

The Nippon Foundation - University of British Columbia
NEREUS PROGRAM
Predicting Future Oceans

Organizational CV

What is the Nereus Program?

The Nereus Program is an interdisciplinary ocean research initiative established in 2011 by the Nippon Foundation and the University of British Columbia. The program is built on three core objectives: to conduct collaborative research across the natural and social sciences to better understand the future of global oceans; to develop a network of experts that can engage in discussion of complex and multifaceted questions surrounding ocean sustainability; and to transfer these concepts to practical solutions in global policy forums.

Leadership

Program Leadership

William Cheung, Director (Science), UBC

Yoshitaka Ota, Director (Policy), UBC

Daniel Pauly, Chair of the Nereus Steering Committee, UBC

Principal Investigators

Mike Bithell, Assistant Director of Research in Computing at the Department of Geography, University of Cambridge

Alex Oude Elferink, Director of the Netherlands Institute for the Law of the Sea, Utrecht University

Carl Folke, Science Director of the Stockholm Resilience Centre, Stockholm University

Patrick Halpin, Associate Professor of Marine Geospatial Ecology and Director of the Geospatial Analysis Program at the Nicholas School of the Environment, Duke University

Chris McOwen, Program Officer, UNEP-WCMC

Erik Molenaar, Deputy Director of the Netherlands Institute for the Law of the Sea, Utrecht University

Henrik Österblom, Deputy Science Director at Stockholm Resilience Centre, Stockholm University

Jorge Sarmiento, George J. Magee Professor of Geoscience and Geological Engineering, Princeton University

Tom Spencer, Reader in Coastal Ecology and Geomorphology and the Director of Cambridge Coastal Research Unit, University of Cambridge
Charles Stock, Research Oceanographer at the NOAA/Geophysical Fluid Dynamics Laboratory, NOAA

Program Management

Andrés Cisneros-Montemayor, Program Manager/Research Associate, UBC

Participating Organizations



Budget

15 million USD (1.5 million annually for 9 years from 2011 to 2019).

The Nereus Program is solely funded by the Nippon Foundation, the largest non-governmental foundation in Asia.

Capacity Building

The Nereus Program provides fellowships to young scholars who conduct their research at participating academic institutes. Since 2011, we have had 30 Nereus Fellows working on various issues on the future of oceans and fisheries. Currently, 11 postdoc and 7 Ph.D. students in the natural and social sciences are participating in the Nereus Program as Nereus Fellows.

Public Engagement and Policy Applications

The Nereus Program is actively engaged with policy processes both at international and regional levels. We have organized side events and workshops together with international organization representatives and national governmental officers.

2016: Side event at the United Nations Fish Stock Agreement Review Conference titled "Science, Policy and Civil Society: The Role of NGOs in Global Fisheries Management".

2015: Press conference on the Nereus Program report in Tokyo (covered by 20 international media outlets, including CBS, and five major Japanese newspapers).

2013: Side event at the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea on seafood security and climate change (attended by nine countries representatives including Japan, US and Palau)

Selected Publications:

The Nereus Program has produced more than 100 academic papers in various disciplines.

Caddell R., 2015. Platforms, Protestors and Provisional Measures: The Arctic Sunrise Dispute and Environmental Activism at Sea, *Law, Netherlands Yearbook of International Law* 2014, 45, 359-384.

Cheung W.W.L., Watson R., **Pauly D.**, 2013. Signature of Ocean Warming in Global Fisheries Catch. *Nature*, 497, 365-368.

Cheung W.W.L., **Sarmiento J.L.**, Dunne J., **Frölicher T.L.**, **Lam V.**, Palomares D.M.L., Watson R., **Pauly D.**, 2013. Shrinking of fishes exacerbates impacts of global ocean changes on marine ecosystems. *Nature Climate Change*, 3, 254-258.

Cheung W.W.L., Sumaila U.R., 2015. Economic incentives and overfishing: A bioeconomic vulnerability index. *Marine Ecology Progress Series*, 530, 223-232.

Crona B., Daw T., **Swartz W.**, Nyström M., Norström A., Thyresson M., **Österblom H.**, **Folke C.**, Sundberg J., 2015. Masked, diluted and drowned out: why signals from local marine ecosystems are not transmitted through global seafood markets. *Fish and Fisheries*.

Daw, T.M., Coulthard, S., **Cheung, W.W.L.**, Brown, K., Abunge, C., Galafassi, D., Peterson, G.D., McClanahan, T.R., Omukoto, J.O., Munyi, L., 2015. Evaluating taboo trade-offs in ecosystems services and human well-being. *Proceedings of the National Academy of Sciences*, 112(22): 6949-6954.

Dunn D.C., **Boustany A.M.**, Roberts J.J., Brazer E., Sanderson M., Gardner B., **Halpin P.N.**, 2014. Empirical move-on rules to inform fishing strategies: a New England case study, *Fish and Fisheries*, 15, 359-375.

Fernandes J., **Cheung W.W.L.**, Jennings S., Frölicher T., Barange M., Grant A., 2013. Integrating trophic interactions into projecting distribution changes in marine fishes and invertebrates. *Global Change Biology*, 19, 2596-2607.

Hanich, Q., **Ota, Y.**, 2013. Moving beyond rights-based management: a transparent approach to distributing the conservation burden and benefit in tuna fisheries. *The International Journal of Marine and Coastal Law*, 28(1): 135-170.

Hazen E.L., Jorgensen E., **Rykaczewski R.R.**, Bograd S.J., Foley D.G., Jonsen I.D., Shaffer S.A., Dunne J.P., Costa D.P., Crowder L.B., Block B.A., 2013. Predicted habitat shifts of Pacific top predators in a changing climate. *Nature Climate Change*, 3, 234-238.

Jones, M.C., **Cheung, W.W.L.**, 2015. Multi-model ensemble projections of climate change effects on global marine biodiversity. *ICES Journal of Marine Science* 72(3): 741-752.

Jones M.C., Dye S.R., Pinnegar J.K., Warren R., **Cheung W.W.L.**, 2014. Using scenarios to project the changing profitability of fisheries under climate change. *Fish and Fisheries*.

Kearney K, **Stock C.**, **Sarmiento J.**, 2013. Amplification and attenuation of increased primary production in a marine food web, *Marine Ecology Progress Series*, 491, 1-14.

Lam V.W.Y., **Cheung W.W.L.**, **Sumaila U.R.**, 2014. Marine capture fisheries in the Arctic: winners or losers under climate change and ocean acidification? *Fish and Fisheries*.

Leadley P., Proença V., Fernández-Manjarrés J., Pereira H.M., Alkemade R., Biggs R., Bruley E., **Cheung W.**, Cooper D., Figueiredo J., 2014. Interacting Regional-Scale Regime Shifts for Biodiversity and Ecosystem Services. *BioScience*, 64 (8): 665-679.

McOwen C.J., Cheung W.W.L., Rykaczewski R.R., Watson R.A., **Wood J.L.**, 2014. Is fisheries production within Large Marine Ecosystems determined by bottom-up or top-down forcing? *Fish and Fisheries*, DOI 10.1111/faf.12082.

Merrie A., Dunn D.C., Metian M., Boustany A.M., Takei Y., Elferink A.O., **Ota Y., Christensen V., Halpin P.N., Österblom H.**, 2014. An ocean of surprises – Trends in human use, unexpected dynamics and governance challenges in areas beyond national jurisdiction. *Global Environmental Change*, 27, 19-31.

Österblom H., Merrie A., Metian M., Boonstra W.J., Blenckner R., **Watson J.R., Rykaczewski R.R., Ota Y., Sarmiento J.L., Christensen V.,** Schlüter M., Birnbaum S., Gustavsson B.G., Humborg C., Mörth C-M., Müller-Karulis B., Tomczak M.T., Troell M., **Folke C.**, 2013. Modeling social-ecological scenarios in marine systems, *BioScience*, 63, 735-744.

Sumaila, U.R., **Lam, V.W.Y.**, Miller, D.D., Teh, L., Watson, R.A., Zeller, D., **Cheung, W.W.L.,** Côté, I.M., Rogers, A.D., Roberts, C., Sala, E., **Pauly, D.**, 2015. Winners and losers in a world where the high seas is closed to fishing. *Scientific Reports* 5, 8481.

Sydeman, W., García-Reyes, M., Schoeman, D., **Rykaczewski, R.**, Thompson, S., Black, B., Bograd, S. 2014. Climate change and wind intensification in coastal upwelling ecosystems. *Science* 345(6192): 77-80.

Tittensor, D.P., Walpole, M., Hill, S.L.L., Boyce, D.G., Britten, G.L., Burgess, N.D., Butchart, S.H.M., Leadley, P.W., Regan, E.C., Alkemade, R., Baumung, R., Bellard, C., Bouwman, L., Bowles-Newark, N.J., Chenery, A.M., **Cheung, W.W.L., Christensen, V.**, et al. 2014. A mid-term analysis of progress toward international biodiversity targets. *Science* 346(6206): 241-244.

Troell M., Naylor R.L., **Metian M.**, Beveridge M., Tyedmers P.H., **Folke C.**, Arrow K.J., Barrett S., Crépin A.S., Ehrlich P.R., Gren A., Kautsky N., Levin S.A., Nyborg K., **Österblom H.**, Polasky S., Scheffer M., Walker B.H., Xepapadeas T., Zeeuw A.D., 2014, Does aquaculture add resilience to the global food system? *Proceedings of the National Academy of Sciences*, 111, 13257-13263.

Watson, J.R., Stock, C.A., Sarmiento, J.L., 2014. Exploring the role of movement in determining the global distribution of marine biomass using a coupled hydrodynamic–Size-based ecosystem model. *Progress in Oceanography*.