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TAKING THE WASTE OUT OF WATER
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August 20, 2020

Delta Independent Science Board

Email: *disb@deltacouncil.ca.gov*

Subject: Comments on the Delta Independent Science Board's 7/14/2020 Public Draft Report, "The Science of Non-native Species in a Dynamic Delta"

Dear Members of the Delta Independent Science Board:

The Sacramento Regional County Sanitation District (Regional San) appreciates the opportunity to review and provide comments on the draft Science of Non-native Species in a Dynamic Delta Report.

The report provides a thorough review of the major drivers that can promote and regulate the establishment and abundance of non-native species in the Delta, including climate change, sea-level rise, land-use change, habitat alteration, hydrological changes, resource use, pollution and nutrient loading, and droughts.

Regional San agrees that management practices in the Delta should evaluate the full ecological community, rather than focusing on a handful of native and non-native indicator species. A community assessment would provide greater insight into the functional roles of non-native species and could potentially identify new management options. As described in the report, it is important that we "not only know the ecology and habitat requirements of the non-native, but that we understand the strengths of its interactions with other species, its food-web relationships, how it affects water quality and nutrient cycling or hydrological flows, and how it fits into a myriad of ecosystem processes".

While it is true that "carefully designed experiments to establish causal relationships are difficult," adaptive management experiments can be very effective in evaluating the level of effect imposed by particular stressors in highly dynamic habitats, such as the Delta. Experiments designed to manipulate specific drivers, such as water flow rates, nutrient concentrations, or predatory fish abundances, allow theories regarding the effects of specific stressors to be tested directly on local aquatic communities. However, please note that studies testing the impacts of non-native species should obviously only be performed in waterbodies where they are already established.

The Delta would certainly benefit from the development and testing of additional comprehensive food-web models (per your review p. 20 and 28). Quantitative, spatially and temporally explicit species and habitat models, which incorporate river hydrology and biogeochemical drivers, could help evaluate the current impacts of established non-native species. These models would also be ideal for predicting the range of impacts from high-risk invaders and evaluate the range of potential responses to management strategies. We recommend that Independent Science Board members discuss this possibility with Marissa (Bauer) Wulff at the USGS California Water Science Center (mwulff@usgs.gov), who has previously constructed an Ecopath/Ecosim model for the Delta.

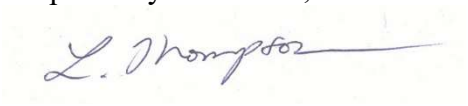
We also agree with many of the draft report's other recommended actions for the scientific community as described below:

- Develop a prioritized list of non-native species that pose the greatest risk of entering the Delta, becoming established in the Delta, and doing ecological harm.
- Evaluate the range of management strategies available to reduce the risk of establishment and minimize the expected negative ecological impacts for prioritized invasive species.
- Ensure that monitoring programs in the Delta are designed to detect the presence of new invasive species and evaluate the effectiveness of active control programs.

Non-native species will almost certainly continue to be an abundant and important component of the Delta ecosystem. We need to understand the factors regulating the entire Delta food web, including non-native species, so future management actions will enhance populations of native species (in favor of non-native species) and promote resilient ecosystems that can withstand the current period of rapid environmental change occurring in the Delta.

For further information, please contact Timothy Mussen at 916-875-4344 or via email at mussent@sacsewer.com.

Respectfully Submitted,



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Chief Scientist

Respectfully Submitted,

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Scientist

cc: Christoph Dobson, Regional San
Terrie Mitchell, Regional San

Attachment: Bauer, Marissa. 2010. An Ecosystem Model of the Sacramento-San Joaquin Delta and Suisun Bay, California USA. Master's Thesis, California State University, Chico.