Personal details

Name	Fernando Rayón Viña	**ORCID**	0000-0002-1622-2180
Date of birth	13 July 1989	**Scopus ID**	57200555524
Nationality	Spanish	**Website**	rayonvina.rbind.io
Email	rayonvina@proton.me rayonvina@dal.ca	**Current position**	Research Associate (postdoctoral), Dalhousie University (Halifax, Canada)

Professional and research experience

June 2025 – June 2027

Research Associate (postdoctoral)
Marine Microbial Macroecology Lab, Dalhousie University (Halifax, Canada).
Principal investigator: Dr Zoe Finkel.
Project: *Phyto-MAP*, a global atlas of phytoplankton abundance observations.

April 2021 – April 2025

Research Assistant
Harmful Microalgae and Plankton Ecology group (VGOHAB), Vigo Oceanographic Centre (IEO-CSIC).
Principal investigator: Dr Enrique Nogueira García.
Projects and tools: VGOHAdB; Operational Plankton Ecology.

- Design and administration of the VGOHAdB PostgreSQL database under Linux.
- Data management and analysis.
- Analytical methods and data visualisation.

2018 – 2019

Honorary Collaborator
Department of Functional Biology, **University of Oviedo**.
Honorary appointment for the 2018–2019 academic year.

October 2017 – January 2018

Research contract. Technical staff.
Department of Functional Biology (Genetics), University of Oviedo.
Principal investigator: Dr Eva García Vázquez.
Project: BLUEPORTS, scientific and educational strategies for sustainable port activities in the face of biological invasions.

March 2017 – September 2017

Research contract
Department of Functional Biology (Genetics), University of Oviedo.
Principal investigator: Dr Eva García Vázquez.
Project: Marine Natural Resources of the Anthropocene, Government of the Principality of Asturias.

September 2016 – May 2017

Laboratory analysis. Industry contract.
University of Oviedo for EDP España.
Project lead: Dr Yaisel J. Borrell Pichs.
Study: Preliminary assessment of the possible presence of the brown pygmy mussel (*Xenostrobus securis*) at the Aboño power plant (EDP) using genetic tools.

Education

2016 – 2019

PhD, University of Oviedo – Doctoral Programme in Chemical, Environmental and Biofood Engineering. *Cum laude* and **International Doctorate distinction**. Defended on 5 July 2019.
Thesis: *Análisis y evaluación del origen, componentes socioculturales y riesgos biológicos de la basura marina en el litoral asturiano*.
Supervisors: Dr Eva García Vázquez and Dr Eduardo Dopico Rodríguez.

- Integrated coastal zone management; assessment of the threat posed by marine litter.
- Monitoring and management of invasive species; social implications of coastal biological impacts.

2015 – 2016

Master's Degree in Marine Conservation – University of Oviedo (taught in English).
Master's thesis: *Social perception of biotic and abiotic marine pollution in the Cantabrian coast. A socioenvironmental approach*.
External placement: 18 ECTS; grade 9.3/10.
Coursework: integrated coastal zone management, marine protected areas, aquaculture, biological invasions, global change, impact assessment, GIS, and remote sensing.

2009 – 2015 **Bachelor's Degree in Biology – University of Oviedo.**
Bachelor's thesis: *Diversidad y función de aves insectívoras en cultivos de manzano de sidra*.
Supervisors: Dr Daniel García García and Dr Marcos Miñarro Prado (SERIDA).

Research stays

March 2018 – June 2018 **International doctoral research stay (Erasmus+ traineeship).**
Marine Research Institute, Faculty of Marine Technologies and Natural Sciences, Klaipėda University (Lithuania), 22 March–30 June 2018.
Supervisor: Dr Marija Kataržytė.
Baltic–Atlantic comparison of coastal litter, sampling protocols, and monitoring of invasive species on marine litter.
Funding: Erasmus+ programme, University of Oviedo, bilateral agreement no. 662.

Research and innovation projects

2025 – 2027 **Phyto-MAP / Simons Collaboration on Computational Biogeochemical Modeling of Marine Ecosystems (CBIOMES).** Simons Foundation.
Principal investigator: Dr Zoe Finkel (Dalhousie University).
Role: Research Associate.

2023 – 2025 **Action A3.3, Operational Plankton Ecology – Galician Marine Science Programme.** Complementary R&D&I Plan (PRTR, NextGenerationEU) / Xunta de Galicia.
Principal investigator: Dr Enrique Nogueira García (IEO-CSIC).
Role: team member, research technical staff (Titulado Superior M3).

2019 – 2022 **GRC-VGOHAB – Harmful Microalgae and Plankton Ecology competitive reference group.** Galician Innovation Agency (GAIN), Xunta de Galicia (€280,000).
Principal investigator: Dr Enrique Nogueira García (IEO-CSIC).
Role: employed project staff, 1 April 2021–30 November 2022.

2017 – 2018 **BLUEPORTS – MINECO-17-CGL2016-79209-R.** Scientific and educational strategies for sustainable port activities in the face of biological invasions. Spanish Ministry of Economy and Competitiveness.
Principal investigator: Dr Eva García Vázquez (University of Oviedo).
Role: employed project staff.

2017 **FC-15-GRUPIN14-093 – Marine Natural Resources of the Anthropocene.** Government of the Principality of Asturias.
Principal investigator: Dr Eva García Vázquez (University of Oviedo).
Role: employed project staff; project funding the doctoral research.

2017 – 2018 **PINN-17-A-054 – Strategy games as tools for university teaching on sustainable exploitation of marine resources.** Teaching innovation project, University of Oviedo.
Coordinator: Dr Yaisel J. Borrell Pichs.
Role: collaborator in a six-person team.

Preprints

2026 **Rayón-Viña, F.**, Finkel, Z.V. & Irwin, A.J. (2026). *'PhyTaxR', a set of phytoplankton taxonomic curation tools in R*. bioRxiv. doi:10.64898/2026.10.23.761320. Preprint; not peer reviewed. Manuscript submitted to PLOS ONE.

Software and data

2026 **Rayón-Viña, F.**, Finkel, Z.V. & Irwin, A.J. (2026). *Phyto-MAP, a curated database of marine phytoplankton abundance records* [Data set]. Zenodo. Relational database of marine phytoplankton abundance, with harmonised observations, metadata, and technical-validation documentation. Available in SQLite and CSV formats. doi:10.5281/zenodo.23424052

Rayón Viña, F. (2026). *Phyto-MAP data-processing scripts* [Computer software]. Zenodo. Scripts for source-specific data processing, taxonomic curation, and construction of the Phyto-MAP relational database, accompanied by workflow documentation. doi:10.5281/zenodo.23351062. Code on GitHub

Rayón Viña, F. (2026). *phytaxr: Phytoplankton Taxonomic Curation Tools* [R package]. Zenodo. Tools for cleaning, standardising, and resolving phytoplankton taxon names, with automated resolution and interactive review of approximate matches. doi:10.5281/zenodo.21905974. Code on GitHub

Publications

Journal articles

2022 Fernandez, S., Ibabe, A., **Rayon-Viña, F.**, Ardura, A., Bartolomé, M., Borrell, Y.J., Dopico, E., Gonzalez, M., Miralles, L., Montes, H., Pérez, T., Rodriguez, N. & Garcia-Vazquez, E. (2022). Flotsam, an overlooked vector of alien dispersal from ports. *Estuarine, Coastal and Shelf Science*, 271, 107879. doi:10.1016/j.ecss.2022.107879

Rayon-Viña, F., Fernandez-Rodriguez, S., Ibabe, A., Dopico, E. & Garcia-Vazquez, E. (2022). Public awareness of beach litter and alien invasions: Implications for early detection and management. *Ocean & Coastal Management*, 219, 106040. doi:10.1016/j.ocecoaman.2022.106040

2021 Ramilo, I., Figueroa, R.I., **Rayón-Viña, F.**, Cuadrado, Á. & Bravo, I. (2021). Temperature-dependent growth and sexuality of the ciguatoxin producer dinoflagellate *Gambierdiscus* spp. in cultures established from the Canary Islands. *Harmful Algae*, 110, 102130. doi:10.1016/j.hal.2021.102130

Parrondo, M., **Rayon-Viña, F.**, Borrell, Y.J. & Miralles, L. (2021). *Sustainable Sea*: A board game for engaging students in sustainable fisheries management. *Applied Environmental Education & Communication*, 20(4), 406–421. doi:10.1080/1533015X.2021.1930608

Masiá, P., Ardura, A., Gaitán, M., Gerber, S., **Rayon-Viña, F.** & Garcia-Vazquez, E. (2021). Maritime ports and beach management as sources of coastal macro-, meso-, and microplastic pollution. *Environmental Science and Pollution Research*, 28(24), 30722–30731. doi:10.1007/s11356-021-12821-0

2020 Ibabe, A., **Rayón, F.**, Martinez, J.L. & Garcia-Vazquez, E. (2020). Environmental DNA from plastic and textile marine litter detects exotic and nuisance species nearby ports. *PLoS ONE*, 15(6), e0228811. doi:10.1371/journal.pone.0228811

2019 **Rayon-Viña, F.**, Miralles, L., Fernandez-Rodríguez, S., Dopico, E. & Garcia-Vazquez, E. (2019). Marine litter and public involvement in beach cleaning: Disentangling perception and awareness among adults and children, Bay of Biscay, Spain. *Marine Pollution Bulletin*, 141, 112–118. doi:10.1016/j.marpolbul.2019.02.034

2018 **Rayon-Viña, F.**, Miralles, L., Gómez-Agenjo, M., Dopico, E. & Garcia-Vazquez, E. (2018). Marine litter in south Bay of Biscay: Local differences in beach littering are associated with citizen perception and awareness. *Marine Pollution Bulletin*, 131, 727–735. doi:10.1016/j.marpolbul.2018.04.066

Miralles, L., Gomez-Agenjo, M., **Rayon-Viña, F.**, Gyraitė, G. & Garcia-Vazquez, E. (2018). Alert calling in port areas: Marine litter as possible secondary dispersal vector for hitchhiking invasive species. *Journal for Nature Conservation*, 42, 12–18. doi:10.1016/j.jnc.2018.01.005

Book chapters

2025 Nogueira, E., Casas, G., **Rayón-Viña, F.**, Velasco-Senovilla, E. & Miranda, A. (2025). Zooplankton dynamics at the northern boundary of the Canary Current Upwelling System (NW Iberian Peninsula). Prospects from updated time series in the 'Ría de Vigo' and adjacent shelf. In L.R. Vieira & F. Morgado (eds.), *Zooplankton Challenges in a Changing World. Vol. 1: A Worldwide Perspective and Research Approach* (pp. 79–106). CRC Press (Taylor & Francis). ISBN 978-1-032-64976-4. doi:10.1201/9781032662275-6

Technical reports and scientific documents

2025 Isla, A., **Rayón Viña, F.** & Velasco-Senovilla, E. (2025). *Evaluación del medio marino. Demarcación marina noratlántica. Tercer ciclo de estrategias marinas. Descriptor 1 – Hábitats pelágicos*. Ministerio para la Transición Ecológica y el Reto Demográfico (MITECO), Madrid. NIPO: 665-25-050-2.

2024 MITECO (2024). *Estrategias marinas. Demarcación marina noratlántica (tercer ciclo): Marco general* [Document released for public consultation]. Co-author of the pelagic habitats section (IEO-CSIC team: E. Nogueira, R. González-Quirós, A. Isla, **F. Rayón Viña**, E. Velasco-Senovilla).

2017 Borrell Pichs, Y.J., **Rayón Viña, F.** & García Vázquez, E. (2017). *Evaluación preliminar de la posible presencia del mejillón pigmeo marrón (Xenostrobus securis) en las instalaciones de la central de Aboño (EDP) mediante el uso de herramientas genéticas*. Technical report for EDP España. University of Oviedo, 10 May 2017.

Proceedings, abstract books, and other publications

2020 Parrondo, M., **Rayón, F.**, Miralles, L., Rico, J.M., García-Vázquez, E. & Borrell, Y.J. (2020). Gamificación en la enseñanza sobre sostenibilidad de los recursos pesqueros: el juego de estrategia «Mar sostenible». In M.A. Fueyo Gutiérrez (ed.), *XI Jornadas de Innovación Docente 2018 – Libro de Actas* (pp. 420–424). Universidad de Oviedo. ISBN 978-84-17445-69-0.

2018 **Rayon-Viña, F.**, Miralles, L., Gómez-Agenjo, M., Dopico, E. & García-Vázquez, E. (2018). The fight against beach litter: a matter of perception and awareness [O2-8]. In S. Jungblut & V. Liebich (eds.), *YOUMARES 9 – The Oceans: Our Research, Our Future. Book of Abstracts* (p. 85). Oldenburg.

2016 **Rayón Viña, F.** (2016). Marine debris, a socioenvironmental approach for new solutions. In E. Dopico & Y.J. Borrell (eds.), *ALERTOOLS Workshop: Science & Educational Strategies for Early Detection of Bioinvaders* (p. 38). Ediciones de la Universidad de Oviedo. ISBN 978-84-16664-34-4.

2015 **Rayón Viña, F.** (2015). Diversidad y función de aves insectívoras en cultivos de manzano de sidra [Bachelor's thesis abstract]. *Tecnología Agroalimentaria* (SERIDA), 16. ISSN 1135-6030.

Conference contributions

2026 Nogueira, E., **Rayón, F.**, Velasco-Senovilla, E., Maneiro, I., Otero, P., Alonso-Pérez, F. & Cabrero, A. *Warming-driven changes in zooplankton assemblages: case study from the Coastal Ocean Observing System Radial-Vigo*. **Poster**. Encuentro de Ciencias Marinas, 2026.

2024 **Rayón, F.** *VGOHAdB – Base de datos de la Actuación «Ecología Operacional de Plancton»*. **Oral presentation (presenter)**. IV Asemblea Xeral do Programa de Ciencias Mariñas de Galicia. Santiago de Compostela, 22 May 2024.

2023 **Rayón, F.**, Velasco, E., Ramilo, I., Cabrero, A., Otero, P., Casas, G. & Nogueira, E. *VGOHAdb. Base de datos de la actuación 3.3 Ecología Operacional del Plancton*. **Poster**. III Asemblea Xeral do Programa de Ciencias Mariñas de Galicia. Santiago de Compostela, 27 October 2023.

2019 Borrell, Y.J., Parrondo, M., **Rayón Viña, F.** & Miralles, L. *Ciencia ciudadana y gamificación como estrategias educacionales alternativas para enseñar conservación marina en las universidades*. **Oral presentation**. Congreso Internacional de Innovación Docente e Investigación en Educación Superior (CIDICO). Madrid, 20–22 November 2019.

2019 Parrondo, M., **Rayón-Viña, F.**, Miralles, L., Rico, J.M., García-Vázquez, E. & Borrell, Y.J. *Juegos de estrategia como herramientas para la enseñanza universitaria del concepto de sostenibilidad en la explotación de recursos marinos (PINN-17-A-054)*. **Poster**. XI Jornadas de Innovación en Docencia Universitaria, University of Oviedo. Mieres, 16 January 2019.

2018 **Rayon-Viña, F.**, Miralles, L., Gómez-Agenjo, M., Dopico, E. & García-Vázquez, E. *The fight against beach litter: a matter of perception and awareness*. **Oral presentation**. YOUMARES 9 – The Oceans: Our Research, Our Future. Oldenburg, Germany, 11–14 September 2018.

2016 **Rayón Viña, F.** *Marine debris, a socioenvironmental approach for new solutions*. **Oral presentation**. 1st International ALERTOOLS Workshop: Science & Educational Strategies for Early Detection of Bioinvaders. Avilés, 13–15 October 2016.

2016 **Rayón Viña, F.** *La basura marina: el caballo de Troya del s. XXI*. **Poster**. 1st International ALERTOOLS Workshop. Avilés, 13–15 October 2016.

2015 García, D., Miñarro, M. & **Rayón, F.** *Control biológico de carpocapsa y riqueza de aves en pomaradas asturianas*. **Poster**. IX Congreso Nacional de Entomología Aplicada (SEEA). Valencia, 19–23 October 2015.

Teaching experience

August 2019 — **Instructor at the IMBRSea Joint Summer School 2019.** International Master of Science in Marine Biological Resources (Erasmus Mundus). Tjärnö Marine Laboratory, Sweden, 13–23 August 2019. Responsible for supervising and mentoring a student research group. 80 teaching hours within a 6-ECTS summer school.

September – December 2017 — **Guest lecturer.** *Aula de Pensamiento Científico. Taller de Evolución: Naves, puertos y contactos*. University extension programme, University of Oviedo. Director: Dr Eduardo Dopico. 2 hours.

2017 – 2018 — **Teaching innovation.** Design and evaluation of the strategy game *Sustainable Sea / Mar Sostenible* with Biology undergraduates, students in the Erasmus Mundus master's programme in Marine Biological Resources, participants in the Aula de Pensamiento Científico, and secondary-school students (project PINN-17-A-054).

Science outreach

November 2024 — Science outreach in CIMAR project activities with DOWN Vigo, Vigo.

September 2023 — Vigo Oceanographic Centre (IEO-CSIC) workshops at the Galician Researchers' Night (G-NIGHT, HORIZON-MSCA-2022-CITIZENS-01). Casa Galega da Cultura, Vigo, 29 September 2023.

September 2022 — Vigo Oceanographic Centre workshops at the *Galician Night of Researchers* (HORIZON-MSCA-2022-CITIZENS-01). Plaza del Berbés, Vigo, 30 September 2022.

June 2022 — World Oceans Day workshops at ONCE's Vigo branch for people with visual impairments, 8 June 2022.

September 2021 — Vigo Oceanographic Centre workshops at G-NIGHT: Noite galega das persoas investigadoras (H2020-MSCA-NIGHT 101035979). Tinglado del Puerto de Vigo, 24 September 2021.

September 2017 — Contributor to European Researchers' Night, University of Oviedo (UCC+i, MINECO-17-FCT-16-10670).

August 2017 — Aula del Mar SM&F, Salinas, Asturias, 3–6 August 2017: two oral presentations, a marine pollution poster, and volunteering. 32 hours.

August 2016 — Aula del Mar SM&F, Salinas, Asturias, 4–7 August 2016: an oral presentation, a marine pollution poster, and volunteering. 40 hours.

Intellectual property

2018 – 2019 — ***Sustainable Sea* educational board game.** Authors: Fernando Rayón Viña, Marina Parrondo Lombardía, and Laura Miralles López. Intellectual Property Registry of the Principality of Asturias: application no. 412 (26 October 2018); registration no. 05/2019/39 (decision dated 14 January 2019).

Peer review

Marine Pollution Bulletin; Environmental Challenges; Regional Environmental Change; Environment, Development and Sustainability; Environmental Monitoring and Assessment.

Additional training

June 2026	Beyond Beginner R: Advancing Your Coding Skills. Physalia Courses (online), 2 ECTS.	24 h
April 2026	Handling Missing Data in R. Physalia Courses (online), 1 ECTS.	15 h
November 2024	Marine Fieldwork: Prevention and Control at CSIC Centres. CSIC (virtual classroom).	3 h
October 2024	Occupational Risk Prevention for CSIC Staff: extreme heat (2 h), road and commuting safety (2 h), and remote working (3 h). ASPY Prevención.	7 h
April 2024	Using FinisTerrae III: High-Performance Computing Workshop. CESGA (remote).	3 h
November 2023	Introduction to Python for Scientists. CSIC training programme (in person).	30 h
September – October 2023	Version Control with Git and GitHub. CSIC training programme (online).	25 h

October – November 2022	Introduction to Linux Systems and Bash Programming. CSIC training programme (online).	25 h
January – November 2022	*PostgreSQL for Everybody* specialisation. Four courses: Database Design and Basic SQL; Intermediate PostgreSQL; JSON and Natural Language Processing; Database Architecture, Scale, and NoSQL with Elasticsearch. University of Michigan – Coursera. Credential verification.	60 h
July 2022	Data Analysis with the tidyverse. Physalia Courses (online), 1 ECTS.	20 h
April – October 2020	Professional Certificate in Environmental Management. Instituto Tecnológico del Cantábrico, Gijón.	500 h
May 2020	Linux. Dicampus (distance learning; Gijón municipal training programme).	40 h
May 2020	Introduction to Git; Building Web Applications with Shiny in R. DataCamp (online).	10 h
February 2020	PH125.1x Data Science: R Basics. HarvardX – edX (verified certificate).	20 h
December 2019	Introduction to Data Science: Statistical Programming with R. UNAM – Coursera.	47 h
June 2018	Introduction to R. DataCamp (online).	4 h
May 2018	Coastal Ecology, Monitoring & Assessment. Klaipėda University – Leibniz Institute for Baltic Sea Research. 6 ECTS; grade 9/10.	60 h
May 2017	Writing Scientific Articles. Doctoral training programme, University of Oviedo.	20 h
February 2017	Research Data Management and Processing: Statistical Analysis with R (Level I). University of Oviedo.	20 h
February 2017	Research Data Management and Processing: Introduction to Qualitative Analysis (Level I). University of Oviedo.	20 h
2016 – 2017	Control and Improvement of Primary Food Production. Module within the Master's Degree in Food Biotechnology, University of Oviedo. Grade 7.5/10.	3 ECTS
October – December 2016	Scientific Thinking Classroom: Evolution Workshop on Natural Resources. University extension programme, University of Oviedo.	20 h
October – November 2016	Soundscape Classroom: Introduction to Acoustic Ecology, Gijón. University extension programme, University of Oviedo.	23 h
August 2016	System Approach Framework (SAF) for coastal research and management: from theory to practice. Klaipėda University (BONUS BaltCoast project). 6 ECTS.	170 h
July 2016	Introduction to R Programming: A Professional Approach. University of Oviedo summer courses.	45 h

Other activities

June 2019	Participant in the workshop *Basuras marinas en Asturias e implicación del sector pesquero*. WWF – Federation of Fishers' Guilds of the Principality of Asturias, REDEPESCA. Gijón, 1 June 2019.
January 2019	Attendee at the XI Jornadas de Innovación en Docencia Universitaria. University of Oviedo, Mieres. 6 hours.

Languages

Spanish	Native language.
English	C1 (CEFR). TOEFL iBT 110/120 (May 2026); Erasmus+ OLS C1 (2018); CUID–UNED C1 (2015); London Tests of English Level 3 (Edexcel, 2005).
Portuguese	B1 (CEFR).

Tools and skills

- **Data analysis and statistics:** R (tidyverse, Shiny, R Markdown/Quarto), Python (NumPy, pandas, matplotlib).
- **Databases:** PostgreSQL (design, administration, and maintenance), SQLite, SQL, and DBeaver.
- **Methods:** time-series and spectral analysis (*wavelets*); GIS and mapping with QGIS.

- **Computing and version control:** Linux, Bash/zsh, high-performance computing (CESGA FinisTerrae III); Git, GitHub, and GitLab.
- **Documents and web:** LaTeX, Markdown, HTML, and CSS; LibreOffice / Microsoft Office.
- **Laboratory, field, and social science methods:** DNA extraction, PCR, DNA barcoding, and environmental DNA; marine litter sampling; questionnaires.