

# Interagency Ecological Program 2026 ANNUAL WORKSHOP

March 16-18, 2026

CNRA Main Auditorium & Rooms 2-221 A-C (2<sup>nd</sup> Flr)



## Interagency Ecological Program

COOPERATIVE ECOLOGICAL  
INVESTIGATIONS SINCE 1970

Science, Synthesis, Service

# Welcome

Welcome to the 2026 IEP Annual Workshop! We're excited to share a program designed to spark ideas and collaboration. This year's workshop features three plenary sessions exploring how AI tools are transforming science. Our keynote speaker will discuss how smarter integration of agentic tools with local models can empower scientists to build ecologically responsible decision-support systems. In addition, three IEP members will showcase how they are applying AI in their research and daily management tasks. Program talks and posters will highlight IEP Work Plan elements, innovative studies from both seasoned and early-career researchers, and emerging research leveraging cutting-edge technologies like artificial intelligence.

## 2026 Workshop Planning Committee

### Organizing Chairs:

Adam Nanninga, U.S. Fish and Wildlife Service (Organizing Co-Chair)  
Stephanie Fong, Interagency Ecological Program (IEP Program Manager)  
Christine Joab, Interagency Ecological Program (IEP Program Facilitator)

### Planning Committee Members: (alphabetical by last name)

Kristi Arend, U.S. Fish and Wildlife Service  
Nicole Athearn, California Department of Fish and Wildlife  
Ching-Fu Chang, Contra Costa Water District  
Denise Colombano, Delta Stewardship Council  
Daniel Ellis, California Department of Fish and Wildlife  
Jessica Falcon, U.S. Fish and Wildlife Service  
Ted Flynn, California Department of Water Resources  
Brian Hutchinson, U.S. Fish and Wildlife Service  
Claudia Macfarlane, U.S. Fish and Wildlife Service  
Timothy Malinich, California Department of Fish and Wildlife  
Florian Mauduit, University of California Davis  
Cynthia Meyer, San Luis Delta Mendota Water Authority  
Peter Nelson, California Department of Water Resources  
Shaela Noble, State Water Resources Control Board  
Katie Osborn, California Department of Water Resources  
Alessandra Rigo de Righi, State Water Resources Control Board  
Taylor Rohlin, California Department of Water Resources  
Brian Schreier, California Department of Water Resources  
Lynn Takata, California Department of Fish and Wildlife  
Sang Seon Yun, U.S. Fish and Wildlife Service

## IEP Mission and Community Statement

The Interagency Ecological Program's mission is to provide and integrate relevant and timely ecological information for management of the Bay-Delta ecosystem and the water that flows through it. This is accomplished through collaborative and scientifically sound monitoring, research, modeling, and synthesis efforts for various aspects of the aquatic ecosystem. The IEP addresses high priority management and policy science needs to meet the purposes and fulfill responsibilities under State and Federal regulatory requirements. The IEP relies upon multidisciplinary teams of agency, academic, non-governmental agencies, and other scientists to accomplish its mission.

The Interagency Ecological Program celebrates equity, diversity, and inclusiveness. We embrace these pillars of excellence as crucial to healthy people and healthy communities. We welcome collaborative scientists of all affiliations and ask that you contribute within a spirit of supportive collegiality.

## IEP Workshop Sponsors & Volunteers

The IEP Workshop Planning Committee thanks our sponsors for their generous support. The California-Nevada Chapter of the American Fisheries Society is managing IEP's funds for the use of renting poster boards for the poster session. The State Water Contractors is sponsoring the Early Career Mentoring Luncheon and ICF, Jones & Stokes is sponsoring the lobby Coffee & Tea Bar.

We'd also like to acknowledge the assistance of the California Natural Resources Volunteer Program in helping us at the registration table and the many volunteers helping us run mics and keep speakers on time inside the auditorium.

California-Nevada Chapter



# Program Logistics & Schedule

## Registration

The workshop is a free, hybrid event taking place in the California Natural Resources Agency (CNRA) Headquarters building ([715 P Street, Sacramento](#)) on March 16 through March 18, 2026.

Live presentations will be held in the main auditorium (North Lobby, 1<sup>st</sup> floor) March 16-18. Registration, which opens February 2, 2026, is required to attend in person. The in-person registration link can be found on the [2026 IEP Annual Workshop](#) page. In-person registration closes on March 6 or when tickets run out, whichever comes first.

Remote viewing of live presentations will be available via Zoom. Registration for remote viewing is required and opens February 2, 2026. The Zoom registration link can also be found on the [2026 IEP Annual Workshop](#) page. The Zoom link will be specific to the registrant, so don't share it with others. The link will cover the entire 3-day workshop.

*A map of the first and second floor of the CNRA building is shown on the last two pages.*

## Posters

Posters will be shown on the 2<sup>nd</sup> floor in conference rooms 2-221 B-C. An overflow seating area is available in room 2-221-A, next to the poster rooms. Dedicated poster sessions will be March 16 & 17 from 4:00 p.m. – 5:30 p.m.

For remote viewers, the posters and abstracts will be posted on the [IEP Annual Workshop](#) page after the workshop under the past workshops section.

## Poetry Slam

A poetry slam will be held March 16. This is a fun event where poster authors pitch their poster to audience members through a creative poem, song, or skit. The idea is to generate interest for audience members to visit the posters. Attendees can also participate in the poetry slam to generate interest in contributions to the art display or to share their admiration of the San Francisco Estuary and California's natural resources.

## Early Career Luncheon

An Early Career Luncheon is being sponsored by the State Water Contractors for those who are relatively new to the Bay-Delta's science, management, and conservation community. On March 16, mentors and mentees will lunch together and discuss career aspirations and experiences. Registration is required and lunch will be provided for registered participants.

## Coffee & Tea Bar

A coffee & tea bar is being sponsored by ICF, Jones & Stokes (North Lobby, near auditorium). Quantities are limited. Please note that food and drinks are **not** permitted inside the auditorium, so we request all guests finish their treats prior to entering the auditorium.

## Steve Culberson Award for Best Early Career Research Presentation

IEP is committed to supporting and engaging early career scientists. As outlined in the IEP Communication and Engagement Plan, we work to expand opportunities for early career researchers to participate in IEP activities, including the annual workshop. These activities help participants strengthen their presentation skills, build professional networks, and form new research partnerships.

Steve Culberson, former IEP Lead Scientist, was a strong advocate for involving early career researchers in IEP efforts. In his honor, IEP has renamed the early career research awards after him.

During the judging process, the Award Session Chair recruits and assigns volunteer judges to evaluate the presentations. Winners for the best early career research presentations, both oral and poster are announced on the IEP Annual Workshop page following the event, and each receives an award certificate from IEP.

## WiFi Network & Password

WiFi Network: CNRA Guest

Password: march2026

## Accommodation Needs and Area Guide (Parking & Food)

If you require an accommodation such as a hearing assistive device for the auditorium, access to the elevator for getting to the 2<sup>nd</sup> floor, or access to a lactation room, please send an email to [iep@wildlife.ca.gov](mailto:iep@wildlife.ca.gov) prior to the workshop.

An [area guide](#) has been developed with suggestions for transportation, parking, and local eateries.

## Safety Information

If evacuation is necessary, leave the building immediately by the nearest exit or as advised. During the evacuation, walk calmly, remain quiet and follow emergency instructions.

The designated muster station is the Franklin Roosevelt Park located at 1615 9<sup>th</sup> St, Sacramento, CA 95814. Assemble and remain at that location unless otherwise instructed.

# Workshop Schedule Day 1: Monday, March 16

## REGISTRATION CHECK-IN

**1<sup>st</sup> Floor North Lobby (next to Auditorium)**

**7:30 am – 8:30 am**

## IEP Workshop Welcome & Housekeeping

**Moderators and Speakers**

**8:30 am – 8:35 am**

8:30 – 8:35      Workshop Welcome & Housekeeping  
Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

## SESSION 1 – PLENARY 1

**Moderators and Speaker:**

**8:35 am – 9:20 am**

Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

8:35 – 9:20      AI Without Data Centers? Local Models and Agentic Tools in Conservation  
Dr. Carl Boettiger, University of California Berkeley

## SESSION 2 – New Technologies (including AI)

**Moderator and Speakers:**

**9:22 am – 10:22 am**

Ching-Fu Chang, Contra Costa Water District

9:22 – 9:42      An AI Pipeline for Faster-Than-Real-Time Fish Passage Video Processing:  
Increasing Efficiency to Provide Timely Passage Data  
Kai Ross, Cramer Fish Sciences

9:42 – 10:02      An Engineered Ecosystem: Productivity and Food Web Function in the  
Sacramento Deep Water Shipping Channel  
Bobbie Flores, Cramer Fish Sciences

10:02 – 10:22      Using LLMs and Automated Data Science Workflows to Inventory DWR's  
Contributions to Scientific Literature  
Lucy Andrews, California Department of Water Resources

## 10-MINUTE BREAK

10:22 – 10:32

## SESSION 3 – Management, Policy, and Social Science

### Moderator and Speakers:

**10:32 am – 12:12 pm**

Alessandra Rigo de Righi, State Water Resources Control Board

- 10:32 – 10:52 Application of a Rapid Structured Decision-Making Approach to Inform Delta Smelt Freshwater Outflow Management - Part I\*  
Brian Mahardja, Metropolitan Water District of Southern California  
*\*This presentation will not be recorded.*
- 10:52 – 11:12 Application of a Rapid Structured Decision-Making Approach to Inform Delta Smelt Freshwater Outflow Management- Part II\*  
Brian D. Healy, U.S. Geological Survey  
*\*This presentation will not be recorded.*
- 11:12 – 11:32 Assessing the Impact of Delta Science Program Funded Research on Decision Making in the Sacramento-San Joaquin Delta  
Ash Zemenick, Delta Stewardship Council
- 11:32 – 11:52 Protecting Central Valley Steelhead: How Reactive Management Misses the Bigger Picture  
Chase Ehlo, Cramer Fish Sciences
- 11:52 – 12:12 Comparison of Fish Species Catch between Beach Seine and Boat Electrofishing Methods of Near Shore Sites  
Autumn Fisher, U.S. Fish and Wildlife Service  
*Early Career Award Candidate*

## LUNCH

### Early Career Luncheon & Regular Lunch

**12:12 pm – 1:42pm**

- 12:12 – 1:42 **Early Career Luncheon:** Meet in Lobby (Registered attendees only)  
12:12 – 1:42 **Regular Lunch:** Area Restaurants – All attendees on their own

## SESSION 4 – Salmon

### Moderator and Speakers:

**1:42 pm – 3:22 pm**

Sang Seon Yun, U.S. Fish and Wildlife Service

- 1:42 – 2:02 Chinook Salmon Floodplain Usage and Behavior in the Lower Sacramento River  
Derrick Alcott, California Department of Fish and Wildlife
- 2:02 – 2:22 Monitoring Record Numbers of Adult Spring-Run Chinook in the Lower Tuolumne River  
Christopher Diviney, California Department of Fish and Wildlife
- 2:22 – 2:42 Steelhead Spawning and Distribution During Five Years of Redd Surveys on the Stanislaus River

- 2:42 – 3:02 Ryan Kok, California Department of Fish and Wildlife  
Evaluating Patterns of Juvenile Chinook Salmon Out-Migration During Pulse Flow Events in California’s Sacramento River to Minimize Fish Screen Exposure at the Location of a Newly Proposed Water Infrastructure Project  
Crystal Rigby, California Department of Fish and Wildlife  
*Early Career Award Candidate*
- 3:02 – 3:22 Facilitated Migration Could Bolster Migrant Passage Through Anthropogenically Altered Ecosystems  
Benjamin P. Burford, University of California, Santa Cruz and NOAA NMFS SWFSC Santa Cruz

## 10-MINUTE BREAK

3:22 – 3:32

## SESSION 5 – LIGHTNING TALKS (8-min each)

**Moderator and Speakers:**

**3:32 pm – 4:04 pm**

Brian Hutchinson, U.S. Fish and Wildlife Service

- 3:32 – 3:40 2026 Delta Science Plan: Vision, Principles, and Approaches for Coordinating, Conducting, and Communicating Science in the Delta  
Hollis Jones, Delta Stewardship Council
- 3:40 – 3:48 Models of Physical Transport and Salmonid Responses to Aid Delta Operations and Large-scale Analyses  
Ching-Fu Chang, Contra Costa Water District
- 3:48 – 3:56 Forced Shifts in California Hydroclimate  
Deirdre Des Jardins, Climate Action California, California Water Research
- 3:56 – 4:04 Using Echosounders to Estimate Northern Anchovy Abundance and Associated Predation Risk to Longfin Smelt in the San Francisco Bay-Delta  
Kim Brewitt, ICF International, Inc.

## SESSION 6 – POETRY SLAM & POSTERS

**Moderators:**

**4:04 pm – 5:30 pm**

Adam Nanninga, U.S. Fish and Wildlife Service (Poetry Slam Chair)  
Cindy Meyer, San Luis Delta Mendota Water Authority (Poster Chair)  
Jessica Falcon, U.S. Fish and Wildlife Service (Poster Chair)

Posters are located on the 2<sup>nd</sup> floor in rooms 2-221 B-C. See the Abstract Booklet for list of titles and authors.

## Workshop Schedule Day 2: Tuesday, March 17

### REGISTRATION CHECK-IN

**1<sup>st</sup> Floor North Lobby (next to Auditorium) 7:30 am – 8:30 am**

### IEP Workshop Welcome & Housekeeping

**Moderators and Speakers 8:30 am – 8:35 am**

8:30 – 8:35 Workshop Welcome & Housekeeping  
Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

### SESSION 7 – PLENARY 2

**Moderators and Speakers: 8:35 am – 9:35 am**

Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

8:35 – 9:05 The Augmented Biologist: Using Generative AI for Technical Workflows and Exploration  
Trinh Nguyen, California Department of Fish and Wildlife

9:05 – 9:35 AI in Estuary Monitoring: Practical Tools and Emerging Trends  
Dr. Joseph Merz, Restoration Ecology Cramer Fish Sciences

### 15-MINUTE BREAK

9:35 – 9:40

### SESSION 8 – DELTA OR LONGFIN SMELT (Part 1)

**Moderator and Speakers: 9:50 am – 10:50 am**

Florian Mauduit, University of California, Davis

9:50 – 10:10 Exploring Scalable Supplementation Strategies for Delta Smelt Recovery: Field Trials and Operational Insights  
Florian Mauduit, University of California, Davis

10:10 – 10:30 Feasibility of Acoustic Telemetry in Delta Smelt: Lessons After Two Years of Progress  
Sebastian Gonzales, University of California, Davis  
*Early Career Award Candidate*

10:30 – 10:50 Mapping Spatial and Temporal Changes in Wakasagi Abundance and Distribution  
Claudia Macfarlane, U.S. Fish and Wildlife Service

## 10-MINUTE BREAK

10:50 – 11:00

## SESSION 9 – DELTA OR LONGFIN SMELT (Part 2)

**Moderator and Speakers:**

**11:00 am – 12:00 pm**

Taylor Rohlin, California Department of Water Resources

- 11:00 – 11:20 A Longfin Smelt Population Model to Identify Factors Impacting Recruitment, Survival, and Population Growth Rates  
Leo Polansky, U.S. Fish and Wildlife Service
- 11:20 – 11:40 LES Talk, More Fieldwork!  
Morgan Gilbert, California Department of Fish and Wildlife
- 11:40 – 12:00 It's a Convoy! Co-Sampling via eDNA and Trawling Methods to Improve Detections of Larval Smelt  
Christina E. Burdi, California Department of Water Resources

## LUNCH

12:00 – 1:30 **Regular Lunch:** Area Restaurants – All attendees on their own

## SESSION 10 – PHYSICAL AND BIOLOGICAL EFFECTS OF FLOW

**Moderator and Speakers:**

**1:30 pm – 2:50 pm**

Claudia Macfarlane, U.S. Fish and Wildlife Service

- 1:30 – 1:50 Variable Freshwater Flow, Estuarine Circulation, and Foodweb Interactions Regulate Abundance of the Endangered Longfin Smelt  
Wim Kimmerer, San Francisco State University
- 1:50 – 2:10 How Complex is Too Complex? Probing Flow-Abundance Relationships in the San Francisco Bay-Delta  
Angelika Kurthen, University of California, Berkeley
- 2:10 – 2:30 A Place to Call Home (Again) – The Effects of X2 Position on Delta Smelt Habitat, Food Supply, Growth, and Condition in the Summer and Fall Over the Past 15 Years  
Rosemary Hartman, California Department of Water Resources
- 2:30 – 2:50 Endurance Swimming to Inform Entrainment Risk for Native California Fishes  
Kelly Hannan, University of California, Davis

## 10-MINUTE BREAK

2:50 – 3:00

## SESSION 11 – Zooplankton & Other Invertebrates

### Moderator and Speakers:

3:00 pm – 4:00 pm

Lynn Takata, California Department of Fish and Wildlife

3:00 – 3:20 Flood Pulses in Seasonal Managed Wetlands Enhance Zooplankton Abundances in Suisun Marsh

Kyle Phillips, University of California, Davis

3:20 – 3:40 Zooplankton Monitoring Review: Gaps, Strengths, and Redundancies

Daniel Ellis, California Department of Fish and Wildlife

3:40 – 4:00 A Model for Multi-Lab Proficiency Testing for eDNA Monitoring of the Invasive Golden Mussel (*Limnoperna fortunei*)

Bryan Barney, California Department of Fish and Wildlife

## SESSION 12 – POSTERS (2<sup>nd</sup> Floor, Rooms 2-221 B-C)

### Moderators:

4:00 pm – 5:30 pm

Cindy Meyer, San Luis Delta Mendota Water Authority (Poster Chair)

Jessica Falcon, U.S. Fish and Wildlife Service (Poster Chair)

Posters are located on the 2<sup>nd</sup> floor in rooms 2-221 B-C. See the Abstract Booklet for list of titles and authors.

## Workshop Schedule Day 3: Wednesday, March 18

### REGISTRATION CHECK-IN

1<sup>st</sup> Floor North Lobby (next to Auditorium)

7:30 am – 8:30 am

### IEP Workshop Welcome & Housekeeping

#### Moderators and Speakers

8:30 am – 8:35 am

8:30 – 8:35 Workshop Welcome & Housekeeping

Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

## SESSION 13 – PLENARY 3

### Moderator and Speaker:

8:35 am – 9:05 am

Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

8:35 – 8:55 Change is Hard: Integrating Generative AI into Your Workflow Without Losing Your Mind (or Your Soul)

Ted Flynn, California Department of Water Resources

## SESSION 14 – LIGHTNING TALKS 2 (8-min each)

**Moderator and Speakers:**

**9:07 am – 9:47 am**

Katie Osborn, California Department of Water Resources

- 9:07 – 9:15      Modeling Contaminant Detections and Toxicity as a Function of Outflow in the Delta  
Meghan Holst, University of California, Davis  
*Early Career Award Candidate*
- 9:15 – 9:23      Delta's Hidden Underwater World  
Lee Murai, California Department of Water Resources  
Thomas Handley, California Department of Water Resources
- 9:23 – 9:31      Comparing Single-Species and Multispecies Environmental DNA Monitoring at Restored Tidal Wetlands  
Ravi Nagarajan, University of California, Davis
- 9:31 – 9:39      Examining Pesticide Use and Monitoring in the Delta to Inform an ISB Review  
Jonathan Huang, Delta Stewardship Council
- 9:39 – 9:47      When do Golden Mussels spawn in the Delta?  
Lu Han, Contra Costa Water District

## 13-MINUTE BREAK

9:47 – 10:00

## SESSION 15 – WETLAND HABITATS

**Moderator and Speakers:**

**10:00 am – 11:40 am**

Daniel Ellis, California Department of Fish and Wildlife

- 10:00 – 10:20      Into the Sloughs of Suisun: The 2025 Annual Trends in Species Composition and Abiotic Variables  
Kimberly Evans, University of California, Davis  
*Early Career Award Candidate*
- 10:20 – 10:40      Quantifying Primary Production in the San Francisco Estuary's Tidal Wetlands  
Elsie Platzer, University of California, Davis  
*Early Career Award Candidate*
- 10:40 – 11:00      Advancing Invasive Aquatic Vegetation Monitoring in the Delta with Sentinel-2  
Bailey D. Morrison, University of California, Merced
- 11:00 – 11:20      Larval Fish Dietary DNA as Indicators of Food Web Dynamics in Tidal Wetland Restoration

Anthony Donahue, San Francisco State University  
*Early Career Award Candidate*

11:20 – 11:40 Projecting the Benefits of Tidal Marsh Restoration for Bird Habitat in the Delta  
Kristen Dybala, Point Blue Conservation Science

## LUNCH

11:40 – 1:10 **Regular Lunch:** Area Restaurants – All attendees on their own

## SESSION 16 – CONTAMINANTS, NUTRIENTS AND WATER QUALITY

**Moderator and Speakers:** **1:10 pm – 2:10 pm**

Ted Flynn, California Department of Water Resources

1:10 – 1:30 Toxicity of Fire Retardant Runoff to Early Life Stages of Chinook Salmon  
Amelie Segarra, University of California, Davis

1:30 – 1:50 Tracking Pesticide Accumulation in Juvenile Chinook Salmon During  
Outmigration Through the Sacramento River Delta  
Hadis Miraly, Southern Illinois University

1:50 – 2:10 Laying the Foundation for a Delta Modeling Collaboratory: A Project-Based  
Collaborative Modeling Approach to Complex Management Challenges  
Michelle Stern, Delta Stewardship Council

## 10-MINUTE BREAK

2:10 – 2:20

## SESSION 17 – PHYTOPLANKTON, ALGAE, OR HARMFUL ALGAL BLOOMS

**Moderator and Speakers:** **2:20 pm – 4:00 pm**

Shaela Noble, State Water Resources Control Board

2:20 – 2:40 Spatial and Ecological Responses to a Wastewater Treatment Plant Upgrade in  
the Sacramento-San Joaquin Delta  
Kyle Leathers, U.S. Geological Survey  
*Early Career Award Candidate*

2:40 – 3:00 Spatial and Temporal Patterns of Cyanobacterial Harmful Algal Blooms in the  
Sacramento–San Joaquin Delta: Implications for Monitoring  
Ellen Preece, California Department of Water Resources

3:00 – 3:20 Elevated Phytoplankton Production in Seasonally Managed Wetlands\*  
Alice Tung, University of California, Davis  
*Early Career Award Candidate, \*This presentation will not be recorded.*

- 3:20 – 3:40      Assessing Drivers of Phytoplankton Blooms in the South Delta  
Nicholas Framsted, U.S. Geological Survey  
*Early Career Award Candidate*
- 3:40 – 4:00      Designs for Cyanobacterial Harmful Algal Bloom Monitoring in the Sacramento-  
San Joaquin Delta  
Keith Bouma-Gregson, U.S. Geological Survey

## 15-MINUTE BREAK

4:00 – 4:15

## SESSION 18 – Delta or Longfin Smelt (Part 3)

**Moderators and Speakers:** **4:15 pm – 4:55 pm**

Adam Nanninga, U.S. Fish and Wildlife Service

4:15 – 4:35      Predation on Delta Smelt During Experimental Releases: Evidence from Gill  
Nets and Gastric Lavage\*  
Veronica Violette, U.S. Geological Survey  
*\*This presentation will not be recorded.*

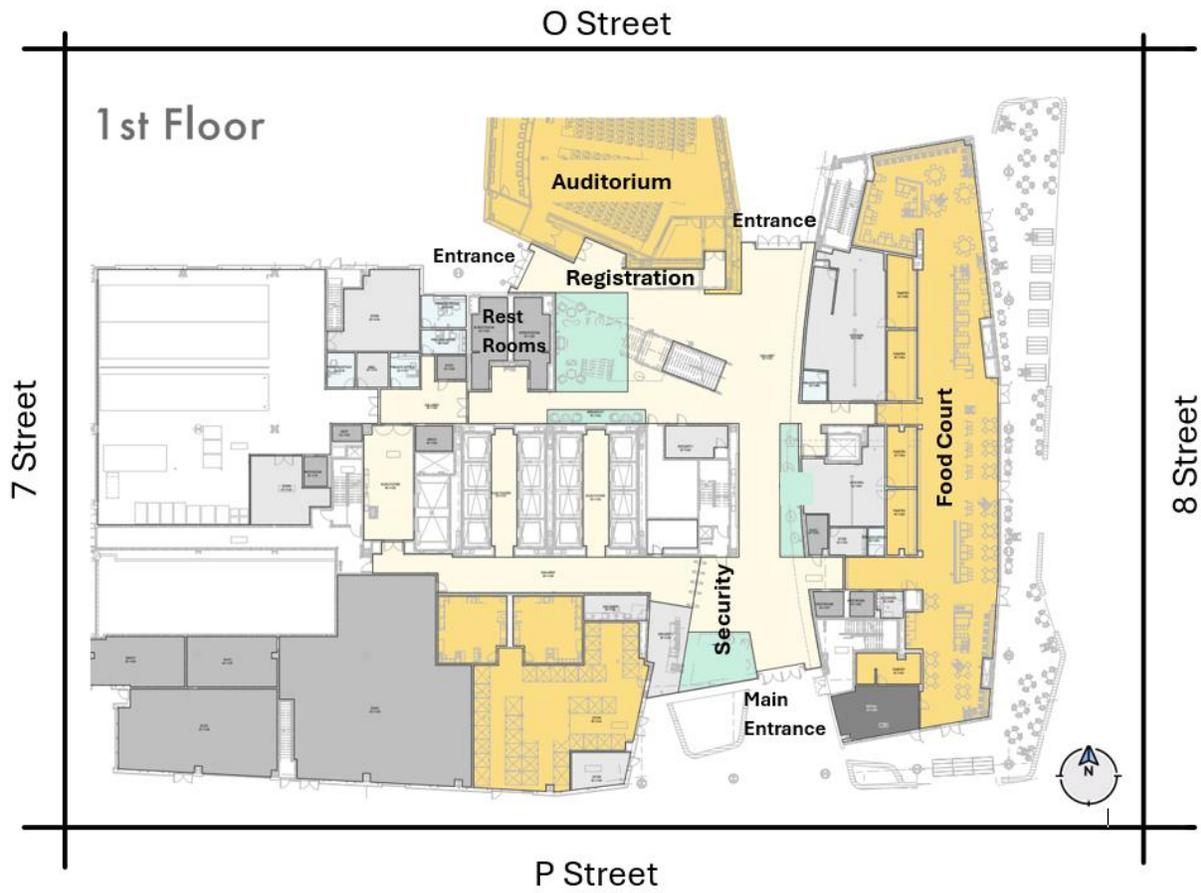
4:35 – 4:55      Using Bioenergetics Modeling to Link Estuarine Physics to a Rare Estuarine Fish  
Matt Young, U.S. Geological Survey

## CLOSING REMARKS

**Moderators and Speakers:** **4:55 pm – 5:00 pm**

Adam Nanninga, U.S. Fish and Wildlife Service (Organizer)

# Map View: 1<sup>st</sup> Floor of CNRA Building



# Map View: 2<sup>nd</sup> Floor of CNRA Building

