Lauren Elizabeth Nadler, PhD

Postdoctoral fellow
Norwegian University of Life Sciences
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ACADEMIC APPOINTMENTS

Postdoctoral fellow — Oslo, Norway
Norwegian University of Life Sciences — April 2018 – present
Supervisor: Dr. Øyvind Øverli

Visiting scholar — San Diego, CA, USA
Scripps Institution of Oceanography — April 2018 – present
Supervisor: Prof. Ryan F. Hechinger

Postdoctoral scholar — San Diego, CA USA
Scripps Institution of Oceanography — Oct. 2016 – April 2018
Supervisor: Prof. Ryan F. Hechinger

Research assistant — Townsville, Australia
James Cook University — July – Oct. 2016
Supervisor: Prof. Morgan S. Pratchett

Research officer — Townsville, Australia
James Cook University — Jan. – Mar. 2014
Supervisor: Prof. Philip L. Munday

Program assistant — Southold, NY, USA
Cornell Cooperative Extension Scallop Restoration Program — May – Aug. 2010
Supervisor: Prof. Christopher F. Smith

Research assistant — Boston, MA, USA
Boston University — May – Aug. 2006
Supervisor: Prof. Tom Kunz

EDUCATION

Ph.D. Marine Biology — Townville, Australia
James Cook University — Jan. 2013 – Dec. 2016
Thesis: Behavioural and physiological effects of shoaling in a coral reef fish
Supervisors: Prof. Mark I. McCormick, Prof. Philip L. Munday, Dr. Paolo Domenici

Master of Research (With Distinction) — Glasgow, Scotland
University of Glasgow — Sept. 2010 – Nov. 2011
Major: Marine and Freshwater Ecology and Environmental Management
Dissertation 1: Lipid composition of oil extracted from Norway lobster (*Nephrops norvegicus*) heads and comparison with oil extracted from Antarctic krill (*Euphasia superba)*
Dissertation 2: Effect of habitat characteristics on the distribution and abundance of damselfish within a Red Sea reef
Supervisors: Prof. Douglas M. Neil, Prof. David M. Bailey

Lauren Elizabeth Nadler, PhD

Bachelor of Arts (Cum Laude) Boston, MA, USA
Boston University Aug. 2003 – May 2007
Major: Biology with a specialization in Marine Sciences/Minor: Photojournalism
Dissertation: Effect of light and salinity on recovery of injuries in the Scleractinian coral *Pocillopora damicornis*
Supervisor: Prof. Les S. Kaufman

TRAINING COURSES

Pathways to Scientific Teaching San Diego, CA USA
UC San Diego Jan. 2018 – April 2018
Certificate in Scientific Teaching for Undergraduate Education

Fish Swimming Friday Harbor, WA, USA
Friday Harbor Laboratories July – Aug. 2013
Specialized training course in fish kinematics, ecomorphology, behavior & environmental physiology

PUBLICATIONS

Nadler LE, Killen SS, Domenici P, McCormick MI. (2018) Role of water flow regime in the swimming behaviour and escape performance of a schooling fish. *Biology Open.* 7: bio031997. DOI: 10.1242/bio.031997
*Article featured in the "First person" series in *Biology Open*

Pratchett MS, Cowan ZL, **Nadler LE**, Hoey AS, Messmer V, Ling SD. (2017) Body size and substrate type modulate movement by the western Pacific crown-of-thorns starfish, *Acanthaster solaris. PLoS One.* 12: e0180805. DOI: 10.1371/journal.pone.0180805

Pratchett MS, Caballes CF, Wilmes JC, Matthews S, Mellin C, Sweatman HPA, **Nadler LE**, Brodie J, Thompson CA, Hoey J, Bos AR, Byrne M, Messmer V, Fortunato SAV, Chen CCM, Buck ACE, Babcock RC, Uthicke S. (2017) Thirty years of research on crown-of-thorns starfish (1986-2016): Scientific advances and emerging opportunities. *Diversity.* 9: 41. DOI: 10.3390/d9040041

Killen SS, Marras S, **Nadler LE**, Domenici P. (2017) The role of physiological traits in assortment among and within fish shoals. *Philosophical Transactions of the Royal Society B: Biological Sciences.* 372:20160233. DOI: 10.1098/rstb.2016.0233

Albalat A, **Nadler LE**, Foo N, Dick JR, Watts AJR, Philp H, Neil DM, Monroig O. (2016) Lipid composition of oil extracted from wasted Norway lobster (*Nephrops norvegicus*) heads and comparison with oil extracted from Antarctic krill (*Euphasia superba*). *Marine Drugs.* 14:219. DOI: 10.3390/md14120219

Nadler LE, Killen SS, McCormick MI, Watson S-A, Munday PL. (2016) Effect of elevated carbon dioxide on shoal familiarity and metabolism in a coral reef fish. *Conservation Physiology.* 4: cow052. DOI: 10.1093/conphys/cow052

Nadler LE, Killen SS, McClure EC, Munday, PL, McCormick MI. (2016) Shoaling reduces metabolic rate in a gregarious coral reef fish species. *Journal of Experimental Biology.* 219: 2802-2805. DOI: 10.1242/jeb.139493
*Article featured on the journal cover and in the "Inside JEB" popular science section

Palacios MM, Killen SS, **Nadler LE**, White JR, McCormick MI. (2016) Top predators negate the effect of mesopredators on prey physiology. *Journal of Animal Ecology.* 85: 1078-1086. DOI: 10.1111/1365-2656.12523

Snyder S, **Nadler LE**, Bayley JS, Svendsen MBS, Johansen JL, Domenici P, Steffensen JF. (2016) Effects of closed *v.* intermittent-flow respirometry on hypoxia tolerance in the shiner perch *Cymatogaster aggregata. Journal of Fish Biology.* 88: 252-264. DOI: 10.1111/jfb.12837

Nadler LE, McNeill DC, Alwany MA, Bailey DM. (2014) Effect of habitat characteristics on the distribution and abundance of damselfish within a Red Sea reef. *Environmental Biology of Fishes.* 97: 1265-1277. DOI: 10.1007/s10641-013-0212-9

Schacter CR, Albright LB, Dubofsky EA, Fitzsimmons JN, Focht R, **Nadler LE**, Sandercock M, Taylor L, Walfoort D, Whitten T, Williams LJ, Rosenthal GG. (2014) Risk-sensitive resource defense in a territorial reef fish. *Environmental Biology of Fishes.* 97: 813-819. DOI: 10.1007/s10641-013-0181-z

In review/revision/submitted:

Nadler LE, Domenici P, Johansen JL, McCormick MI. (in review) Familiarity improves fast-start escape performance in schooling fish. *Proceedings of the National Academy of Sciences of the United States of America.*

Nadler LE, Killen SS, McCormick MI. (in review) Evidence of physiological assortment among wild schools of a coral reef fish. *Journal of Zoology.*

Helland-Riise SH, **Nadler LE**, Vindas MA, Bengston E, Turner AV, Johansen IB, Weinersmith KL, Hechinger RF, Øverli Ø. (in review) Quantifying the regional distribution of a brain-infecting parasite provides insights on parasite-induced behaviour manipulation. *Journal of Parasitology.*

Helland-Riise SH, Vindas MA, Johansen IB, **Nadler LE**, Weinersmith KL, Hechinger RF, Øverli Ø. (in review) Brain-encysting trematodes (*Euhaplorchis californiensis*) decrease raphe serotonergic activity in California killifish (*Fundulus parvipinnis*). *Open Science.*

Killen SS, **Nadler LE**, Grazioso K, Cox A, McCormick MI. (in revision) The effect of minimum and maximum metabolic rate on sociability and choice of social group size in a coral reef fish. *Physiology and Behavior.*

Johansen JL*, **Nadler LE***, Habary A, Bowden AJ, Rummer JL. (in revision) Thermal acclimation of tropical fishes to global warming: coordinated responses of multiple physiological performance traits over time. *Global Change Biology.*
*These authors contributed equally to this manuscript

Nadler LE, Bengston E, Eliason EJ, Hassibi C, Helland-Riise SH, Johansen IB, Kwan GT, Øverli Ø, Tresguerres M, Turner AV, Weinersmith KL, Hechinger RF. (submitted) A brain-infecting parasite impacts host metabolism both before and after infection. Target journal: *Proceedings of the Royal Society of London B: Biological Sciences.*

To be submitted (within three months):

Nadler LE, Jolles JW, Binning SA, Domenici P, Killen SS, Silk MS. Parasitism and the tradeoffs of sociality: the role of parasite transmission mode. Target journal: *Ecology.*

Nadler LE, Midttun HLE, Killen SS, Vindas MA, Øverli Ø, Johansen IB. Role of previous parasite exposure in metabolism and brain serotonin signaling following acute infection. Target journal: *Journal of Animal Ecology.*

Helland-Riise SH, Johansen IB, Vindas MA, **Nadler LE**, Weinersmith KL, Hechinger RF, Øverli Ø. Infection with brain-encysting *Euhaplorchis californiensis* parasites increases activity in novel environment, but not after a simulated predator attack in California killifish (*Fundulus parvipinnis*). Target journal: *Behavioral Ecology.*

Reports:

Nadler LE, Doo S, Madin EMP, Watson S-A. (2016) Science-based policy plan for Australia's coral reefs. *Australian Coral Reef Society submission*. Invited policy document for the Office of Hon Bill Shorten MP, Leader of the Australian Labor Party.

Popular science:

Nadler LE. (2018) Serotonin: Octopus love potion? *Journal of Experimental Biology* (Outside JEB section). 221: jeb170282. doi:10.1242/jeb.170282

Nadler LE. (2014) Fish schools: Not all seats in the class are equal. *Naked Scientists*.

PRESENTATIONS

Invited department seminar presentations

Rosenstiel School of Marine and Atmospheric Science, University of Miami. 2019
Host: Professor Nikki Traylor-Knowles

Marine Sciences Program, Florida International University. 2019
Host: Professor Alastair Harborne

Department of Biosciences, University of Oslo. 2019
Host: Dr. Sjannie Lefevre

Conference presentations and posters

Nadler LE, Ellis HI, Nelson A, Turner AV, Williams CL, Øverli Ø, Hechinger, RF. (2019) Can parasites indirectly benefit final hosts? The role of behavioural manipulation and trophic transmission in the energetic tradeoffs of a host-parasite system. 10th International Congress of Comparative Physiology and Biochemistry. Ottawa, Canada.

*Invited speaker for session "Studying the evolution of host-parasite interactions: Advantages of combining mechanistic and evolutionary approaches"

Nadler LE, Midttun HLE, Vindas MA, Øverli Ø, Johansen IB. (2019) Role previous parasite exposure in metabolism and brain serotonin signaling following acute infection. Society for Experimental Biology annual conference. Seville, Spain.

*Session chair for "Open animal biology"

Nadler LE, Ellis HI, Nelson A, Turner AV, Williams CL, Øverli Ø, Hechinger, RF. (2019) Are parasites always detrimental? Costs of infection to final hosts that forage on prey modified by parasites. Society for Integrative and Comparative Biology 2019 Annual Meeting. Tampa, Florida.

Nadler LE, Bengston E, Eliason EJ, Hassibi C, Helland-Riise SH, Johansen IB, Kwan GT, Øverli Ø, Tresguerres M, Turner AV, Weinersmith KL, Hechinger RF. (2018) How a brain-infecting parasite alters energy metabolism in a shoaling fish. Society for Experimental Biology annual conference. Florence, Italy.

*Session chair for "Open animal biology"

Nadler LE, Cox A, Domenici P, Killen SS, McCormick MI, Munday PL, Pratchett MS, Watson, S-A. (2017) The effect of elevated CO_2 on swimming performance and schooling in a coral reef species. Society for Experimental Biology annual conference. Gothenburg, Sweden.

Nadler LE, Killen SS, Watson SA, Munday PL, McCormick MI. (2016) Shoaling reduces metabolic rate in a gregarious coral reef fish species. Society for Experimental Biology annual conference. Brighton, United Kingdom.

*Session chair for "The role of individual variation in the behaviour of animal groups"

Nadler LE, Killen SS, Watson SA, Munday PL, McCormick MI. (2016) Shoaling reduces metabolic rate in a gregarious coral reef fish species. 13th International Coral Reef Symposium. Honolulu, Hawaii, USA.

Nadler LE, Killen SS, Domenici P, Munday PL, McCormick MI. (2015) Go with the flow: Flow rate modulates metabolism and escape response in fish shoals on coral reefs. Behaviour2015 Conference. Cairns, QLD, Australia.

Nadler LE, Killen SS, Domenici P, Munday PL, McCormick MI. (2015) Metabolism and habitat modulate assorting and escape responses in fish schools on coral reefs. 89th Australian Coral Reef Society Conference. Daydream Island, QLD, Australia.

Nadler LE, Killen SS, Domenici P, Munday PL, McCormick MI. (2015) Metabolism and habitat modulate assorting and escape responses in fish schools on coral reefs. Society for Experimental Biology annual conference. Prague, Czech Republic.

Nadler LE, Domenici P, Johansen JL, Munday PL, McCormick MI. (2014) Fish with friends: Effect of familiarity on schooling behaviour in coral reef fish. Society for Experimental Biology annual conference. Manchester University, Manchester, England.

Nadler LE, Domenici P, Johansen JL, Munday PL, McCormick MI. (2014) Fish with friends: Effect of familiarity on schooling behaviour in coral reef fish. International Society for Behavioral Ecology biennial conference. Hunter College, New York, NY, USA. (poster)

Nadler LE, Domenici P, Johansen JL, Munday PL, McCormick MI. (2014) Fish with friends: Effect of familiarity on schooling behaviour in coral reef fish. 51st Annual Conference of the Animal Behavior Society. Princeton University, Princeton, NJ, USA.

Nadler LE, Domenici P, Johansen JL, Munday PL, McCormick MI. (2014) Fish with friends: Effect of familiarity on schooling behaviour in coral reef fish. 88th Australian Coral Reef Society Conference. Brisbane, QLD, Australia.

Nadler LE, Albalat A, Edrada-Ebel R, Neil D. (2011) Metabolomics of different tissues from the Norway lobster, *Nephrops norvegicus*: A first approach to determine uses for fishery waste and biomarkers of environmental health in a crustacean. 9th International Conference and Workshop on Lobster Biology & Management. Bergen, Norway. (poster)

Nadler LE, Albalat A, Edrada-Ebel R, Neil D. (2011) Metabolomics of different tissues from the Norway lobster, *Nephrops norvegicus*: A first approach to determine uses for fishery waste and biomarkers of environmental health in a crustacean. Marine Alliance for Science and Technology Annual Science Meeting. Oban, Scotland, UK. (poster)

Nadler LE, Moore MS, Kunz TH. (2006) Ecological influences on rabies infections in the big brown bat, *Eptesicus fuscus*. Boston University Research Symposium. Boston University. Boston, MA, USA. (poster)

GRANTS, FELLOWSHIPS & AWARDS

2017 1. Society for Experimental Biology Travel Grant (£170)

2016 1. Company of Biologists Travelling Fellowship (£2500 – declined)
2. Society for Experimental Biology Young Scientist Award - winner
*Awarded for talk entitled "Shoaling reduces metabolic rate in a gregarious coral reef fish species"
3. Society for Experimental Biology Travel Grant (£250)
4. Company of Biologists Travel Grant (£400)
5. Australian Coral Reef Society Travel Fellowship ($500AU)

2015 1. Society for Experimental Biology Young Scientist Award – finalist
*Finalist for talk entitled "Metabolism and habitat characteristics modulate collective escape responses in fish schools on coral reefs"
2. James Cook University Graduate Research Scheme Grant ($2,400AU)
3. Lizard Island Reef Research Foundation International Travel Grant ($4,000AU)

2014 1. Australian Coral Reef Society Student Presentation Award
*Awarded for talk entitled "Fish with friends: Effect of familiarity on schooling behaviour in a coral reef fish"
2. Australian Coral Reef Society Conference Travel Grant ($380AU)
3. Company of Biologists Travel Grant (£500)
4. Society for Experimental Biology Travel Grant (£320)
5. James Cook University Graduate Research Scheme Grant ($2,000AU)
6. Great Barrier Reef Marine Park Authority Science for Management Award ($1,000AU)
7. Lizard Island Reef Research Foundation Doctoral Fellowship ($16,000AU)

2013 1. Friday Harbor Laboratory Ragen Scholarship ($2,000US)
2. Endeavour International Postgraduate Research Scholarship ($75,000AU)
3. Australian Postgraduate Award ($96,000AU)

2011 1. Gilchrist Education Trust Expedition Grant (£500)
2. Royal Geographical Society (with IBG) Fieldwork Grant (£500)
3. Blodwen Lloyd-Binns/Glasgow Natural History Society Grant (£800)

2006 1. Boston University Undergraduate Research Opportunities Grant ($2,400US)

TEACHING & MENTORING

2019 Lecturer: Scientific Publishing (Norwegian University of Life Sciences)
Designed and coordinated an undergraduate level course on scientific writing for publication for research-track veterinary students.

Staff Mentor: Scientific Writing Club (Norwegian University of Life Sciences)
Coordinate a monthly meeting for graduate students to learn about scientific writing from researchers in a range of disciplines, who give interactive talks on topics related to writing and publishing in science.

2018 Co-Advisor to Angelique Hoffman (Honors student, James Cook University)
Topic: Transgenerational acclimation of metabolism to elevated temperature in coral reef fish.

Supervisor for four Undergraduate Interns (Scripps Institution of Oceanography)
Trained and oversaw analysis of videos examining the role of parasites in predator-prey interactions.

2017 Guest Lecturer for "Current Research in Marine Biology" (Scripps Institution of Oceanography)
Created and presented a lecture on social behavior in coral reef fishes.

Mentor for Independent Study for Undergraduates (Scripps Institution of Oceanography)
Mentored an undergraduate student in the design, execution, analysis, and write-up of independent research for course credit.

Mentor for the Summer Training Academy for Research Success (STARS; University of California, San Diego)
Mentored two STARS fellows through their eight-week summer fellowship, designed to provide rigorous research opportunities to community college students from around the country.

Supervisor for 12 Undergraduate Interns (Scripps Institution of Oceanography)
Trained and oversaw 12 undergraduate interns in the full husbandry protocol for shoals of the California killifish and snail mudflat mesocosms.

2016 Course Coordinator and Lecturer for "Coastal and Catchment Geomorphology" (James Cook University)
Designed the course curriculum, including planning and executing a trip into the field to teach research techniques. Created and presented weekly lectures and practicals. Graded assignments and exams associated with this coursework.

Teaching Assistant for "Marine Ecology & Environmental Assessment" (James Cook University)
Oversaw in-class practical work, moderated discussions, and graded assignments.

2015 Mentor for the Independent Study Program (School for International Training)
Mentored one undergraduate student through the design, execution, analysis, and write-up of independent research during a study abroad program at the Lizard Island Research Station, on the Great Barrier Reef, Australia.

2007 Teaching Assistant for "Vertebrate Zoology" (Boston University)
Created and presented a lecture on vertebrate locomotion. Oversaw in-class practical work and exams.

SERVICE & LEADERSHIP

Outside JEB — London, United Kingdom
Journal of Experimental Biology — November 2018 – present
- Contributing writer to the popular science section of the *Journal of Experimental Biology* (JEB) known as Outside JEB, which highlights relevant journal articles for the JEB readership.

Vice Chair of Web and Social Media Engagement — San Diego, CA USA
UC San Diego Postdoctoral Association (PDA) — Jan. 2017 – April 2018
- Led the committee running the PDA's web and social media activities, including the website, LinkedIn, Twitter, Facebook, and Instagram.

Committee Member — San Diego, CA USA
Expanding Your Horizons (EYH) - San Diego branch — Feb. 2017 – April 2018
- Help organize and run hands-on workshops locally for high school and undergraduate aged women interested in careers in science, technology, engineering, and math (STEM).

Councilor & Social Media Coordinator — Townsville, Australia
Australian Coral Reef Society (ACRS) — June 2014 – June 2016
- Helped in the planning and execution of all ACRS events (including the annual conference) and ran the society's social media outlets (Facebook and Twitter).

Delegate — Canberra, Australia
Science Meets Parliament — Feb. 2016
- Worked with Australian politicians Hon Bill Shorten MP and Hon Warren Entsch MP to advise on policies to aid in the resiliency of Australia's coral reefs.

Graduate Student Committee — Townsville, Australia
ARC Centre of Excellence for Coral Reef Studies — January – December 2015
- Worked with a committee of graduate students to plan training, career mentoring, and social events.

Graduate Student Representative — Sept. 2010 – Sept. 2011
University of Glasgow — Glasgow, Scotland
- Worked with the university administration to establish policies that promoted graduate student success.

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SKILLS & PROFESSIONAL SERVICES

- **Laboratory experience:** Intermittent-flow respirometry, Carbonate chemistry, CO_2 administration, Temperature-controlled studies, Swim tunnel technology, Visual implant elastomer tagging, High performance liquid chromatography, Tissue cryosectioning, Parasitology
- **Field experience:** 3D Stereo-camera techniques, SCUBA and snorkel survey techniques, Fish collection using: barrier nets, the clove oil extraction technique, seines, Mesocosm studies
- **Analytical techniques:** Linear and non-linear modeling, Mixed effects linear and non-linear modeling, proficiency with programming language R
- **Certifications:** SSI Dive Control Specialist, Emergency First Responder (First Aid and CPR), Emergency Oxygen Administration, Australian Recreational Boat License, Scientific Teaching
- **Journal reviewer for:** *Proceedings of the Royal Society B* (Impact Factor: 4.85), *PLoS One* (Impact Factor: 2.77), *Journal of Experimental Biology* (Impact Factor: 3.18), *Coral Reefs* (Impact Factor: 3.10), *Marine Biology* (Impact Factor: 2.22), *The Science of Nature - Naturwissenschaften* (Impact Factor: 1.79), *Marine Ecology Progress Series* (Impact Factor: 2.28), *Scientific Reports* (Impact factor: 4.12), *Biology Letters* (Impact Factor: 3.23)
- **Professional memberships:** Society for Experimental Biology, Society for Integrative and Comparative Biology, Australian Coral Reef Society, International Society for Reef Studies, Society for Women in Marine Science, American Association for the Advancement of Science

SELECTED INTERNATIONAL MEDIA OUTREACH

- Scientific social media engagement via Twitter (@LaurenNadler, 1356 followers) and Instagram (@lauren.e.nadler, 276 followers)
- NRK TV (Norwegian National TV): "Latterlig Smart" (translates to "Ridiculously Smart") with Erlend Osnes: Standup comedy about parasites, 21 November 2018
- ABC news: Damselfish feel distress when separated from their 'friends', JCU researchers find, 22 September 2016
- Eco Magazine: Coral Fish Stress, Lose Weight When Separated from 'Shoal-Mates', 26 September 2016
- Brisbane Times: Baby fish less stressed around large ocean predators, 26 April 2016
- The Atlantic: Ocean acidification could be creating friendless fish, 1 July 2014
- Mother Jones: We're screwing up the oceans so much, these fish can't find their BFFs, 1 July 2014
- Science Daily: Climate change could stop fish finding their friends, 30 June 2014
- Others: MSN, Deustchlandfunk (German public radio), ABC Queensland Radio, Naked Scientist, Grist.org

REFERENCES

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