

NCERA-101 station report (2021) – NASA Ames Research Center, Moffett Field, CA 94035

1. Representatives:

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2. Accomplishments:

NCERA-101 project areas addressed:

- Completion of the joint NASA, USDA, State of California, University of California project, “Delta Region Areawide Aquatic Weed Project” (DRAAWP). The DRAAWP provided for development, gap-filling science, and demonstration of how science and remote sensing-based tools regarding plant ecosystem responses to climate change can be fused to support adaptive management decisions in a complex aquatic ecosystem with a wide range of stakeholder pressures and regulatory oversight.
- Environmental response and economic models, derived using controlled environments, and satellite-based, remote sensing mapping tools in use and impacting natural resource management practices.
- Awards from scientific society for outstanding technical contributions, Federal Lab Consortium (FLC) for interagency collaboration, and NASA Ames Research Center for Technology Transfer.
- Initiation of Space Act Agreement involving NASA Ames Research Center and the State of California “Utilizing Adaptive Management Methods for Invasive Aquatic Plant Management”.

3. Description of Activities and Outputs:

Laboratory access and associated activities were limited due to Covid and Federal Facilities closures. Emphasis was placed on remote sensing analysis and tool development, field sampling to validate remote sensing, and data analysis for model parametrization. Only limited controlled environment studies related to shifting Floating Aquatic Vegetation (FAV) and Submerged Aquatic Vegetation (SAV) and differential response to environmental shifts could be conducted.

4. **Publications:**

Aquatic Plant Management Journal DRAAWP Special Issue

David Bubenheim, Vanessa Genovese, Edward Hard, and John D. Madsen.

Remote Sensing and Mapping of Floating Aquatic Vegetation in the Sacramento-San Joaquin River Delta.

J. Aquat. Plant Manage. 59s: 46–54.

Karen Jetter, John D Madsen, David Bubenheim, and Minghua Zhang.

Bioeconomic modeling of floating aquatic weeds in the Sacramento–San Joaquin River Delta.

J. Aquat. Plant Manage. 59s: 98–106

Patrick J. Moran, Louise Conrad, Thomas Jabusch, John D. Madsen, Paul D. Pratt, David L. Bubenheim, Edward Hard, and Raymond I. Carruthers.

An overview of the Delta Region Areawide Aquatic Weed Project for improved control of invasive aquatic weeds in the Sacramento-San Joaquin Delta.

J. Aquat. Plant Manage. 59s: 2–15

Ruoyu, Wang, Huajin Chen, David Bubenheim, Patrick Moran, and Minghua Zhang.

Modeling nitrogen runoff from Sacramento and San Joaquin River basins to Bay Delta Estuary: Current status and ecological implications.

J. Aquat. Plant Manage. 59s:107-111

5. Awards:

- Aquatic Plant Management Society – Outstanding Technical Project
- Federal Laboratory Consortium – Interagency Collaboration Award
- NASA Ames Research Center – Technology Transfer Award