

Santiago Alvarez Fernandez

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Born 23 July 1983 in Oviedo, Spain

EMPLOYMENT AND EXPERIENCE

Universidad Autonoma de Barcelona 2021-2023. Data Scientist for the European Research Council project “*Local Indicators of Climate Change Impacts: the contribution of local knowledge to climate change research*” (www.licci.eu).

Freelance analyst and consultant 2018-2021. Statistical analyses, with focus on numerical ecology and biostatistics. Specialised in data collation, time series, and multivariate analyses, with focus on spatiotemporal biodiversity trends.

Freelance scientific editor 2018-2021.

Alfred Wegener Institute (Helmholtz Centre for Polar and Marine Research) 2015–2017. Postdoctoral research on Plankton responses to ocean acidification, within the BIOACID programme (bioacid.de).

Ecological consultant 2014–2015. Freelance consultancy dealing with impact assessment studies, statistical analyses, and ecological studies with both marine and terrestrial mammals.

Institute for Marine Resources and Ecosystem Studies (IMARES) 2009–2013 - PhD research on the biological response to environmental changes in the North Sea.

ACADEMIC ACHIEVEMENTS

PhD by Wageningen University, The Netherlands (2015) – Thesis entitled “Rhyme and Reason: Plankton community changes in the North Sea”

Msc (Distinction) in Marine Ecology and Environmental Management at Queen Mary University of London, United Kingdom (2008–2009),

Biology degree, through the Marine Biology route, by the University of Santiago de Compostela – 2007

SKILLS

Programming skills: >10-year experience as an *R* programmer and 3-year experience with *python*. Previous experience in Matlab, PHP, MySQL, SDMX, JSON, and various data transferring protocols. Comfortable in Linux environments.

Data collation and handling: Collecting and collating datasets from different sources; including temporal and spatial segregation and averaging, estimation of missing data (if/when appropriate), cross-check of common variables, etc.

Data visualization: Translating big data sets or mathematical concepts to non-specialised audiences.

Univariate time series analyses: Including generalized linear models and generalized additive models. Modelling and trend extraction of single parameter time series.

Univariate regression analyses: Finding out the relationship between two or more time series, e.g. explain biological variation based on environmental variation.

Multivariate analyses: Extraction of common patterns in large datasets, via ordinations, clustering techniques, etc.

Constrained multivariate analyses: Assessment of the relationship between a multivariate dataset (e.g. community composition) and an assortment of independent variables (e.g. environmental data).

Social network analysis: Use of graph theory to investigate network structures through analyses of nodes and ties.

Other: Experienced in accessing and processing large online databases, GIS, multivariate and machine learning techniques.

PEER-REVIEWED ARTICLE SELECTION – [Google Scholar](#)

Reyes-García, V., Álvarez-Fernández, S., Benyei, P., García-del-Amo, D., Junqueira, A. B., *et al.* (2023). Local indicators of climate change impacts described by indigenous peoples and local communities: Study protocol. *PLoS ONE* 18(1), e0279847.

Alvarez-Fernandez, S., Taucher, J., Bach, L., Brussaard, C., Riebesell, et al. (2018). Plankton responses to ocean acidification: The role of nutrient limitation. *Progress in Oceanography* 165, 11-18

Riebesell, U., Aberle-Malzahn, N., Achterberg, E.P., Algueró-Muñiz, M., Alvarez-Fernandez, S., *et al.* (2018). Toxic algal bloom induced by ocean acidification disrupts the pelagic food web. *Nature Climate Change* 8 (12), 1082-1086

Bach, L.T., Alvarez-Fernandez, S., Hornick, T., Stuhr, A., Riebesell U. (2017). Simulated ocean acidification reveals winners and losers in coastal phytoplankton. *PLoS ONE* 12(11): e0188198

Moyano, M., Candebat, C., Ruhbaum, Y., Álvarez-Fernández, S., Claireaux, G., *et al.* (2017). Effects of warming rate, acclimation temperature and ontogeny on the critical thermal maximum of temperate marine fish larvae. *PLoS ONE* 12:7, e0179928.

Algueró-Muñiz, M., Alvarez-Fernandez, S., Thor, P., Bach, L.T., Esposito, M., *et al.* (2017). Ocean acidification effects on mesozooplankton community development: Results from a long-term mesocosm experiment. *PLoS ONE* 12(4)

Alvarez-Fernandez, S., Licandro, P., van Damme, C., Hufnagl, M. (2015). Effect of zooplankton on fish larval abundance and distribution: a long-term study on North Sea herring (*Clupea harengus*). *ICES Journal of Marine Science* 72(9):2569

Alvarez-Fernandez, S., Riegman, R. (2014). Chlorophyll in North Sea coastal and offshore waters does not reflect long term trends of phytoplankton biomass. *Journal of Sea Research* 91, 35-44.

Alvarez-Fernandez, S., Lindeboom, H.J., Meesters, H.W.G. (2012). Temporal changes in plankton of the North Sea: Community shifts and environmental drivers. *Marine Ecology Progress Series* 462, 21-38

OTHER SCIENTIFIC ACTIVITIES

Teaching

Msc Statistical course focused on analysing ecological data at the AWI - Biologische Anstalt Helgoland.
Co-supervision of international MSc students (2016 - Hiroshi Inoue, Katherine Amorim and Mahmudur Rahman Khan).

Statistical workshops on data-handling and analyses at ICTA-UAB

Statistical support and supervision to several PhD candidates during their doctoral thesis (2017 -María Algueró-Muñiz, 2021-2023 - Vincent Porcher, Anna Porcuna-Ferrer, Anna Schlingman, Mouna Chambon, Julian Caviedes), leading to peer-review publications.

Presentations in international conferences

2017 – ASLO Aquatic Sciences Meeting. Plankton Responses to Ocean acidification.

2015 – Biological Institute Helgoland colloquium. Rhyme and Reason: Plankton community changes in the North Sea.

2015 – ASLO Aquatic Sciences Meeting. Rhythm in the water: Synchronic changes in plankton communities across the north-eastern Atlantic.

2014 – ICES Annual Science Conference. Effect of zooplankton prey on distribution and abundance of North Sea herring (*Clupea harengus*) larvae: A long term study. International research activities.

2015 – Invited to the ICES Working group on Zooplankton Ecology

2014 – ICES Working Group on Small Pelagic Fishes, their Ecosystems and Climate Impact.
Tenerife, Spain

2013 – ICES Working Group on Integrated assessments of the North Sea. Lisbon, Portugal

Other academic activities

2010-now: Scientific reviewer for several scientific journals such as Marine Ecology Progress Series, Journal of Plankton Research, PLOS One, Journal of Sea Research, among others.

2014-2017: Supervisor of several PhD and MSc students.

2010: Founding member of the PhD Council at the Institute for Marine Resources & Ecosystem Studies (IMARES)