

Curriculum Vitae Macarena Ros Clemente

Department of Biology, CASEM-Facultad de Ciencias del Mar y Ambientales
University of Cádiz, Campus Universitario de Puerto Real, 11510, Cádiz (Spain)

Date of birth: December 04, 1984. Nationality: Spanish

E-mail: mros@us.es

Research interests

I am broadly interested in how biological invasions are changing the structure and the functioning of most ecosystems around the world and what biotic and abiotic factors modulate this process. During my PhD, I used native and non-native caprellid crustaceans as a model for understanding the contribution of small marine mobile invertebrates to biological invasions, an understudied component in this field. In addition to a complex taxonomy, one of the biggest challenges I found was the absence of a standardized methodology specifically developed to detect this group of animals. Currently, I am working on the development of a standardized methodology to assess the contribution of small marine and freshwater mobile invertebrates to biological invasions on a global scale, as well as to understand their ecophysiological responses to different marine stressors.

Education

- 2015 **PhD Biology; University of Seville (Spain). PhD Thesis** 'Invasion dynamic of introduced caprellids (Crustacea: Amphipoda) in the Mediterranean Sea and adjacent waters. Global distribution, ecology and vectors of spread'. Advisors: José M. Guerra-García and Maite Vázquez-Luis. Awarded the highest possible grade (*Sobresaliente Cum Laude*).
- 2011 **MSc Oceanography; University of Cádiz (Spain). MSc Thesis** 'Biogeografía, ecología y taxonomía de los crustáceos peracáridos asociados a macroalgas del litoral la Península Ibérica'. Advisors: José M. Guerra-García and Lucas Cervera Currado. Awarded the highest possible grade (*Sobresaliente*)
- 2009 **BSc Biology; University of Seville (Spain). Five-year program ('Licenciatura'). BSc Thesis** 'Isópodos, tanaidáceos y cumáceos (Crustacea: Peracarida) asociados al alga *Stypocaulon scoparium* (L.) Kützinger en la Península Ibérica'. Advisor: José M. Guerra García. Awarded the highest possible grade (*Sobresaliente*)

Publications

International peer-reviewed publications

- (23) **Ros, M.**, Lacerda M.B., Vázquez-Luis M., Masunari S., Guerra-García J.M. 2016 Studying exotics in their native range: can introduced fouling amphipods expand beyond artificial habitats?. *Biological Invasions*, 18: 2983–3000.
- (22) Guerra-García, J.M., Hachero-Cruzado, I., González-Romero, P., Jiménez-Prada, P., Cassell, C., **Ros, M.** 2016. New Findings for Integrated Multi-Trophic Aquaculture: Lessons from Caprellids (Crustacea: Amphipoda). *Plos One*, 11(4):e0154776.
- (21) Gavira-O'Neill, K., Guerra-García, J.M., Moreira, J., **Ros, M.** 2016. Mobile epifauna of the invasive bryozoan *Tricellaria inopinata*: is there a potential invasional meltdown? *Marine Biodiversity*, doi: 10.1007/s12526-016-0563-5
- (20) **Ros, M.**, Vázquez-Luis, M., Guerra-García, J.M. 2015 'Environmental factors modulating the extent of biological pollution in coastal invasions: the case of a widespread invasive caprellid (Crustacea: Amphipoda) in the Iberian Peninsula' *Marine Pollution Bulletin*, 98:247-258.

- (19) **Ros, M.**, Guerra-García J.M., Hoffman R. 2015. 'First record of the exotic caprellid amphipod *Paracaprella pusilla* Mayer, 1890 in the eastern Mediterranean' **Marine Biodiversity**, doi: 10.1007/s12526-015-0311-2.
- (18) Guerra-García, J.M., **Ros, M.**, Baeza-Rojano, E. 2015. 'Seasonal fluctuations and dietary analysis of fouling caprellids (Crustacea: Amphipoda) from marinas of southern Spain' **Marine Biology Research**, 11: 703-705.
- (17) Navarro-Barranco, C., Guerra-García, J.C., Sánchez-Tocino, L., **Ros, M.**, Florido, M., García-Gómez, J.C. 2014. 'Colonization and succession patterns in the mobile epifaunal community inhabiting marine caves' **Marine Ecology Progress Series**, 521:105-115.
- (16) **Ros, M.**, Ashton, G.V., Lacerda, M.B., Carlton, J.T., Vázquez-Luis, M., Guerra-García, J.M., Ruiz, G.M. 2014. 'The Panama Canal and the transoceanic dispersal of marine invertebrates: evaluation of the introduced amphipod *Paracaprella pusilla* Mayer, 1890 in the Pacific Ocean' **Marine Environmental Research**, 99:204-211.
- (15) **Ros, M.**, Tierno-De-Figueroa, M., Guerra-García, J.M., Navarro-Barranco, C., Lacerda, M., Vázquez-Luis, M., Masunari, S. 2014. 'Exploring trophic strategies in non-native caprellids (Crustacea: Amphipoda): comparison between native and introduced distribution ranges' **Estuarine, Coastal and Shelf Science**, 139: 88-98.
- (14) **Ros, M.**, Guerra-García, J.M., Navarro-Barranco, C., Cabezas, M.P., Vázquez-Luis, M. 2014. 'The spreading of the non-native caprellid (Crustacea: Amphipoda) *Caprella scaura* Templeton, 1836 into southern Europe and northern Africa: a complicated taxonomic history' **Mediterranean Marine Science**, 15(1): 145-165.
- (13) Guerra-García, J.M., Tierno-De-Figueroa, J.M., Navarro-Barranco, C., **Ros, M.**, Sánchez-Moyano, J.E., Moreira, J. 2013. 'Dietary analysis of the Amphipoda (Crustacea: Peracarida) from the Iberian Peninsula' **Journal of Sea Research**, 85, 508-517.
- (12) **Ros, M.**, Vázquez-Luis, M., Guerra-García, J.M. 2013. 'The role of marinas and recreational boating in the occurrence and distribution of exotic caprellids (Crustacea: Amphipoda) in the Western Mediterranean: Mallorca Island as a case study' **Journal of Sea Research**, 83: 94–103
- (11) **Ros, M.**, Vázquez-Luis, M., Guerra-García, J.M. 2013. 'The tropical amphipod *Paracaprella pusilla* Mayer 1890: a new alien crustacean in the Mediterranean sea' **Helgoland Marine Research**, 67 (4), 675-685.
- (10) **Ros, M.**, Guerra-García, J. M., González-Macías, M., Saavedra, A., López-Fe, C.M. 2013. 'Influence of fouling communities on the establishment success of alien caprellids (Crustacea: Amphipoda) in Southern Spain' **Marine Biology Research**, 9(3): 293-305.
- (9) Cabezas, M.P., Navarro-Barranco, C., **Ros, M.** And Guerra-García, J.M. 2013. 'Long-distance dispersal, low connectivity and molecular evidence of a new cryptic species in the obligate rafter *Caprella andreae* Mayer, 1890 (Crustacea: Amphipoda: Caprellidae)' **Helgoland Marine Research**, 67: 483-497.
- (8) **Ros, M.**, Guerra-García, J. M. 2012. 'On the occurrence of the tropical caprellid (Crustacea: Amphipoda) *Paracaprella pusilla* Mayer, 1890 in Europe' **Mediterranean Marine Science**, 13 (1): 134-139.
- (7) Guerra-García, J. M., **Ros, M.**, Izquierdo, D., Soler-Hurtado, M.M. 2012. 'The invasive *Asparagopsis armata* versus the native *Corallina elongata*: differences in associated peracarid assemblages' **Journal of Experimental Marine Biology and Ecology**, 416–417: 121–128.
- (6) Guerra-García, J. M., **Ros, M.** 2011. 'Presence of abdominal appendages in females of *Caprella equilibra* Say, 1818 (Peracarida: Amphipoda): Is *Mecaprella* Mayer, 1903 a valid genus?' **Crustaceana** 85(1): 75-79

- (5) Guerra-García, J.M., **Ros, M.**, Dugo-Cota, A, Burgos, V., Flores-León, A.M., Baeza-Rojano, E., Cabezas, M. P., Núñez, J. 2011. 'Geographical expansion of the invader *Caprella scaura* (Crustacea: Amphipoda: Caprellidae) to the East Atlantic coast' **Marine Biology**, 158(11): 2617-2622
- (4) Guerra-García, J.M., Cabezas, M. P., Baeza-Rojano, E., Izquierdo, D., Corzo, J., **Ros, M.**, Sánchez, J.A., Dugo-Cota, A., Flores-León, A.M., Soler-Hurtado, M.M. 2011. 'Abundance patterns of macrofauna associated to marine macroalgae along the Iberian Peninsula' **Zoologica baetica**, 22, 3-17
- (3) Guerra-García, J.M., **Ros, M.**, Gordillo, I., Cabezas, M. P., Baeza-Rojano, E., Izquierdo, D., Corzo, J., Domínguez, J., Varona, S. 2010. 'Distribution patterns of intertidal and shallow water caprellids associated with macroalgae along the Iberian Peninsula' **Zoologica baetica**, 21:101-109.
- (2) Guerra-García, J. M., Sánchez, J. A., **Ros, M.** 2009. 'Distributional and ecological patterns of caprellids (Crustacea: Amphipoda) associated to the seaweed *Stypocaulon scoparium* in the Iberian Peninsula'. **Marine Biodiversity Records**, 2: 1-8.
- (1) Guerra-García, J.M., **Ros, M.**, Sánchez, J.A. 2009. 'Isopods, tanaids and cumaceans (Crustacea, Peracarida) associated to the seaweed *Stypocaulon scoparium* in the Iberian Peninsula' **Zoologica baetica**, 20: 35-48.

National publications (spain)

- (3) Guerra-García, J. M., Cabezas, M.P., Baeza-Rojano, E., **Ros, M.**, Navarro-Barranco, C., Tierno-De-Figueroa, M. 2014. Los crustáceos caprélidos de la Península Ibérica: desconocidos habitantes de nuestro litoral. **Quercus**, 340:26-34.
- (2) Guerra-García, J. M., Pacios, I., Baeza-Rojano, E., Cabezas, M.P., **Ros, M.**, García-Gómez, J.C. 2012 'Patrones de variación espacial de las comunidades intermareales de la Isla de Tarifa (Cádiz)' **Migres** 2, 25-34.
- (1) Guerra-García, J. M., Sánchez, J. A., **Ros, M.**, Baeza-Rojano, E., Cabezas, M. P., Izquierdo, D., Corzo, J., 2010 'Macrofauna asociada al alga *Stypocaulon scoparium* en el Estrecho de Gibraltar y comparación con el resto de la Península Ibérica'. **Almoraima**, 40: 123-132.

Technical reports

- Christopher D. Wells, Adrienne L. Pappal, Yuangyu Cao, James T. Carlton, Zara Currimjee, Jennifer A. Dijkstra, Sara K. Edquist, Adriaan Gittenberger, Seth Goodnight, Sara P. Grady, Lindsay A. Green, Larry G. Harris, Leslie H. Harris, Niels-Viggo Hobbs, Gretchen Lambert, Antonio Marques, Arthur C. Mathieson, Megan I. McCuller, Kristin Osborne, Judith A. Pederson, **Macarena Ros**, Jan P. Smith, Lauren M. Stefaniak, and Alexandra Stevens. 2013 Rapid Assessment Survey of Marine Species at New England Bays and Harbors. **Massachusetts Office of Coastal Zone Management**, Boston. 26pp.

Fellowships & Awards

-
- Feb 2017-Ene 2019 **Juan de la Cierva Postdoctoral Fellowship** (score 99 out of 100). Funding body: Government of Spain (Ministerio de Economía, Industria y Competitividad)
 - Jul 2015-Jul 2016 **Research grant** to carry out a project focused in the detection of exotic peracarid crustaceans in Ceuta (Spain). Funding body: Instituto de Estudios Ceutíes
 - Nov 2010-Feb 2014 **Predoctoral fellowship**: 'Beca de Formación de Profesorado Universitario (FPU)'. Funding body: Ministerio de Ciencia e Innovación. Governmet of Spain.
 - May 2013-Jul 2013 **Short-term fellowship** to perform a predoctoral research stay at the

Smithsonian Environmental Research Center (Maryland, EEUU). Funding body: Ministerio de Ciencia e Innovación. Government of Spain.

- Sept 2012 **NEOBIOTA 2012, 7th European Conference on Biological Invasions** Award for Best Poster Presentation.
- Sept 2012 **Travel grant** to attend the NEOBIOTA 2012, 7th European Conference on Biological Invasions. Funding body: University of Seville.
- Feb 2010–Oct 2010 **Predoctoral fellowship**: ‘Beca de Personal Investigador en Formación (PIF) propia de la Universidad de Sevilla’. Funding body: University of Seville.

Patents

- Liofilizado de crustáceos caprélidos (*Caprella* spp) como alimento para peces. *Lyophilized caprellid crustaceans* (*Caprella* spp) as feed for fish. **Ref. No: P201100380** (co-inventor).

Research Stays

- Aug 2016–Sep 2016 (1 mth) **Montpellier, France**. Marine Biodiversity Exploitation and Conservation (**MARBEC**) Laboratory at the University of Montpellier. Advisor: Jehan-Hervé Lignot.
- May 2013–Jul 2013 (3 mth) **Maryland, EEUU**. **Smithsonian Environmental Research Centre (SERC)**. Advisor: Gregory M. Ruiz.
- Sep 2012–Dec 2012 (3 mth) **Curitiba, Brazil**. **Universidad Federal do Paraná**. Advisor: Setuko Masunari.
- Dec 2011–Jan 2012 (2 mth) **Male, Maldives**. **Marine Research Centre** (Ministry of Fisheries and Agriculture) and **Università degli Studi di Milano-Bicocca, Maldives Outpost**. Advisors: Mohammed Shiham Adam and Paolo Galli.

Organization of conferences

- Nov 2015. Member of the **organizing committee** of ‘II Jornadas Andaluzas de Biotecnología Marina’. University of Seville (Seville, SPAIN).
- Dec 2014. Member of the **organizing committee** of ‘I Jornadas Andaluzas de Biotecnología Marina’. University of Seville (Seville, SPAIN).
- May 2012. Member of the **organizing committee** of ‘I Jornadas Ibéricas de Taxonomía Marina’. University of Seville (Seville, SPAIN).
- Sept 2010. Member of the **organizing committee** of ‘14 th International Colloquium on Amphipoda’. University of Seville (Seville, SPAIN).

Participation in conferences

International conferences

- Nov 2016. **I International Meeting of Researchers** Fundación Campus Tecnológico de Algeciras (Spain)
 - ‘*Inadvertent introductions in the Strait of Gibraltar: a standardized methodology for assessing the contribution of small mobile invertebrates to marine bioinvasions*’. **Ros, M**, Navarro-Barranco, C., González-Sánchez, M., Guerra-García, J.M. (Poster)
- Sept 2015. **16 th International Colloquium on Amphipoda** (Portugal)
 - ‘*Environmental factors modulating the extent of competitive interactions between newcomer and established caprellids along the Iberian Peninsula*’. **Ros, M**, Vázquez-Luis, M., Guerra-García, J.M. (Poster)
 - ‘*A new method to study the diet of amphipods*’. Guerra-García, J.M., Tierno de

- Figueroa, J.M., Navarro-Barranco, C., **Ros, M.** (Invited keynote talk)
- 'Substrate selection of intertidal caprellids of southern Spain'. Martínez-Laiz, G., **Ros M.**, Navarro-Barranco, C., Guerra-García, J.M. (Oral communication)
 - 'The influence of the invasive seaweed *Asparagopsis taxiformis* on the caprellid community'. Florido, M., González-Romero, P., Navarro-Barranco, C., **Ros, M.**, Guerra-García, J.M. (Poster)
- Sept 2013. **15 th International Colloquium on Amphipoda** (Poland)
 - 'Spatial distribution and ecological traits of the exotic caprellids *Caprella scaura* and *Paracaprella pusilla* in the Mediterranean'. **Ros, M.**, Guerra-García J.M., Vázquez-Luis, M. (Oral communication)
 - 'Habitat use of exotic caprellids in the Atlantic and Mediterranean coast of Spain'. **Ros M.**, Vázquez-Luis M., Angulo G., César M., Márquez, ME, Guerra-García, JM. (Poster)
 - 'Feeding habits of exotics caprellids in the Mediterranean: comparison between native and non-native distribution ranges'. **Ros, M.**, Tierno-de-Figueroa J.M., Guerra-García, J.M., Navarro-Barranco, C., Lacerda, M., Vázquez-Luis, M and Masunari, S. (Poster)
 - Nov 2012. **VII Congresso Brasileiro sobre Crustaceos** (Brazil)
 - 'Distribution pattern of the exotic brazilian caprellid *Paracaprella pusilla* (Crustacea: Amphipoda) in western Europe.' **Ros, M.**, Guerra-García, J.M. and Vázquez-Luis M. (Poster)
 - Sept 2012. **Neobiota 2012 Seventh European Conference on Biological Invasions** (Spain)
 - 'The role of touristic harbors in the distribution of invasive caprellids (Crustacea: Amphipoda) in the Iberian Peninsula and North Africa'. **Ros, M.**, Guerra-García, J.M. and M. Vázquez-Luis M. (Oral communication)
 - 'Paracaprella pusilla Mayer 1890, a new alien crustacean in the Mediterranean Sea'. **Ros, M.**, Vázquez-Luis M., Guerra-García, J.M., Navarro-Barranco, C. and Baeza-Rojano, E. (Poster)
 - Sept 2011. **MEB Conference: 'New frontiers for Monitoring European Biodiversity: the role and importance of amphipod crustaceans'** (Italy)
 - 'Alien caprellids from the Iberian Peninsula'. **Ros, M.** and Guerra-García, J.M. (Oral communication)
 - Aug 2011. **Senventh International Conference on Marine Bioinvasions** (Spain)
 - 'Monitoring two alien caprellids (Crustacea: Amphipoda) in Southern Spain. A threat to native wildlife'. **Ros, M.** and Guerra-García, J.M. (Poster)
 - Jul 2011. **The Crustacean Society Summer Meeting** (Hawaii, USA)
 - 'Floating pontoons as a refuge for non-native species of caprellids (Crustacea: Amphipoda)'. **Ros, M.**, González-Macías, M., Saavedra, A. López-Fe, C. M^a and Guerra-García, J.M. (Poster)
 - May 2011. **10th Annual Larwood Meeting** (Spain)
 - 'Alien bryozoans as a substrates for alien caprellids (Crustacea: Amphipoda)' **Ros, M.**, González-Macías, M., Saavedra, A. López-Fe, C. M^a and Guerra-García, J.M. (Oral communication)
 - Sep 2010. **14 th International Colloquium on Amphipoda** (Spain)
 - 'First record of the invasive *Caprella scaura* Templeton, 1836 in the Strait of Gibraltar'. Guerra-García, J.M., **Ros, M.**, Cabezas, M.P., Burgos, V., Flores-León A.M., Dugo-Cota A. and Baeza-Rojano, E. (Poster)

- 'Distribution patterns of intertidal and shallow waters caprellids associated with macroalgae along the Iberian Peninsula'. Guerra-García J.M., **Ros M.**, Gordillo I., Cabezas M.P., Baeza-Rojano E., Izquierdo D., Corzo J., Domínguez J. and Varona S. (Poster)
- 'Vertical distribution and seasonal fluctuations of intertidal caprellids from Tarifa Island, Southern Spain: 2 years of study'. Guerra-García J.M., Baeza-Rojano E., Cabezas M.P., Pacios I., Díaz-Pavón J.J., García-Ordóñez A.L., González-Paredes D., López-Alonso M.M., Jiménez-Herrera M.J., Dugo-Cota A., Flores-León A.M., Burgos V., **Ros M.**, Soler M.M., Ruiz-Tabares A. and García-Gómez, J.C. (Poster)
- Apr 2009. **II Internacional Symposium in Marine Sciences** (Spain)
 - 'Spatio-temporal distribution of the intertidal Caprellidae (Crustacea: Amphipoda) from Tarifa Island, Southern Spain'. Guerra-García, J.M., Baeza-Rojano, E., Cabezas, M.P., Pacios, I., Díaz-Pavón, J.J., Izquierdo, D., Soler, M.M., Sánchez, J.A., **Ros, M.**, García-Gómez, J.C. (Poster)

National conferences (Spain)

- Sept 2012. **EEI 4º Congreso Nacional sobre Especies Exóticas Invasoras** (Pontevedra)
 - 'Marinas y embarcaciones de recreo, una vía de entrada y dispersión de crustáceos caprellidos invasores en la isla de Mallorca'. **Ros, M** Guerra-García, J.M. (Oral communication)
- Sept 2012. **XVII Simposio Ibérico de Estudios de Biología Marina (SIEBM)** (San Sebastián)
 - 'Is *Caprella scaura* Templeton, 1836 displacing the native *C. equilibra* Say, 1818 along the Iberian Peninsula and Northern Africa?'. **Ros, M.**, Guerra-García J.M., Navarro-Barranco, C., Cabezas, P. and Vázquez-Luis, M.P. (Poster)
 - 'Long-distance dispersal, low connectivity and molecular evidence of a new cryptic species in the obligate rafter *Caprella andreae* Mayer, 1890 (Crustacea: Amphipoda: Caprellidae)'. Cabezas, M.P., Navarro-Barranco, C., Ros, M. and Guerra-García, J.M. (Poster)
- Sept 2010. **XVI Simposio Ibérico de Estudios de Biología Marina (SIEBM)** (Alicante)
 - 'Seasonal fluctuations of the intertidal Caprellidae (Crustacea: Amphipoda) from Tarifa Island, Southern Spain'. Guerra-García, J.M., Baeza-Rojano, E., Cabezas, M.P., Pacios, I., Díaz-Pavón, J.J., Dugo, A., Flores, A.M., Burgos, V., **Ros, M.** and Rivera-Ingraham, G.A. (Poster)
- Oct 2009. **IX Jornadas de flora, fauna y ecología del Campo de Gibraltar** (San Roque)
 - 'Macrofauna asociada al alga *Stypocaulon scoparium* en el Estrecho de Gibraltar y comparación con el resto de la Península Ibérica'. Guerra-García, J.M., Sánchez, J.A., **Ros, M.**, Baeza-Rojano, E., Cabezas, M.P., Izquierdo, D., Corzo, J. (Oral communication)

Teaching & Supervision

Thesis supervision

- 2017-present. **Co-direction of the BSc Thesis** of Natalia Sanzes (with Prof. Lucas Cervera Currado) 'Intertidal and shallow water Peracarid crustaceans of La Caleta beach. Detection of exotic species' (University of Cádiz).
- 2016-present. **Co-direction of the PhD Thesis** of Gemma Martínez-Laíz (with Prof. José M. Guerra García) 'The role of recreational boating in the introduction and spread of Peracarid Crustaceans along the Iberian Peninsula' (University of Seville).
- 2015/2016. **Co-direction of the MSc Thesis** of Marina González-Sánchez (with Dr. Carlos Navarro Barranco) 'Different patterns of short-term colonization between native and introduced marine mobile invertebrates' (University Pablo de Olavide)

- 2013/2014. **Co-direction of the BSc Thesis** of Sebastián Molina (with Prof. José M. Guerra García) 'Distribution of the invasive caprellid *Caprella scaura* (Crustacea: Amphipoda) in Cádiz marina, Southern Spain: implications for its dispersal' (University of Seville)

Undergraduate Courses at the University of Seville (Biology and Magisterium degree)

- 2013/2014. 2º Course (Biology degree): *Zoología* (Zoology). Faculty of Biology, University of Seville
- 2013/2014. 1º Course (Magisterium degree): *Biología del Desarrollo* (Developmental biology). Faculty of Education, University of Seville
- 2012/2013. 1º Course (Biology degree): *Principios Instrumentales y Metodológicos en Zoología y Fisiología Animal* (Instrumental and methodological principles in Zoology and Animal Physiology). Faculty of Biology, University of Seville
- 2012/2013. 5º Course (Biology degree): *Biología Marina* (Marine Biology). Faculty of Biology, University of Seville
- 2011/2012. 2º Course (Biology degree): *Zoología* (Zoology). Faculty of Biology, University of Seville
- 2011/2012. 1º Course (Biology degree): *Principios Instrumentales y Metodológicos en Zoología y Fisiología Animal* (Instrumental and methodological principles in Zoology and Animal Physiology). Faculty of Biology, University of Seville

Graduate Courses at the University of Seville

- Jul 2012. **Biología Marina Aplicada** (I Edición) (Applied Marine Biology, First Edition)

Reviewer

- Marine Pollution Bulletin, Estuarine Coastal and Shelf Science, Systematics and Biodiversity, Mediterranean Marine Science, Bioinvasion records, Annals of the Brazilian Academy of Sciences
-

Academic skills and additional information

- **Languages:** **Spanish** (mother tongue), **English** (level B2_First Certificate in English, University of Cambridge), **Portuguese** (academic reading and elementary conversation)
- **Statistical computing:** R, PRIMER, SPSS, GMAV, PC-ORD
- ACUC Open Water **Diver**
- **Driving license** category B