

Matthew L.H. Cheng

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EDUCATION

University of Alaska Fairbanks, College of Fisheries and Ocean Sciences

PhD., Fisheries Science (GPA: 4.0/4.0)

2021 - Present

Juneau, AK

University of New Hampshire, College of Life Sciences and Agriculture

BS., Marine Estuarine and Freshwater Biology (GPA: 3.75/4.0)

2017 - 2021

Durham, NH

PUBLICATIONS

Published:

1. **Cheng, M. L. H.**, Rodgveller, C.J., Langan, J.A., Cunningham C.J. (2023). Development of Fishery-dependent Abundance Indices for Alaska Sablefish (*Anoplopoma fimbria*)" (*Accepted*) **ICES Journal of Marine Science**
2. **Cheng, M. L. H.**, Hinch, S. G., Juanes, F., Healy, S. J., Lotto, A. G., Mapley, S. J., Furey, N. B. (2022). Acoustic Imaging Observes Predator-Prey Interactions between Bull Trout and Migrating Sockeye Salmon Smolts. **North American Journal of Fisheries Management**, nafm.10833. <https://doi.org/10.1002/nafm.10833>
3. Stasse, A., **Cheng, M. L. H.**, Meyer, K., Bumbera, N., Van Volkom, K., Laferriere, A. M., Dijkstra, J. A., Brown, B. (2022). Temporal Dynamics of Eastern Oyster Larval Abundance in Great Bay Estuary, New Hampshire. **Journal of Shellfish Research**, 40(3). <https://doi.org/10.2983/035.040.0303>
4. **Cheng, M. L. H.**, Lippmann, T. C., Dijkstra, J. A., Bradt, G., Cook, S., Choi, J.-G., Brown, B. L. (2021). A baseline for microplastic particle occurrence and distribution in Great Bay Estuary. **Marine Pollution Bulletin**, 170, 112653. <https://doi.org/10.1016/j.marpolbul.2021.112653>

In review:

1. Fitzgerald K.A., Bellmore R.J., Fellman J.B., **Cheng M.L.H.**, Delbecq C.E., Falke J.A. "Stream hydrology and a pulse subsidy shape patterns of fish foraging" *In review - Ecology*

In preparation (Available upon request):

1. **Cheng, M. L. H.**, Vajda, Z., Brammer, D., Harris, L.G., Monitoring of Temperature in the Benthic Zone of the Gulf of Maine and Assessment of the Effects of Temperature on Disease Incidence of *Strongylocentrotus droebachiensis* and *Henricia sanguinolenta* (*Plan to submit to Northeastern Naturalist*)
2. **Cheng, M. L. H.**, Goethel, D.R., Cunningham C.J., Incorporating dynamic spatiotemporal fleet structure in stock assessment models: Accounting for a rapidly developing pot fishery for Alaska sablefish (*Anoplopoma fimbria*) " (*Plan to submit to Fisheries Research*)
3. **Cheng, M. L. H.**, Thorson, J.T., Ianelli, J.N., Cunningham C.J., Estimating age, year, and cohort effects in stock assessments: demonstration of a computationally efficient and reproducible framework" (*Plan to submit to Fisheries Research*)

Technical reports:

1. Goethel, D.R., Rodgveller, C.J., Echave, K.B., Shotwell, S.K., Siwicke, K.A., Malecha, P.W., **Cheng, M.L.H.**, Williams, M., Omori, K., and Lunsford, C.R. 2022. Assessment of the Sablefish Stock in Alaska. 182.

EXPERIENCE

Research Assistant

Supervisor: *Bonnie L. Brown*

University of New Hampshire

May 2019 - May 2021

- Identified, optimized, and designed physical and chemical methods for separating microplastics from sediment cores.
- Quantified microplastics using confocal microscopy, and analyzed data to prepare reports.
- Collected zooplankton via larval tows, deployed and retrieved spat collectors to quantify settling rates of oyster spat
- Quantified larval abundance via microscopy, and analyzed data to prepare reports.

Research Coordinator

Supervisor: *Elizabeth Craig*

University of New Hampshire

Jan 2021 - May 2021

- Conducted literature reviews, optimized, and designed methods for separating microplastics from regurgitated pellets cores.
- Coordinated project logistics and mentored two undergraduates.
- Provided reading material, introduced R software for statistical analyses, assisted with coding.

Research Assistant

Supervisor: *Nathan B. Furey*

University of New Hampshire

May 2020 - May 2021

- Analyzed DIDSON (acoustic sonar) videos from Chilko Lake, British Columbia to investigate predatory-prey dynamics between Bull Trout and migrating Sockeye Salmon smolts

ADDITIONAL EXPERIENCE

Field Technician

Supervisor: *Nathan B. Furey*

University of New Hampshire

Summer 2021

- Coordinated field logistics, conducted habitat mapping, cataloged invasive knotweed, collected stream macroinvertebrates in Northern New Hampshire
- Recaptured PIT tagged knotweed bundles to understand knotweed dispersal
- Conducted electrofishing surveys to capture Brook Trout and other stream fishes

Wildlife Intern

Supervisor: *Alexej Sirén*

USGS Northeast Climate Adaptation Science Center

Aug 2020 - May 2021

- Collated wildlife and snow data into a central database
- Responsible for data management and proofing of database (Microsoft Access)

NSF REU Intern

Supervisor: *Joanna York*

University of Delaware

Summer 2020

- In-person projects cancelled due to COVID-19, but relevant distance learning in topics such as scientific communication, current research at UD, science ethics, technical writing, and data visualization.

Intern

Supervisor: *Andrea Tomlinson*

New Hampshire Community Seafood

Jul 2019 - Dec 2020

- Engaged fishers to coordinate and collaborate with academics on research projects
- Directed public outreach efforts on sourcing sustainable and local seafood, and fishery related topics
- Solicited potential customers to join our community supported fishery program

OUTREACH & TEACHING

CFOS NSF GRFP Workshop

University of Alaska Fairbanks

Workshop Co-lead

Fall 2022

- Co-led a workshop covering application components for the NSF GRFP, pairing up applicants with mentors to develop a fellowship application.

BIOL 492; Biology Seminar

University of Alaska Southeast

Guest Lecturer

Spring 2022

- Presented a lecture on predator-prey interactions between sockeye smolts and bull trout and catch-per-unit-effort standardization methods.

NSF Tamamta Graduate Fellowship

University of Alaska Fairbanks

Teaching assistant

Fall 2021

- Provided personalized tutoring for graduate students(s) taking Calculus I.

BIOLG 541; General Ecology Teaching Assistant

University of New Hampshire

Supervisor: James Haney

Spring 2020

- Assisted with lab and field instruction, helping refine and engage students in ecological concepts

PRESENTATIONS

*Best student presentation/poster award

Cheng, M. L. H., Goethel, D.R., Cunningham C.J., Incorporating dynamic spatiotemporal fleet structure in stock assessment models: Accounting for a rapidly developing pot fishery for Alaska sablefish (*Anoplopoma fimbria*)" (2023) Western Groundfish Conference

Cheng, M. L. H., Goethel, D.R., Cunningham C.J., Incorporating dynamic spatiotemporal fleet structure in stock assessment models: Accounting for a rapidly developing pot fishery for Alaska sablefish (*Anoplopoma fimbria*)" (2023) 49th Annual American Fisheries Society Alaska Chapter Meeting, Oral Presentation

Cheng, M. L. H., Thorson, J.T., Ianelli, J.N., Cunningham C.J., Unlocking the triad of age, year, and cohort effects in stock assessment: a proof-of-concept study" 26th Annual American Fisheries Society Student Symposium (UAF CFOS), Oral Presentation

Cheng MLH, Rodgveller CJ, Langan JA, Goethel, DR, Cunningham CJ, Standardizing sablefish catch-per-unit-effort (CPUE) across gear types and data sources. (2022) September Groundfish Plan Team Meeting

Cheng MLH, Rodgveller CJ, Cunningham CJ, Development of Fishery-dependent Abundance Indices for Alaska Sablefish (*Anoplopoma fimbria*). (2022) NOAA CPUE Discussion Group

Cheng MLH, Rodgveller CJ, Langan JA, Cunningham CJ, Development of Fishery-dependent Abundance Indices for Alaska Sablefish (*Anoplopoma fimbria*). (2022) 152nd Annual American Fisheries Society Meeting, Oral Presentation

***Cheng MLH**, Rodgveller CJ, Cunningham CJ, Development of Fishery-dependent Abundance Indices for Alaska Sablefish (*Anoplopoma fimbria*). (2022) 25th Annual American Fisheries Society Student Symposium (UAF CFOS), Oral Presentation

Cheng MLH, Rodgveller CJ, Cunningham CJ, Development of Fishery-dependent Abundance Indices for Alaska Sablefish (*Anoplopoma fimbria*). (2022) 48th Annual American Fisheries Society Alaska Chapter Meeting, Oral Presentation

Stasse. A, Meyer. K, **Cheng MLH**, Brown BL. Evaluation of Oyster Larval Abundance in the Great Bay Estuary. (2022) Aquaculture, Poster Presentation

Cheng MLH, Lippmann TC, Dijkstra JA, Bradt G, Cook S, Choi JG, Brown BL. A deposition baseline for microplastic particle distribution in an estuary (2021) College of Life Sciences Agriculture Undergraduate Research Conference, Oral Presentation

Cheng MLH, Mapley SJ, Lotto AG, Hinch SG, Juanes F, Furey NB. Assessing predator-prey interactions between migrating juvenile sockeye salmon smolts and bull trout in British Columbia (2021) College of Life Sciences Agriculture Undergraduate Research Conference, Poster Presentation

Stasse. A, Meyer. K, **Cheng MLH**, Brown BL. Evaluation of Oyster Larval Abundance in the Great Bay Estuary. (2021) New Hampshire Sea Grant Symposium, Poster Presentation

*McDowell L, Wardinski C, **Cheng MLH**, Caldwell AE, Craig, E. Evaluating regurgitated pellets as indicators of microplastic ingestion by NH-breeding seabirds. (2021) College of Life Sciences Agriculture Undergraduate Research Conference, Poster Presentation

Brammer D, **Cheng MLH**, Derrick. M, Dunn. T, Orzech. E Vajda. Z. Monitoring of Temperature in the Benthic Zone of the Gulf of Maine and Assessment of the Effects of Temperature on Disease Incidence of *Strongylocentrotus droebachiensis* and *Henricia sanguinolenta*. (2020) College of Life Sciences Agriculture Undergraduate Research Conference, Poster Presentation

SERVICE

University of Alaska Fairbanks Justice, Equity, Diversity, and Inclusion Committee (2021 - 2022)

University of Alaska Fairbanks Student Well-being Committee (2021 - 2022)

Alaska American Fisheries Society Student Symposium Organizer (UAF CFOS; 2021 - 2023)

Executive Member of Lambda Chi Alpha Fraternity

AWARDS, GRANTS, AND HONORS

2023 American Fisheries Society Alaska Chapter Travel Award

2022 American Fisheries Society Marine Fisheries Section Student Travel Award (\$500)

2022 Alaska EPSCoR NSF Travel Award (\$2500)

2022 National Science Foundation Graduate Research Fellowship Program (Award offered)

2022 Alaska American Fisheries Society Student Symposium Best Long Talk

2021 National Science Foundation Graduate Research Fellowship Program (Honorable Mention)

2019 Rutman Scholars Initiative (\$1500)

2019 John and Katharyn Williams Scholarship (\$3500)

COURSEWORK

University of Alaska Fairbanks: Statistical Computing in R, Regression and Analysis of Variance, Estimation of Fish Abundance, Bayesian Decision Theory for Resource Management, Ecosystem-based Fisheries Management, Time Series, Quantitative Population Dynamics

University of New Hampshire: Quantitative Ecology, Experimental Design and Analysis, Introduction to the R Software, Physiology of Fishes, Sharks and Bony Fishes (Ichthyology), Fisheries Biology, Sustainable Marine Fisheries, Biological Oceanography, Evolution

SKILLS

Programming languages: R, LATEX, ADMB, TMB

Statistical methods: regression methods, maximum likelihood estimation, Bayesian statistics, non-linear models, age-structured models