MAIISG NEWSLETTER

Number 3, December 2020

HI, MAIISG MEMBERS

We are thrilled to present the third MAIISG newsletter of 2020.

As usual, we have some great articles shared by our members. We start the newsletter with the marvellous new Guide for the Azores islands' land and freshwater molluscs.

Marco Neiber brings a fresh new paper about the Geomitrini land snails radiation in the Madeira archipelago. Luis Crespo notices the eight new *Dysdera* species for Madeira archipelago.

The novel Conservation Strategy for the Ôbo Giant Snail from São Tomé and Principe islands is presented by Martina and Frazer. The first butterfly monitoring program in Macaronesia is brought to us by the ZERYNTHIA Association.

We also note the fantastic work done by the CAO – Porto Santo for the Porto Santan molluscs public awareness. At the same time, Paulo Borges testimonies the start of the LIFE Beetles project in the Azores.

Last but not least, the novel logo of MAIISG is unveiled.

We hope you enjoy this third 2020 edition.

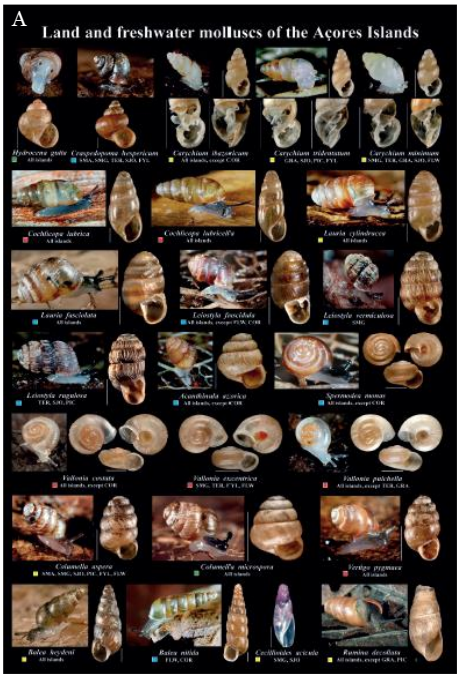
SAVE OUR SNAILS – A CRY FOR HELP ATTENDED BY THE COMMUNITY

By António M. Frias Martins

Azorean land snails! In most people's perception, they aren't many, and they aren't worth the effort. Yet I knew they were there and that they are many! However, if people do not see them, how can they know they really exist? And so, how can people appreciate them, adopt them as their own natural heritage, care for their survival? These and other questions were dancing in my head when I decided to build-up a pictorial spread-sheet of the land and freshwater molluscs of the Azores. I called it a "Field Guide": all 122 recorded species, in full colour, most photographed alive, packed with distributional and biogeographical information, compacted in a plasticised 8-page pamphlet. Now people will know, so I dreamed…

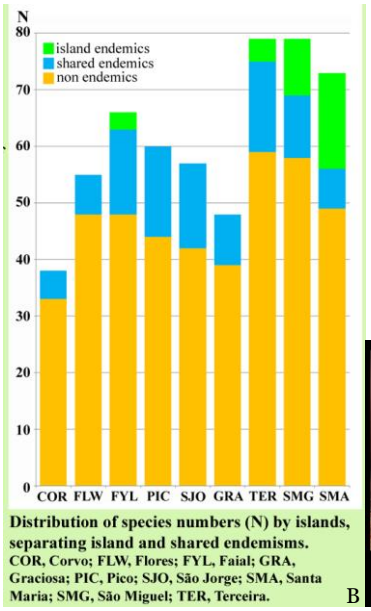
The first Azorean endemic land mollusc was described by Augustus A. Gould in 1847 as *Bulimus pruninus*; deposited at the Smithsonian collection, the type of this elegant species was for a long time thought to be of tropical origin. It was only after the French naturalist Arthur Morelet's (1860) publication of the results of his and Henri Drouët's 6-month expedition to the Azores that the terrestrial malacofauna of the archipelago made its way to the scientific forum. Morelet (1860) recorded 66 species, 32 of which were endemic, thus calling attention to the uniqueness of the Azorean malacofauna. His publication, with colour illustrations, careful descriptions, and rich habitat details, was for a century the textbook of the Azorean land malacology.

In the late 1950s, the Dutch researcher Wim Backhuys visited the Azores to collect material for a PhD thesis published in 1975. There, he thoroughly reviewed the literature, updated the descriptions and biogeography, listing 97 species, of which 35 were endemic. Moreover, by mentioning the many novelties that he had reserved for future publications, Backhuys lifted the veil onto a previously unsuspected added richness.



By the late 1970s, the University of the Azores was rehearsing its first steps and knowledge of the archipelago's natural heritage was then deemed to be an important research issue. As a result of intensive and extensive collecting throughout the archipelago, a reference collection of land snails was set up (DBUAç-MT = Departamento de Biologia, Universidade dos Açores – Moluscos Terrestres). Many new records were identified, and anatomical and molecular research revealed at least 40 new species awaiting description (Martins, 2005, Harris et al., 2013). Based on this collection, Martins (2011) listed those records for the Azores, including also the non-named, yet-to-be described species. The Field Guide (Martins, 2019) updates that listing and records 122 species, of which 53 are endemic.

The Field Guide was also a cry for help. Since the 1980s, at least four species are feared to be extinct, some yet to be described. They are all from Santa Maria, the oldest island and the richest in endemics. The IUCN, the Government of the Azores, the people from Santa Maria and some enthusiastic researchers studied the problem and put together the ambitious proposal "LIFE-Snails". The summary of it passed the first screening! I wish to believe that the Field Guide had something to do with the setting in motion of such proposal…



Distribution of species numbers (N) by islands, separating island and shared endemisms.
COR, Corvo; FLW, Flores; FYL, Faial; GRA, Graciosa; PIC, Pico; SJO, São Jorge; SMA, Santa Maria; SMG, São Miguel; TER, Terceira.

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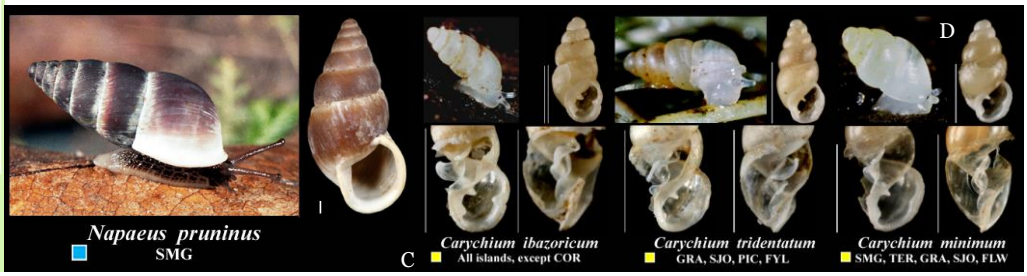
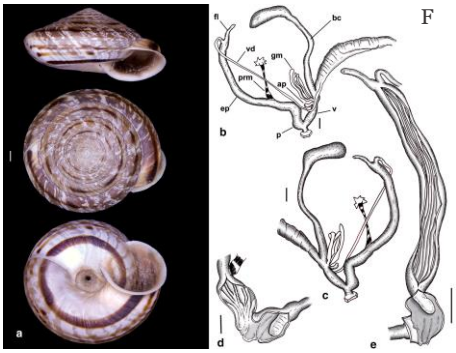


"I decided to build-up a pictorial spread-sheet of the land and freshwater molluscs of the Azores. I called it a "Field Guide": all 122 recorded species, in full colour, most photographed alive, packed with distributional and biogeographical information, compacted in a plasticised 8-page pamphlet. Now people will know, so I dreamed…."

UNRAVELING A LAND SNAIL RADIATION FROM THE MADEIRAN ARCHIPELAGO

By Marco Neiber



Researchers from Germany, Portugal, Italy, Austria and Hungary, among them the MAIISG members Dinarte Teixeira, Klaus Groh and Marco T. Neiber, studied the phylogeny and biogeography of the Geomitrini radiation (Gastropoda: Stylommatophora) from the Madeiran Archipelago in a recently published article in the journal Cladistics (Brozzo et al., 2020).

The Geomitrini is the most species-rich group of land snails in the Madeiran Archipelago. The tribe is endemic to the Madeiran Archipelago and possibly the Azores (the records from the Canary Islands may be non-autochthonous), most of them to the Madeiran Archipelago. Geomitrini has evolved various shell shapes, which is unusual among helicoid land snails (Fig. 1). There is also an exceptional variation in shell size among species, varying from just 3.5 mm to over 50 mm. Shell shapes range from flat, discoidal shells to globular shells and turreted shells (Fig. 1). The shell surface can be distinctly ornamented, including granulated, ribbed or even hirsute forms (Fig. 1).

The phylogeny of the group was reconstructed based on mitochondrial and nuclear genetic markers. The timing of diversification, the colonisation history of the islands of the Madeiran Archipelago and the evolution of characters reproductive organs were studied. The results of the phylogenetic analyses confirm the sister group relationship of Geomitrini and Cochlicellini, but also show that several previously accepted genus-group taxa are not monophyletic. A new classification for the Geomitrini is proposed, including the description of two new genera, *Domunculifex* Brozzo, De Mattia, Harl & Neiber, 2020 and *Testudodiscula* Brozzo, De Mattia, Harl & Neiber, 2020.

The onset of diversification of Geomitrini was dated at 13 Ma, which largely coincides with the emergence of the present-day islands of the Madeiran Archipelago. Furthermore, ancestral state estimation suggested independent losses of accessory organs of the reproductive system within the tribe and an ancestral area estimation suggested recurrent colonisations of Madeira (and the Ilhas Desertas) from the older island Porto Santo. The paper can be consulted using the following link: https://doi.org/10.1111/cla.12440 .

"The Geomitrini is the most species-rich group of land snails in the Madeiran Archipelago. The tribe is endemic to the Madeiran Archipelago and possibly the Azores (the Canary Islands records may be non-autochthonous), most of them to the Madeiran Archipelago."

INTEGRATIVE TAXONOMIC REVISION ON THE WOODLOUSE-HUNTER SPIDER GENUS *DYSDERA* (ARANEAE: DYSDERIDAE) IN THE MADEIRA ARCHIPELAGO WITH NOTES ON ITS CONSERVATION STATUS

By Luís Crespo

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In the course of the study of the island lineages of *Dysdera*, a species-rich genus throughout the Mediterranean and Macaronesia (especially in the Canary Islands, with 47 described species), a number of remarkable findings were reported. *Dysdera* is now the most speciose spider genus in the Madeira archipelago since the researchers describe 8 new species to science, redescribe the three previously known species and synonymise *D. longibulbis* and *D. vandeli* under *D. coiffaiti* and *D. diversa*. Also, the phylogenetic relationships within the genus are analysed using Sanger sequencing methods, and their conservation concerns are noted.

The new species described are: *D. dissimilis*, named for the combination of several striking morphological characters, *D. exigua*, named for its small size, *D. isambertoi*, named in honour of Isamberto Silva, who greatly contributed to the reported discoveries with field work, *D. precaria*, named for a two-fold motif comprising both the precarious state of its natural habitat and the professional status of many taxonomists, *D. recondita*, named after its restricted distribution, *D. sandrae*, named after Sandra Videira, partner of the first author, *D. teixeirai*, named after Dinarte Teixeira, a malacologist who initially motivated several of these authors to work on Madeira archipelago spiders, and *D. titanica*, named for its large size.

The phylogenetic study points to a well-supported monophyletic clade (*D. titanica* not analysed) that probably speciated undergoing adaptive radiation since sympatric congenerics are all very different from each other and can be easily distinguished. The ancestry of this Madeiran-clade of *Dysdera* can be traced to a large Ibero-Macaronesian clade, favouring the idea of independent colonisation through stepping stone islands from the Iberian Peninsula, instead of colonisation from the Canary Islands, with the early colonisers having arrived first to Porto Santo (the oldest island), then having colonised Madeira and Desertas. The enigmatic *D. titanica*, found in the Kulczynski collection at Warsaw, is yet to be seen again and might represent distinct colonisation of the archipelago because it resembles more the Canarian species than the other Madeiran species.

The new species were either found at the top of Porto Santo mountains, or at the Desertas Islands. These are fragile ecosystems, highly affected by the historical land use and/or colonisation attempts by humans. This severely depauperated the native vegetation and introduced exotic species into the fray. These spiders can only be found where humidity is highest, which is at the summits. Coupled to present-day climate change and the normal erosional processes of oceanic islands, the authors believe these species are of conservation concern should be of use to conservation authorities to lobby for the restoration of natural habitats of Madeira archipelago.

This study was published in the Zoological Journal of the Linnean Society and can be accessed here: https://academic.oup.com/zoolinnean/advance-article/doi/10.1093/zoolinnean/zlaa089/6012771?guestAccessKey=6261e952-5b9f-419c-baac-aa3130987550.

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THE OBÔ GIANT SNAIL ACTION PLAN

By Martina Panisi and Frazer Sinclair

The Obô Giant Snail *Archachatina bicarinata is* a large terrestrial mollusc that occurs only in the forests of São Tomé and Príncipe Islands in the Gulf of Guinea. It is a culturally significant species with a long history of harvesting for food and traditional medicine use. Once locally abundant, it has experienced a severe ongoing decline in both population and range during the past 30 years.

This Species Action Plan describes what is currently known about the Obô Giant Snail and establishes a conservation action framework. The framework and an associated threat assessment were developed through two stakeholder workshops – one on each island – during October 2019. These involved more than 60 participants from public, private, and civil society organisations, ensuring that a broad spectrum of views was shared and incorporated.

This document has been reviewed and endorsed by the Mid-Atlantic Island Invertebrate Specialist Group (MAIISG) - part of the Species Survival Commission (SSC) for the International Union for Conservation of Nature (IUCN). It is available to download via the MAIISG website: http://www.maiisg.com/resources/publications/"

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FIRST BUTTERFLY MONITORING PROGRAM IN THE CANARY ISLANDS AND MACARONESIA

By Yeray Monasterio

A team of researchers led by Yeray Monasterio, from the Zerynthia Association, The Canary Islands are an engaging environment for the study of Lepidoptera. The isolation makes this archipelago a laboratory for evolution, where 352 species of moths and 18 species of butterflies have been recorded to date.

The work carried out by the Zeryinthia Association (the Spanish NGO that works in the study, conservation and divulgation of butterflies and moths) allowed to launch the first butterfly monitoring program in the Canary Islands and Macaronesia as a pioneering project: https://www.asociacion-zerynthia.org/seguimiento-diurnas

Currently, there exist active transects for monitoring butterflies in Tenerife and Gran Canaria. On the island of La Palma, a program has just started, with financial and logistical support from the regional government (Cabildo) of La Palma. Due to the health crisis at the moment, participation has been limited to rangers. In 2021 it is expected to be able to grow the project by holding informative workshops for the island's population that may be interested in participating.

The Canary species' uniqueness makes it necessary to study their population dynamics to understand their conservation status better and develop more effective conservation policies. Furthermore, many species are endemic, and we still know little about them.

ZERYNTHIA's work is also developed in other areas. In 2019 the endemic butterfly from Tenerife and La Palma *Pieris cheiranthi* was chosen "Butterfly of the Year" in Spain, an initiative of our NGO (https://www.asociacion-zerynthia.org/MDA). Also, two new species of moths have been published recently (*Amicta gara* and *Amicta moneiba*), among many other initiatives.

> *"The uniqueness of the Canary species makes it necessary to study their population dynamics to understand their conservation status better and develop more effective conservation policies".*

LIFE BEETLES (AZORES) - LIFE18 NAT/PT/000864

By Paulo A. V. Borges

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Endemic arthropods are particularly diverse in the Azores archipelago. However, several threats are impacting the habitats of many rare species. Recently, started in the Azores the Project LIFE-BEETLES (https://www.lifebeetlesazores.com/en/), aiming to improve the population size, distribution area and conservation status of tree beetle endemic species: *Tarphius floresensis*, *Pseudanchomenus aptinoides* and *Trechus terrabravensis*, which are classified as Critically Endangered or Endangered (by IUCN) due to habitat quality and quantity loss, as a result from the change of land use and invasive alien species (IAS).

During Summer 2020 the fieldwork started in the islands of Pico, Terceira and Flores aiming to sample the main core habitats and evaluate its integrity.

> *" Recently, started in the Azores the Project LIFE-BEETLES (https://www.lifebeetlesazores.com/en/), aiming to improve the population size, distribution area and conservation status of tree CR or EN beetle endemic species: Tarphius floresensis, Pseudanchomenus aptinoides and Trechus terrabravensis."*

THE FORCE OF DIFFERENCE!

By Carmo Freitas


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Porto Santo Center for Occupational Activities (CAO) integrates the Department of Inclusion of People with Disabilities from the Madeira Social Security Institute, IP-RAM, Madeira Government. The institution ensures the transition to adult life for people with severe disabilities, aged 18 years or over, whose capacities do not allow, temporarily or permanently, productive activity.

In the last four years, and given the peculiar and rich specificities of the biodiversity of the island of Porto Santo, it has started to boost activities with the island's snails. It is Madeira's region with the highest percentage of endemic snails, 82% with 101 only species.

Island singularities. Singularities and differences of a CAO that are reflected in the people that fill this institution with joy. Thus, throughout the year, snails give colour and shape to many of the different works they develop and are also keen to spread throughout the community, remembering that difference makes societies wealthier.

On the Day of Persons with Disabilities, celebrated internationally and nationally, this December, they left the following message in a snail installation:

"The island, bathed by the Atlantic Ocean, remains firm and, after 18

million years, is awarded as a UNESCO Biosphere Reserve. The strength comes from its entrails, from its roots, like the trees that grow and live in a particular territory that is a testimony of resilience. Nothing makes her falter. Nothing makes her give up. It is a test of Value, Overcoming, Mobilisation and Strength."

The Center for Occupational Activities (CAO) stands for Difference, this Difference. Genuine, intrinsic, lives beyond standardised islands. He lives and outdoes himself. In all branches of life, live and alert to Differences, in favour of Change, Inclusion, Healthy and Happy Communities. The difference is what unites us! The difference is Strength, Strength of Difference!

> *"The Center for Occupational Activities (CAO) stands for Difference, this Difference. Genuine, intrinsic, lives beyond standardised islands. He lives and outdoes himself."*

THE NEW MAIISG LOGO

By Dinarte Teixeira

Dear friends, I am happy to announce that our group has a new logo!

Created by Xavier Teixeira, the MAIISG logo incorporates the images of representatives of invertebrates such as beetles, butterflies, snails and spiders, and the acronym of the Mid-Atlantic Islands Invertebrate Specialist Group. There are two versions of the logo, one which includes the webpage under the invertebrates images and other without it.

The logo can be downloaded at the MAIISG website (www.maiisg.com), having five different colours to choose from: yellow, black, green, ocean blue, orange and brown.

Enjoy!

> *"Created by Xavier Teixeira, the MAIISG logo incorporates the images of representatives of invertebrates such as beetles, butterflies, snails and spiders, as well as the acronym of the Mid-Atlantic Islands Invertebrate Specialist Group."*

FINAL REMARKS

We wish to thank the members who contributed to the December newsletter.

We look forward to more news and developments about the ongoing projects which most of you are currently involved, and we would love to include those contributions in the April 2021 newsletter.

We take the opportunity to wish you a Merry Christmas and a Happy New Year, hopefully with no restrictions in our mobility.

Until then, stay safe.

Vicky, Paulo and Dinarte

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Image credits:

A. *Plate from the Land and Freshwater molluscs of the Azores Islands* (© *António Frias Martins*),

B. *Distribution of the species by the Azorean Islands* (© *António Frias Martins*).

C. Napaeus pruninus (© *António Frias Martins*).

D. Carychium sp. (© *António Frias Martins*).

E. Geomitrini land snails from Madeira Island (© Marco Neiber).

F. Shell and genital system of Testudodiscula testudinalis, a land snail from Porto Santo from the new genus Testudodiscula (Lowe, 1852) (© Marco Neiber).

G. Fajã da Nogueira, Madeira island (© Pedro Cardoso).

H. Planalto Sul, Deserta Grande, Desertas islands (© Pedro Cardoso).

I. *Dysdera exigua* nov. sp (© *Pedro Cardoso*).

J. *Dysdera portosancti*, female (© *Pedro Cardoso*).

K. *Dysdera precaria* nov. sp., male (© *Pedro Cardoso*).

L. Ôbô Snail Conservation Plan (© *Martina Panisi*).

M. Meeting of Association ZERYNTHIA (© *Yeray Monasterio*).

N. Astronomy observatory on La Palma (© *Yeray Monasterio*).

O. La Palma Grayling Hipparchia tilosi (Manil, 1984) (© *Yeray Monasterio*).

P. LIFE BEETLES Team (© Paulo A.V. Borges).

Q. Corner for Inclusion and Diversity at Porto Santo (*source: Câmara Municipal do Porto Santo*).

R. Biosphere Reserve Mural (© *CAO Porto Santo*).

S. Users of CAO Porto Santo assembling Christmas balls (© *CAO Porto Santo*).

T. Christmas tree with endemic Porto Santan snails, elaborated by CAO – Porto Santo (© Câmara Municipal do Porto Santo).