

Planting the next generation of oak trees

The paucity of mature tree cover on the Maltese Islands, as well as the onslaught spared to mature trees in public places, are sacrosanct truths known to all. Official statistics recount that roughly 1% of the islands are colonized by woodland (the EU average is 35%), of which just a few vestiges or remnants are actually natural or original woodland (i.e. not planted by man), restricted to locations such as il-Bosk in Buskett, l-Imgiebah in Mellieha, Wardija and Ta'Baldu in Dingli, which feature venerable holm oak and Aleppo pine individuals which are hundreds of years old. Afforestation schemes have also been ratcheted up in recent years, contributing to considerable surges in the land cover dominated by woodland, but these depend on a catalyst which, in most cases, is government or a private company.

We have become so ensconced in our urban humdrum that we scarcely realize that indigenous trees can be even sown by individuals having little green acumen or garden space, at the drop of a hat. In fact, seemingly coincidental with Arbor Day (International Tree Day), due to be commemorated locally on the 16th of January, acorns of the holm oak (Balluta) mature at this time of the year and these can easily be planted in compost, germinating into saplings sometime in spring. Holm oaks are a slow-growing species, with the Maltese Islands marking almost the southernmost extent of their range in the Mediterranean region, such that they can easily reside in sizeable pots until they are five years old, after which they would need transplanting to an open-soil location, which might include a public garden in your own locality if one lacks an appropriate location at home. The relative ease with which holm oaks can be propagated makes them an ideal candidate to inseminate tree nurseries within schools. One way through which we can ensure that the spirit of Arbor Day truly lives on is by instilling a love for trees in the young ones....sowing the next generation of oak trees is one way of doing this.

ODZ barometer

From time to time, this column takes stock of current trends in the numbers and typologies of Outside Development Zone (ODZ) planning applications being submitted to MEPA. Such trends have been summarized by using ODZ statistics for 13 predominantly rural localities in Malta, such as Mellieha and Dingli, and all of 14 Gozitan localities. The number of ODZ applications received by MEPA in 2011, 2012 and 2013 was 47, 235 and 70, respectively. The Maltese locality with the highest number of ODZ applications received over the 3 years under review was Rabat (46), followed by Naxxar (which includes Maghtab – 26), Mellieha (24), Siggiewi and Mgarr (23 each) with the Gozitan counterparts being Xaghra and Sannat. What should raise some eyebrows is the anomalously high fraction of such ODZ applications which are submitted by a handful of architects, some of whom occupy prominent positions in the planning infrastructure of this country. The next column will focus on the most glaring of such ODZ applications.

Life under the sand

Sandy beaches (excluding sand dunes) do not rank high amongst conservation priorities, mainly as a result of the widespread misconception that these areas are essentially 'ecological deserts'. In fact, up to the early 1980s, sandy beaches were mainly studied from a geological perspective and marine biologists tended to regard estuaries, coral reefs and rocky shores, obviously teeming with life, as more fruitful areas for study than apparently impoverished sandy beaches. The 'desert' notion is

further reinforced by the apparent lack of life on sandy beaches – besides the lack of attached plants, most macrofaunal (i.e. visible to the naked eye) species on sandy beaches burrow deep into the sand, emerging (if at all) at night, and have a cryptic colouration. Three recently-published scientific works on the ecology of Maltese sandy beaches, co-authored by the undersigned and partly funded by the Research Fund Committee of the University of Malta, serve to give more insight about the vibrant world under the sand surface.

In the first study, a total of 25 *Phaleria* spp. (a beetle species restricted to sandy beaches) populations from sandy beaches on different central Mediterranean archipelagos (Maltese, Pelagian, Egadian, and Aeolian ones) and on the Sicilian mainland were sampled once, over the March–October 2010 period. *P. acuminata* populations from Ramla l-Hamra and Xatt l-Ahmar (Gozo) and *P. bimaclata* populations from Ghajn Tuffieha, Golden Bay and Santa Marija Bay (Comino) were included in the study, with the two beetle species never being recorded together on the same beach. Heads and legs from a selected number of beetle individuals from each population were used for DNA extraction for genetic analyses. The study also involved the use of the geometric morphometrics technique, which is nowadays a standard protocol in morphological research. Geometric morphometrics and molecular analyses gave congruent results, allowing a sound separation of the two species.

In the second study, a total of 32 Central Mediterranean sandy beaches located on the Maltese archipelago, Sicily and different circum-Sicilian islands were sampled for the presence of two *Tylos* species – *Tylos europaeus* and *Tylos ponticus*. The first species is known from just two beaches in the Maltese Islands – Ramla l-Hamra and San Blas in Gozo – whilst the second species is known only from Paradise Bay. The two species were never recorded on the same beach and, although *T. europaeus* has a preference for fine sand and *T. ponticus* has a preference for fine-medium sand, differences in the distribution of the two species could not solely explained in terms of differences in sand particle size.

In the third study, the meiofaunal communities of local sandy beaches were described for the first time ever. Meiofauna consists of organisms which are smaller than 0.5mm and are thus too small to be seen with the naked eye. A total of seven sandy beaches on the island of Malta were sampled during spring 2012, with sediment samples being collected at the Mean Sea Level. Median grain size and sand organic and water content were measured for each beach. A total of 13 higher meiofaunal groups were recorded from the Maltese sandy beaches, with the most abundant groups being those of nematodes (roundworms), flatworms (turbellarians) and crustaceans (copepods), with other animal groups, such as water bears, which have never been fully studied locally, also being recorded. The meiofaunal abundance ranged between 50 and 1392 ind/10cm². The meiofauna on Maltese sandy beaches separated by more than 5-10 km were considerably different from each other, whilst Maltese sandy beaches showed comparable meiofaunal abundances to that on other Central Mediterranean sandy beaches.

The three works have been published in the following journals: Journal of Crustacean Biology, Zoomorphology and Estuarine, Coastal and Shelf Science. They will eventually all be available for download from the personal website of the author – www.alandeidun.eu (downloads section).

A robot buddy for divers?

CONMAR, an FP7-funded project, is seeking to develop a group of ‘robots’, in the form of autonomous surface vehicles, to supervise and guide a human diver along a prescribed path, thus effectively assisting him under challenging circumstances such as low underwater visibility. The diver

simply receives commands from the robots as patterns of lights from LED's installed on the diving mask. The offshore industry and marine scientists, among others, stand to benefit from such an innovative navigation system as it brings them closer to cooperative human-robot missions at sea.

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