

On the look out: A better explanation of Maltese sand dunes

Introduction

The Maltese archipelago contains a number of sandy beaches, some of which managed to sustain a sand dune hinterland with a resultant unique natural habitat: a habitat made even more interesting by the fact that it contains some of the rarest and threatened flora on the islands. Sandy beaches generally form at the mouth of valleys where the land slopes gently lead to shallow sea. Millennia of seasonal rains cause fine grained material to be carried by storm water to be deposited on the seabed until a thick layer of sand creates the beach. The weather conditions such as wave action pound on the coast to deposit quantities of sand on land, leading to the familiar crescent shaped sandy beach sloping gently into the sea.

The type and quality of material which is transported by water down the valley, bears a strong relationship with the type and quality of beach, with some beaches being composed of stones and pebbles while others are composed of sand. Here in the Maltese Islands one can distinguish between two main types of sandy beaches:

- the ones with reddish sand, such as Ramla l-Hamra and San Blas in Gozo and Ghajn Tuffieha, Golden Bay and Gnejna in Malta
- the ones with a lighter coloured sand such as the beaches in Mellieha, Armier, Paradise Bay and Balluta Bay on Malta, Xlendi Bay on Gozo and the Blue Lagoon, and Santa Marija Bay on Comino.

Maltese beaches with reddish sand are generally found in places where there are clay slopes exposed. In Maltese geology, the clay layer is topped with a deposit of “green sand”, which oxidizes to the more familiar red when exposed to the atmosphere. Furthermore, Maltese beaches with a lighter coloured sand are ones in which coralline or globigerina limestone layers are the predominant surface of their valley sources.



Beaches are traditionally self-replenishing through the annual draining and depositing of material. The biggest beaches that still exist in Malta are the ones whose watercourses are still undisturbed, such as Ghajn Tuffieha, Gnejna and Ramla l-Hamra. Unfortunately, the construction of roads close to the beaches, have choked the supply of sediment to a vast number of Maltese beaches. Therefore, resulting in previously bigger sandy beaches slowly waste to remnants of what they once were. Examples of such deteriorating beaches include Mellieha, Armier and Xemxija, as well as a range of smaller ones which have almost faded into obscurity such as Salina, Qalet Marku, Balluta, Xlendi, Rinella, Marsascala and St George's Bay in St. Julians.

All of these locations are characterized by roads which have cut their link with the valleys behind them. The latter have been recently replenished with crushed granite imported from a terrestrial source in Jordan to avoid contamination with invasive marine organisms.

What are sand dunes?

Sand dunes are the natural hinterland of undisturbed beaches. They form the buffer zone between the beach and the valley floor behind it. As mentioned in the introduction, they consist of sand, which accumulates at the back of the beach as a result of wind and wave action. They are a sort of middle ground: an area where the predominant material is sand but where vegetation still grows. The sand dune is an area where the underground water flowing downwards from the valley is predominantly fresh to brackish (depending on the season) as opposed to saline water beneath the exposed sand of the beach. This means that sand dunes can support a variety of plant life which is specially adapted to their unique environmental conditions. These organisms have to survive extreme aridity and heat. They also need to adapt to the reality of living in a shifting environment, where the action of wind and water can affect the profile of the landscape. This calls for strong root systems which are capable of penetrating deep to seek water and sustenance.

Human impact on sand dunes and a better way to conserve them

It is a scarce habitat and given the small number of sandy beaches in the Maltese archipelago, this habitat has suffered huge losses due to:

- urbanization
- extension of coastal road networks
- mass tourism activity.

The best examples of reasonably intact sand dune habitat is Ramla l-Hamra Bay in Gozo. This beach has managed to survive the ravages of time and development primarily through the almost total lack of development in its pristine valley. However, it has also found additional assistance from a sub-sea wall, built during the reign of the Knights of St. John which was designed to ground enemy shipping attempting to beach there. This wall has over the centuries assisted in retaining vast quantities of sand from being lost in deeper waters, with the result that Ramla l-Hamra Bay is by far the largest sandy beach on the island.

Nowadays, this sand dune is reasonably intact, generally well protected and well marked as a cordoned-off zone. Before campers had a free rein to pitch their tents among the sand dunes, making campfires and wreaking havoc and damage to this habitat in the process.

On the main island of Malta, the best sand dune habitats are found at Ramla tal-Mixquqa (Golden Bay), Ghajn Tuffieha Bay and Gnejna Bay. A reasonably extensive, though seriously threatened and degraded sand dune also exists in the hinterland of Ramla tat-Torri beach, surrounded by the illegally constructed beach houses prevalent in this part of the north of Malta. A huge sand dune also used to exist until the mid 1970s in the area of Mellieha Bay but now it houses the bird reserve. Remnants of this sand dune remain incorporated within the grounds of the reserve. Other small examples of sand dune habitats can be found in Santa Marija Bay on Comino and near the minute Slugs Bay in l-Ahrax tal-Mellieha.

Different species found in Maltese sand dunes

Sand dunes offer a special fascination, although they often go unnoticed by the majority of people who bypass them on the way to the beach. They contain plants which are amazing when considering their capability to sprout almost effortlessly from barren sand. Needless to say, given their rare and threatened status within the Maltese biosphere, all the plants in the Maltese sand dune habitat are in some way or another threatened some of which are at the risk of extinction or rare. These include:

- the Sea daffodil (*Pancratium maritimum*)
- the Sea Medick (*Medicago maritima*)
- the Sea Holly (*Eryngium maritimum*)
- the Prickly parsnip (*Echinophora spinosa*)
- the Sea bindweed (*Calystegia soldanella*)

The versatile spurge family is also present in the sand dunes, particularly through the aptly named Sea spurge (*Euphorbia paralias*), with another coastal species the Sea Rocket (*Cakile maritima*) also making a presence. A number of thistle species

have also successfully colonized the sand dune habitat with one of the most common being the Common golden thistle (*Scolymus hispanicus*).

The management of beaches by NGOs including the Gaia Foundation have not only controlled the wildest of excesses such as camping, four-wheel drive off-roading and other activities, but have also led to the introduction of practical steps, such as cordoned-off zones and limiting human activity on the dunes. Other beaches vying for the Blue Flag Status also need to introduce visible elements of nature protection and appreciation to their users.

Conclusion

In a densely populated country such as Malta, facing all the pressures that it does from an active population coupled with the needs of international tourism, the preservation of the natural environment will always be an uphill struggle. The sand dunes represent one of the most threatened habitats we possess and may well be one of the first to disappear if complacency and insensitivity win over care and awareness. Losing them will be a great loss. I am sure that becoming aware of its delicate ruggedness will convince you to conserve it.

References:

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