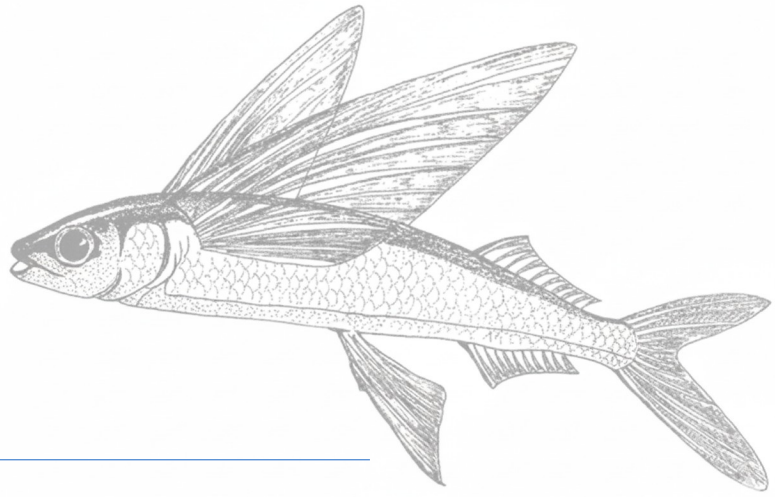
Scott J. Spillias



Marine scientist and AI researcher with expertise in ecological modelling, GenAI, and interdisciplinary collaboration. Proven track record in high-impact research and stakeholder engagement.

Education

2019 – 22 | PhD in Environmental Management

University of Queensland, *Seaweed Farming for Sustainable Development*

2017 – 18 | Master of Environmental Management

University of Queensland, Major in Environmental Economics

Dean's Commendation for Academic Excellence, Semester 2, 2017, 2018

2005 – 09 | Bachelor of Science

Duke University, Major in Marine Biology, Minors in Mathematics and Environmental Science & Policy

Cum Laude, with Distinction | Dean's List with Distinction, Fall 2008 and Spring 2009

Employment

2023 – Present | *CSIRO* | **Postdoctoral Research Fellow**

- Led development of AI-driven frameworks for marine ecosystem modelling, integrating Generative AI and retrieval-augmented generation (RAG) to automate parameter synthesis and model construction.
- Contributed to high-impact publications (e.g., *BioScience*, *Cell Reports Sustainability*) and presented findings at major conferences, including MODSIM and AMSA.
- Supervised and mentored students on projects applying AI for science communication and stakeholder engagement, fostering interdisciplinary collaboration.

2022 | *International Institute for Applied Systems Analysis* | **Postdoctoral Fellow**

- Led the integration global fisheries data with the partial equilibrium land-use change model, GLOBIOM

2020 | *Australian Seaweed Institute* | **Consultant**

- Co-facilitated expert elicitation workshop
- Contributed to *Australian Seaweed Industry Blueprint* report

2019 –2022 | *University of Queensland, Various Courses*| **Academic Tutor**

- Teach quantitative and qualitative modelling for a master's level Systems Dynamics course
- Teach decision analysis for a master's level Environmental Decision-Making course
- Advised 10 Master's and Undergraduate research projects`

2019 | *Maron Ecology & Conservation Policy Lab, University of Queensland* | **Research Assistant**

- Conducted interviews with land management experts to elicit costs associated with threatened species interventions.

Grants & Awards

2021| Peccei Award | Awarded for Outstanding Contribution to Young Scientist Summer Program at the International Institute for Applied Systems Analysis (IIASA), includes funding for three months further study

IIASA YSSP Participant | ~8,000 USD to study at IIASA in Vienna

2020 | 3-Minute Thesis | $1,000 AUD for First Prize and People's Choice in the School of Earth and Environmental Science, and Runner-up in the Science Faculty competitions

2019 | Ian McDougall Bursary |$4,000 AUD from Future Earth Australia to fund seaweed farming sustainability elicitation workshops

2018 | University of Queensland Graduate School Scholarship | ~$84,000 Stipend & 3-years tuition for PhD studies

2009 | Oak Foundation Marine Conservation Service Grant | $5,000 USD to fund Ocean Conservation Service

Selected Publications and Preprints

Spillias, S., Trebilco, R., Adams, M. P., Boschetti, F., Constable, A., Dunstan, P., ... & Fulton, B. (2024). *The future of artificial intelligence in ecosystem modelling*. **(Accepted at Bioscience)**

Spillias, S., Rogers, J., Boschetti, F., Fulton, E. A., Guglielmo, M., Yong, S. Y., & Trebilco, R. (2025). *Data-Driven Discovery of Mechanistic Ecosystem Models with LLMs*. ***bioRxiv***, 2025-07.

Spillias, S., Fulton, E. A., Boschetti, F., Bulman, C., Strzelecki, J., & Trebilco, R. **(**2025). *Automated Diet Matrix Construction for Marine Ecosystem Models Using Generative AI*. ***BioRxiv***, 2025-05.

Spillias, S., 2025. Benchmarking Large Language Models for Marine Functional Group Classification. ***Available at SSRN*** *5506941*.

Brown, C. J., & **Spillias, S.** (2025). *Prompting large language models for quality ecological statistics*. ***EcoEvoRXiv***

Murphy, K., Fierro-Arcos, D., Rohr, T., Green, D., Novaglio, C., Baker, K., ... **Spillias, S., ...**& Blanchard, J. (2025). *Developing a southern ocean marine ecosystem model ensemble to assess climate risks and uncertainties*. ***Earth's Future,*** *13*(3), e2024EF004849.

Spillias, S., Ollerhead, K. M., Andreotta, M., Annand-Jones, R., Boschetti, F., Duggan, J., ... & Trebilco, R. (2025). *Evaluating generative AI for qualitative data extraction in community-based fisheries management literature*. ***Environmental Evidence***, *14*(1), *9*.

Spillias, S., Tuohy, P., Andreotta, M., Annand-Jones, R., Boschetti, F., Cvitanovic, C., ... & Trebilco, R. (2023*). Human-AI collaboration to identify literature for evidence synthesis*. ***Cell Reports Sustainability***, *1(7).*

Spillias, S., Valin, H., Cottrell, RS., O'Brien, KO., Batka, M., Sperling, F., Havlik, P., Lauri, P., Leclere D., McDonald-Madden, E. (2023) *The Potential for Seaweed Farming to Transform Global Sustainability*. **Nature Sustainability** https://doi.org/10.1038/s41893-022-01043-y

Spillias, S., Cottrell, RS., Layton, C., O'Brien, KO., McDonald-Madden, E., *Having our kelp and eating it too: Minimizing trade-offs from seaweed farming*. **Journal of Cleaner Production**, 448, 141150.

Spillias, S., Kareiva, P., Ruckelshaus, M., & McDonald-Madden, E. (2020). *Renewable energy targets may undermine their sustainability*. **Nature Climate Change**, 10(11), 974-976.

Conferences/Presentations

2025 | Beer Aquatic Public Talk: Food Webs and Neural Nets – Hobart Brewing Co
Presented at the AMSA 2025 Conference – Melbourne (*AI-assisted ecosystem modelling*)
Presented at the FishMIP Regional Modelling Workshop: Advancing Regional Marine Ecosystem Modelling: from Southern Ocean to Global Perspectives – University of Tasmania
Presentation to the CMS Interdisciplinary School on AI-assisted ecosystem modelling

2024 | Presented at the AI–Ecosystem Modelling Workshop – Hobart
Future Science Talks: Comedy Edition – Hobart Dark Fringe (Ocean ecosystem simulations with AI)

2023 | Presented at the 25th International Congress on Modelling and Simulation (MODSIM 2023): Collaborative intelligence for modelling marine social-ecological systems – Darwin

2021 | Presented at the Australasian Permaculture Convergence
Designed and delivered a workshop at the Sustainability, Research, and Innovation Congress
Presented at the World Fisheries Congress

2020 | Presenter at the December BrisScience Public Forum
Facilitator for Future Earth Australia's 10-year Oceans and Coasts strategic planning workshops
3-minute thesis contestant in UQ's School of Earth and Environmental Science & UQ's Science Faculty

2019| Future of Coasts Early Career Researcher and Practitioner forum and workshop
Presentation to Queensland Parks and Wildlife Service on the Environmental Impacts of Seaweed Farming
Graduate Student Seminar presentation to UQ's Centre for Marine Science

Professional Service & Leadership

2025 – Present | Guest Editor, *PLOS Sustainability and Transformation*

2025 – Present | National Councillor, Australian Marine Sciences Association (AMSA)

2024 – Present | Early Career Researcher Representative, Centre for Marine Socioecology (CMS)

Other Activities

2021 – 2023 | *Blue Peter* **| *Skipper/Curriculum Coordinator***
- Develop and deliver outdoor education curricula aboard 6m sailboats in Moreton Bay, QLD

2018 – 2020 | *HDR Student Committee* **| Volunteer Committee Member**
- Organize social and academic events for the School of Earth and Environmental Science at UQ

2017 – 2018 | *Jane Street Community Garden* **| Volunteer co-coordinator**
- Coordinated volunteers, facilitate working days, and communicate with the community.

2017 – 2018 | *Brisbane Tool Library* **| Volunteer coordinator**
- Coordinated volunteers, speak at events, document, clean and inventory donated tools.
- Help with strategic planning.

Other Experience

2010 – 17 | *Sea Education Association*, *Call of the Sea*, *Sail Training Non-Profits* **| Captain, Chief Mate, Naturalist**

- Managed teams of 30-40 professional and student sailors and scientists using verbal and written communication on extended (up to 32 days) research/educational sea voyages.
- Planned, implemented, and directed long- and short-term maintenance schedules involving managing priorities and responding to shifting circumstances.

2009 | *Marine Conservation Biology Institute* | **Offshore Renewable Energy Research Intern**

- Evaluated the ecological impact of offshore renewable energy development in United States waters.
- Collected spatial data including resource availability, current infrastructure, areas of ecological importance
- Developed a spatial data layer to identify sites well-suited to offshore renewable energy development.

2009 | *National Marine Fisheries Service* **| Ecosystem-Based Fisheries Management Intern**

- Evaluated the viability of implementing ecosystem-based fisheries management in the Gulf of Mexico.
- Collaborated with 9 ECRs to conduct interviews with scientists, policymakers, and stakeholders.
- Developed an interactive resource to educate professionals and students on the importance of ecosystem-based thinking for fisheries management

2008 | *National Science Foundation Internship*, *University of Southern California* **| Research Intern**

- Project Title: *Mixotrophic Characteristics of the Golden Alga*, Prymnesium parvum.
- Tested the effect of different environmental stressors (e.g. nutrient limitation, light limitation) on the amount of heterotrophy observed in the harmful algal bloom causing *P. parvum*.

2007 | *Howard Hughes Vertical Integration Program Internship* **| Research Intern**

- Project Title: *Gene Expression Clustering Analysis: Parameter and Clustering Algorithm Choices.*
- Used R to apply several clustering techniques to a microarray dataset consisting of Arabidopsis thaliana gene expressions in order to identify genes of interest.