

Continued management and monitoring of alligator weed (*Alternanthera philoxeroides*) in the Sacramento-San Joaquin Delta and Suisun Marsh

Cal-IPC Symposium
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Michael Kwong, DBW
michael.kwong@parks.ca.gov

Leslie Earl-Gould, DBW
leslie.earl-gould@parks.ca.gov

Dr. Brenda Grewell, USDA-ARS
bjgrewell@ucdavis.edu

Jose Martinez, DBW
jose.martinez@parks.ca.gov



OVERVIEW

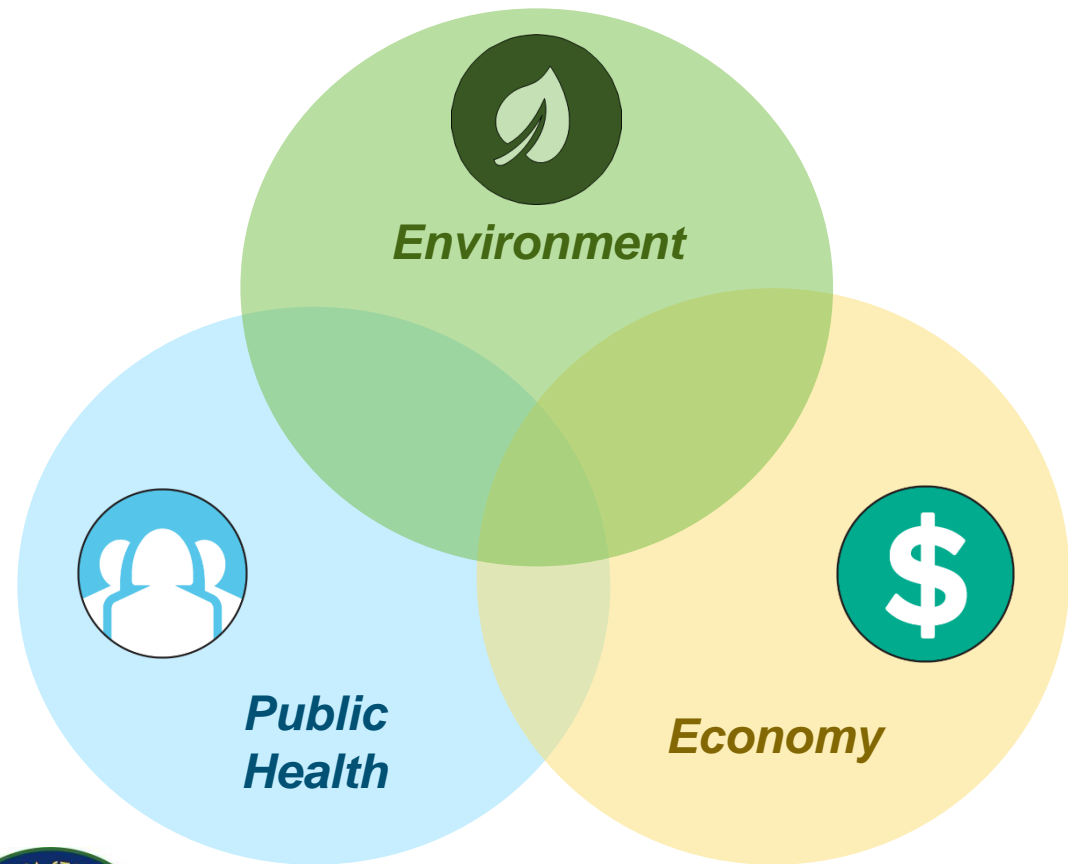
- ▶ Background
- ▶ Alligator weed in the Delta
- ▶ Survey and Control Efforts
- ▶ Collaboration and Outreach Efforts
- ▶ Challenges
- ▶ Next Steps
- ▶ Your Involvement



AQUATIC INVASIVE PLANT CONTROL PROGRAM (AIPCP)

- ▶ Division of Boating and Waterways (DBW) designated as lead agency to cooperate with federal, State, and local agencies to control invasive aquatic plants
- ▶ In coordination with federal nexus, USDA-ARS
- ▶ Control program, not an eradication program
- ▶ Permissive, not mandatory program

Control and manage invasive aquatic plants for:





WHY CONTROL INVASIVE AQUATIC PLANTS?



PROJECT AREA

Sacramento-San Joaquin Delta and its
southern tributaries

Suisun Marsh (monitoring only)





Physical/
Handpicking

Herbicide

Integrated
Control
Strategy

Mechanical

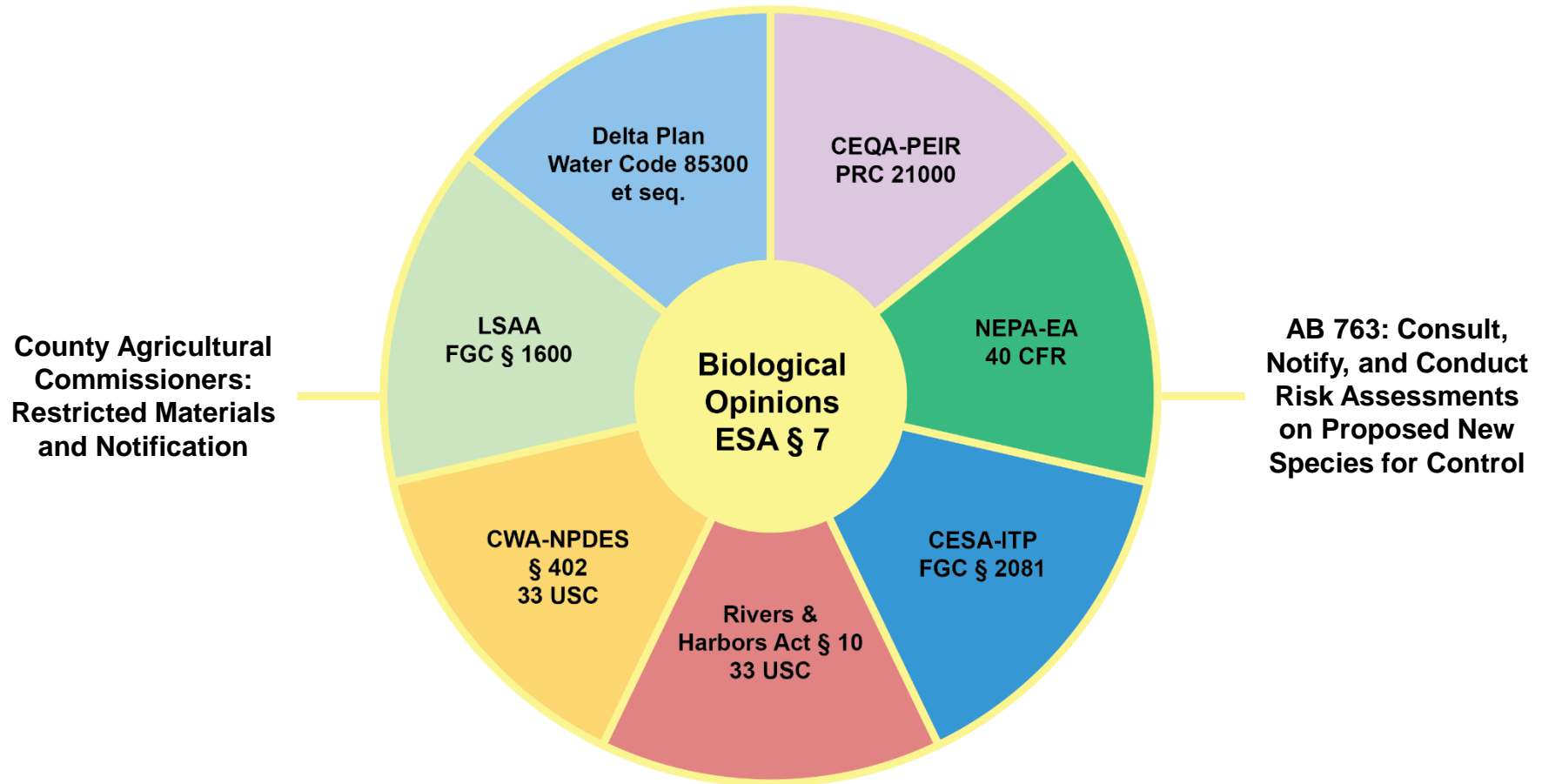
Biocontrol

ENVIRONMENTAL COMPLIANCE

SPECIAL STATUS SPECIES

WATER QUALITY

BIOLOGICAL MONITORING

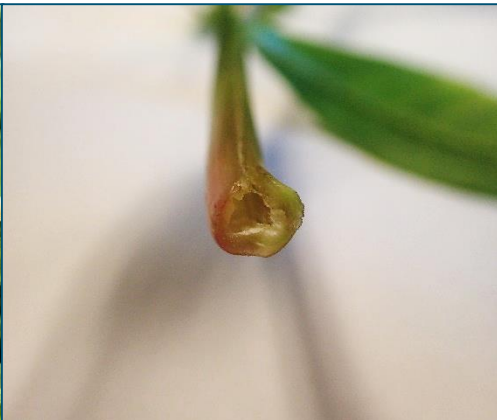


WHAT IS ALLIGATOR WEED?

Scientific name: *Alternanthera philoxeroides*

Family: Amaranthaceae

- ▶ Native to the Parana River region of South America
- ▶ CDFA Noxious Weed (A-rated) and Cal-IPC Statewide Rating (High)
- ▶ Aquatic to terrestrial; free-floating to rooted emergent
- ▶ Vegetative reproduction (e.g. fragmentation), viable seed set not observed in the United States
- ▶ Can tolerate relatively brackish conditions and cold temperatures, but not prolonged freezing (DiTomaso and Kyser 2013)



ALLIGATOR WEED IN THE DELTA

August 2017

- Identified in Montezuma Slough by Dr. Brenda Grewell, USDA-ARS

November 2017

- DBW submitted official risk assessment to CDFW

February 2018

- DBW given federal permission to control alligator weed

March 2018

- CDFW designated alligator weed as invasive species of concern (AB 763)

2018 Season

- Collaboration Guidelines for Delta AIP Control
- DBW began conducting herbicide treatments for in all known locations and documenting new occurrences

2019 Season

- California Alligator Weed Workgroup (CAWW) was formed and conducted blitz survey
- Continued treatments, surveying, and outreach
- Small-scale herbicide trial

2020 Season

- Continuing treatments, surveying, and outreach
- Documenting herbicide impacts and pathways of spread
- Survey 123 + Collector
- Next steps?



Alligatorweed Detections

As of September 22, 2017

Yolo County

Sacramento County

Napa

Sonoma

Solano County

San Joaquin County

Contra Costa County

Alameda County

Stanislaus County

Total Detections: 4

● Alligatorweed Detections

■ DBW Sites

□ Legal Delta



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March 4, 2020: FAV_Alligatorweed_Powerpoint_20170922 M.Kwong

Alligatorweed Detections

As of November 26, 2018

Yolo County

Sacramento County

Napa

Sonoma

Solano County

San Joaquin County

Contra Costa County

Alameda County

Stanislaus County

Total Detections: 33

● Alligatorweed Detections

■ DBW Sites

□ Legal Delta



0 5 10 Miles

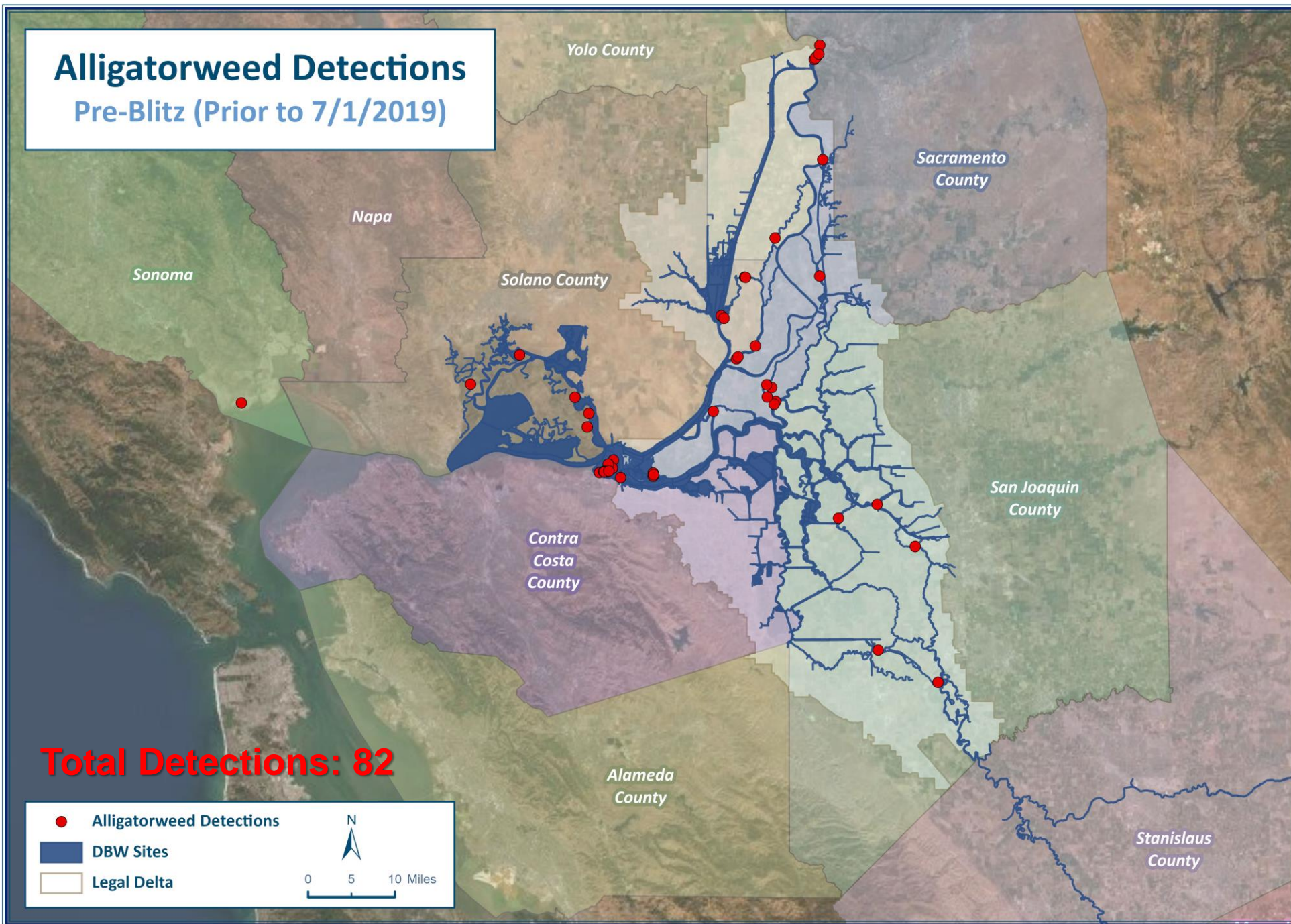


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February 7, 2020: FAV_Alligatorweed_Powerpoint_20181126 M.Kwong

Alligatorweed Detections

Pre-Blitz (Prior to 7/1/2019)



Total Detections: 82

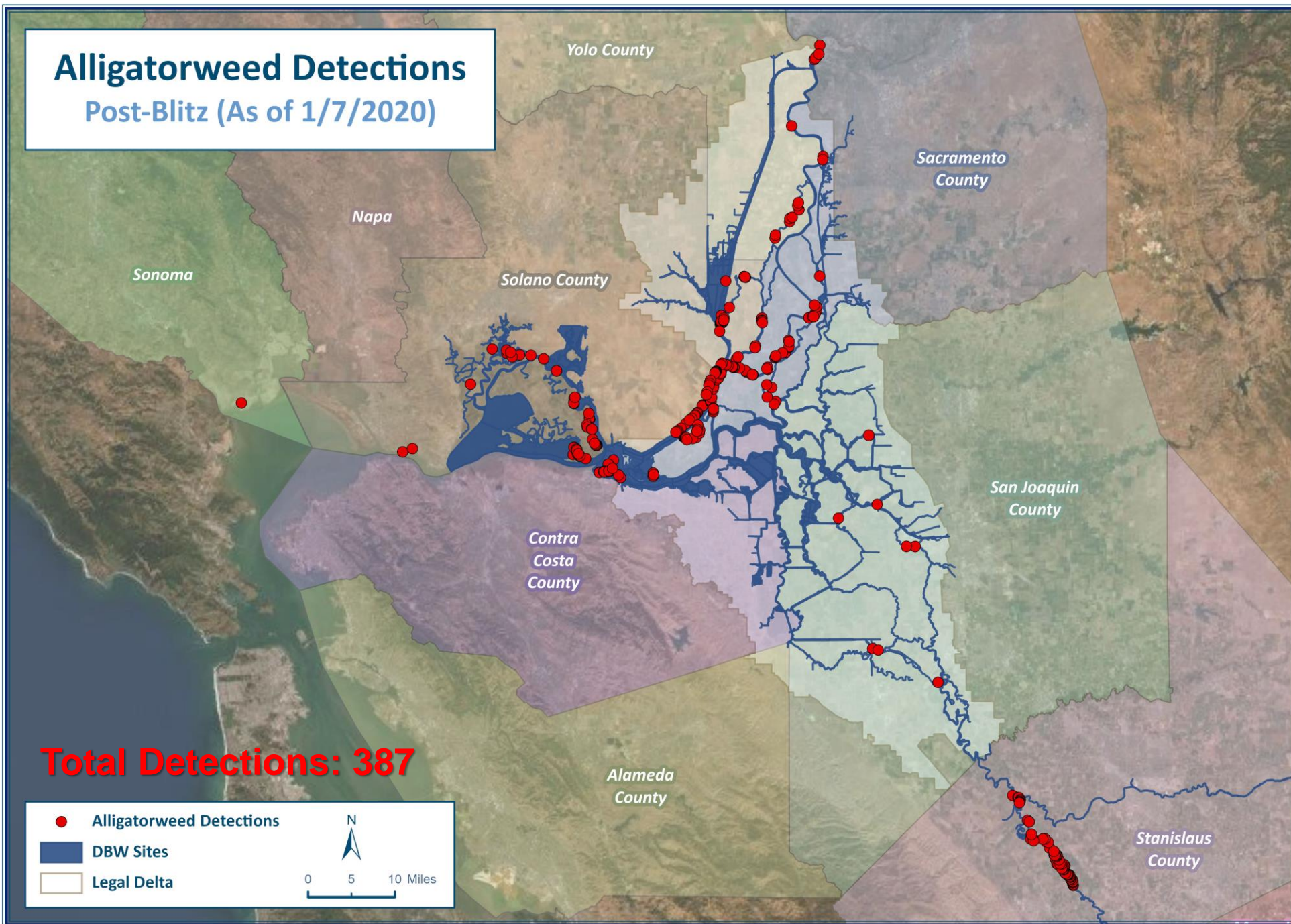


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Alligatorweed Detections

Post-Blitz (As of 1/7/2020)



Total Detections: 387



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Alligatorweed Detections

As of 10/14/2020

Yolo County

Sacramento County

Sonoma County

Napa County

Solano County

San Joaquin County

Contra Costa County

Alameda County

Stanislaus County

Total Detections: 810

- 2020 Alligatorweed Detections
- Pre-2020 Alligatorweed Detections
- DBW Sites
- Legal Delta

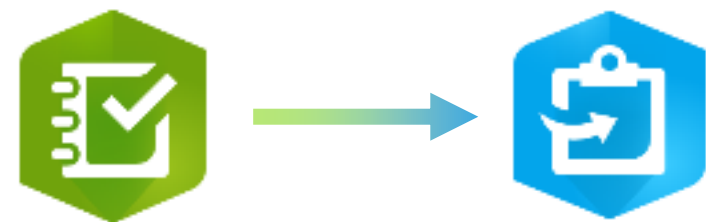


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October 14, 2020 PAC Alligatorweed PowerPoint - 10/14/2020

CONTROL AND SURVEY EFFORTS

- ▶ Herbicide treatments
 - ▶ Glyphosate (2% v/v), Imazamox (1-2% v/v), and 2,4-D (1.1-2.2% v/v)
 - ▶ Agridex or Competitor (1% v/v)
- ▶ Collection and disposal of fragments (66-026 permit obtained through CDFA)
- ▶ 2019 CAWW Blitz Survey and development of survey datasheets
- ▶ Weekly detection and re-check surveys
- ▶ **Survey 123** and **Collector**



COLLABORATION AND OUTREACH EFFORTS

- ▶ California Alligator Weed Workgroup (CAWW)
- ▶ “Delta 311” mobile app
- ▶ Alligator weed rack card and FAV informational sheet
- ▶ Public campaign
- ▶ Voucher specimens to CDFA
- ▶ Data sharing (CDFA, Calflora)



CHALLENGES

- ▶ Hydrochorous fragment dispersal
- ▶ Management by landowners, marinas, etc.*
- ▶ Disturbance and spread by boaters, wildlife*
- ▶ Treatment limitations
 - ▶ Delta smelt spawning and rearing habitat
 - ▶ Herbicide selection and tank mixes
 - ▶ Staffing
 - ▶ Suisun Marsh and upstream sources
- ▶ Diverse patches and growth behind emergent aquatic vegetation
- ▶ Terrestrial form



NEXT STEPS

- ▶ Continue surveys, treatments, and outreach to...
 - ▶ Stop the spread of alligator weed in DBW's jurisdiction
 - ▶ Prevent introduction into managed wetlands, agricultural lands
 - ▶ Learn more about alligator weed in the context of the Delta

- ▶ Document herbicide impacts and pathways of spread

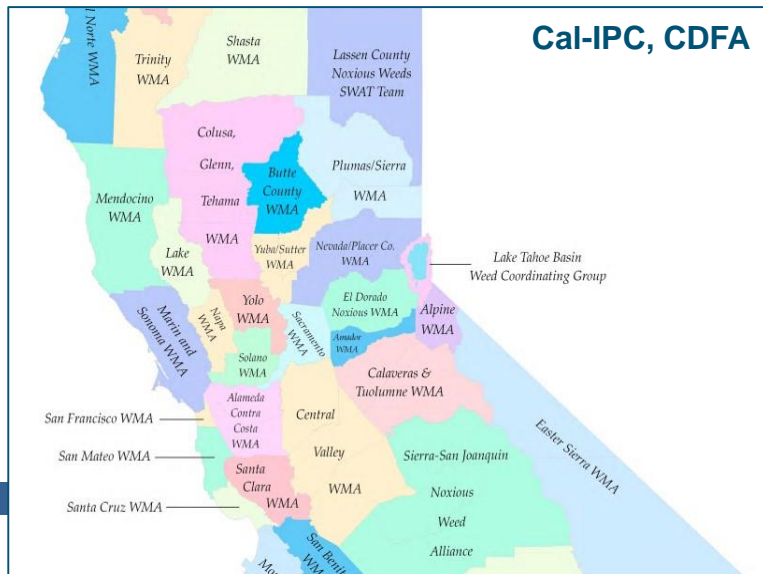
- ▶ Operationalize additional herbicides and/or tank mixes

USFWS Biological Opinion Risk Assessment for DBW AIPCP Herbicides		
Herbicide	Risk to Delta Smelt	Risk to Food Web
2,4-D (FAV)	Moderate	Low
Glyphosate (FAV)	Low	Low
Penoxsulam (FAV)	Low	Low
Imazamox (FAV)	Low-Moderate	Low
Diquat (FAV)	Low	Moderate-High
Imazapyr (FAV)	Low	Low
Carfentrazone-ethyl (FAV)	Low	Low
Flumioxazin (FAV)*	Moderate-High	Low-Moderate
Florpyrauxifan-benzyl (FAV)	Moderate	Low
* high uncertainty toxicity		
**high uncertainty bioaccumulation		



NEXT STEPS

- ▶ Increase communication and collaboration with agencies responsible for upstream watersheds and local Weed Management Areas (WMAs)
- ▶ Multiple Delta stakeholders initiating discussions about formalizing Early Detection Rapid Response (EDRR) plan for the Delta
- ▶ Explore other survey techniques and data collection software



HOW YOU CAN GET INVOLVED

- ▶ Join the California Alligator Weed Workgroup (CAWW)
 - ▶ Next meeting: Monday, November 9th
 - ▶ To be added to the distribution list, send an e-mail to michael.kwong@parks.ca.gov or ais@parks.ca.gov
- ▶ Review the provided supplemental alligator weed ID materials, survey your own management areas or worksites, and educate others
- ▶ Report sightings of suspected alligator weed
 - ▶ Send an e-mail to ais@parks.ca.gov
 - ▶ Include pictures, description of location (i.e. coordinates, landmarks)
 - ▶ Data will be shared with the appropriate agencies/organizations
- ▶ If encountered, handling and disturbing the alligator weed should be avoided, if possible



THANK YOU

California Alligator Weed Workgroup (CAWW) and
DBW's partner agencies

Dr. Brenda Grewell, USDA-ARS

DBW survey leads, treatment crews, and scientific staff

Michael Kwong, DBW
michael.kwong@parks.ca.gov

Dr. Brenda Grewell, USDA-ARS
bjgrewell@ucdavis.edu

Leslie Earl-Gould, DBW
leslie.earl-gould@parks.ca.gov

Jose Martinez, DBW
jose.martinez@parks.ca.gov

