

PERSONAL
INFORMATION

Juan Carlos Real Capaz



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ACADEMIC QUALIFICATIONS

2011 to 2013: Aquaculture and Fisheries Masters – Fisheries Specialization (MSc 16/20 Values)

Universidade do Algarve (UALg), Faculdade de Ciências e Tecnologia (FCT)

Advanced training in analysis and understanding of the assessment, management, sustainable use and conservation of living resources, directly extracted from the natural environment (fisheries). Production capability of aquaculture species in different aquaculture production systems (aquaculture).

October 2012 to December 2013: Master's Thesis: "Fish Communities Structure, sampled by BRUVS – Baited Remote Underwater Video System on the South Coast of Portugal"; Marine Science Center (CCMar); Coastal Fisheries Research Group (CFRG); Development of a feasibly adapted BRUV to characterize fish assemblages of subtidal bedrock (non-destructive and non-invasive), between 5 and 50 meters' depth, on the south coast of Portugal (Algarve). Up to 15 points sampled in the Greta area (Praia de Faro) with sardine and mussel baits and without bait. Caught up range of 1 second photo-sequences for 60 minutes, registering 32 species in total, also looking up behavior of individuals. This technique and respective methodology were the first study of its kind in this region – **18/20 values**.

2004 to 2011: Marine Biology Graduation (13/20 Values)

Universidade do Algarve (UALg), Faculdade de Ciências e Tecnologia (FCT)

Solid and multidisciplinary training in Marine Biology fields, strong practical training component, covering the study of structure and function of marine organisms, operating procedures and exploitation of marine ecosystems, as well as the production and management of marine resources or in aquaculture and fisheries.

March to July 2009: Technical-Scientific Project Practical work: "Biogeography, Conservation and Invertebrate commercial exploitation on the Algarve Coast: Search and Database Organization"; Marine Science Center (CCMar); Coastal Fisheries Research Group (CFRG); Recognition of biogeography, conservation status and commercial value of invertebrate marine species of the Algarve coast in mapping projects of bio-relations associated with Algarve seabed (RENSUB I, II and III) – **17/20 values**.

August 2011: Technical and scientific Project: Treatment and daily maintenance tasks of marine organisms in a Marine and Aquaculture Research Station (Ramalhete) (17 Values)

**Universidade do Algarve (UALg), Faculdade de Ciências e Tecnologia (FCT);
Center of Marine Sciences (CCMAR), Aquaculture Marine Experimental Station Ramalhete**

Practical work in marine species maintenance and treatment, respective support systems, objectively, applying prior consolidated knowledge basis, acquiring new and improved methodologies in the field of aquaculture and marine research, particularly with European cuttlefish (*Sepia officinalis*). Finally, descriptive methodological report of this period, activities and methodologies followed for the proper operation and support of the maintenance live systems, as well as the inherent biological methodologies.

8th October to 30th November 2005: ABRIGOS Project – Marine Mammals Support Network

**Hélio Vicente, Marco Bragança / Zoomarine Algarve (Porto d'Abrigo do Zoomarine)
Educational entertainment and Oceanographic Park (8200-864, Guia, Albufeira, Portugal)**

During 2 months in the Zoomarine Marine Species Rehabilitation Center (Porto d'Abrigo), 3 times a week, 8 hours shifts of behavior observations and rehabilitation treatment (basic or in assistance) of a juvenile Striped dolphin (*Stenella coeruleoalba*) beached in Praia da Rocha (Portimão). Centro de Reabilitação de Espécies Marinhas (Porto d'Abrigo) of Zoomarine.

March 2003: Dolphin observation and monitorization, in Sado River estuary
“Vertigem Azul – Estuário do Sado” Organization

Individuals recognition and identification of bottle-nose dolphins (*Tursiops truncatus*), habits and behavior, feeding time, communication, interactions and protection measures and policies.

PROFESSIONAL ACTIVITY

March 2018 to 15 September 2020: Scientific Research Studentship MAR-02.01.01-FEAMP-0053 - “SEPIACUL - Otimização da tecnologia de cultivo do choco, *Sepia officinalis* – maximização da performance reprodutiva e desenvolvimento de rações comerciais”
Universidade do Algarve (UAlg), Center of Marine Sciences (CCMAR)
Aquaculture Marine Experimental Station Ramalhete
Coordinator: Dr. António de Vilhena Sykes

Perform daily work with various stocks of European cuttlefish, *Sepia officinalis*, tasks related to cultivation and reproduction development, which include gathering live food in the surrounding lagoon areas of the Ramalhete station during the hatchling phase. Research on the effect of different sex ratios of reproducers on the increase of reproductive performance, breeding behavior, rhythms of activity and other social behaviors of the cuttlefish, related to their animal welfare in order to increase reproductive performance.

Collaboration in the tasks of preparation of experiments and of sampling for all Phases of the project. Collecting, compiling, analyzing data and producing corresponding scientific reports.

July 2017 to March 2018: CCMAR Aquaculture Scientific Research Superior Technician
Center of Marine Sciences (CCMAR), Universidade do Algarve (UAlg)
Aquaculture Marine Experimental Station Ramalhete; Coordinator: Dr. João Eugénio Reis

Performed daily work in maintenance and growth of marine organisms, including up keeping of equipment, preparation and provision of feeds, sanitary control, reproduction of young life stages, maintenance of breeding systems and of food chain, handling and transfer of organisms between tanks or facilities. Planning, setup, maintenance and daily monitoring of environmental conditions of experimental seawater systems for research. Cleaning and maintenance of tanks, aquaria, sand filters and pipes. Driver to transport people and materials between the Gambelas Campus and Ramalhete marine station.

Work with cuttlefish (*Sepia officinalis*), sea bream (*Sparus aurata*), but also different species in their different stages of growth and development, namely: sea bass (*Dicentrarchus labrax*), sole (*Solea senegalensis*), seahorses (*Hippocampus hippocampus*, *H. guttulatus*), tilapia (*Oreochromis mossambicus*) and holothurians (*Holothuria arguinensis*, *H. mammata*); among others. Knowing these species in a practical manner, have the knowledge on how to maintain, rear and culture individuals, understanding what it means to have total dedication.

Experimental technical support, analyses and samples treatment, laboratorial material preparation, data collection and elaboration of technical reports. Eventually other tasks non-specified above but necessary for the functioning of the marine station, aquaria and the successful development of experimental activities.

January to December 2016: Scientific Research Studentship CCMAR/SC/BTI/04/2016
Center of Marine Sciences (CCMAR), Universidade do Algarve (UAlg)
Aquaculture Marine Experimental Station Ramalhete; Scientific Coordinator: Dr. António Sykes

Analyze data from previous experimental activities, writing scientific articles of SEPIABREED project, including analysis of biological and behavioral data, from European cuttlefish reproductive experimentation (*Sepia officinalis*).

Zoo-technological execution of condition optimization activities on European cuttlefish cultivation and reproduction of European cuttlefish, as well as the maintenance of the animals stock in Ramalhete Station: Check water quality in physicochemical parameters, cleaning, maintenance and verification of tanks marine systems, data collection and compilation, daily records monitoring, mortalities control, feeding, reproductive cycle processing to new stocks and assure the development of hatchlings to adulthood. Provide support to experiments development, sampling and other routine work.

May to December 2015: Scientific Research Studentship PROMAR, SEPIATECH Project (Ref. 31.03.05.FEP.002) – “Technological development of the European cuttlefish aquaculture production, *Sepia officinalis* – pellets and zoo-technical issues”
Fisheries Operational Program 2007-2013, Fisheries European Fund – FEF
Universidade do Algarve (UALg); Aquaculture Marine Experimental Station Ramalhete
Scientific Coordinators: Prof. Dr. José Pedro Andrade and Dr. António Sykes

Zoo-technology activities implementation, reproduction and reproductive behavior, related to the optimization of culture conditions and breeding of European cuttlefish, *Sepia officinalis*. It includes effect investigation of different growing conditions in the breeding behavior, activity rhythms and other social behaviors of cuttlefish, obtaining biological data related to breeder's experiment. It also includes testing of experimental diets for cuttlefish juveniles.

Provide support to current experiences, samplings, other routine work, preparation of reports and, in rotation, assure animal maintenance tasks and experiences during the week-end to gather objectively the experimental reproductive data to enable the right control of the captive situation of this species.

February 2014 to April 2015: Scientific Research Studentship CCMAR/BTI/0003/2014, SEPIABREED Project – PTDC/MAR/120876/2010, “Reproduction improvement of the European cuttlefish, *Sepia officinalis* (Linnaeus, 1758), in captivity: a multidisciplinary approach”
Fundação para a Ciência e Tecnologia (FCT); Center of Marine Sciences (CCMAR)
Aquaculture Marine Experimental Station Ramalhete; Scientific Coordinator: Dr. António Sykes

Daily work with European cuttlefish, *Sepia officinalis*, at the level of tasks development related to the improvement of cultivation and breeding conditions. Research on the effect of different growing conditions in reproductive behavior, activity rhythms and other social behavior of this species through the development and installation of a monitoring system and underwater visual record.

Maintenance and development of animals in different experimental phases, recording and compiling all possible data from the process, from the laying of eggs by breeders and all inherent interactions, to processing and investigation of the eggs and hatchlings produced, considering the scientific character, experimental, economic, commercial and pioneer in this area.

Participation in the study of the increase heterozygosity effect in the European cuttlefish cultivation improvement, through collaboration in the project sample tasks, ensuring rotation and animal maintenance tasks during weekends and holidays, if necessary.

ACADEMIC AND PROFESSIONAL REFERENCES

✓ Professor Dr. William R. Driedzic (Canada Research Chair in Marine Bioscience)
Memorial University of Newfoundland - Co-chairs an NSERC Grant Selection Committee
e-mail: wdriedzic@mun.ca

✓ Professor Dr. Karim Erzini (Senior Researcher & Fisheries, Biodiversity and Conservation Group leader)
Universidade do Algarve (UALg) - Center of Marine Sciences (CCMAR) - Fisheries, Biodiversity and Conservation (FBC)
e-mail: kerzini@ualg.pt

✓ Dr. António de Vilhena Sykes (Auxiliar Researcher)
Universidade do Algarve (UALg) - Center of Marine Sciences (CCMAR) - Fisheries Biology and Hydrobiology Group (FBH)
e-mail: asykes@ualg.pt

✓ Dr. Jorge Manuel S. Gonçalves (Senior Researcher)
Universidade do Algarve (UALg) - Center of Marine Sciences (CCMAR) - Fisheries, Biodiversity and Conservation (FBC)
e-mail: jgoncal@ualg.pt

PUBLICATIONS

- Capaz J. C., Hernández-Brooke D., Balvet S., Couto A. T., Alves A. C., Gonçalves R. A., Frias P. A., Andrade J. P., Sykes A. V. (2020), *Control of Zootechnology Leads to Improved Cuttlefish (Sepia officinalis, L.) Reproduction Performance up to Pre-industrial Levels*. Front. Mar. Sci. 7:112., DOI: 10.3389/fmars.2020.00112.
- Callaghan, N., Capaz, J. C., Lamarre, S. G., Bourloutski, E., Oliveira, A. R., MacCormack, T. J., Driedzic, W. R., Sykes, A. V., (2019), *Reversion to developmental pathways underlies rapid arm regeneration in juvenile European cuttlefish, Sepia officinalis (Linnaeus 1758)*. Journal of Experimental Zoology Part B Molecular and Developmental Evolution 2019;1–8. DOI: 10.1002/jez.b.22849.
- Capaz J. C., Tunnah L., MacCormack T. J., Lamarre S. G., Sykes A. V., Driedzic W. R. (2019), *Corrigendum: Hypoxic Induced Decrease in Oxygen Consumption in Cuttlefish (Sepia officinalis) Is Associated with Minor Increases in Mantle Octopine but No Changes in Markers of Protein Turnover*. Front. Physiol. 10:18., DOI: 10.3389/fphys.2019.00018.
- Sykes, António V., Alves, A., Capaz, J. C., Madeira, C., Gonçalves, Rui A., Frias, Paulo A., Leal, I., Couto, Ana T., Andrade, José P. (2017), *Refining tools for studying cuttlefish (Sepia officinalis) reproduction in captivity: in vivo sexual determination, tagging and DNA collection*. Aquaculture 479:13-16, DOI: 10.1016/j.aquaculture.2017.05.021.
- Capaz, J. C., Tunnah, L., MacCormack, T., Lamarre, S., Sykes, António V., Driedzic, W. (2017), *Hypoxic induced decrease in oxygen consumption in cuttlefish (Sepia officinalis) is likely associated with decreases in protein synthesis and Na⁺/K⁺ ATPase*, Frontiers in Physiology - Invertebrate Physiology 8 (344), DOI: 10.3389/fphys.2017.00344.
- Capaz, J. C., (2013), *Estrutura de Comunidades de Peixes, Amostras por SVSI - Sistema de Vídeo Subaquático Iscado, na Costa Sul de Portugal, Tese e dissertação apresentada para a obtenção do Grau de Mestre em Aquacultura e Pescas (Especialização Pescas) na Universidade do Algarve, Gambelas-Faro, 154p (Master Thesis)*.

PAPPERS IN PREPARATION FOR PUBLICATION / SUBMITTED

- Rodríguez-González, T., Morillo-Velarde, P. S., Capaz, J. C., Gonçalves, Rui A., Frias, P. A., Andrade, J. P., Sykes, A. V., *Developing prepared diets for the european cuttlefish (Sepia officinalis)*. Aquaculture.
- Callaghan, N. I., Bennett, C., Lamarre, S. G., Bourloutski, E., Sykes, A. V., Capaz, J. C., Driedzic, W. R., MacCormack, T. J., *Age-specific physiological organization underlies excitation-contraction coupling differences in the mantle of European common cuttlefish (Sepia officinalis L.)*. Frontiers.
- Contrasting Microbiota Diversity Patterns Between the Haemolymph and the Digestive Tract of Cuttlefish (Sepia officinalis L.) Before and After Feeding*, Frontiers in Physiology, section Invertebrate Physiology.

POSTERS AND COMMUNICATIONS

- Sykes, A., Capaz, J., Hernández-Brooke, D., Balvet, S., Couto, A., Alves, A., Andrade, J., *Effects of increased volume and tank bottom areas on cuttlefish (Sepia officinalis, L.) reproduction performance*, Poster, Conference: Aquaculture Europe 2016 – Food for Thought At: Edinburgh, UK, September 2016, DOI: 10.13140/RG.2.2.32193.35686.
- Cooke, G., Capaz, J., Sykes, A., (2016), *Effects of increased volume and tank bottom areas on cuttlefish (Sepia officinalis, l.) Reproduction behavior*, Presentation, Conference: Aquaculture Europe 2016, Edinburgh, September 2016.

COLLABORATIONS WITHOUT AUTHORSHIP

- Lamarre S. G., MacCormack T. J., Bourloutski É., Callaghan N. I., Pinto V. D., Andrade J. P., Sykes A. V., Driedzic W. R. (2019), *Interrelationship Between Contractility, Protein Synthesis and Metabolism in Mantle of Juvenile Cuttlefish (Sepia officinalis)*, Front. Physiol. 10:1051., DOI: 10.3389/FPHYS.2019.01051.
- Lamarre, S., MacCormack, T., Sykes, A., Hall, J., Speers-Roesch, B., Callaghan, N., Driedzic, W., (2016), *Metabolic rate and rates of protein turnover in food deprived cuttlefish, Sepia officinalis (Linnaeus 1758)*, American Journal of Physiology - Regulatory, Integrative and Comparative Physiology Vol. 310 n° 11, R1160-R1168, DOI: 10.1152/ajpregu.00459.2015.
- Speers-Roesch, B., Callaghan, N., MacCormack, T., Lamarre, S., Sykes, A., Driedzic, W., (2016), *Enzymatic capacities of metabolic fuel use in cuttlefish (Sepia officinalis) and responses to food deprivation: insight into the metabolic organization and starvation survival strategy of cephalopods*, Journal of Comparative Physiology B 186, 711–725, DOI: 10.1007/s00360-016-0991-3.
- MacCormack, T., Callaghan, N., Sykes, A., Driedzic, W., (2015), *Taurine depresses cardiac contractility and enhances systemic heart glucose utilization in the cuttlefish, Sepia officinalis*, Journal of Comparative Physiology – B 186, 215-227, DOI: 10.1007/s00360-015-0946-0.

IN MIDIA

- ✓ 2020 Report Aquafeed - Hatchery Feed & Management Website: <http://www.hatcheryfm.com/hfm-article/831/Advances-in-zootechnical-conditions-pave-the-way-for-an-industrial-cuttlefish-production/>
- ✓ 2020 Report CCMAR Website (Spotlight): https://www.ccmar.ualg.pt/news/spotlight-controlo-zoo-tecnico-de-chocos-em-aquacultura-melhora-productividade-ate-nivel-pre?fbclid=IwAR1Br_Av59fYV8LT_jRRbkLrjmNdIahAwHXQj8nDv3wrLkthGOx4hlrvyE
- ✓ 2016 Interview/TV Program SIC (Jornal das 12): <https://www.youtube.com/watch?v=jKRJhiVpEvM>
- ✓ 2016 Youtube Video (Cuttlefish DNA collection using a swab): https://youtu.be/2_mAx90v7M
- ✓ 2016 Youtube Video (Exemplification of the use of borescope/endoscope to determine the sex and maturity stage in *Sepia officinalis*): <https://youtu.be/jBGgqwdQnyk>
- ✓ 2016 Youtube Video (Maintenance Cleaning cuttlefish tanks): <https://youtu.be/55qFvYSRz4A>
- ✓ 2016 Youtube Video (Ultrasound scanning cuttlefish procedure): <https://youtu.be/dUo2YgmL350>
- ✓ 2014 Interview/TV Program TVI (Jornal das 8): <https://www.youtube.com/watch?v=x5GDqam2lwA>
- ✓ 2014 Interview/TV Program RTP1 (Portugal em Direto): <https://www.youtube.com/watch?v=Hdu58mSC67M>
- ✓ 2014 Interview/TV Program RTP1 (jornal da Tarde): <https://www.youtube.com/watch?v=3wrNz7l4Rts>
- ✓ 2014 Interview (Journal/magazine) Jornal Público (Biodiversidade: O “milagre” da multiplicação dos chocos em cativeiro foi descoberto por cientistas do Algarve): <https://www.publico.pt/2014/08/10/ciencia/noticia/o-milagre-da-multiplicacao-dos-chocos-em-cativeiro-descoberto-por-cientistas-do-algarve-1665866>
- ✓ 2014 Youtube Video (Cuttlefish Juveniles eating extruded pellets developed at CCMAR): <https://youtu.be/B6rrko54sBU>

ADDITIONAL FORMATION AND ACCREDITATION

November 2015: Welfare Laboratory Animal Sciences, B Category Certificate (DGAV)

Interdisciplinary Center for Marine and Environmental Research (CHIMAR - Biotério de Organismos Aquáticos): CAL-AQUA: Ana Paula Martins (Veterinary General Direction), Benjamín Costas (CHIMAR / IBMC), Hugo Santos, Laura Guimarães, Olga Martínez (CIIMAR)
 Universidade do Algarve (UAlg); Center of Marine Sciences (CCMAR): Dr. António Sykes

Use of aquatic organisms as experimental models justifies specific training for best animal welfare, in compliance with legal requirements. Acquiring skills in experimental models with use of aquatic organisms, with emphasis on vertebrates for scientific purposes. Advanced training for good laboratory practices in scientific research using live aquatic organisms, certified by the Portuguese Food and Veterinary Directorate (Direção Geral de Alimentação e Veterinária – DGAV).

The program of this course is in accordance with the criteria established by the **Portuguese Food and Veterinary Directorate (DGAV) and the Federation of European Animal Laboratory Science (FELASA) for science courses in Laboratory Animals – B Category.**

KNOWLEDGE FIELDS

- ✓ Marine biology, aquaculture and fisheries, marine sciences and resources.
- ✓ Direct and indirect biological data acquisition in laboratorial and field work, processing, analysis and compilation in edited results, in different programs and formats, for posterior analysis with quantitative and qualitative models.
- ✓ Marine organism's captivity maintenance experience (also freshwater organisms), and respective culture systems. Biological variables referent to cephalopods and respective zoo-technology. Practical and theoretical knowledge in idealization, assembling, maintenance and improvement of different marine species aquaculture systems, with special emphasis in *Sepia officinalis*, interpretation and analyses of reproductive behavior.
- ✓ Idealization and conception of mechanisms and methodologies in subaquatic image acquisition (photo or video). Qualitative and quantitative treatment of marine organisms' subaquatic images in natural and captive environment.
- ✓ Informatics knowledge in operative systems Microsoft Windows and Office, Adobe Acrobat and Photoshop CS6 13.0, InkScape, GoPro Studio 2.0 (Woodman Labs, Inc.), EverFocus System and CCTV cameras, IBM SPSS 21 and PRIMER 6.

INTEREST FIELDS

- ✓ Marine biology and zoology, marine systems, aquaculture and fisheries.
- ✓ Differences or similarities between species biological variables and marine systems in wild environment comparing to aquaculture, for scientific research.
- ✓ Marine organisms' behavior analyses, *in vivo*, using photo or video recording.
- ✓ Maintenance, welfare and viable reproduction in captivity.
- ✓ New methodologies on zoo-technical and technological systematics, applicable to marine resources in marine scientific research (aquaculture or fisheries).

LANGUAGES AND PERSONAL COMPETENCES

Native language

Portuguese

Other idioms

English
Spanish
French

	UNDERSTANDING		SPEAKING		WRITING
	Oral Comprehension	Reading	Oral Interaction	Oral Production	
English	C2	C2	C2	C2	C1
Spanish	C2	C2	C2	C2	C2
French	A2	A2	A1	A1	A1

Levels: A1/2 – Basic; B1/2 – Independent; C1/2 – Advanced (Quadro Europeu Comum de Referência para as Línguas (CECR))

Communication

Good interaction in formal or informal contexts, with capacity for dialogue and ideas discussion. fast learning ability and insight, cheerful and helpfulness, friendliness and cooperation. Easy argument exposure and presentation of possible hypotheses for solving problems. Easy adaptability to entry into a pre-existing working group or reception/insertion of new individuals in existing projects, referring to the dynamism and inculcated cooperation, good mood and easy communication with colleagues at the time of exchanging ideas.

Organization


Good capability to improve, execute and develop projects, activities or previous exigencies at a professional level. Highly organized, methodical, coherent, always anticipating steps and tools for the right accomplishment of the objectives, independently of the conditions imposed.

Hobbies

Legal sport fisherman (*spinning, surfcasting, float*); Aquarist and fishkeeping; Snorkel; Archery; Illustration and free drawing; Natural digital photography.

Driver License

B category since 2003.


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