The Natural Environment of the Maltese Islands

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96 km south of Sicily
290 km north of N. African coast
Total Land Area: 316 km²
Highest point: 253m amsl

Maltese Islands

Size and Location of the Maltese Islands

Main Islands of the Archipelago

<table>
<thead>
<tr>
<th>Island</th>
<th>Area (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malta</td>
<td>245.7</td>
</tr>
<tr>
<td>Gozo</td>
<td>67.1</td>
</tr>
<tr>
<td>Comino</td>
<td>2.8</td>
</tr>
<tr>
<td>St. Paul's Islands</td>
<td>10.134</td>
</tr>
<tr>
<td>Cominotto</td>
<td>9.864</td>
</tr>
<tr>
<td>Filfla</td>
<td>2.024</td>
</tr>
<tr>
<td>General's Rock</td>
<td>0.687</td>
</tr>
</tbody>
</table>

Population: c. 400,000 (>1300 persons km⁻²)
Bathymetry In The Vicinity Of The Maltese Islands

Source: Pedley, Hughes-Clarke & Galea (2002)

Land Bridges In The Mediterranean Sea

The Mediterranean Sea as it is thought to have been during parts of the last glaciation. Based on Reyment (1983)

Climate of the Maltese Islands

- **Mid, wet winter**
  - Punctuated rainfall (63% of days in wet season have no measurable rainfall)

- **Summer drought**
  - Highly variable annual rainfall

- **Mean annual rainfall**: 560mm

- **Windy** (only 7.7% of windless days per year)

- **Sunny**: annual mean 8.2 h day⁻¹; July 11.96 h day⁻¹

Source: Pedley, Hughes-Clarke & Galea (2002)
Pluviothermal diagram for the Maltese Islands

Inter-annual variation in mean rainfall

MORE CONSIDERATIONS:

It is not the total rainfall per se that it important for vegetation but its distribution throughout the year

- Punctuated rainfall

Intensity of rainfall is more relevant to vegetation than total annual rainfall

- Deluges may account for over 40% of mean annual rainfall in <24 hours
Stratigraphy

Simple layer cake succession:
- Coralline Limestones at the top and bottom of the sequence
- Soft limestone and marly limestone (clay) in between

VOLCANIC ASH
Quaternary Deposits

Flat-topped Hills
Aquifers

- A: perched aquifer
- B: mean sea-level aquifer
- C: seawater
Approximately 1100 species
- c. 850 indigenous or archaeophytic species (77%)
- c. 250 naturalised alien species (23%)

Approximately 700 casual alien species

17 endemic species (2%)

**Vascular flora**

**Endemic species**

- Darniella melitensis
- Anacamptis urvilleana
- Anthemis urvilleana
- Zannichellia melitensis
- Chenoaphyton lanfranconi
- Crambopenicillus lanfranconi
- Chelidonium locconeri
- Limonium melitense
- Limonium zeraphae
- Allium lycsae
- Allium lojaconoi
- Matthiola incana subsp. melitensis
- Romules melitensis
- Euphorbia melitensis
- Cheirolophus crassifolius
- Zannichellia melitensis
- Anacamptis urvilleana
- Cheirolophus crenatus
- Hyoseris frutescens
- Ophrys melitensis
- Romules melitensis
- Euphorbia melitensis
Natura 2000 sites (27 sites; 15% of national territory)

Drought
Alkaline soils
Wind
Saline Spray
Anthropogenic Disturbance
Grazing
Thin (or absent) soils

SOURCES OF ENVIRONMENTAL STRESS ON VEGETATION OF THE MALTESE ISLANDS
ADAPTATIONS OF VEGETATION ON THE MALTESE ISLANDS

- Thick succulent leaves
- Structural reduction of leaves (spines, needles)
- Active removal of salt
- Life-cycle modification
- Subterranean organs
- High habitat-adaptability

SUB-CLASSES OF THE MACROPHYTIC VEGETATION OF THE MALTESE ISLANDS

- Indigenous species
- Archaeophytic species
- Palaeoendemic species
- Neo-endemic species
- Introduced species
- Escapes from cultivation / ornamentation

SERAL STAGES

WOODLAND
OVERCLIFF COMMUNITIES

- Limonium spp.
- Matthiola incana subsp. melitensis
- Darniella melitensis
- Coronilla valentina
- Hypericum aegypticum

Thymbra capitata community
Dry river valleys

Seasonally-dry Valleys (Widien)
Eryngium maritimum

Echinophora spinosa

Euphorbia paralias
Pancratium maritimum

Calystegia soldanella

Sand-dune remnant at Golden Bay
Carpobrotus edulis

Arundo donax

ROCKY SHORES

Foreshore: controlled by saline spray from wave action
Backshore: controlled by surface runoff and direct precipitation

Coexistence of specialised halophyte (Inula crithmoides) with more generalist species

Arthrocnemum macrostachyum
Crithmum maritimum

Limonium spp.
**Saltmarshes**

Dominant species:
- *Inula crithmoides*
- *Plantago coronopus*
- *Anthemis urvilleana*

Saltmarsh at Marsaxlokk

- *Arthrocnemum sp.*
- *Salicornia sp.*
Juncus acutus

Inula crithmoides

Equisetum ramosissimum

Salicornia spp.

TEMPORARY POOLS
SANDRO LANFRANCO; 10 SEPTEMBER 2012

- *Elatine gussonei*
  - Endemic to the Maltese Islands and Lampedusa

SANDRO LANFRANCO; 10 SEPTEMBER 2012

- *Ranunculus saniculifolius*

SANDRO LANFRANCO; 10 SEPTEMBER 2012

- *Crassula vaillanti*
Zannichellia melitensis

- Endemic to the Maltese Islands

OTHER WETLANDS

PERMANENT POOLS

WATERCOURSES
It suddenly became even more difficult c.7000 years ago!

Agriculture: the first great change

Victims...

Population density

Population size based on November 2005 census:
- Malta: 365,001
- Gozo & Comino: 29,829

Population density:
- Malta: 1,486 persons per squared km
- Gozo: 427 persons per squared km
Alien species

6,000 trees to be planted at vandalised afforestation site

The LCM Environment and 6,000 trees on the Galili 2011 site in Matimba were vandalised outside the walls, the Environment Ministry said.

The trees will replace the 6,000 trees vandalised on the site of the Galili 2011 project in the Tel Aviv area. The LCM Environment Ministry will continue to monitor the area.

The Ministry said it had reached an agreement with the owners of the site to plant 6,000 trees in the area. The owners agreed to plant the trees in the area as a way of compensation for the vandalised trees.

The Ministry said it had also received a donation from the Tel Aviv municipality to plant trees in the area.

The trees will be planted in October in an area that was uprooted in the past. The area will be planted with trees that are resistant to drought and heat.