

## Maartje Oostdijk

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### Research interests

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Social-ecological systems, coastal and marine ecosystems, ecological modeling, network analysis, ecological economics, governance of the commons, participatory modeling

### Researcher profile

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I am interested in the governance of common pool resources and the interactions between humans and their environment. During my education I focused specifically on coastal and marine systems, anthropogenic impacts on the ecological functioning of these systems and ecological and socio-economic impacts of management measures. I have experience collaborating with those from the fields of social sciences and natural sciences and as an interdisciplinary marine scholar move between those fields, in a team-setting. I've strongly grounded myself in quantitative methods, using network analysis, statistical modelling, dynamic ecosystem modelling and remote sensing. More recently I'm also gaining experience in qualitative methods, through an interview campaign and the organisation of stakeholder workshops.

Recent areas of research:

- Social-ecological modelling of a potential fishery in the ocean twilight zone and impacts on fish contributions to carbon cycling, combining qualitative interview data and quantitative data
- Classification of global fisheries management systems and their relation to outcomes for marine populations using statistical modelling
- Statistical modelling of global trade impacts on marine population status
- Ecological modelling of global change drivers in the Icelandic ecosystem
- Statistical and network modelling of socio-economic impacts and drivers in the Icelandic fisheries system

### Professional Experience

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#### 2021 – now Research Associate United Nations Maritime University (UNMU)

Responsible for participatory and dynamic modeling of carbon, food and profit trade-offs in the mesopelagic zone and supervision of MSc students

#### Contract employment

-2020 Sustainably fished stocks and fleet economic performance – with Griffin Carpenter, contracted by Cogea for DG Mare

-December 2020-February 2021 Literature review on European green deal and sustainability impacts through global trade – ERASME center of excellence at University of Clermont Auvergne

### Education

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#### 2016- 2021 Joint PhD in Environment and Natural Resources - University of Iceland and Stockholm University

Marie-curie fellowship (ITN) - Supervisors: Brynhildur Davíðsdóttir and Gunnar Stefánsson

PhD topic: Ocean fisheries dynamics, with a focus on Iceland. Statistical and dynamic modeling of the effects of fisheries management on fish and invertebrate populations, incentives-based management, foodweb-modeling, climate change scenarios for Icelandic fisheries.

#### 2013- 2015 Joint Degree MSc Environmental science (cum laude) - Utrecht University & Ca Foscari (Venice)

Specialization track: Global Change and Ecosystems; Thesis: "Assessing the effects of increased summer flooding in an impounded mangrove with the use of remote sensing" Visit to **Duke university** 02-2015-04-2015 and **Smithsonian**

**Institute** 03-2015

2007- 2013 BSc Biology- **Utrecht University** Specialization: (marine) ecology

2008-2012 BA Fine Arts (hons) – **College of the arts, Utrecht**

### Fellowships, grants

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**EU Horizon 2022 project** (15 million € total, ~500,000 to WMU) (**Co-applicant**) Large scale project called "Ocean-ICU" on the functioning of the biological pump, WMU leading the "connection to society" part, WP lead Mary Wisz, Project Pls: Michael stJohn & Ken H Andersen

**Publication grant and honorarium UBC** 5,000€ (lead author)

**Jean Monet funding for a center of excellence** (~40,000 €) (**Co-applicant**) Funding with which I collaborated on the foundation of research NGO ERASME, linked to CERDI, Clermont Ferrand – France

**Travel grant university of Iceland** 1,000€

**SESYNC graduate pursuit** – 10/2017 – 03/2019 ~60,000 (**Co-PI**) € graduate research project funded by SESYNC, Maryland (National Socio-Environmental Synthesis Center). We were awarded a grant for our proposal that regards the impact of global trade on the stock status of fishes and invertebrates around the world.

**PhD grant the University of Iceland Eimskip fund** (~40,000€) (I wrote the grant proposal) 2019 for final year of PhD studies

### **Additional activities**

**Internship** at New Economics Foundation, 06/2018-09/2018

**Complex systems summer school**, 07/2017, Santa Fe

### **Peer reviewed publications**

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#### *Minor revisions*

11. Elsler L.G., Girona, A., Quintana A., **Oostdijk M**, Stefanski, S., Basurto X., Tekwa, E., (2022) Strong collective action allows cooperatives to buffer local fisheries against the impacts of international demand (*In second review ERL*)

#### **Published/Accepted**

10. Elsler, L.G., **Oostdijk, M.**, Levin, L.A., Satterthwaite, E., Pinsky, M.L., Ortuño Crespo G., Wisz, M.S., (2022) Protecting ocean carbon through biodiversity and climate governance (*In press, Frontiers in Marine Science*)
9. **Oostdijk, M.**, Carpenter, G., (2022) Which attributes of fishing opportunities are linked to sustainable fishing? (*In press, Fish and Fisheries*) preprint: <https://www.diva-portal.org/smash/record.jsf?pid=diva2:1539082>.
8. **Oostdijk, M**, Elsler, G. L., Ramírez-Monsalve, P., Orach, K., Wisz, M.S., (2022) Governing open ocean and fish carbon: perspectives and opportunities. *Frontiers in Marine Science*, 9. 1-15
7. Woods, P.J., Macdonald, J.I., Barðarson, H., Bail, Bonanomi, S. , Boonstra, W.J., Cornell, G., Cripps, G., Danielseon, R., Färber, L., Ferreira, A.S.A., Fergusonrench, K., Holma, M., Holt, R.E., Hunter, K. L., Kokkalis, A., Langbehn, T.J., Ljungström, G., Nieminen, E., Nordström, M., **Oostdijk, M.**, Richter, A., Romagnoni, G., Sguotti, C., Simons, A., Shackell, N.L., Snickars, M., Tunca, S., Whittington, J.D., Wootton, H., and Yletyinen, J. (2022) A review of adaptation options in fisheries management to support resilience and transition under socio-ecological change. *ICES journal of Marine Science* 79, 463-479
6. Sumaila UR, Skerritt DJ, Schuhbauer A, Villasante S, Cisneros-Montemayor AM, Sinan H, Burnside D, [211 authors] **Oostdijk M**, [77 authors]. (2021) WTO must ban harmful fisheries subsidies. *Science* 374: 544. Letter
5. **Oostdijk, M**. Erla Sturludóttir, Santos, M.J., (2021) Reshaping of a sub-arctic trophic web due to combined ocean acidification and warming as projected by a whole-ecosystem model. *Ecosystems* 2: 1-18
4. Byrne, C.J., Agnarsson, S., Davíðsdóttir, B, **Oostdijk, M.**, (2020) Species-level quota concentration in the Icelandic harvesting sector, *Marine Policy*, 121; 1-11
3. **Oostdijk, M.**, Byrne, C.J., Santos, M.J., Stefansson, G., Woods, P.J, (2020) Catch-quota matching allowances balance economic and ecological targets in a fishery managed by individual transferable quota, *Proceedings of the National Academy of the Sciences*, 117 (40) 24771-24777
2. **Oostdijk, M.**, Santos, M.J., Agnarsson, S., Woods, P.J., (2019) Structure and evolution of cod quota market networks in Iceland over times of financial volatility. *Ecological Economics*, 159: 279-290
1. **Oostdijk, M.**, Santos, M.J., Whigham, D., Verhoeven, J. Silvestri, S., (2018), Assessing rehabilitation of managed mangrove ecosystems using high resolution remote sensing, *Estuarine and coastal shelf science*, 211: 238-247

#### **In Review**

-Byrne, C.J., **Oostdijk, M.**, Agnarsson, S., Davíðsdóttir, B., Quota Trade and potential measures of the Transitional Gains Trap - A quantitative analysis of the Icelandic ITQ system. (*In review Ecological Economics*, preprint available here: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3999407](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3999407))

- Elsler L.G.\*, **Oostdijk M.\***, Zhao J., Free C.M., Tekwa E., Bochniewicz E.M., Gephart J.A., Johnson A.F., Speed and

scale of seafood trade indicative of marine population status. (*In review PNAS*)  
\*these authors have contributed equally to the work

### **Advanced preparation**

-**Oostdijk, M.**, Elsler, LG, Deelen, J, Auping, W., Wisz, MS, et al Governing fisheries & carbon services under deep uncertainty: the case of the ocean twilight zone *In prep for Global Environmental Change*  
-Ramírez-Monsalve, P., Pedreschi, D., Langlet, D., **Oostdijk, M.**, Elsler, L., Polejack, A., Goldsborough, D., Wisz, M., A review of high-level legal frameworks to support Integrated Ecosystem Assessments in the Atlantic (*in prep for ICES journal of Marine Science*)  
- Reader, M.O., **Oostdijk, M.**, Santos, M.J., Sea-land transitions in food supply across global deltas. *In prep for Nature Sustainability*

### **Other publications**

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Entries: Depletion, Individual transferable quotas (ITQs) in *Dictionary of Ecological Economics* (eds. Brent Haddad and Barry Solomon)- Edward Elger, Forthcoming February 2023  
Kraan, M., Oostdijk, M., Elsler, E., Schadeberg, A., Wisz, M., Groeneveld, R., (2022) Report: Report of the System and extreme outcomes workshop of the MEEEO project held on 23 September 2021  
Co-editor of a Book with conference proceedings: *Paradigms, Models, Scenarios you and Practices for strong sustainability* – Oeconomia (2020)

### **Conference presentations (co-authored presentations not included)**

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"Governing fish and open ocean carbon" – International Council for Exploration of the Seas (ICES) annual conference, Dublin 2022  
"Governing fish and open ocean carbon" – Our Fish UN Oceans side-event, Lisbon 2022 (invited)  
"Ocean Acidification and Warming effects on important Socio-Economic and Ecological Species in a Sub-Arctic Marine Ecosystem" EGU, Vienna, 2022  
"Evolution of cod quota networks in Iceland" European Society for Ecological Economics, Turku, Finland, 2019  
"Sequential exploitation, patterns of global fisheries expansion" European Society for Ecological Economics, Turku, Finland, 2019  
"The I the T or the Q, which element of quota systems supports the health of marine stocks", IIFET 2018, Seattle, Washington (USA)  
"Sequential exploitation, macro and micro-drivers of global fisheries expansion", System Dynamics Conference, Reykjavik, 2018.  
"Patterns in global fish trade data", Santa Fe Institute (CSSS final projects), Santa Fe, New Mexico, USA, 07/2017  
*Poster presentations*  
"Understanding drivers of catch-quota matching and mismatching in the Icelandic ITQ system", American Fisheries Society Meeting, Atlantic city, USA, 2018  
"Sustainable harvesting of predator and forage fish populations, a self-governing system? – a fragile equilibrium, System Dynamics conference, Boston, Massachusetts, USA, 2017

### **Teaching and supervision**

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Guest Lecture Aruba – Social-ecological systems, Science in Sustainable Engineering UA- 2022 (BSc students)  
Guest Lecture in Ocean governance WMU- 2022 (MSc + PhD students)  
Guest Lecture in Ocean governance WMU-2021 (MSc + PhD students)  
Massive online open course: lecture on sustainability of global industrial fisheries. Clermont Ferrand – France:  
<https://www.erasmecentre.eu/mooc-strong-sustainability/> (2020)  
Guest lecturer (x2) Marine Environment and Fisheries - UAU108M, fall semester 2020, university of Iceland (MSc students)  
Lecturer in Marine Environment and Fisheries - UAU108M- Fall semester 2019, university of Iceland (MSc students)

### **Co-supervision MSc theses:**

Saratu Inuwa at World Maritime University (2022) – Perception of mangrove ecosystem services by decision makers in Nigeria  
Oluremi Taiwo Filani at World Maritime University (2021) – Blue carbon marine habitats in Nigeria: ecosystem services,

threats and implication for ecosystem-based management  
Alumita Sekinairai at World Maritime University (2021) – Understanding human impacts on the marine environment in Fiji: insights from an ODEMM conceptual model and semi-structured interviews

### **Outreach and organization of conferences/workshops**

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Co-organizer two transdisciplinary workshops with industry participants for the MEESO project, NGO's and academics 2021 & 2022

Co-organizer conference "Paradigms, Models, Scenarios and Practices for strong sustainability" Clermont Ferrand, France, 2019

Co-organizer PhD colloquium, System Dynamics Conference, Reykjavik, 2018.

Article on the commons in Utrecht: <https://unusualbusiness.nl/en/stories/utrecht-overvecht-100-people-practice-communal-living/index.html>

Several blogs for my ITN network website: <https://adaptecon.wordpress.com/>

### **Reviewer**

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*Marine Policy, Remote Sensing Applications: Society and Environment, Canadian Journal of Fisheries and Aquatic Sciences*

### **Computer literacy**

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Programming/software: R, Matlab, Sqlite, ENVI, Vensim

### **Volunteer activities**

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06/2022-now, member of Early Career Ocean Professional Diversity Equity and Inclusion committee

01/2019-10/2019 Red cross volunteer, helping to organize women's lunches for refugees in Iceland every other Thursday

2017-2018 Early Stage Researcher representative in the Project Management Board of ITN AdaptEconII

2014-2016 Voluntary researcher for CASCO (non-profit art institution) on collective action in commons around the city of Utrecht, Netherlands

### **References**

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Available upon request