

## Miguel Costa Leal, PhD Biology

Dep. Fish Ecology & Evolution

Eawag: Swiss Federal Institute of Aquatic Science and Technology, Center for Ecology, Evolution and Biogeochemistry

### Personal data

**Nationality:** Portuguese

**Date of birth:** 4<sup>th</sup> Jun 1986

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### Education

**2010 – 2014** **PhD Biology.** University of Aveiro (UA, Portugal). Dissertation: Trophic plasticity in the cnidarian-algal symbiosis. Advisors: Ricardo Calado, João Serôdio (UA); Jens Nejstgaard, Marc Frischer (University of Georgia, USA).

**2007 – 2009** **MSc. Marine Ecology.** Faculty of Sciences, University of Lisbon (Portugal). Dissertation: Vertical dynamics of planktonic communities at Sofala Bank, Mozambique. Advisors: José Paula, Vanda Brotas. Classification: 19 (out of 20).

**2004 – 2007** **BSc. Biology Marine Biology.** Faculty of Sciences, University of Lisbon (Portugal). Classification: 16 (out of 20).

### Professional experience

**2015 – present** Post-doctoral fellow at Eawag: Swiss Federal Institute of Aquatic Science and Technology (Switzerland).

Expertise: trophic ecology; eco-evolution; molecular detection of trophic interactions; ecological stoichiometry.

**2014 – 2015** Post-doctoral researcher at University of Aveiro (Portugal).

Expertise: food webs; invertebrate ecology and aquaculture; molecular detection of trophic interactions; seafood traceability.

**2010 – 2014** Research assistant at University of Aveiro (Portugal).

Expertise: coral reef ecology; trophic interactions; invertebrate ecology and aquaculture; marine biotechnology; marine natural products.

**2009 – 2010** Environmental consultant at Bio3 (Portugal).

Expertise: environmental impact assessment; biodiversity valuation; marine ecosystem overview; EU aquatic environmental policies.

## **Awards**

- 2015** Post-doctoral fellowship (2 years). Eawag: Swiss Federal Institute of Aquatic Science and Technology (Switzerland)
- 2015** Post-doctoral grant (3 years). Fundação Ciência e Tecnologia (Portugal)
- 2013** Student grant. 14<sup>th</sup> International Conference Marine Natural Products (La Toja, Spain).
- 2012** Best student poster award (“Culture of the tropical sea anemone *Aiptasia pallida*: biomass, propagation rates and fatty acid profile”). AQUA 2012 (Prague, Czech Republic).
- 2012** Student grant. 12<sup>th</sup> International Coral Reef Symposium (Cairns, Australia).
- 2009** PhD grant (4 years). Fundação Ciência e Tecnologia (Portugal)
- 2009** Merit scholarship 2007/08. University of Lisbon (Portugal).
- 2009** Best student poster award (“Crustacean Decapods and Stomatopods larvae distribution and vertical migration at Sofala Bank, Mozambique”). 6<sup>th</sup> WIOMSA Symposium (La Reunion, France).

## **Research Projects**

- 2015 – 2017** Ecosystem consequences of eco-evolutionary change within populations (Eawag: Swiss Federal Institute of Aquatic Science and Technology, Switzerland). PI: Miguel Leal.
- 2015 – 2017** Ecophysiological changes associated with nutrient recycling and carry-over effects in marine early life stages (Fundação Ciência e Tecnologia, PT). Coordinator: University of Lisbon and MARE (PT).
- 2015 – 2016** LARVASOLE – Optimizing trophic regime of *Solea* larviculture (PROMAR, European Fisheries Fund). Coordinator: Sea8 Group and University of Aveiro (PT)
- 2012 – 2014** Synergies through merging biological and biogeochemical expertise in coral research (EU FP7 – People). Coordinator: University of Aveiro (Portugal).  
Activity: coral reef ecology; proposal writing and management; exchanges to James Cook University (Australia), University of Delaware (USA) and University of Salvador da Bahia (Brazil).
- 2011 – 2014** RASTREMAR – Use of molecular tools in the traceability of marine food products (PROMAR, European Fisheries Fund). Coordinator: University of Aveiro (Portugal).  
Activity: molecular analysis; production of scientific outputs.
- 2012 – 2013** Metamorphosis does not reset embryonic and larval history – clarifying the role of offspring provisioning and larval feeding on early post-settlement performance of coastal marine invertebrates (FCT Portugal). Coordinator: University of Aveiro (Portugal).  
Activity: food-web biomarkers; decapods reproductive ecology
- 2012 – 2013** MarinLit database of marine natural products. Coordinator: University of Canterbury (New Zealand).  
Activity: data collection and organization; scientific analysis of biogeographical data
- 2009 – 2010** Southern Ocean Studies for Understanding Global – Climate Issues (Brazilian Antarctic Program). Coordinator: Federal University of Rio Grande do Sul (Brazil).  
Activity: phytoplankton dynamics.
- 2007 – 2009** Strengthening the knowledge base for implementing an ecosystem approach to

marine fisheries in developing countries (NORAD, IMR, FAO). Coordinator: IMR (Norway)

Activity: team leader for plankton sampling of the “Special studies” onboard the *R/V Dr. Fridtjof Nansen*; oceanography and primary productivity; zooplankton and phytoplankton.

**2008 – 2009** Transboundary Networks of Marine Protected Areas for Integrated Conservation and Sustainable Development: Biophysical, Socio-Economic and Governance Assessment in East Africa (EU FP6). Coordinator: University of Lisbon (Portugal)

Activity: data management and analysis; scientific reporting; science outreach.

**2008 – 2008** PESCPROF – 3 deep-sea fisheries at Madeira island (EU FEDER – INTERREF III B). Coordinator: Madeira Fisheries Research Services (Portugal).

Activity: deep-sea fisheries assessment.

**2007 – 2008** Peri-urban mangrove forests as filters and potential phytoremediators of domestic sewage in East África (EU FP6). Coordinator: University of Lisbon (Portugal)

Activity: crustacean decapods ecology.

### **Additional training**

**2014** Introduction to Linear Mixed Effects Models, GLMM and MCMC with R. Highland Statistics Ltd. (UK)

**2013** Data exploration, regression, GLM and GAM with R. Highland Statistics Ltd. (UK)

**2011** qPCR for Coral Biologists. Prof. Mikhail Matz (University of Texas, USA).

**2011** Optical techniques to *in vivo* study of photosynthesis. Prof. João Serôdio (University of Aveiro, Portugal).

**2011** Scientific Writing. Prof. Maria Dornelas (University of Aveiro, Portugal).

**2009** Aquatic Microbial and Molecular Ecology. Prof. Erik Kristensen, Prof. Donald Canfield, Prof. Raymond Cox (Southern Denmark University, Denmark).

### **Teaching and supervision**

**2015** Supervision of Sylvain Lanz for summer internship (Universty of Neuchatel, Switzyerland) to work on stoichiometry of different fish populations.

**2010** Supervision of 3 high-school biology students for final work on Marine Ecosystems (Escola Secundária Fernão Mendes Pinto, Portugal)

**2009** Teaching assistant. Marine Ecology (supervised by Prof. José Paula; undergraduate students). Faculty of Sciences, University of Lisbon (Portugal).

### **Peer review and committees**

**International journals**: African Journal of Marine Science, Aquaculture, Biology Open, Bulletin of Marine Science, Coral Reefs, Journal of Experimental Biology, Journal of Thermal Biology, Journal of the Marine Biological Association of the United Kingdom, Marine & Freshwater Research, Marine Drugs, Molecular Ecology, Molecular Ecology Resources, Oceanography Open Access, Scientific Reports, Tropical Zoology, World Journal Microbiology Biotechnology.

**International reports**: United Nations Environment Program, Western Indian Ocean Marine Science Association.

**International funding evaluation**: Austrian Science Fund (Austria), European Aquaculture Society

Student Group, National Science Foundation (USA).

**Board and membership positions:** Associated member of the Scientific Committee on Oceanic Research working group on Sea-Surface Microlayers (since 2012); Board member of the European Aquaculture Society Student Group (2012 – 2014).

## Scientific publications and communications

### *Metrics*

**H-index:** 11 (285 total citations, source: Google Scholar; ResearcherID: C-8611-2009)

**Sum impact factors:** 132.2 (average: 3.5)

### *Peer-reviewed publications*

- 40) Calado R, **Leal MC** (in review) Trophic ecology of marine invertebrates with bi-phasic life cycles – what are we still missing? *Advances in Marine Biology* (invited review)
- 39) **Leal MC**, Cruz ICS, Mendes CRB, Calado R, Kikuchi RKP, Soares AMV, Serôdio J, Rocha RJM (in review) Photobiology of the zoanthid *Zoanthus sociatus* in intertidal and subtidal habitats. *Marine & Freshwater Research*.
- 38) Ricardo F, Pimentel T, Moreira A, Rey F, Coimbra M, Domingues MR, Domingues P, **Leal MC**, Calado R (accepted) Traceability of collection site using fatty acid profiles of the adductor muscle of cockles (*Cerastoderma edule*). *Scientific Reports*.
- 37) Ricardo F, Génio L, **Leal MC**, Albuquerque R, Queiroga H, Rosa R, Calado R (accepted) Trace element fingerprinting of cockle (*Cerastoderma edule*) shells reveal harvesting location in adjacent areas. *Scientific Reports*.
- 36) **Leal MC**, Ferrier-Pagès C, Petersen D, Osinga R (in press) Coral aquaculture: applying scientific knowledge to ex-situ aquaculture. *Reviews in Aquaculture* (doi:10.1111/raq.12087)
- 35) **Leal MC**, Jesus B, Ezequiel J, Calado R, Rocha RJM, Serôdio J (in press) Concurrent imaging of chlorophyll fluorescence, chlorophyll *a* and GFP-like proteins of symbiotic cnidarians. *Marine Ecology* (doi: 10.1111/maec.12164)
- 34) **Leal MC**, Vaz MCM, Puga J, Rocha RJM, Brown C, Rosa R, Calado R (accepted) Marine ornamental fish imports in the European Union: an economic perspective. *Fish and Fisheries*
- 33) Rocha RJM, Bontas B, Cartaxana P, **Leal MC**, Ferreira JM, Rosa R, Serôdio J, Calado R (2015) Development of a standardized modular system for experimental coral culture. *Journal of the World Aquaculture Society* 46: 235-251 (doi:10.1111/jwas.12186)
- 32) **Leal MC**, Pimentel T, Ricardo F, Rosa R, Calado R (2015) Seafood traceability: current needs, available tools, and biotechnological challenges for origin certification. *Trends in Biotechnology* 33: 331-336 (doi:10.1016/j.tibtech.2015.03.003)
- 31) Cruz ICS, **Leal MC**, Mendes CR, Kikuchi RKP, Rosa R, Soares AMVM, Serôdio J, Calado R (2015) White but not bleached: photophysiological evidence from white *Montastrea cavernosa* reveals potential overestimation of coral bleaching. *Marine Biology* 162: 889-899 (doi:10.1007/s0022-015-2633-9)
- 30) **Leal MC**, Hoadley K, Pettay DT, Grajales A, Calado R, Warner ME (2015) Symbiont type influences trophic plasticity of a model cnidarian-dinoflagellate symbiosis. *Journal of Experimental Biology* 218: 858-863 (doi:10.1242/jeb.115519)
- 29) Rosa R, Baptista M, Lopes VM, Pegado MR, **Leal MC**, Calado R, Repolho T (2014) Early-life exposure to climate change impairs tropical shark survival. *Proceedings of the Royal Society B – Biological Sciences* 281: 20141738 (doi: 10.1098/rspb.2014.1738)
- 28) **Leal MC**, Ferrier-Pagès C, Berger S, Calado R, Brandes JA, Frischer ME, Nejstgaard JC (2014) Temporal changes in the trophic ecology of the asymbiotic gorgonian *Leptogorgia virgulata*. *Marine Biology* 161: 2191-2197 (doi:10.1007/s00227-014-2496-5)
- 27) **Leal MC**, Sheridan C, Osinga R, Dionísio G, Rocha RJM, Rosa R, Calado R (2014) Drug

- discovery from marine microorganism-invertebrate assemblages: perspectives to solve the 'supply problem'. *Marine Drugs* 12: 3929-3952 (doi: 10.3390/md12073929)
- 26) Kenkel CD, Sheridan C, **Leal MC**, Bhagooli R, Castillo KD, Kurata N, McGinty E, Goulet TL, Matz MV (2014). Diagnostic gene expression biomarkers of coral thermal stress. *Molecular Ecology Resources* 14: 667-678 (doi: 10.1111/1755-0998.12218)
  - 25) **Leal MC**, Ferrier-Pagès C, Calado R, Brandes JA, Frischer ME, Nejstgaard JC (2014) Trophic ecology of the facultative symbiotic coral *Oculina arbuscula*. *Marine Ecology Progress Series* 504: 171-179 (doi: 10.3354/meps10750)
  - 24) **Leal MC**, Nejstgaard JC, Calado R, Thompson ME, Frischer ME (2014) Molecular assessment of heterotrophy and prey digestion in zooxanthellate cnidarians. *Molecular Ecology* 23: 3838-3848 (doi: 10.1111/mec.12496)
  - 23) **Leal MC**, Ferrier-Pagès C, Calado R, Thompson ME, Frischer ME, Nejstgaard JC (2014) Coral feeding on microalgae assessed with molecular trophic markers. *Molecular Ecology* 23: 3870-3876 (doi: 10.1111/mec.12486)
  - 22) Calado R, **Leal MC**, Vaz MCM, Brown C, Rosa R, Stevenson TC, Cooper CH, Tissot BN, Li Y-W, Thornhill DJ (2014). Caught in the Act: how the U.S. Lacey Act can hamper the fight against cyanide fishing in tropical coral reefs. *Conservation Letters* 7:561-564 (doi: 10.1111/conl.12088)
  - 21) Wijgerde T, van Melis A, Silva CIF, **Leal MC**, Vogels L, Mutter C, Osinga R (2014) Red light represses the photophysiology of the scleractinian coral *Stylophora pistillata*. *PLoS One* 9: e92781 (doi: 10.1371/journal.pone.0092781)
  - 20) Penha-Lopes G, Costa PF, Gil J, **Leal MC**, Cannicci S, Macia A, Mwangi S, Paula J (2013) Polychaeta community in peri-urban equatorial and subtropical mangroves of East Africa. *Western Indian Ocean Journal of Marine Science* 12: 1-14.
  - 19) **Leal MC**, Munro MHG, Blunt JW, Puga J, Jesus B, Calado R, Rosa R, Madeira C (2013) Biogeography and biodiscovery hotspots of macroalgal marine natural products. *Natural Product Reports* 30: 1380-1390 (doi: 10.1039/c3np70057g)
  - 18) **Leal MC**, Calado R, Sheridan C, Alimonti A, Osinga R (2013) Coral aquaculture to support drug discovery. *Trends in Biotechnology* 31: 555-561 (doi: 10.1016/j.tibtech.2013.06.004)
  - 17) Dionísio G, Rosa R, **Leal MC**, Cruz S, Calado G, Serôdio J, Calado R (2013) Beauties and beasts: a portrait of sea slugs aquaculture. *Aquaculture* 408-409: 1-14 (doi: 10.1016/j.aquaculture.2013.04.033)
  - 16) Rosa R, Trubenbach K, Repolho T, Pimentel M, Faleiro F, Boavida-Portugal J, Baptista M, Dionísio G, **Leal MC**, Calado R, Portner HO (2013) Lower hypoxia thresholds of cuttlefish early life stages living in a warm acidified ocean. *Proceedings of the Royal Society B – Biological Sciences* 280: e1768 (doi: 10.1098/rspb.2013.1695)
  - 15) Rocha RJM, Serôdio J, **Leal MC**, Cartaxana P, Calado R (2013) Effect of light intensity on post-fragmentation photobiological performance of the soft coral *Simularia flexibilis*. *Aquaculture* 388-391: 24-29 (doi: 10.1016/j.aquaculture.2013.01.013)
  - 14) **Leal MC**, Nunes C, Kempf S, Reis A, Silva TL, Serôdio J, Cleary DFR, Calado R (2013) Effect of light, temperature and diet on the fatty acid profile of the tropical sea anemone *Aiptasia pallida*. *Aquaculture Nutrition* 19:818-826 (doi: 10.1111/anu.12028)
  - 13) Sheridan C, Kramarsky-Winter E, Sweet M, Kushamaro A, **Leal MC** (2013) Diseases in coral aquaculture: causes, implications and preventions. *Aquaculture* 396: 124-135 (doi: 10.1016/j.aquaculture.2013.02.037)
  - 12) Mendes CR, Garcia VMT, **Leal MC**, Souza MS, Brotas V, Garcia CAE (2013) Shifts in the dominance between diatoms and cryptophytes during three late summers in the Bransfield Strait (Antarctic Peninsula). *Polar Biology* 36: 537-547 (doi: 10.1007/s00300-012-1282-4)
  - 11) Sá C, **Leal MC**, Nordez S, André E, Paula J, Brotas V (2013) Variation of phytoplankton assemblages along the Mozambican coast as revealed by HPLC and microscopy. *Journal of Sea Research* 79: 1-11 (doi: 10.1016/j.seares.2013.01.001)
  - 10) **Leal MC**, Pochelon PN, Silva TL, Reis A, Calado R (2013) Variable within-brood maternal

- provisioning in newly extruded embryos of *Homarus gammarus*. *Marine Biology* 160: 763-772 (doi: 10.1007/s00227-012-2131-2)
- 9) Penha-Lopes G, Marques J, **Leal MC**, Carvalho AF, Paula J (2012) *Pseudione elongata africana* (Bopyridae, Isopoda) population structure and reproduction parameters. *Western Indian Ocean Journal of Marine Science* 11: 27-39
  - 8) **Leal MC**, Madeira D, Brandão CA, Puga J, Calado R (2012) Bioprospecting for new natural products – a zoogeographical and chemical perspective. *Molecules* 17: 9842-9854 (doi:10.3390/molecules17089842)
  - 7) **Leal MC**, Nunes C, Alexandre D, Reis A, Silva TL, Dinis MT, Calado R (2012) Parental diets determine the embryonic fatty acid profile of the tropical nudibranch *Aeolidiella stephanieae* – the effect of eating bleached prey. *Marine Biology* 159: 1745-1751 (doi: 10.1007/s00227-012-1962-1)
  - 6) **Leal MC**, Nunes C, Engrola S, Dinis MT, Calado R (2012) Optimization of monoclonal production of the glass anemone *Aiptasia pallida* (Agassiz in Verrill, 1864). *Aquaculture* 345-355: 91-96 (doi: 10.1016/j.aquaculture.2012.03.035)
  - 5) Mendes CR, Garcia VMT, **Leal MC**, Brotas V (2012) Dynamics of phytoplankton communities during late summer around the Antarctic Peninsula. *Deep-Sea Research Part I* 65: 1-14 (doi: 10.1016/j.dsr.2012.03.002)
  - 4) **Leal MC**, Puga J, Serôdio J, Gomes NCM, Calado R (2012) Trends in the Discovery of New Marine Natural Products from Invertebrates over the Last Two Decades – Where and What are we Bioprospecting? *PLoS One* 7: e30580 (doi: 10.1371/journal.pone.0030580)
  - 3) Paula J, **Leal MC**, Silva MJ, Mascarenhas R, Costa H, Mascarenhas M (2011) Dogs as a tool to improve bird-strike mortality estimates at wind farms. *Journal for Nature Conservation* 19: 202-208 (doi: 10.1016/j.jnc.2011.01.002)
  - 2) **Leal MC**, Pereira T, Brotas V, Paula J (2010) Vertical Migration of the gold-spot herring (*Herklotsichthys quadrimaculatus*) larvae at the Sofala Bank, Mozambique. *Western Indian Ocean Journal of Marine Science* 9: 175-183
  - 1) **Leal MC**, Sá C, Nordez S, Brotas V, Paula J (2009) Distribution and vertical dynamics of planktonic communities at Sofala Bank, Mozambique. *Estuarine, Coastal and Shelf Science*, 84: 605-616 (doi:10.1016/j.ecss.2009.07.028)

### Book chapters

- 6) **Leal MC**, Ferrier-Pagès C, Petersen D, Osinga R. (submitted) Corals. *In: Marine Ornamental Species Aquaculture* (R Calado, I Olivotto, M Planas, G Holt, Eds.). Wiley-Blackwell
- 5) **Leal MC**, Calado R (in press) Marine natural products: biodiscovery, biodiversity and bioproduction. *In: Bioactive Natural Products: Chemistry & Biology* (G Brahmachari, Ed.), Wiley-VCH. 473-490 pp.
- 4) Rocha J, **Leal MC**, Calado R (2015) Cnidarians as a source of new marine bioactive compounds. *In: Springer Handbook of Marine Biotechnology* (S-K Kim, Ed.). Springer-Verlag, Berlin. (ISBN 978-3-642-53970-1), p 823-849.
- 3) Ekau W, **Leal MC** (2014) Neuston net sampling. *In: Guide to best practices to study the ocean's surface* (Cunliffe M, Wurl O, Eds.). Occasional publications of the Marine Biological Association of the United Kingdom, Plymouth, UK. 51-58 pp.
- 2) **Leal MC** (2014) A expedição. *In: BioGrafias – Vidas de quem estuda a Vida* (D Veríssimo, MP Pais, C Brito, Eds.). Escola de Mar, Lisbon (ISBN 978-989-95229-7-8)
- 1) **Leal MC** (2014) Explorando o fundo do mar. *In: BioGrafias – Vidas de quem estuda a Vida* (D Veríssimo, MP Pais, C Brito, Eds.). Escola de Mar, Lisbon (ISBN 978-989-95229-7-8)

### Published abstracts

- 37) Ferrier-Pagès C, Reynaud C, **Leal MC** (2015) Tracing trophic interactions in symbiotic anthozoans using stable isotopes. *ASLO 2015 Aquatic Sciences Meeting*, Granada, Spain.

- 36) Munro MHG, Blunt JW, Dabb S, **Leal MC**, Calado R (2014) The role of biogeography in marine natural products discovery. *American Society of Pharmacognosy 2014 Annual Meeting*, Oxford, MS, USA.
- 35) **Leal MC**, Hoadley K, Pettay DT, Calado R, Warner ME (2013) Trophic plasticity in the cnidarian-algal symbiosis. 1<sup>st</sup> mid-Atlantic SymbioFest, Lewes DE, USA.
- 34) **Leal MC**, Munro MHG, Blunt JW, Puga J, Madeira C, Jesus B, Rosa R, Calado R (2013) Biogeography in Marine Natural Products Research. *14th International Symposium and 8th European Conference on Marine Natural Products*, La Toja Island, Galicia, Spain.
- 33) Sá C, Leal MC, Silva A, Nordez S, André E, Paula J, Brotas V (2013) Variation of phytoplankton assemblages along the Mozambique coast as revealed by HPLC and microscopy. *8<sup>th</sup> WIOMSA Scientific Symposium*, Maputo, Mozambique.
- 32) Dionísio G, Rosa R, **Leal MC**, Cruz S, Brandão C, Calado G, Serôdio J, Calado R (2013) Culturing sea slugs: why they matter? *World Congress of Malacology*, Ponta Delgada, Azores.
- 31) Rosa R, Trubenback K, Repolho T, Pimentel M, Faleiro F, Boavida-Portugal J, Baptista M, Dionísio G, **Leal MC**, Calado R, Portner HO (2013) Lower hypoxia thresholds of mollusk early life stages living in a warm acidified ocean. *World Congress of Malacology*, Ponta Delgada, Azores.
- 30) Frischer ME, Nejstgaard JC, Troedsson C, **Leal MC**, Maloy AP, Culltooy SC (2013) Inferring trophic interactions in marine invertebrates from molecular-based gut content analyses. Transitioning to the mainstream, a decade of progress. *2nd International Symposium on the Molecular Detection of Trophic Interactions*, Lexington, Kentucky, USA.
- 29) **Leal MC**, Ferrier-Pagès C, Thompson ME, Calado R, Frischer ME, Nejstgaard JC (2013) Herbivory in scleractinian and soft corals. *2nd International Symposium on the Molecular Detection of Trophic Interactions*, Lexington, Kentucky, USA.
- 28) Calado R, **Leal MC**, Eiras FR, Neto G, Queiroga H, Cleary DFR, Rotllant G, Guerao G, Gomes NCM, Silva JM, Giménez L, Anger K, Pechenik JA, Nejstgaard JC, Frischer ME (2013) Project NO RESET - Shedding light over the trophic regimes of brachyuran crab larvae supplied to coastal habitats before and during upwelling events. *2nd International Symposium on the Molecular Detection of Trophic Interactions*, Lexington, Kentucky, USA.
- 27) **Leal MC**, Nejstgaard JC, Thompson ME, Calado R, Warner ME, Frischer ME (2013) Molecular assessment of feeding and digestion in zooxanthellate cnidarians. *2nd International Symposium on the Molecular Detection of Trophic Interactions*, Lexington, Kentucky, USA.
- 26) **Leal MC**, Ferrier-Pagès C, Calado R, Frischer ME, Nejstgaard JC (2013) Herbivory in the symbiotic coral *Oculina arbuscula* assessed with stable isotopes and molecular trophic markers. *42nd Benthic Ecology Meeting*, Savannah, Georgia, USA.
- 25) Frischer ME, **Leal MC**, Thompson ME, Calado R, Nejstgaard JC (2013) Molecular assessment of heterotrophy and prey digestion in symbiotic corals. *ASLO 2013 Aquatic Sciences Meeting*, New Orleans, Louisiana, USA. Abstract ID 11422.
- 24) **Leal MC**, Nejstgaard JC, Thompson ME, Calado R, Frischer ME (2012) Molecular assessment of feeding and digestion rates of live-prey to improve aquaculture practices. *AQUA 2012* (European and World Aquaculture Society Meeting), Prague, Czech Republic. Book of Abstracts 29.
- 23) Brotas V, Sá C, Alegre R, **Leal MC**, Nordez S, André E, Paula J, Brewin RJW, Groom S (2012) Phytoplankton biomass and size-class distribution along the Mozambique coast: satellite imagery and HPLC pigments. *9th AARSE conference*, El Jadida, Morocco.
- 22) **Leal MC**, Nunes C, Kempf S, Engrola S, Dinis MT, Reis A, Silva TL, Serôdio J, Cleary DFR, Calado R (2012) Culture of the tropical sea anemone *Aiptasia pallida*: biomass, propagation rates and fatty acid profile. *AQUA 2012* (European and World Aquaculture Society Meeting), Prague, Czech Republic. Book of Abstracts 29.
- 21) **Leal MC**, Sheridan C, Kramarsky-Winter E, Sweet M, Kushamaro A (2012) Diseases in coral aquaculture: causes, implications and preventions. *AQUA 2012* (European and World Aquaculture Society Meeting), Prague, Czech Republic. Book of Abstracts 82.

- 20) **Leal MC**, Ferrier-Pagès C, Petersen D, Wijgerde T, Henkemans P, Calado R, Osinga R (2012) Coral aquaculture: quality, quantity and sustainability. *AQUA 2012* (European and World Aquaculture Society Meeting), Prague, Czech Republic. Book of Abstracts 52
- 19) **Leal MC**, Calado R (2012) The role of aquaculture in sustainable marine drug discovery - advantages and current challenges. *AQUA 2012* (European and World Aquaculture Society Meeting), Prague, Czech Republic. Book of Abstracts 16.
- 18) Serôdio J, Frommlet J, Kikuchi RKP, **Leal MC**, Leggat W, Suggett D, Warner ME, Wild C (2012) SymbioCoRe: An initiative to promote collaborative coral research. *12th International Coral Reef Symposium*, Cairns, Queensland, Australia. Book of Abstracts 77.
- 17) **Leal MC**, Ezequiel J, Calado R, Rocha R, Serôdio J (2012) Coral imaging: distribution of zooxanthellae, photosynthetic activity and fluorescent proteins. *12th International Coral Reef Symposium*, Cairns, Queensland, Australia. Book of Abstracts p. 128.
- 16) Mendes CRB, Garcia VMT, Souza MS, **Leal MC**, Brotas V, Garcia CAE (2012) A new perspective on the presence of cryptophytes in the surface waters of Bransfield Strait (Antarctic Peninsula). *International Polar Year Conference 2012*, Montréal, Canada.
- 15) Paula J, **Leal MC**, Silva MJ, Mascarenhas R, Costa H, Mascarenhas M (2012) Una nueva arma para la búsqueda de cadavers de aves y murciélagos en parques eólicos. I Congresso Ibérico sobre Energía Eólica y Conservación de la Fauna, Jerez de la Frontera, Cádiz, Spain.
- 14) **Leal MC**, Puga J, Mota V, El-Shaffey H, Serôdio J, Gomes NCM, Calado R (2011) European Marine Invertebrates as a source of New Drugs. *Aquaculture Europe 2011*, Rhodes, Greece.
- 13) **Leal MC**, Puga J, Gomes NCM, Serôdio J, Calado R (2011) New Marine Drugs from Marine Invertebrates in the 21<sup>st</sup> century – Where and What are we Bioprospecting? *World Aquaculture Society 2011*, Natal, Brazil.
- 12) Paula J, **Leal MC**, Silva MJ, Mascarenhas R, Costa H, Mascarenhas M (2011) Beware of the dog! In: May, R. and Bevanger, K. (eds.) *Proceedings of the Conference on Wind Energy and Wildlife Impacts*, 2-5 May, Trondheim, Norway. ISBN: 978-82-426-2278-5. 144 pp.
- 11) Paula J, **Leal MC**, Silva MJ, Mascarenhas R, Costa H, Mascarenhas M (2011) El uso de perros para la detección de cadáveres en parques eólicos y su importancia para las estimas de mortalidad. *VI Congreso Nacional de Evaluación de Impacto Ambiental*, Albacete, Espanha.
- 10) Bernardino J, Puga J, **Leal MC**, Mascarenhas M, Costa H, Reis C (2010) A Directiva Quadro da Água no contexto de Estudos de Impacte Ambiental de barragens: caso de estudo da barragem do Alvito. *4ª Conferência Nacional de Avaliação de Impactes* (CNAI), Vila Real, Portugal.
- 9) Mendes CR, Garcia VMT, **Leal MC**, Souza MS, Brotas V, Garcia CAE (2010) Dynamics of phytoplankton communities around the Antarctic Peninsula determined by HPLC-CHEMTAX analysis. *SCAR OSC-2010*, Buenos Aires, Argentina.
- 8) Mendes CR, Garcia VMT, **Leal MC**, Souza MS, Brotas V, Garcia CAE (2010) Estudo das comunidades de fitoplâncton em torno da Península Antártica utilizando os pigmentos como biomarcadores taxonómicos. *CBFic 2010*, Paraty, Rio de Janeiro, Brasil.
- 7) Paula J, **Leal MC**, Silva MJ, Mascarenhas R, Costa H, Mascarenhas M (2010) Improvement of bird and bat carcasses detection on wind farms using wildlife research dogs. *Wind Wildlife Research Meeting VIII* (NWCC), Lakewood Colorado, USA.
- 6) Paula J, **Leal MC**, Silva MJ, Mascarenhas R, Costa H, Mascarenhas M (2010) Cão-biólogo: um contributo para a optimização das estimativas de mortalidade em parques eólicos. *12º Encontro Nacional de Ecologia* (SPECO), Porto, Portugal.
- 5) **Leal MC**, Sá C, Nordez S, Brotas V, Paula J (2009) Distribution and vertical dynamis of planktonic communities at Sofala Bank, Mozambique. *6th WIOMSA Scientific Symposium*, St. Denis, Reunion.
- 4) **Leal MC**, Brotas V, Paula J (2009) Crustacea Decapoda and Stomatopoda larvae distribution and vertical migration at Sofala Bank, Mozambique. *6th WIOMSA Scientific Symposium*, St. Denis, Reunion.
- 3) **Leal MC**, Pereira T, Brotas V, Paula J (2009) Vertical Migration of the gold-spot herring



- (*Herklotsichthys quadrimaculatus*) larvae at the Sofala Bank, Mozambique. *6th WIOMSA Scientific Symposium*, St. Denis, Reunion.
- 2) Paula J, Mascarenhas M, **Leal MC**, Santos A, Lemos A, Costa H, Pacheco F (2009) La utilización de equipos caninos en la búsqueda y detección de cadáveres de murciélagos y aves. *IX Jornadas de la SECEM*, Bilbao, Spain.
  - 1) Sá C, **Leal MC**, Nordez S, André E, Paula J, Brotas V (2009) Phytoplankton distribution along the Mozambican coast. *6th WIOMSA Scientific Symposium*, St. Denis, Reunion.

### *Invited communications*

- 2014** Trophic plasticity in the cnidarian-algal symbiosis. Leibniz Center for Tropical Marine Ecology (ZMT, Germany)
- 2013** Molecular trophic markers to study marine food-webs. Federal University Rio Grande do Sul (Brazil)
- 2013** Biogeography in marine natural products research. 14<sup>th</sup> International Symposium on Marine Natural Products Research (La Toja, Spain)
- 2012** The role of aquaculture in sustainable marine drug discovery – advantages and current challenges. AQUA 2012 (Prague, Czech Republic)
- 2009** Planktonic communities at Sofala Bank, Mozambique. University of Bergen (Norway).

### *International reports*

- 2) Massingue A, Atanassov B, Litulo C, Carreira F, Silva IM, Williams J, Pereira MAM, **Leal MC** et al. (2015) *Mozambique Marine Ecosystems Review*. Foundation Ensemble, Maputo, Mozambique. pp 139.
- 1) Paula J, Brotas V, Sá C, **Leal MC** (2008) Cruise report of Ecosystem Survey Mozambique 27 Sept – 21 Sept 2007. Strengthening the knowledge base for implementing an ecosystem approach to marine fisheries in developing countries (NORAD, IMR, FAO). Maputo, Mozambique. pp 26.

### *Science communication*

#### Newspaper news

- Journal de Notícias (9<sup>th</sup> October 2013) – “Corais para fazer medicamentos”
- Diário Regional Viseu (9<sup>th</sup> October 2013) – “Biólogo defende criação de corais em aquário para produzir medicamentos”
- Correio da Manhã – Figure of the Future (23<sup>rd</sup> September 2012) – “Estudo de anémone tropical vale prémio”, by Isabel Faria.
- Savannah Morning News (21<sup>st</sup> November 2011) – “Skidaway Island scientists ask what’s on reef menu”, by Mary Landers.
- Conservation Magazine (14<sup>th</sup> March 2011) – “Fetch! – ‘Carcass dogs’ could help count bird and bat fatalities at wind farms”, by David Malakoff.
- Diário Económico (22<sup>nd</sup> March 2010) – World Water Day (Portuguese daily press).

#### Radio interviews

- M80 (October 2013) – news report.
- Antena 1 – Click (26<sup>th</sup> September 2013) – “Biólogos recomendam aquacultura de corais na investigação de fármacos inspirados no mar”, by Catarina Lázaro
- Antena 1 - Click (22<sup>nd</sup> September 2012) – “Base de dados sobre invertebrados marinhos”, by Catarina Lázaro.

Online journals

Skidaway Scoop (October 2013) – “Leal published two papers on SKiO research”

Notícias ao minuto (9<sup>th</sup> October 2013) – “Biólogo de Aveiro quer criar corais em aquários para produzir medicamentos”

TVI 24 (9<sup>th</sup> October 2013) – “Biólogo defende criação de corais em aquário para produzir medicamentos”

Diário Digital (9<sup>th</sup> October 2013) – “Biólogo de Aveiro quer criar corais em aquário para produzir medicamentos”

Sapo Saúde (9<sup>th</sup> October 2013) – “Biólogo de Aveiro defende criação de corais em aquário para produzir medicamentos”

Rostos (9<sup>th</sup> October 2013) – “Universidade de Aveiro aponta que a aquacultura de corais em é solução para descoberta de novos meciamentos”

Skidaway Scoop (November 2012) – “Leal published paper, wins best student poster award”, by Mike Sullivan.

Ciência hoje (12<sup>th</sup> September 2012) – “Miguel Leal é galardoado no Congresso Internacional de Aquacultura”, by Susana Lage.

University of Aveiro news (12<sup>th</sup> September 2012) – “Anémonas valem prémio a doutorando no congresso mundial de aquacultura”.

CESAM online news (10<sup>th</sup> September 2012) – “CESAM PhD student awarded at the International Congress of Aquaculture”.

Ciência hoje (5<sup>th</sup> March 2012) – “Estudo português facilita busca de compostos bioactivos”, by Susana Lage.

Science and Development Network (2<sup>nd</sup> March 2012) – “Asia-Pacific may benefit from marine bioprospecting”, by Ruci Botei.

Skidaway Scoop (February 2012) – “Miguel returning to continue research on coral reefs”, by Mike Sullivan.

**Environmental consultancy projects**

- 2010** Characterization of macroinvertebrate community at Alcântara navigation channel (DHV).
- 2010** Monitoring of Alvito Hydroelectric basin – phytoplankton, bivalves, River Habitat Survey and biological elements of the water framework directive (ATKINS).
- 2010** Monitoring of Trutas Hydroelectric basin – bivalves, freshwater fishes, benthic macroinvertebrate, freshwater vegetation and water mole (AHE Trutas).
- 2010** Freshwater fauna special study on Alvito Hydroelectric basin and appliance of *Instream Flow Incremental Methodology* method (ATKINS).
- 2010** Environmental Impact Assessment of Herdade do Mercador – freshwater ecosystems (Cubo Verde).
- 2010** Ecological risk assessment at Lagoa Palmeira – benthic macroinvertebrate (Golder Associates).
- 2010** Environmental Impact Assessment of Redonda dam – biological elements of Water Framework Directive (ATKINS).
- 2010** Environmental Impact Assessment São Jacinto fisherman’s housing and supplies – aquatic ecosystem (CONSULMAR).
- 2010** Olgas, Ferradosa, Pretarouca and Sambade dams monitoring – herpetofauna, freshwater fishes, mammals and benthic macroinvertebrate (DHV)
- 2009** Strategic and methodological plan for Water Framework Directive (Bio3).
- 2009** Conservation dog training for bird and bat corpses detection (Bio3).

**2009** Environmental Impact Assessment of Alcântara basin dredging – aquatic ecosystem (DHV).

## **Other activities and skills**

### *Workshops and courses*

**2011** Oxygen First Aid for Scuba Diving.

**2011** First Aid/CPR/AED for the Workplace (American Red Cross).

**2006** English certificate (ESOL) level1.

**2006** PADI *Rescue Diver*.

**2005** PADI *Emergency First Response*.

**2005** PADI *Advanced Water Diver*.

**2003** PADI *Open Water Diver*.