Matthew LH. Cheng

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EDUCATION

University of Alaska Fairbanks, College of Fisheries and Ocean Sciences 2021 - Present
PhD., Fisheries Science (GPA: 4.0/4.0) Juneau, AK

University of New Hampshire, College of Life Sciences and Agriculture 2017 - 2021
BS., Marine Estuarine and Freshwater Biology (GPA: 3.75/4.0) Durham, NH

PUBLICATIONS

Published:

1. **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" **Fisheries Research**, 266. https://doi.org/10.1016/j.fishres.2023.106755

2. **Cheng, M. L. H**., Rodgveller, C. J., Langan, J. A., Cunningham, C. J. (2023). Standardizing fishery-dependent catch-rate information across gears and data collection programs for Alaska sablefish (Anoplopoma fimbria). **ICES Journal of Marine Science**, fsad037. https://doi.org/10.1093/icesjms/fsad037

3. **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 PredatorPrey Interactions between Bull Trout and Migrating Sockeye Salmon Smolts. **North American Journal of Fisheries Management**, nafm.10833. https://doi.org/10.1002/nafm.10833

4. 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

5. **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

Technical reports:

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

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 - Journal of Animal Ecology*

2. Fitzgerald K.A., Bellmore R.J., Fellman J.B., **Cheng, M. L. H**., Boyles-Muehleck N., Delbecq C.E., Falke J.A., Pink Salmon spawning abundance fluctuations impart biennial growth disparities to juvenile Coho Salmon in a southeast Alaska watershed" *In review - Freshwater Biology*

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*

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**., Goethel, D.R., Hulson, PJ.F., Cunningham C.J., Confronting shifts in fishery fleet structure: Practical recommendations for integrated stock assessments" *Plan to submit to Canadian Journal of Fishery and Aquatic Sciences*

EXPERIENCE

Field Technician — University of New Hampshire
Supervisor: Nathan B. Furey — Jun 2021 - Aug 2021

- Coordinated field logistics, conducted habitat mapping, and collected stream macro-invertebrates
- Mark-recapture experiment for knotweed to understand dispersal
- Conducted electrofishing surveys to capture Brook Trout and other stream fishes

Research Assistant — University of New Hampshire
Supervisor: Bonnie L. Brown — May 2019 - May 2021

- Designed physical and chemical methods for separating microplastics from sediment cores
- Quantified microplastics using confocal microscopy
- Collected zooplankton via larval tows and estimated oyster larval abundance via microscopy
- Investigated environmental factors influencing larval abundance of oysters

Research Coordinator — University of New Hampshire
Supervisor: Elizabeth Craig — Jan 2021 - May 2021

- Designed methods for separating microplastics from regurgitated bird pellets
- Coordinated project logistics and mentored two undergraduates
- Provided reading material, introduced R software for statistical analyses, and assisted with coding

Research Assistant — University of New Hampshire
Supervisor: Nathan B. Furey — May 2020 - May 2021

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

Wildlife Intern — USGS Northeast Climate Adaptation Science Center
Supervisor: Alexej Sirén — 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 — University of Delaware
Supervisor: Joanna York — 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 — New Hampshire Community Seafood
Supervisor: Andrea Tomlinson — Jul 2019 - Dec 2020

- Engaged harvesters 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 a community supported fishery program

OUTREACH & TEACHING

UAF NSF GRFP Workshop — University of Alaska Fairbanks
Workshop Co-lead — Fall 2022, Fall 2023

- Led a workshop covering application components for the NSF GRFP, and paired applicants with mentors to develop a fellowship application (2 awards, 1 Honorable Mention).

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, and engaged students in basic ecological concepts

CONFERENCE PRESENTATIONS

***Best student (or runner-up) presentation/poster award**

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

***Cheng, M. L. H**, Goethel, D.R., Cunningham C.J., Incorporating dynamic 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*, Fairbanks AK

*Muehleck, N., Fitzgerald K.A., **Cheng, M. L. H**., Bellmore, J.R., Fellman, J.B., Falke, J.A., "Juvenile Coho Salmon growth patterns track biennial Pink Salmon spawning abundance fluctuations in a southeast Alaska watershed" (2023) 49th Annual American Fisheries Society Alaska Chapter Meeting, *Poster Presentation*, Fairbanks AK

***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" (2023) 26th Annual American Fisheries Society Student Symposium (UAF CFOS), *Oral Presentation*, Juneau AK

Cheng M. L. H., 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*, Spokane WA

***Cheng M.LH**., 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*, Juneau AK

Cheng M.LH., 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*, Virtual

Stasse. A, Meyer. K, **Cheng M. L. H**., Brown BL. Evaluation of Oyster Larval Abundance in the Great Bay Estuary (2022) Aquaculture, *Poster Presentation*, San Diego CA

Cheng M. L. H., 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*, Virtual

Cheng M. L. H., 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*, Virtual

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

*McDowell L, Wardinski C, **Cheng M. L. H**., 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*, Virtual

Brammer D, **Cheng M. L. H**., 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*, Virtual

TECHNICAL PRESENTATIONS

Cheng M. L. H., 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, *Oral Presentation*, Seattle WA

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

SERVICE

***Journal Referee*:** Journal of Fish and Wildlife Management (n = 1)
Western Groundfish Conference, Juneau AK, Volunteer (2023)
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 2023 Western Groundfish Conference, Best Presentation ($300)
2023 Alaska EPSCoR NSF Travel Award ($1000)
2023 49th Annual American Fisheries Society Alaska Chapter Meeting, Best PhD Oral Presentation ($450)
2023 Alaska American Fisheries Society Student Symposium, Runner Up for Best Short Talk
2023 Alaska Chapter American Fisheries Society Travel Award ($1300)
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) ($147,000)
2022 Alaska American Fisheries Society Student Symposium Best Long Talk ($100)
2021 National Science Foundation Graduate Research Fellowship Program (Honorable Mention)
2019 Rutman Scholars Initiative ($1500)
2019 John and Katharyn Williams Scholarship ($3500)

RELEVANT 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, Modern Applied Statistics for Fisheries *(Informal audit)*

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, Sustainble Marine Fisheries, Biological Oceanography, Evolution

SKILLS

At-Sea Experience:

* Volunteer scientist, NOAA Sablefish Longline Survey, Dutch Harbor to Kodiak, AK (6/12/23 - 7/1/23)
* Volunteer scientist, NOAA Sablefish Longline Survey, Yakutat to Seward, AK (7/17/22 - 8/3/22)

Programming languages: R, LATEX, ADMB, TMB

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