



L-Università ta' Malta
Faculty of Science

Department
of Biology

Department of Biology

Museum Newsletter

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Inside this Issue:

- **Curator's note** **Page 2**
- **News** **Page 2**
- **Specimen of the month** **Page 3**
- **Reference Collections – Maerl Molluscs** **Page 3**
- **Quote of the month** **Page 4**

Curator's note

The Galapagos Islands off the west coast of South America have long been considered a biodiversity paradise. The unique finches found there are famous for having consolidated Charles Darwin's insights into his theory of evolution by natural selection. The islands are characterised by a high rate of endemism: Most birds and reptiles can be found nowhere else on the planet, while a third its plant species are also endemic. The Galapagos coasts host the world's only species of marine iguana and the only penguin species of the northern hemisphere.

The Islands are a UNESCO World Heritage site and their wildlife safeguarded by strict protection measures. However, their unique flora and fauna have been subject to threats. The latest such threat was a diesel spill from a barge which took place last December. Nearly 3000 litres of the fuel were on the barge when it was hit by a crane (they even have them there!) and capsized off the coast of San Cristobal Island. Sea lions, seabirds and marine fauna were endangered; images from the scene show the pristine coast of the island having turned dark. The President of Ecuador declared a state of emergency for the islands and a massive response to counteract the effects of the spill was triggered; contingency measures were immediately implemented. This is not the first oil spill suffered by the island territory: in 2001 a massive spill of over a million litres of oil caused one of the worst disasters in the islands' history, resulting in the death of two thirds of the iguana population on one of the islands.



A dramatic image of the oil spillage incident at San Cristobal Island.

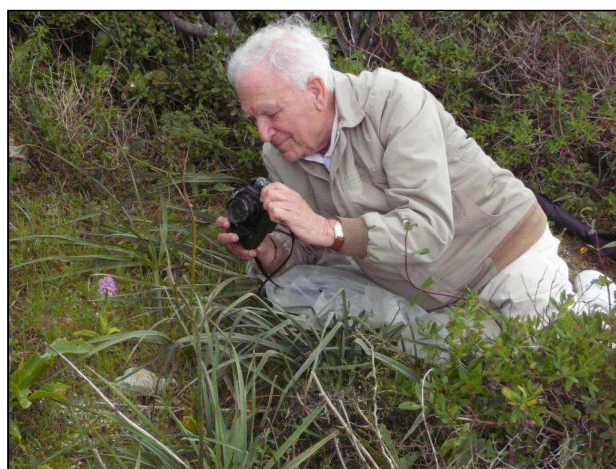
Other threats to the islands' ecology include alien species introduced by humans including rats and insects. The larvae of the recently introduced alien fly *Philornis downsi* live in the nose and ear cavities of the chicks of the iconic Galapagos finches, feeding on keratin and blood, causing malformations in the birds' beaks. These interfere with the finches' mating song leading to a decrease in reproductive rates.

News

Late last month Malta lost one of its foremost botanists, Michael Briffa, who passed away on 27th January, aged 93. His lifelong contributions to our knowledge of the island's flora were recognized in 2017 when he was presented with the Buonamico Award by the Environment and Resources Authority.

Briffa's passion for botany resulted in important discoveries related to Malta's vascular plants and mycoflora, particularly fungi and slime moulds, with several new records and the rediscovery of species thought to be extinct from the islands. Briffa's new vascular plant records include *Sarcopoterium spinosum* in 1985, *Muscari commutatum* in 1983 and the buttercup *Ranunculus parviflorus* in 1985. Another of his achievements is the rediscovery of the white-flowered form of the Maltese rock-centaury, *Palaeocyamus crassifolius* (the national plant); this form, first included in the description of the species by Stefano Zerapha in 1827, had not been seen for a very long time and was thought to be extinct.

His studies of local macrofungi and the related slime moulds (*Myxogastria*) include records of around 300 species. His 1997 checklist list of 71 slime moulds includes species which were new not only to Malta but to the Mediterranean region. Most of Briffa's discoveries are included in the official 'Red Data Book for the Maltese Islands' and a good number are protected by law, either directly as protected species or via the protection of their habitats through legislation enacted by the Environment and Resources Authority.



The late Michael Briffa at work in the field.

Sincere condolences to Michael's family. The memory of this unassuming botanist will live on in his valuable publications.

Specimen of the Month

This month's specimen is the seed pod and seeds of the Flame Tree, *Delonix regia*. This beautiful tree belongs to the subfamily Caesalpinoidea of the pea family Fabaceae. It is native to Madagascar, where it is endangered in the wild in the island's dry deciduous forests it has now been introduced as an ornamental tree to many tropical and sub-tropical countries, in some of which it is regarded as naturalised. Here in Malta we have a few large trees at San Anton Gardens, Castille Place and in Sliema. The tree's English names include Royal Poinciana, Flamboyant Tree, Flame Tree and Flame of the forest. It was previously placed in the genus *Poinciana*, named after Philippe de Poincy, the Governor of St Kitts Nevis, where, although not indigenous, it is designated as the National Tree.

The tree, which can grow to a maximum height of 60m, is characterised by its feathery, doubly pinnate leaves and spectacular inflorescences. Each leaf is 30–50 cm long with 20 to 40 pairs of primary leaflets, each divided into 10–20 pairs of secondary leaflets. The flowers are large, with four spreading scarlet or orange-red petals up to 8 cm long, and a fifth upright petal called the standard, which is slightly larger and spotted with yellow and white.



The Flame Tree at Castille Square



Leaves and flower of *Delonix regia*

The large seed pods are green and soft when young but harden and turn mottled brown when mature. They can reach lengths of 60 cm and contain numerous elongate seeds. Seed propagation involves soaking the seeds in warm water for ca. 24 hrs in order allow moisture to penetrate the tough outer casing.



The DoB Museum's pod and seeds of *Delonix regia*

Reference collections Maerl Molluscs

In 1996 the Department of Biology participated in an EC-funded project together with institutions in the United Kingdom, France and Spain. The project, entitled **BIOMAERL**, had the objective of conducting a comparative study of the ecology, biodiversity and biogeography of maerl beds in Scotland, France Spain and Malta.

Maerl beds are benthic biogenic sediments characterised by accumulations of living and dead unattached coralline algae termed rhodoliths. Such beds form a unique ecosystem with high biodiversity which includes many rare and unusual faunal elements. At the time the project took place 'maerl' was used as a generic term for all kinds of sediments with rhodoliths. More recently, the term 'maerl' has been restricted to refer to rhodolith beds where the density of rhodoliths is so high such that they form a more or less continuous carpet. The generic term now used is 'rhodolith bed'.

The BIOMAERL project surveys revealed the presence of extensive rhodolith beds (ca. 20 km²) off northeast Malta and Gozo at depths ranging from 50m to 90m. Forty stations within these beds were sampled using grabs and these grounds, which ranged in type from sediment with rather sparse rhodoliths to very dense maerl beds with multiple layers of rhodoliths, proved to have a very high species diversity with 331 macroinvertebrate taxa, including molluscs, crustaceans, annelids, bryozoans and sponges; 87 algal taxa were also recorded. A veritable biodiversity hotspot! These sampling operations resulted in rich collections of specimens which were deposited at the DoB Museum. In this issue the Mollusca collection will be featured.

The mollusc collection consists of no less than 116 identified species within 24 bivalve, 36 gastropod and 1 cephalopod families. Many of these were recorded from Maltese waters for the first time. *Bittium latreilli* and *Barleeia unifasciata* were the most abundant gastropod species while the most abundant bivalves were *Pteromeris minuta* and *Gonilia calliglypta*. The only cephalopod recorded was the cuttlefish *Sepiolo rondeleti*; note however that only benthic species were sampled so demersal cephalopods would not have been collected.



Rhodoliths of the coralline alga *Lithothamnion minervae* from the NE coast of Malta



Mollusc species collected during the BIOMAERL Project. Top: left *Bittium latreilli*, right *Barleeia unifasciata*. Centre: left *Pteromeris minuta*, right *Gonilia calliglypta*. Bottom: *Sepiolo rondeleti*.

The Biomaerl project spawned a number of publications including a synoptic paper published by Sciberras *et al.* in 2009¹ Other collections derived from the project include algae, brachiopods, crustaceans, echinoderms and polychaetes. All these collections are deposited at the DoB Museum.

(Thanks to Prof. Patrick Schembri for his valuable comments)

Quote of the Month

I had this experience at the age of eight. My parents gave me a microscope. I don't recall why, but no matter. I then found my own little world, completely wild and unconstrained, no plastic, no teacher, no books, no anything predictable. At first I did not know the names of the water-drop denizens or what they were doing. But neither did the pioneer microscopists. Like them, I graduated to looking at butterfly scales and other miscellaneous objects. I never thought of what I was doing in such a way, but it was pure science. As true as could be of any child so engaged, I was kin to Leeuwenhoek, who said that his work "was not pursued in order to gain the praise I now enjoy, but chiefly from a craving after knowledge, which I notice resides in me more than most other men."

Edward Osborne Wilson, Entomologist

The Creation: An Appeal to Save Life on Earth (2010)

Department of Biology Museum

Curator: David Dandria

david.dandria@um.edu.mt

¹ Sciberras M., Rizzo M., Mifsud J.R., Camilleri K., Borg J.A., Lanfranco E. & Schembri P.J. (2009) Habitat structure and biological characteristics of a maerl bed off the northeastern coast of the Maltese Islands (Central Mediterranean). *Marine Biodiversity* 39(4): 251 - 264