CV
Saskia Otto

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EMPLOYMENT

Since 04/2014   Institute for Hydrobiology and Fisheries Science (IHF), University of Hamburg. Postdoc (qualification position for habilitation), Equal Opportunity Representative
- Development and dissemination of modern, statistical analysis tools
- Development of MSFD food web indicators and R package for indicator evaluation (https://github.com/saskiaotto/INDperform)
- Development of Baltic Sea database for zooplankton, phytoplankton, fish and benthos traits
- Integrated analyses of spatio-temporal changes in ecosystem structure and functioning and underlying pressures for the Baltic Sea
- Teaching in marine data science, statistics and R (Bachelor and Master level)
- Supervision of master and PhD students

02/2012 – 03/2014   Stockholm Resilience Centre, Stockholm University. Postdoc (BEAM project)
- Size measurements and time series analysis: testing for patterns in size distribution, trends and thresholds in Baltic Sea pelagic food webs
- Teaching in statistical and ecosystem modeling and regime shift detection (Master to Postdoc level)
- Organization of national and international workshops

09/2010 – 11/2014   World Wide Fund (WWF). Freelancer
- Developing improved version of the WWF's "Common Wild Capture Fishery Methodology" to assess the environmental sustainability of the origins of seafood species from wild-capture fisheries
- Conducting wild-fishery assessments and quality control thereof for the annual seafood guide

04/2009 – 01/2012   Institute for Hydrology and Fisheries Sciences, University of Hamburg. Research assistant and PhD student in the BONUS Era-Net project AMBER
- Time series analysis and statistical modeling: long-term dynamics of zooplankton populations, changes in productivity regimes, relative importance of trophic controls
- Teaching in statistics and R (Master level)

07/2007 – 03/2009   Institute of Inland Fisheries Potsdam-Sacrow (IfB). Research scientist
- Consolidation of fishery-, zooplankton-, benthos- and hydrology data and the development of server-based relational databases
- Development and implementation of ArcGIS geodatabases
- Survey and assessment of the fish fauna and water quality within the Water Framework and the Habitat Directives for the federal states Brandenburg and Sachsen-Anhalt
- Writing export reports

01/2008 – 02/2008   German Technical Cooperation (GTZ). Consultant
- Aquaculture baseline study in the province Negros Occidental, Philippines
- Comparative study of certification schemes of organic aquaculture and their suitability for the Philippines
- Assessment of aquaculture farms (tilapia, milkfish, shrimps) for qualification of the "Naturland" eco-label certification

04/2006 – 05/2007   German Development Service (DED) in cooperation with the NGO PROCESS Bohol, Inc., Philippines. Junior consultant
- Project management: study on heavy metal contamination in estuary sediments and mussels, study on environmental and health impacts of the local shrimp aquaculture

- Planning and conducting of workshops on experimental designs and basic statistics
- Training and supervision of interns
- Coral reef monitoring in MPA's and within the scope of the "Guimaras Rapid Assessments" after the major oil spill

ACADEMIC EDUCATION

08/2012	**PhD** (Dr. rer. nat.), University of Hamburg, Department of Biology (degree: "magna cum laude")
	Thesis "Long-Term Population Dynamics of Key Copepods under Climate and Food Web Changes: The Baltic Sea as a Case Study"
04/2002 – 09/2005	**Diploma** (equivalent to M.Sc.), Humboldt-University of Berlin, Germany, Department of Biology, Postgraduate studies in biology (major: zoology, minor: ecology, geography), grade: 1.5 (level A)
	Thesis "The effects of temporal variability of disturbance on marine fouling communities" at the IFM GEOMAR, Kiel, and Leigh Marine Laboratory, University Auckland, NZ, within the framework of the international training and research program GAME ("Global Approach of Modular Experiments")
10/1999 – 03/2002	Hamburg University, Germany, Department of Biology.
	Intermediate diploma in biology, chemistry, physics; grade: level A

FURTHER QUALIFICATIONS

IT SKILLS	Programming languages (R, SQL, GIT, HTML, CSS, VB/VBA), statistic programs (Matlab, SAS, SPSS, Primer, STATISTICA), ArcGIS, relational databases (MySQL, MS Access), modeling and simulation software (Vensim, Netlogo, Gephi, XPP), graphics (Adobe Photoshop, Illustrator, Acrobat, Apple Keynote, MS Power Point, Prezi), Endnote, Ocean Data View, project management software (Merlin Project, Omniplan), version control (git and github)
FIELD AND LAB EXPERIENCE	Participation in 3 North Sea bottom trawl surveys (annual IBTS in summer) and 2 Baltic Sea pelagic surveys, onboard data collection, sampling and classification of pelagic and demersal fish, micro- and macroscopic analysis of fish parasites, sampling and analysis of zooplankton including digital image analysis (ZooScan), enzyme activity measurements, underwater coral reef measurements: point intercept transect for corals, belt transect for invertebrates, fish visual census
	PADI rescue diver license (02/2008; > 75 dives)
SOFT SKILLS	Academic Leadership (2015/2016), Intercultural Communication und Management - Asia/Oceania (2006)
LANGUAGE SKILLS	German (Mother tongue) English (Fluent) French, Swedish (Intermediate) Visayan (Basics)

RESEARCH CRUISES

04/2015	Research cruise to the Bornholm Basin, Baltic Sea (RV Alkor): INSPIRE project
03/2010	Research cruise to the Kiel Bight, Baltic Sea (RV Alkor), student course
07/2002 – 08/2002	Research assistant at the "International Bottom Trawl Survey" in the North Sea (RV WH3)
07/2001 – 08/2001	Research assistant at the "International Bottom Trawl Survey" in the

North Sea (RV WH3)

| 01/2008 – 02/2008 | Research assistant at the "International Bottom Trawl Survey" in the North Sea (RV WH3) |

▬▬▬ SCHOLARSHIPS

| 04/2006 – 05/2007 | DED Trainee Program (NFP) |
| 10/2004 – 7/2005 | Mercator Foundation, International student training and research program GAME |

▬▬▬ FUNDED PROJECTS

"RLab 2.0 - Modular environmental statistics: Script-based analyses with R for geography, meteorology or biology students", a research lab project funded by the University of Hamburg (https://www.universitaetskolleg.uni-hamburg.de/universitaetskolleg-2-0/lehrlabor/01-2018-min-rlab2.html), 2018 - 2019.

BONUS ERA-NET Project: "BLUEWEBS – Blue growth boundaries in novel Baltic food webs" (http://www.syke.fi/bonusbluewebs), 2017 - 2020. *Grant value: € 2,930,134*

EU-funded Innovative Training Network program: MARmaED – "MARine MAnagement and Ecosystem Dynamics under climate change" (https://cordis.europa.eu/project/rcn/198315_en.html), 2015 - 2019. *Grant value: €3,979,800*

FUNBAZOO – "Functional Diversity of Baltic Zooplankton" funded by the federal state Hamburg, 2015 - 2017, <u>project coordinator</u>. *Grant value: €17,600*

ICES Science Fund: IEA-Exchange – "Exchange of knowledge for Integrated Ecosystem Assessment" (http://www.ices.dk/community/icessciencefund/Pages/Exchange-of-knowledge-for-Integrated-Ecosystem-Assessment.aspx), 2015 - 2016, <u>project coordinator</u>. *Grant value: DKK 57,500 (≈ € 7,750)*

"Ecosystem-based approach for developing and testing pelagic food web indicators", project funded by the Swedish Environmental Protection Agency (SEPA) and Swedish Agency for Marine and Water Management (https://www.havochvatten.se/artikel?artikel=271272), 2014 - 2016, <u>project coordinator</u>. *Grant value: SEK 3,065,192 (≈ € 295,100)*

Stockholm University program: BEAM – "Baltic Ecosystem Adaptive Management" (http://www.su.se/ostersjocentrum/english/beam), 2010-2015, post doc

BONUS ERA-NET Project: AMBER – "Assessment and Modeling of Baltic Ecosystem Response" (www.io-warnemuende.de/amber.html), 2009 - 2011, PhD student

▬▬▬ NETWORKS

Co-chair of the "ICES/HELCOM Working Group on Integrated Assessment of the Baltic Sea" (member since 2010, co-chair since 2016)

Member of "ICES Working Group on Zooplankton Ecology" since 2018

▬▬▬ CHAIRMANSHIP AT CONFERENCES & SYMPOSIA

Convener of the Theme Session "Multiple stressors at multiple scales: ecosystem based management in the face of changing ocean conditions", 4th International ECCWO Symposium ("The Effects of Climate Change on the World's Oceans"), Washington D.C., U.S.A., 4-8 June 2018.

Convener of the Theme Session "From science to evidence – innovative uses of biodiversity indicators for effective marine policy and conservation", 5th International Marine Conservation

Congress, Kuching, Malaysia, 24-29 June 2018.

<strong style="color:gray">▬▬▬ TEACHING

MARSYS-4 ("Statistics for Lab Methods") (WS2010/2011 and since WS2014/2015), University of Hamburg, master course:
Introduction to computer programming in R, data exploration and visualization, and statistical modelling (see online course version https://marinedatascience.co/courses/)

MARSYS-11 ("Statistics for Field Methods") (SS2011 and since SS2014), University of Hamburg, master course:
Introduction to inferential statistics, experimental design, multifactorial Analysis of Variance (ANOVA), Generalized Linear Models (GLM), Generalized Additive Models (GAM), and multivariate cluster analysis, Multi-Dimensional Scaling (MDS), Analysis of Similarity (ANOSIM), Permutational Analysis of Variance (PERMANOVA), Similarity Percentage (SIMPER)

MARSYS-10 ("Ecosystem Management and Environmental Policy"), University of Hamburg, master course:
Contributing with individual lectures on principles, concepts and instruments of the Ecosystem Approach to Management (e.g. indicator systems, marine protected areas); approaches to the assessment of marine ecosystems

MARSYS-5 ("Field Methods in Biological Oceanography and Fishery Science"), University of Hamburg, master course:
Contributing with individual lectures on *In situ* sampling techniques in marine research; planning, execution and evaluation of sampling

"Basics in biostatistics" (SS2014-SS2017), University of Hamburg, biology bachelor course:
Lectures and exercises on the introduction to R (3 weeks)

Invited instructor at a course on "Applied methods for research on regime shifts in socio-ecological systems" organized by The Beijer Institute of Ecological Economics, Stockholm University and held in conjunction with the 5th World Congress of Environmental and Resource Economists in Istanbul, 27-29 June 2014 (link):
Lecture and exercises on statistical methods for identifying thresholds and tipping points in data sets

Lecturer at PhD summer school "Ecosystem modeling", Askö, Sweden, 19/03/2013 - 23/03/2013, organized by the Stockholm University: "General Additive Models (GAM) and their application in modeling zooplankton life cycle dynamics" (see the online documentation on Youtube)

Master Course 2: "Systems Theory and Resilience Thinking", Module Regime shifts (WS 2012/2013), Stockholm Resilience Centre (link):
Lecture and exercises on regime shift detection methods and early warning indicators

<strong style="color:gray">▬▬▬ PUBLICATIONS

<strong style="color:gray">RESEARCH ARTICLES (PEER-REVIEWED)

Otto, S.A., Kadin, M., Casini, M., Torres, M.A. & Blenckner, T. (2018). A quantitative framework for selecting and validating food web indicators. *Ecological Indicators*, 84, 619-631. https://doi.org/10.1016/j.ecolind.2017.05.045

Dickey-Collas, M., McQuatters-Gollop, A., Bresnan, E., Kraberg, A.C., Manderson, J.P., Nash, R.D.M. **Otto, S.A.,** Sell, A.F., Tweddle, J.F., Trenkel, V.M. (2017). Pelagic habitat: exploring the concept of good environmental status. *ICES Journal of Marine Science*, 74 (9), 2333–2341. https://doi.org/10.1093/icesjms/fsx158

Klais, R., **Otto, S.A.,** Teder, M., Simm, M. & Ojaveer, H. (2017). Winter–spring climate effects on small-sized copepods in the coastal Baltic Sea. *ICES Journal of Marine Science*, 74, 1855-1864. 10.1093/icesjms/fsx036

Torres, M.A., Casini, M., Huss , M., **Otto, S.A.**, Kadin, M. & Gårdmark, A. (2017). Food-web indicators accounting for species interactions respond to multiple pressures. *Ecological Indicators*, 77, 67–79. 10.1016/j.ecolind.2017.01.030

Otto, S.A., Simons, S., Stoll, J.S. & Lawson, P. (2016). Making progress on bycatch avoidance in the ocean salmon fishery using a transdisciplinary approach. *ICES Journal of Marine Science*, 73, 2380–2394. https://doi.org/10.1093/icesjms/fsw061

Beaugrand, G., Conversi, A., Chiba, S., Edwards, M., Fonda-Umani, S., Greene, C., Mantua, N., **Otto, S.A.,** Reid, P. Stachura, M., Stemmann, L. & H. Sugisaki (2015): "Synchronous marine pelagic regime shifts in the Northern Hemisphere". *Philosophical Transactions of the Royal Society B*, 370(1659).

Downing, A.S., Hajdu, S., Hjerne, O., **Otto, S.A.,** Blenckner, T., Larsson, U. & M. Winder (2014): "Zooming in on size distribution patterns underlying species co-existence in Baltic Sea phytoplankton". *Ecology Letters*, 17(10): 1219-1227.

Otto, S.A., Llope, M., Kornilovs, G., & C. Möllmann (2014): "Interactions among density, climate and food web effects determine long term dynamics of marine zooplankton species". *Marine Ecology Progress Series*, 498:73-84

Otto, S.A., Diekmann, R., Flinkmann, J., Kornilovs, G., & C. Möllmann (2014): "Habitat heterogeneity determines climate impact on zooplankton community structure and dynamics". *PLoS ONE*, 9(3): e90875

Tomczak, M.T., Heymans, J.J., Yletyinen, J., Niiranen, S., **Otto, S.A.** & T. Blenckner (2013): "Ecological network indicators of ecosystem status and change in the Baltic Sea". *PLoS ONE*, 8(10): e75439

Lindegren, M., Dakos, V., Gröger, J.P., Gårdmark, A., Kornilovs, G., **Otto, S.** & C. Möllmann (2012): "Early detection of ecosystem regime shifts: a multiple method evaluation for management application". *PLoS ONE*, Vol 7(7): 1-9

Atalah, J., **Otto, S.A.**, Anderson, M.J., Costello, M., Lenz, M. & M. Wahl (2007): "Temporal variance of disturbance did not affect diversity and structure of a marine fouling community in north-eastern New Zealand". *Marine Biology*, Vol. 153(2): 199-211

BOOK CHAPTER

Diekmann, R., **Otto, S.A.** & C. Möllmann (2012): "Towards Integrated Ecosystem Assessments (IEAs) of the Baltic Sea - Investigating ecosystem state and historical development". In: "Climate Impacts on the Baltic Sea: From Science to Policy", Reckermann, M., Brander, K., MacKenzie, B.R., Omstedt A. (eds.), Springer Earth System Sciences Series, Berlin, Heidelberg, p. 161-201

SELECTED ORAL AND POSTER PRESENTATIONS

Otto, S.A., Niiranen, S., Müller-Karulis, B., Möllmann, C., & T. Blenckner (2014): "A novel approach to modelling life cycle dynamics of a key marine species under past and future environmental changes". Ocean Sciences Meeting 2014, Honolulu, Hawaii, U.S.A., oral presentation

Otto, S.A., Llope, M., Kornilovs, G., & C. Möllmann (2013): "Life cycle dynamics of a key copepod over long time scales: A complex and non-stationary interplay of internal and external drivers". 98th Annual Meeting of the Ecological Society of America, Minneapolis, U.S.A., oral presentation

Otto, S.A., Diekmann, R., Kornilovs, G., Postel, L. & C. Möllmann (2011): "Climate-related decadal dynamics in Baltic Sea zooplankton: Interactive and additive effects of bottom-up and top-down controls". 5th International Zooplankton Production Symposium, Pucón, Chile, oral presentation

Diekmann, R., **Otto, S.A.**, Kornilovs, G., Postel, L. & C. Möllmann (2010): "Climate-related long-term trends and spatial variability in the zooplankton community of the Central Baltic

Sea". BONUS Annual Conference 2010, Vilnius, Latvia, poster presentation

Otto, S.A., Cabo Bujan, J.A. & K. Schöder (2008): "Current Status of Heavy Metal Pollution in Abatan River and the Maribojoc Bay". Eurasia Conference on Chemical Sciences, Manila, Philippines, poster presentation

OTHER MEDIA

S.A. Otto (2013): "General additive models and their application in modelling zooplankton lifecycle dynamics", video presentation of seminar held during the BEAM PhD workshop „Modelling as a tool to study the Baltic Ecosystem", March 2013, Askö laboratory
(available at this [Youtube](#) link)