MAYA L. GRONER

Name: Maya L. Groner
Employer: Bigelow Institute for Ocean Science
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EDUCATION

August 2006 – Dec 2011 **Ph.D.,** Biological Sciences at **University of Pittsburgh Pittsburgh, PA, USA.**
Dissertation Title: *Effects of multiple stressors on the dynamics of a fungal pathogen associated with global amphibian declines*
Major Advisor: Rick Relyea
Committee: Andrew Blaustein, Stephen Tonsor, Brian Traw, Jeffrey Lawrence

August 2000 – May 2004 **B.A**., Earth and Environmental Sciences at **Wesleyan University, Middletown, CT, USA.**

CURRENT POSITION

Nov 2021- current **Senior Research Scientist**
Quantitative Disease Ecology Lab, Bigelow Institute for Ocean Sciences, 60 Bigelow Dr., East Boothbay, ME 04544 USA

PAST RESEARCH EXPERIENCE

Feb 2018 – Oct 2021 **Affiliate Scientist**
U.S. Geological Survey, Western Fisheries Research Center, Seattle, WA, USA

Feb 2018 – Oct 2021 **Research Scientist**
Prince William Sound Science Center, Cordova, AK, USA

Jan 2016 – Jan 2018 **Postdoctoral Researcher**
Virginia Institute of Marine Science, Gloucester Point, VA, USA
Advisors: John Hoenig, Jeffrey Shields

Jan 2012 - Dec 2015 **Postdoctoral Researcher**
Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, PE, Canada
Advisors: Crawford W. Revie, Mark Fast

April 2015 **Visiting postdoctoral fellow**
Institute for Marine Environmental Technology, University of Maryland-Baltimore, Baltimore, MD
Advisor: Colleen Burge

Sept 2006 - Dec 2011 **Graduate Student**
University of Pittsburgh, Pittsburgh, PA
Advisor: Rick Relyea

Sept 2005- Sept 2006 **Monitoring Assistant**
Nooksack Salmon Enhancement Association*,* Bellingham, WA
Monitored spawning salmonid populations and water quality. Assisted with riparian restoration and education programs.

June-Sept 2004, 2005 **Field Technician**
Northwest Fisheries Science Center, Cascade, ID and Seattle, WA

Dr. Beth Sanderson and Dr. Kate Macneale
Stream ecosystem intern for studies of nutrient dispersal and interspecific competition among salmonids.

May 2003-May 2004 **Independent Research/ Thesis**
Dept. of Earth and Environmental Sciences, Wesleyan University, Middletown, CT
Professor Johan Varekamp
Analysis of geologic history of Long Island Sound over past 20,000 years

AWARDS AND DISTINCTIONS

Provost development fund, *University of Pittsburgh,* USA, for minorities and women completing a doctorate, finalist 2010

President's Award, *North American Benthological Society*, USA, 2009

Teaching award, *University of Pittsburgh,* USA, for excellent teaching assistantship in the biological sciences, nominated 2008

Ivy McManus Award, *University of Pittsburgh,* USA, For outstanding 1st year graduate student in biology, 2007

Mary K. Sease Award, *Wesleyan University,* USA, For excellence in science outreach, 2004

RESEARCH FUNDING AND FELLOWSHIPS

2021 **Research Grant**, NSF Ecology and Epidemiology of Infectious Diseases, Transmission pathways of seagrass wasting disease in coastal meadows $USD 2,200,000 (co-PI)

Research Grant, North Pacific Research Board, Epidemiology and pathology of an emerging disease, black eye syndrome, in snow crab in the Eastern Bering Sea. $USD 495,000 (lead PI)

2020 **Research Grant,** *Ocean Frontiers Institute,* One Ocean Health: Understanding and managing environmental and animal health threatened by climate change in order to sustainably grow fisheries and aquaculture and support coastal communities in the North Atlantic. CAD $1,494,000, (co-PI)

2019 **Research Grant,** Spatial and temporal patterns of bacterial gill disease in razor clams, North Pacific Coast, Marine Resource Council. $16,500 (lead PI)

2018 **Research Grant**, Is shifting epidemiology in *Ichthyophonus* increasing mortality of Pacific herring?, North Pacific Research Board, $138,636 (lead PI)

Research Grant, Sea lice sensitivity to fresh and warmwater treatments. Subcontract for grant from the Norwegian Seafood Research Fund, sub award for $25,650

2017 **Travel Grant**, Awarded to three postdoctoral fellows, *Virginia Institute for Marine Science,* USA, $1000

2015 **Seed Grant,** Model Support for Treatment Strategies in Managing Sea Louse Parasites and Evolution of Resistance on Atlantic Salmon Farms, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $20,000

Seed Grant, Tipping the scales: Are marine opportunists pathogens an increasing threat in a changing climate?, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $20,000

Atlantic Innovation Fund, Atlantic Eelgrass Monitoring Consortium, *Environment Canada,*

Canada, $200,000 (co-investigator on grant)

2014 **Seed Grant,** Resilience of coastal ecosystems to green crab introduction and removal, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $20,000

Seed Grant, Use of eelgrass as a mitigation strategy for ocean acidification on oyster farms, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $25,000

Short term Research Placement Award, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $4970

Early Career Development Grant, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $2,000

2013 **Workshop Grant,** *NIMBioS Workshop on modelling the evolution of pesticide resistance,* Canada

Early Career Development Grant, *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $2500

Research Exchange Grant, *NSF Research coordination network on ecology of infectious marine diseases,* USA, $1,000

Research grant, *Patricia L. Dudley Endowment, Friday Harbor Labs, University of Washington*, USA, $2000

2012 **Early Career Development Grant,** *Canadian Excellence Research Chair in Aquatic Epidemiology at University of Prince Edward Island,* Canada, $2500

Course Stipend, *NSF Research coordination network on ecology of infectious marine diseases,* USA, $3500

2010 and prior **Course Stipend,** *University of Washington Summer institute for statistics: modeling infectious disease,* USA, $800

Pape Award, *University of Pittsburgh and Pymatuning Lab of Ecology,* USA, $1400

Pape Award, *University of Pittsburgh and Pymatuning Lab of Ecology,* USA, $3050

Student grants, *Chicago Herpetological Society*, USA, $1,000, 2009

Gaige Fund, *American Society of Ichthyology and Herpetology,* USA, $500, 2000

Lewis and Clark Grant, *American Philosophical Society,* USA, $2500, 2009

Grants-in-aid-of-Research, *Sigma Xi,* USA, $400, 2009

McKinley Grant, *University of Pittsburgh,* USA, $3,500, 2008

NSF Predoctoral Fellowship, *National Science Foundation,* USA, $121,000, 2007

McKinley Grant, *University of Pittsburgh,* USA, $4,000, 2007

Howard Hughes Undergraduate Research Fellowship, *Wesleyan University*, USA , 2003

PUBLICATIONS

Peer-reviewed publications

2022 Agnew MV, **Groner ML**, Eisenlord, ME, Friedman CS, Burge CA, *in review.* Pacific oyster filtration as a sink and potential source of the eelgrass pathogen, *Labyrinthula zosterae.*

Groner ML, Bravo-Mendosa, ED, MacKenzie, AH, Gregg JL, Conway CM, Trochta JT, Hershberger PK. *In review.* Reconstruction of infection history indicates consistently

elevated transmission and prevalence of *Ichthyophonus* sp. in a collapsed population of Pacific herring.

Meyers TM, Morris R, Jackson TM, Dissen JN, Slater LM, **Groner ML**, Gaeuman W. *in review.* First reports of black eye syndrome and a systemic rickettsia-like organism in Alaskan *Chionoecetes* crabs including normal eyestalk microanatomy

Trochta J, **Groner ML**, Hershberger PK, Branch, T. 2022. A novel approach for directly incorporating disease into fisheries stock assessment: the powerful potential of seroprevalence data. **Canadian Journal of Fisheries and Aquatic Sciences**

2021 Hershberger PK, Meyers TR, Gregg JL, **Groner ML**, Jayasekera HT, MacKenzie AH, Neal AS, Piatt EN, Garver KA. 2021. Annual recurrences of viral hemorrhagic septicemia epizootics in Age 0 Pacific herring *Clupea pallasii*. **Animals** 11:2426.

Groner ML, Eisenlord ME, Yoshioka RM, Fiorenza EA, Dawkins PD, Graham OJ, Winningham M, Vompe A, Rivlin ND, Yang Bo, Burge CA, Rappazzo B, Gomes CP, Harvell CD. 2021. Warming sea surface temperatures fuel summer epidemics of eelgrass wasting disease. **Marine Ecology Progress Series**

Travis BA, Batts WN, **Groner ML**, Hershberger PK, Fradkin SC, Conway CM, Park L, Purcell MK. 2021. Novel diagnostic tests for the putative agent of bacterial gill disease in Pacific razor clams (*Siliqua patula*). **Journal of Invertebrate Pathology**

Elliott DG, Conway CM, McKibben CL, MacKenzie AH, Hart LM, **Groner ML**, Purcell MK, Gregg JL, Hershberger PK. 2021. Differential susceptibility of Yukon River and Salish Sea stocks of Chinook salmon *Oncorhynchus tshawytscha* to ichthyophoniasis**. Diseases of Aquatic Organisms**.

2020 Cantrell DL, **Groner ML**, Ben-Horin T, Grant J, Revie CW. 2020. Modeling parasite dispersal in marine ecosystems. **Trends in Parasitology.**

2019 Hershberger, PK, AH MacKenzie, JL Gregg, A Lindquist, T Sandell, **ML Groner**, D Lowry. 2019. A Geographic Hot Spot of *Ichthyophonus* infection in the Southern Salish Sea, USA. **Diseases of Aquatic Organisms** 136: 157-162.

McEwan GF, **Groner ML**, Cohen AAB, Imsland AKD, Revie CW. 2019. Modelling the use of lumpfish to control sea lice on Atlantic salmon farms: Interactions with mate limitation, temperature, and treatment rules. **Diseases of Aquatic Organisms** 133: 69-82.

Groner ML, Laurin E, Sanchez J, Stormoen M. Revie CW. 2019. Potential for sea lice to evolve freshwater tolerance as a consequence of freshwater treatments in salmon aquaculture: a literature review. **Aquaculture Environment Interactions** 11: 507-519.

2018 Ben-Horin T, Burge CA, Bushek D, **Groner ML**, Proestou DA, Huey LI, Bidegain G, Carnegie RB. 2018. Intensive oyster aquaculture can reduce disease impacts to sympatric wild oysters. **Aquaculture Environment Interactions** 10: 557-567.

Groner ML, Shields JD, Landers, DF Jr., Swenarton J, Hoenig J. 2018. Rising temperature causes phenological mismatch between molting and epizootic shell diseased in the American lobster. **American Naturalist** 192: E163-E177.

Groner ML, Hoenig JM, Pradel R, Choquet R, Vogelbein WK, Gauthier DT, Friedrichs MAM. 2018. Dermal mycobacteriosis and warming sea surface temperatures are associated with elevated mortality of striped bass in Chesapeake Bay. **Ecology and Evolution** 8: 9384-9397.

Groner ML, Burge CA, Cox R, Rivlin N, Turner M, Van Alstyne K, Wyllie-Echeverria, S, Bucci J, Staudigel P, Friedman CS. 2018. Oysters and eelgrass: potential partners in a high pCO_2 ocean**. Ecology** 99: 1802-1814.

2017 Cox R, **Groner ML,** Todd C, Patanasatienkul T, Review CW. 2017. Mate limitation in salmon

lice infesting wild salmon hosts: the influence of parasite gender ratio and aggregation. **Ecosphere** 8:e02040.

Hoenig JM*, **Groner ML*,** Smith MW*, Vogelbein WK, Taylor DM, Landers DF Jr., Gauthier DT, Sadler P, Matsche M, Haines A, Small HJ, Pradel R, Choquet R, Shields JD. 2017. Impact of disease on the survival of three commercially fished species. **Ecological Applications** 27: 2116-2127.

*Co-lead authors

2016 McEwan G, **Groner ML,** Burnett D, Fast M, Revie CW. 2016. Managing aquatic parasites for reduced resistance: Lessons from the land. **Journal of the Royal Society Interface** 13: 20160830.

Burge CA, Closek C, Friedman CS, **Groner ML,** Jenkins C, Shore A, Welsh JE. 2016. The use of filter-feeders to manage disease in a changing world. **Integrative and Comparative Biology** icw048.

Groner ML, McEwan G, Gettinby G, Rees EE, Revie CW. 2016. Quantifying the influence of temperature and salinity on the population dynamics of a marine ectoparasite. **Canadian Journal of Fisheries and Aquatic Sciences** 73: 1-11.

Groner ML*, Rogers LA*, Bateman AW, Connors BM, Frazer LN, Godwin SC, Krkošek M, Lewis MA, Peacock SJ, Rees EE, Revie CW, Schlägel UE. 2016. Lessons from sea lice and salmon epidemiology. **Philosophical Transactions of the Royal Society (London) B** 1689: 20150203.

*Co-lead authors

Groner ML, Burge CA, Kim CJS, Rees EE, Van Alstyne K, Yang S, Wyllie-Echeverria S, Harvell CD. 2016. Plant characteristics associated with widespread variation in eelgrass wasting. **Diseases of Aquatic Organisms** 118: 159-168.

Eisenlord ME*. **Groner ML*,** Yoshioka RM, Elliot J, Maynard J, Fradkin S, Turner M, Pyne K, Rivlin N, van Hooidonk R, Harvell CD. 2016. Demographic shifts and severe population declines from the sea star wasting disease epizootic in the northeast Pacific. **Philosophical Transactions of the Royal Society (London) B** 1689: 20150212.

*Co-lead authors

Groner ML*, Maynard J*, Breyta R, Carnegie RB, Dobson A, Friedman CA, Froelich B, Garren M, Gulland FMD, Heron SF, Noble RT, Revie CW, Shields JD, Vanderstichel R, Weil E, Wyllie-Echeverria S, Harvell CD. 2016. Responding to marine disease emergencies in an era of rapid change. **Philosophical Transactions of the Royal Society (London) B** 1689: 20150364.

*Co-lead authors

Maynard J, van Hooidonk R, Harvell CD, Eakin CM, Liu G, Willis BL, Williams GJ, **Groner ML,** Dobson A, Heron SF, Glenn R, Reardon K, Shields JD. 2016. Improving marine disease surveillance through sea temperature monitoring, outlooks and projections. **Philosophical Transactions of the Royal Society (London) B** 1689: 20150208.

2015 McEwan, G, **Groner ML,** Fast M, Gettinby G, Revie CW. 2015. Modeling the effect of refugia on the evolution of chemical resistance in a marine parasite. **PLoS One** 10: e0139128.

Groner ML, Relyea RA. 2015. Predators reduce *Batrahochytrium dendrobatidis* infection

loads in their prey. **Freshwater Biology** 60: 1699-1704.

2014 Paige-Karjian, A, Norton TM, **Groner ML**, Gottdenker NL. 2014. Factors influencing survivorship of rehabilitating greeen sea turtles (*Chelonia mydas*) with fibropapillomatosis. **Journal of Zoo and Wildlife Medicine** 45: 507-519.

Groner ML, Gettinby G, Stormoen M, Revie CW and Cox R. 2014. Modelling the impact of temperature-induced life-history plasticity and mate limitation on the epidemic potential of a marine ectoparasite. **PLoS One** 9: e88465.

Groner ML, Burge CA, Couch CS, Kim CJS, Siegmund G-F, Singhal S, Smoot S, Jarrell A, Gaydos JK, Harvell CD, Wyllie-Echeverria S. 2014. Host demography influences the prevalence and severity of eelgrass wasting disease. **Diseases of Aquatic Organisms** 108: 165-175.

Groner, ML, Rollins-Smith, LA, Reinert, LK and Relyea RA. 2014. Effects of competitor and predator stress on life history traits and immune function in leopard frogs. **Journal of Experimental Biology** 217: 351-358.

2013 Garcia-Vedrenne AE, **Groner ML**, Page-Karjian A, Siegmund G, Singhal S, Sziklay J, Roberts S. 2013. Development of genomic resources for a thraustochytrid pathogen and investigation of temperature influences on gene expression. **PLoS One** 8: e74196.

Groner ML, Buck JC, Gervasi S, Blaustein AR, Reinert LK, Rollins-Smith LA, Bier ME, Hempel J and Relyea RA. 2013. Lasting effects: Larval exposure to predators alters immune function and disease in post-metamorphic wood frogs. **Ecological Applications** 23: 1443-1454.

Groner ML, Cox R, Gettinby G and Revie CW. 2013. Use of agent-based modelling to predict benefits of cleaner fish in controlling sea lice (*Lepeophtheirus salmonis*) infestations on farmed Atlantic salmon. **Journal of Fish Diseases** 36: 195-208.

2012 and prior **Groner ML** and Relyea RA. 2011. A tale of two pesticides: How common insecticides affect aquatic communities. **Freshwater Biology** 56: 2391-2404.

Groner ML and Relyea RA. 2010. *Batrachochytrium dendrobatidis* is present in northwest Pennsylvania, with high prevalence in *Notophthalmus viridescens*. **Herpetological Review** 41:462-465.

Turner AM, Cholak EJ and **Groner ML**. 2010. Expanding American Lotus and Dissolved Oxygen Concentrations of a Shallow Lake. **American Midland Naturalist** 164: 1-8.

Varekamp JC, Thomas E, and **Groner ML**. 2005. The late Pleistocene - Holocene History of Long Island Sound, **Seventh Biennual LIS Research Conference Proceedings** (2004), p. 27-32.

Other publications (Book chapters, popular press):

Ben-Horin T, Bidegain G, de Leo G, **Groner ML**, Hofmann EE, McCallum H, Powell EN. 2020. Chapter 13. Modeling and forecasting disease dynamics in the sea. In DC Behringer, BR Silliman, KD Lafferty (Eds.), *Marine disease ecology.* Oxford, England: Oxford University Press.

Groner ML, Breyta R, Dobson A, Friedman CA, Froelich B, Garren M, Maynard J, Gulland F, Weil E, Wyllie-Echeverria S, Harvell CD. 2015. Emergency response for marine diseases. **Science** 347: 1210.

Harvell CD, **Groner ML**. 2015. Tipping back the balance toward healthy oceans. **The Hill.** July 9, 2015. http://thehill.com/blogs/pundits-blog/energy-environment/247263-tipping-

back-the-balance-toward-healthy-oceans

TEACHING EXPERIENCE

Summer 2019	**Instructor**: Ecology of infectious marine diseases, *University of Washington Friday Harbor Labs, Friday Harbor, WA*
April 2018 – current	**Leader**: Disease Ecology Journal Club, *Western Fisheries Research Center, Seattle, WA, USA*
January 2012 - Dec 2013	**Symposium Leader:** *Epidemiological modeling group, Atlantic Veterinary College, PE, Canada*
Autumn 2011	**Teaching Assistant:** Vertebrate Morphology Lab: *University of Pittsburgh, Pittsburgh, PA, US*
Summer 2011	**Teaching Assistant:** Ornithology, *University of Pittsburgh, Pittsburgh, PA, US*
June 2010	**High School Science Project leader:** *Butler High School, Butler, PA* Led evolution experiments with *Daphnia pulex* in three high school biology classes
Spring 2008	**Teaching Assistant:** Genetics Recitation, *University of Pittsburgh, Pittsburgh, PA, U*
Autumn 2007	**Teaching Assistant:** Ecology Lab, *University of Pittsburgh, Pittsburgh, PA, US*
Sept 2004-Sept 2005	**Environmental Educator**: *Padilla Bay National Estuarine Research Reserve, Mt Vernon, WA* Taught estuarine science in English and Spanish to grade school children and adults Coordinated seminar series
Autumn 2002	**Undergraduate course assistant**: History of Life on Earth, *Wesleyan University, Middletown, CT*
Spring 2003	**Undergraduate course assistant**: Our Dynamic Earth, *Wesleyan University, Middletown, CT*
Various times	**Guest lecturer:** Disease Ecology (*University of Washington*), Fisheries Ecology (*Alaska Pacific*), Ecology of Infectious Marine Diseases (*University of Washington*), Coastal Field Ecology (*University of Prince Edward Island)*, Population Biology (*Clarion University*), Ecology (*University of Prince Edward Island*, *Clarion University*), Veterinary student rotation in Marine Disease (*University of Prince Edward Island*), Conservation Genetics (*University of Prince Edward Island*)

MENTORSHIP

Graduate students I have mentored:
Morgan Eisenlord, *Ecology and evolutionary biology, Cornell University*
Tori Agnew, *Institute of Marine and Environmental Sciences*
John Trochta, *School of Aquatic and Fisheries Sciences, University of Washington*
Kanaad Pathak, *Computer and Information Sciences, University of Strathclyde*
Danielle Cantrell, *Aquatic epidemiology, University of Prince Edward Island*

Undergraduate students:
Megan Swanger, *University of Washington,* Winter-Spring 2020
Brooke Travis, *Cornell University*, Summer 2019
Eliana Bravo-Mendosa, *Western Washington University,* Summer 2018 - Spring 2019

Allegra Cohen, *Stanford University,* Summer 2016
Jessie Champion, *University of Prince Edward Island,* Summer 2014
Vivian Chen, *University of Prince Edward Island*, Summer 2014
Silei Peng, *University of Prince Edward Island,* Summer 2014
Junshi Dong, *University of Prince Edward Island,* Summer 2014
Shane Gilbert, *University of Prince Edward Island,* Summer 2014
Akanksha Singh, *University of Prince Edward Island,* Summer 2014
Diane Ayala, *Fresno State University, Fresno, CA,* Summer 2013
Aissa Yazzie, *Northwest Indian College*, *Bellingham, WA,*Summer 2013
Holly Williams-Moxley, *Northwest Indian College, Bellingham, WA,* Summer 2013
Lindsay Skovira, *University of Pittsburgh, Pittsburgh, PA,* Autumn 2011- Spring 2012
Caitlin Newcamp, *University of Pittsburgh, Pittsburgh, PA,* Summer 2010
Abhinav Mitthal, *University of Pittsburgh, Pittsburgh, PA,* Summer 2009

SELECTED INTERNATIONAL CONFERENCES

Groner, ML, Conway, CM, Bravo-Mendosa, E, Trochta, J, Hershberger, PK. 2021. Historical reconstruction of *Ichthyophonus* sp. prevalence in a collapsed population of Pacific herring. **Ocean Science Meeting 2022, Virtual.**

Groner, ML, Conway, CM, Bravo-Mendosa, E, Trochta, J, Hershberger, PK. 2021. Epidemiology of ichthyophoniasis in Pacific herring in Sitka Sound and Prince William Sound from 2007-2018. **Alaska Marine Science Symposium, Anchorage, USA.**

Groner, ML, Hoenig, J, Shields, J, Landers, D, Swenarton J. 2017. Rising temperature, phenological mismatch and epizootic shell disease in the American lobster. **Ecology and Evolution of Infectious Diseases. Santa Barbara, USA.**

Groner, ML, Hoenig, J, Shields, J, Landers, D, Swenarton J. 2017. Quantifying the impact of epizootic shell disease on the American lobster using 35 years of mark-recapture data. **International conference and workshop on lobster biology. Portland, ME, USA.**

Groner, ML, Hoenig, J, Shields, J. 2016. Influence of life history plasticity on disease. **Evolutionary Demography Society Annual meeting. Charlottesville, VA, USA.**

Groner, ML, Burge, CA, Yang, S, Van Alstyne, K, Rees, EE, Harvell, CD, Wyllie-Echeverria, S. Identification of demographic and environmental risk factors associated with eelgrass wasting disease in the Salish Sea. **2014. Salish Sea Ecosystem Conference, Seattle, WA, USA.** Invited oral presentation.

Groner, ML, St. Hilaire, S. Effects of climate change of disease in aquaculture. **2014. Climate change and aquaculture symposium, University of Prince Edward Island. Charlottetown, PE, Canada.** Invited oral presentation.

Groner, ML, Burge, CA, Yang, S, Wyllie-Echeverria, S, Harvell, CD. Local and climatic factors affecting the prevalence of eelgrass wasting disease. **2014. Ocean Science Meeting, Honolulu, HI, USA**. Oral Presentation.

Groner, ML, Cox, R, Fast, M, Gettinby, G, Revie, CR. Understanding the evolution of resistance to chemotherapeutants in a marine ectoparasite. **NIMBioS Investigative Workshop: Modelling the evolution of pesticide resistance. 2013. Knoxville, TN, USA.** Oral presentation.

Groner, ML, Cox, R, Revie, CW and Gettinby, G. Modeling resistance to chemotherapeutants in salmon ectoparasites: the influence of treatment regimens and temperature. **2013. European Society of Evolutionary Biology, Lisboa, Portugal.** Poster

presentation

Groner, ML, Cox, R, Gettinby, G, Stormoen, M and Revie, CW. Influence of temperature on the life history and epidemic potential of a marine ectoparasite of salmon. **2013. Ecology and Evolution of Infectious Diseases 2013, State College, PA, USA.** Poster presentation.

Groner, ML, Couch, C, Kim, C, Siegmund, GF, Singhal, S, Smoot, S, Harvell, CD and S Wyllie-Echeverria. Ecology and etiology of wasting disease in *Zostera marina* of the San Juan Islands, WA, USA. **2012. I0th International Seagrass Biology Workshop, Buzios, Brazil.** Oral presentation.

Groner, ML and Revie, CW. Elastograms and Individual-based models: comparing approaches to understanding effects of life history variation on the evolution of resistance to insecticides in sea lice (*Lepeophtheirus salmonis*). **2012. Evolution, Ottawa, ON, Canada.** Poster presentation.

Groner, ML, Cox, R, Gettinby, G and Revie, CW. Understanding the role of wrasse in controlling sea lice using individual-based models. **2012. Sea Lice 2012, Bergen, Norway.** Oral presentation.

Groner, ML and Relyea, RA. Healthy Herds and Peaked Packs: How infection alters inducible defenses against predators. **2011. Ecological Society of America: Earth stewardship: preserving and enhancing earths life-support systems, Austin, TX, USA.** Oral presentation.

Groner, ML, Buck, JC, Blaustein, AR, Rollins-Smith, LA, Reinert, LK and RA Relyea. Scared sick? Effects of sublethal exposure to predators and pesticides on life history traits, immune function and disease susceptibility in wood frogs. **2010. North American Benthological Society: Aquatic Sciences: Global changes from the center to the edge, Santa Fe, NM, USA.** Oral presentation.

Groner, ML, Buck, JC, Blaustein, AR, Rollins-Smith, LA, Reinert, LK and RA Relyea. Scared sick? Effects of sublethal exposure to predators and pesticides on life history traits, and disease susceptibility in wood frogs. **2010. Ecological Society of America: Global Warming: The legacy of our past, the challenge for our future, Pittsburgh, PA, USA.** Oral presentation.

INVITED PRESENTATIONS

Groner, ML. 2022. Managing infectious disease in our changing oceans. College of Ocean and Fisheries Sciences, University of Alaska-Fairbanks, USA.

Groner, ML. 2022. Managing infectious disease in our changing oceans. College of Ocean and Fisheries Sciences, University of Alaska-Fairbanks, USA.

Groner, ML, Fradkin, S. 2021. **Assessment of the Nix Pathogen and Population Impacts in the Pacific Razor Clam *(Siliqua patula).*** Jefferson and Clallam County Marine Resource Advisory Council.

Groner, ML. 2021. Lobsters in a pinch: Impact of warming seawaters on epizootic shell disease. Bigelow Laboratory for Ocean Sciences, USA.

Groner, ML. 2018. Managing disease in fished populations. University of Prince Edward Island, Charlottetown, PE, Canada.

Groner, ML. 2018 Managing marine diseases. PISCO Marine disease summit. Portland, Oregon, USA.

Groner, ML. 2018. In a pinch? Impact of epizootic shell disease on the Southern New England stock of American Lobster. OneNOAA Science Seminar. NOAA, MD, USA.

Groner, ML. 2017. Quantitative approaches to understanding the rising tide of marine

diseases. Smithsonian Environmental Research Center, MD, USA.

Groner ML. 2017. Tracking moving targets for adaptive management of fisheries and coastal habitats: case studies with lobsters, seagrass, and salmon. Gloucester, MA, USA. (for general public)

Groner ML. 2017. Tracking moving targets for adaptive management of fisheries and coastal habitats: case studies with lobsters, seagrass, and salmon. University of Massachusetts Amherst, MA, USA. (for general public)

Groner, ML, Hoenig, J. Shields, J**.** 2016. Managing marine diseases despite large knowledge gaps: A case study of epizootic shell disease in the American Lobster. SUNY Stony brook, Stony brook, NY, USA. (for scientific audience)

Groner, ML, Hoenig, J. Shields**.** 2016. Managing marine diseases despite large knowledge gaps: A case study of epizootic shell disease in the American Lobster. New York Marine Resource Advisory Council. Stony brook, NY, USA. (for general public)

Groner, ML. 2016. Lobsters in a pinch: epizootic shell disease in the American lobster. Virginia Institute of Marine Science, VA, USA

Groner, ML, Harvell CD, Hoenig, JM, Landers DF, Maynard J, Shields JD**.** 2016. Managing marine diseases despite large knowledge gaps: A case study of epizootic shell disease in the American Lobster. Ecological Society of America: Novel Ecosystems in the Anthropocene, Fort Lauderdale, FL, USA. Invited oral presentation.

Groner, ML. 2016. Changing disease ecology of the Salish Sea. Western Washington University, WA, USA.

Groner, ML. 2015. Using data-driven models to explore sea louse infestations on wild and farmed salmon. Old Dominion University, VA, USA

Groner, ML. 2015. Impacts of global change on marine diseases: case studies with eelgrass wasting disease and salmon lice. Virginia Institute of Marine Science, VA, USA

Groner, ML. 2015. Understanding marine diseases in a changing climate. Institute for Marine and Environmental Technology, MD, USA

Groner, ML, Revie, CW. 2015. Using data-driven models to explore sea louse infestations on wild and farmed salmon. University of St. Andrews, Scotland, UK

Groner ML. 2014. Are marine diseases increasing? Case studies using eelgrass wasting disease and sea louse parasites of salmon. University of Prince Edward Island, PE, Canada

Groner ML. 2011. Effects of multiple stressors on the dynamics of a pathogen associated with amphibian population declines. University of Prince Edward Island, PE, Canada

SERVICE

January 2022 – current	**Editorial Board Member** Philosophical Transactions of the Royal Society
January 2021 – current	**Science Panel Advisory Committee** Seattle Audubon
Spring 2020- October 2021	**Group Coordinator** USGS Diversity Action Committee
May 2015	**Workshop organizer** Using drones for environmental research, University of Prince Edward Island, PE, Canada

August 2007-August 2010	**Symposium Coordinator** Graduate student invited speaker symposiums Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA, USA
January 2008-May 2008	**Prospective Graduate Student Visit Coordinator** Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA, USA
August 2007-Spring 2008	**Symposium Coordinator** Ecology and evolution seminar series Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA, USA
January-May 2007	**Reading Group Founder and Coordinator** Applications of molecular methods to ecology and evolution Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA, USA
May 2004, 2005	**Student Mentor/Event Judge** 'Amazing Aquifers': Western Washington regional science fair for middle school students, Mt. Vernon, WA, USA
Autumn 2002-Spring 2004	**Group Leader and educator** Action Science Kids: Supporting 5th grade science education for girls Wesleyan University, Middletown, CT, USA

WORKING GROUPS

Autumn 2013	Modeling the evolution of pesticide resistance National Institute for Mathematical and Biological Synthesis Knoxville, TN
August 2012- 2017	Research Coordination Network on the Ecology of Infectious Marine Diseases Funded by the National Science Foundation

PEER REVIEW

Aquaculture Environment Interactions, Aquatic Pharmacology, Biology Letters, Canadian Journal of Aquatic Fisheries Sciences, Diseases of Aquatic Organisms, Ecological Modeling, Ecological Applications, Ecotoxicology, Environmental Science and Pollution Research, Environmental Science and Technology, Epidemics, Estuaries and Coasts, Evolutionary Ecology, Fish and Fisheries, Fisheries, Functional Ecology, Global Change Biology, Herpetological Review, Herpetologica, Journal of Applied Ecology, Journal of Aquatic Animal Health, Journal of Evolutionary Biology, Journal of Experimental Marine Biology, Journal of Fish Diseases, Marine Ecology Progress Series, Philosophical Transactions of the Royal Society (London) B, PLoS one, Proceedings of the Royal Society B, Reviews in Aquaculture, Royal Society Interface, Scientific Reports

PROFESSIONAL SOCIETY MEMBERSHIPS

American Society of Naturalists
American Fisheries Society
Graduate Women in Science
Ecological Society of America