



Ming SUN

[Google Scholar](#)

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Research scientist at Stony Brook University, School of Marine and Atmospheric Sciences



Personal details

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Research interest

My research focuses broadly on quantitative fisheries and fisheries management. I perform fisheries modeling based on population dynamics and Management Strategy Evaluation. I evaluate the stock assessment and management of a variety of fisheries ranging from data-limited fisheries to multispecies, multi-gear mixed fisheries. I work with US fisheries and international fisheries. I am currently working on how the offshore wind development in the US Mid-Atlantic will affect the fisheries survey and stock assessment performance.



Work experience

Research Scientist June. 2023 – present
Stony Brook University, School of Marine and Atmospheric Sciences

Assistant Editor-in-Chief June. 2023 – present
Journal of Marine Environmental Engineering

Postdoc Associate
Stony Brook University, School of Marine and Atmospheric Sciences Sep. 2021 – May 2023
University of Maine, School of Marine Sciences Nov. 2020 – Aug. 2021



Education

Doctor of Philosophy in Fisheries Science Aug. 2017 – Oct. 2020
Joint Program of Ocean University of China, China, and University of Maine, USA

- Area: Management strategy evaluation, Data-limited methods, Stock assessment, Harvest control rules
- Thesis: Management strategy evaluation (MSE) for data-limited fisheries: framework, application, and implication
- Supervisors: Dr. Yong Chen, Dr. Yiping Ren

Master of Science in Marine Ecosystem and Fishery Science Oct. 2014 - Oct. 2016
University of Hamburg, Institute of Hydrobiology and Fishery Science

- Thesis: Assessing the effects of trophic interactions on the management strategy evaluation for North Sea cod
- Supervisors: Dr. Axel Temming, Dr. Alex Kempf, Dr. Marc Taylor, Dr. Jens Floeter

Bachelor of Agriculture in Marine Fisheries Science and Technology Sep. 2010 - July 2014
College of Fisheries, Ocean University of China, China



Research experience

Co-PI: Evaluating offshore wind farm impacts on Mid-Atlantic fisheries stock assessment **\$362,101**
New York State Energy Research and Development Authority Sep. 2023 – Present

Co-PI: Reviewing and identifying assessment and management approaches to inform the Bohai Sea TAC experiment **\$84,865**

Environmental Defense Fund

Oct. 2022 – Aug. 2023

Co- PI: Developing mixed fisheries stock assessment and management \$174,000

Natural Resources Defense Council

Nov. 2020 – Dec. 2022

- Identified key challenges in mixed fisheries management and develop best practice guidelines for assessing and managing mixed fisheries in China
- Synthesized and evaluated global stock assessment and management approaches
- Develop multispecies models and performed mixed-fisheries management strategies evaluations (MSE)
- Circulated the research findings and management recommendations with key decision-makers and stakeholders

Investigator: Hudson River Biological Monitoring Program

Hudson River Foundation, New York State Department of Environmental Conservation

Dec. 2022 – Present

- Modeled and quantified possible effects of different sampling variables on the estimated fish abundance, fish life history, and community structure
- Developed modeling approaches to calibrate the ichthyoplankton survey data in space and time due to changes in sampling protocol
- Led Fall Juvenile Survey data analyses and report drafting to NYSDEC

Consultant: Fujian Zhangzhou Red Swimming Crab FIP

Ocean Outcomes and Tao Ran

Nov. 2022 – Apr. 2023

- Conduct spawning potential ratio (SPR) or other appropriate analysis to evaluate status of the red swimming crab (RSC) stock off in the Southern Taiwan Strait
- Developed assessment report on the stock status

Co- PI: Canada lobster stock assessment \$46,669

Fisheries and Oceans Canada

Dec. 2021 – Mar. 2022

- Developed a seasonal, sex-specific length-structured stock assessment model for the lobster stock assessment in LFA 34 and the Bay of Fundy (LFA35-38)
- Collaborated with DFO scientists and SBU colleagues on data compilation and model modification
- Conducted model program running, assessment tuning, assessment diagnostics, and output analysis
- Drafted assessment reports and presenting results to DFO scientists

Investigator: International Crustacean Fisheries Task Force

Lenfest Ocean Program

Nov. 2020 – Dec. 2022

- Collaborated with international experts on crustacean fisheries stock assessment and management
- Developed and published reviews on global crustacean stock assessment
- Analyzed and published performance and applicability of adaptive fisheries management framework to focal crustacean fisheries

Consultant: China's TAC pilot fisheries program

Natural Resources Defense Council

Sep. 2020 - Dec. 2020

- Conducted data analysis for the post-project stakeholder survey
- Published research paper to disseminate lessons learned from the project

Consultant: Oman Fishery Stock Assessment Advisory Service

Feb. 2019

- Established the data analysis protocol based on the data availability of Oman fishery
- Formulated management recommendations and drafted advisory reports

Coordinator: Shandong Provincial Fishery Monitoring Program

Shandong Provincial Institute of Marine Resources and Environmental Research

Nov. 2016 - Aug. 2018

- Coordinated the project operation with the provincial fisheries department and over 60 front-line fisheries managers and vessel owners

- Managed a task force of 10 graduate students participating in the program
- Designed paper fishing logs and supervised the training, launching, and beta test of electronic fishing logs
- Developed annual and monthly reports and data analysis protocol

Researcher, IHF, University of Hamburg

Oct. 2015 - May 2016

- Conducted and publishing the project “A learning experiment for integrated assessment of the sensitivity of North Sea living marine resources to climate change”
- Established the hierarchical risk analysis framework and conducted extensive literature reviews and the questionnaire-based survey among marine and fisheries scientists
- Identified the similarities and sensitivities for 26 species to 6 climate change impacts
- Validated the reliability of the framework with the background survey of inquired experts

Researcher, IHF, University of Hamburg

Sep. 2015 - Jan.2016

- Developed a research report titled “Diel spatial distribution of herring (*Clupea harengus*) and sprat (*Sprattus sprattus*) in the Bornholm Basin”
- Evaluated the vertical fish distribution based on the 24-hour consecutive acoustics echo images

Scientist, Alkor 460 Research Vessel, GEOMAR

July 2015 - Aug. 2015

- Took part in the Alkor 460 research cruise in the Baltic Sea
- Sampled the phytoplankton with Bongo Net and Multiple Plankton Net in the Baltic Sea
- Conducted trawling and assorted the catches in the Baltic Sea
- Measured the temperature, oxygen concentration and salinity with CTD in the Baltic Sea
- Observed the echo views from fisheries acoustics to locate the fish stocks and grasped the underwater topographic feature in the Baltic Sea



Publication

Peer-reviewed publications

1. **Sun, M.**, Chang, H., Rokosz, K., and Chen, Y., 2023. Evaluating effects of changing sampling protocol for a long-term Ichthyoplankton. *Frontiers in Marine Science*. DOI: 10.3389/fmars.2023.1237549
2. Li, Y., **Sun, M.**, Kleisner, K.M., Mills, K.E. and Chen, Y., 2023. A global synthesis of climate vulnerability assessments on marine fisheries: methods, scales and knowledge co-production. *Global Change Biology*.
3. **Sun, M.**, Li, Y., Suatoni, L., Kempf, A., Taylor, M., Fulton, E., Szuwalski, C., Spedicato, M.T. and Chen, Y. (2023). Status and Management of Mixed Fisheries: A Global Synthesis. *Reviews in Fisheries Science & Aquaculture*, pp.1-25. doi: 10.1080/23308249.2023.2213769
4. **Sun, M.**, Setiawan, A., Susila, P.B., Ernawati, T., Fang, L., Fujita, R., Guan, L., Harlisa, H., Ingles, J., Mesa, S., Kleisner, K., & Chen, Y. (2023). Evaluating adaptive management frameworks for data-limited crustacean fisheries. *Journal of Environmental Management*, 341, p.118074. doi: 10.1016/j.jenvman.2023.118074
5. Ren, Q., **Sun, M.**, Xie, B., Zhang, L., Chen, Y., and Liu, M, 2023. Evaluating performance of data-limited management procedures in an ecosystem perspective: A case study for *Larimichthys crocea* (*Sciaenidae*) in the Min River Estuary, China. *Ecological Indicators*, 146, 109772. DOI: 10.1016/j.ecolind.2022.109772.
6. **Sun, M.**, Li, Y., & Chen, Y. (2022). Unveiling unselective fishing in China: A nationwide meta-analysis of multi-species fisheries. *Fish and Fisheries*, 00, 1– 17. doi: 10.1111/faf.12715
7. **Sun, M.**, Li, Y., Ren, Y., & Chen, Y., 2022. Redefine sustainable fisheries targets under the impact of the Southern Yellow Sea green tide: mitigating the recurring surge in natural mortality. *Frontiers in Marine Science*, 9:813024. doi: 10.3389/fmars.2022.813024
8. Chen, N., **Sun, M.**, Zhang, C., Ren, Y. and Chen, Y., 2022. Non-stationary Natural Mortality Influencing the Stock Assessment of Atlantic Cod (*Gadus morhua*) in a Changing Gulf of Maine. *Frontiers in Marine Science*, 9:845787. doi: 10.3389/fmars.2022.845787

9. Hodgdon, C. T., Khalsa, N. S., Li, Y., **Sun, M.**, Boenish, R., & Chen, Y., 2022. Global crustacean stock assessment modelling: Reconciling available data and complexity. *Fish and Fisheries*, 23(3), 697-707.
10. **Sun, M.**, Li, Y., Ren, Y., & Chen, Y., 2021. Developing an intermediate-complexity projection model for China's fisheries: A case study of small yellow croaker (*Larimichthys polyactis*) in the Haizhou Bay, China. *Acta Oceanologica Sinica*, 40(8), 108-118.
11. Li, Y., **Sun, M.**, Ren, Y., & Chen, Y., 2021. Fisher behavior matters: Harnessing spatio-temporal fishing effort information to support China's fisheries management. *Ocean & Coastal Management*, 210, 105665.
12. Zhu, W., Lu, Z., Dai, Q., Lu, K., Li, Z., Zhou, Y., Zhang, Y., **Sun, M.***, Li, Y. and Li, W., 2021. Transition to timely and accurate reporting: An evaluation of monitoring programs for China's first Total Allowable Catch (TAC) pilot fishery. *Marine Policy*, 129, 104503.
13. Wang, K., Zhang, C., **Sun, M.**, Xu, B., Ji, Y., Xue, Y., & Ren, Y., 2021. Fishing pressure and lifespan affect the estimation of growth parameters using ELEFAN. *Fisheries Research*, 238, 105903.
14. **Sun, M.**, Li, Y., Ren, Y. and Chen, Y., 2020. Using fisheries-independent survey data to reinforce China's data-limited fisheries management: Management strategy evaluation of survey-based management procedures. *Fisheries Management and Ecology*, doi: 10.1111/fme.12454.
15. **Sun, M.**, Li, Y., Ren, Y. and Chen, Y., 2020. Rebuilding depleted fisheries towards BMSY under uncertainty: harvest control rules outperform combined management measures. *ICES Journal of Marine Sciences*, "A tribute to the life and accomplishments of Sidney J. Holt", doi: 10.1093/icesjms/fsaa078.
16. **Sun, M.**, Li, Y., Zhang, C., Xu, B., Ren, Y. and Chen, Y., 2020. Management of Data-Limited Fisheries: Identifying Informative Data to Achieve Sustainable Fisheries. *North American Journal of Fisheries Management*.
17. Li, Y., **Sun, M.**, Ren, Y. and Chen, Y., 2020. Impact of pre-closure fishing effort on marine protected area performance in social-ecological dimensions: Implications for developing marine conservation plans. *Science of The Total Environment*, 729. DOI: 10.1016/j.scitotenv.2020.138936.
18. Li, Y., **Sun, M.**, Evans, K.S., Ren, Y. and Chen, Y., 2020. Rethinking marine conservation strategies to minimize socio-economic costs in a dynamic perspective. *Biological Conservation*, 244, p.108512.
19. Li, Y., **Sun, M.**, Zhang, C., Zhang, Y., Xu, B., Ren, Y. and Chen, Y., 2020. Evaluating fisheries conservation strategies in the socio-ecological system: A grid-based dynamic model to link spatial conservation prioritization tools with tactical fisheries management. *PloS one*, 15(4), p.e0230946.
20. Xu, L., Hodgdon, C. T., **Sun, M.**, Mazur, M. D., Chen, X., & Chen, Y., 2020. Comparing a suite of surplus-production-based stock status identification approaches and management procedures. *Canadian Journal of Fisheries and Aquatic Sciences*, 78(5), 599-611.
21. Li, Y., **Sun, M.**, Ren, Y. and Chen, Y., 2020. The implication of systematic conservation planning on China's marine protected area planning system. *Ocean Development and Management*, (2), 7. (in Chinese: 李韵洲, **孙铭**, 任一平, 陈勇, 2020. 系统保护规划方法对我国构建海洋保护地选划布局体系的启示. 海洋开发与管理, (2), 7.)
22. Liu, Y., Zhang, C., Zan, X., **Sun, M.**, Xu, B., Xue, Y., Ren, Y., 2020. Distribution of Relative Abundance of Slender Lizardfish and Its Influencing Factors in Southern Coastal Waters of Shandong During Autumn. *Periodical of Ocean University of China*, 50(4), 45-53. (in Chinese: 刘逸文, 张崇良, 咎肖肖, **孙铭**, 徐宾铎, 薛莹, 任一平, 2020. 山东南部近海秋季长蛇鲻相对资源量的分布及其影响因素. 中国海洋大学学报: 自然科学版, 50(4), 45-53.)
23. **Sun, M.**, Li, Y., Ren, Y. and Chen, Y., 2019. Developing and evaluating a management strategy evaluation framework for the Gulf of Maine cod (*Gadus morhua*). *Ecological Modelling*, 404, pp.27-35.
24. Li, Y., Zhang, C., Xue, Y., Xu, B., **Sun, M.**, Ren, Y. and Chen, Y., 2019. Developing a marine protected area network with multiple objectives in China. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 29(6), pp.952-963.
25. Karim, E., Liu, Q., **Sun, M.**, Barman, P.P., Hasan, S.J. and Hoq, M.E., 2019. Assessing recent gradual upsurge of marine captured Hilsa stock (*Tenualosa ilisha*) in Bangladesh. *Aquaculture and Fisheries*, 4(4), pp.156-165.
26. Chen, N., Zhang, C., **Sun, M.**, Xu, B., Xue, Y., Ren, Y. and Chen, Y., 2019. Evaluating the Performances of Size-Frequency-Based Methods for Estimating Fishing Mortality of *Pholis fangi*. *Marine and Coastal Fisheries*,

11(4), pp.305-314.

27. **Sun, M.**, Zhang, C., Chen, Y., Xu, B., Xue, Y. and Ren, Y., 2018. Assessing the sensitivity of data-limited methods (DLMs) to the estimation of life-history parameters from length–frequency data. *Canadian Journal of Fisheries and Aquatic Sciences*, 75(10), pp.1563-1572.
28. **Sun, M.**, Zhang, C., Li, Y., Xu, B., Xue, Y. and Ren, Y., 2018. Management Strategy Evaluation of fishery stocks in Haizhou Bay based on Data-Limited Method. *Journal of Fisheries of China*, 42(10), pp.1661-1669. 10.11964/jfc.20170910964. (in Chinese: **孙铭**, 张崇良, 李韵洲, 徐宾铎, 薛莹, 任一平, 2018. 以有限数据评估方法为基础的海州湾渔业管理策略评估. 水产学报, 42(10), 1661-1669.)
29. Chen, N., Zhang, C., **Sun, M.**, Xu, B., Xue, Y., Ren, Y. and Chen, Y., 2018. The impact of natural mortality variations on the performance of management procedures for Spanish mackerel (*Scomberomorus niphonius*) in the Yellow Sea, China. *Acta Oceanologica Sinica*, 37(8), pp.21-30.

Research reports

1. **Sun, M.**, Hodgdon, C. et al, 2023. Technical Minutes of the Stony Brook University Review Group for the Advice Drafting Group for Biology and Assessment for the Elasmobranch Fisheries Resources (WGEF).
2. **Sun, M.**, Hodgdon, C. et al, 2023. Technical Minutes of the Stony Brook University Review Group for the Advice Drafting Group for Biology and Assessment of the North Sea Fisheries Resources (WGNSSK).
3. **Sun, M.**, Hodgdon, C. et al, 2023. Technical Minutes of the Stony Brook University Review Group for the Advice Drafting Group for Biology and Assessment of the Bay of Biscay Fisheries Resources (WGBIE).
4. **Sun, M.**, Hodgdon, C. et al, 2023. Technical Minutes of the Stony Brook University Review Group for the Advice Drafting Group for Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP).
5. **Sun, M.**, Hodgdon, C. et al, 2022. Technical Minutes of the Stony Brook University Review Group for the Advice Drafting Group for Biology and Assessment of the Celtic Sea Fisheries Resources.
6. **Sun, M.**, Hodgdon, C. et al, 2022. Technical Minutes of the Stony Brook University Review Group for the Advice Drafting Group for Biology and Assessment of the North Sea Fisheries Resources.
7. Hodgdon, C., Chang H., **Sun, M.** et al., 2020. Technical Minutes of the University of Maine Review Group for the Advice Drafting Group for Biology and Assessment of Deep-sea Fisheries Resources.
8. **Sun, M.**, Chen, Y., 2019. Management recommendations for six Omani fish stocks.
9. Mazur, M., Li, B., Xu, L., **Sun, M.** et al., 2019. Technical Minutes of the University of Maine Review Group for the Advice Drafting Group for the Celtic Seas.
10. Boenish, R., Li, B., Tanaka, K., Mazur, M., Torre, M., Xu, L., ..., **Sun, M.** et al., 2018. Technical Minutes of the University of Maine Review Group for the Advice Drafting Group for Northwest Stocks.



Presentation

- Developing mixed fisheries management best practices for China. China Fisheries Learning Network, March, 2023, online.
- How can we manage mixed fisheries: a global synthesis. American Fisheries Society, New York Chapter, February 10, 2023. Stony Brook, New York.
- Status and management of mixed fisheries: a global synthesis. NOAA Central Library, National Stock Assessment Seminar Series, December 1, 2022. Online.
- Status and management of mixed fisheries: a global synthesis. ICES Annual Science Conference, September 20, 2022, Dublin, Ireland
- Status and management of mixed fisheries: Implications to China. 全球典型混合渔业现状与管理及对中国的启示. The International Workshop on Mixed-Fisheries Management, July 20, 2022. Online.
- Data-limited methods and applications-数据有限方法及应用. China Fisheries Learning Network, 2021, online.
- Data-limited stock assessment and management strategy evaluation. Shanghai Ocean University, 2020, online course.

- Are data-limited methods sustainable approaches – management strategy evaluation of data-limited methods with a data-rich stock. ICES Annual Science Conference, 2019, Gothenburg, Sweden.
- Implementation of data-limited stock assessment in China. International workshop on fishery management based on TAC, 2017, Zhoushan, China.



Service and review experience

I have served as a reviewer extensively (>40 times) for many academic journals. Following is a list of the journals for which I have provided reviews (in alphabetic order): *Acta Oceanologica Sinica*, *Animals*, *Aquaculture and Fisheries*, *Canadian Journal of Fisheries and Aquatic Science*, *Diversity*, *Fishes*, *Fisheries Oceanography*, *Fisheries Research*, *Frontiers in Marine Sciences*, *ICES Journal of Marine Science*, *International Journal of Environmental Research and Public Health*, *Journal of Biomedical Research & Environmental Sciences*, *Journal of Infrastructure, Policy and Development*, *Journal of Marine Environmental Engineering*, *Journal of Fisheries of China (in Chinese)*, *Journal of Ocean University of China*, *Marine and Coastal Fisheries*, *Marine Life Science & Technology*, *Nature Sustainability*, *Ocean and Coastal Management*, *PLOS One*, *Royal Society Open Science*, *Scientific Report*, *Sustainability*, and *Water*.

I have served multiple times as co-chair for the ICES Stock Assessment Review Group (International Council for the Exploration of the Sea) since 2018. I led a group of >20 experts to review and evaluate the scientific data and methods used by the ICES stock assessment working groups of the Bay of Biscay, Celtic Sea, Icelandic Sea, Irish Sea, North Sea, Deep-sea fisheries resources, and Elasmobranch Fishes. I was responsible for coordinating the review process, providing scientific training, controlling the quality and integrity of stock assessment process and reports, and providing feedback to the ICES working groups.



Proficiency

- **Language:** Native Chinese, Fluent German
- **Software:** R, Microsoft Office, FISAT, ArcGIS, Visual Basic, Auto CAD, Surfer, Echoview