015 herbicide treatment plan. In 2015, the EDCP treated 25 sites and a total of 1,530 water acres with extensive water quality monitoring occurring throughout the season. Treatments in Discovery Bay were extended for an additional 16 weeks with 8 bi-weekly herbicide applications. The herbicide treatments were effective in reducing the density of *Egeria densa* and Curly Leaf Pondweed.

Egeria densa Comparative Analysis 2014 vs 2015



Mechanical Harvesting

On October 27th DBW received approval by the California Department of General Services to proceed with a Mechanical Harvesting contract for four years in the Delta. DBW will initially be working in the Central Delta, specifically around the Deep Water Channel and Stockton Waterfront areas. Our concept is to continue to use herbicide treatment as the most effective and efficient method of invasive FAV control, while using less efficient mechanical harvesting[2] to diminish large areas of biomass that are impeding navigation and critical infrastructure like water pump stations. More details will follow on DBW AIS weekly notifications.

Procurement/Staffing

With the 2015-16 Budget Change Proposal funding, AIS has hired three new field technicians with one more arriving on the 16th of November. Two new Field Managers have been hired to provide excellent public value and build trust among staff as well as the stakeholders and many partners that DBW is coordinating and collaborating with to effectively manage invasive aquatic vegetation.

With existing funding AIS has entered a three year Inter-agency contract with CA Conservation Corps for up to six additional personnel to assist DBW with controlling weeds via boat or via docks to aid mechanical harvesting operations Delta Wide.

Equipment

Procurement of six new outboard motors for the aging boats was acquisitioned and installed and are now operational.

With existing funding DBW delineated all trucks, vessels and equipment with State Parks and Recreation Logos in order to be more visible on the water.

The BCP provides funding for four new boats. These are in the process of being bid through DGS. Existing funding for seven replacement boats are also being bid through DGS.

Additionally, the BCP funds four new trucks that are on order and pending delivery. In the meantime, DBW Division has reallocated available equipment and vessels to AIS as a stop gap measure until new equipment arrives. AIS is also working with private vendors to bid on replacement systems for on-board spray equipment that is in excess of 17 years old.

[2] FAV Mechanical Harvesting is supported by current Federal Biological Opinions; however, Mechanical Harvesting is not currently recommended for SAV.

Herbicide

DBW has procured the 1st of three herbicide purchases for the 2016 Egeria Densa Control Program.

Of the $3.9 mil in the BCP, AIS has encumbered nearly $1.7 million to date with new staffing, vessel, truck and herbicide purchases.

Strategic Examples

USDA Area-Wide Project

The continued expansion of invasive aquatic plants threatens ecosystems, impedes current ecosystem restoration efforts and is economically and environmentally detrimental to the Delta. DBW has joined in partnership with the leadership of the U.S. Department of Agriculture to create an Area-Wide Project for the Delta. The project includes NASA Ames Research Center and several local, state and federal agencies to develop a science-based, adaptive-management strategy to address integrated weed resource management for the Sacramento-San Joaquin Delta.

Symposium

As part of this effort DBW recently worked with an inter-agency team of science experts to facilitate the scoping and holding of an Aquatic Weed Symposium at UC Davis on September 15th. Local and national experts presented key ideas, existing research and proposed critical concepts for solution oriented outcomes to combat the invasive aquatic plants in the Delta.

Revisions to the DBW Biological Opinions

DBW's existing Biological Opinions expire in 2017 which will afford DBW an opportunity create a 10-year programmatic Biological Opinion. DBW aims to demonstrate with updated scientific data and mapping the extent of the aquatic invasive aquatic plant communities and their threat to the Delta from and economic, environmental and public health angle. It is the hope that through a year-long scoping effort, DBW will develop an enhanced tool box under the Endangered Species Act to combat the problem.