Curriculum vitae for

Anders Nielsen

Personal Data

Anders Nielsen
Vandtårnsvej 32
DK-2860 Søborg. Denmark
Phone: (+45) 4695 0694
Email: anders@nielsensweb.org
Url: http://www.anders.nielsensweb.org

DTU-Aqua.
Dept. of Marine Fisheries
Charlottenlund Slot
DK-2920 Charlottenlund
Phone: (+45) 3396 3300
Fax: (+45) 3396 3333

Education

Sep. 2000	Master of Science in Statistics (Cand. Scient.) University of Copenhagen. Title of master thesis: "Fish Stock Assessment using Markov Chain Monte Carlo."
Nov. 2004	Ph.D. degree in statistics. Royal Vetenary and Agricultural University. Title of thesis: "Estimating Fish Movement."

Experience

Royal Veterinary and Agricultural University

1996–2004	*Teaching assistant/ project supervisor/ Course writer/*	Statistics, Basic Course, Experimental Statistical Design, Statistical Data Analysis in Practice and more
2001–2004	*PhD Student*	

AArhus School of Business

1999	*Programming assistant*	Professor Michael Sørensen

DTU-Aqua (Danish Institute for Fisheries Research)

1998–2000	*Statistical consultant*
2000–2001	*Research assistant*
2004 autumn	*Project researcher*
2008–present	*Scientist*

University of Hawai'i at Mānoa

2005–2008	*Post doc*

Long term stays abroad

2002 autumn	Visited Dr. John R. Sibert at University of Hawai'i
2005–2008	Post doc at University of Hawai'i

Recent teaching experience

AD Model Builder Workshop at NCEAS, Santa Barbara, 9-10 March 2009.

AD Model Builder Workshop at AZTI Tecnalia, San Sebastian, 6-7 July, 2009.

AD Model Builder Workshop at DTU-Aqua, Copenhagen, 17-18 August, 2009.

AD Model Builder Workshop at International Statistical Ecology Conference 2010, Canterbury, UK, 5 July 2010.

AD Model Builder and Stock Assessment Course at Fisheries and Oceans Canada, St. John's, Newfoundland. 29 November - 3 December, 2010.

AD Model Builder and Stock Assessment Course at ICES HQ in Copenhagen.
21-25 February 2011.

R course for biologists (5-day) at DTU-Aqua, Copenhagen, Spring 2011.

Advanced data analysis and statistical modelling (full semester) at DTU-informatics. Spring 2011

Research Interests

Biostatistics: Modeling of dynamical systems (state-space models), fish stocks, and fish movements.
Improving stock assessment models: Moving to statistically sound models, optimize sampling, and including spatial structure.
Computer intensive statistical methods: Markov Chain Monte Carlo and bootstrap methods.
Statistical software: In general, but in particular the languages "AD Model Builder" and "R".

Software

Nielsen, A. and Berg, C. 2009. Stockassessment.org: A state-space assessment model with a web-based user interface. The key feature is that the fish stock assessment model and the data going into the model can be customized online, which allows working groups to actually work together on providing the best assessment.

Nielsen, A. and Sibert, J. R. and Lam, C. H. 2007. Trackit: R-package to efficiently estimate the most probable track from raw light measurements and possibly SST. Available at: http://www.trackit.nielsensweb.org/

Nielsen, A., Sibert, J. R. and Lam, C. H. 2005. UKFSST/KFSST: R-package to efficiently estimate the most probable track from light-based longitude, latitude and SST. Available at: http://www.nielsensweb.org/ukfsst/

Nielsen, A. 2003. SimNI (Simulation of Numerous Individuals): An add-on package for the statistical environment R to efficiently simulate the movement of a possibly large number of individuals. Available at: http://www.dina.kvl.dk/∼anielsen/SimNI/

Sibert, J. R. and Nielsen, A. 2003. KFtrack (Kalman Filter tracking): An add-on package for the statistical environment R to efficiently estimate movement parameters and predict most probable track from raw geo-locations of archival tagged individuals. Available at: https://www.soest.hawaii.edu/tag-data/tracking/kftrack/

Award

The Ecological Society of America's **2010 Sustainability Science Award.**

Membership

Member of the Danish Society for Theoretical Statistics.

Founding member and board member of The AD Model Builder foundation (http://www.admb-project.org).

Participation in ICES working groups

Workshop on Reviews of Recent Advances in Stock Assessment Models Worldwide (WKADSAM)

Working Group on Methods of Fish Stock Assessments (WGMG)

Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK)

Baltic Fisheries Assessment Working Group (WGBFAS)

Ad Hoc Group on Cod Recovery Management Plan

Ad hoc group on Sandeel

Benchmark Workshop on Roundfish

Publication count

Peer reviewed: 22
Other: >10

Peer reviewed publications

Fournier, D.A., Skaug, H.J., Ancheta, J., Ianelli, J., Magnusson, A., Maunder, M.N., Nielsen, A., and Sibert, J. 2011. AD Model Builder: using automatic differentiation for statistical inference of highly parameterized complex nonlinear models. Optimization Methods and Software (in press).

Eigaard, O.E., Thomsen, B., Hovgaard, H., Nielsen, A., and Rijnsdorp, A.D. 2011. Fishing power increases from technological development in the Faroe Islands longline fishery. Can. J. Fish. Aquat. Sci. (in press).

Pedersen, M.W., Berg, C.W., Thygesen, U.H., Nielsen, A., and Madsen, H. 2011. Estimation methods for nonlinear state-space models in ecology. Ecological Modelling **222**(8): 1394-1400

Gårdmark, A., Nielsen, A., Floeter, J., and Möllmann, C. 2011. Depleted marine fish stocks and ecosystem-based management: on the road to recovery we need to be precautionary. ICES Journal of Marine Science **68**: 212–220.

Lam, C.H., Nielsen, A., and Sibert, J.R. 2010. Incorporating sea-surface temperature to the light-based geolocation model, TrackIt. Mar. Ecol. Prog. Ser **419**: 71-84.

Lindegren M, Möllmann C, Nielsen A, Brander K, MacKenzie B, Stenseth N. C. 2010. Ecological Forecasting under Climate Change - the case of Baltic cod. Proceedings of the Royal Society B-Biological Sciences **277**(1691): 2121-2130.

Swimmer, Y., McNaughton, L., Foley, D., Moxey, L., and Nielsen, A. 2010. Movements of olive ridley sea turtles *Lepidochelys olivacea* and associated oceanographic features as determined by improved light-based geolocation. Endang Species Res **10**(1-3): 245-254.

Lindegren, M., Möllmann, C., Nielsen, A., Stenseth, N. C. 2009. Preventing the collapse of the Baltic cod stock through an ecosystem-based management approach. National Academy of Sciences. Proceedings **106**(34): 14722-14727.

Nielsen, A., Sibert, J., Kohin, S., and Musyl, M. 2009. State space model for light based tracking of marine animals: validation on swimming and diving creatures. Reviews: Methods and Technologies in Fish Biology and Fisheries 295-309.

Sibert, J., Nielsen, A., Musyl, M., Leroy, B., and Evans, K. 2009. Removing bias in latitude estimated from solar irradiance time series. Reviews: Methods and Technologies in Fish Biology and Fisheries 311-322.

Thygesen, U. H. and Nielsen, A. 2009. Lessons from a prototype geolocation problem. Reviews: Methods and Technologies in Fish Biology and Fisheries 257-276.

Galuardi, B., Nielsen, A., and Lutcavage, M. 2008. Optimizing smoothed sea surface temperature for improving archival tag geolocation. Mar. Ecol. Prog. Ser **365**: 35-44.

Lam, C. H., Nielsen, A., and Sibert., J. R. 2008. Improving light and temperature based geolocation by unscented Kalman filtering. Fisheries Research **91**(1): 15-25.

Nielsen, A. and Sibert., J. R. 2007. State-space model for light-based tracking of marine animals Can. J. Fish. Aquat. Sci. **64**(8): 1055-1068.

Andersen, K. H., Nielsen, A., Thygesen, U. H., Hinrichsen, H. H., and Neuenfeldt., S. 2007. Using the particle filter to geolocate Atlantic cod (*Gadus morhua*) in the Baltic Sea, with special emphasis on determining uncertainty. Can. J. Fish. Aquat. Sci. **64**(4): 618-627.

Neuenfeldt, S., Hinrichsen, H. H., Nielsen, A., and Andersen, K. H. 2007. Reconstructing migrations of individual cod (*Gadus morhua L.*) in the Baltic Sea by using electronic data storage tags. Fisheries Oceanography **16**(6), 526-535.

Sibert, J. R., Lutcavage, M. E., Nielsen, A., Brill, R. W., and Wilson, S. G. 2006. Interannual variation in large-scale movement of Atlantic bluefin tuna (*Thunnus thynnus*) determined from pop-up satellite archival tags. Can. J. Fish. Aquat. Sci. **63**(10): 2154-2166.

Nielsen, A., Bigelow, K. A., Musyl, M. K., and Sibert, J. R. 2006. Improving light-based geolocation by including sea surface temperature. Fisheries Oceanography, **15**(4): 314-325.

Lewy, P., Nielsen, A. and Gislason, H. 2004. Stock dynamics of sandeel in the North Sea and sub-regions including uncertainties. Fisheries Research **68**: 237–248.

Lewy, P. and Nielsen, A. 2003. Modeling stochastic fish stock dynamics using Markov Chain Monte Carlo. ICES Journal of Marine Science **60**: 743–752.

Sparrevohn, C. R., Nielsen, A. and Støttrup J. G. 2002. Diffusion of fish from a single release point. Can. J. Fish. Aquat. Sci. **59**(5): 844–853

Nielsen, A. and Lewy, P. 2002. Comparison of the frequentist properties of Bayes and the maximum likelihood estimators in an age-structured fish stock assessment model. Can. J. Fish. Aquat. Sci. **59**(1): 136–143.