

TIMOTHY MATHIAS DAVIDSON

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EDUCATION

- Ph.D. 2011 Environmental Sciences and Resources, Portland State University, OR
Advisor: Catherine de Rivera
2011 *Graduate certificate in Geographic Information Systems
- M.S. 2006 Biology. University of Oregon, Eugene. Advisors: A. Shanks & S. Rumrill
- B.S. 2002 Environmental Science, Magna cum laude. Oregon State University, Corvallis

PROFESSIONAL EXPERIENCE

Associate Professor. California State University, Sacramento, Department of Biological Sciences.
2021-Present

Assistant Professor. California State University, Sacramento, Department of Biological Sciences.
2016-2021

Postdoc. Smithsonian Tropical Research Institute & University of Hawai'i at Mānoa, NSF
Postdoc Fellowship, (with Mark Torchin & Celia Smith). 2014-16

Postdoc. Smithsonian Tropical Research Institute, Smithsonian Marine Science Network
Fellowship (with Gregory Ruiz & Mark Torchin). 2012-14

Delegate. Emerging Leaders Extraction & Environment Program, Duquesne University &
University of Ghana, Legon (with Dorothy Bassett & Stanley Kabala). Summer 2011

TEACHING EXPERIENCE

Professor, California State University, Sacramento:

- *Conservation Biology & Wildlife Management (Grad & undergrad)*
- *Quantitative Methods in Biol*
- *Life in the Ocean (GE)*
- *Advanced Ecology (Grad)*
- *Introduction to Scientific Analysis*
- *Introduction to Scientific Inquiry (Grad)*
- *Ecology & Conservation Seminar (Grad)*
- *Biodiversity, Evolution, & Ecology: Lecture, Activity, Lab*

Instructor, *Marine Biology*. 4th and 5th grade students through the Academic Talent Search Program, June 2018

Instructor, *Environmental Statistics; Water in the Environment I; Natural Science Inquiry (x2)*;
PSU, 2011-2012

Teaching assistant, UNST 224, *Environmental Sustainability*, PSU, 2007-2008

NSF GK-12 Graduate Fellow, *Marine Biology*, Coos Bay Elementary Schools, 2004-2006.
Taught & developed marine science curricula for elementary students & teachers

Guest lecturer, Coastal Marine Ecology, Wetland Ecology, Marine Bioinvasions, Marine Conservation Biology, Oceanography, Environmental Systems

MENTORING

7 MS students, 38 undergraduates, 2 citizen scientists during international and local research.

Including 19 undergraduate students, 6 MS students at CSUS and 1 MS student from Oregon State University, 6 PhD students; 2016-18, 10 students at University of Hawai'i, 2014-2016; 4 undergraduate students at Smithsonian Tropical Research Institute, 2012-14; 5 undergraduate students at PSU and Clatsop Community College, 2007-11

PEER-REVIEWED PUBLICATIONS *denotes a mentored student author

22. **Davidson TM**, Torchin ME Smith CM (2023) Introduced mangroves exhibit less leaf damage and greater performance than native mangroves. *Biol Invasions* 25, 3503–3515
21. O'Brien SM*, Helm BP, **Davidson TM**, Kneitel JM (2023) Invertebrate community composition differs between restored and natural vernal pools. [Restor Ecol: e14080](#)
20. **Davidson TM**, Smith CM, Torchin ME (2022) Introduced mangroves escape damage from marine and terrestrial enemies. *Ecology* 103: e3604
19. Albright S*, Sellers AJ, **Davidson TM** (2022) Native urchins as potential agents of biotic resistance to the introduced alga *Kappaphycus alvarezii* in a tropical lagoon. *Biological Invasions* 24: 345-351.
18. Lee J*, **Davidson TM**, Torchin ME (2021). Variable host responses mediate host preference in marine flatworm - snail symbioses. [PLOS ONE: 16: e0247551](#)
17. **Davidson TM**, Sokoloski C, Smith CM (2020). Leaf detective: using evidence of damage on mangrove leaves to measure the effects of different herbivores. [Science Activities 57: 33-48](#)
16. **Davidson TM**, Altieri, AH, Ruiz GM, Torchin ME (2018). Bioerosion in a changing world: a conceptual framework. [Ecology Letters 21: 422-438](#)
15. **Davidson TM**, Ruiz GM, Torchin ME (2016) Boring crustaceans shape the land–sea interface in brackish Caribbean mangroves. [Ecosphere 7:e01430](#)
14. Sellers AJ*, Saltonstall K, **Davidson TM** (2015) The introduced alga *Kappaphycus alvarezii* in abandoned cultivation sites in Bocas del Toro, Panama. *BioInvasions Records* 4: 1-7
13. **Davidson TM**, Grupe BM (2015) Habitat modification in tidepools by bioeroding sea urchins and implications for fine-scale community structure. *Mar Ecol* 36: 185-194
12. **Davidson TM**, de Rivera CE, Hsieh HL (2014) Damage and alteration of mangroves inhabited by a marine wood-borer. *Mar Ecol Prog Ser* 516: 177-185
11. **Davidson TM**, de Rivera CE, Carlton JT (2013) Small increases in temperature exacerbate the erosive effects of a non-native burrowing crustacean. *J Exp Mar Biol Ecol* 446: 115-121
10. **Davidson TM** (2012) Boring crustaceans damage polystyrene floats under docks polluting marine waters with microplastic. *Mar Poll Bul* 64: 1821-1828

9. **Davidson TM**, de Rivera CE (2012) Per capita effects and burrow morphology of a burrowing isopod (*Sphaeroma quoianum*) in different estuarine substrata. *J Crust Bio* 32: 25-30
8. **Davidson TM**, de Rivera CE (2010) Accelerated erosion of saltmarshes infested by the non-native burrowing crustacean *Sphaeroma quoianum*. *Mar Ecol Prog Ser* 419: 129-136
7. Behrens Yamada S, **Davidson TM**, Fisher S, (2010) Claw morphology and feeding rates of introduced European green crabs (*Carcinus maenas* L, 1758) and native Dungeness crabs (*Cancer magister* Dana, 1852). *J Shell Res* 29: 471-477
6. **Davidson TM**, Rumrill SS, Shanks AL (2010) The composition and density of fauna utilizing burrow microhabitats created by a non-native burrowing crustacean (*Sphaeroma quoianum*) *Biol Invasions* 12:1403-1413
5. Dunn PH, **Davidson TM** (2009) One fish, two fish: balancing economy with ecology as a fishery manager. *Science Activities* 46: 31-35
4. **Davidson TM**, Shanks AL, Rumrill SS (2008) Colonization and substratum preference of an introduced burrowing crustacean in a temperate estuary. *J Exp Mar Biol Ecol* 345: 144-149
3. **Davidson TM**, Brenneis VEF, de Rivera CE, Draheim R, Gillespie GE (2008) Northern range expansion and coastal occurrences of the New Zealand mud snail (*Potamopyrgus antipodarum* Gray, 1843) in the northeast Pacific. *Aquatic Invasions* 3: 349-353
2. **Davidson TM**, Hewitt CL, Campbell M (2008) Distribution, density, and habitat use among native and introduced populations of the Australasian burrowing isopod *Sphaeroma quoianum*. *Biol Invasions* 10: 399-410
1. **Davidson TM** (2008) Prevalence and distribution of the introduced burrowing isopod, *Sphaeroma quoianum* in the intertidal zone of a temperate northeast Pacific estuary (Isopoda, Flabellifera). *Crustaceana* 81: 155-167

OUTREACH & OTHER PUBLICATIONS

4. **Davidson TM**, Dalrymple, CJ, Ham J, Thompson, M. (2011) Policy Recommendations for Sustainable Fisheries Management in Ghana (West Africa), Emerging Leaders' Extraction and Environment Program. Submitted to the Ministry of Fisheries of Ghana
3. **Davidson TM**, Larson AA, de Rivera CE (2009) Early detection and rapid response plan for the European green crab, *Carcinus maenas*, in Alaska. EDRR Plan for the Alaska Department of Fish and Game. 77pp
2. **Davidson TM** (2009) Non-native aquatic species of Oregon. <http://www.clr.pdx.edu/abrpi/naso> (closed)
1. **Davidson TM**, Stefans R, Rumrill SS (2006) Protecting Oregon's estuaries from invading species, a field guide to identifying and controlling invading species. Friends of the South Slough

SERVICE

Proposal Reviewer: NSF Biological Oceanography program, NSF EAPSI Biology Panel, NSF Ocean Sciences Post Doctoral fellowship reviewer, National Estuarine Research Reserve System Graduate Fellowship program, Elsevier Science & Technical Books, CSU COAST grant development program, CSU COAST Rapid Response grant program, CSU COAST Graduate Student fellowship proposals

Reviewer: Journal of Animal Ecology, Biological Invasions, Marine Biology, Marine Pollution Bulletin, Journal of Experimental Marine Biology and Ecology, Integrative Organismal Biology, Pacific Science, Reviews of Geophysics, Journal of Coastal Research, Science Activities, Forest Ecology & Management, Aquatic Invasions, BioInvasions Records, Journal of Natural History, Oxford University Press

University, College, & Departmental Committees:

- Graduate Committee 2017- Present
- University Curriculum Subcommittee 2018
- COAST Campus representative 2017- Present
- Hiring committees: Plant biologist (2018-19), ASA II (2017), Chair of ISA II (2017)
- Professional Masters of Science Development Committee 2018-20
- Field Safety Committee 2017-19
- Pedagogy Enhancement Award Subcommittee 2019-2022
- Moss Landing Marine Labs Governing Board alternate member 2018-2022
- Scholarship Committee 2016-17
- Library liaison 2018-Present
- Goethe Fund Committee 2017-Present
- Lecturer Ranking Committee 2017

Outreach, Education, and other Workshops:

Avoiding Hungry Sea Predators. Expanding Your Horizons conference for middle school girls. Fall 2018, 2019

Marine Biology: the beautiful, the deadly & the weird. Academic Talent Search program for 4th and 5th graders. Summer 2018

Created & Presented Professional Development Workshops for students:

Getting into Graduate School Workshop and Discussion. CSUS. Spring 2019-2023 (x5)

A fear worse than death? Making presentations to a scientific audience. University of Hawai'i at Mānoa. 2014

Using Google Earth to visualize your data and communicate your science. PSU. 2011

How to find funding for graduate school and research. PSU. 2011

Other institutional Service:

- *Judge*, Sacramento State Student Research Symposium 2016-18
- *Research and Creative Activities proposal reviewer* 2018-19
- *Reviewer* for COAST Sacramento State Research Awards 2016-Present
- *Graduate Committee Member* for 20 MS students (CSUS), 2 PhD students (University of Hawai'i at Mānoa)

GRANTS AND FELLOWSHIPS (31 total)

2023	Research Enhanced Support Grant	CSU Sacramento
2022	Pedagogy Enhancement Award	CSU Sacramento
2020	Bushy Lake restoration plan (as a collaborator; PI: Michelle Stevens)	California Wildlife Conservation Board
2018	Research and Creative Activities Award	CSU Sacramento
2018	Pedagogy Enhancement Award	CSU Sacramento
2016	Research and Creative Activities Award	CSU Sacramento
2016 & 2018-23	Goethe & Genes to Ecosystems Fund (x6)	CSU Sacramento
2015-21	1923 Fund for Collaborative Research (co-PI); student research exchange	Private donor. University of Florida & Smithsonian Institution
2014	Diversity and Equity Initiative Workshop Grant (declined)	University of Hawai'i
2014-16	Ocean Sciences Post Doctoral Fellowship	National Science Foundation (NSF)
2013	Travel Award	Smithsonian Tropical Research Institute (STRI)
2012-14	Marine Science Network Post Doctoral Fellowship	Smithsonian Institution
2011	Travel & Workshop Development Grant	Academically-Controlled Auxiliary Activities, Portland State University
2011	Research Award	Sigma Xi (Columbia-Willamette)
2011	David Dunnette Travel Grant	ESM Department, PSU
2010	Short Term Fellowship	STRI
2010	EAPSI Fellowship in Taiwan	NSF
2010	Research Grant	Sigma Xi
2010	Lerner Gray Research Grant	American Museum of Natural History
2010	Science Building Renovation Grant (co-PI)	PSU
2007-10	National Estuarine Research Reserve Fellowship	NOAA
2006	EAPSI Fellowship in Australia	NSF
2006	Research Grant	Sigma Xi
2005	Lerner Gray Research Grant	American Museum of Natural History
2005	Project Aware Research Grant	PADI
2004-06	GK-12 Fellowship	NSF
2000	REU Fellowship	NSF

HONORS & SCHOLARSHIPS (17 total)

2022	Received “Best” Sabbatical proposal	CSU Sacramento
2020-22	Nominated by Chair of Biological Sci for the <i>Outstanding Faculty Award in Research</i>	Biol Sci Dept, CSU Sacramento
2020	<i>Outstanding Faculty Award in Teaching</i>	CSU Sacramento
2011	Mia Tegner Award for Best presentation	Western Society of Naturalists
2011	University Commendation for Academic Excellence	Portland State University
2009-11	Laurels Tuition Remission Scholarship	Portland State University
2010	Outstanding Graduate Researcher of the Year	ESM Department, PSU
2008	Graduate Scholarship	Marine Technology Society
2007-11	USA Funds Scholarship	USA Funds
2006	<i>Honorable mention</i> for best presentation	Pacific Estuarine Research Society
2006	University of Oregon General Scholarship	University of Oregon
2006	Neil Richmond Memorial Scholarship	Oregon Institute of Marine Biology
2002	Oregon Space Grant Scholarship	Oregon Space Grant
2001	Union of Classified Employees Scholarship	Portland Community College
2000-01	College of Science Scholarship	Oregon State University

INVITED PRESENTATIONS & LECTURES (13 TOTAL)

Why are some species invasive? Testing the enemy release hypothesis with invasive mangroves in Hawaii. Invited Speaker. Ecological and Environmental Issues Seminar. Oct 2018

Biotic interactions & invasive species in estuarine wetlands. Invited Lecturer. Wetland Ecology. Dr. Michelle Stevens. California State University, Sacramento. Sept 2018, 2019

Bioerosion in a changing world. Invited Speaker. Moss Landing Marine Laboratory Seminar series. April 2017

Bioerosion in a changing world. Invited Speaker. Geology-Ecology-Environmental Science Colloquium, California State University, Sacramento. March 2016

Using invasive mangroves to teach students about healthy streams. Invited Speaker. University of Hawai‘i at Mānoa. B-WET Kupuna teacher training workshop. Organized by Celia Smith, Dec 2015

¿Cómo los animales afectan el manglar rojo? (Presented in Spanish). Invited Speaker. Bocas del Toro teacher training workshop. Marlon Smith, Smithsonian Bocas del Toro Research Station. March 2015

The path to Academia: opportunities in marine science. Invited Lecturer, Ocean 101: Introduction to the Marine Option Program. Instructor Donna Brown, University of Hawai‘i Maui College. Apr 2014

Biological erosion in the sea. Interesting effects from boring isopods. Invited Lecturer, Ocean 101: Introduction to the Marine Option Program. Instructor Donna Brown, University of Hawai‘i Maui College. Apr 2014

Latitudinal variation & biotic interactions among mangrove boring & fouling communities. Invited Speaker, Rookery Bay National Estuarine Research Reserve Seminar Series. Naples, FL. May 2012

Invasion Ecology. Experimental design. Invited Lecturer. Coastal Marine Ecology, Professors Elise Granek and Catherine de Rivera. PSU, Portland, OR. Apr 2011

Invasion Ecology: The invasion of the Australasian burrowing isopod in Coos Bay, Oregon. Invited Lecturer. Environmental Systems II, Professor Elise Granek. PSU, Portland, OR. Feb 2008

The invasion of the Australasian burrowing isopod in Coos Bay, Oregon. Invited Lecturer. Marine Bioinvasions, Professor James T Carlton. Oregon Institute of Marine Biology. Charleston, OR. July 2007

Distribution, density, and habitat use among native and introduced populations of the Australasian burrowing isopod (Sphaeroma quoianum). Invited Lecturer. Marine Conservation Biology, Professor Chad Hewitt. National Centre for Marine and Coastal Conservation, Rosebud, Victoria, Australia. Aug 2006

PRESENTATIONS (24 TOTAL; 2 PRESENTATION AWARDS)

1. *Bushy Lake: Rising from the Ashes using Traditional Ecological Knowledge and Western Science.* Geology, Environmental Studies, and US Geological Survey Colloquium. Presented with the Bushy Lake team. April 2022.
2. *Introduced mangroves escape damage from marine and terrestrial enemies.* (Oral) CSU COAST annual meeting. Nov 2020.
3. *Shipworms: cryptic ecological engineers of the sea.* (Poster). Pacific Estuarine Research Society. Presented by Nancy Treneman. Mar 2017
4. *Effects of the 2015-16 El Niño on near-shore reefs and local communities in the U.S. affiliated island-states, Pohnpei and Chuuk.* (Poster). 41st annual Tester Symposium at University of Hawai‘i at Mānoa. Presented by Nicole Yamase. Apr 2016
5. *Does enemy release explain the dominance of invasive mangroves in Hawaii?* (Oral). Western Society of Naturalists meeting. Nov 2015
6. *A decade of boring [isopod] research* (Oral). JTC Marine Bioinvasions conference. Smithsonian Environmental Research Center. Edgewater, Maryland. Apr 2014
7. *Biological erosion in the sea: Interesting effects from boring isopods* (Oral). Tupper Seminar at the Smithsonian Tropical Research Institute, Panama, Sept 2013

8. *Impacts from a non-native isopod increase in mangroves at higher latitudes* (Oral). International Conference on Marine Bioinvasions. Vancouver, Canada, Aug 2013
9. *Exotic crustaceans damage polystyrene floats under docks polluting marine waters with microplastic* (Oral). Congreso Nacional de Ciencia y Tecnologia. Ciudad del Saber, Panama. Oct 2012
10. *Seawater temperature mediates biological erosion by a non-native burrowing crustacean* (Oral). Ecological Society of America. Portland, OR, August 2012
11. *Boring crustaceans damage polystyrene floats under docks polluting marine waters with microplastic* (Oral). Smithsonian Tropical Research Institute Fellows Symposium. Balboa, Panama, Mar 2012
12. *Seawater temperature mediates biological erosion and plastic pollution of a non-native crustacean* (Oral). Western Society of Naturalists. Vancouver, WA, Nov 2011. Received the Mia Tegner Award for best student presentation
13. *Policy Recommendations for Sustainable Fisheries Management in Ghana (West Africa)* (Oral), Submitted to the Ministry of Fisheries of Ghana. Emerging Leaders' Extraction and Environment Symposium. University of Ghana, Legon. Ghana, West Africa. July 2011
14. *The destruction and alteration of mangroves infested by a wood-boring crustacean in a restored mangrove stand in Taiwan* (Oral). International Marine Conservation Congress. Victoria, BC. May 2011
15. *Seawater temperature mediates the bioerosive impacts of a non-native burrowing crustacean* (Oral). 12th Annual Environmental Joint Campus Conference. Eugene, OR. May 2010
16. *Factors influencing the colonization of a non-native bioeroding isopod (Sphaeroma quoianum) in a temperate estuary* (Poster). Coastal and Estuarine Research Federation: Estuaries and Coasts in a Changing World. Portland, OR. Nov 2009
17. *Accelerated erosion of saltmarshes infested by a non-native burrowing crustacean* (Oral). 6th International Conference on Marine Bioinvasions. Portland, OR. Aug 2009
18. *Accelerated erosion of saltmarshes infested by a non-native burrowing crustacean* (Oral). 11th Annual Environmental Joint Campus Conference. Intellectual Cross Pollination: Interdisciplinary Approaches to Environmental Problems. Portland, OR. May 2009
19. *The density and associated fauna of a non-native habitat-altering isopod (Sphaeroma quoianum) in a temperate estuary* (Oral). Pacific Estuarine Research Society, Newport, OR. Feb 2008, Honorable mention for best student presentation
20. *The invasion of the Australasian burrowing isopod in Coos Bay, Oregon* (Oral), Oregon Invasive Species Council. Portland, OR. Nov 2007
21. *The density and associated fauna of the invasive burrowing isopod Sphaeroma quoianum in a temperate Pacific Northwest estuary* (Oral). 9th Annual Environmental Joint Campus Conference: Linking People, Policy, & Science. Eugene, OR. May 2007

22. *The intertidal distribution and density of the introduced bioeroding isopod Sphaeroma quoianum in Coos Bay, Oregon* (Oral). Western Society of Naturalists. Seattle, WA. Nov 2006
23. *Substratum preference of the introduced bioeroding isopod Sphaeroma quoianum in Coos Bay, Oregon* (Poster). Western Society of Naturalists. Seaside, CA. Nov 2005
24. *Rate of prey consumption in green and Dungeness crabs* (Oral). Pacific Coast Shellfish Growers Association and National Shellfisheries Association. Portland, OR. Oct 2003

CSUS STUDENT PRESENTATIONS (16 TOTAL; 3 STUDENT PRESENTATION AWARDS)

1. Rodriguez, C, Davidson TM. *Meta-analysis investigating the effects of Myocastor coypus (Nutria) on native ecosystems* (Poster). Provost's Student Research Fall Forum. Nov 2021
2. Albright, S., TM Davidson. *Impacts of body size and water movement on fragmentation in three temperate estuarine algae* (Poster). Student Research & Creative Activity Fall Poster Forum. Nov 2020
3. Albright, S., TM Davidson. *Impacts of body size and water movement on fragmentation in three temperate estuarine algae* (Poster). NSM Student Research Symposium. Oct 2020
4. Roberts, E, TM Davidson. *Burrows created by an ecosystem engineer improve survivorship of intertidal invertebrates* (talk). Sacramento State Student Research Spring Symposium. Mar 2020
 * Awarded second place for best presentation
5. Albright, S., TM Davidson. *Impacts of water movement on fragmentation of algae in San Francisco Bay* (Poster). Provost's Student Research Fall Forum. Nov 2019
6. Roberts, E, TM Davidson. *Burrow microhabitats created by an ecosystem engineer improve survivorship of intertidal invertebrates* (Poster). Provost's Student Research Fall Forum. Nov 2019
7. Albright, S., TM Davidson. *Impacts of water movement on fragmentation of algae in San Francisco Bay* (Poster). NSM Student Research Symposium. Oct 2019
8. Roberts, E, TM Davidson. *Burrow microhabitats created by an ecosystem engineer enhance survivorship of intertidal invertebrates* (Poster). NSM Student Research Symposium. Oct 2019
9. Roberts, E, TM Davidson. *It's not the heat, it's the humidity: burrow microhabitats created by a boring crustacean ameliorate stressful conditions in the intertidal* (talk). CSU Fullerton 33rd Annual CSU Student Research Competition. Apr 2019
10. Roberts, E, TM Davidson. *It's not the heat, it's the humidity: burrow microhabitats created by a boring crustacean ameliorate stressful conditions in the intertidal* (talk). Sacramento State Student Research Spring Symposium. Mar 2019
 * Awarded First place
11. Ziba, A, TM Davidson. *Patterns of herbivory & predation by crabs in a Florida mangrove* (Poster). Provost's Student Research Fall Forum. Nov 2018

12. Albright, S., TM Davidson. *Impacts of water movement on fragmentation of algae in San Francisco Bay*. (Poster) Provost's Student Research Fall Forum. Nov 2018
13. Bricker A, TM Davidson. *Do burrow refuges created by a marine ecosystem engineer reduce predation in the intertidal?* (Poster) NSM Undergraduate Research Reception. Oct 2018
14. Roberts E, TM Davidson. *It's not the heat, it's the humidity: burrow microhabitats created by a boring crustacean ameliorate stressful conditions in the intertidal* (Poster). Sacramento State Student Research Symposium. March 2018
*** Roberts received the Provost's Award for Research Excellence**
15. Roberts E, TM Davidson. *It's not the heat, it's the humidity: burrow microhabitats created by a boring crustacean ameliorate stressful conditions in the intertidal* (Poster). Provost's Student Research Fall Forum. Nov 2017
16. Roberts E, TM Davidson. *It's not the heat, it's the humidity: burrow microhabitats created by a boring crustacean ameliorate stressful conditions in the intertidal*. NSM Undergraduate Research Reception. Oct 2017