

San Diego Estuaries Research Symposium

Zoom Webinar | 9:00 am – 12:30 pm, February 7, 2023
(Available at <https://youtu.be/79sElhFOtWE>)

San Diego estuaries are living labs for advancing our understanding of these coastal systems and how they are responding to stressors and management actions. This half-day virtual symposium featured cutting-edge research about the health and ecosystem changes of the Tijuana River Estuary and Los Peñasquitos Lagoon and innovative techniques being tested in these locations as well as in San Diego Bay. This virtual event- an expansion from the inaugural Tijuana Estuary research symposium in 2019 - engaged the science and coastal management communities and encouraged an exchange to better understand needs to study, protect, and enhance these vital places.

Research Symposium Presentations:

- Welcome, introduction, and Tribal land acknowledgment
Kristen Goodrich, Tijuana River National Estuarine Research Reserve
- Scripps coastal mapping program and applications
Adam Young, Scripps Institution of Oceanography
- Mouth morphodynamics and impacts in intermittently closed estuaries
Alex Simpson, Scripps Institution of Oceanography
- Benthic responses to mouth closure and hypoxia in Los Peñasquitos Lagoon, with comparison to Tijuana Estuary
Lisa Levin, Scripps Institution of Oceanography
- Oysters as biosensors, the Habitat Heartbeats Project
Luke Miller, San Diego State University
- Real-time monitoring of sediment and sewage contamination in the Tijuana River and Estuary.
Trent Biggs, San Diego State University
- How do estuarine outflows interact with surfzone breaking waves and spread in the coastal ocean?
Sarah Giddings, Scripps Institution of Oceanography
- Monitoring habitat change in the Tijuana Estuary
Kellie Uyeda, Tijuana River National Estuarine Research Reserve
- Coastal Dunes at Border Field State Park: a dynamic ecosystem on the edges
Dave Hubbard, Coastal Restoration Consultants

Audience engagement

“Thank you for all the very useful information. A reminder of all the variables that can affect or be affected by the management decisions we make.” - participant

Number of people registered to attend: **183**

Average number of attendees (present during 90% of the webinar): **80**

Maximum number of attendees in a given time/moment: **97**

Number of organizations/communities represented among the audience: **44**

Survey respondents reporting intent to apply information learned: **93%**

Your perspective is important - the [evaluation](#) remains open for you to share it.

Thanks to our sponsors:



1. What information is both critical and missing that you need to successfully manage our estuaries? (18 responses)

Responses covered several themes:

- Effects of climate change on opening/closing of estuary openings. This included historical records of past openings/closings, sea level rise modeling and effects of sea level rise on various estuary habitats, and carbon storage potential.
- Physical process changes within and outside the estuary to better understand local sediment budgets, geomorphological features of tidal channels, and accretion rates.
- Monitoring and analysis to capture accurate water level data in the estuaries for capturing low flow trends; continue understanding the dynamics between mouth openings and hypoxia events, groundwater interactions, and ground motion.
- Interdisciplinary science-management partnerships to understand how a regional approach might improve or reduce costs for inlet maintenance/sand bypass; inform locally-relevant guidance for estuary management; advance standards for statewide mapping and change detection; and better understand human dimensions and social vulnerabilities related to estuary health including impacts on health, wellness, infrastructure, education, and economy.

2. Do you see ways that the oyster biosensor system might have utility in other sites or situations? (11 responses)

Responses included: the potential integration of these into living shorelines and restoration project success; using them as indicators for water quality health for people and ecosystems; assessing the ability of oysters to filter near urban settings (i.e. not filtering if oyster closed); the relative success of native and invasive oyster species; informing water quality predictive models; and linking oyster health and growth to carbon sequestration. Considerations such as potential theft of instruments in public settings as well as use of nonnative species were raised.

3. What is important to know about dry and wet weather conditions for estuary management and health? (6 responses)

Responses included: the frequency of coincidence of wet weather events and high wave events and how that would affect estuarine water quality/community health; duration and volume of rain events; changes in sedimentation and erosion due to climate change; effects of anthropogenic freshwater inputs during the dry season; post-rain pollution indices near river mouths that allow us to know when it is safe to carry out activities in the water; and particular needs and services of different ecosystems.

4. What do you want to see next? any predict/RT monitoring tools? (19 responses)

Responses included: online predictive tools; unmanned monitoring via aerial or water-based vessels; groundwater cameras; stationary cameras; higher frequency monitoring; carbon cycle monitoring; acoustic monitoring; saltwater intrusion and sea level rise modeling; channel bathymetry lidar; metabolic flux; human dimension data; and nature-based solution monitoring. Other responses reflected a need for community science and better community access to imagery and monitoring information, crowd-sourced data, and bridged or linked data platforms. Interest was expressed in future (i.e., annual) symposiums that feature additional estuaries in the region.

