

MICHAEL THOMAS BOOTH

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A. EDUCATION

Cornell University Ecol & Evol Biology Ph. D. January 2012
University of California, Santa Cruz Ecol & Evol Biology B.S. (Highest Honors; 3.87 GPA)
2004

B. PROFESSIONAL EXPERIENCE

2018- Visiting Assistant Professor, University of Cincinnati Biological Sciences
2016-2017 Senior Ecologist, United Water Conservation District
2012-2015 Associate Ecologist, United Water Conservation District
2011-2012 Associate Fisheries Biologist, United Water Conservation District
2007-2008 Graduate Research Assistant, Cornell Biogeochemistry and Biocomplexity
Initiative
2004-2005 Field & Lab project manager, Arizona State University, Yale, University of
Minnesota
2003 South Rim Exotic Plant Manager (Eugene Polk Fellowship), Grand Canyon
Revegetation, U.S. Department of the Interior, National Park Service
2002-2004 Laboratory/Field Technician, Ecol and Evol Biology, University of California,
Santa Cruz

C. TEACHING EXPERIENCE

2018 - Visiting Assistant Professor, University of Cincinnati, Biological Sciences:
*Graduate Research Progress, Aquatic Biology, Aquatic Biology Lab, Biology
Seminar, Graduate Special Topics: Careers in Biology*
Summer 2018 Visiting Assistant Professor, UC International: *Environmental Science 101*
Summer 2017 Adjunct Professor, CA State University Channel Islands: *Field Methods in
Environmental Science*
2008-2010 Graduate Teaching Assistant, Cornell Ecol & Evol Biology
Courses instructed: *Ecology and the Environment (head TA); Evolutionary
Biology and Diversity; Stream Ecology (Lab instructor); Intro to Ecology and the
Environment*
2004 Teaching Assistant, Ecol and Evol Biology, University of California, Santa Cruz,
course instructed: *Community Ecology*

D. PEER REVIEWED PUBLICATIONS

Booth, M.T. Patterns and Drivers of Steelhead Smolt Migration in Southern California. 2020.
North American Journal of Fisheries Management. 40(4): 1032-1050.
DOI:10.1002/nafm.10475

- Booth, M.T.**, Hairston, N. G. H., Jr., Flecker, A. S.. Consumer movement dynamics as hidden drivers of stream habitat structure: suckers as ecosystem engineers on the night shift. 2020. *Oikos*. 129: 194-208. DOI: 10.1111/oik.06396
- Dagit, R., **Booth, M.T.**, Gomez, M., Hovey, T., Howard, S., Lewis, S. D., Jacobson, S., Larson, M., McCanne, D., Robinson, T. H.. Occurrences of Steelhead Trout (*Oncorhynchus mykiss*) in Southern California 1994-2018. 2020. *California Fish and Wildlife*. 106(1): 39-58.
- Howard, S. and **Booth, M.T.**. Range expansion of the Shimofuri goby (*Tridentiger bifasciatus*) in southern California, with emphasis on the Santa Clara River. 2016. *California Fish and Game*. 102 (2):45-49.
- Booth, M.T.**, Hairston, N. G. Jr., Flecker, A. S. Is mobility a fixed trait? Summer movement patterns of catostomids using PIT telemetry. 2014. *Transactions of the American Fisheries Society*. 143 (4):1098-1111.
- Booth, M.T.**, Hairston, N. G. Jr., Flecker, A. S. How mobile are fish populations? Diel movement, population turnover, and site fidelity in suckers. 2013. *Canadian Journal of Fisheries and Aquatic Science*. 70 (5):666-677.
- Booth, M.T** and A. J. Shipley*. Spatial dynamics and growth of two native catostomid species: are movements restricted? 2012. *Southwestern Naturalist*. 57 (3):248-256.
- Capps, K. A., **M. T. Booth**, S. M. Collins, M. A. Davison, J. M. Moslemi, R. W. El-Sabaawi, J. L. Simonis, and A. S. Flecker. Nutrient diffusing substrata: a field comparison of commonly used methods to assess nutrient limitation. 2011. *Journal of the North American Benthological Society*. 30 (2):522-532.
- Capps, K.A., C.B. Turner, **M.T. Booth**, D.L. Lombardozzi, S.H. McArt, D. Chai, and N.G. Hairston, Jr. The behavioral and trophic ecology of an introduced fish, *Gambusia affinis* (Actinopterygii: Poeciliidae), and an endemic shrimp, *Halocardina rubra* (Malacostraca: Atyidae), in Hawaiian anchialine ponds. 2009. *Pacific Science*. 63 (1): 27-37.

*undergraduate collaborator

E. MANUSCRIPTS IN PROGRESS

- Booth, M.T.**, Urbanic, M.*, Wang, X., and Beaulieu, J.J. Bioturbation frequency alters methane emissions from reservoir sediments. *In USEPA technical review*. To be submitted to *Freshwater Biology*.
- Booth, M.T.** and Barton, R.*. Interactions between invasive American bullfrog diet (*Lithobates catesbeianus*) and invasive species management in a non-native dominated pond system. *In prep*. To be submitted to *Biological Invasions*.
- Booth, M.T.**, Israel, G.*, McCombs, C.*, Pastura, L.*, Sanders, A.*, Urbanic, M.*, Impacts of altered hydrology and pollution on urban headwater stream fish. *In prep*. To be submitted to *Urban Ecosystems*.
- Ayres, K.A., Claudi, R., **Booth, M.T.**. Temperature and dose response of invasive quagga mussels to various molluskicides. *In prep*. To be submitted to *Biological Invasions*.

F. GRANTS (FUNDED)

2020- Great Parks of Hamilton County. Electrofishing Survey of the Campbell Lakes, Hamilton, Ohio. \$6428

2019- University Research Council Undergraduate Student Stipend and Research Cost Awards for Faculty-Student Collaboration. "Do fish populations and movements change following implementation of stormwater management?" with Sanders, A.* \$4500

2015- Nontraditional Section 6 Program Habitat Conservation Planning Assistance grant for United Water Conservation District's Multi-Species Habitat Conservation Plan \$750,000

2010- Biogeochemistry and Environmental Biocomplexity IGERT small grant: "Do movement dynamics drive ecosystem structure? Suckers as ecosystem engineers" \$2800

2009-Conservation scientist award, NSF funded "Crossing Boundaries" program, \$3000

2009- Biogeochemistry and Environmental Biocomplexity IGERT small grant: "Ecological engineers? The functional role of fish in Southwestern streams" \$4000

2008- National Science Foundation Doctoral Dissertation Improvement grant: "Ecological Role of Fish in Southwestern Streams" \$11,936

2008- Biogeochemistry and Environmental Biocomplexity IGERT small grant \$3993

2007- PADI Foundation: "The ecological role of suckers (Pisces: Catostomidae) in the American Southwest" \$3000

2007- Biogeochemistry and Environmental Biocomplexity IGERT small grant \$3619

2007- American Philosophical Society: Lewis and Clark Fund for Exploration and Field Research \$3600

2005-2007 NSF Biogeochemistry and Environmental Biocomplexity IGERT fellowship

2005- Biogeochemistry and Environmental Biocomplexity IGERT small grants program: \$2000

G. GRANTS SUBMITTED

2019- Ohio Department of Higher Education Harmful Algal Bloom Research Initiative: "A Holistic Approach to the Assessment, Monitoring, and Management of Harmful Algae Blooms on the Ohio River". Mike Booth, Lead PI. Co-PI: Michael Waters \$265,650 (*not funded*)

2019- Ohio Water Resource Center 104(b). "Field validation of pollution absorption media as a best management practice for water quality improvement in an urban headwater catchment". Mike Booth, Lead PI. Co-PI: Adam Lehmann \$35,128 (*not funded*)

2019- Ohio Division of Wildlife: "Habitat Limitation of Black Bass on the Ohio River" Mike Booth, Lead PI. Co-PI: Jeremy Pritt \$65,000 (*not funded*)

2018- UC Office of Research Collaborative Research Advancement Grants Program Track 1: Pilot Teams: "Evaluating hydrologic and green infrastructure improvements to achieve biological integrity in an urban watershed" Mike Booth, Lead PI. Co-PIs: Ishi Buffam, Reza Soltanian, Leah Holstein, Adam Lehmann \$24,999 (*not funded*)

2018- University Research Council Faculty Research Cost Support Award: "The Role of Fish Bioturbation in Greenhouse Gas Emissions from Reservoirs" Mike Booth, PI \$7000 (*funding recommended, not funded*)

H. TECHNICAL REPORTS

UWCD Environmental Planning and Conservation Department. 2017. Quagga Mussel Monitoring and Control 2016 Annual Report. Prepared for United Water Conservation District, Santa Paula, CA.

United Water Conservation District. 2016. Multiple Species Habitat Conservation Plan (Administrative Draft). Prepared by United Water Conservation District for review by National Marine Fisheries Service, United States Fish and Wildlife Service, and California Department of Fish and Wildlife.

UWCD Environmental Planning and Conservation Department. 2016. Combined Report: Revised Lower Piru Creek Herpetological Monitoring Plan and Arroyo Toad Protection Plan. Prepared by United Water Conservation District for Santa Felicia Project FERC P-2153.

Booth, M. T. 2016. Fish passage monitoring at the Freeman diversion 1993-2014. Prepared for United Water Conservation District, Santa Paula, CA.

UWCD Environmental Planning and Conservation Department. 2015. Combined Report: Revised Lower Piru Creek Herpetological Monitoring Plan and Arroyo Toad Protection Plan. Prepared by United Water Conservation District for Santa Felicia Project FERC P-2153.

Howard, S. and **Booth, M. T.** 2014. Fish Passage Monitoring and Studies, Vern Freeman Diversion Facility, Santa Clara River, Ventura County, California. Annual Report 2014 Monitoring Season. Prepared for United Water Conservation District, Santa Paula, CA.

UWCD Environmental Planning and Conservation Department. 2014. Combined Report: Revised Lower Piru Creek Herpetological Monitoring Plan and Arroyo Toad Protection Plan. Prepared by United Water Conservation District for Santa Felicia Project FERC P-2153.

Howard, S. and **Booth, M. T.** 2013. Fish Passage Monitoring and Studies, Vern Freeman Diversion Facility, Santa Clara River, Ventura County, California. Annual Report 2013 Monitoring Season. Prepared for United Water Conservation District, Santa Paula, CA.

UWCD Environmental Planning and Conservation Department. 2013. Combined Report: Revised Lower Piru Creek Herpetological Monitoring Plan and Arroyo Toad Protection Plan. Prepared by United Water Conservation District for Santa Felicia Project FERC P-2153.

Howard, S. and **Booth, M. T.** 2012. Fish Passage Monitoring and Studies, Vern Freeman Diversion Facility, Santa Clara River, Ventura County, California. Annual Report 2012 Monitoring Season. Prepared for United Water Conservation District, Santa Paula, CA.

UWCD Environmental Planning and Conservation Department. 2012. Combined Report: Revised Lower Piru Creek Herpetological Monitoring Plan and Arroyo Toad Protection Plan. Prepared by United Water Conservation District for Santa Felicia Project FERC P-2153.

UWCD Environmental Planning and Conservation Department. 2012. Revised Lower Piru Creek Herpetological Monitoring Plan. Prepared by United Water Conservation District for Santa Felicia Project FERC P-2153 - Article 404.

Howard, S. and **Booth, M. T.** 2011. Fish Passage Monitoring and Studies, Vern Freeman Diversion Facility, Santa Clara River, Ventura County, California. Annual Report 2011 Monitoring Season. Prepared for United Water Conservation District, Santa Paula, CA.

I. SELECTED HONORS AND AWARDS

2020- Participant. National Socio-Environmental Synthesis Center Early Career Researcher workshop, "S-E Approaches to Watershed Management and Governance."

2010- Outstanding Student Presentation award (ASLO), Joint meeting of the North American Benthological Society and American Society of Limnology and Oceanography.

2004- NSF Predoctoral Fellowship Honorable Mention

2004- University of California, Santa Cruz thesis honors in Ecology and Evolution

J. SYNERGISTIC ACTIVITIES

2019—Thomas More University STEM High School Camp – instructor, fish art

2018-present— Member of the East Fork Watershed Cooperative (EFWCoop), a multi-stakeholder group dedicated to research, monitoring, and improved land conservation in the Little Miami watershed

2018-present— Member of the Cooper Creek Demonstration Watershed team, which is using a small urban headwater stream in Cincinnati to monitor the effectiveness of green and grey stormwater infrastructure improvements for increasing biological condition

2018-2019— Scientist presenter at the UC Center for Field Studies Science Day, participant in the Hughes High School Biology Day

2012-2017— Participant in Environmental Science and Resource Management career day at California State University Channel Islands, throughout the year provide facility tours and class lectures for school groups ranging from 3rd grade to college

2009-2010— Conservation scientist for NSF-funded "Crossing Boundaries", a program that provides middle and high school students with knowledge, skills, motivation, and inspiration to use information and communication technologies in addressing biodiversity conservation issues in local and international contexts. <http://www.crossingboundaries.org/mike-booth-1130.php>

2007-2010— served on the Biogeochemistry and Environmental Biocomplexity IGERT grant review panels

2008-present— Recruited and supervised independent study and field research for >35 undergraduates and recent graduates

I. PRESENTATIONS (ORAL AND INVITED)

Booth, M.T., Urbanic, M.,* and Beaulieu, J. Bioturbation frequency shifts rates, content, and magnitude of greenhouse gas production in reservoir sediments. Invited speaker. Joint Meeting of ASLO and SFS, Madison, WI. Cancelled due to COVID19.

Booth, M.T. Understanding fish movements to inform water resource management: from urban centers to desert streams. Invited speaker at Bowling Green State University, OH. February 13, 2020.

Booth, M.T. Balancing groundwater management and migration of endangered steelhead in a spatially intermittent watershed. Ecological Society of America. Louisville, KY. August 14, 2019.

Booth, M.T. There and Back Again: Fish behavior as a driver of ecosystem structure and ecosystem structure as regulator of fish behavior. Invited speaker at Thomas More University Biology Field Station, KY. May 30, 2019.

Booth, M.T., Hairston, N.G. Jr., Flecker, A.S. There's no divot like home: benthic foraging fish create novel habitats in soft sediments. Oral presentation. Society for Freshwater Science. Salt Lake City, UT. May 23, 2019.

Booth, M.T. There and Back Again: Fish behavior as a driver of ecosystem structure and ecosystem structure as regulator of fish behavior. *Invited.* University of Cincinnati Biological Sciences. September 10, 2018.

Booth, M.T. Anadromy in the desert: Balancing groundwater management and migration of endangered steelhead in a spatially intermittent watershed. Society for Freshwater Science, Detroit, MI. May 24, 2018.

Booth, M.T. Linking fish behavior to water resource management: consequences for water quality and quantity. University of Cincinnati Research+Innovation Week 2019. April 10, 2018.

Booth, M.T. and Howard, S. Steelhead smolt migration timing and hydrology in a large, spatially intermittent watershed, Santa Clara River, Ventura County, California. Western Division American Fisheries Society, Reno, NV. March 24, 2016.

Booth, M.T., Howard, S., Allen, M., and Cerasale, D. Adaptive Management & Effectiveness Monitoring for Santa Felicia Dam FERC project, Piru Creek, Ventura County, California. Salmonid Restoration Federation. March 20, 2014.

Booth, M.T., Flecker, A.S., Hairston, N.G. Jr. Semper Fidelis? Site fidelity and population turnover in suckers of the Southwest using PIT telemetry. Desert Fishes Council, Death Valley, CA. November 15, 2012

Booth, M.T., Flecker, A.S., Hairston, N.G. Jr. Linking movement dynamics to ecosystem structure: suckers as ecosystem engineers. American Fisheries Society. Pittsburg, PA. September 15, 2010.

Booth, M.T., Flecker, A.S., Hairston, N.G. Jr. Movement dynamics drive ecosystem structure: suckers as ecosystem engineers. Joint meeting of the North American Benthological Society and American Society of Limnology and Oceanography. Santa Fe, NM. June 11, 2010. **winner of Outstanding Student Presentation award from ASLO*

Booth, M.T., Flecker, A.S., Hairston, N.G. Jr. The influence of movement dynamics on ecosystem structure: Suckers as ecosystem engineers. Meeting of the Ecological Society of America. Albuquerque, NM. August 4, 2009.

J. PRESENTATIONS (POSTER AND TEACHING)

Urbanic, M.*, Beaulieu, J., and **Booth, M. T.** Frequency of bioturbation in sediments impacts greenhouse gas ebullition. Poster. Society for Freshwater Science (Summer of Science). Online (due to COVID19). June 11, 2020.

Booth, M.T., Sanders, A. J.*, Urbanic, M. A.* Fish community composition and movement patterns in a hydrologically-impacted urban stream. Poster. Ecological Society of America. Louisville, KY. August 13, 2019.

Booth, M.T. Big River Ecology: Understanding Animal Movement. Invited lecture. Chautauqua Course for Educators at Thomas More University Biology Field Station, KY. June 26, 2019.

Harris, J.*, Grubbs, G.*, Hintz, C., and **Booth, M.T.** Will differences in biological and chemical factors break down leaves at different rates in otherwise similar adjacent streams? Poster. UC Biological Sciences Undergraduate Research Symposium. April 22, 2019.

Grubbs, G.*, Harris, J.*, Hintz, C., and **Booth, M.T.** Does macroinvertebrate exclusion affect the rate of leaf decomposition in an urban stream? Poster. UC Biological Sciences Undergraduate Research Symposium. December 5, 2018.

Booth, M.T. Ecological Monitoring and Water Management: Perspectives from a Groundwater Management Agency. Invited lecture for Water Resource Management course at California State University Channel Islands. March 27, 2017.

Booth, M.T. Hands on data management for environmental science in Microsoft Excel. Invited workshop for Water Resource Management course at California State University Channel Islands. February 13, 2017.

Booth, M.T. Tips and tricks for data preparation in Microsoft Excel. Invited lecture for Water Resource Management course at California State University Channel Islands. May 1, 2016.

Booth, M.T. Ecological Monitoring and Water Management: Perspectives from a Groundwater Management Agency. Invited lecture for Water Resource Management course at California State University Channel Islands. May 1, 2016.

K. Mentoring (last 5 years)

Rainey Barton (CSU Channel Islands; Capstone in Environmental Science 2017)

Gabrielle Grubbs (University of Cincinnati; Undergraduate Capstone Biological Sciences 2018)

Joshua Harris (University of Cincinnati; current undergraduate researcher 2018-present)

Adam Sanders (University of Cincinnati; undergraduate researcher 2018-2019)

Gabrielle Israel (University of Cincinnati; current undergraduate researcher 2019-present)

Megan Urbanic (University of Cincinnati; current undergraduate researcher 2019-present)

Logan Pastura (University of Cincinnati; current undergraduate researcher 2019-present)

Connor McCombs (University of Cincinnati; current undergraduate researcher 2019-present)

Jackson Cheadle (University of Cincinnati; current undergraduate researcher 2020-present)

Chelsea Hintz (University of Cincinnati; Ph.D. candidate in Biological Sciences, RAC)

Tyler Boggs (University of Cincinnati; Ph.D. candidate in Biological Sciences, RAC)

L. Skills

18+ years field work experience throughout the US and Chiapas, Mexico

Proficiency with Microsoft Office, Adobe Creative Suite, Manifold GIS, Program R, JMP statistical software, web design and production.

Experience with collaborative document sharing, classroom software, web and graphic design

Design and fabrication in wood and metal, proficient with wood and machine shop equipment

NAUI certified Rescue Scuba diver

Small boat operation