Kimberly B. Fitzpatrick

Ph.D. Candidate | Dept. Natural Resources and the Environment, Cornell University
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Education

Ph.D. Candidate in Natural Resources, Cornell University   2017-Present
   Concentrations: Fishery and aquatic science, applied statistics, quantitative ecology
   Dissertation Title: *Modeling Predator-Prey Dynamics to Support Fisheries Management*
   Advisor: Dr. Suresh Sethi
   Expected Graduation: December 2022

M.S. in Geography, University of Oklahoma   2015-2017
   Thesis Title: *Return-on-investment frameworks can increase the efficiency of restoration
   efforts to improve freshwater connectivity*
   Advisor: Dr. Thomas Neeson

B.S. in Marine Science, Eckerd College   2011-2015
   Concentrations: Biology; Minor: Computer Science
   Thesis Title: *Swimming behavior of marine cercariae: effects of gravity and
   hydrostatic pressure*
   Advisor: Dr. Nancy Smith

Employment Record

Graduate Research Assistant   Aug 2017 – Present
New York Cooperative Fish and Wildlife Research Unit, Cornell University   *15 hrs / week*
Projects:
   - Development of a multispecies statistical catch-at-age model for two recreational fisheries in
     Lake Ontario and their shared primary prey species (Fitzpatrick et al. 2022)
   - Piloting a parentage-based tagging mass marking program – genetically matching hatchery-
     raised fish back to broodstock parents – for identifying hatchery-raised Chinook Salmon Lake
     Ontario and informing fisheries management.
   - Holistic cost-benefit analysis of mass marking techniques for hatchery-raised Chinook Salmon
     in Lake Ontario.
   - Return-on-investment of monitoring initiatives for improving the multispecies stock
     assessment model

Graduate Teaching Assistant   Aug 2021 – Dec 2021
Department of Natural Resources and the Environment, Cornell University   *15 hrs / week*
NTRES 1101: Understanding Environment and Sustainability
   - Prepared weekly lectures (13) for two hour-long discussion sections
   - Facilitated scholarly discussions around ecological and social issues with environmental
     research, policies, and sustainability practices
   - Graded weekly (13) written assignments for forty students and provided feedback to improve
     students' academic writing skills
   - Developed an R Shiny application on the impact of stochasticity on statistical and
     mathematical models and potential outcomes for fisheries management

Graduate Research Assistant   Aug 2015 – May 2017
Department of Geography and Environmental Sustainability, University of Oklahoma   *20 hrs / week*

Projects:
- Aligning dam removals and road culvert upgrades boosts conservation return-on-investment (Fitzpatrick and Neeson 2018)
- Indicator species to guide conservation investments to restore connectivity in Great Lakes tributaries (Fitzpatrick et al. 2021, Neeson et al. 2018)

Ford Apprentice Scholar Summer Internship   May 2014 – Aug 2014
Eckerd College   *40 hrs / week*
- Designed experiments on cerceriae behavioral response to geotactic and barokinetic stimuli
- Analysis of videographic data on the vertical movement of cercariae using MaxTRAQ and MaxMATE
- Assisted with daily field survey collections of crab zoea (morning and evening) in response seasonal environmental dynamics
- Field collection and surveys of gastropods in salt marsh habitats

National Science Foundation Research Experience for Undergraduates   May 2012 – Aug 2012
Radford University 40 hrs / week
- Dissection of amphibian hosts (tadpole stage) including identification and quantification of parasitic infection loads
- Assisted in field work collections and surveys of gastropods and amphibians from freshwater habitats
- Prepared samples for scanning electron microscopy (SEM), clearing and staining, and histology

Marine Science Freshman Researcher   Aug 2011 – May 2012
Eckerd College   *4 hrs / week*
- Genetic population analyses on meta-population structure
- Mitochondrial DNA extraction and amplification
- Field collections for three pipefish species and bonnethead sharks in coast marine ecosystems (sein net and gillnet, respectively)

Publications

Fitzpatrick, K.B., Overgaard Therkildsen, N., Marcy-Quay, B., Borchardt-Wier, H.B., Sethi, S.A. Discriminating between natural and stocked recruitment in inland fisheries using parentage-based tagging. *In review at Fisheries Management and Ecology.*

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., Lantry, B., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. 2022. Balancing prey availability and predator consumption: a multispecies stock assessment for Lake Ontario. Canadian Journal of Fisheries and Aquatic Sciences.

Fitzpatrick, K.B., Moody, A.T., Milt, A., Herbert, M.E, Khoury, M., Yacobson, E., Ross, J.A., Doran, P.J., Ferris, M.C., McIntyre, P.B., Neeson, T.M. 2021. Can indicator species guide conservation investments to restore connectivity in Great Lakes tributaries? Biodiversity and Conservation. 30: 165-182. https://doi.org/10.1007/s10531-020-02084-5

Andres, K.J., Sethi, S.A., Dusky, E., Lepak, J.M., Rice, A.N., Estabrook, B.J., **Fitzpatrick, K.B.**, George, E., Marcy-Quay, B., Paufve, M.R., Perkins, K., Scofield, A.E. 2020. Seasonal habitat use indicates that depth may mediate the potential for invasive round goby impacts in inland lakes. Freshwater Biology. 65(8): 1337-1347. https://doi.org/10.1111/fwb.13502

Neeson, T.M., Doran, P.J., Ferris, M.C., **Fitzpatrick, K.B.**, Herbert, M., Khoury, M., Moody, A.T., Ross, J., Yacobson, E., McIntyre, P.B. 2018. Conserving rare species can have high opportunity

costs for common species. Global Change Biology. 24(8): 3862-3872.
https://doi.org/10.1111/gcb.14162

Fitzpatrick, K.B., Neeson, T.M. 2018. Aligning dam removals and road culvert upgrades boosts conservation return-on-investment. Ecological Modelling. 368: 198-204.
https://doi.org/10.1016/j.ecolmodel.2017.11.018

Fitzpatrick, K.B., Smith, N.F., Cohen, J.H. 2016. Swimming behavior of marine cercariae: effects of gravity and hydrostatic pressure. Journal of Experimental Marine Biology and Ecology. 476: 8-14.
https://doi.org/10.1016/j.jembe.2015.12.002

Presentations

Fitzpatrick, K.B., Overgaard Therkildsen, N., Marcy-Quay, B., Borchardt-Wier, H.B., Sethi, S.A. 2022. Parentage-Based Tagging to Support the Conservation and Management of Inland Fish Populations. Joint Aquatic Sciences Meeting. May 19.

Fitzpatrick, K.B. 2022. Modeling Predator-Prey Dynamics to Support Fisheries Management. Cornell Unviersity Department of Natural Resources and the Environment Seminar Series. April 19. Recording: https://vod.video.cornell.edu/media/Clip+of+DNRE+Seminar+Kimberly+Fitzpatrick%2A/1_tqh9pu2r

Fitzpatrick, K.B., Connerton, M.J., Yuille, M.J., Overgaard Therkildsen, N., Sethi, S.A. 2021. Minimizing cost and uncertainty: assessing marking techniques to distinguish stocked and wild fish. International Association of Great Lakes Research. May 17-21.

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., Lantry, B., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. 2021. Predator-prey population dynamics modeling for Chinook salmon and alewife in Lake Ontario. New York Chapter of the American Fisheries Society Annual Meeting. Feb. 6.

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., Lantry, B., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. 2020. Balancing Predator Consumption and Prey Availability in an Intensively Managed Fishery: A Multispecies Statistical Catch-at-Age Model for Lake Ontario. American Fisheries Society Annual Meeting. Sept. 14.

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., Lantry, B., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. (invited). Predator-prey modeling for Lake Ontario. Lake Ontario Lake Committee Meeting. March 2020 (canceled due to pandemic).

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., Lantry, B., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. 2020. Predator-prey population dynamics modeling for chinook salmon and alewife in Lake Ontario. New York Chapter of the American Fisheries Society Meeting. Feb. 6

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., Lantry, B., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. 2019 (invited). Predator-prey population dynamics in Lake Ontario. NYS Department of Environmental Conservation Great Lakes Fisheries Section Meeting. July 24.

Fitzpatrick, K.B., Weidel, B.C., Connerton, M.J., Lantry, J.R., Holden, J.P., Yuille, M.J., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Brenden, T.O., Sethi, S.A. 2019. Predator-prey population dynamics modeling for Chinook Salmon and Alewife in Lake Ontario. International Association of Great Lakes Research. June 12.

Fitzpatrick, K.B., Brenden, T.O., LaPan, S.R., Rudstam, L.G., Sullivan, P.J., Weidel, B.C., Sethi, S.A. 2019. Modeling Chinook salmon population dynamics in Lake Ontario. (poster) New York Chapter and Northeastern Division of the American Fisheries Society Meeting. Feb. 7.

Fitzpatrick, K.B. and Sethi, S.A. 2018. Predator-prey population dynamics model for Lake Ontario salmon management. New York Chapter of the American Fisheries Society Meeting. (poster) Feb. 8.

Fitzpatrick, K.B. and Sethi, S.A. 2017. Predator-prey population dynamics model for Chinook Salmon management. Lake Ontario Technical Committee Meeting. Nov. 27-28.

Fitzpatrick, K.B., Moody, A.T., Milt, A., Herbert, M.E, Khoury, M., Yacobson, E., Ross, J.A., Doran, P.J., Ferris, M.C., McIntyre, P.B., Neeson, T.M. 2017. Can indicator species guide conservation investments to restore connectivity in Great Lakes tributaries? Midwest Fish and Wildlife Conference. Feb. 5-8.

Fitzpatrick, K.B., Smith, N., Cohen, J. 2015. Swimming behavior of marine cercariae: Effects of gravity and hydrostatic pressure. The Ecological Society of America. Aug. 12.

Fitzpatrick, K.B., Smith, N., Cohen, J. 2014. Facilitating Host Contact: Can Marine Cercariae Use Gravity To Find Their Next Host? SigmaXi Annual Meeting (poster) Nov. 7-9.

Michael, C., Bennett, J., Carter, J., **Fitzpatrick, K.B.**, Flight, C., O'Brien, C., Petrilla, C., Ramirez, H., Mack, K., Szelistowski. W.A. 2012. Genetic Structure of Chain Pipefish *Syngnathus louisianae* and Dusky Pipefish *Syngnathus floridae* populations in Florida. Florida Chapter of the American Fisheries Society Annual Meeting. (poster) Feb. 21-23.

Computer Software Skills

Mathematical and statistical model development, data analyses, and programing: R, AD Model Builder (ADMB), Java, Python.

Spatial analyses and GIS: ArcGIS

Parentage Analysis: Cervus, Colony, CKMRsim (R package)

Microsoft Office: Microsoft Excel, Microsoft Word, Microsoft Powerpoint

Coursework using: QGIS, GRASS, Git and Github, SQL, WinBUGS, Program Mark, website development languages (html, css, php, MySQL, JavaScript)

Teaching Experience

Teaching Assistant: Cornell University, Understanding Environment and Sustainability – Fall 2021
Teaching Assistant: Eckerd College, Marine Invertebrate Biology – Fall 2014

Research Grants

Parentage based tagging for Lake Ontario salmon management, $70,000, PIs: S.A. Sethi (Cornell) and N. Overgaard Therkildsen (Cornell). CI: K.B. Fizpatrick. NY Department of Environmental Conservation grant.	2022
Monitoring against runaway wild production: Genetics provides a cost efficient and reliable tool for identifying hatchery versus wild Chinook Salmon in the Great Lakes, $15,000, Co-PIs: S.A. Sethi (Cornell) and N. Overgaard Therkildsen (Cornell), AI: K.B. Fitzpatrick (Cornell). NY Sea Grant grant.	2019-2020

Awards and Honors

Charles Standley Memorial Award for Outstanding Publication by a Graduate Student, Dept. of Geography and Environmental Sustainability, University of Oklahoma.	2018
Phi Beta Kappa National Honor's Society, Eckerd College	2015
Sigma Xi Honor's Society, Associate Member, Eckerd College	2015
Eckerd College Ford Apprentice Scholar Program	2013-2015
Women Diver's Hall of Fame Undergraduate Scholarship in Marine Conservation	2014
Florida Zeta Chapter of Phi Beta Kappa Peter Pav Freshmen Scholar Award	2012

Service

Lake Ontario Technical Committee Member, Predator-Prey Working Group	2018-Present
Cornell University DNRE DEI Advisory Council Charter Working Group Member	2020
Cornell University DNR Graduate Student Assembly, President	2019-2020
Cornell University DNR Graduate Student Assembly, Treasurer	2018-2019
Kieckhefer/Mellon Funds Evaluation Committee	2019
Cornell University American Fisheries Society Panel on Graduate School Advice	2019
University of Oklahoma Association of Geography Graduate Students, VP	2016-2017
Eckerd College Natural Science Collegium Student Representative	2013-2015
Eckerd College Academic Honor Council Member	2012-2015
Eckerd College Search and Rescue (participated in 200+ emergency responses)	2011-2015

Society Memberships

American Fisheries Soceity, New York Chapter of the American Fisheries Society, Society for Freshwater Science, SigmaXi, Phi Beta Kappa