Jason Philip Sckrabulis
Curriculum Vitae

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Education

Doctor of Philosophy in Biological and Biomedical Sciences
Oakland University, Rochester, Michigan, USA, 2015-2020

Master of Arts in Biology
Oakland University, Rochester, Michigan, USA, 2013-2014

Bachelor of Science in Applied Biological Sciences
Concentrations: Animal Physiology and Zoology
Arizona State University, Tempe, Arizona, USA, 2007-2010

Research Experience

Postdoctoral Research:

- 2025 – Present: Invasive species as conduits for pathogen spillover between natural and agricultural systems (S. Luke Flory, Ph.D.; Agronomy Department & Robert D. Holt, Ph.D.; Agronomy Department, University of Florida)
- 2022 – 2025: Constructing a database describing the thermal impact of parasite performance (Jason R. Rohr, Ph.D.; Department of Biological Sciences, University of Notre Dame)
- 2020 – 2022: Dynamical modeling of microparasitic infection on individual hosts and entire host populations (Thomas R. Raffel, Ph.D.; Department of Biological Sciences, Oakland University)

Dissertation Research: Department of Biological Sciences, Oakland University

- Environmental drivers of snail-borne parasitism (Thomas R. Raffel, Ph.D.)

Undergraduate Research: Department of Applied Sciences and Mathematics, Arizona State University

- Spring 2010: Biomechanical analyses of swimming among fish species (Course Project - Heather Bateman, Ph.D. and Maxim Sukharev, Ph.D.)
- Spring 2010: Various environmental responses in the marine dinoflagellate *Prorocentrum micans* and applications toward harmful algal blooms (Course Project - Marilyn Enloe)
- Spring 2010: Herpetological biodiversity survey on Mesa Gateway Regional Airport (Individual Instruction - Heather Bateman, Ph.D.)
- Spring 2010: Development and synthesis of a fluorescence polarized assay for S100B protein (Individual Instruction - David Madar, Ph.D.)
- Fall 2008: Producing a West Nile virus vaccine through transgenic tobacco plants (Individual Instruction - Qiang Chen, Ph.D.)

Research Interests

- Species interactions and temperature – Modeling temperature effects on metabolism to predict species interactions such as host-pathogen systems (e.g., trematode flatworms, chytridiomycosis)
- Disease ecology – Predicting the spatial and temporal dynamics of organisms and their diseases and pathogens by investigating effects on both host and pathogen biology
- Open-source technology – Developing open-source software and hardware solutions for experimentation and field research methods

Acquired Funding

(Sources of funding where J. Sckrabulis contributed to writing/ideation of the grant)

Grants:

- *CAREER: A metabolic theory approach to the thermal biology of parasitism*
  The goals of this project are to test the core assumption that different organisms and physiological processes have similar values and thermal acclimation responses for key MT model parameters, to test the ability of MT based models to predict parasite transmission in variable-temperature environments, and to delve into the cellular and molecular mechanisms underlying thermal acclimation effects on host-parasite interactions.
  Source: National Science Foundation (IOS-1651888)
  Role: Senior Personnel (20%); PI was Thomas R. Raffel (Oakland U.)
  Effective Dates: 04/2017 to 08/2022
  Cost: $964,898

- *Exploring swimmer's itch drivers in southern Michigan*
  The goal for this grant is to determine the environmental drivers of avian schistosomes that cause human cercarial dermatitis in understudied areas in southern Michigan.
  Source: Michigan Swimmer's Itch Partnership
  Role: Senior Personnel (30%); Co-PIs were Thomas R. Raffel (Oakland U.) & Deanna M. Soper (U. of Dallas)
  Effective Dates: 06/2019 to 06/2020
  Cost: $29,558

- *Early detection of harmful algal blooms (HAB) using environmental risk assessment and a tiered citizen-science approach to sampling*
  The goal for this grant is to develop a cost-effective and flexible HAB monitoring framework which incorporates four emerging technologies: (1) a HAB state-level risk map; (2) multiplex cyanotoxin qPCR; (3) solid phase adsorption toxin tracking (SPATT); and (4) an innovative smartphone app; and combine them with elements of traditional water quality monitoring to improve predictions of HAB risk in Michigan lakes.
  Source: Michigan Department of Environmental Quality
  Role: Senior Personnel (15%); Co-PIs were David C. Szlag & Thomas R. Raffel (Oakland U.)
  Effective Dates: 09/2016 to 09/2018
  Cost: $207,135

Awards and Scholarships:

- 2022: Recipient, Global Amphibian and Reptile Disease Conference Travel award ($1000)
- 2017: Recipient, Oakland University Student Travel Award ($250)
- 2017: Recipient, Oakland University Biological Travel Award ($250)
- 2014: Recipient, Oakland University Provost Graduate Student Research Award ($2,000)
- 2007-2010: Recipient, Arizona State University Provost Scholarship (Full Tuition Support)

Publications

*(*Denotes student work mentored by J. Sckrabulis; †Denotes co-first authorship)*

Scientific:

- **Sckrabulis, J.P.** †, J.E. Noelker†, K.A. Altman, H.M. Craig, B. Pell, J.R. Tituskin*, R.B. McWhinnie, and T.R. Raffel. (In Prep.) Distinguishing temperature-dependent pathogen infectivity from host resistance using a metabolic theory-based thermal mismatch model. Target journal: *Nature Ecology and Evolution*
- **Sckrabulis, J.P.** †, M.B. Mahon†, D.E. Jennings, D.J. Civitello, M.J. Lajeunnesse, and J.R. Rohr. (In Prep.) Functional similarity, not phylogenetic relatedness, predicts the relative strength of competition. Target journal: *PNAS*
- Craig, H.M., R. Stepanian*, K. Spengler*, K.A. Altman, **J.P. Sckrabulis**, and T.R. Raffel. (2024) Testing for thermal acclimation in zoospores of an amphibian pathogen. *Diseases of Aquatic Organisms*. 160, 101-114. https://doi.org/10.3354/dao03828
- Noelker, J.E., V. Abreu Ruozzi, H.M. Craig, **J.P. Sckrabulis**, and T.R. Raffel. (2024) Glove decontamination procedures to prevent pathogen and DNA cross-contamination among frogs. *Diseases of Aquatic Organisms*. 158, 173-178. https://doi.org/10.3354/dao03793
- **Sckrabulis, J.P.**, M.L. Messner, J. Stanny*, R.B. McWhinnie*, H.D. Ansari, A.M. Hajek*, A. Bageris*, and T.R. Raffel. (2024) Large-scale spatial drivers of avian schistosomes in Northern Michigan inland lakes. *Parasitology*. 151(5), 495-505. https://doi.org/10.1017/S0031182024000337
- Soper, D.M.†, T.R. Raffel†, **J.P. Sckrabulis**†, K.L. Froelich, B.A. McPhail, M.D. Ostrowski*, R.L. Reimink, D. Romano*, S.P. Rudko, and P.C. Hanington. (2022) A novel schistosome species hosted by *Planorbella (Helisoma) trivolvis* is the most widespread swimmer's itch-causing parasite in Michigan inland lakes. *Parasitology*. 150(1), 88-97. https://doi.org/10.1017/S0031182022001561
- **Sckrabulis, J.P.**, K.A. Altman, and T.R. Raffel. (2022) Using metabolic theory to describe linear and non-linear thermal acclimation effects in a host-parasite system. *American Naturalist*. 199(6), 789-803. https://doi.org/10.1086/719409
- McWhinnie, R.B., **J.P. Sckrabulis**, and T.R. Raffel. (2021) Temperature and mass scaling affect cutaneous and pulmonary respiratory performance in a diving frog. *Integrative Zoology*, 16(5), 712-728. https://doi.org/10.1111/1749-4877.12551
- **Sckrabulis, J.P.**, A.R. Flory, and T.R. Raffel. (2020) Direct onshore wind predicts swimmer's itch incidence at a Michigan beach. *Parasitology*, 147(4), 431-440. https://doi.org/10.1017/S0031182020000074
- Molnár, P.K., **Sckrabulis, J.P.**, Altman, K.A., and T.R. Raffel. (2017). Thermal performance curves and the metabolic theory of ecology—A practical guide to models and experiments for parasitologists. *Journal of Parasitology*, 103(5), 423-439. https://doi.org/10.1645/16-148
- Stephens, J.P., A.B. Stoler, **J.P. Sckrabulis**, A. Fetzer*, S.D. Tiegs, K.A. Berven, and T.R. Raffel. (2017) Ontogenetic changes in sensitivity to nutrient limitation of tadpole growth. *Oecologica*, 183: 263-273. https://doi.org/10.1007/s00442-016-3746-7

Other:

- Harris, H.E. (2016) Professional Diver: Volume 1, A Practical Guide to Careers in Sport Diving (Professional Diver Series). Self-published by Author. Amazon Kindle Store. *Manuscript contributions and editing*.

Presentations

*(*Denotes student work mentored by J. Sckrabulis)*

Oral:

- **Sckrabulis, J.P.**, J.E. Noelker, K.A. Altman, H.M. Craig, B. Pell, J.R. Tituskin*, R.B. McWhinnie, and T.R. Raffel. (2024) Scaling metabolic models describing host-parasite dynamics from individuals to populations. *Society of Industrial and Applied Mathematics: Life Sciences Meeting*. (Mini-symposium in "Challenges in Modeling Ecological and Epidemiological Processes").
- Noelker, J.E., V.A. Ruozzi, **J.P. Sckrabulis**, H.M. Craig, A.R. Nadjarian, J.T. Heabeart*, R.B. McWhinnie, G. Fielhauer*, B. Pell, and T.R. Raffel. (2023) Ongoing transmission explains elevated Bd infection intensities in a population-level controlled temperature experiment. *Ecological Society of America Annual Meeting.*
- **Sckrabulis, J.P.**, K.A. Altman, H.M. Craig, J.R. Tituskin*, J.E. Noelker, R.B. McWhinnie*, R. Stepanian*, and T.R. Raffel. (2022) Using metabolic theory and thermal mismatches to model the temperature dependence of ectotherm resistance to an emerging disease. *Global Amphibian and Reptile Disease Conference 2022*.
- Noelker, J.E., V.A. Ruozzi, **J.P. Sckrabulis**, H.M. Craig, A.R. Nadjarian, J.T. Heabeart*, R.B. McWhinnie, G. Fielhauer*, and T.R. Raffel. (2022) Comparing temperature dependence of experimental Bd infection dynamics at individual and population scales. *Global Amphibian and Reptile Disease Conference Annual Meeting 2022.*
- **Sckrabulis, J.P.**, K.A. Altman, H.M. Craig, J.R. Tituskin*, J.E. Noelker, R.B. McWhinnie*, R. Stepanian*, and T.R. Raffel. (2022) Using metabolic theory and thermal mismatches to model the temperature dependence of ectotherm resistance to an emerging disease. *Society for Integrative and Comparative Biology 2022 Annual Meeting*.
- Raffel, T.R., D.M. Soper, **J.P. Sckrabulis**, M.D. Ostrowski*, and D. Romano*. (2020) Distribution and abundance of snails and snail-borne parasites in Michigan's lower peninsula. *Great Lakes Water Institute – Winter Water Quality Symposium.*
- **Sckrabulis, J.P.**, M.D. Ostrowski*, D.M. Soper, and T.R. Raffel. (2019) Exploring swimmer's itch drivers in Southern Michigan. *Michigan Lake Stewardship Associations 58th Annual Conference.*
- **Sckrabulis, J.P.**, M.L. Messner, R.B. McWhinnie*, H.D. Ansari, and T.R. Raffel. (2019) Environmental predictors of avian schistosome (swimmer's itch) abundance among Michigan inland lakes. *Society for Integrative and Comparative Biology 2019 Annual Meeting.*
- Altman, K.A., J.R. Tituskin*, R.B. McWhinnie, **J.P. Sckrabulis**, and T.R. Raffel. (2018) Using metabolic data to predict the temperature dependence of amphibian disease. *Arizona State University: Integrated Research Challenges in Environmental Biology – Amphibian Declines 2018 Meeting.*
- Raffel, T.R., **J.P. Sckrabulis**, and K.A. Altman. (2017) Using metabolic theory to model climate impacts on multi-host diseases. *XI Congreso Latinamericano de Herpetologica (XI Latin American Congress of Herpetology) Annual Meeting*.
- **Sckrabulis, J.P.**, K.A. Altman, and T.R. Raffel. (2016) A metabolic theory approach to describe thermal acclimation effects in a host-parasite system. *Ecological Society of America Annual Meeting.*

- Messner, M.L., **J.P. Sckrabulis**, and T.R. Raffel. (2016) Spatial and temporal patterns of swimmer's itch parasites in Michigan lakes: 2015 results and plans for 2016. *Michigan Inland Lakes 2016 Convention.*
- **Sckrabulis, J.P.**, K.A. Altman, R.B. McWhinnie[*], and T.R. Raffel. (2015) Using microscopy and video analysis to quantify parasite activity for metabolic modeling. *Michigan Microscopy and Microanalysis 2015 Annual Meeting.*
- Raffel, T.R., **J.P. Sckrabulis**, K.A. Altman, E.L. Scott[*], J.R. Rohr, and P.T.J. Johnson. (2015) Thermal biology of parasitism: A metabolic approach. *American Society of Parasitologists 2015 Annual Meeting.*

Poster:

- **Sckrabulis, J.P.**, M.W. Simon, H.S. Smith, N.A. Gauthier, N. Christian, P.F. Harmon, K.A. Clay, M.H. Orive, R.D. Holt, E.M. Goss, and S.L. Flory. (2025) Invasive species as conduits for pathogen spillover between natural and agricultural systems. *Ecology and Evolution of Infectious Diseases Annual Meeting*.
- Noelker, J.E., B. Pell, **J.P. Sckrabulis**, H.M. Craig, and T.R. Raffel. (2025) Transmission-intensity feedbacks account for 800-fold heavier chytrid infections in a population level controlled-temperature experiment. *Ecology and Evolution of Infectious Diseases Annual Meeting*.
- Noelker, J.E., V.M. Six[*], H.M. Craig, M. Vassallo, **J.P. Sckrabulis**, D.S. McCrary[*], S.P. Brady, R.B. McWhinnie, and T.R. Raffel. (2024) Comparing metabolic thermal performance among amphibian species using Arduino-based respirometry. *Society for the Study of Amphibians and Reptiles Annual Meeting*.
- **Sckrabulis, J.P.**, S.E. Koerner, J. Cohen, E.L. Sauer, A. Korotasz, C. Ramsey, S. Rumschlag, B. Delius, S. Knutie, K. Nguyen, K. Surbaugh, C. Wolfe, L. Joyce, L.R. Johnson, A.I. Dell, and J.R. Rohr. (2023) The Thermal Impact on Parasite Performance (TIPP) database. *Ecological Society of America Annual Meeting*.
- Haque, M.S.[*], **J. P. Sckrabulis**, J.A. Willis[*], and T.R. Raffel. (2019) Building a better cercaria trap – Developing an "artificial skin" device to study the infectious behavior of a human parasite. *Oakland University Center for Biomedical Research and Sigma Xi 2019 Research Festival.*
- Tituskin, J.R.[*], K.A. Altman, **J.P. Sckrabulis**, and T.R. Raffel. (2018) Effects of temperature and thermal acclimation on frog metabolic performance. *Ecological Society of America Annual Meeting.*
- Haque, M.S.[*], **J. P. Sckrabulis**, J.A. Willis[*], and T.R. Raffel. (2018) Building a better cercaria trap – Developing an "artificial skin" device to study the infectious behavior of a human parasite. *Oakland University Summer Undergraduate Research Fellowship 2018 Conference.*
- Scott, E.L.[*], K.A. Altman, **J.P. Sckrabulis**, and T.R. Raffel. (2014) Thermal stress in snails accounts for fluctuating-temperature effects on parasite production. *Sigma Xi 2014 Annual Meeting and International Research Conference.*

Invited Presentations & Guest Lectures:

- Oakland University CSE 425 - Computational Methods in Biomedical Data (Winter 2016). Non-linear metabolic model fitting in host-parasite interactions.

Software

- *Fitting Thermal Performance Curves*
  Shiny-R app to facilitate fitting of metabolic models to data for an introductory biology lab.
  Access via https://sites.google.com/oakland.edu/raffel-lab/teaching
  V2.0 is in development, expected delivery Summer 2025.

Media Coverage

- Oakland University – Research press release (2022):
  https://oakland.edu/oumagazine/news/biology/2022/ou-researchers-use-statistical-models-to-analyze-host-parasite-relationships
- Oakland University – Project Upward Bound outreach (2018):
  https://oakland.edu/oumagazine/news/cas/2018/project-upward-bound-students-explore-sciences-at-ou-under-auspices-of-nsf-grant-
- Scientific American – Research press release (2017):
  https://www.scientificamerican.com/article/creepy-swimmer-rsquo-s-itch-parasite-in-northern-lakes-can-scratch-summer-fun/

Professional Development

- VectorByte Training Workshop 2023, Virgina Tech, Blacksburg, VA, USA: This workshop provides training for accessing and analyzing vector traits within the VecTraits database, a resource containing data describing vector traits along an experimental gradient.
- Graduate Teaching Assistant Workshop 2018 & 2019, Oakland University, Rochester, MI, USA: The workshop provides TA training on current teaching pedagogy, including active learning and equal and equitable access to material. Led by TR Raffel (Ph.D. advisor).

Teaching Experience

- **Teaching Assistant**: September 2015 to December 2019
  Prepare and conduct lab sections of BIO 1201 (General Biology). F15, W16, S16, W19
  Prepare and conduct lab sections of BIO 3330 (Ecology). W17, W18
  Prepare and conduct lab sections of BIO 4320 (Medical Parasitology). F19
  Oakland University, Department of Biological Sciences, Rochester, MI, USA
- **Graduate Assistant**: September 2016 to April 2017
  Assist with grading duties for HC 1000 (First Year Colloquium: Making Discoveries).
  Mentor students through the proposal process and writing for HC 3900 (Introduction to the Thesis).
  Organize and develop a student shadowing program and field trip for local underserved high school students.
  Oakland University, Honors College, Rochester, MI, USA
- **Summer Biology Lab Assistant**: 2015-2017
  Prepare and assist with lab activities for AP Biology high school teacher professional development and certification.
  Oakland University, Department of Strategic Programs and Academic Affairs, Rochester, MI, USA

- **Marine Science Instruction Intern**: September 2010 to December 2010
  Teach marine science topics to visiting school groups ranging from elementary to high school level in classroom and field settings.
  Project: To develop a training guide to flora and fauna for incoming staff members.
  Seacamp Incorporated/Newfound Harbor Marine Institute, Big Pine Key, FL, USA

Academic Service

Journal Review: Functional Ecology, iScience, Journal of Animal Ecology, Journal of Parasitology, Knowledge and Management of Aquatic Ecosystems, Oecologica, Chemosphere, Journal of Applied Ecology, Ecology and Evolution

Grant Review: National Science Foundation (ad hoc: DEB)

Outreach and Volunteer Service

Scientific:

- 2024, College of Science and Engineering Research Horizons Symposium – Poster Session Judge, University of Notre Dame, Notre Dame, Indiana, USA
- 2024, Teachers as Scholars, *From climate change to the monsters inside us: Understanding global change drivers and infectious disease* – Presenter, University of Notre Dame, Notre Dame, Indiana, USA
- 2018-2019, Project Upward Bound Summer Program, Thermal Biology Lab – Lab Assistant, Oakland University, Rochester, Michigan, USA
- 2018, Project Upward Bound College & Career Day – Facilitator & Presenter, Oakland University, Rochester, Michigan, USA
- 2016-2017, Science Fair Judge, International Technology Academy, Pontiac, Michigan, USA
- 2015-2017, Science Fair Judge, Chandler Park Academy, Harper Woods, Michigan, USA
- 2015, Water Pollution Presenter, Notre Dame Preparatory, Pontiac, Michigan, USA

Other:

- 2012-present, Extra Life Marathon Participant. Total individual fundraising: $38,437.15 USD (as of Dec. 31, 2024)
- Extra Life Detroit, Michigan Guild (Officially affiliated with Children's Miracle Network and Corewell Children's [formerly Beaumont Children's], market fundraising: $895,773.17 USD as of Jan. 01, 2024)
  - Guild Liaison & Advisor, 2022-present (following restructured organization)
  - President, 2016-2022
  - Founding Member, 2015
- 2024, Ignite: Peer-to-Peer Leadership Conference attendee & Extra Life United participant
- 2016-2023, Children's Miracle Network Momentum attendee & Extra Life United participant
- 2019-present, DonorDrive Peer-to-Peer Fundraising Research Panelist
- 2020-2023, Corewell Health Children's Business Ambassador Group Member
- 2022, Nominated for the Peer-to-Peer Professional Forum 'Cash, Sweat, and Tears' Award
- 2019, Children's Miracle Network Extra Life Lead Angel award for exceptional service

Professional References

1. Thomas R. Raffel
   Ph.D. advisor and collaborator on Bd-amphibian metabolic modeling
   Associate Professor
   Department of Biological Sciences
   Oakland University
   (248) 370-3551; raffel@oakland.edu

2. Bruce Pell
   Mathematician and collaborator on Bd-amphibian metabolic modeling
   Assistant Professor
   Department of Math and Computer Science
   Lawrence Technological University
   (248) 204-3537; bpell@ltu.edu

3. Karie A. Altman
   Collaborator on amphibian infection and host-parasite interactions
   Assistant Professor
   Department of Biology
   St. Bonaventure University
   (716) 375-2631; karie.altman@gmail.com

4. Jason R. Rohr
   Postdoctoral advisor and collaborator on thermal performance database
   Ludmilla F., Stephen J., and Robert T. Galla College Professor
   Department of Biological Sciences
   University of Notre Dame
   (574) 631-3587; jrohr2@nd.edu

5. Robert D. Holt
   Postdoctoral advisor and collaborator on thermal mismatch evolution
   Eminent Scholar & Arthur R. Marshall, Jr., Chair in Ecological Studies
   Department of Biology
   University of Florida
   (352) 392-6917; rdholt@ufl.edu

6. S. Luke Flory
   Postdoctoral advisor and collaborator on invasion spillover across ecosystem boundaries
   Professor & Director of the Invasion Science Institute
   Agronomy Department
   University of Florida
   (352) 294-1581; flory@ufl.edu