

BIO ISLE - NEWSLETTER

Resumo

O CIBIO-Açores, Centro de investigação em Biodiversidade e Recursos Genéticos – Açores, tem sede na Universidade dos Açores, constituindo-se como um grupo de investigação do InBIO, a Rede de Investigação em Biodiversidade e Biologia Evolutiva. Em 2020 o centro contou com 92 investigadores: 25 doutorados (11 professores, 1 investigador principal, 2 investigadores auxiliares e 11 investigadores doutorados), 11 doutorandos, 7 mestrandos e 49 colaboradores de projeto. Em 2020 o centro publicou 41 artigos e conseguiu obter financiamento a nível nacional e internacional. Desde a sua formação em 2006, a sua atividade centra-se no desenvolvimento de investigação de elevado nível na área da biodiversidade, utilizando os Açores e outros sistemas insulares como modelo. As suas áreas de ação estendem-se dos biótopos costeiros até às florestas naturais e de exóticas, incluindo também a ecologia das águas interiores, a paleoecologia e a paleontologia.

Summary

CIBIO-Açores, the Research Center in Biodiversity and Genetic Resources – Azores, is based at the University of the Azores while constituting a research group of InBIO, the Research Network in Biodiversity and Evolutionary Biology. In 2020 it included 92 researchers: 25 PhDs (11 professors, 1 principal researcher, 2 junior researchers and 11 post-doc fellows), 11 PhD students, 7 MSc students and 49 research fellows. In 2020 the center published 41 papers and managed to obtain funding at national and international levels. Since its establishment in 2006, the center is devoted to the development of high-level research in biodiversity using the Azores and other island systems as models. Its areas of activity span from coastal biotopes to natural and exotic forests but also include freshwater ecology, paleoecology, and paleontology.

Editorial

Num ano marcado pela pandemia, há a relevar um ligeiro aumento da produção científica, ao nível do número de artigos científicos com fator de impacto, e também do impacto total acumulado, tendo-se obtido o valor mais elevado em registo.

O centro registou, igualmente um aumento considerável do número de alunos de doutoramento no final do ano, correspondendo a um total de 17.

De referir ainda que, no final do ano, dois dos nossos investigadores de pós-doutoramento conseguiram assegurar uma posição mais permanente na Faculdade de Ciências e Tecnologia da Universidade dos Açores.

Para além disso, entrou em execução o novo quadro de financiamento plurianual suportado pela FCT – IP, o que permitiu alguma renovação do equipamento das equipas de investigação, dada a impossibilidade de efetuar despesas relacionadas com deslocações ou missões científicas.

Num período caraterizado por uma elevada instabilidade, ainda assim, foi possível manter a atividade científica, em grande parte sob a forma de teletrabalho. Neste sentido, verificou-se um aumento da utilização de sistemas de videoconferência, o que permitiu, em muitos casos, aumentar os contactos com colaboradores externos e realizar reuniões de forma mais eficiente. Assim, é expectável que as tecnologias de informação e comunicação venham a desenrolar um papel cada vez mais relevante no estabelecimento e manutenção de redes de investigação regionais, nacionais e internacionais. Esperamos que isto contribua ainda mais para a internacionalização da nossa equipa de investigação e para o estabelecimento de novas cooperações com outras instituições insulares, nomeadamente no Atlântico.

Editorial

In a year marked by the pandemic, we should emphasize a slight increase in scientific production, in terms of the number of scientific articles with impact factor, as well as the total accumulated impact, which corresponded to the highest value on record.

The center also registered a considerable increase in the number of PhD students at the end of the year, corresponding to a total of 17.

We should also stress that by the end of the year two of our postdoc research fellows managed to secure a more permanent position at the University of the Azores, Faculty of Science and Technology.

In addition, the new multiannual funding framework supported by FCT - IP was put into effect, which allowed for some renewal of the equipment of the research teams, given the impossibility of incurring expenses related to travel or scientific missions.

In a period characterized by high instability, even so, it was possible to maintain scientific activity, largely in the form of telework. In this sense, there was an increase in the use of video conferencing systems, which allowed, in many cases, to increase contacts with external collaborators and to hold meetings more efficiently. Thus, it is expected that information and communication technologies will play an increasingly important role in the establishment and maintenance of regional, national, and international research networks. We hope that this will further contribute to the internationalization of our research team and to the establishment of new cooperation links with other island-based institutions, particularly in the Atlantic.

Produção científica

Scientific production

A produtividade científica do CIBIO-Açores tem-se mantido desde 2012, embora com oscilações, atingindo no decurso do presente ano um total de 41 artigos publicados, com um fator de impacto acumulado de 97 (Figura 1). Relativamente aos projetos de investigação e às prestações de serviço aprovadas, tem sido possível obter financiamento de entidades diversas (ver lista de projetos).

The scientific productivity of CIBIO-Açores has been maintained since 2012, although with oscillations, reaching a total of 41 published articles during the current year, with a cumulative impact factor of 97 (Figure 1). With regard to research projects and approved services, it has been possible to obtain funding from various entities (see list of projects).

Scientific production

Produção científica

 Articles - Artigos  Impact factor - Fator de impacto



Figura 1. Resumo da produção científica do CIBIO-Açores desde 2012.

Figure 1. Summary of the scientific production of CIBIO-Açores since 2012.

Principais áreas de investigação

Embora o centro tenha como principais áreas de investigação a Evolução em Ilhas, a Ecologia Insular e a Conservação e Gestão em Ilhas, realizámos uma análise interna dessas áreas, de forma mais detalhada e precisa. Identificámos oito unidades de investigação, com um grau considerável de interconexão.

Main research areas

Although the center's main research areas are Island Evolution, Island Ecology as well as Island Conservation and Management, we undertook an internal analysis of those areas in a more detailed and precise way. Eight research units were identified, with a considerable degree of interconnection.

Aquatic Systems	MARBE Marine Biodiversity and Environment * Biodiversidade e Ambiente Marinhos Coordinator * Ana Cristina Costa
	MPB Marine PalaeoBiogeography * PaleoBiogeografia Marinha Coordinator * Sérgio Ávila
	PALEO Palaeolimnology * Paleolimnologia Coordinator * Pedro Raposeiro
	FRESCO Freshwater Ecology * Ecologia das Águas Doces Coordinator * Vítor Gonçalves
Terrestrial and Aquatic Systems	DIVERGE Systematics and Evolution of Insular Lineages * Sistemática e Evolução de Linhagens Insulares Coordinator * Mónica Moura
Tourism	GBM Madeira Biodiversity Group * Grupo de Biodiversidade da Madeira Coordinator * Miguel Sequeira
	MODELANDIS Modelling and Land Management on Island Systems * Modelação e Gestão do Território em Sistemas insulares Coordinator * Luís Silva
	NaTour Planning and management of tourism in natural areas * Planeamento e gestão do turismo em áreas naturais Coordinator * Maria Anunciação Ventura

MARBE

Marine Biodiversity and Environment * Biodiversidade e Ambiente Marinhos
Coordinator * Ana Cristina Costa

The main goal of this research line is to describe marine biodiversity, understand the dynamics and the functioning of marine littoral ecosystems, analyse human-induced pressures and their impacts on these ecosystems, and to reconcile exploitation (fishing, aquaculture and bio prospectation) and conservation, meeting societal expectations on marine issues including awareness, assessment, innovation and renovation. In particular, we intend to improve the understanding of processes that control marine biodiversity at local scales, in the Atlantic and in a global context, addressing natural and anthropogenic induced connectivity of marine systems (e.g. insular, oceanic and with marginal seas). More specifically, we address the following aspects.

Community dynamics and functioning: Study of the drivers of structure and communities' functions; assessment of biotic interactions across spatial and temporal scales; assessment of effects of human activities on coastal biodiversity including the impacts of global change (e.g. invasive species and climate change) on the structure and functioning of communities. The importance of accurate and reliable taxonomy to studies of biodiversity cannot be overemphasized to meet the needs of the newly emerging and rapidly developing marine biotechnology to evaluate resource organisms for applied research. However, not only taxonomic inventories but also species' relative abundances, genetic diversity, and apportionment in higher taxa are important to properly evaluate the natural marine patrimony. Patterns' data are critical to understand the processes affecting biodiversity and to detect biodiversity changes. Thus, besides traditional taxonomic inventories updates in marine flora and fauna, some other approaches are considered:

Comparison of fossil biota with living ones from some habitats and regions to provide clues on favourable conditions for the formation and proliferation of species; identification of natural processes historically generating biodiversity patterns.

Evolutionary ecology and adaptation: linking geographic distribution and evolutionary history of marine organisms by using molecular techniques for quantifying the phylogenetic relatedness between species and higher taxa in order to recognize intraspecific genetic variability, and to quantify difficult-to-identify species and larval forms in natural samples.

Multiple uses of coastal systems: analysis of coastal ecosystems statuses, development of their uses within reconciliation boundaries with biodiversity and habitat conservation (e.g. MPAs, Marine Reserves); measuring and minimizing human impacts (e.g. fishing, tourism) by developing guidelines enabling nature protection and management; develop scientific-based biodiversity arguments for management and decision for MSP; develop strategies to meet societal challenges of littoral populations by promoting a sustainable exploitation of marine biodiversity, and development of innovative and profitable uses of marine environment and biodiversity.



MPB
Marine PalaeoBiogeography * PaleoBiogeografia Marinha
Coordinator * Sérgio Ávila

The MPB team studies a wide range of marine phyla (e.g., molluscs, echinoderms, bryozoans, crustacean decapods, crustacean balanids, crustacean ostracods, foraminifers, corals, selaceans, whales, bony fishes, calcareous algae), both Recent and fossil, from a palaeontological, (palaeo)biogeographical, (palaeo)ecological, and (palaeo)climatic perspective.

Our research is focused on the Atlantic Ocean insular systems and include the following areas: Marine Island Biogeography Theory; Geological processes in volcanic oceanic islands; Island ontogeny and sea-level changes; Spatial-temporal biogeography and biodiversity patterns; Local/global climate changes; Evolution of marine species in oceanic islands; Taxonomy and systematics of selected marine invertebrate groups.

We use several research tools: Geochronology; Isotopic analysis; Big Data Analysis; Modelling; Statistics, and quantitative tools; Tourism and socioeconomic tools; GIS-based tools; Unmanned observation drones; Professional video and photography.

Besides the fundamental research in Marine PalaeoBiogeography, we also promote the sustainable use of insular geoheritage for tourism purposes.

The specific objectives of MPB areas of research aim to: Understand the marine (palaeo)biogeographic and evolutionary patterns and processes occurring in oceanic islands throughout geological time; Understand the marine insular (palaeo)biodiversity and (palaeo)ecological patterns and processes; Understand the marine phylogeographical patterns of selected taxa from the Atlantic archipelagos; Evaluate and promote insular natural resources for (geo)tourism; Develop management tools that will contribute to improve the islands' natural-resource sustainability and (palaeo)biodiversity conservation.

For a long time, we have been highly committed to outreach activities, which include: the writing of books, TV documentaries, the “Route of the Fossils” trails and the “House of the Fossils’ Museum” on the island of Santa Maria, support for the “PalaeoBiology Database”.



PALEO

Paleolimnology * Paleolimnologia
Coordinator * Pedro Raposeiro

The paleolimnology group aims to study past climate and environmental changes and their causes, with a focus on human impact, by the analysis of paleo environmental archives. These natural environmental archives include lake sediments and peat bogs sampled and analysed using a multiproxy approach (e.g., classical as well as cutting-edge proxies) allowing the reconstruction of past environmental changes (e.g., climatic, volcanic and anthropogenic change) and ecosystem processes (e.g., food web changes following the introduction of top predators, methane cycling in lakes). The classical methods used are based on several biological (pollen, charcoal, diatoms, cladocera and chironomids), chemical (organic and inorganic chemical composition of the sediments, stable isotopes in organic matter), sedimentological (lithological description of the sediments) and mineralogical indicators and cutting-edge methods, based on molecular markers (e.g., aDNA, leaf waxes) that are used to reconstruct and interpret past environmental and climate conditions. The group expects to understand the links between changing climate and their impact on past human populations and societies to predict incoming climatic and ecological events and to envisage adaptive responses. The Paleolimnology group includes three senior researchers, one Ph.D. student, two M.Sc. students and one research grant holder and has several international collaborators on several projects.

Our research covers two areas:

- Terrestrial systems: landscape and climate histories;
- Aquatic systems: freshwater and brackish systems' ecology and diversity influenced by humans and climate.



FRESCO

Freshwater Ecology * Ecologia das Águas Doces
Coordinator * Vítor Gonçalves

Aquatic ecosystems of oceanic islands are unique due to their volcanic origin, geomorphological environment, climate situation and biogeographic isolation, which originate structural and functional patterns and ecosystem processes different from those observed in continental regions. Taking the advantage of being in a 'natural laboratory', the Azores islands, our main goal is to describe and understand the structure and function of insular aquatic ecosystems,

and to develop methodologies and strategies for their environmental assessment, rehabilitation and conservation.

Our research aims to determine the impacts of local and global environmental changes on aquatic biota, namely lakes, streams and coastal waters. We want to describe the biological community's structure and its interactions with environmental drivers, and determine the indicative value of biological quality elements for ecological quality assessment of these ecosystems. On ecosystem function, focus is given on litter processing to understand how this process occurs in the absence or low abundance of detritivores (natural situation in many oceanic freshwaters), which is expected to occur more frequently and in wider areas in the future given their sensitivity to warming and pollution.

To address these topics, we use a combination of classical ecological approaches and new methodologies such as environmental DNA (eDNA) and modelling.

The major goals of FRESCO are to:

1. assess the biodiversity of Macaronesian freshwater ecosystems and their distribution patterns;
2. understand the functioning of aquatic ecosystems in remote oceanic islands and how they are affected by local and global environmental changes;
3. assess the response of aquatic biota to environmental changes, particularly those arising from eutrophication and/or organic pollution, allowing the development of biological metrics for ecological quality assessment of inland surface waters;
4. develop molecular tools for the assessment of cyanotoxin production potential in Azorean lakes and thermal waters to implement in monitoring programs;
5. maintain a culture collection of Azorean microalgae and cyanobacteria and evaluate their potential use for biotechnological applications (e.g., nutrition, pharmaceutical, cosmetics).

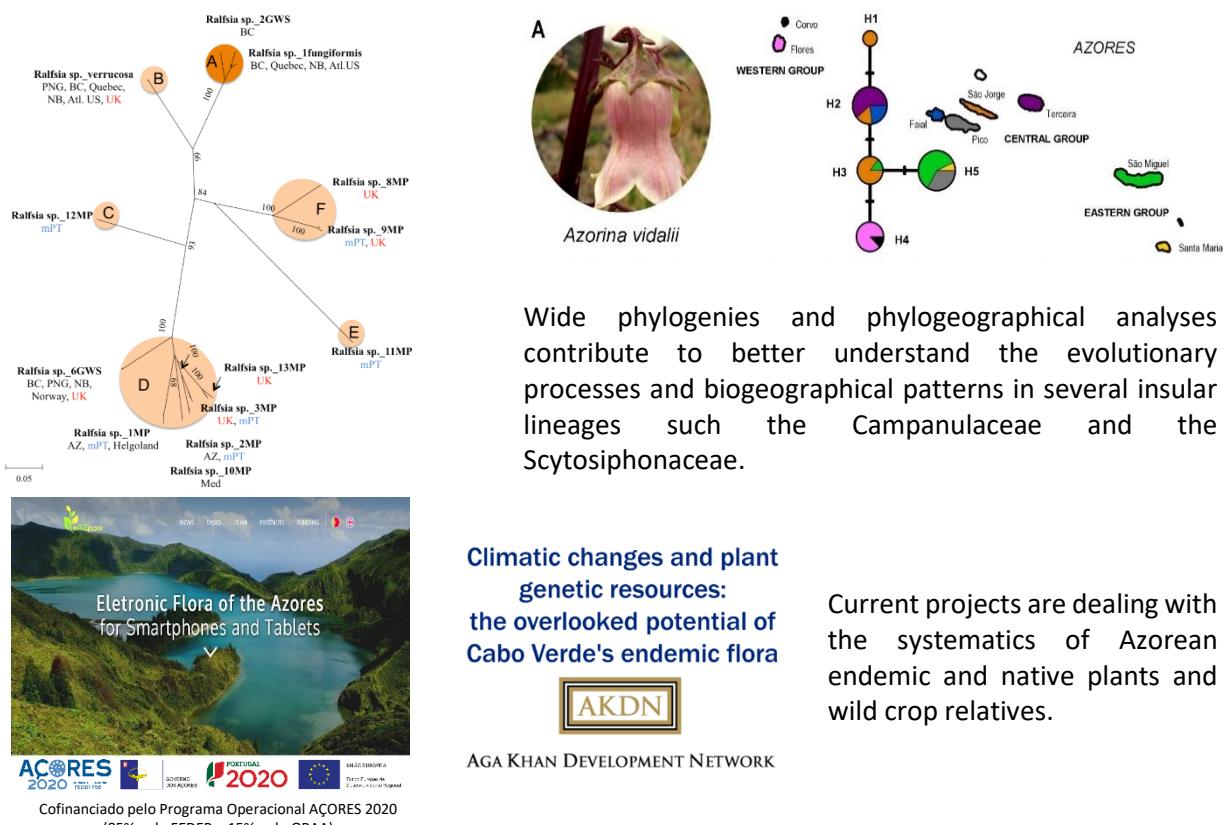


DIVERGE
Systematics and Evolution of Insular Lineages * Sistemática e Evolução de Linhagens Insulares
 Coordinator * Mónica Moura

Islands are perfect spots to comprehend how evolution takes place. It is thus the primary aim of DIVERGE to study the mechanisms that drive speciation in insular settings such as those that occur in the Macaronesian Region. Molecular genetics, morphology and bioinformatics are our main tools to detect diversity patterns at several levels, from straightforward morphologically distinct lineages to cryptic speciation.

Molecular genetics methods, encompassing population genetics, phylogenetics and phylogeography, are used to determine the relationships between and within insular lineages and their associated evolutionary patterns. Because systematics is basic to conservation planning, the group also deals with fundamental issues such as revision of taxonomic inaccuracies, detection of barriers to gene flow and population structure.

The group is composed of researchers that are united by a common passion for broadening the existing knowledge base on insular biodiversity and evolutionary forces, through the study of such diverse groups as marine algae and terrestrial vascular plants, frequently in collaboration with other research groups at national and international institutions. The group has been focussing its work on Azorean lineages and on related Macaronesian and continental taxa, with several projects currently underway dealing with the systematics of Azorean endemic plants and wild crop relatives.



Wide phylogenies and phylogeographical analyses contribute to better understand the evolutionary processes and biogeographical patterns in several insular lineages such the Campanulaceae and the Scytoniphonaceae.

**Climatic changes and plant genetic resources:
the overlooked potential of Cabo Verde's endemic flora**



AGA KHAN DEVELOPMENT NETWORK

Current projects are dealing with the systematics of Azorean endemic and native plants and wild crop relatives.

GBM

Madeira Biodiversity Group * Grupo de Biodiversidade da Madeira
Coordinator * Miguel Sequeira

We investigate the past, present and future of the flora and fauna of Madeira and the Macaronesian islands. Our research activities include: Study of the fauna, flora and vegetation of the past; The history of zoological and botanical knowledge in Macaronesia; Study of the current fauna, flora and vegetation; Description of new species, subspecies and new combinations; Genetic diversity; Island ecology, Ecology - plant landscape, tree growth rings and invasive plants, invasive animals. Phylogenetic relationships and colonization patterns of several taxa, essentially the endangered and endemic/native taxa.

The main goals of this research group are:

- To contribute to a better paleobotanical and paleozoological knowledge of Macaronesia;
- To better understand vegetation types and dynamics, including recent landscape changes, and human-driven changes in the Macaronesian Landscape;
- To contribute to a better floristic knowledge of Madeira and to taxonomical knowledge of critical taxa including their conservation status (e.g., *Andryala* L., *Sinapidendron* Lowe, *Musschia* Dum., *Carlina* L., *Aeonium* Webb & Berthel., *Tolpis* Adans., *Myrica faya* Aiton, *Dracaena draco* L.);
- To contribute to a better faunal knowledge of Madeira and to taxonomical knowledge of several taxa (e.g. bats, reptiles, birds, land-snails), including their conservation status.



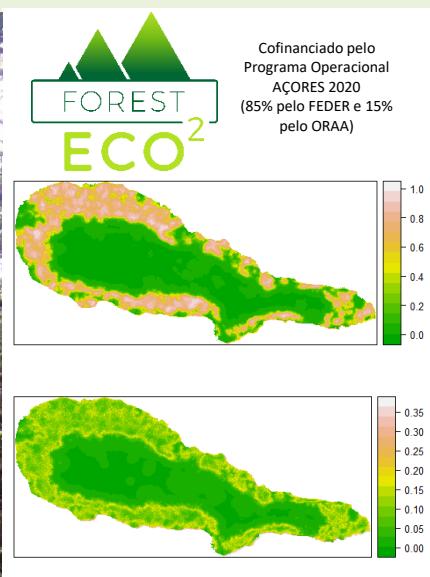
MODELANDIS

Modelling and Land Management on Island Systems * Modelação e Gestão do Território em Sistemas insulares
Coordinator * Luís Silva

Globally, and particularly on islands, anthropogenic activities have led to considerable change in soil cover and biodiversity patterns. Therefore, a holistic approach to research and management presently requires the integration of studies devoted to indigenous and non-indigenous species, natural and artificial habitats, ecologic and economic services. Our strategy is to use diverse modelling, statistical, sociodemographic and geographic information tools to research and evaluate a wide range of species, from endemic to invasive, and a broad array of ecosystems, including forest resources, pastureland, and natural habitats. Besides fundamental research dedicated to the study of ecological and biodiversity patterns on islands, using diverse modelling tools (e.g., species distribution modelling, community modeling), our group also uses dendrometric and dendrochronological approaches, evaluation of economic resources (e.g., tourism), and land management tools (e.g., management plans) in more applied research.

The specific objectives of the group are:

- To understand the biodiversity, ecological and genetic patterns in island systems, as derived from natural and anthropogenic factors;
- To evaluate ecological services, economic services and diversity patterns in pastureland and forests, particularly along gradients of anthropogenic disturbance;
- To evaluate natural resources for tourism and its potential impact on, for example, walking trails;
- To devise land management tools that will contribute to improve natural resource sustainability and biodiversity conservation.



NaTour

Planning and management of tourism in natural areas * Planeamento e gestão do turismo em áreas naturais
Coordinator * Maria Anunciação Ventura

In the last decade, the Azores archipelago turned from an almost unknown region to a highly awarded tourist destination. Furthermore, in April 2015 the local air space was opened to low-cost flights, leading to an increase in the number of national and international arrivals. Cruise ships carrying thousands of tourists also arrive more frequently, mainly to Ponta Delgada harbour. The observed boom of tourists is recent in these islands but is already a fact in other neighbouring archipelagos. Thus, our research interests extend to the entire Macaronesian biogeographic region, which includes the EU's outermost regions of the Azores, Madeira and the Canaries, as well as the African country of Cape Verde. In this context, we have already established recent contacts with Cape Verdean colleagues that might help develop joint research, within the frame of an ongoing H2020 project.

In general, we are dealing with small oceanic islands, dispersed throughout the North Atlantic Ocean, that need a particular care when it comes to planning and managing activities that take place within their natural habitats, in order to preserve local natural resources while promoting ecotourism, nature-based tourism and a high-quality touristic offer. Islands are mostly wanted for their natural beauties, and tourism is quite important for the economy of small island states. For instance, in the Azores, the beautiful landscape and seascape are the main reasons for most of the tourists to visit the archipelago.

Thus, this group is built under the need to properly plan and manage tourist activities that take place within natural areas, both on land and at sea, harmonizing recreation and conservation, while minimizing possible impacts.

Our main goals are to:

- Study and value the nature-based tourism as a cultural service provided by the Macaronesian natural ecosystems;
- Analyse and explore the existing natural resources that form our biological and geological heritage, in order to promote them for sustainable tourist uses;
- Determine tourist carrying capacities in natural areas (e.g., in the existing trails) and help plan and develop new activities, routes and trails;
- Plan the design of sub-aquatic trails for a sustainable use of the maritime resources (e.g., seascape, biodiversity assets), by the local maritime-tourism enterprises;
- Study the potential to develop new forms of nature-based tourism to be implemented in the regions and analyse their economic revenue, without compromising the ecosystems' conservation;
- Promote certification schemes that can help preserve the natural capital;
- Identify and develop management plans for certain terrestrial/marine species with conservation interests (e.g., umbrella or key species), that can in turn be used to promote local tourism;
- Analyse cultural ecosystem services to support decision-making.



Artigos
Articles

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Participação em projetos e extensão

Participation in projects and extension

- 3B-vent – Biodiversity, Biological interactions and Biotechnological products of coastal hydrothermal vents in Azores. ACORES-01-0145-FEDER-000112, 2019-2022;
- ADAPTALENTEJO – Predicting ecosystem-level responses to climate change. FCT - 02/SAICT2017 nº 31577, 2017-2020;
- Avaliação prévia de marcadores moleculares para Cetáceos. Ardit - Agência Regional para o Desenvolvimento da Investigação, Tecnologia e Inovação;
- Avaliação de Riscos de inundações Costeiras – Decreto Lei n.º 115/2010, de 22 de outubro que transpõe a Diretiva 2007/60/CE, do parlamento europeu e do Conselho, de 23 de outubro – 2º Ciclo de Planeamento. Estudo adjudicado pela Direção Regional do Ambiente/Direção Regional dos Assuntos do Mar, 2018-2020;
- Atlas de biología reproductiva de la Flora Macaronésica y aplicaciones a la conservación. Marcadores de vigor y de amenaza con análisis genéticos de paternidad (MAC/4.6d/190). Funding: FEDER 2017-2020;
- AZORESBIOPORTAL – PORBIOTA (ACORES-01-0145-FEDER-000072);
- BIOINVENT- Generic bio-inventory of functional soil microbial diversity in permanent grassland ecosystems across management and climate gradients. Biodiversa Program through Fundo Regional para a Ciência e Tecnologia (FRCT), 2017-2020;
- CRYPTO – Molecular Identification of Cryptogenic Macroalgae With Invasive Potential In The Azores –PO Azores 2020, Portugal ACORES-01-0145-FEDER-000091, 2019-2022;
- CVAgrobiodiversity - Climatic changes and plant genetic resources: the overlooked potential of Cabo Verde's endemic flora. Fundação para a Ciência e a Tecnologia (FCT I.P.) e a Rede Aga Khan para o Desenvolvimento (AKDN), 2018-2020;
- Determinación do estado de conservación, deseño dun sistema de seguimento e redacción de medidas de conservación para os tipos de hábitat de turbeiras acedas, turbeiras calcáreas e paraturbosos de Galicia. Xunta de Galicia. (PI) Xabier Pontevedra Pombal. Periodo: 2020- 2021;
- DISCOVERAZORES - “Quando o arquipélago dos Açores foi realmente colonizado? Uma abordagem paleolimnológica de alta resolução”, Fundação para a Ciência e Tecnologia (FCT), PTDC/CTA-AMB/28511/2017, 2018-2021;
- EAZFLORA - Electronic Flora of the Azores for Smartphones and Tablets. ACORES-01-0145-FEDER-000007. Azores 2020 PO, 2016-2021;
- ECLIPSA - Evidencias del cambio climático a partir de los yacimientos paleontológicos y los depósitos volcánicos y sedimentarios abióticos de Canarias, Museo de la Naturaleza y el Hombre, Cabildo de Tenerife, Tenerife, Canarias, 2018-2020;
- ERASMUS+ CAPACITY BUILDING IN THE FIELD OF HIGHER EDUCATION - Joint Post-Graduate Study Programme in Ecotourism and Nature Guiding Project Reference Number: 619157-EPP-1-2020-1-ES-EPPKA2-CBHE-JP, UNIVERSITAT AUTONOMA DE BARCELONA.
- ESTUDO DE IMPACTE AMBIENTAL: Central Hidroelétrica Reversível da Lagoa das Furnas – Comunidades Aquáticas;

Estratégia Regional para o Controlo e Prevenção de Espécies Exóticas Invasoras no âmbito do projeto “LIFE IP AZORES NATURA (LIFE17 IPE/PT/000010), Direção Regional do Ambiente, Secretaria Regional da Energia, Ambiente e Turismo. 2019-2021;

EUROPONDS, 3rd European EFFS-EFYR FreshProject: taxonomy, biomass, energy and dietary quality, as measured by total lipids and their fatty acids of emerging insects from ponds across Europe. (2020- Present);

Extending the General Dynamic Model (GDM) of oceanic island biogeography from the terrestrial to the marine realm: a multidisciplinary approach for a global biogeographic theory. Projecto exploratório FCT/IF/00465/2015, 2017-2021;

FLAD - Crossing the Atlantic: Lipid and DNA Biomarkers as Portals into the Azorean Recent;

FLORAZOR - Elaboração de catálogo de espécies florícolas. Secretaria Regional do Ambiente, Turismo e Energia, 2019-2020;

FunAqua, Global DNA-based inventory of aquatic fungi for documenting global fungal biodiversity in water and sediments. (PI) Kristel Panksep; Alo Laas; Helen Tammert, Estonian University of Life Sciences (2018- present);

GPS Azores- Geographical and Political Scenarios and Maritime Spatial Planning for the Azores and North Atlantic. ACORES-01-0145-FEDER-000002 GPS Azores. Financiado pelo PO Governo Regional dos Açores 2020 – EU; 2016-2020;

HOLMODRIVE - Influencia dos padrões atmosféricos do Atlântico Norte no clima do Oeste de Iberia: Desde o Tardiglaciarío até o Presente. PTDC/CTAGEO/29029/2017, 2018-2021;

IGEaD - Potencial do Ensino a Distância na promoção da inclusão geográfica nos Açores M1.1.C/C.S./014/2019/01 (2019-2021). PRO-SCIENTIA Eixo 1 Ação 1.1. Medida 1.1. C – Implementação de Projetos de I&D na área das Ciências Sociais e Humanas, 2019-2021;

IMPACOM, Climate Impacts of the Common Era on Aquatic Systems in NW Spain. Impactos climáticos de la era común sobre los ecosistemas acuaticos del NW de España. PID2019-107424RB-I00, 2020-2021;

IslandShark - Oceanic Islands as Essential Habitat for migratory sharks. PTDC/BIA-BMA/32204/2017 (2020);

LIG Canarias - Lugares De Interés Geológico De Canarias: Estudio, inventario Y Divulgación, Instituto Geológico y Minero de España (Canarias), 2017-2020;

MACFLOR II - Atlas de biología reproductiva de la Flora Macaronésica y aplicaciones a la conservación. Marcadores de vigor y de amenaza con análisis genéticos de paternidad, Cabildo Insular de Gran Canaria – Jardín Botánico Canario Viera y Clavijo, Canarias; MAC2/4.6d/386, 2020-2022;

MACFLOR - Atlas de biología reproductiva de la Flora Macaronésica y aplicaciones a la conservación. Marcadores de vigor y de amenaza con análisis genéticos de paternidad, Cabildo Insular de Gran Canaria – Jardín Botánico Canario Viera y Clavijo, Canarias; MAC/4.6d/190, 2017-2020;

MaCoBioS - Marine Coastal Ecosystems Biodiversity and Services in a Changing World - H2020. European Union’s Horizon 2020 research and innovation programme - grant agreement no. n°869710. 2020-2024;

MarSP – Macaronesian Maritime Spatial Planning. EASME/EMFF/2016/1.2.1.6/03SI2.763106, 2018-2020;

MIMAR+ - Seguimiento, control y mitigación de proliferaciones de organismos marinos asociadas a perturbaciones humanas y cambio climático en la Región Macaronésica. INTERREG MAC 2014-2020, MAC2/4.6d/249, 2019-2022;

MONITAIA - Monitorização Operacional das Massas de Água Interiores e de Transição da Região Hidrográfica dos Açores, SRAM – 18/DRA/2019. Instituto de Inovação Tecnológica dos Açores/Fundação Gaspar Frutuoso, 2020-2023;

MONITSALGA – Monitorização Biológica da Ribeira da Salga. Serviço Florestal do Nordeste, 2018-2020;

MOTiVE – Research and training action on palaeoclimate approaches to reconstruct MOdes of ClimaTe Variability impacting Europe during the Holocene (H2020-MSCA-ITN-2020 - Marie Skłodowska-Curie Innovative Training Networks; Proposal number: 952895). Coordinating: Royal Holloway and Bedford New College, CM Puertas;

NIS-DNA Deteção precoce e monitorização de espécies não- indígenas (NIS) em ecossistemas costeiros baseadas em ferramentas de sequenciação de alto débito, PTDC/BIA-BMA/29754/2017, 2019-2022;

North Atlantic CCTBON - Coupled Coastal Temperature and Biodiversity Observation Network, 2020-2029;

PADDLE - Planning in a liquid world with tropical stakes: solutions from an EU-Africa-Brazil perspective – Paddle (H2020-MSCA-RISE-2016), 2017-2021;

PALEOMODES - Holocene climate and ecological impacts of the East Atlantic pattern (EA) and North Atlantic Oscillation (NAO) interplay in southwestern Atlantic Europe. CGL2016-75281-C2-1,2-R, 2016-2020;

PAP-SMA – Plano de Ação para o PAleoParque Santa MariA (PAP-SMA); AD36/DRA/2019, 2019-2021;

PGRH Açores – Elaboração do Plano de Gestão da Região Hidrográfica 2022-2027 – 3º Ciclo (Águas Superficiais). Simbiente Açores/Simbiente Engenharia e Gestão Ambiental, 2020-2021;

PhytoPonds – Phytoplankton of Iberian Ponds. Museo Nacional de Ciencias Naturales, CSIC, 2019-2020;

PLANCLIMAC - Elaboração de guias e materiais de sensibilização para a integração dos riscos das alterações climáticas nas políticas de ordenamento do território e de gestão de recursos naturais nos Açores – PLANCLIMAC (MAC2/3.5B/244)". Estudo adjudicado pela Direção Regional do Ambiente do Governo dos Açores;

PLATMAR - Development of volcanic island shelves: insights from Sta. Maria Island and implications on hazard assessment, habitat mapping and marine aggregates management. PTDC/GEO-GEO/0051/2014; 2016-2020;

Potencial de Produção de Biomassa Vegetal nos Açores. Varela & C.ª Ida (Bensaude energia). CIBIO, Universidade dos Açores/Fundação Gaspar Frutuoso;

PRIBS – Estratégia Regional para o Controlo e Prevenção de Espécies Exóticas Invasoras no Âmbito do Projecto “LIFE IP AZORES NATURA /LIFE17 IPE/000010), 2019-2021;

Projecto exploratório FCT/IF/00465/2015 - Extending the General Dynamic Model (GDM) of oceanic island biogeography from the terrestrial to the marine realm: a multidisciplinary approach for a global biogeographic theory, 2017-2021;

RAPIDNAO - The NAO reconstruction during the Holocene Rapid Climate Change periods. MEC - CGL2013-40608-R

Reading wood to assess the vulnerability of Macaronesian laurel forests to global change (LAUREL); Referencia: PID2019-109906RA-I00; Entidad financiadora: Agència Estatal de Investigación, Ministerio de Ciencia, Innovación y Universidades; Convocatoria: Programa Estatal de I+D+i orientada a los Retos de la Sociedad, convocatoria 2019 ("Proyectos I+D+i" 2019, modalidad "Retos Investigación"); Duración: 2 años (1 junio 2020 - 31 mayo 2022);

REBECA – Red de excelencia en biotecnología azul (algas) de la región macaronésica. INTERREG MAC 2014-2020, MAC/1.1a/060, 2017-2020;

REBECA-CCT – Rede de excelencia en biotecnología azul (algas) de la región macaronésica. INTERREG MAC 2014-2020, MAC2/1.1b/269, 2019-2022;

Rhodoliths from the Cape Verde Archipelago: insights into climate change and megatsunami sediment dynamics. DFG - RA 1597/3-1 Host: Staatliches Museum für Naturkunde Stuttgart (Germany). 2017-2021;

SCAPETOUR - Seascapes promotion to diverse touristic products (POAÇORES2020- ACORES-01-0145-FEDER-000083). 2019-2022;

SEA-THINGS - Objetos de aprendizagem para promover a Alfabetização Oceânica (PO AÇORES 2020 - ACORES-01-0145-FEDER00011), 2019-2022;

Sexagem molecular de cetáceos II. Ardit - Agência Regional para o Desenvolvimento da Investigação, Tecnologia e Inovação, 2020;

Towards a mechanistic model of invasiveness in oceanic islands: determinants of the establishment and invasion success in alien plants (Hacia un modelo mecanistico de invasion en islas oceanicas: determinantes del exito de establecimiento e invasion de plantas exóticas), 2020-2023;

TURIVIVA+, ACORES-01-0145-FEDER-000115, financiado em 85% pelo FEDER e 15% pelo ORAA, aprovado pela Autoridade de Gestão do Programa Operacional AÇORES 2020 (Direção Regional do Planeamento e Fundos Estruturais), 2019-2020;

UNTLeD – UNlocking the megaTsunami Deadlock: using the near-source impacts to constrain tsunami generation by volcanic flank collapses. LISBOA-01-0145-FEDER-028588, 2018-2021;

VRPROTO: Virtual Reality PROTOtype: the geological history of “Pedra-que-pica”. ACORES-01-0145_FEDER-000078; PO Azores 2020, 2019-2023;

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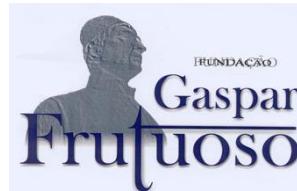
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