

# 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]

- Lindmark, M.**, Anderson, S. C., Gogina, M., Casini, M. 2022. Evaluating drivers of spatiotemporal individual condition of a bottom-associated marine fish. *BioRxiv*.  
<https://www.biorxiv.org/content/10.1101/2022.04.19.488709v3>

#### [Publications]

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*, early view. <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

- |   |           |
|---|-----------|
| 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 In recognition of all-round performance in the Applied Marine and Fisheries Ecology program throughout the year. Awarded jointly with another student	2015
Fishmonger's Award, Scholarship recipient Full fees payment (£3400) awarded to 1 MRes/MSc student on academic merit by the Fishmonger's Company	2014
Gothenburg Biological Society 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	2014
Stiftelsen Hvitfeldtska gymnasiet's samfund Stipend awarded for academic achievement (top 10% of science students in class)	2010

## Invited talks

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

## Conferences

ICES ASC (Remote talk) <i>Higher mortality rates leave heated ecosystem with similar size structure despite larger, younger, and faster growing fish</i>	2022
ICES/PICES Early Career Scientist Conference (Talk) <i>Evaluating drivers of spatiotemporal changes in the condition of Eastern Baltic cod</i>	2022
Swedish Oikos Meeting, Online (Talk) <i>Evaluating drivers of spatiotemporal changes in the condition of Eastern Baltic cod</i>	2021
Baltic Sea Science Congress, Stockholm (Talk) <i>Warming alters the effect of fishing on the size spectra of an exploited temperate food web</i>	2019
Society for Experimental Biology, Seville (Talk) In Satellite: Is global warming causing animals to shrink? evidence, mechanisms and models <i>Physiological constraints to growing large in warm waters?</i>	2019
Swedish Oikos Meeting, Uppsala (Talk) <i>Physiological constraints to growing large in warm waters?</i>	2019
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) 2017  
*Climate change and size-structured populations. Temperature dependent allometry and ontogenetic asymmetry shape warming responses of size structured populations*

## Research visits

University of Washington, School of Aquatic and Fishery Sciences Mar 2017-Jun 2017  
 Research visit and collaboration with Dr. Jan Ohlberger

University of Tasmania, Institute for Marine and Antarctic Studies Nov 2018-Dec 2018  
 Research visit and multispecies food web modelling workshop with Dr. Julia Blanchard

## Working groups

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

## Teaching

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

*Sustainability perspectives on contemporary fisheries. Where have all the fishes gone?* 2019  
 Teaching assistant. Lecture on climate impacts on global fisheries.

*Ecology for fish management and conservation* 2016–2019  
 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.

*Principles in Fisheries Science* 2018–2022  
 Teaching assistant. Wrote R lab Impacts of fishing in an ecological context. Lecture on ecological interactions <https://github.com/maxlindmark/pfs>

## Supervision

### PhD students

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

### MSc students

Julia Cao Sanchez, Uppsala University 2023  
 Main supervisor for project: *Joint species distribution modelling of benthic invertebrate communities*

Leo Sheils, Uppsala University 2023  
Main supervisor for project: *Effects of warming on fish growth and body size*

Malin Karlsson, Swedish University of Agricultural Sciences 2019–2020  
Main supervisor for project: *The effect of temperature on life history traits of perch (Perca fluviatilis) in a large scale natural climate change experiment and its implications for population age- and size structure?*

Mattias Grunander, Swedish University of Agricultural Sciences 2016  
Co-supervisor for project: *Effects of global warming on Eurasian perch (Perca fluviatilis) in the Baltic Sea. - Does the growth response to increased temperatures differ along a latitudinal gradient?*

### BSc students

Lisa Schüttler, University of Gothenburg 2023  
Main supervisor for project: *Effects of heatwaves on fish size-at-age*

## Workshops

*Making academic websites using GitHub, Quarto and RStudio* 2022  
<https://github.com/maxlindmark/quarto-website>

*Making graphics in R for popular report on status of fishes in Swedish* 2019  
<https://github.com/maxlindmark/ROM>

*LunchR* 2018  
A department wide R course in data wrangling and plotting (4x1 hour). Solely initiated and organized together with student colleague Philip Jacobson. Material: <https://github.com/maxlindmark/LunchR>

*Modelling population dynamics with MatCont* 2018  
Organized a session on numerical continuation analysis of a predator-prey model

## Reviewing

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

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) <i>Climate change and size-structured populations. Temperature dependent allometry and ontogenetic asymmetry shape warming responses of size structured populations</i>	2017
Science evenings (high school), östhammar municipality (Talk) <i>Effects of warming on fishes</i>	2017
Göteborg Biological Society Popular talk at the Göteborg Museum of Natural History on bycatch in small scale pelagic fisheries on the west coast of Sweden	2014
Swedish Society for Nature Conservation 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)	2011–2014
Göteborg Museum of Natural History Arranged seminar (4*2 per year) with invited speakers, covering all things marine	2011–2014