

Dr. Heiko Schoenfuss

Visiting Scientist

Toxicology Department

Southern California Coastal Water Research Project

Education

Ph.D., Evolutionary Morphology, Louisiana State University, Baton Rouge, 1997

M.S., Veterinary Anatomy, Texas Christian University, 1997

B.S., Biology, Miami University, Honors with Distinction, 1991

Professional Experience

Professor, Department of Biological Sciences, St. Cloud State University, July 2008-present.

Director, Aquatic Toxicology Laboratory, St. Cloud State University, 2002-present.

Associate Professor of Aquatic Toxicology, Department of Biological Sciences, St. Cloud State University, August 2005 - June 2008.

Assistant Professor of Aquatic Toxicology, Department of Biological Sciences, St. Cloud State University, August 27, 2001 - July 2005.

Research Associate, Department of Fisheries & Wildlife, University of Minnesota, 1999-2001.

Instructor, Department of Biological Sciences, Southeastern Louisiana University, 1995-97.

Laboratory Instructor, Department of Zoology, Louisiana State University, 1993-97.

Professional Appointments

"*Science & Technology Achievement Award, Level III*", US Environmental Protection Agency. 2019

Editorial Board Member, *Water*. 2019

Top 5% peer reviewer *Society for Environmental Toxicology & Chemistry* 2018 & 2019

Chair, *Endocrine Disrupter Testing and Risk Assessment (EDTRA)* of the SETAC (2017-2020).

Editorial Board Member, *Environmental Toxicology & Chemistry*. 2017

Program Committee, *Society for Environmental Toxicology & Chemistry* 2017 meeting host committee. 2016

SCSU Faculty Research Award Committee (2015-2020).

St. Cloud State University Scholar Award (2014-16)

Member, Steering Committee of the SETAC Global Advisory Group on Endocrine Disrupter Testing and Risk Assessment (EDTRA) (2014-2020)

Member, MN Department of Health, Task Force on Criterion Development for Contaminants of Emerging Concern (2010-12)

Member, Peer Review Committee, National Institute of Environmental Health. 2009

Member, Science Advisory Board on Emerging Contaminants. US EPA. 2008

Fellow, Institute on the Environment (ION). University of Minnesota. 2008

Member, ASTM Online Toxicity Monitoring Task Group. 2008

Host of Emerging Contaminant Stake-holder meeting, St. Cloud, MN. 2008

President, Midwest Division of the Society for Environmental Toxicology & Chemistry. 2007

Student Organization Advisor of the Year Award, St. Cloud State University. 2007

Student Advisor of the Year Award - St. Cloud State University 2007

Faculty Research Award - St. Cloud State University 2007

Organizer of the Midwest Division Meeting of the Society for Environmental Toxicology

Chemistry, St. Cloud, MN, March 2006.

Faculty Senate Representative, St. Cloud State University, Department of Biological Sciences.
2002-2006

Professional Societies and Certifications

Society for Environmental Toxicology and Chemistry (SETAC)

American Association for the Advancement of Science (AAAS)

European Association of Fish Pathologists

International Congress of Vertebrate Morphology (ICVM)

Sigma Xi

Publications

Cipoletti N, Jorgenson ZG, Banda JA, Hummel SL, Kohno S, Hummel, SL, Schoenfuss HL. In press. Biological Consequences of Agricultural and Urban Land-Use Along the Maumee River, a Major Tributary to the Laurentian Great Lakes Watershed. *Journal of Great Lakes Research*.

Korn VR, Ward JL, Edmiston PL, Schoenfuss HL. In press. Temperature-Dependent Biomarkers of Estrogenic Exposure in a Piscivore Freshwater Fish. *Archives of Environmental Contamination & Toxicology*.

Blob RW, Baumann T, Diamond KM, Schoenfuss HL. In press. Functional correlations of axial muscle fiber type proportions in the waterfall-climbing Hawaiian stream fish, *Sicyopterus stimpsoni*. *Journal of Anatomy*.

Kohno S, Vang D, Ang E, Brunell A, Lowers RH, Schoenfuss HL. 2020. Estrogen-induced ovarian development is time-limited during the temperature-dependent sex determination of the American alligator. *General and Comparative Endocrinology* 291:113397.

Blob RW, Lagarde R, Diamond KM, Keeffe RM, Bertram RS, Ponton D, Schoenfuss HL. In press. Functional diversity of evolutionary novelties: insights from waterfall-climbing kinematics and performance of juvenile gobiid fishes. *Integrative Organismal Biology*.

Schoenfuss HL, Wang LC, Korn VR, King CK, Kohno S, Hummel SL. Accepted. Understanding the Ecological Consequences of Ubiquitous Contaminants of Emerging Concern in the Laurentian Great Lakes Watershed: A Continuum of Evidence from the Laboratory to the Environment. *In: Handbook of Environmental Chemistry: Contaminants of the Great Lakes* (eds.: Crossman J, Weisener C); Chapter 2.6. Springer, Switzerland.

Diamond KM, Lagarde R, Schoenfuss HL, Walker JA, Ponton D, Blob RW. In press. Relationship of escape performance with predator regime and ontogeny in fishes. *Journal of the Linnaean Society*.

Cipoletti N, Jorgenson ZG, Banda JA, Hummel SL, Kohno S, Schoenfuss HL. 2019. Land use contributions to adverse biological effects in a complex agricultural and urban watershed: a case study of the Maumee River. *Environmental Toxicology & Chemistry* 38(5):1035-1051.

Cox MK, Ward JL, Matsuura M, Aing R, Schoenfuss HL, Kohno S. 2019. Estrone exposure interacts with temperature to alter predator evasion performance and systemic mRNA abundance. *Science of the Total Environment* 692:519-528.

Mole RA, Good CA, Stebel EE, Higgins JF, Pitell SA, Welch AR, Minarik TA, Schoenfuss HL, Edmiston PL. 2019. Effect of UV or hypochlorite disinfection on pharmaceuticals in wastewater by measuring concentrations in pre-/post-treated effluent correlated to bench-scale transformations. *Chemosphere* 226:565-575.

Moody KN, Wren JLK, Kobayashi DR, Blum MJ, Ptacek MB, Blob RW, Toonen RJ, Schoenfuss HL, Childress MJ. 2019. Evidence of local adaptation in a waterfall-climbing Hawaiian goby fish derived from coupled biophysical modeling of larval dispersal and post-settlement selection. *BMC Evolutionary Biology* 19(1):88. doi: 10.1186/s12862-019-1413-4

Guyader ME, Warren LD, Green E, Butt C, Ivosev G, Kielsing RL, Schoenfuss HL, Higgins CP. 2019. Exploitation of Toxicological Endpoints for the Prioritization of Liquid Chromatography Tandem High Resolution Mass Spectrometry (LC-HRMS) Features: Identifying Potential Endocrine Active Chemicals (EACs) in Lakewater. *Science of the Total Environment* 670:814-825.

Nilsen E, Smalling KL, Ahrens L, Gros M, Miglioranza KSB, Pico Y, Schoenfuss HL. 2019. Critical Review: grand challenges in assessing the adverse effects of contaminants of emerging concern on aquatic food webs. *Environmental Toxicology & Chemistry* 38:46-60.

Rearick DC, Ward J, Venturelli P, Schoenfuss HL. 2018. Environmental oestrogens cause predation-induced population decline in a freshwater fish. *Royal Society Open Science* 5:181065. <http://dx.doi.org/10.1098/rsos.181065>

Fairbairn DJ, Elliott SM, Kiesling RL, Schoenfuss HL, Ferrey ML, Westerhoff BM. 2018. Contaminants of emerging concern in urban stormwater: Spatiotemporal patterns and removal by

iron-enhanced sand filters (IESFs). *Water Research* 145:334-345.

Carlstrom LP, Cheever TR, Schoenfuss HL, McGee MR, Ekker SC, Henley JR. 2018. Synergy and convergence of pathways controlling functional regeneration in the spinal cord. *bioRxiv* preprint.

Westerhoff BM, Fairbairn DJ, Ferrey ML, Matilla A, Kunkel J, Elliott SM, Kiesling RL, Woodruff D, Schoenfuss HL. 2018. Effects of urban stormwater and iron-enhanced sand filtration on *D. magna* and *Pimephales promelas*. *Environmental Toxicology & Chemistry* 37(10):2645-2659.

Lagarde R, Buillaume B, Blob RW, Schoenfuss HL, Ponton D. 2018. Intra and inter-specific morphological diversity of amphidromous gobies influences waterfall-climbing performance. *Journal of Zoology* 35(4):361-369.

Schoenfuss HL, Ward JL. 2018. Can't find the rhythm. *Integrated Environmental Assessment and Management* 14(5):660-663. DOI: 10.1002/ieam.4065.

Elliott SM, Brigham ME, Kiesling RL, Schoenfuss HL, Jorgenson ZG. 2018. Environmentally Relevant Chemical Mixtures of Concern in U.S. Tributaries to the Great Lakes. *Integrated Environmental Assessment and Management* 14(4):509-518. DOI: 10.1002/ieam.4041.

Jorgenson ZG, Thomas L, Elliott SM, Cavallin JE, Randolph EC, Choy SJ, Alvarez DA, Banda JA, Gefell DJ, Lee KE, Furlong ET, Schoenfuss HL. 2018. Contaminants of Emerging Concern Presence and Adverse Effects in Fish: A Case Study in the Laurentian Great Lakes. *Environmental Pollution* 236:718-733. DOI: 10.1016/j.envpol.2018.01.070.

Guyader M, Warren L, Green E, Proudian A, Kiesling R, Schoenfuss HL, Higgins CP. 2018. Trace Organic Contaminant (TOrC) Mixtures in Minnesota Littoral Zones: Effects of On-Site Wastewater Treatment System (OWTS) Proximity and Biologic Impact. *Science of the Total Environment* 626:1157-1166. DOI: 10.1016/j.scitotenv.2018.01.123.

Kohno S, Katsu Y, Cipoletti N, Wang LC, Jorgenson ZG, Miyagawa S, Schoenfuss HL. 2018. Divergent Responsiveness of Two Isoforms of the Estrogen Receptor to Mixtures of Contaminants of Emerging Concern in Four Vertebrates. *Journal of Applied Toxicology* 38(5):705-713. DOI:10.1002/jat.3577.

Feifarek DJ, Shappell NW, Schoenfuss HL. 2018. Do environmental factors affect male fathead minnow (*Pimephales promelas*) response to estrone? Part 1. Dissolved oxygen and sodium chloride. *Science of the Total Environment* 610-611:1262-1270. <http://dx.doi.org/10.1016/j.scitotenv.2017.07.251>

Shappell NW, Feifarek DJ, Rearick DC, Bartell SE, Schoenfuss HL. 2018. Do environmental factors affect male fathead minnow (*Pimephales promelas*) response to estrone? Part 2. Temperature and food availability. *Science of the Total Environment* 610-611:32-43. DOI:

10.1016/j.scitotenv.2017.08.021

Ivanova J, Zhang S, Wang R-L, Schoenfuss HL. 2017. Social hierarchy modulates responses of fish exposed to contaminants of emerging concern. *PLoS ONE* 12(10): e0186807. DOI: 10.1371/journal.pone.0186807

Cox MK, Peterson KN, Tan D, Novak PJ, Schoenfuss HL, Ward JL. 2017. Temperature modulates estrone degradation and biological effects of exposure in fathead minnows. *Science of the Total Environment* 621:1591-1600. DOI 10.1016/j.scitotenv.2017.10.069

Thomas LM, Jorgenson ZG, Brigham ME, Choy SJ, Moore JN, Banda JA, Gefell DJ, Minarik TA, Schoenfuss HL. 2017. Contaminants of emerging concern in tributaries to the Laurentian Great Lakes: II. Biological consequences of exposure. *PLoS ONE* 12(9): e0184725. DOI: 10.1371/journal.pone.0184725

Ward JL, Cox MK, Schoenfuss HL. 2017. Thermal modulation of anthropogenic estrogen exposure on a freshwater fish, *Pimephales promelas*, at two life stages. *Hormones and Behavior* 94:21-32.

Taft NK, Taft BN, Henck H, Diamond KM, Schoenfuss HL, Blob RW. 2017. Comparative morphology and mechanical properties of the lepidotrichia of climbing and non-climbing Hawaiian gobioid fishes. *Cybium* 41(2): 107-115.

Zhao J-L, Furlong ET, Schoenfuss HL, Kolpin DW, Bird KL, Feifarek DJ, Schwab EA, Ying G-G. 2017. Uptake and disposition of select pharmaceuticals by bluegill exposed at constant concentrations in a flow through aquatic exposure system. *Environmental Science & Technology* 51(8):4434-4444.

Schroeder AL, Martinovic-Weigelt D, Ankley GT, Lee KE, Garcia-Reyero N, Perkins EJ, Schoenfuss HL, Villeneuve DL. 2017. Prior knowledge-based approach for associating contaminants with biological effects: a case study in the St. Croix River basin, MN, WI, USA. *Environmental Pollution* 221:427-436.

Diamond KM, Schoenfuss HL, Walker JA, Blob RW. 2016. Flowing water affects fast-starts: escape performance of the Hawaiian stream goby *Sicyopterus stimpsoni*. *Journal of Experimental Biology* 219:3100-3105.

Schoenfuss HL, Furlong ET, Phillips PJ, Scott T, Kolpin DW, Cetkovic-Cvrlje M, Lesteborg KE, Rearick DC. 2016. Complex mixtures, complex responses: assessing pharmaceutical mixtures using field and laboratory approaches. *Environmental Toxicology and Chemistry* 34(4):953-965.

Biales AD, Denton DL, Riordan D, Vreuer R, Deanovic L, Batt AL, Crane DB, Schoenfuss HL. 2015. Complex watersheds, collaborative teams: assessing pollutant presence and effects in the San Francisco Delta. *Integrated Environmental Assessment and Management* 11(4):674-688. PMID

25779725 DOI: [10.1002/ieam.1633](https://doi.org/10.1002/ieam.1633).

Kelly MM, Rearick DC, Overgaard CG, Schoenfuss HL, Arnold WA. 2015. Sorption of isoflavones to river sediment and model sorbents and outcomes for larval fish exposed to contaminated sediment. *Journal of Hazardous Materials* 282:26-33.

Moody KN, Hunter SN, Childress MJ, Blob RW, Schoenfuss HL, Blum MJ, Ptacek MB. 2014. Local adaptation despite high gene flow in the waterfall-climbing Hawaiian goby, *Sicyopterus stimpsoni*. *Molecular Ecology* 24(3): 545-563.

Schoenfuss HL, Wang R-L. 2015. Embracing 'omic diversity: a mixed academic/government perspective. *Environmental Toxicology & Chemistry* 34(4):702-703.

Jorgenson ZG, Buhl K, Bartell SE, Schoenfuss HL. 2014. Do laboratory species protect endangered species? Inter-species variation in responses to 17 β -estradiol, a model endocrine active compound. *Archives of Environmental Contamination and Toxicology* 68:204-215.

Baker BH, Martinovic-Weigelt D, Ferrey M, Barber LB, Writer JH, Rosenberry DO, Kiesling RL, Lundy JR, Schoenfuss HL. 2014 Identifying non-point sources of endocrine active compounds and potential ecological risks in freshwater lakes. *Archives of Environmental Contamination and Toxicology* 67:374-388.

Martinovic-Weigelt D, Mehinto AC, Ankley GT, Denslow ND, Barber LB, Lee KE, King RJ, Schoenfuss HL, Schroeder AL, Villeneuve DL. 2014. Transcriptomic effects-based monitoring for endocrine active chemicals: assessing relative contribution of treated wastewater to downstream pollution. *Environmental Science & Technology* 48:2385-2394.

Rearick DC, Fleischhacker N, Kelly MM, Arnold WA, Novak PJ, Schoenfuss HL. 2014. Phytoestrogens in the environment: I. occurrence and exposure effects on fathead minnows. *Environmental Toxicology & Chemistry* 33:553-559.

Kelly MM, Fleischhacker N, Rearick DC, Arnold WA, Schoenfuss HL, Novak PJ. 2014. Phytoestrogens in the environment: II. Microbial degradation of phytoestrogens and the response of fathead minnows to degradate exposure. *Environmental Toxicology & Chemistry* 33:560-566.

Schoenfuss HL, Bragulla HH, Schumacher J, Henk WG, George JC, Hillmann DJ. 2014. The anatomy of the larynx of the bowhead whale, *Balaena mysticetus*, and its sound-producing functions. *Anatomical Record* 297:1316-1330.

Schoenfuss, TC, Pataky A, Matz Z, Schoenfuss HL. 2014. The equivalency of sodium results in cheese digested by either dry ash or microwave-accelerated digestion. *Journal of Dairy Science* 97:710-714.

- Maie T, Meyer S, Schoenfuss HL, Blob RW. 2014. Feeding performance of the Hawaiian sleeper, *Eleotris sandwicensis* (Gobioidei: Eleotridae): correlation between predatory functional modulation and selection pressures on prey. *Biological Journal of the Linnaean Society* 111:359-374.
- Elliott SM, Kiesling RL, Jorgenson ZG, Rearick DC, Schoenfuss HL, Fredricks KT, Gaikowski MP. 2014. Fathead minnow and bluegill sunfish life-stage responses to 17 β -estradiol exposure in outdoor mesocosms. *Journal of the American Water Resources Association* 50:376-387.
- Lee KE, Barber LB, Schoenfuss HL. 2014. Spatial and temporal patterns of endocrine active chemicals in small streams indicate differential exposure to aquatic organisms. *Journal of the American Water Resources Association* 50:401-415.
- Minarik TA, Vick JA, Schultz MA, Bartell SE, Martinovic-Weigelt D, Rearick DC, Schoenfuss HL. 2014. On-site exposure to treated wastewater effluent has subtle effects on male fathead minnows and pronounced effects on carp. *Journal of the American Water Resources Association* 50:358-375.
- Schoenfuss HL, Maie T, Moody KN, Lesteberg KE, Blob RW, Schoenfuss TC. 2013. Stairway to heaven: evaluating levels of biological organization correlated with the successful ascent of natural waterfalls in the Hawaiian stream goby *Sicyopterus stimpsoni*. *PLoS ONE* 8(12): e84851. doi:10.1371/journal.pone.0084851.
- Martinovic-Weigelt D, Minarik TA, Curran EM, Marschuk JS, Pazderka MJ, Smith EA, Goldenstein RL, Miresse CL, Matlon TJ, Schultz MM, Schoenfuss HL. 2013. Environmental estrogens in an urban aquatic ecosystem: I. spatial and temporal occurrence of estrogenic activity in effluent-dominated systems. *Environment International* 61:127-137.
- Schultz MM, Minarik TA, Martinovic-Weigelt, Curran EA, Bartell SE, Schoenfuss HL. 2013. Environmental estrogens in an urban aquatic ecosystem: II. Biological effects. *Environment International* 61:138-149.
- Leet JK, Lesteberg KE, Schoenfuss HL, Olmstead AW, Amber JJ, Ankley GT, Sepulveda MS. 2013. Sex-specific gonadal and gene expression changes throughout development in fathead minnow. *Sexual Development* 7:303-307.
- Asem-Hiablie S, Church CD, Elliott HA, Shappell NW, Schoenfuss HL, Drechsler P, Williams CF, Knopf A, Dabie MY. 2013. Serum estrogenicity and biological responses in African catfish raised in wastewater ponds in Ghana. *Science of the Total Environment* 463-464:1182-1191.
- Cullen JA, Maie T, Schoenfuss HL, Blob RW. 2013. Evolutionary novelty versus exaptation: Oral kinematics in feeding versus climbing in the waterfall-climbing Hawaiian goby *Sicyopterus stimpsoni*. *PLoS ONE* 8(1): e53274. doi: doi:10.1371/journal.pone.0053274.

Maie T, Schoenfuss HL, Blob RW. 2013. Musculoskeletal determinants of pelvic sucker function in Hawaiian stream gobiid fishes: interspecific comparisons and allometric scaling. *Journal of Morphology* 274:733-742.

Kawano SM, Bridges WC, Schoenfuss HL, Maie T, Blob RW. 2013. Differences in locomotor behavior correspond to different patterns of morphological selection in two species of waterfall-climbing gobiid fishes. *Functional Ecology* 27(5):949-969. doi: 10.1007/s10682-012-9621-z.

Maie T, Schoenfuss HL, Blob RW. 2012. Performance and scaling of a novel locomotor structure: adhesive capacity of climbing gobiid fishes. *Journal of Experimental Biology* 215:3925-3936.

Schoenfuss HL, Font WF. 2012. John Michael "Mike" Fitzsimons (1941 - 2012). *Copeia* 2012(4):762-764.

Bartell SE, Schoenfuss HL. 2012. Affinity and matrix effects in measuring fish plasma vitellogenin using immunosorbent assays: considerations for aquatic toxicologists. *ISRN Toxicology*. Volume 2012, Article ID 942804, doi:10.5402/2012/942804.

Leonard G, Maie T, Moody KN, Schrank GD, Blob RW, Schoenfuss HL. 2012. Finding paradise: cues directing the migration of the waterfall climbing Hawaiian gobioid *Sicyopterus stimpsoni*. *Journal of Fish Biology* 81:903-920.

Schoenfuss HL, Maie T, Kawano S, Blob RW. 2012. Performance across extreme environments: comparing waterfall climbing among amphidromous gobioid fishes from Caribbean and Pacific islands. *Cybium* 35(4): 361-369.

Lozano N, Rice CP, Pagano J, Zintek L, Barber LB, Murphy EW, Nettesheim T, Minarik TA, Schoenfuss HL. 2012. Concentration of organic contaminants in fish and their biological effects in a wastewater-dominated urban stream. *Science of the Total Environment* 420:191-201.

Custer CM, Custer TW, Schoenfuss HL, Poganski BH, Solem L. 2012. Exposure and effects of perfluoroalkyl compounds on tree swallows nesting at Lake Johanna in east central Minnesota, USA. *Reproductive Toxicology* 33:556-562.

Schultz MM, Bartell SE, Schoenfuss HL. 2011. Effects of Triclosan and Triclocarban, Two Ubiquitous Environmental Contaminants, on Anatomy, Physiology and Behavior of the Fathead Minnow (*Pimephales promelas*). *Archives of Environmental Contamination and Toxicology* 63(1): 114-124. DOI 10.1007/s00244-011-9748-x

Miller LM, Bartell SE, Schoenfuss HL. 2011. Assessing the Effects of Historical Exposure to Endocrine Active Compounds on Reproductive Health and Genetic Diversity in Native Apex Predators in a Large Riverine System. *Archives of Environmental Contamination and Toxicology* 62(4):657-671. DOI 10.1007/s00244-011-9731-6.

- Kolok AS, Miller JT, Schoenfuss HL. 2011. The mini mobile environmental monitoring unit: a novel bioassessment tool. *Journal of Environmental Monitoring* 14: 202-208.
- Dammann AA, Shappell NW, Bartell SE, Schoenfuss HL. 2011. Comparing biological effects and potencies of estrone and 17 β -estradiol in mature fathead minnows, *Pimephales promelas*. *Aquatic Toxicology* 105:559-568.
- Kolok AS, Schoenfuss HL, Propper CR, Vail TL. 2011. Empowering citizen scientists: the strength of many in monitoring biologically active environmental contaminants. *Bioscience* 61(8): 626-630.
- Maie T, Meister AB, Leonard GL, Schrank GD, Blob RW, Schoenfuss HL. 2011. Jaw muscle fiber type distribution in Hawaiian gobioid fishes: histochemical correlations with feeding ecology and behavior. *Zoology (Jena)* 114: 340-347.
- Barber LB, Brown GK, Nettesheim TG, Murphy EW, Bartell SE, Schoenfuss HL. 2011. Effects of organic contaminant mixtures on fish in a wastewater dominated urban stream. *Science of the Total Environment* 409:4720-4728.
- Vajda AM, Barber LB, Gray JL, Lopez EM, Bolden AM, Schoenfuss HL, Norris DO. 2011. Demasculinization of male fish by wastewater treatment plant effluent. *Aquatic Toxicology* 103:213-221.
- Schultz MM, Painter MM, Bartell SE, Logue A, Furlong ET, Werner SL, Schoenfuss HL. 2011. Selective Uptake and Biological Consequences of Environmentally Relevant Antidepressant Pharmaceutical Exposures on Male Fathead Minnows. *Aquatic Toxicology* 104:38-47.
- Kolok AS, Schoenfuss HL. 2011. Environmental scientists, biologically active compounds and sustainability: the vital role for small-scale science. *Environmental Science and Technology* 45:39-44.
- Writer JH, Barber LB, Brown GK, Taylor HE, Kiesling RL, Ferrey ML, Jahns ND, Bartell SE, Schoenfuss HL. 2010. Anthropogenic tracers, endocrine disrupting chemicals, and endocrine disruption in Minnesota lakes. *Science of the Total Environment* 409:100-111.
- Schoenfuss HL, Roos J, Rivera A, Blob RW. 2010. Motor patterns of distal hind limb muscles in walking turtles: implications for models of limb bone loading. *Journal of Morphology* 271:1527-1536.
- Shappell NW, Hyndman KM, Bartell SE, Schoenfuss HL. 2010. Comparative biological effects and potency of 17 α - and 17 β estradiol in fathead minnows. *Aquatic Toxicology* 100:1-8.
- Schultz MM, Furlong ET, Kolpin DW, Werner SL, Schoenfuss HL, Barber LB, Blazer V, Norris DO, Vajda AM. 2010. Distribution of antidepressant pharmaceuticals between water, sediment and

fish brain tissue in two effluent-dominated streams in the United States. *Environmental Science & Technology* 44(6):1918-1925.

Hyndman KM, Biales A, Bartell SE, Schoenfuss HL. 2010. Assessing the effects of exposure timing on biomarker expression using 17 β -estradiol. *Aquatic Toxicology* 96:264-272.

Blob WR, Kawano SM, Moody KN, Bridges WC, Maie T, Ptacek MB, Julius ML, Schoenfuss HL. 2010. Morphological selection and the evaluation of potential tradeoffs between escape from predators and the climbing of waterfalls in the Hawaiian stream goby *Sicyopterus stimpsoni*. *Integrative & Comparative Biology* 50(6):1185-1199.

Painter MR, Buerkley MA, Julius ML, Vajda AM, Norris DO, Barber LB, Furlong ET, Schultz MM, Schoenfuss HL. 2009. Antidepressants at environmentally relevant concentrations affect predator avoidance behavior of larval fathead minnows (*Pimephales promelas*). *Environmental Toxicology & Chemistry* 28(12):2677-2684.

Maie T, Pruette ME, Schoenfuss HL, Blob RW. 2009. Feeding kinematics and performance of Hawaiian stream gobies, *Awaous guamensis* and *Lentipes concolor*: linkage of functional morphology and ecology. *Journal of Morphology* 270:344-356.

McGee MR, Julius ML, Vajda AM, Norris DO, Barber LB, Schoenfuss HL. 2009. Predator avoidance performance of larval fathead minnows (*Pimephales promelas*) following short-term exposure to estrogen mixtures. *Aquatic Toxicology* 91:355-361.

Blanksma C, Eguia B, Lott K, Lazorchak JM, Smith ME, Wratschko M, Dawson TD, Elonen C, Kahl M, Schoenfuss HL. 2009. Effects of water hardness on skeletal development and growth in juvenile fathead minnows. *Aquaculture* 286:226-232.

Maie T, Schoenfuss HL, Blob RW. 2009. Jaw lever analysis of Hawaiian gobioid stream fishes: a simulation study of morphological diversity and functional performance. *Journal of Morphology* 270:976-983.

Blob RW, Bridges WC, Ptacek MB, Maie T, Cediell RA, Bertolas MM, Julius ML, Schoenfuss HL. 2008. Morphological selection in an extreme flow environment: body shape and waterfall-climbing success in the Hawaiian stream fish *Sicyopterus stimpsoni*. *Integrative & Comparative Biology* 48:734-749.

Schoenfuss HL, Levitt JT, Rai R, Julius ML, Martinovic D. 2008. Treated wastewater effluent reduces sperm motility along an osmolality gradient. *Archives of Environmental Contamination and Toxicology* 56(3):397-407. DOI 10.1007/s00244-008-9219-1.

Ye X, Schoenfuss HL, Jahns ND, Delinsky AD, Strynar MJ, Varns J, Nakayama S, Helfant L, Lindstrom AB. 2008. Perfluorinated Compounds in Common Carp (*Cyprinus carpio*) Fillets from

the Upper Mississippi River. *Environment International* 34(7):932-938.

Schoenfuss HL, Bartell SE, Bistodeau TB, Cediel RA, Grove KJ, Zintek L, Lee KE, Barber LB. 2008. Impairment of the reproductive potential of male fathead minnows by environmentally relevant exposures to 4-nonylphenol. *Aquatic Toxicology* 86:91-98.

Cediel RA, Blob RW, Schrank GD, Plourde RC, Schoenfuss HL. 2008. Muscle fiber type distribution in climbing Hawaiian gobioid fishes: ontogeny and correlations with locomotor performance. *Zoology (Jena)* 111(2):114-122.

Blob RW, Wright KM, Becker M, Maie T, Iverson TJ, Julius ML, Schoenfuss HL. 2007. Ontogenetic change in novel functions: waterfall climbing in adult Hawaiian gobiid fishes. *Journal of Zoology* 273:200-209.

Julius ML, Stepanek J, Tedrow O, Gamble C, Schoenfuss HL. 2007. Estrogen-receptor independent effects of two ubiquitous environmental estrogens on *Melosira varians* Agardh, a common component of the aquatic primary production community. *Aquatic Toxicology* 85:19-27.

Maie T, Schoenfuss HL, Blob RW. 2007. Ontogenetic scaling of body proportions in waterfall-climbing gobiid fishes from Hawai'i and Dominica: implications for locomotor function. *Copeia* 2007(3):755-764.

Barber LB, Lee KE, Swackhamer D, Schoenfuss HL. 2007. Response of Male Fathead Minnows Exposed to Wastewater Treatment Plant Effluent, Effluent Treated with XAD8 Resin, and an Environmentally Relevant Mixture of Alkylphenol Compounds. *Aquatic Toxicology* 82:36-46.

Schoenfuss HL, Blob RW. 2007. The importance of functional morphology for fishery conservation and management: applications to Hawaiian amphidromous fishes. *Bulletin of the Bishop Museum, Honolulu, Hawaii* 3:125-141.

Bistodeau TJ, Barber LB, Bartell SE, Cediel RA, Grove KJ, Klaustermeier J, Woodard JC, Lee KE, Schoenfuss HL. 2006. Larval exposure to environmentally relevant mixtures of alkylphenolethoxylates reduces reproductive competence in male fathead minnows. *Aquatic Toxicology* 79:268-277.

Julius ML, Schoenfuss HL. 2006. Phylogenetic reconstruction as a broadly applicable teaching tool in the biology classroom. *Journal of College Science Teaching* July/August 2006:40-45.

Blob RW, Rai R, Julius ML, Schoenfuss HL. 2006. Functional diversity in extreme environments: effects of locomotor style and substrate texture on the waterfall climbing performance of Hawaiian gobiid fishes. *Journal of Zoology, London* 268:315-324.

Julius ML, Blob RW, Schoenfuss HL. 2005. The survival of *Sicyopterus stimpsoni*, an endemic

amphidromous Hawaiian gobiid fish, relies on the hydrological cycles of streams: evidence from changes in algal composition of diet through growth stages. *Aquatic Ecology* 39:473-484.

Schoenfuss HL, Julius ML, Blob RW. 2004. Colonization of a recent, volcanically formed freshwater habitat: an example of primary succession. *Ichthyological Exploration of Freshwaters* 15:83-90.

Schoenfuss HL, Blob RW. 2003. Kinematics of waterfall climbing in Hawaiian freshwater fishes (Gobiidae): vertical propulsion at the aquatic-terrestrial interface. *Journal of Zoology* 261:191-205.

Fitzsimons JM, McRae MG, Schoenfuss HL, Nishimoto RT. 2003. Gardening behavior in the amphidromous Hawaiian fish *Sicyopterus stimpsoni* (Osteichthyes: Gobiidae). *Ichthyological Explorations of Fresh Water* 14(2):185-191.

Schoenfuss HL, Levitt JT, Van Der Kraak G, Sorensen PW. 2002. Ten week exposure to treated sewage effluent discharge has small, variable effects on reproductive behavior and sperm production in goldfish. *Environmental Toxicology & Chemistry* 21(10):2185-2190.

Schoenfuss HL, Martinovic D, Sorensen PW. 2001. Effects of exposure to low levels of water-borne 17 β -estradiol on nest holding ability and sperm quality in fathead minnows. *Water Resources Update* 120:49-55.

Schoenfuss HL. 1997. AFJK Mayer: Anatomy of the eye of the cetaceans: An annotated translation. *Occasional Papers of the Museum of Natural Sciences* 75:1-38.

Fitzsimons JM, Schoenfuss HL, Schoenfuss TC. 1997. Significance of unimpeded flows in limiting the transmission of parasites from exotics to Hawaiian stream fishes. *Micronesica* 30:117-125.

Schoenfuss HL, Blanchard TA, Kuamo'o DGK. 1997. Metamorphosis in the cranium of postlarval *Sicyopterus stimpsoni*, an endemic Hawaiian stream goby. *Micronesica* 30:93-104.

Book-Chapters & Proceedings

Hummel SL, Schoenfuss HL. Accepted. Survey of Contaminants of Emerging Concern and Their Effects to Fish and Wildlife in Great Lakes Tributaries. *In: Contaminants of Emerging Concern in the Great Lakes. Protection the HEalth and Integrity of Wildlife Populations from Adverse Effects* (Murphy E, ed.). GLRI Action Plan I, Focus Area 1, Goal 5.

Martinovic-Weigelt D, Feely JR, Schoenfuss HL. 2018. Toxicants in the Great Lakes: Living with a

toxic legacy while managing for chemicals of emerging concern. *In: Biodiversity, Conservation, and Environmental Management in the Great Lakes Basin*. Routledge, London and New York.

Elliott, S.M., Brigham, M.E., Kiesling, R.L., Jorgenson, Z.G., and Schoenfuss, H.L., 2017. Use of a chemical mixtures software to identify environmentally relevant mixtures of chemicals of emerging concern in select tributaries of the Great Lakes: U.S. Geological Survey Scientific Investigations Report.

Elliott SM, Lee KE, Brigham ME, Langer SK, Trombley MM, Menheer MA, Furlong ET, Foreman WT, Jorgenson ZG, Choy SJ, Moore JN, Banda JB, Gefell DJ. 2015. Chemicals of Emerging Concern in Water and Bottom Sediment in Great Lakes Areas of Concern, 2013-Analytical Methods, Collection Methods, Environmental Data, and Quality Assurance. U.S. Geological Survey Data Release. 2015; Available from: <http://dx.doi.org/10.5066/F7DF6P9D>.

Elliott SM, Lee KE, Brigham ME, Langer SK, McCool MM, Menheer MA, Furlong ET, Foreman WT, Jorgenson ZG, Choy SJ, Moore JN, Banda JA, Gefell DJ, Schoenfuss HL. 2016. Chemicals of Emerging Concern in Water and Bottom Sediment in the Great Lakes Basin, 2014-Analytical Methods, Collection Methods, Quality-Assurance Analyses, and Data. U.S. Geological Survey Data Release. 2016. Available from: <http://dx.doi.org/10.5066/F7TH8JS6>.

Barber LB, Writer JH, Keefe SH, Brown GK, Ferrey ML, Jahns ND, Kiesling RL, Lundy JR, Poganski BH, Rosenberry DO, Taylor HE, Woodruff OP, Schoenfuss HL. 2012. Endocrine disrupting chemicals in Minnesota lakes—Water-quality and hydrological data from 2008 and 2010: U.S. Geological Survey Open-File Report 2012-1124, 53 pp.

Lee KE, Langer SK, Barber LB, Writer JH, Ferrey ML, Schoenfuss HL, Furlong ET, Foreman WT, Gray JL, ReVello RC, Martinovic D, Woodruff OP, Keefe SH, Brown GK, Taylor HE, Ferrer I, Thurman EM. 2011. Endocrine active chemicals, pharmaceuticals, and other chemicals of concern in surface water, wastewater-treatment plant effluent, and bed sediment, and biological characteristics in selected streams, Minnesota—design, methods, and data, 2009: U.S. Geological Survey Data Series 575, 54 p., with appendixes.

Ferrey M, Lee K, Barber LB, Writer J, Schoenfuss HL, Martinovic D. 2011. Wastewater treatment plant endocrine disrupting chemical monitoring study. MN Pollution Control Agency Investigative Report lrp-ei-1sy11, 65 p.

Lee KE, Schoenfuss HL, Barber LB, Writer JH, Blazer VS, Kiesling RL, Ferrey ML. 2010. Endocrine active chemicals and endocrine disruption in Minnesota streams and lakes—implications for aquatic resources, 1994-2009: U.S. Geological Survey Scientific Investigations Report 2010-5107, 47 p. with Appendixes.

Ferrey M, Preimesberger A, Schoenfuss HL, Kiesling R, Barber LB, Writer J. 2008. Statewide

endocrine disrupting compound monitoring study, 2007-2008. MN Pollution Control Agency Investigative Report tdr-g1-08, 83 p.

Lee KE, Schoenfuss HL, Jahns ND, Brown GK, Barber LB. 2008. Alkylphenols, other endocrine-active chemicals, and fish responses in three streams in Minnesota—Study design and data, February–September 2007: U.S. Geological Survey Data Series 405, 44 p. plus appendixes.

Lee KE, Yaeger CS, Jahns ND, Schoenfuss HL. 2008. Occurrence of endocrine active compounds and biological responses in the Mississippi River—study design and data, June through August 2006: U.S. Geological Survey Data Series 368, 27 p.

Schoenfuss HL. 2005. Marine Mammals: Research Programs. *In: Encyclopedia of the Arctic*, vol. 3: 1250-1255 (ed.: M. Nuttall). Routledge, vol. 3. New York, USA.

Schoenfuss HL. 2003. The need for novel approaches in assessing the biological impact of biologically active compounds. *In: Proceedings of the 3rd International Conference on Pharmaceuticals and Endocrine Disrupting Chemicals in Water*, R. Masters (ed.), Minneapolis, MN, March 19-21, 2003, pp. 103-121.

Martinovic D, Sorensen PW, Schoenfuss HL. 2003. Low levels of water-borne estrogen suppress androgen levels and the ability to male fathead minnow to reproduce in the competitive spawning scenario. *In: Proceedings of the 3rd International Conference on Pharmaceuticals and Endocrine Disrupting Chemicals in Water*, R. Masters (ed.), Minneapolis, MN, March 19-21, 2003, pp. 125-133.

Levitt JT, Schoenfuss HL, Adelman IR. 2001. Possible effects of endocrine disrupting compounds on walleye, *Stizostedion vitreum*, near the Metro Sewage Treatment Plant, Saint Paul, MN. *In: Proceedings of the 2nd International Conference on Pharmaceuticals and Endocrine Disrupting Chemicals in Water*, D. Guth (ed.), Minneapolis, MN, October 9-11, 2001, pp. 191-202.

Schoenfuss HL. 1999. The bowhead whale larynx: physical constraint and adaptation. *Secondary Adaptation to Life in Water II*, E. Hoch and N. Bonde, eds. Copenhagen, Denmark, ISBN 87-88114-22-8, pp. 61-62.

Schoenfuss HL, Hillmann DJ. 1996. Laryngeal adaptations and mechanisms of sound production in the bowhead whale, *Balaena mysticetus*. *Secondary Adaptations to Life in Water*, J.-M. Mazin, P. Vignaud, and V. de Buffrenil, eds. Poitiers, France, pp.43-45.