

# Max Lindmark

*Curriculum vitae*

## Contact

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## Education

- Ph.D. Ecology, Swedish University of Agricultural Sciences. 2016–2020  
*Temperature- and body size scaling: effects on individuals, populations and food webs.*
- MRes. Applied Marine and Fisheries Ecology (Distinction), University of Aberdeen. 2014–2015  
*Predicting spatial distribution of fish stocks by updating informative survey-based priors with commercial data in a Bayesian framework*
- BSc. Biology, University of Gothenburg 2011–2014

## Professional experience

- Researcher 2022–  
Swedish University of Agricultural Sciences, Institute of Marine Research
- Post-doctoral researcher 2020–2022  
Swedish University of Agricultural Sciences, Institute of Marine Research

## Publications

[Preprints]

[Publications]

11. **Lindmark, M.**, Anderson, S. C., Gogina, M., Casini, M. 2023. Evaluating drivers of spatiotemporal variability in individual condition of a bottom-associated marine fish, Atlantic cod (*Gadus morhua*). *ICES Journal of Marine Science*, 80(5), 1539–1550 <https://doi.org/10.1093/icesjms/fsad084>
10. **Lindmark, M.**, Karlsson, M., and Gårdmark, A. 2023. Larger but younger fish when growth outpaces mortality in heated ecosystem. *eLife*, 12, e82996. <https://doi.org/10.7554/eLife.82996>
9. Belgrano, A, **Lindmark, M.** 2022. Biodiversity transformations in the global ocean: a climate change and conservation management perspective. *Global Change Biology*, 29(12), 3235–3236. <https://doi.org/10.1111/gcb.16665>
8. Woods, A. H, Moran, A. L. [...] **Lindmark, M.\*** [...], Verberk, C.E.P. 2022. Integrative Approaches to Understanding Organismal Responses to Aquatic Deoxygenation. *The Biological Bulletin*, 243(2), pp. 85–103. <https://doi.org/10.1086/722899> \*16/26

7. Audzijonyte, A., Jakubavičiūtė, E., **Lindmark, M.**, Richards, S.A. 2022. Mechanistic temperature-size rule explanation should reconcile physiological and mortality responses to temperature. *The Biological Bulletin*, 243(2), pp. 220–238. <https://doi.org/10.1086/722027>
6. **Lindmark, M.**, Audzijonyte, A., Blanchard, J. L. and Gårdmark, A. 2022. Temperature impacts on fish physiology and resource abundance lead to faster growth but smaller fish sizes and yields under warming. *Global Change Biology*, 28(21), 6239–6253. <https://doi.org/10.1111/gcb.16341>
5. **Lindmark, M.**, Ohlberger, J., Gårdmark, A. 2022. Optimum growth temperature declines with body size within fish species. *Global Change Biology*, 28(7), pp. 2259–2271. <https://doi.org/10.1111/gcb.16067>
4. Thunell, V., **Lindmark, M.**, Huss, M., Gårdmark, A. 2021. Effects of warming on intraguild predator communities with ontogenetic diet-shifts. *The American Naturalist*. 196(6). 706–718. <https://doi.org/10.1086/716927>
3. Huss, M., **Lindmark, M.**, Jacobson, P., van Dorst, R., Gårdmark, A. 2019. Experimental evidence of gradual size-dependent shifts in body size and growth of fish in response to warming. *Global Change Biology*, 25(7), pp. 2285–2295. <https://doi.org/10.1111/gcb.14637>
2. **Lindmark, M.**, Ohlberger, J., Huss, M., Gårdmark, A. 2019. Size-based ecological interactions determine effects of warming on food web stability. *Ecology Letters*, 22(5), pp. 778–786. <https://doi.org/10.1111/ele.13235>
1. **Lindmark, M.**, Huss, M., Ohlberger, J., Gårdmark, A. 2018. Temperature-dependent body size effects determine population responses to climate warming. *Ecology letters*, 21(2), pp. 181–189. <https://doi.org/10.1111/ele.12880>

## Reports

- ICES. 2023. Workshop 2 on Fish Distribution (WKFISHDISH2; outputs from 2022 meeting). ICES Scientific Reports. 5:7. 127 pp. <https://doi.org/10.17895/ices.pub.21692246>
- Havs- och vattenmyndigheten 2019. Fisk- och skaldjursbestånd i hav och sötvatten 2018. Resursöversikt. Havs- och vattenmyndighetens rapport 2019:4. Göteborg, 305 s.
- Havs- och vattenmyndigheten 2018. Fisk- och skaldjursbestånd i hav och sötvatten 2017. Resursöversikt. Göteborg, 273 s.
- Havs- och vattenmyndigheten 2016. Fisk- och skaldjursbestånd i hav och sötvatten 2016. Resursöversikt

## Grants & awards

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|---|-----------|
| Formas research projects for early-career researchers<br>Principal Investigator of a four-year grant from the Swedish Research Council Formas for Early Career Researchers. Project title: <i>Improving estimates of climate-driven body size changes and range shifts in fishes by accounting for fine-scale spatial heterogeneity</i> . (3 990 209 SEK) | 2023–2016 |
| Sven och Dagmar Saléns stiftelse (Travel grant) (5 616 SEK)   | 2019      |
| Knut and Alice Wallenbergs foundation (Travel grant) (24 000 SEK)   | 2018      |
| SLU funds for internationalization of graduate education (Travel grant) (28 000 SEK)  | 2016      |

Lindsay Laird Prize	2015
In recognition of all-round performance in the Applied Marine and Fisheries Ecology program throughout the year. Awarded jointly with another student	
Fishmonger's Award, Scholarship recipient	2014
Full fees payment (£3400) awarded to 1 MRes/MSc student on academic merit by the Fishmonger's Company	
Gothenburg Biological Society	2014
Stipend for well accomplished bachelor's thesis: By-catch in pelagic fisheries: A study on by-catch in Swedish herring fisheries on the west coast in the winter of 2013/2014	
Stiftelsen Hvitfeldtska gymnasiet's samfund	2010
Stipend awarded for academic achievement (top 10% of science students in class)	

## Invited talks

3rd Internal Water Seminar at SLU (Uppsala)	March 2023
<i>Embracing local scale processes in climate-driven range shifts</i>	
Svensk Fiskhälsa (Uppsala)	Dec 2022
<i>Fish and fisheries in a changing climate</i>	
Gulf of Maine Research Institute May Seminar (GMRI) (video)	May 2021
<i>Understanding the effects of climate warming on food webs via individual-level physiology</i>	

## Conferences

PICES 5th International Symposium on the Effects of Climate Change on the World's Ocean (ECCWO-5), Bergen	2023
<i>Local changes in demersal fish biomass in relation to oxygen, temperature, and the metabolic index in a warming and deoxygenating ecosystem</i>	
Swedish Oikos Meeting, Gothenburg	2023
<i>Quantifying competition between two demersal fish species</i>	
ICES ASC (Remote talk)	2022
<i>Higher mortality rates leave heated ecosystem with similar size structure despite larger, younger, and faster growing fish</i>	
ICES/PICES Early Career Scientist Conference (Talk)	2022
<i>Evaluating drivers of spatiotemporal changes in the condition of Eastern Baltic cod</i>	
Swedish Oikos Meeting, Online (Talk)	2021
<i>Evaluating drivers of spatiotemporal changes in the condition of Eastern Baltic cod</i>	
Baltic Sea Science Congress, Stockholm (Talk)	2019
<i>Warming alters the effect of fishing on the size spectra of an exploited temperate food web</i>	
Society for Experimental Biology, Seville (Talk)	2019
In Satellite: Is global warming causing animals to shrink? evidence, mechanisms and models	
<i>Physiological constraints to growing large in warm waters?</i>	
Swedish Oikos Meeting, Uppsala (Talk)	2019
<i>Physiological constraints to growing large in warm waters?</i>	

Models in Population Dynamics, Ecology, and Evolution, Leicester (Talk) <i>Species interactions determine effects of warming on stability in a stage-structured food chain</i>	2018
Nordic Oikos Meeting, Trondheim (Talk) <i>Species interactions determine effects of warming on stability in a stage-structured food chain</i>	2018
Swedish Oikos Meeting, Lund (Talk) <i>Climate change and size-structured populations. Temperature dependent allometry and ontogenetic asymmetry shape warming responses of size structured populations</i>	2017

## Research visits

University of Washington, School of Aquatic and Fishery Sciences Research visit and collaboration with Dr. Jan Ohlberger	Mar 2017-Jun 2017
University of Tasmania, Institute for Marine and Antarctic Studies Research visit and multispecies food web modelling workshop with Dr. Julia Blanchard	Nov 2018-Dec 2018

## Working groups

WGGRIFY Joint ICES/PICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields (WGGRIFY)	Member 2020-present
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## Teaching

All lab material written by me is available on this github repository:  
<https://github.com/maxlindmark/comp-labs-ecology>

<i>Sustainability perspectives on contemporary fisheries. Where have all the fishes gone?</i> Teaching assistant. Lecture on climate impacts on global fisheries.	2019
<i>Ecology for fish management and conservation</i> Teaching assistant. Wrote R lab Population dynamics and harvesting, lecture on fish morphology, physiology, and energetics, supervising and grading student projects, exam questions and marking.	2016–2019
<i>Principles in Fisheries Science</i> Teaching assistant. Wrote R lab Impacts of fishing in an ecological context. Lecture on ecological interactions <a href="https://github.com/maxlindmark/pfs">https://github.com/maxlindmark/pfs</a>	2018–2022

## Supervision

### PhD students

Henry Hansen, Karlstad University (co-supervisor)	2023–
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### MSc students

Julia Cao Sanchez, Uppsala University	2023
Main supervisor for project: <i>Joint species distribution modelling of benthic invertebrate communities</i>	
Leo Sheils, Uppsala University	2023
Main supervisor for project: <i>Effects of warming on fish growth and body size</i>	
Malin Karlsson, Swedish University of Agricultural Sciences	2019–2020
Main supervisor for project: <i>The effect of temperature on life history traits of perch (<i>Perca fluviatilis</i>) in a large scale natural climate change experiment and its implications for population age- and size structure?</i>	
Mattias Grunander, Swedish University of Agricultural Sciences	2016
Co-supervisor for project: <i>Effects of global warming on Eurasian perch (<i>Perca fluviatilis</i>) in the Baltic Sea. - Does the growth response to increased temperatures differ along a latitudinal gradient?</i>	
<b>BSc students</b>	
Lisa Schüttler, University of Gothenburg	2023
Main supervisor for project: <i>Effects of heatwaves on fish size-at-age</i>	

## Workshops

<i>Making academic websites using GitHub, Quarto and RStudio</i>	2022
<a href="https://github.com/maxlindmark/quarto-website">https://github.com/maxlindmark/quarto-website</a>	
<i>Making graphics in R for popular report on status of fishes in Swedish</i>	2019
<a href="https://github.com/maxlindmark/ROM">https://github.com/maxlindmark/ROM</a>	
<i>LunchR</i>	2018
A department wide R course in data wrangling and plotting (4x1 hour). Solely initiated and organized together with student colleague Philip Jacobson. Material: <a href="https://github.com/maxlindmark/LunchR">https://github.com/maxlindmark/LunchR</a>	
<i>Modelling population dynamics with MatCont</i>	2018
Organized a session on numerical continuation analysis of a predator-prey model	

## Reviewing

**Journals:** ICES Journal of Marine Science | Fish and Fisheries | Nature Communications | Ecology | Scientific Reports | Functional Ecology | PLOS ONE | Oikos | Proceedings of the Royal Society B | Fisheries | Canadian Journal of Fishery and Aquatic Sciences | Global Ecology and Biogeography | Ecology and Evolution | Environmental Biology of Fishes

Ifremer: External evaluation of PhD proposal 2022

## University services

PhD Representative Department of Aquatic Resources, SLU	2019
Class representative Applied Marine and Fisheries Ecology	2014–2015

I represented students' opinions and views on the program in regular meetings with course- and program coordinators at the University of Aberdeen

Student Ambassador Applied Marine and Fisheries Ecology 2014–2015  
I communicated with prospective students, mostly through social media

## Outreach

Co-managing research group's Instagram account @fishinfoodwebs 2016–2020

SLU 40th Anniversary, Uppsala (Poster) 2017  
*Climate change and size-structured populations. Temperature dependent allometry and ontogenetic asymmetry shape warming responses of size structured populations*

Science evenings (high school), Östhammar municipality (Talk) 2017  
*Effects of warming on fishes*

Gothenburg Biological Society 2014  
Popular talk at the Gothenburg Museum of Natural History on bycatch in small scale pelagic fisheries on the west coast of Sweden

Swedish Society for Nature Conservation 2011–2014  
I have given public talks (presenting on the topic of toxins in the Baltic herring in 2014) at local festivals (go: TO SEA and Västerhavsveckan)

Gothenburg Museum of Natural History 2011–2014  
Arranged seminar (4\*2 per year) with invited speakers, covering all things marine