Santiago Alvarez Fernandez

Independent researcher and data scientist

PERSONAL INFO

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EDUCATION

PhD (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)

Bsc (Biology) by the University of Santiago de Compostela – 2007

SKILLS

Programming skills: R, Python,Linux, html, PHP, MySQL, and various data transferring protocols.

Data collation and handling

Data repositories

Data visualization

Time series analyses

Regression analyses

Multivariate analyses

Social network analysis

LANGUAGES

Spanish - Native

English - Proficient

Dutch -Basic



EMPLOYMENT AND EXPERIENCE

Independent researcher 2023-2026. Collaborating in different projects with the University of Zurich (UZH), University of California (UCDavis), and French Agricultural Research Centre for International Development (CIRAD).

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 2018-2026. Statistical analyses, with focus on numerical ecology and biostatistics. Specialised in data collation, time series, and multivariate analyses, with focus on spatiotemporal biodiversity trends.

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.

SKILLS

Programming skills: >15-year experience as an R programmer and 5-year experience with python.
Matlab, PHP, MySQL, 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 repositories: Familiar with various data repository protocols such as CORA, Zenodo, and the Harvard's Dataverse.

Data visualization: Translating big qualitative and quantitative data 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.

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 and machine learning techniques..

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, and developing data management protocols.

SELECTED PEER-REVIEWED PUBLICATIONS

Google Scholar ORCID ResearchGate

Castro-Vargas, S., Alvarez-Fernandez, S., & Galt, R. E. (2026). Grounding pesticide use intensity and hazards with real-world data: Toward correcting global model interpolation in tropical agriculture. *Environment International*, 110468. https://doi.org/10.1016/j.envint.2026.110468

Fernández-Llamazares Á, Álvarez-Fernández S, Fraixedas S, et al. (2025) Indigenous Peoples and local communities report a consistent decline in the body mass of birds across three continents. *Oryx*. 2025;59(5):565-578. https://doi.org/10.1017/S0030605325102615

Cruz-Gispert, A., García-del-Amo, D., Junqueira, A. B., Schunko, C., Álvarez-Fernández, S., & Reyes-García, V. (2025). Indigenous peoples and local community reports of climate change impacts on biodiversity. *Conservation Biology*, e.70033. https://doi.org/10.1111/cobi.70033

Reyes-García, V., García-del-Amo, D., Álvarez-Fernández, S., Benyei, P., Calvet-Mir, L., Junqueira, A. B., *et al*. (2024). Indigenous Peoples and local communities report ongoing and widespread climate change impacts on local social-ecological systems. *Communications Earth & Environment*, 5(1), 29. https://doi.org/10.1038/s43247-023-01164-y

Caviedes, J., Ibarra, J. T., Calvet-Mir, L., Álvarez-Fernández, S., & Junqueira, A. B. (2024). Indigenous and local knowledge on social-ecological changes is positively associated with livelihood resilience in a Globally Important Agricultural Heritage System. *Agricultural Systems*, 216, 103885. https://doi.org/10.1016/j.agsy.2024.103885

Porcuna-Ferrer, A., Labeyrie, V., Alvarez-Fernandez, S., Calvet-Mir, L., Faye, N. F., Ouadah, S., & Reyes-García, V. (2023). Crop biocultural traits shape seed networks: Implications for social-ecological resilience in south eastern Senegal. Agricultural Systems, 211, 103750. https://doi.org/10.1016/j.agsy.2023.103750

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. https://doi.org/10.1371/journal.pone.0279847

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. https://doi.org/10.1038/s41558-018-0344-1

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. https://doi.org/10.3354/meps09817

OTHER SCIENTIFIC ACTIVITIES

Presentations in international conferences

2025 – The pesticide global complex. International workshop. University of Zurich
2017 – ASLO Aquatic Sciences Meeting. Plankton Responses to Ocean acidification.
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

2014-2023: Supervisor of several PhD and MSc students.