

LEVI S. LEWIS

Otolith Geochemistry & Fish Ecology Laboratory
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OVERVIEW

Dr. Lewis is an interdisciplinary ecologist who integrates field observations with experiments to quantify variation in natural communities, species interactions, life history and functional traits, and ecosystem dynamics. He has published research across a variety of ecosystems including salt marshes, coral reefs, seagrass beds and tidal wetlands, and across diverse taxonomic groups including primary producers, invertebrates, and fishes. His work crosses multiple disciplines including experimental field ecology, stable isotope ecology, metabolic ecology, otolith geochemistry, and ecological modeling. Dr. Lewis enjoys teaching, mentoring, and inspiring students and audiences of diverse backgrounds, and he has actively sought and created many opportunities to do so.

PROFESSIONAL PREPARATION

2016	PhD	Scripps Inst. of Oceanography, UCSD	Oceanography (Biological)
2009	MS	San Diego State University	Biology (Marine Ecology)
2002	BS	University of California, Davis	Wildlife, Fish, & Conservation Biology

APPOINTMENTS

2022-present	PI (Asst. Res. Step V): Otolith Geochemistry & Fish Ecology Laboratory, UC Davis
2020-2022	PI (Asst. Res. Step III): Otolith Geochemistry & Fish Ecology Laboratory, UC Davis
2018-2019	Sea Grant (DSF) Postdoctoral Fellow, Wildlife, Fish & Cons. Biology, UC Davis
2016-2017	Postdoctoral Scholar, Wildlife Fish, & Conservation Biology, UC Davis
2016-2016	Lead Instructor, Lecture: BILD3 - Biology, Ecology, and Evolution, UCSD
2016-2016	Laboratory Instructor/Lecture TA, Phycology, Scripps Institution of Oceanography, UCSD
2009-2016	Doctoral Fellow (NSF, NRC-Ford, & SD), Scripps Institution of Oceanography
2015-2015	Lead Instructor, Lecture: Marine Invertebrate Zoology, Academic Connections, UCSD
2009-2009	Research Associate, Center for ICP Mass Spectrometry, UC Davis
2005-2009	Graduate Researcher, Dept. of Biology, San Diego State University
2007-2008	Laboratory Instructor, Zoology, San Diego State University
2005-2006	Laboratory Instructor, Biology, San Diego State University
2003-2005	Post-graduate Researcher, Bodega Marine Laboratory, UC Davis
2002-2003	Student Biologist, U.S. Fish and Wildlife Service, Sacramento

HONORS AND AWARDS

Major Research Grants & Fellowships

- 2022 Research Grant—UCD, Evaluating the health of Delta Smelt, **co-PI**, USBR (\$2,700,000)
- 2022 Research Grant—UCD, Longfin Smelt in Wetlands of San Pablo Bay, **co-PI**, USGS, (\$500,000)
- 2021 Research Grant—UCD, Revising the life cycle of Longfin Smelt, **PI**, CDFW (\$760,000)
- 2021 Research Grant—UCD, UC Davis Longfin Smelt Culture Development Program, **co-PI**, DWR (\$3,900,000)
- 2021 Research Grant—UCD, Intensive Sampling of Alviso Marsh, **PI**, SFEI (\$50,000)
- 2020 Postdoctoral Award – UC Davis Award for Excellence in Postdoctoral Research (\$1,000)
- 2019 Research Grant—UCD, Ecology of estuarine fishes, **PI**, Pacific States Marine Fisheries Council (\$50,000)
- 2019 Research Grant—UCD, Otolith growth and chemistry of endangered fish, **co-PI**, USBR (\$2,500,000)
- 2019 Research Grant—UCD, Monitoring fishes in marsh and slough habitats, **PI**, City of San Jose (\$150,000)
- 2018 Postdoctoral Fellowship – UCD, Otolith age and chemistry of Longfin Smelt, **PI**, DSC-SG (\$200,000)
- 2017 Research Grant – UCD, Defining the ontogenetic niche of Longfin Smelt, **co-PI**, CDFW (\$1,500,000)
- 2017 Research Grant – UCD, Otolith age and chemistry of Longfin Smelt, **PI**, CDFW (\$600,000)
- 2015 Doctoral Fellowship – SIO, Ford Dissertation Year Fellowship (\$25,000)

- 2013 Research Grant – SIO, NSF–IGERT, Ecology and Health of Maldivian Coral Reefs, co–author (\$11,800)
 2012 Equipment Grant – SIO, NSF–IGERT, CMBC Media Center Development, co–author (\$9,000)
 2012 Doctoral Fellowship – SIO, NSF–IGERT Fellowship (\$42,000)
 2011 Doctoral Fellowship – SIO, NRC Ford Foundation Fellowship (NRC) (\$63,000)
 2011 Research Grant – SIO, NSF–IGERT, Interdisciplinary Student Project, co–author, (\$15,000)
 2009 Doctoral Scholarship – UCSD Center for Marine Biodiversity & Conservation (\$17,000)
 2009 Doctoral Fellowship – SIO, San Diego Fellowship (\$50,000)
 2009 Doctoral Fellowship – SIO, AGEF (\$36,000, declined)
 2009 Doctoral Fellowship – Florida State University McKnight (\$32,000, declined)
 2008 Research Grant – San Diego State University, Port of San Diego, MS research, co-author (\$35,000)
 2007 Research Grant – San Diego State University, Port of San Diego, MS research (\$10,000)

Minor Scholarships, Awards, Research Grants

- 2022 Honor Society – Induction into the Sigma Xi Science Honor Society
 2022 Research Grant – SFEI/WRMP, Database and draft SOP for Fish and Fish Habitat Work Team (\$18,000)
 2020 Research Grant – SFEI, modeling of fish abundance and environmental conditions in SFE wetlands (\$20,000)
 2021 Research Grant – Cramer Sci., modeling and analysis of white sturgeon growth and migration (\$25,000)
 2020 Research Grant – SFEI, modeling of fish abundance and environmental conditions in SFE wetlands (\$20,000)
 2015 Honor Society – Induction into Golden Key Honor Society
 2014 Doctoral Scholarship – UCSD, Brython P Davis Award, Academic Scholarship (\$4,200)
 2012 Research Grant – UCSD, Mia Tegner Award, Dissertation Research, Maui, HI (\$1,500)
 2011 Doctoral Scholarship – UCSD, Brython P Davis Award, Academic Scholarship (\$4,200)
 2011 Research Grant – UCSD, SciFund, crowd–sourced funding opportunity for science (\$1,815)
 2011 Research Grant – UCSD, Edna Bailey Sussman Foundation, HI DWR partnership & research (\$5,000)
 2011 Research Grant – UCSD, PADI Foundation, Dissertation Research, Maui, HI (\$3,000)
 2008 Honor Society – induction into Phi Kappa Phi HS
 2008 Best Poster – Western Society of Naturalists (\$100)
 2008 Deans Award – SDSU Research Symposium (\$250)
 2006 Master’s Scholarship – SDSU, Mabel Myers Memorial (\$1,000)
 2006 Research Grant – SDSU, PADI Foundation, MS Research (\$5,000)
 2006 Research Grant – SDSU, Southern CA Academy of Sciences, MS Research (\$1,000)

PUBLICATIONS

Accepted or In Press

31. Mulvaney, W, M Rahman, **LS Lewis**, J Cheng, T Hung*. 2022. Captive Rearing of Longfin Smelt *Spirinchus Thaleichthys*: First Attempt of Weaning Cultured Juveniles to Dry Feed. *Animals*.
 30. Yanagisturu, Y., IY Daza, **LS Lewis**, JA Hobbs, T Hung, RE Connon, NA Fangué. 2022. Growth, osmoregulation, and ionoregulation of Longfin Smelt (*Spirinchus thaleichthys*) yolk-sac larvae at different salinities. *Conservation Physiology*.
 29. Saygin, S, N Polat, M Willmes, **LS Lewis**, JA Hobbs, AA Atci, and M Elp. 2022. Strontium isotopes in otoliths reveal a diversity of natal origins for Tarek (*Alburnus tarichi*) in Lake Van, Turkey. *Fisheries Research*.
 28. Campbell, MA, SEK Joslin, AM Goodbla, M Willmes, JA Hobbs, **LS Lewis**, and AJ Finger. 2022. Polygenic discrimination of migratory phenotypes in an estuarine forage fish. *G3: Genes, Genomes, Genetics*.
 27. Davis, B. J., Adams, **LS Lewis**, J. Hobbs, N. Ikemiyagi, C. Johnston, L. Mitchell, A. Shakya, B. Schreier, B. Mahardja. 2022. Wakasagi in the San Francisco Bay Delta Watershed: Comparative trends in distribution and life-history traits with native Delta Smelt. *San Francisco Estuary & Watershed Science*.

Published

26. Selheim, K, M. Willmes, **LS Lewis**, J Sweeney, J. Merz, J. Hobbs. 2022. Diversity in habitat use by White Sturgeon revealed using fin ray geochemistry. *Frontiers in Marine Science* 9:859038.
<https://doi.org/10.3389/fmars.2022.859038>

25. Barros, A, J Hobbs, M Willmes, C Parker, M Bisson, N Fangué, A Rypel and **LS Lewis**. 2022. Spatial heterogeneity in prey availability, feeding success, and dietary selectivity for the Threatened Longfin Smelt. *Estuaries and Coasts*. <https://doi.org/10.1007/s12237-021-01024-y>
24. **Xie, W***, **Lewis, LS***, F Zhao, RA Fichman, M Willmes, T Hung, L Ellison, T Stevenson, G Tigan, A Schultz, JA Hobbs. 2021. Experimental validation of otolith-based age and growth reconstructions across multiple life stages of a critically endangered estuarine fish. *PeerJ*. <https://doi.org/10.7717/peerj.12280>
*equal first author
23. Hammock, B, R Hartman, R Dahlgren, C Johnston, T Kurobe, P Lehman, **LS Lewis**, E Van Nieuwenhuysse, W Ramírez-Duarte, A Schultz, S Teh. 2021. Patterns and predictors of condition indices in a critically endangered fish. *Hydrobiologia*. <https://doi.org/10.1007/s10750-021-04738-z>
22. **Lewis, LS**, C Denney, M Willmes, W Xie, R Fichman, F Zhao, B Hammock, A Schultz, NA Fangué, JA Hobbs. 2021. Otolith-based approaches indicate strong effects of environmental variation on growth of a critically endangered estuarine fish. *Marine Ecology Progress Series* 676:37-56. <https://www.int-res.com/abstracts/meps/v676/p37-56/>
21. Kuntz, J Hobbs, **LS Lewis**. 2021. The clever strategies fishes use to survive in San Francisco's dynamic estuary. *Frontiers for Young Minds*. <https://kids.frontiersin.org/articles/10.3389/frym.2021.608881>
20. Saglam, I, J Hobbs, R Baxter, **LS Lewis**, A Benjamin, A Finger. A. 2021. Genome-wide analysis reveals regional patterns of drift, structure, and gene flow in longfin smelt (*Spirinchus thaleichthys*) in the northeastern Pacific. *Canadian Journal of Fisheries and Aquatic Sciences*. <https://cdnsiencepub.com/doi/pdf/10.1139/cjfas-2021-0005>
19. Yanagitsuru, YR, MA Main, **LS Lewis**, JA Hobbs, T Hung, RE Connon, NA Fangué. 2021. Effects of temperature on hatching and growth performance of embryos and yolk-sac larvae of a threatened estuarine fish: Longfin Smelt (*Spirinchus thaleichthys*). *Aquaculture*. <https://doi.org/10.1016/j.aquaculture.2021.736502>
18. Sweeny, J, M Willmes, K Sellheim, **LS Lewis**, JA Hobbs, NA Fangué, JE Merz. 2020. Ontogenetic patterns in the calcification and element incorporation in fin rays of age-0 White Sturgeon. *Environmental Biology of Fishes*. <https://doi.org/10.1007/s10641-020-01031-1>
17. Willmes, M, E Jacinto, **LS Lewis**, R Fichman, Z Bess, G Singer, A Steel, P Moyle, A Rypel, N Fangué, J Glessner, J Hobbs, E Chapman. 2020. Geochemical tools identify the origins of Chinook salmon returning to a restored creek. *Fisheries* 46(1):22-32. <https://doi.org/10.1002/fsh.10516>
16. **Lewis, LS**, M Willmes, A Barros, P Crain, J Hobbs. 2020. Newly discovered spawning and recruitment of threatened Longfin Smelt in restored and under-explored tidal wetlands. *Ecology* 101(1):e02868. <https://doi.org/10.1002/ecy.2868>
15. **Lewis, LS**, M Willmes, A Barros, P Crain, J Hobbs. 2020. Silicon Valley's Threatened Longfin Smelt: evidence of spawning and recruitment in a restored tidal wetland. *Bulletin of the Ecological Society of America*. 101(1):e01628. <https://doi.org/10.1002/bes2.1628>
14. Hobbs JA, **LS Lewis**, M Willmes, C Denney, and E Bush. 2019. Complex life histories discovered in a critically endangered fish. *Sci Rep* 9, 16772. <https://doi.org/10.1038/s41598-019-52273-8>
13. **Lewis, LS** and JE Smith. 2019. Functional diversity among herbivorous sea urchins on a coral reef: grazing rate, dietary preference, and metabolism. *Marine Ecology Progress Series* 625:71-87. <https://doi.org/10.3354/meps13038>
12. Carter, AL, CB Edwards, Y Eynaud, MD Fox, MD Johnson, **LS Lewis**, CG Amir, SA Sandin, and JE Smith. 2019. Variability in the spatial and temporal dynamics of an invasive corallimorph, *Rhodactis howesii*, at Palmyra Atoll. *Coral Reefs*. <https://doi.org/10.1007/s00338-019-01841-5>
11. Willmes, M, **LS Lewis**, BE Davis, LL Hannah, F James, C Denny, R Baxter J., L Conrad, NA Fangué, T Hung, RA Armstrong, IS Williams, P Holden, JA Hobbs. 2019. Calibrating temperature reconstructions from fish otolith oxygen isotope analysis for California's critically endangered Delta Smelt. *Rapid Commun Mass Spectrom*. 2019; 33: 1207– 1220. <https://doi.org/10.1002/rcm.8464>
10. Willmes M, Ransom KM, **Lewis LS**, Denney CT, Glessner JGG, Hobbs JA. 2018. IsoFishR: An application for reproducible data reduction and analysis of strontium isotope ratios (⁸⁷Sr/⁸⁶Sr) obtained via laser-ablation MC-ICP-MS. *PLoS ONE* 13(9): e0204519. <https://doi.org/10.1371/journal.pone.0204519>
9. **Lewis LS**, Smith JE, Eynaud Y. 2018. Comparative metabolic ecology of tropical herbivorous echinoids on a coral reef. *PLoS ONE* 13(1): e0190470. <https://doi.org/10.1371/journal.pone.0190470>
8. Willmes, M., J. A. Hobbs, A. M. Sturrock, Z. Bess, **LS Lewis**, J. J. G. Glessner, R. C. Johnson, R. Kurth, and J. Kindopp. 2018. Fishery collapse, recovery, and the cryptic decline of wild salmon on a major California river. *Canadian Journal of Fisheries and Aquatic Sciences*. <https://doi.org/10.1139/cjfas-2017-0273>
7. Nakajima R., H Yamazaki, **LS Lewis**, A Khen, JE Smith, N Nakatomi, H Kurihara. 2017. Planktonic trophic structure in a coral reef ecosystem – Grazing versus microbial food webs and the production of mesozooplankton. *Progress in Oceanography* 156:104–120. <https://doi.org/10.1016/j.pocean.2017.06.007>

6. Smith, JE, PS Vroom, D Obura, A Carter, JL Harris, **LS Lewis**, S Dugas, C Edwards, E Sala, S Sandin, R Brainard. 2016. Re-evaluating the health of coral reef communities: baselines and evidence for human impacts across the central Pacific. *Proc. R. Soc. B.* 283: 20151985. <http://dx.doi.org/10.1098/rspb.2015.1985>
5. Harris, JL, **LS Lewis**, JE Smith. 2015. Quantifying scales of spatial variability in algal turf communities on coral reefs. *Marine Ecology Progress Series.* 532 : 41-57. <https://doi.org/10.3354/meps11344>
4. **Lewis, LS** and Anderson, TW. 2012. Top-down control of epifauna by fishes enhances seagrass production. *Ecology* 93(12): 2746-2757. <https://doi.org/10.1890/12-0038.1>
3. Hobbs, JA, **Lewis, LS**, Ikemiyagi, N, Sommer, T and Baxter, R. 2010. The use of otolith strontium isotopes to identify critical nursery habitat for a threatened estuarine fish. *Environmental Biology of Fishes.* 89:557–569. <https://doi.org/10.1007/s10641-010-9672-3>
2. Farlin, JA, **Lewis, LS**, Anderson, TW, and Lai, C. 2010. Functional diversity in amphipods revealed by stable isotopes in an eelgrass ecosystem. *Marine Ecology Progress Series.* 420: 277–281. <https://doi.org/10.3354/meps08873>
1. McGourty, CR, Hobbs, JA, Bennett, WA, Green, PG, Hwang, H, Ikemiyagi, N, **Lewis, LS** and Cope, JM. 2009. Likely population-level effects of contaminants on a resident estuarine fish species: Comparing *Gillichthys mirabilis* population static measurements and vital rates in San Francisco and Tomales Bays. *Estuaries and Coasts.* 32(6): 1111-1120. <https://doi.org/10.1007/s12237-009-9177-5>

Technical Reports & Theses

18. **Lewis L.S.**, C. Denney, M. Willmes, L. Cavole, W. Xieu, R. E. Bush, N. Fanguie, J. Glessner, B. Hammock, S. Teh, A. A. Schultz, and J. A. Hobbs. 2022. Climate variability alters the migratory life history of California’s critically endangered Delta Smelt. In Bertrand, N.G., K.K. Arend, and B. Mahardja., editors. Directed Outflow Project: Technical Report 3. U.S. Bureau of Reclamation, Bay-Delta Office, California-Great Basin Region, Sacramento, CA. 2022, 268 pp. <https://www.usbr.gov/mp/bdo/directed-outflow.html>
17. **Lewis L.S.**, M. Willmes, L. Cavole, W. Xieu, R. A. Fichman, T.C. Hung, L. Ellison, T. Stevenson, A. A. Schultz, B. G. Hammock, S.J. Teh, A. A. Schultz, and J. A. Hobbs. 2022. Experimental Assessment of Otolith-based Geochemical Reconstructions of Migratory Life History for an Imperiled Estuarine Fish. In Bertrand, N.G., K.K. Arend, and B. Mahardja., editors. Directed Outflow Project: Technical Report 3. U.S. Bureau of Reclamation, Bay-Delta Office, California-Great Basin Region, Sacramento, CA. 2022, 268 pp. <https://www.usbr.gov/mp/bdo/directed-outflow.html>
16. **Lewis L.S.**, L. Cavole, M. Willmes, C. Denney, W. Xieu, F. Zhao, R. A. Fichman, B. G. Hammock, S. Teh, A. A. Schultz, and J. A. Hobbs. 2022. Phenological changes in Delta Smelt in relation to variation in climate. In Bertrand, N.G., K.K. Arend, and B. Mahardja., editors. Directed Outflow Project: Technical Report 3. U.S. Bureau of Reclamation, Bay-Delta Office, California-Great Basin Region, Sacramento, CA. 2022, 268 pp. <https://www.usbr.gov/mp/bdo/directed-outflow.html>
15. Huang, Jonathan L., M. Willmes, R. A. Fichman, T.C. Hung, L. Ellison, T. Stevenson, S.J. Teh, A. A. Schultz, J. Grimsich, C. Chalker, B. G. Hammock, A. A. Schultz, J. A. Hobbs and **Lewis L.S.** 2022. Quantifying morphological and crystalline anomalies in otoliths of wild and cultured Delta Smelt. In Bertrand, N.G., K.K. Arend, and B. Mahardja., editors. Directed Outflow Project: Technical Report 3. U.S. Bureau of Reclamation, Bay-Delta Office, California-Great Basin Region, Sacramento, CA. 2022, 268 pp. <https://www.usbr.gov/mp/bdo/directed-outflow.html>
14. Campbell, Matthew A., Shannon E.K. Joslin, Alisha M. Goodbla, Malte Willmes, James A. Hobbs, **LS Lewis**, and Amanda J. Finger. 2022. Polygenic Discrimination of Migratory Phenotypes in an Estuarine Forage Fish. In Bertrand, N.G., K.K. Arend, and B. Mahardja., editors. Directed Outflow Project: Technical Report 3. U.S. Bureau of Reclamation, Bay-Delta Office, California-Great Basin Region, Sacramento, CA. 2022, 268 pp. <https://www.usbr.gov/mp/bdo/directed-outflow.html>
13. Hobbs, JA, **LS Lewis**, M Willmes, C Denney, R Fichman, and W Xieu. *Chapter 9. Delta Smelt Life History Diversity.* In FLOAT-MAST (Flow Alteration - Management Analysis and Synthesis Team), 2022. *White papers providing a synthesis of knowledge relating to Delta Smelt biology in the San Francisco Estuary, emphasizing effects of flow.* Interagency Ecological Program, Sacramento, CA. IEP Technical Report #98. 191 pp.
12. **Lewis, LS**, J Ervin, N Floros, P Crain, and James Hobbs. 2021. *Status and Trends of fishes and macroinvertebrates in tidal ponds, sloughs, and open-water habitats of the Alviso Marsh Complex, San Francisco Bay, California, 2010-2021.* Final report (part 1) submitted to the San Jose-Santa Clara Wastewater Facility to satisfy Grant No. 1348123/T-32026, 47 pp.

11. Hobbs, JA, M Bisson, J. Ervin, and **LS Lewis**. 2022. *Drivers of the distribution and abundance of mysid shrimp in Alviso Marsh*. Final report (part 2) submitted to the San Jose-Santa Clara Wastewater Facility to satisfy Grant No. 1348123/T-32026, 23 pp.
10. **Lewis, LS**, J Ervin, and James Hobbs. 2020. *Status and Trends Report: UC Davis - Lower South San Francisco Bay Study 2020*. Final report submitted to the Pacific States Marine Fisheries Commission to satisfy Grant No. 20-73G (A20-3346-001), 50 pp.
9. **Lewis, LS**, Malte Willmes, Christian Denney, Christina Parker, Micah Bisson, Arthur Barros, James Hobbs. 2019. *Interdisciplinary Studies on Longfin Smelt in the San Francisco Bay Estuary*. Report to the California Department of Water Resources, Contract No. 4600011196, 130 pp. DOI: [10.13140/RG.2.2.12944.33280](https://doi.org/10.13140/RG.2.2.12944.33280)
8. Hobbs, JA, C Denney, **LS Lewis**, M Willmes, W Xieu, A Schultz, O Burgess. 2019. *Chapter 4 - Exploring life history diversity of Delta Smelt during a period of extreme environmental variability*. In A.A. Schultz, editor. Directed Outflow Project Technical Report 1. U. S. Bureau of Reclamation, Bay-Delta Office, Mid-Pacific Region, Sacramento, CA. Technical Report – Final Draft. August 2019, 402 pp.
7. Hobbs, JA, C Denney, **LS Lewis**, M Willmes, W Xieu, A Schultz, O Burgess. 2019. *Chapter 5 - Environmental and ontogenetic drivers of growth in a critically-endangered species*. In A.A. Schultz, editor. Directed Outflow Project Technical Report 1. U. S. Bureau of Reclamation, Bay-Delta Office, Mid-Pacific Region, Sacramento, CA. Technical Report – Final Draft. August 2019, 402 pp.
6. **Lewis, LS**, M Willmes, C Denney, C Parker, M Bisson, A Barros, J Hobbs. 2018. *Interdisciplinary Studies on Longfin Smelt in the San Francisco Bay Estuary*. Report to the California Department of Water Resources, Contract No. 4600011196, 44 pp.
5. **Lewis, LS** and JA Hobbs. 2017. Chapter 3 - *Environmental drivers of fish abundance in the Alviso Marsh Complex 2010-2016*. 2018. Pages 3-1 through 3-44 in MacVean, L.J., L.S. Lewis, P. Trowbridge, J.A. Hobbs, D.B. Senn. 2018. *Dissolved Oxygen in South San Francisco Bay: Variability, Important Processes, and Implications for Understanding Fish Habitat*. Technical Report. San Francisco Estuary Institute, Richmond, CA, Subcontract No: 1276., 108 pp. <https://www.sfei.org/documents>
4. **Lewis, LS**, JA Hobbs, Jon Cook and Pat Crain. 2017. *Community Structure of Fishes and Invertebrates in the Alviso Marsh Complex 2014-2016*. Report to the San Jose-Santa Clara Regional Wastewater Facility. 35 pp.
3. **Lewis, LS**, JA Hobbs, M Willmes, and J Chhor. 2017. *Growth of Longfin Smelt: putting extreme drought into a long-term context*. Report to the California Department of Fish and Wildlife, Contract No. D1583004. 31 pp.
2. **Lewis, LS**. 2016. *Consumers on coral reefs: variation in the structure and function of herbivorous echinoid communities and their consequent effects on benthic dynamics*. Doctoral Dissertation. Scripps Institution of Oceanography, UC San Diego. 236 pp. <https://escholarship.org/uc/item/7833f9cd>
1. **Lewis, LS**. 2009. *Microcarnivorous fishes limit epifaunal abundance and enhance seagrass production*. Master's Thesis. San Diego State University. 52 pp. <https://doi.org/10.1890/12-0038.1>

MEDIA COVERAGE

- 2022 San Francisco Estuary News**. March 2022. *South Bay Trawls Show Fish Like Restored Shores*. Coverage of the OGFL South Bay Otter Trawl Study. Article in *Fish Tales: Stories of fins and scutes, smelt and salmon, gut rot and egg loss, and the myriad fishes tracked, tagged, trawled, and hatched in the San Francisco Estuary*. Estuary News Magazine Vol (31):1. **LS Lewis** provided the **issue cover photo & contributed to the inset poster**. <https://archive.estuarynews.org/south-bay-trawls-show-fish-like-restored-shores/>
- 2022 San Francisco Estuary News**. March 2022. *Sturdy Sturgeon, Long Live the Centenarians*. Coverage of fin-spine geochemistry and otter trawl surveys of White Sturgeon conducted by the OGFL, including photos. Article in *Fish Tales: Stories of fins and scutes, smelt and salmon, gut rot and egg loss, and the myriad fishes tracked, tagged, trawled, and hatched in the San Francisco Estuary*. Estuary News Magazine Vol (31):1. <https://archive.estuarynews.org/sturdy-sturgeon/>
- 2021 Estuary-PEARLS**. April 29, 2021. *Coverage of LS Lewis's Bay Delta Science Contributed Talk: Responses of Wild Delta Smelt to Environmental Change*. <https://www.sfestuary.org/mega-pearls-part-4-climate-bay-delta-science-conference-april-2021/>
- 2021 Estuary-PEARLS**. April 20, 2021. *Coverage of LS Lewis's Bay Delta Science Plenary Talk: Seeding, Ceding, and Unseating - Disentangling the mystery in life history*. <https://www.sfestuary.org/bay-delta-science-conference-mega-pearls-april-2021/>

2021 The San Francisco Chronicle, April 8, 2021. *S.F. Baykeeper sues Biden administration to list local longfin smelt as endangered species*. Tara Duggan. Published; updated April 9, 2021. **LS Lewis** was interviewed as an expert on the biology and conservation of Longfin Smelt.
<https://www.sfchronicle.com/local/environment/article/SF-Baykeeper-sues-Biden-administration-to-list-16087586.php>

2021 National Geographic Television, March 26, 2021. *The Last Drop*. **LS Lewis** and crew were filmed in the field while sampling fishes on San Francisco Bay and **LS Lewis** was interviewed regarding the health of the estuary. <https://www.nationalgeographic.com/tv/movies-and-specials/the-last-drop>

2020 UC Davis College of Agricultural and Environmental Science. September 11, 2020. Coverage re: *UC Davis Award for Excellence in Postdoctoral Research awarded to LS Lewis in 2020*.
<https://www.facebook.com/UCDavis.CAES/posts/congratulations-to-dr-levi-lewis-a-fourth-year-postdoc-and-delta-science-fellow-/10159024278574974/>

2020 UC Davis Marine and Coastal Science Institute (MCSI) Blog. September 1, 2020. Coverage re: *UC Davis Award for Excellence in Postdoctoral Research awarded to LS Lewis in 2020*.
<https://marinescience.ucdavis.edu/news/levi-lewis-award-announcement>

2019 Ecological Society of America. August 29, 2019. *Discovering longfin smelt in new habitats raises questions about long-term surveys*. Zoe Gentes. Coverage re: the manuscript published by **LS Lewis** on Longfin Smelt in wetlands of the San Francisco Estuary, published in the journal *Ecology*.
<https://www.esa.org/blog/2019/08/29/discovering-longfin-smelt-in-new-habitats-raises-questions-about-long-term-surveys/>

TEACHING EXPERIENCE

Lecture and Laboratory Instruction

2019-2022—**Training workshops** for 12 staff/students in *fisheries methods, statistics in R, sci. writing, UCD*
 2022 Lecture—WFCB 50: Natural History of CA Wild Vertebrates. “Life history diversity in fishes”, UCD
 2021 Lecture—*Coral Reef Ecology*. San Jose State University
 2016 **Course Instructor**—BILD3: *Ecology and Evolutionary Biology*, 100 students, UCSD
 2016 **Laboratory Instructor/TA**—SIO 183: *Phycology—the study of marine plants*, UCSD
 2015 Training—*Center for Teaching Excellence (CET), "The College Classroom"*, UCSD
 2015 **Instructor**—*Marine Invertebrate Zoology*, Academic Connections, 20 students, UCSD
 2013 Lecture —*Coral reef ecology* (Maldives National University, Male, Republic of the Maldives)
 2013 Lecture & Lab—*Biology and ecology of seagrass and mangrove ecosystems* (SIO, Dr. Smith, Phycology)
 2012 **Organizer** —*Teaching English Through Science Symposium II*, American Language Program, CSUF
 2012 Lecture —*Intro. to Marine Science and SIO* (American Language Program, CSU Fullerton, Prof. Azimi)
 2012. Lecture — *Ecology and why it matters* (American Language Program, CSU Fullerton, Prof. Azimi)
 2012 **Organizer** —*Teaching English Through Science Symposium I*, American Language Program, CSUF
 2012 Lecture —*Intro. to Marine Science and SIO* (American Language Program, CSU Fullerton, Prof. Azimi)
 2012 Lecture —*Trophic Dynamics* (American Language Program, CSU Fullerton, Prof. Azimi)
 2008 **Course Manager** —Zoology Lab.(3 instructors, 12 classes), advised instructors on lectures and exercises
 2007 **Laboratory Instructor** — Zoology, (4 classes/wk), gave weekly lectures and led laboratory exercises, SDSU
 2006 **Laboratory Instructor** — Intro. Biology, (5 classes/wk), gave weekly lectures and led lab exercises, SDSU
 2005 **Laboratory Instructor** — Intro. Biology, (4 Classes/wk), gave weekly lectures and led lab exercises, SDSU
 *bold = leadership role

Mentorship

Year	Name	Level	School	Current Position
2021-present	Leticia Cavole*	PD	UCD	PD, UCD
2020-present	Rachel Fichman†*	MS	UCD	MS Student, UCD
2020-present	Lee Burrows†	UG	UCD	UG, UCD
2020-present	Jonathan Huang†*	UG-PG	UCD	PG, UCD
2020-present	Sami Araya†*	UG	UCD	UG, UCD
2020-present	Allison Grygar†	UG	UCD	UG, UCD

2018-present	Alexander Scott*	PG	UCD	JS/AS, UCD
2020-present	Caitlynn Klawon	PG	UCD	JS, UCD
2020-present	Nikolas Floros	PG	UCD	JS/AS, UCD
2018-present	Christian Denney	PG	UCD	SRA/AS, UCD
2018-present	Micah Bisson	PG	UCD	SRA, UCD
2018-present	Wilson Xieu†*	PG	UCD	MS Student, SSU
2020-2021	Katrina Siems	UG	UCD	UG, UCD
2018-2021	Feng Zhao*	PG	UCD	MS Student, NYU
2018-2020	Jonathan Kuntz*	PG	UCD	PhD Student, UCM
2018-2020	Jamie Sweeny†*	MS	UCD	Research Scientist, Cramer Fish Sciences
2018-2019	Christina Parker	PG	UCD	MS Student, OSU & Environmental Scientist, CDFW
2018-2019	Arthur Barros†*	MS	UCD	Environmental Scientist, CDFW
2018-2019	Sabah UI Hassan*	DR	UCM	Postdoctoral Fellow, Scripps Research Institute
2014-present	Adi Khen*	PG-DR	SIO	NSF-GRFP Fellow, PhD student, SIO
2012-2019	Abigail Cannon	PG-DR	SIO	Salk Institute
2016	Josh Francois	DR	UCSD	Ford Foundation Doctoral Fellow, UCSD
2015	Nathalie Staiger	PG	SIO	MS Student, U. Mass, Dartmouth
2014	Mallory Morgan	MS	SIO	Climate Specialist, San Diego Foundation
2013-2014	Samantha Clements	MS	SIO	Staff Research Associate, SIO
2013-2014	Amanda Carter*	MS	SIO	PhD, Knauss Policy Fellow, Washington DC
2014	Alexander Scott	PG	SIO	MS, UNC, Wilmington
2014	Jennifer Lee	UG	SIO	NSF-GRFP Fellow, PhD student, SIO
2011-2012	Niko Kaplanis	UG	SIO	Undergraduate Researcher, SIO
2007-2009	James Farlin*	UG	SDSU	PhD Student, UC Davis
2006-2007	Victoria Norrell	UG	SDSU	MS-Alaska Pacific U., PhD student-Brannon University
2006-2007	Laura Foley	UG	SDSU	PhD, UNC Wilmington
2006	Leah Segui	UG	SDSU	PEW Charitable Trusts, Washington DC

*UG-undergrad, PG-postgrad, MS-masters, DR-doctoral, PD-postdoc; SIO-Scripps Inst. Oceanog., SDSU-San Diego State U. *Co-authored manuscript published or in review. †Advised an independent research project.*

BROADENING PARTICIPATION IN STEM

- 2020-2022 Active member of the Justice, Equity, Diversity, and Inclusion Committee, Department of Wildlife, Fish, and Conservation Biology (WFCB), UC Davis. Contributed to drafting of WFCB departmental mission statement, departmental principles of community, and advising the department on ways to diversify and support diverse backgrounds and perspectives in wildlife and fisheries science.
- 2022 SCMBAS AFS Subunit Seminar Series: “Diverse Voices in Fisheries Science.” Santa Cruz, CA, Virtual. **Lecture (invited) & Discussion.** *Using otoliths to assess the sensitivity of estuarine fishes to climate change*
- 2021 National Conference on Ecological Restoration (NCER) Plenary Session on “Diversity in Science.” University of FL, Gainesville, FL, Virtual. **Presenter & Panelist (invited).** *Disentangling the Mystery in Life History.*
- 2021 Bay Delta Science Conference Plenary Session on “Diversity in Science”. Sacramento, CA, Virtual. **Presenter & Panelist (invited).** *Seeding, Ceding, and Unseating for our Future*
- 2018 Contributed as a marine invertebrate educator and conference volunteer at the “Tléix’ Yaakw — One Canoe” Conference at the University of Alaska Southeast, bringing native peoples (Hawaiians and Alaskans) together with Western scientists to learn about and celebrate the science and culture of the ocean using modern and traditional knowledge structures.
- 2015-2016 Worked/negotiated with students, staff, and administrators to develop a job description, justification, and plan for the hiring of a Diversity Initiatives Coordinator at SIO (hired on 9/13/2016).
- 2009-2014 Helped organize and run the Team for Inclusion and Diversity in Education and Science (TIDES), SIO.
- 2010-2014 4x student science judge at annual Greater San Diego Science and Engineering Fair, San Diego, CA.
- 2014 Mentored URM science students at SACNAS diversity science conference, Los Angeles, CA.
- 2014 Organized and led a campus-wide Celebration of Culture at SIO.
- 2014 Organized and led a campus-wide Forum on Diversity in academia and at SIO.
- 2013 Participant in joint cultural-scientific cruise to the Northwestern Hawaiian Islands, NOAA.
- 2013 Organized and led “Teaching English Through Science II” symposium, American Language Program, CSUF.
- 2012 Participant in joint cultural-scientific cruise to the Northwestern Hawaiian Islands, NOAA.
- 2012 Panel member for NRC Ford Grad Fellowships Forum for URM students at UCSD.
- 2012 Organized and led “Teaching English Through Science I” symposium, American Language Program, CSUF.

- 2012 Panel member for the McNair fellow graduate recruitment forum at UCSD.
- 2012 Mentored URM students at Lincoln High School Career Fair.
- 2011 Participant in joint cultural-scientific cruise to the Northwestern Hawaiian Islands, NOAA.
- 2010 Organized and presented a lecture at the SIO Community Forum on Diversity.
- 2010 Visited Compton High School to establish a science program at SIO for URM students.
- 2010 Mentored URM science students at the 2010 UC Edge conference, UCLA.

RESEARCH

Multi-year Projects

- 2016-present UC Davis. Multiple collaborative grants from the CA Department of Fish and Wildlife, US Bureau of Reclamation, National Marine Fisheries Service, United States Geological Survey, Delta Stewardship Council & CA Sea Grant, and smaller, local awards: (a) Performing statistical analysis and modeling (in R) of habitat suitability for endangered species based on long-term survey datasets. (b) Conducting interdisciplinary studies of age and life-history traits of endangered species using otolith microstructure and isotope geochemistry techniques. (c) Completing field surveys and multivariate assessments of community structure of fishes and invertebrates across marsh ecosystems throughout the San Francisco Bay Estuary.
- 2011-2016 UC San Diego. Organized and led a 36-mo. manipulative field experiment on benthic succession and trophic interactions using settlement tiles in Maui, HI. Required over 20 field excursions, collaborations with the Maui Division of Aquatic Resources and Maui Aquarium. Field work consisted of over 100 scientific dives and continuous site visits by scuba and snorkel for data collection, and design and construction of temporary laboratory facilities for metabolic assays.
- 2011-2014 UC San Diego. NSF-IGERT funded interdisciplinary study of human perceptions of conservation success
- 2011-2013 UC San Diego. Organized and led a 24-mo. manipulative field experiment on trophic dynamics on a coral reef in Maui, HI (10 trips, > 200 sci. dives)
- 2011-2013 University of Hawaii/NOAA. Served as lead phycologist in 3 annual joint cultural-scientific research cruises to the Northwestern Hawaiian Islands, NOAA.
- 2006-2014 SDSU. Assisted with scuba-based research projects in kelp forests on Catalina Island and seagrass beds in coastal San Diego, CA.
- 2006-2008 SDSU. Organized and led multipole manipulative field experiments on trophic cascades in local seagrass beds.
- 2003-2005 UC Davis. Organized and led field surveys and experiments in local salt marsh ecosystems and conducted otolith microstructure analyses for the ichthyology group of the Pacific Estuarine Indicator Research (PEEIR) consortium, Bodega Marine Lab, CA.

Short-term Projects

- 2013 UC San Diego. Scuba-based research projects on coral health in the Maldives (planned, funded, executed).
- 2010-2012 UC San Diego. Participated in the 2010, 2011, and 2012 Northern Line Islands Cruises, SIO & UH.
- 2010 UC San Diego. Ecological scuba-based research in coral reefs, Maui, HI.
- 2009 UC Davis. Chemical analysis of otoliths and data processing for the ICP-MS Fish Ecology Lab, UC Davis.

PROFESSIONAL AND ACADEMIC SERVICE

Collaborative Science Advisory Teams

- 2020-2022 Scientific Advisory Committee (SAC), Delta Stewardship Council (DSC), Delta Sci. Program (DSP)
- 2019-2022 Technical Science Team, San Francisco Bay Dissolved Oxygen Working Group (SFEI)
- 2019-2022 Technical Advisory Committee (TAC), SF Wetland Regional Monitoring Prog. (WRMP)
- 2017-2020 San Francisco Estuary Longfin Smelt Technical Science Team

Individual Contributions to the Science Enterprise

- 2022 Session Chair: *Otoliths and other hard parts in fishes*. American Fisheries Society CalNeva Conference

2022 Journal Reviewer – Oecologia
 2021 Proposal Reviewer & Selection Panel—Sea Grant Graduate Fellows Program (17 pre- & 7 full proposals)
 2020 Proposal Reviewer – NOAA Internal Grants
 2020 Proposal Reviewer – CA Sea Grant Early Career Faculty Grants
 2020 Journal Reviewer – Oecologia
 2019 Journal Reviewer – San Francisco Estuary and Watershed Science
 2016 Journal Reviewer - Public Library of Science (PLOS) One
 2015 Journal Reviewer – Marine Ecology
 2014 Journal Reviewer - Coral Reefs
 2014 Science Judge – Greater San Diego Science and Engineering Fair
 2013 Journal Reviewer - Coral Reefs
 2013 Journal Reviewer - Oecologia
 2012 Journal Reviewer - Limnology and Oceanography (unofficial)
 2012 Science Judge – Greater San Diego Science and Engineering Fair
 2012 Fisheries biologist/educator at the San Diego Sustainable Seafood Gala, Oceans Foundation
 2012 Executive committee - American Fisheries Society Cal-Neva chapter (2012).
 2012 Student Committee – Western Society of Naturalists
 2011 Science Judge – Greater San Diego Science and Engineering Fair
 2011 Student Committee – Western Society of Naturalists
 2010 Science Judge – Greater San Diego Science and Engineering Fair
 2010 Student Committee – Western Society of Naturalists
 2008 Student Rep – SDSU Faculty Selection Committee
 2007 Volunteer – Annual meeting of the CalNeva American Fisheries Society
 2006 Volunteer – Annual meeting of the Western Society of Naturalists (WSN)
 2005 Volunteer – Annual meeting of the Western Society of Naturalists (WSN)

LEADERSHIP

2019-2022 Lead Principal Investigator of the Otolith Geochemistry and Fish Ecology Laboratory at UC Davis, comprised of 12 full-time staff, 2 graduate student researchers, and 5 undergraduate researchers. Managed multiple field and laboratory studies of the ecology of endangered estuarine fishes with 5 grants totaling over \$2 million in research funds. Managed all hiring, training, supervising and mentoring of laboratory assistants, contract management, and writing/editing of proposals and manuscripts with state, federal, and academic collaborators.

2016-2022 Led a \$809,000 study on endangered Longfin Smelt in the San Francisco Bay Estuary conducted by the Otolith Geochemistry & Fish Ecology Laboratory at UC Davis. Conducted all hiring, supervising and mentoring of laboratory researchers, grant management, purchasing, and drafting of reports and manuscripts.

2011-2014 Led 12 research expeditions abroad in coral reef ecology conducted by the Smith Lab, Scripps Institution of Oceanography. Supervised and mentored numerous laboratory and field assistants, conducted purchasing, supervised lab analyses, and drafted reports and manuscripts.

2006-2008 Led extensive field and lab work for seagrass research conducted by the SDSU Fish Ecology Lab. Supervised and mentored numerous laboratory and field assistants, conducted purchasing, supervised lab analyses, and drafted reports and manuscripts.

2012-2016 Funded, established, and helped maintain the Media Center for the Center for Marine Biodiversity and Conservation, Scripps Institution of Oceanography

2014 Lead Organizer – Scripps Forum on Diversity II, SIO
 2014 Lead Organizer – Scripps Cultural Celebration, SI
 2012 Executive Committee - American Fisheries Society, Cal-Neva Chapter
 2011 Lead Organizer – Scripps Forum on Diversity I, SIO
 2008 Course Manager – Zoology Lab, SDSU (3 instructors, 18 classes)
 2005 Fundraising Chair - Bodega Marine Science Association, BML
 2004 Fundraising Chair - Bodega Marine Science Association, BML
 2002 President - Delta Kappa Epsilon international fraternity
 2001 Treasurer - Delta Kappa Epsilon international fraternity

SYMPOSIA AND PRESENTATIONS

- 2022 Annual Meeting of the California-Nevada Chapter of the American Fisheries Society. **Lecture.** *Where the Longfins are: using otoliths to track growth and migration of Longfin Smelt.*
- 2022 South Bay Salt Pond Restoration Project Workshop. **Lecture (invited).** *Assessing the Aquatic Health of San Francisco's Tidal Wetlands.*
- 2022 SCMBAS AFS Subunit Seminar Series: "Diverse Voices in Fisheries Science." **Lecture (invited).** *Using otoliths to assess the sensitivity of estuarine fishes to climate change*
- 2022 Longfin Smelt Science Technical Team (LFSTT). Sacramento, CA. **Lecture (invited).** *Exploring the trophoscape of the lower San Francisco Estuary.*
- 2022 Green Sturgeon Technical Team. **Lecture (invited).** *WRMP Fish and Fish Habitat SOP and Fish Monitoring Inventory for the Lower San Francisco Estuary.*
- 2022 Interagency Ecological Program Workshop, Folsom, CA, Virtual. **Lecture (invited).** *New Insights into Longfin Smelt Life Histories*
- 2021 US Fish and Wildlife Service Longfin Smelt Status Assessment Symposium. **Lecture (invited).** *Otolith techniques, reproduction, and life cycle overview for Longfin Smelt.*
- 2021 National Conference on Ecological Restoration (NCER). University of FL, Gainesville, FL, Virtual. **Lecture (invited).** *Seeding, Ceding, and Unseating for our Future: Disentangling the Mystery in Life History.*
- 2021 California State University Channel Islands (CSUCI). Camarillo, CA, Virtual. **Lecture (invited).** *Application of otolith-based approaches to assess the sensitivity of Delta Smelt to environmental change.*
- 2021 Rutgers University. Newark, NJ, Virtual. **Lecture (invited).** *Application of classic and geochemical approaches to assess the distribution, migration, and condition of estuarine fishes.*
- 2021 San Jose State University (SJSU). San Jose, CA, Virtual. **Lecture (invited).** *Comparative metabolic, trophic, and functional ecology of tropical herbivorous echinoids on Maui, Hawaii.*
- 2021 Bay Delta Science Conference. Sacramento, CA, Virtual. **Lecture (invited, plenary).** *Seeding, Ceding, and Unseating for our Future: Disentangling the Mystery in Life History.*
- 2021 Bay Delta Science Conference. **Lecture.** Sacramento, CA. Virtual. *Responses of Wild Delta Smelt to Environmental Change.*
- 2021 Department of Wildlife, Fish and Conservation Biology, UC Davis. Davis, CA, Virtual. **Lecture (invited).** *A Fish-eye View of Habitat Quality in San Francisco's Brackish Tidal Wetlands.*
- 2020 Department of Wildlife, Fish and Conservation Biology, UC Davis. Davis, CA, Virtual. **Lecture (invited).** *Application of classic and geochemical approaches to assess the distribution, migration, and condition of estuarine fishes.*
- 2020 Interagency Ecological Program Climate MAST. Sacramento, CA. Virtual. **Lecture (invited).** *Otolith-based evidence for the responses of Delta Smelt to environmental conditions & future climate change.*
- 2020 Department of Water Resources, Science Thursday. West Sacramento, CA, Virtual. **Lecture (invited).** *Longing for Longfin: the known, the new, and the clandestine.*
- 2020 Scripps Institution of Oceanography Marine Biology Seminar. San Diego, CA, Virtual. **Lecture (invited).** *Listening to Ears: Geochemical Exploration of the Life History Strategies used by Endangered Fishes of the San Francisco Estuary.*
- 2020 Biannual Ocean Sciences Meeting. San Diego, CA. **Lecture.** *Utilization of Multiple Tracers to Reassess the Life-History, Movements, and Connectivity of Threatened Osmerid Smelts in San Francisco Bay.*
- 2019 State of the Estuary Symposium. Oakland, CA. **Lecture (invited).** *A Fish-eye View of Habitat Quality in San Francisco's Brackish Tidal Wetlands.*
- 2019 Western Society of Naturalists. Ensenada, MX. **Lecture.** *Isotopic examination of life history diversity in endangered estuarine fishes.*
- 2019 State Water Contractors Longfin Smelt Symposium. Sacramento, CA. **Lecture (invited).** *Focusing Lights and Lasers on Otoliths to Elucidate Longfin Smelt Life-histories.*
- 2019 National American Fisheries Society Annual Meeting. Reno, NV. **Lecture.** *The Delta's Smelts: Life History Diversity Within a Highly-Modified and Ever-Changing Environment.*
- 2019 North American Workshop on Laser Ablation (NAWLA). Austin, TX. **Poster.** *Trace Metals to Trace Movements – reevaluating the Life History of Longfin Smelt.*
- 2019 Interagency Ecological Program (IEP) Workshop. Folsom, CA. **Poster.** *Trace Metals to Trace Movements – reevaluating the Life History of Longfin Smelt.*
- 2019 Institute for Shipboard Education Semester at Sea. MV World Odyssey. San Diego, CA. **Lecture (invited).** *Ode to Oikos: searching for solutions in seas of uncertainty*
- 2018 Point Blue Conservation Science. Petaluma, CA. **Lecture (invited).** *Otolith geochemistry to inform fisheries management and conservation*

- 2018 Estuarine and Ocean Science (EOS) Center, San Francisco State University. Tiburon, CA. **Lecture (invited)**. *Fish communities and habitat suitability in marshes of the San Francisco Bay Estuary*
- 2018 Science Uncorked. Bodega Marine Laboratory, UC Davis. **Lecture (invited)**. *Alternative lifestyles of the rare and endangered - how ear bones, lasers, and chemistry could save species and alter California's water wars.*
- 2018 National American Fisheries Society. Atlantic City, NJ. **Lecture (invited)**. *California's endangered estuarine osmerids: life history diversity within a highly-modified and ever-changing environment*
- 2018 Bay-Delta Science Conference. Sacramento, CA. **Lecture (invited)**. *Novel investigations into the distribution, growth, and origins of Longfin Smelt throughout the SFE*
- 2018 Western Division of the American Fisheries Society. Anchorage, AK. **Lecture**. *The Delta's Smelts – demise and discovery among California's estuarine osmerids*
- 2018 Tl'ix' Yaakw — One Canoe Conference. Juneau, AK. **Invertebrate Instructor & conference volunteer**
- 2018 Interagency Ecological Program (IEP) Workshop. Folsom, CA. **Lecture**. *Re-evaluating the Life History of Longfin Smelt*
- 2018 Cal-Neva American Fisheries Society. San Luis Obispo, CA. **Lecture**. *The environmental drivers of habitat use by Silicon Valley's estuarine fishes.*
- 2017 Cal-Neva American Fisheries Society. Humboldt, CA. **Lecture**. *Longfin Smelt - Reconstruction of habitat utilization and growth histories via otolith microchemistry*
- 2016 Western Society of Naturalists. Monterey, CA. **Lecture**. *Comparative metabolic, trophic, and functional ecology of tropical herbivorous echinoids in Maui, Hawaii*
- 2016 International Coral Reef Symposium. Oahu, Hawaii. **Lecture**. *Comparative experiments on 8 nearshore Hawaiian coral reefs: spatial variation in the environmental drivers of reef development.*
- 2016 Maui Makai Watch. Lahaina, Hawaii. **Invited Lecture**. *Fascinating facets of Maui's coral reefs.*
- 2015 Western Society of Naturalists. Sacramento, CA. **Lecture**. *Comparative experiments on 8 nearshore Hawaiian coral reefs: spatial variation in the environmental drivers of reef development*
- 2015 Conference of Ford Fellows. National Academies, Washington D.C. **Lecture**. *Diversity, identity, and the functional ecology of tropical marine herbivores on coral reefs.*
- 2014 Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), Los Angeles, California. **Exhibitor/mentor for underrepresented minority science students.**
- 2014 Third International Marine Conservation Congress (IMCC), Glasgow, Scotland. **Lecture**. *Navigating success in a sea of failure.*
- 2014 Third International Marine Conservation Congress (IMCC), Glasgow, Scotland. **Lecture**. *Using a rapid, multi-dimensional Coral Health Index (C.H.I.) to assess anthropogenic and natural variation in Maldivian coral reefs.*
- 2014 Ecological Society of America (ESA), Sacramento, California. **Lecture**. *Identity trumps diversity in determining the effects of a tropical herbivore community.*
- 2014 Ridge to Reef Science Workshop, Oahu, Hawaii. **Lecture 1**. *Herbivory*. **Lecture 2**. *Water quality, sediments, algae, and reef development/growth.*
- 2013 Maldives National University (MNU), Male, Republic of the Maldives. **Lecture**. *Coral reef ecology – the Maldives and beyond.*
- 2013 Teaching English Through Science Symposium II. California State University, Fullerton. **Lecture**. *Ecology and why it matters*. **Symposium Organizer.**
- 2012 Western Society of Naturalists (WSN), Monterey, CA. **Poster**. *Biophysical characteristics and the development and growth of coral reefs in Maui, HI.*
- 2012 12th International Coral Reef Symposium (ICRS). Cairns, Queensland, Australia. **Lecture**. *Functional diversity of herbivorous urchins in Maui, HI.*
- 2012 Teaching English Through Science Symposium I. California State University, Northridge. **Lecture**. *Trophic dynamics in marine ecosystems*. **Symposium Organizer.**

MEMBERSHIPS (past/present)

Sigma Xi Scientific Research Honor Society ($\Sigma\Xi$)
 Golden Key Honor Society
 Phi Beta Phi Honor Society ($\Phi\text{B}\Phi$)
 NRC Ford Foundation Fellows (FFF)
 Ecological Society of America (ESA)
 Western Society of Naturalists (WSN), **student committee**
 Society for Conservation Biology (SCB)
 International Society for Reef Studies (ISRS)

American Fisheries Society (AFS), **Cal-Neva executive committee**
Delta Kappa Epsilon International Fraternity (DKE), **president & treasurer**
Team for Inclusion and Diversity in Education and Science (TIDES-SIO)
Bodega marine Science Association (BMSA), **fundraising chair**
UCSD Ujima Network [diversity in science]

REFERENCES

Dr. Nann Fangue	Postdoc Advisor	UC Davis	nfangue@ucdavis.edu
Dr. James Hobbs	Postdoc Advisor	UC Davis	jahobbs@ucdavis.edu
Dr. Jennifer Smith	Ph.D. advisor	SIO-UCSD	smithj@ucsd.edu
Dr. Jonathan Shurin	Ph.D. committee	SIO-UCSD	jshurin@ucsd.edu
Dr. Todd Anderson	M.S. advisor	SDSU	tanderson@mail.sdsu.edu