MINISTERIO DE CIENCIA E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

CURRICULUM VITAE

CV date	14/10/2026

PERSONAL INFORMATION

First name	Carmen
Family name	Barrena de los Santos
Open Researcher and Contributor ID (ORCID)	0000-0002-7013-494X

CURRENT POSITION

Institution	Consejo Superior de Investigaciones Científicas (CSIC)
Department/Center	Instituto de Investigaciones Marinas de Andalucía (ICMAN)
Country	Spain
Key words	Marine ecology, ecosystem services, functional traits, seagrass, blue carbon

CV SUMMARY

1. Scientific contributions in the fields of natural and environmental sciences, with a focus on the **ecology of coastal vegetated habitats** (mostly **seagrass**), within 4 interconnected research lines: 1) responses to environmental stress and human impacts; 2) trait-based ecology; 3) seagrass trends and monitoring, and 4) provision of ecosystem services, in particular carbon sequestration. The **main contributions** are: A) understanding of the spatial and among-species variability in the provision of ecosystem services delivered by coastal vegetated habitats (e.g. carbon sequestration) and the underlying biophysical factors; B) understanding of the effects of environmental stresses (light, hydrodynamics, nutrients, ocean acidification and pollutants) on seagrass structure and functioning; C) first comprehensive study of the seagrass mechanical traits and how they explain their adaptation and acclimation to the environment; D) first assessment of seagrass trends in Europe.

Research activity communicated to the scientific community through publication of **46 scientific articles** in JRC journals (since 2009, 54% in the last 5 years, 34 Q1, 15 D1, 14 as first author, 6 as senior author; H-Index = 24 Scopus), **2 book chapters** and **edition/authorship of 3 books**, and **48 congress contributions** (40 international, 3 as invited speaker; since 2005). Research activity funded through (competitive) **18 research projects** (7 international; 2006-2023, total funded +4M€), **3 salary award projects** (2017, 2021, 2025), **2 individual grants** (2004, 2006), **3 project-associated contracts** (2009, 2013, 2016), **8 mobility grants** (2005-2013, 20K€), and **16 grants for other research or training activities** (since 2007, 8K€). **PI of 6 research projects**: 1 transnational access project (2019), 2 salary award projects (2017-2021, 2021-2025), 1 international project (2018, 4K€), 1 national project (2024, 25K€), **1 salary + project (2025-2029, 167+75K€).** Funding coming mainly from Spanish Ministry of Science, Portuguese Foundation for Science and Technology, European Union, Andalusian Regional Government.

Main **scientific and technical skills developed**: A) conceptualisation, designing and performing experimental and observational fieldwork and mesocosms experiments; B) strong analytical and statistical skills using R programming language, including systematic reviews, meta-analysis, and ecological modelling; C) effective writing/oral communication skills to disseminate results for different audiences. European scientific diving certificate (2019) and open water diving instructor (2016).

13 short research stays in 10 international research centres (20 months in total, since 2005) and **+10 years** in 2 research centres in Portugal**, as post-doc** (2014-2021) **and research assistant** (2021-2025). 68% of published articles with international teams.

Co-leader of the *Blue Carbon* research line at CCMAR (2016-2025) and **coordinator** of the blue carbon working group in the Algarve region (2022-2025). **Joined ICMAN-CSIC in July 2026 with a tenure-track research contract to lead the seagrass ecology and blue carbon research line.**

2. Participation in **14 service contracts for public and private entities** (since 2009; total funded +275K€), being PI of 2 of them. Contribution to **international policies** as member of the International Union for Conservation of Nature Seagrass Expert Group (2020-2021) and participant of the workshop

for seagrass environmental accounting of the UN Environment Programme's WCMC (2018). **Scientific dissemination** to society through +30 activities (since 2007). Researcher for the Blue Carbon Citizen Science project (2017). **Co-founder** of the Environmental Volunteering programme for seagrass monitoring in Cadiz Bay (2006-2011).

3. Co-supervision (since 2017) of **3 PhD thesis** (2 in progress), **supervision or co-supervision of 9 MSc theses** (1 in progress) and **3 BSc theses**; **host of 5 young researchers** for short stays (4 pre-doctoral and 1 post-doctoral; since 2020); and supervision of 4 hired young researchers (since 2022). **Reviewer** of 33 scientific articles for 24 international journals (since 2009), 1 book proposal for Elsevier (2023), 4 national projects in Portugal and Spain (since 2015). **Jury member or external examiner** for 16 theses (9 MSc and 7 PhD; since 2017).

4. Organiser of **5 international congress sessions and 1 scientific workshop**. **Assistant Professor** at the University of Algarve (2019-2022) and the University of Cadiz (2007-2011) (289 h BSc and MSc degrees, 42 h courses and seminars, co-organiser of 2 summer schools for university students). Teacher of accredited courses for secondary school teachers (53 h). Accredited as University Associate and Private University Professor (2023). Member of the United Nations International Seagrass Experts Network (2018), the global research network TeaComposition H2O (2016), and the World Seagrass Association (2018). Doctoral award by University of Cádiz (2012). Co-founder and Steering Committee member of the global database SeagrassTraitDB (2022). Coordinator of OB3 (Talent Attraction and Retention) within the MaX-CSIC Project at ICMAN and spokesperson for the Welcome and Centre Operations Committee at ICMAN-CSIC.

RELEVANT MERITS

Publications (CA: corresponding author)

1. **Article.** Alexandre A, de los Santos CB (2/10), Jiménez-Herrero J, Deguette A, Silva J, Martins M, Parreira F, Schubert N, de la Rosa SP, Santos R. White is a new shade of blue carbon: a case study of a traditional salt production pond that is a net carbon sink. *Journal of Geophysical Research: Biogeosciences, 131,* e2025JG009016 DOI: 10.1029/2025JG009016.
2. **Article.** Ito P, Martins M, Von Sachsen-Coburg Und Gotha S, Santos R, de los Santos CB (CA, 5/5) **2025.** Seagrasses in coastal wetlands of the Algarve region (southern Portugal): Past and present distribution and extent. *Journal of Sea Research*, *205*, 102580. **DOI:** 10.1016/j.seares.2025.102580.
3. **Article.** Graversen A, … de los Santos CB (72/92), … et al. **2025**. A marine and salt marsh sediment organic carbon database for European regional seas (EURO-CARBON). Data in Brief, 60, 111595. **DOI:** 10.1016/j.dib.2025.111595
4. **Article.** Trevathan-Tackett S, … de los Santos CB (88/110), … et al. **2024**. Global effects of ecosystem and climate on long-term belowground decomposition in wetlands. Environmental Science and Technology, 58, 21589-21603. **DOI:** 10.1021/acs.est.4c02116.
5. **Book.** Santos R, Ito P, de los Santos CB (3/3). Avaliação dos ecossistemas de carbono azul em Portugal continental. Centro de Ciências do Mar. Faro, setembro **2023**. ISBN 978-989-8380-45-6.
6. **Article.** Maxwell TL, Rovai AS, Adame MF, ..., de los Santos CB (21/86), Worthington TA. **2023**. Global dataset of soil organic carbon in tidal marshes. Scientific Data 10, 797. DOI: 10.1038/s41597-023-02633-x.
7. **Article.** Gillis LG, Viana IG, de los Santos CB (3/3). **2023**. A research blueprint: plant traits responses to stress and effects on Blue Carbon storage potential. Functional Ecology, 37, 2259-2270. **DOI:** 10.1111/1365-2435.14352.
8. **Article.** de los Santos CB (CA, 1/8), Egea LG, Martins M, Santos R, Masqué P, Peralta G, Brun F, Jiménez-Ramos, R. **2023**. Sedimentary organic carbon and nitrogen sequestration across a vertical gradient on temperate wetland seascape including salt marsh, seagrass and rhizophytic macroalgae meadows. Ecosystems, 26, 826-842. **DOI:** 10.1007/s10021-022-00801-5.

9. **Book chapter.** de los Santos CB (1/9), Scott A, Arias-Ortiz A, ..., de la Torre-Castro M. **2020**. Seagrass ecosystem services: Assessment and scale of benefits. In: Out of the blue: The value of seagrasses to the environment and to people. United Nations Environment. ISBN: 978-92-807-3780-6. **Handle:** 20.500.11822/32636.
10. **Article.** de los Santos CB (CA, 1/27), Krause-Jensen D, Alcoverro T, ..., Santos R. **2019**. Recent trend reversal for declining European seagrass meadows. Nature Communications, 10, 3356. **DOI:** 10.1038/s41467-019-11340-4.

Congress

1. **Oral presentation.** CB de los Santos CB, M Martins, R Carrasco, P Ito, S Gotha, A Ricart, P Masqué, R Santos. Blue carbon stocks in intertidal seagrass and saltmarsh habitats of the Ria Formosa lagoon (south Portugal): accounting for spatial variability. ASLO 2023 Aquatic Sciences Meeting. June **2023**. Palma de Mallorca, Spain.
2. **Invited conference (plenary talk).** CB de los Santos. SeagrassTraitDB: seagrass trait data base. World Seagrass Conference 2022. August **2022**. Annapolis, USA.
3. **Poster presentation.** Herrero-Fernández A, de los Santos CB, Martins M, Aires T, Abrantes F, Serrão E, Santos R. Blue carbon and nitrogen sequestration in restored seagrass meadows increases over time but has not reached natural levels after 10 years. Estuarine Coastal Sciences Association, ECSA 59. September **2022**. San Sebastián, Spain.
4. **Invited conference.** CB de los Santos. Microplastic retention in marine coastal canopies. ASSEMBLE Plus Conference 2021 - Marine biological research at the frontier. January **2021**. Faro, Portugal.
5. **Oral presentation.** CB de los Santos, M Martins, R Mace, A Silva, C Freitas, B Martínez-Crego, F Parreira, J Silva, C Veiga-Pires, G Calado, C Grilo, V Calixto, R Santos. An ecosystem service approach to decision making in the Ria Formosa (South Portugal). World Seagrass Conference 2018. June **2018**. Singapore.

Research projects (PI: Principal investigaror)

1. **Title:** FUTUCA - Blue carbon future in seagrasses of the Andalusian Atlantic coast (Ref. DGP_EMEC_2023_00537). Regional Government of Andalusia. **PI:** CB de los Santos. Dates: 16/06/2025 - 15/06/2029. **Subsidy:** 242.840 €. **Participation:** PI
2. **Title:** Algarve Blue Carbon - Blue carbon in the Algarve region for climate change mitigation and environmental protection (Ref. Blue Carbon). FAM Foundation Grants 2023/24. **PI:** CB de los Santos (CCMAR). **Dates:** 16/01/2023-16/01/2024. **Subsidy:** 25.000 €. **Participation:** PI.
3. **Title:** BLUEFORESTS - Seaforests for blue carbon - natural capital from nature-based solutions (Ref. EEA.BG.CALL4.012.2020). EEA Grants Portugal. Call 4. **PI:** R Santos. (CCMAR). **Dates:** 09/11/2021-30/04/2024. **Subsidy:** 985,220 €. **Participation:** Researcher.
4. **Title:** BLUEPORT - Assessment and restoration of coastal blue carbon stocks in Portugal for climate change mitigation (Ref. 2020.03825.CEECIND). Portuguese national funding agency for science, research, and technology (FCT). Stimulus of Scientific Employment, Individual Support. Call 3rd year. **PI:** CB de los Santos (CCMAR). **Dates:** 01/05/2021-ongoing. **Subsidy:** Monthly allowance. **Participation:** PI.
5. **Title:** SEASINK - Fate of microplastics: The role of seagrass meadows as particle sinks (Ref. 336). European Union's Horizon 2020 Research and Innovation Program. ASSEMBLE Plus. **PI:** CB de los Santos (CCMAR). **Dates:** 19/08/2019-06/09/2019. **Subsidy:** Full access and mobility grant. **Participation:** PI.
6. **Title:** CADYCCO - Carbon dynamics in vegetated coastal communities of Cádiz Bay (Ref. CADYCCO). CEI·MAR Research projects for young researchers. International Campus of Excellence in Marine Science. **PI:** CB de los Santos (CCMAR). **Dates:** 01/09/2018-31/08/2019. **Subsidy:** 4,000 €. **Participation:** PI.
7. **Title:** ECOFUN - Ecological production functions to evaluate ecosystem services delivered by seagrass beds (Ref. SFRH/BPD/119344/2016). Portuguese national funding agency for science, research, and technology (FCT). Call for attribution of Doctoral and Post-Doctoral scholarships 2016. **PI:** CB de los Santos (CCMAR). **Dates:** 01/04/2017-20/04/2021. **Subsidy:** Monthly allowance. **Participation:** PI.

8. **Title:** RIAVALUE - Valuation of the ecosystem services delivered by Ria Formosa lagoon (Ref. PTDC/MAR-EST/3223/2014). Portuguese national funding agency for science, research, and technology. R&D Project Competitions. Call 2014. **PI:** R Santos. (CCMAR). **Dates:** 01/06/2016-31/12/2019. **Subsidy:** 199,933 €. **Participation:** Researcher.
9. **Title:** CYMOCO - Effect of CO_2 and nutrient enrichment on leaf properties and growth of the seagrass *Cymodocea nodosa* (Ref. 20120020). European Commission 7th Framework Programme ENVIRONMENT. Specific Programme "Cooperation". Integration of European marine research networks of excellence – Euromarine – Euromarine Mobility Fellowship. **PI:** CB de los Santos. **Dates:** 06/10/2012-21/12/2012. **Subsidy**: 3,500 € (mobility research grant). **Participation:** PI.
10. **Title:** EUROPE - Long-term changes in European seagrasses (Refs. 06377, 06419, 06441). European Cooperation in Science and Technology, COST Actions - Short-Term Scientific Mission in COST-ES0906. **PI:** CB de los Santos. **Dates:** 15/05/2012- 31/08/2013 (3 periods, 6 months in total). **Subsidy**: 6,500.00 € (mobility research grant). **Participation:** Researcher.

Contracts, technological or transfer merits (PI: Principal investigaror)

1. **Title:** SALINAS - Scientific study to characterise the sediment in MadeinSea salt pans (Castro Marim). **PI:** CB de los Santos. **Dates:** 01/01/2024 - 30/06/2026. **Subsidy:** 21,500 €.
2. **Title:** Determinación del estado de consevación de la seba (*Cymodocea nodosa*) en el área de OSPAR (Ref. 23BDCM003). **Dates:** 18/07/2023 - 30/11/2023. **Participation:** Researcher.
3. **Title:** GULBENKIAN - Offsetting the carbon footprint through blue carbon projects (S-ECO-05/2022). **Entity:** Fundação Calouste Gulbenkian. **PI:** R Santos (CCMAR). **Dates:** 01/07/2022-31/12/2022. **Participation:** Researcher.
4. **Title:** RAMPAO - Development of a training manual and preparation and facilitation of a regional seagrass training workshop (O-S-C-01/2021). **Entity:** Regional Network of Marine Protected Areas in West Africa. **PI:** CB de los Santos. **Dates:** 15/11/2021-30/05/2022. **Participation type:** PI.