

Joshua Stepanek
Curriculum Vitae
Colorado Mountain College Vail Valley
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EDUCATION

- Ph.D.** **University of Colorado Boulder**, Boulder, CO 2016
Ecology and Evolutionary Biology
*Developing an Evolutionary Roadmap to High Lipid Accumulating
Diatoms: A Systematic Appraisal of Amphora Sensu Lato*
- M.S.** **St. Cloud State University**, St. Cloud, MN 2010
Ecology and Natural Resources
*Laboratory Flume Investigation into Hydrodynamic Properties
of Select Stalk Forming Diatom Morphologies*
- B.S.** **St. Cloud State University**, St. Cloud, MN 2008
Ecology and Field Biology

PROFESSIONAL APPOINTMENTS

- 2023– Present Professor, Department of Biological Sciences, Colorado Mountain College Vail
Valley, Edwards, CO
- 2018– 2023 Associate Professor, Department of Biological Sciences, Colorado Mountain College
Vail Valley, Edwards, CO
- 2017– 2018 Assistant Professor, Department of Biological Sciences, St. Cloud State University,
St. Cloud, MN.

PUBLICATIONS

- Stepanek J.G., Carlson T.E., Rumley L.E. & Julius M.L. 2023. Systematic reappraisal of the diminutive *Amphora thumensis* and the transfer of *Halamphora parathumensis* to the genus *Amphora*. *Diatom Research* 38: 135–142.

- Kociolek J.P., Lowe R.L., Sánchez K. & Stepanek J.G. 2021. Benthic diatom (Bacillariophyta) flora of Torch Lake, Michigan, an oligotrophic, alkaline ecosystem with evident benthic diatom production, with a consideration of some new and interesting species. *The Great Lakes Botanist* 60: 24–55.
- Stepanek J.G. & Kociolek J.P. 2019. Molecular phylogeny of the diatom genera *Amphora* and *Halamphora* (Bacillariophyta) with a focus on morphological and ecological evolution. *Journal of Phycology* 55: 442–456.
- Hamsher S.E., Keepers K.G., Pogoda C.S., Stepanek J.G., Kane N.C. & Kociolek J.P. 2019. Extensive chloroplast genome rearrangement amongst three closely related *Halamphora* spp. (Bacillariophyceae), and evidence for rapid evolution as compared to land plants. *PLoS ONE* 14(7): e0217824. <https://doi.org/10.1371/journal.pone.0217824>
- Pogoda C.S., Keepers K.G., Hamsher S.E., Stepanek J.G., Kane N.C. & Kociolek J.P. 2019. Comparative analysis of the mitochondrial genomes of six newly sequenced diatoms reveals group II introns in the barcoding region of *cox1*. *Mitochondrial DNA Part A* 30: 43–51.
- Kociolek J.P., Williams D.M., Stepanek J.G., Liu Q., Liu Y., You Q., Karthick B. & Kulikovskiy M. 2019. Rampant homoplasy and adaptive radiation in pennate diatoms. *Plant Ecology and Evolution* 152: 131–141.
- Stepanek J.G. & Kociolek J.P. 2018. *Amphora* and *Halamphora* from inland waters of the United States and Japan, with the description of 33 new species. *Bibliotheca Diatomologica* 66: 1–260.
- Lowe R., Kociolek J.P., You Q., Wang Q. & Stepanek J.G. 2017. Diversity of the diatom genus *Humidophila* in karst areas of Guizhou, China. *Phytotaxa* 305: 269–284.
- Stepanek J.G., Fields F.J. & Kociolek J.P. 2016. A comparison of lipid content metrics using six species from the genus *Halamphora* (Bacillariophyta). *Biofuels* 7: 521–528.
- Stepanek J.G. & Kociolek J.P. 2016. Re-examination of Mereschkowsky's genus *Tetramphora* (Bacillariophyta) and its separation from *Amphora*. *Diatom Research* 31: 123–148.
- Stepanek J.G., Hamsher S.E., Mayama S., Jewson D.H. & Kociolek J.P. 2016. Observations of two marine members of the genus *Cymbellonitzschia* (Bacillariophyta) from Tokyo Bay, Japan, with the description of the new species *Cymbellonitzschia banzuensis*. *Phycological Research* 64: 26–34.
- Thomas E.W., Stepanek J.G. & Kociolek J.P. 2016. Historical and current perspectives on the systematics of the 'enigmatic' diatom genus *Rhoicosphenia* (Bacillariophyta), with single and multi-molecular marker and morphological analysis and discussion of the monophyly of 'monoraphid' diatoms. *PLoS ONE* 11(4): e0152797. doi:10.1371/journal.pone.0152797.

- Kociolek J.P., You Q., Stepanek J.G., Lowe R.L. & Wang Q. 2016. A new *Eunotia* C.G. Ehrenberg (Bacillariophyta: Bacillariophyceae: Eunotiales) species from Karst formations of southern China. *Phytotaxa* 265: 285–293.
- Kociolek J.P., You Q., Stepanek J.G., Lowe R.L. & Wang Q. 2016. New freshwater diatom genus, *Edtheriotia* gen. nov. of the Stephanodiscaceae (Bacillariophyta) from south-central China. *Phycological Research* 64: 274–280.
- Stepanek J.G., Mayama S. & Kociolek J.P. 2015. Description and phylogenetic position of *Amphora aliformis* (Bacillariophyta), a new species from Tokyo Bay. *Phycologia* 54: 78–86.
- Stepanek J.G. & Kociolek J.P. 2015. Three new species of the diatom genus *Halamphora* (Bacillariophyta) from the prairie pothole lakes region of North Dakota, USA. *Phytotaxa* 197: 27–36.
- Stepanek J.G. & Kociolek J.P. 2014. Molecular phylogeny of *Amphora sensu lato* (Bacillariophyta): an investigation into the monophyly and classification of the amphoroid diatoms. *Protist* 165: 177–195.
- Hamsher S.E., Graeff C.L., Stepanek J.G. & Kociolek J.P. 2014. Frustular morphology and polyphyly in freshwater *Denticula* (Bacillariophyceae) species, and the description of *Tetralunata* gen. nov. (Epithemiaceae, Rhopalodiales). *Plant Ecology and Evolution* 147: 346–365.
- Stepanek J.G. & Kociolek J.P. 2013. Several new species of *Amphora* and *Halamphora* from the western USA. *Diatom Research* 28: 61–76.
- Kociolek J.P., Stepanek J.G., Lowe R.L., Johansen J.R. & Sherwood A.R. 2013. Molecular data show enigmatic cave dwelling diatom *Diprora* (Bacillariophyceae) to be a raphid diatom. *The European Journal of Phycology* 48: 474–488.
- Julius M.L., Stepanek J.G., Tedrow O., Gamble C., & Schoenfuss H.L. 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.

TEACHING EXPERIENCE

Colorado Mountain College, 2018–Present

Biological Sciences:

- BIO1111 General Biology I with Lab
- BIO1112 General Biology II with Lab
- BIO2104 Microbiology with Lab
- BIO2124 Genetics Lab
- BIO3030 Botany Lab

- ESS3300 Plant and Vegetation Ecology
- ESS 4200 Soil Ecology Lab

Environmental Science:

- ENV1010 Natural Disasters
- ENV1111 Intro to Environmental Science with Lab

Teaching Assistant, University of Colorado Boulder, 2012–2016

Freshwater Phycology, General Biology Lab I, General Biology Lab II, Non-Majors General Biology Lab

Teaching Assistant, St. Cloud State University, 2008–2009

General Zoology, Organismal Biology

EXTERNAL GRANTS AND FELLOWSHIPS

- 2014 **Prairie Biotic Research, Inc.**, Small grant for prairieland research, Madison, WI.
- 2013 **NSF/JSPS East Asia and Pacific Summer Institute (EAPSI) Research Fellowship**, Japan. NSF OISE-13 7324938.

AWARDS

2020 – 2021 CMC Edwards Campus Faculty of the Year.

CONFERENCE PRESENTATIONS

- 2019 EXTENSIVE CHLOROPLAST GENOME REARRANGEMENT AMONGST THREE CLOSELY RELATED *HALAMPHORA* SPP. (BACILLARIOPHYCEAE), AND EVIDENCE FOR RAPID EVOLUTION AS COMPARED TO LAND PLANTS. Sarah E. Hamsher, Kyle G. Keepers, Cloe S. Pogoda, Joshua G. Stepanek, Nolan C. Kane & J. Patrick Kociolek. Poster Presentation. Presented at the 25th Biannual North American Diatom Symposium, July 31–August 4, 2019.
- 2018 CHLOROPLAST GENOMES OF THREE CLOSELY RELATED *HALAMPHORA* SPP. (BACILLARIOPHYCEAE): A CASE OF CONSERVED GENE CONTENT AND EXTENSIVE GENOME REARRANGEMENT. Sarah E. Hamsher, Kyle G. Keepers, Cloe S. Pogoda, Joshua G. Stepanek, Nolan C. Kane & J. Patrick Kociolek. Poster Presentation. Presented at the 57th Annual Northeast Algal Symposium, April 13–15, 2018. University of New Haven, Connecticut.

- 2017 NATURE VS NURTURE: COMPARATIVE PHYLOGENETICS IN ALGAL STRAIN SELECTION. Joshua G Stepanek, J. Patrick Kociolek & Matthew L. Julius. Oral Presentation. Presented at the 11th Annual Algae Biomass Summit, October 29–November 1, 2017. Salt Lake City, Utah.
- 2017 A UNIVERSITY BIOGAS AND ALGAL BIOMASS PRODUCTION CENTER FOR EDUCATION AND NEW REVENUE. Matthew L Julius & Joshua G Stepanek. Oral Presentation. Presented at the 11th International Biomass Conference and Expo, April 10–12, 2017. Minneapolis, Minnesota.
- 2016 DEVELOPING AN EVOLUTIONARY ROADMAP TO HIGH LIPID ACCUMULATING DIATOMS: A COMPARATIVE PHYLOGENETIC EVALUATION OF THE GENUS *HALAMPHORA*. Joshua G Stepanek & J Patrick Kociolek. Oral Presentation. Presented at the 51st Annual Meeting of the Phycological Society of America, July 24–28, 2016. Cleveland, Ohio.
- 2015 HISTORICAL AND CURRENT PERSPECTIVES ON THE SYSTEMATICS OF THE ‘ENIGMATIC’ DIATOM GENUS *RHOICOSPHENIA*. Evan W Thomas, Joshua G Stepanek & J Patrick Kociolek. Oral Presentation. Presented at the Guild of Rocky Mountain Ecologists and Evolutionary Biologists. September 18–20, 2015. University of Colorado Mountain Research Station, Colorado.
- 2015 SHAPE DOES MATTER, QUANTIFYING ENVIRONMENTAL FORCES ON THE DIATOM FRUSTULE. Matthew L Julius & Joshua G Stepanek. Poster Presentation. Presented at the Molecular Life of Diatoms Conference, July 7–10, 2015. Seattle, Washington.
- 2015 PRELIMINARY OBSERVATIONS ON THE DIATOM (BACILLARIOPHYTA) FLORA OF ROCKY MOUNTAIN NATIONAL PARK: SUMMARY OF GENERA PRESENT AND REPORTS OF NEW AND INTERESTING SPECIES. Joshua G Stepanek & J Patrick Kociolek. Oral Presentation. Presented at the 2015 Rocky Mountain National Park Research Conference, March 4–5, 2015. Estes Park, Colorado.
- 2015 PRELIMINARY OBSERVATIONS OF THE DIATOM (BACILLARIOPHYTA) GENUS *NITZSCHIA* HASSELL IN ROCKY MOUNTAIN NATIONAL PARK. Sarah E Hamsher, Joshua G Stepanek & J Patrick Kociolek. Poster Presentation. Presented at the 2015 Rocky Mountain National Park Research Conference, March 4–5, 2015. Estes Park, Colorado.
- 2014 AN EVOLUTIONARY ROADMAP TO HIGH OIL PRODUCING ALGAE: AN INVESTIGATION OF THE DIATOM GENUS *AMPHORA*. Joshua G Stepanek & J Patrick Kociolek. Poster Presentation. Presented at the Colorado Center for Biorefining and Biofuels Semi-Annual Meeting, November 6, 2014. University of Colorado Boulder, Boulder, Colorado.

- 2014 DEVELOPING AN EVOLUTIONARY BASED APPROACH TO THE SELECTION OF HIGH LIPID PRODUCING DIATOMS. Joshua G Stepanek & J Patrick Kociolek. Oral presentation. Presented at the Joint Aquatic Sciences Meeting, May 18–23, 2014. Portland, Oregon.
- 2012 CREATING A ROADMAP TO PRODUCTIVE ALGAL BIOFUELS: A BIOLOGICAL PERSPECTIVE. Joshua G Stepanek & J Patrick Kociolek. Poster presentation Presented at the 3rd Annual Energy Frontiers Conference, March 22, 2012. University of Colorado, Boulder, Colorado.
- 2011 PHYLOGENETIC POSITION OF THE AMPHOROID DIATOMS. Joshua G Stepanek & J Patrick Kociolek. Oral presentation. Presented at the 2011 North American Diatom Symposium, September 14–18. Flathead Lake Field Station, Montana.
- 2011 NEW SPECIES FROM THE GENERA *AMPHORA* EHRENBERG EX KÜTZING AND *HALAMPHORA* (CLEVE) LEVKOV, WITH COMMENTS ON THE TAXONOMY OF THE AMPHOROID DIATOMS. Joshua G Stepanek & J Patrick Kociolek. Poster presentation. Presented at the 2011 North American Diatom Symposium, September 14–18. Flathead Lake Field Station, Montana.
- 2009 FROM MICRO TO MACRO: DETERMINING HYDRODYNAMIC PROPERTIES OF STALK FORMING DIATOMS. Joshua G Stepanek, Robert Janisch, Matthew L Julius. Oral presentation. Presented at the 2009 North American Diatom Symposium, September 23–26, Iowa Lakeside Laboratory, Iowa.
- 2009 FROM MICRO TO MACRO: DETERMINING HYDRODYNAMIC PROPERTIES OF STALK FORMING DIATOMS. Joshua G Stepanek, Robert Janisch, Matthew L Julius. Oral presentation. Presented at the 2009 International Phycological Congress, August 2–8, Tokyo Japan.
- 2009 A PRELIMINARY MULTIGENE PHYLOGENY FOR THE CHRYSOPHYTE ALGAE. Matthew L Julius, Rachael Lindgren, Joshua G Stepanek, Jeanette Hoffer, Katherine Conroy, Kristin Lingle. Poster presentation. Presented at the 2009 International Phycological Congress, August 2–8, Tokyo, Japan.
- 2009 A PRELIMINARY MULTIGENE PHYLOGENY FOR THE CHRYSOPHYTE ALGAE. Matthew L Julius, Rachael Lindgren, Joshua G Stepanek, Jeanette Hoffer, Katherine Conroy, Kristin Lingle. Poster presentation. Presented at the 2009 Phycological Society of America Conference, July 18–22, Honolulu, Hawaii.
- 2009 UTILIZING A PRIMARY PRODUCER TO INTRODUCE 4-NONYLPHENOL TO DAPHNIA MAGNA. Timothy G Loes II, Joshua G Stepanek, Matthew L Julius, Heiko L Shoenfuss. Oral presentation. Presented at the 2nd Annual Conference for Emerging Contaminants 2009, August 4–7, Colorado State University, Fort Collins, CO.

- 2009 UTILIZING A PRIMARY PRODUCER TO INTRODUCE 4-NONYLPHENOL TO *DAPHNIA MAGNA*. Timothy G Loes II, Joshua G Stepanek, Matthew L Julius, Heiko L Schoenfuss. Oral presentation. Presented at the 2009 SETAC Midwest Regional Conference, April 1–3, LaCrosse, WI.
- 2008 4-NONYLPHENOL BINDING TO GLASS AS A POSSIBLE TOXICITY MECHANISM IN DIATOMS. Joshua G Stepanek, Robert Janisch and Matthew L Julius. Oral presentation. Presented at the 2008 Phycological Society of America Annual Meeting, July 27–29, New Orleans, LA.
- 2008 4-NONYLPHENOL BINDING TO GLASS AS A POSSIBLE TOXICITY MECHANISM IN DIATOMS. Joshua Stepanek, Robert Janisch and Matthew Julius. Oral presentation. Presented at the 68th Annual Meeting of the North Central Branch of the American Society for Microbiology 2008, October 17–18, St. Cloud, MN.
- 2008 4-NONYLPHENOL BINDING TO GLASS AS A POSSIBLE TOXICITY MECHANISM IN DIATOMS, AN IMPORTANT AQUATIC PRODUCER. Joshua G Stepanek, Robert Janisch and Matthew L Julius. Poster presentation. Presented at the 2008 Mid-West Society of Environmental Toxicology and Chemistry Annual Meeting, March 31–April 2, Duluth MN.
- 2008 *DAPHNIA MAGNA* POTENTIALLY SELECT AGAINST CONSUMPTION OF DIATOM ALGAE EXPOSED TO 4-NONYLPHENOL. Timothy G Loes II, Amanda J Cole, Joshua G Stepanek, Heiko L Schoenfuss, and Matthew L Julius. Poster presentation. Presented at the 2008 Mid-West Society of Environmental Toxicology and Chemistry Annual Meeting, March 31–April 2, Duluth MN.
- 2007 EFFECTS OF ESTROGENIC COMPOUNDS ON *MELOSRIA VARIANS*, A COMMON COMPONENT OF THE AQUATIC PRIMARY PRODUCTION COMMUNITY. Joshua G Stepanek and Matthew L Julius. Poster presentation. Presented at the 2007 Society for Environmental Toxicology and Chemistry Annual Meeting, 11–15 November, Milwaukee, WI.

RESEARCH EXPERIENCE

- 2014–2015 Diatoms of Rocky Mountain National Park; biodiversity and bioassessment with a focus on the diatom genus *Nitzschia*; do diatom based indicators of water quality exist in Rocky Mountain National Park? Researcher. Rocky Mountain National Park. (NPS).

- 2011– 2012 Assessing functional diversity of algal communities at the single cell level with a compact multi-function microfluidic cytometer. Research Assistant. Cooperative Institute for Research in Environmental Sciences, University of Colorado Boulder. (NSF EAGER).
- 2010– 2011 Development of taxon pages for the online diatom taxonomy and ecology resource, Diatoms of the United States. Research Assistant. Museum of Natural History, University of Colorado Boulder. (USGS NAWQA).
- 2008– 2010 A phylogenetic and genomic investigation of the algal heterokont tree. Research Assistant. Phycology Laboratory, St. Cloud State University. (NSF ATOL).
- 2008– 2009 Water quality trend analysis, Camp Ripley Training Center, Minnesota Department of Military Affairs. Research Assistant. Phycology Laboratory, St. Cloud State University. (US DOI).
- 2005– 2008 Developing rapid assessment tools to evaluate the biological effects of complex and biologically active chemical mixtures. Research Assistant. Aquatic Toxicology Laboratory, St. Cloud State University. (EPA STAR).

SERVICE TO PROFESSION

Taxon Contributor and Reviewer, Diatoms of the United States,
www.westerndiatoms.colorado.edu.

Peer Reviewer: *PLOS ONE*, *Phytotaxa*, *Diatom Research*, *Algae*, *Journal of Eukaryotic Microbiology*, *Plant Ecology and Evolution*, *Science Technology*.