

Full name: Katja Susanna Enberg **E-mail:** katja.enberg@uib.no **Home page:** <http://katja.enberg.no>

Work address: Dept. of Biological Sciences, University of Bergen Thormøhlensgate 53B, 5020 Bergen

Date and place of birth: 15.2.1977, Finland (age: 41)

Career breaks: Altogether 2.5 years of parental leave for children born in 9/2009, 5/2011, and 11/2012

Selected evaluations:

"Katja has been at the forefront of her field producing innovative and well considered modelling approaches to an important area of evolutionary biology and fisheries science. Fellow scientists are keen to collaborate with her due to these skills and her readiness to debate science. As such I think Katja is an excellent scientist who has great potential as leading scientist." Dr. Peter J. Wright (Marine Scotland Science), evaluation for title of docent¹ at Univ. Helsinki (2014).

"Her scientific work is characterized by 2 strong qualities - 1) she is interested and works in a broad number of topics and is able to apply theoretical and applied methodology, and 2) she was successfully able to combine her theoretical ecology work with practical fisheries management questions. We consider this the strongest part of her CV and she is without doubt a leading scientist in this regard." The committee evaluating professorial level researcher competence (at IMR), consisting of two international and two Norwegian professors, and 1 internal evaluator (2014).

Academic degrees and evaluations:

2014 Professorial level researcher competence (1183), Institute of Marine Research (IMR), Norway.

2014 Title of docent¹ in evolutionary ecology, University of Helsinki.

2005 PhD, Faculty of Biosciences, Dept. of Biological and Environmental Sciences, University of Helsinki.

2000 MSc, Faculty of Science, Dept. of Ecology and Systematics, University of Helsinki.

Positions held after receiving PhD:

08/2018- Associate Professor in Fisheries Science, University of Bergen (UiB)

03/2014- 07/2018 Head of the Research and Advice Program for the Norwegian Sea, IMR

04/2010-02/2014 Researcher, IMR, Bergen (scientist 2010-2011, senior scientist 2011-2014)

12/2007-03/2010 Postdoctoral fellow, UiB

04/2007- 11/2007 Research fellow, IMR/ UiB, Norway

04/2006-03/2007 Postdoctoral fellow, Int. Inst. for Appl. Systems Analysis (IIASA), Laxenburg, Austria

07/2005-03/2006 Postdoctoral fellow, Department of Mathematics and Statistics, Univ. of Helsinki

Academic leadership:

Head of the Research and Advice Program for the Norwegian Sea, IMR (3/2014-7/2018). Strategic planning, implementation and follow-up of >40 projects, total annual budget € 18 mill. National responsibility for scientific management advice for fish stocks with first-hand annual sales value of ca € 550 mill.

Vice Chair of the [Young Academy of Norway](#) (2016-2017). Membership (2015-2019) based on application and interview, leadership elected among members.

Project leader and PI for Research Council of Norway projects [ConEvolHer](#) (2015-2018) and [EcoNorSe](#) (2015-2018), see also under *Scholarships and grants*.

IMR **project leader** for EU project [MYFISH](#) (Maximising yield of fisheries while balancing ecosystem, economic and social concerns: FP7-KBBE-2011-5), 2012-2014.

Chair for the following groups under the [International Council for the Exploration of the Sea](#) (ICES):

- Working group on widely distributed stocks (WGWIDE; assessing and providing quota advice on commercially highly important stocks like mackerel, herring, blue whiting), 2014-2016.
- Benchmark Workshop on Pelagic Stocks (WKPELA 2018)
- Workshop on the determination of reference points for NSS Herring (WKNSSHREF 2018)
- Workshop on long term management plan (LTMP) for NEA mackerel (WKMACLTMP 2014).
- Workshop on LTMP on Norwegian spring-spawning herring (WKBWNSSH 2013).

Leadership training:

2015-2016: Leadership development program for young leaders (Yngre Ledere) by the Administrative Research Institute (AFF) at the Norwegian School of Economics (NHH), Bergen. 5 work weeks and intersessional work.

¹ Docent: a person who has comprehensive knowledge of her/his own field, a capacity for independent research demonstrated through publications, and good teaching skills www.helsinki.fi/bio/faculty/materials/instructions_for_docentship_2010.pdf

Scientific/academic duties:

Member of the Norwegian [Advisory Committee for Research on Marine Resources](#) (2015-2018).

Member of the following ICES groups: WGWIDE (2010-present), Herring Assessment Working Group for the Area South of 62° N (HAWG, 2011-present), workshop on LTMP for North Sea herring (WKHELP 2012), Working Group on the Integrated Assessments of the Norwegian Sea (WGINOR 2015-present), Workshop on Strategy for a Long-term Management Plan for Blue Whiting (WKBWMSE 2016), Working Group on Fisheries-Induced Evolution (2007-present), Benchmark workshop on Widely Distributed Stocks (WKWIDE 2016).

Guest editor of the special issue [Toward Darwinian fisheries management](#) in *Evolutionary Applications* 2009, 2(3): 245 – 455.

Member of the PhD examination board at the University of Lund, Sweden, in 2009 and in 2013.

Convener for the symposia: 1) “Evolving Fish, Changing Fisheries” AFS annual meeting, 2008, Canada; 2) “Recruitment dynamics in a changing environment: integrating spatial and temporal variability into stock assessment and management strategies” ICES Annual Science Conference, 2017, USA.

External referee for research proposals for NSF (USA), The Royal Society (UK), Swedish Univ. of Agricultural Sciences (Sweden), NWO (the Netherlands), The Fram Centre (Norway), H.C. Ørsted Programme cofunded by Marie Skłodowska-Curie Actions (DTU, Denmark), FCT (national funding agency for science, Portugal).

Reviewer for over 20 different journals including *Nature communications*, *Nature Ecology and Evolution*, *Ecology Letters*, *Journal of Animal Ecology*, *Evolutionary Applications*, *Ecological Applications*, *Journal of Applied Ecology*, *Fish and Fisheries*, *Oikos*, *Canadian Journal of Fisheries and Aquatic Sciences*, *Conservation Biology*, and *Evolutionary Ecology*.

International mobility:

2008: University of California Santa Cruz, USA. Visiting Prof. Marc Mangel. 3 months.

2008: University of California Riverside, USA. Visiting Prof. David Reznick. 3 months.

2006-2007: Institute for Applied Systems Analysis, Austria. Postdoc with Prof. Ulf Dieckmann. 12 months.

1999: Imperial College London, UK. Visiting Prof. Kai Lorenzen. 5 months.

Teaching and higher education studies:

2018: Lecturing on courses BIO102 (Organismal biology); BIO325 (Ocean Science; including 8-day survey)

2016: Invited lecturer in [Bergen Summer Research School](#) on ‘The ocean, climate and society’. Title: *Combined effects of harvesting and climate change on fish populations*.

2015: Invited lecturer in [Hjort Summer School](#) (Bergen) on ‘Fishing and physics as drivers of marine ecosystem dynamics’. Title: *Fisheries management in theory and practice - ecosystem-based?*

2014-present: Visiting lecturer organizing a practical, introductory ‘fish lab’ and lecturing on fisheries management for first-year students in BIO100 (Introduction to Evolution and Ecology). In Norwegian.

2015: Visiting lecturer in BIO339 (Ecosystem and Fisheries Assessment Models), Department of Biology, UiB.

2011: Invited lecturer in [Winter school on eco-evolutionary modelling of speciation](#) (Sweden). Title: *Individual-based eco-evolutionary models*.

2011-> Sensor in oral and written exams for the Department of Biology at UiB. BIO339: Ecosystem and Fisheries Assessment Models, BIO331: Fisheries Management, MNF115: Natural Science Perspective on Sustainable Development, BIO213: Marine Ecology. In Norwegian and in English.

2009: Teaching assistant in Ecology (BIO201) at the Department of Biology, UiB. In Norwegian.

2005: University pedagogy 1 (5 study weeks, corresponding to ca. 10 ECTS), University of Helsinki.

2005: Main lecturer in population ecology and responsibility for the computer exercises in “From individuals to Ecosystems” 7 ECTS credits at University of Helsinki, for second year biology students.

2002, 2003: lecturing and leading computer labs in the course "Managing populations" on population modelling at the Department of Ecology and Systematics, University of Helsinki. In English.

Supervision:

Postdoc: Nikos Nikolioudakis (Institute of Marine Research), main supervisor. 10/2015-

Fabian Zimmermann (Institute of Marine Research), main supervisor. 11/2015-

PhD: Marion Claireaux (Institute of Marine Research), main supervisor. 8/2015-

Ingrid Wathne (University of Bergen), co-supervisor. To be finished in 2018.

MSc: Marion Claireaux (University of Brest, France), 2015.

Johanna Myrseth (University of Bergen), 2008.

Scholarships and grants:

2014: Research Council of Norway: Ecosystem dynamics in the Norwegian Sea - new methods for understanding recent changes ([EcoNorSe](#)). 1.1.2015-31.12.2018, ca. € 1 mill.

2014: Research Council of Norway: Can Contemporary Evolution explain the many enigmas in recent dynamics of Norwegian spring-spawning Herring? ([ConEvolHer](#)). 1.7.2015- 31.8.2018, ca. € 1 mill.

2007: Academy of Finland, personal postdoctoral grant for research abroad, € 47 100.

Public outreach, interviews, and science dissemination:

I have published several popular science articles in Norwegian on fisheries assessment and management in the Norwegian Fishermen's journal Fiskeribladet Fiskaren, and been interviewed as an expert several times by them and by Norway's national broadcasting company NRK (on web, radio, and national tv).

Publications [Total citations 1246 (1967), h-index 13 (16) from ISI Web of Science ([Google Scholar](#))]

	Citations:	
	ISI	Google
Refereed contributions in peer-reviewed international journals		
Claireaux, M., C. Jørgensen and K. Enberg . Evolutionary effects of fishing gear on foraging behavior and life-history traits. <i>Ecology and Evolution</i> (<i>in press</i>).	-	-
Nikolioudakis, N., H.J. Skaug, A.H. Olafsdottir, T. Jansen, J.A. Jacobsen, and K. Enberg . Drivers of the summer-distribution of Northeast Atlantic mackerel (<i>Scomber scombrus</i>) in the Nordic Seas from 2011 to 2017; a Bayesian hierarchical modelling approach. <i>ICES J. Mar. Sci.</i> DOI: 10.1093/icesjms/fsy085	-	-
Enberg K. , C. Jørgensen. 2017. Conclusion that fishing-induced evolution is negligible follows from model assumptions. <i>PNAS</i> 114 : E4321. DOI: 10.1073/pnas.1700708114	1	1
Zimmermann, F. and K. Enberg . 2017. Can less be more? Effects of reduced frequency of surveys and stock assessments. <i>ICES J. Mar. Sci.</i> 74 : 56-68. DOI: 10.1093/icesjms/fsw134	1	3
Jorgensen, C., K. Enberg , M. Mangel. 2016. Modelling and interpreting fish bioenergetics: a role for behaviour, life-history traits and survival trade-offs. <i>J. Fish Biol.</i> 88 : 389-402. DOI: 10.1111/jfb.12834	6	10
Kvamsdal, S.F., A. Eide, N. Ekerhovd, K. Enberg , et al. 2016. Harvest Control Rules in Modern Fisheries Management. <i>Elem. Sci. Anth.</i> 4 : 114. DOI: 10.12952/journal.elementa.000114	N/A	11
Laugen, A.T., G.H. Engelhard, R. Whitlock, R. Arlinghaus, D.J. Dankel, E.S. Dunlop, A.M. Eikeset, K. Enberg , et al. 2014. Evolutionary impact assessment: Accounting for evolutionary consequences of fishing in an ecosystem approach to fisheries management. <i>Fish Fish.</i> 15 : 65-96. DOI: 10.1111/faf.12007	57	85
Boukal, D.S., U. Dieckmann, K. Enberg , M. Heino and C. Jørgensen. 2014. Life-history implications of the allometric scaling of growth. <i>J. Theor. Biol.</i> 359 : 199–207.	11	19
Skagen, D.W., M. Skern-Mauritzen, D.J. Dankel, K. Enberg , O.S. Kjesbu, and R.D.M. Nash. 2013. A simulation framework for evaluating fisheries management decisions using environmental information. <i>ICES J. Mar. Sci.</i> 70 (4): 743-754. DOI: 10.1093/icesjms/fst043	3	7
Heino, M., L. Baulier, D.S. Boukal, B. Ernande, F.D. Johnston, F. Mollet, H. Pardoe, N.O. Therkildsen, S. Uusi-Heikkilä, A. Vainikka, R. Arlinghaus, D.J. Dankel, E.S. Dunlop, A.M. Eikeset, K. Enberg , et al. 2013. Can fisheries-induced evolution shift reference points for fisheries management? <i>ICES J. Mar. Sci.</i> 70 : 707-721. DOI: 10.1093/icesjms/fst077	53	71
Enberg K. , C. Jørgensen, E.S. Dunlop, Ø. Varpe, D.S. Boukal, L. Baulier, S. Eliassen M. Heino. 2012. Fishing-induced evolution of growth: concepts, mechanisms, and the empirical evidence. <i>Mar. Ecol.-Evol. Persp.</i> 33 : 1-25. DOI: 10.1111/j.1439-0485.2011.00460.x	89	143
Myrseth, J., K. Enberg , M. Heino, and Ø. Fiksen. 2011. Do accurate stock estimates increase harvest and reduce variability in fisheries yields? <i>Nat. Resour. Model.</i> 24 : 222–241. DOI: 10.1111/j.1939-7445.2011.00089.x	5	5
Enberg, K. , C. Jørgensen, M. Mangel. 2010. Fishing-induced evolution and changing reproductive biology of fish: the evolution of steepness. <i>Can. J. Fish. Aquat. Sci.</i> 67 : 1708–1719. DOI: 10.1139/F10-090	21	29
Dickey-Collas, M., R.D.M. Nash, T. Brunel, C.J.G. van Damme, C.T. Marshall, M.R. Payne, A. Corten, A.J. Geffen, M.A. Peck, E.M.C. Hatfield, N.T. Hintzen, K. Enberg , et al. 2010. Lessons learned from stock collapse and recovery of North Sea herring: a review. <i>ICES J. Mar. Sci.</i> 67 : 1875-1886. DOI: 10.1093/icesjms/fsq033	63	95
Enberg, K. , C. Jørgensen, E.S. Dunlop, M. Heino, U. Dieckmann. 2009. Implications of fisheries-induced evolution for stock rebuilding and recovery. <i>Evol. Appl.</i> 2 : 394-414.	128	174
Tiira, K., A. Laurila, K. Enberg , and J. Piironen. 2009. Short-term dominance: stability and consequences for subsequent growth. <i>J. Fish Biol.</i> 74 : 2374-2385. DOI: 10.1111/j.1095-8649.2009.02253.x	6	12
Heino, M., L. Baulier, D.S. Boukal, E.S. Dunlop, S. Eliassen, K. Enberg , C. Jørgensen, and Ø. Varpe. 2008. Evolution of growth in Gulf of St Lawrence cod? <i>P. Roy. Soc. B-Biol. Sci.</i> 275 : 1111-1112. DOI: 10.1098/rspb.2007.1429	24	27

Jørgensen, C., K. Enberg , E.S. Dunlop, et al. 2007. Managing evolving fish stocks. <i>Science</i> 318 : 1247-1248. DOI: 10.1126/science.1148089	353	518
Enberg, K. , M.S. Fowler, E. Ranta. 2006. The impacts of different management strategies and environmental forcing in ecological communities. <i>P. Roy. Soc. B-Biol. Sci.</i> 273 : 2491-2499. DOI: 10.1098/rspb.2006.3611	6	11
Tiira, K., A. Laurila, K. Enberg , et al. 2006. Do dominants have higher heterozygosity? Social status and genetic variation in brown trout, <i>Salmo trutta</i> . <i>Behav. Ecol. Sociobiol.</i> 59 : 657-665. DOI: 10.1007/s00265-005-0094-8	43	53
Enberg, K. 2005. Benefits of threshold strategies and age-selective harvesting in a fluctuating fish stock of Norwegian spring spawning herring <i>Clupea harengus</i> . <i>Mar. Ecol. Progr. Ser.</i> 298 : 277-286.	9	14
Kaitala, V., K. Enberg , and E. Ranta. 2004. Fish harvesting, marine reserves, and distribution of individuals over space. <i>Biological Letters</i> 41 : 3-10.	N/A	4
Kaitala, V., N. Jonzén, and K. Enberg . 2003. Harvesting strategies in a fish stock dominated by low-frequency variability: the Norwegian spring-spawning herring (<i>Clupea harengus</i>). <i>Mar. Resour. Econ.</i> 18 : 263-274.	N/A	13
Enberg, K. and V. Kaitala. 2003. Managed extinctions in fisheries. <i>Advances in Ecological Sciences</i> 19 : 981-987.	N/A	1
Gårdmark, A., K. Enberg , J. Ripa, J. Laakso, and V. Kaitala. 2003. The ecology of recovery. <i>Ann. Zool. Fenn.</i> 40 : 131-144.	18	32
Lorenzen, K., K. Enberg . 2002. Density-dependent growth as a key mechanism in the regulation of fish populations: evidence from among-population comparisons. <i>P. Roy. Soc. B-Biol. Sci.</i> 269 : 49-54. DOI: 10.1098/rspb.2001.1853	221	351
Lahti, K., A. Laurila, K. Enberg , and J. Piironen. 2001. Variation in aggressive behaviour and growth rate between populations and migratory forms in the brown trout, <i>Salmo trutta</i> . <i>Anim. Behav.</i> 62 : 935-944.	50	77
Other contributions in international peer-reviewed journals:		
Dunlop, E.S., K. Enberg , C. Jørgensen, M. Heino. 2009. Toward Darwinian fisheries management. <i>Evol. Appl.</i> 2 : 245-259.	48	67
Jørgensen, C., K. Enberg , et al. 2008. The role of fisheries-induced evolution – response. <i>Science</i> 320 : 48-50.	10	17
Book chapters in international peer-reviewed edited books:		
Lilly, G.R., K. Wieland, B. Rotschild, S. Sundby, K. Drinkwater, K. Brander, G. Ottersen, J. Carscadden, G. Stenson, G. Chouinard, D. Swain, N. Daan, K. Enberg et al. 2008. Decline and recovery of Atlantic cod (<i>Gadus morhua</i>) stocks throughout the North Atlantic. In <i>Resiliency of gadoid stocks to fishing and climate change</i> , Edited by G.H. Kruse et al. Alaska Sea Grant College Program, Fairbanks, Alaska. Pp 39-66.	N/A	39
Enberg, K. , E.S. Dunlop, C. Jørgensen. 2008. Fish growth. In <i>Encyclopedia of Ecology</i> , Edited by S.E. Jørgensen and B.D. Fath. Elsevier, Oxford. Pp 1564-1572.	N/A	10
Heino, M. and K. Enberg . 2008. Sustainable use of populations and overexploitation. In <i>Encyclopedia of life sciences</i> . John Wiley & Sons, Chichester, UK.	N/A	3
Articles on research policy:		
Aronsen, M., A.R. Jensenius, K. Emblem, K. Storeng, K. Enberg , C-H. Knutsen, G. Lind. 2017. Kvalitetsparadokset i den norske forskningspolitikken. <i>Krono</i> . [The paradox of quality in the Norwegian research policy]		
Emblem, K.E., K. Enberg , I. Helland, A.R. Jensenius, M. Rognes, K. Storeng, G. Østby. 2017. Tenk nytt om tellekanter, Haugstad! <i>Morgenbladet</i> . [We need novel ideas about publication points]		
Aronsen, M., G. Lind, I. Helland, A. Schomacker, K. Enberg & H. Hølleland 2017. Karriereveier for økt forskningskvalitet. <i>Krono</i> . [Career paths for increased research quality]		
Enberg, K. , K. E. Emblem, A. Midtbøen, G. Lind & H. Hølleland 2016. Mobilitet i akademia – et liv som nomade? <i>Universitetsavisa</i> . [Mobility in academia – a life as a nomad?]		
Reports (Last 5 years, in total ca. 30):		
ICES. 2016. Report of the Working Group on Widely Distributed Stocks (WGWIDE), 31 August-6 September 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:16. 500 pp.		
ICES. 2016. Report of the Inter-Benchmark for Blue Whiting (IBPBLW), 2016, By correspondence. ICES CM 2016/ACOM:36. 118 pp.		
ICES. 2016. Report of the Benchmark Workshop on Pelagic stocks (WKPELA), 29 February–4 March 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:34. 106pp.		
Gjøsæter, H. Bogstad, B., Enberg, K. , Kovalev, Yu, Shamrai, E. (eds.) 2016. Long term sustainable management of living marine resources in the Northern Seas. The proceedings from the 17 Norwegian-Russian symposium, Bergen, Norway, 16-17 March 2016. IMR/PINRO Report series 3-2016		
ICES. 2015. Report of the Working Group on Widely Distributed Stocks (WGWIDE), 25 - 31 August 2015, Pasaia, Spain. ICES CM 2014/ACOM:15. 938 pp		
ICES. 2015. Report of the EU Workshop on the NEA Mackerel Long-term Management Plan (WKMACTMP), 24–27 June and 17–19 November 2014, Copenhagen, Denmark. ICES CM 2014/ACOM:63. 120 pp.		
ICES. 2014. Report of the WGWIDE subgroup for updated Mackerel advice for 2014, April 2014, by correspondence. ICES CM 2014/ACOM:48. 40pp.		
ICES. 2014. Report of the Benchmark Workshop on Pelagic Stocks (WKPELA), 17–21 February 2014, Copenhagen, Denmark. ICES CM 2014/ACOM: 43. 341 pp.		
ICES. 2013. Report of the Working Group on Widely Distributed Stocks (WGWIDE), 27 August - 2 September 2013, ICES HQ, Copenhagen, Denmark. ICES CM 2013/ACOM:15. 950 pp.		
ICES. 2013. Report of the Working Group on Widely Distributed Stocks (WGWIDE), 27 August - 2 September 2013, ICES HQ, Copenhagen, Denmark. ICES CM 2013/ACOM:15. 950 pp.		
ICES. 2013. Report of the Blue Whiting/Norwegian Spring-Spawning (Atlanto- Scandian) Herring Workshop (WKBWNSSH), 11–13 March 2013, Bergen, Norway. ICES CM 2013/ACOM:69. 88 pp.		