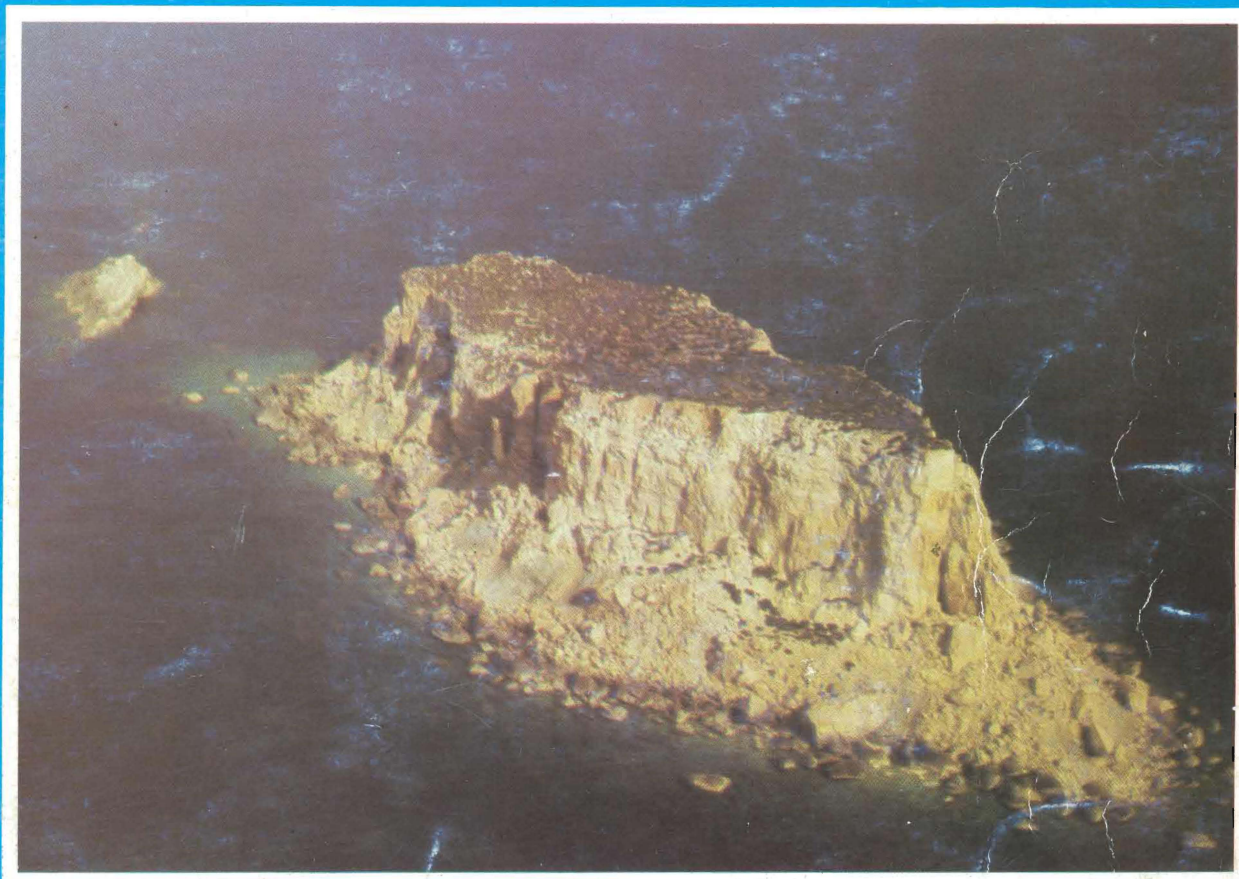


Localities
with Conservation Value
in the Maltese Islands



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Foreword by: Minister of Education

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LOCALITIES WITH
CONSERVATION VALUE
IN THE MALTESE ISLANDS

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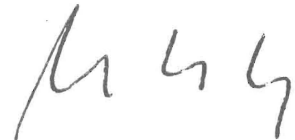
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FOREWORD

The Maltese Islands, with an area of some 322 square kilometres and a population of about 345,000 are amongst the most densely populated countries in the world. It is not surprising therefore, that many of us have the wrong assumption that our islands do not possess areas of natural importance. This study, which is being presented by various experts in their field, immediately reveals the richness of our archipelago in fauna, flora and geology.

It is a sad fact that due to the lack of well-planned development, Malta's natural environment has been impoverished. We are not too late, however, to save those remaining sites and localities which are regarded as Malta's natural gems, for present and future generations.

This publication highlights the scientific importance of these areas and it should serve to increase awareness and appreciation for their protection. It also serves as a small, but valuable, contribution to 1987 - the European Year of the Environment.



Ugo Mifsud Bonnici
Minister of Education

LOCALITIES WITH CONSERVATION VALUE IN THE MALTESE ISLANDS

INTRODUCTION

In spite of their small size, the Maltese Islands are endowed with a variety of habitat types and a rich fauna and flora - suffice it to say that in spite of having only some 0.1% of the area of the British Isles, the Maltese Islands possess roughly the same number of flowering plants (circa 1000)! Moreover, some of the habitats present locally are not found in mainland Europe while a number of plants and animals are **ENDEMIC** to the Maltese Islands, that is, occur here only and **nowhere else in the world**. Thus, apart from their importance as a unique part of our national heritage, they are also part of the heritage of all mankind which we hold in trust. We therefore have a grave responsibility to conserve these unique forms for future generations.

The Maltese Islands have a very high population density and consequently human impact on the natural environment is intense and more often than not negative. It is therefore important to identify key localities which support particularly important habitats and species and designate them conservation areas, especially those sites that are on the verge of obliteration. Development and certain other human activities in such conservation areas should be strictly controlled.

The purpose of this document is to list the most outstanding localities in the Maltese Islands that should be declared conservation areas. It is not meant to be a comprehensive inventory of sites but rather a short-list of localities in dire need of official recognition as important components of our heritage, just as are our neolithic and other historical monuments and consequently, just as worthy of protection.

The list below includes localities which are important for their faunistic, floristic and geological interest; many of these are also areas of great scenic beauty and in some cases are also of archaeological interest, although these aspects will not be dealt with here.

The ornithological calendar of the Maltese Islands is dominated by the seasonal migrations and most of the localities listed provide food and shelter for the regular spring and/or autumn migrants and for winter visitors, together totalling some 160 species. In addition, many other rare or vagrant species of birds are known from these and other sites. For the sake of brevity, only the more important ornithological elements will be mentioned in the text below.

For each locality listed an indication is given as to its natural historic importance without going into any great detail. Some habitats are so rare in the Maltese Islands that all localities which support them are automatically considered conservation areas. Such habitats include:

- + **Permanent springs** (localities with perennially flowing freshwater)(Bahrija Valley; San Martin; Bingemma Valley; Gnejna Valley; Wied tal-Lunzjata, Gozo)
- + **Freshwater marshland** (watercourses of valleys with an abundant supply of freshwater)
- + **Saline marshland** [Ghadira (Malta's only nature reserve); Pwales (Is-Simar); Salina; Marsa (now completely degraded); Marsaskala (the 'fishponds'); Marsaxlokk (Il-Maghluq)]
- + **Sand-dunes** [the largest system in the Maltese Islands is at Ramla (Gozo), much smaller and very degraded systems at Ghadira, Ramla tat-Torri and Santa Marija (Comino)]
- + **Mediterranean sclerophyll forest** [only remnants are now left in two localities: Ballut tal-Wardiya and Ballut ta' l-Imgiebah; previously such forest covered most of Malta and Gozo!]
- + **Woodland** (originally planted by man but now self-maintaining) [largest such sites are Buskett and Mizieb]
- + **Freshwater pools** [Il-Qattara at Dwejra, Gozo; Ta' Sarraflu pool, Gozo; Ghadira s-Safra between Maghtab and Ghallis]
- + **Caves** (especially deep ones) [Ghar Hasan; Ghar il-Friefet, Birzebbuga; Ghar ta' l-Inkwizitur, Girdgħenti; Ghar Harq Hamiem, St.George's Bay/Dragnaral]
- + **Cliffs** (these harbour the most important elements of our native flora and fauna, including a large number of endemic species and many others of biogeographical interest).

LOCALITIES IN MALTA

• MARFA RIDGE

This includes areas of great natural historic interest and scenic beauty. The most important regions are:

RAS IL-QAMMIEH/RDUM IL-QAMMIEH - type locality for Maltese stratigraphy and a very suitable area for examination of outcrops of all Maltese rock types and occurring fossils; ideal for geological field-excursions.

RAMLA TAT-TORRI (White Tower Bay) - one of the few remaining sand-dune habitats; the only remaining locality in Malta for the Sea Spurge *Euphorbia paralias* [Tenghud tar-Ramell] and *Echinophora maritima*; valuable populations of other sand-dune plants and associated fauna including the sphecid wasps *Prionyx kirbi* and *Ectemnius sescinctus*, known only from this locality; other sand-dune associating and consequently rare species include the wasps *Prionyx viduatus*, *Bembix oculata*, *Meria* spp. and others.

RDUM TAL-MADONNA - includes the only Malta population of *Bupleurum semicompositum* and the best population of *Plantago bellardi*, a plant which seems to be confined to the Marfa peninsula only; also present is the coastal endemic *Allium lojaconoi* [Maltese Dwarf Garlic]; this locality is possibly the only site in Malta for *Mutilla barbara barbara*, a mutillid wasp of biogeographical interest; the *rdu*m supports one of the largest colonies in the islands of *Puffinus puffinus yelkouan* [Garnija], the Mediterranean race of the Manx Shearwater, as well as 3-4 pairs of *Monticola solitarius* [Merill], the Blue Rock-thrush which is the **National Bird** of Malta.

The whole Marfa Ridge is one of the more important areas for the summer breeding visitor *Calandrella brachydactyla* [Short-toed Lark; Bilblal], as well as for the Spectacled Warbler *Sylvia conspicillata* [Bufula Hamral] which has decreased all over the islands during the last decade, and for the Corn Bunting *Miliaria calandra* [Durrajsal].

• MELLIEHA BAY

Ghadira, a saline marshland, is already a nature reserve; the adjoining sand-dunes should be incorporated within this to prevent further damage; these dunes (together with those at Ramla tat-Torri) support the only European population of the Sand Broomrape *Orabanche densiflora* [Budebbus tar-Ramell] which here occurs as the endemic form *melitensis*; the Ghadira area, including the sand-dunes and saline marshland, supports a very diverse entomofauna, some members of which are known only from this area; examples include: the tettigonid grasshopper *Odontura stenoxipha*, the eumenid wasp *Leptochilus medanae*, a species of *Smicromyrme* and another of *Tachygetes*, both undescribed new species of wasps which are possibly endemic, and at least two species of staphylinid beetles and three of carabid beetles; other species occurring at Ghadira have a limited

distribution in the Maltese Islands; the most important of these are: *Labidura riparia*, a semi-subterranean sand-dwelling earwig, a large population of which occurs here, the eumenid wasp *Pseudepipona tripunctata*, the mutillid wasp *Dasylabris maura*, at least two species of carabid beetles and three of tenebrionid beetles including *Erodium siculus melitensis* which is endemic; a small breeding population of the large subterranean cricket *Brachytripes megacephalus* is also known from Ghadira; the Ghadira Nature Reserve is one of the few places in the Maltese Islands where migrating waders, herons and egrets can stop to rest and feed; it is also a good wintering area for the Black-necked Grebe *Podiceps nigricollis* [Blongun Sekond], Little Grebe *Tachybaptus ruficollis* [Blongun Zghir], Water Rail *Rallus aquaticus* [Gallozz tax-Xitwal], Coot *Fulica atra* [Tigiega tal-Bahar], Moorhen *Gallinula chloropus* [Gallozz Iswed], and Kingfisher *Alcedo atthis* [Ghasfur ta' San Martin]; breeding birds at Ghadira include the declining Corn Bunting *Miliaria calandra* [Durrajsal].

• MGIEBAH

One of the only two localities in the Maltese Islands with a stand of native Holm Oak, *Quercus ilex* [Ballut], the original climax vegetation which covered most of the islands; animal species of interest which occur here include the carabid beetle *Reicheia italica* and the ant *Leptothorax rabaudi* both of which are leaf-litter species with a very limited distribution.

• SELMUN

The region from Selmun Palace to Fort Campbell includes a large population of *Iris pseudopumila* [Bellus] in its purple flowered form and large populations of *Putoria calabrica* (the only ones in Malta) and Blue Flax *Linum bienne* [Kittien Ikhall]; the coastal clay slopes of this area support populations of the ant *Aphaenogaster sicula* and the tenebrionid beetle *Belops elongatulus siculus* which are restricted to this habitat type; also present in this area are the rare silverfish *Proatelura pseudolepisma* and *Coletina maggii*; the carabid beetle *Parophonus hispanus* is apparently particular to the **GHAJN HADID** area.

• MISTRA

At Mistra is the only Maltese population of the Black Bryony *Tamus communis* while the same area also supports wild populations of the Wild Stocks *Matthiola incana* [Gizi Salvagg], which is probably an endemic subspecies; also an important coastal wetland - many local halophilic invertebrates are known only from Mistra, for example the isopods (woodlice): *Tylos latreillei sardous*, *Trichoniscus halophilus*, *Buchnerillo littoralis*, *Armadillidium candidus* and *Platyarthus schobli intermedius*.

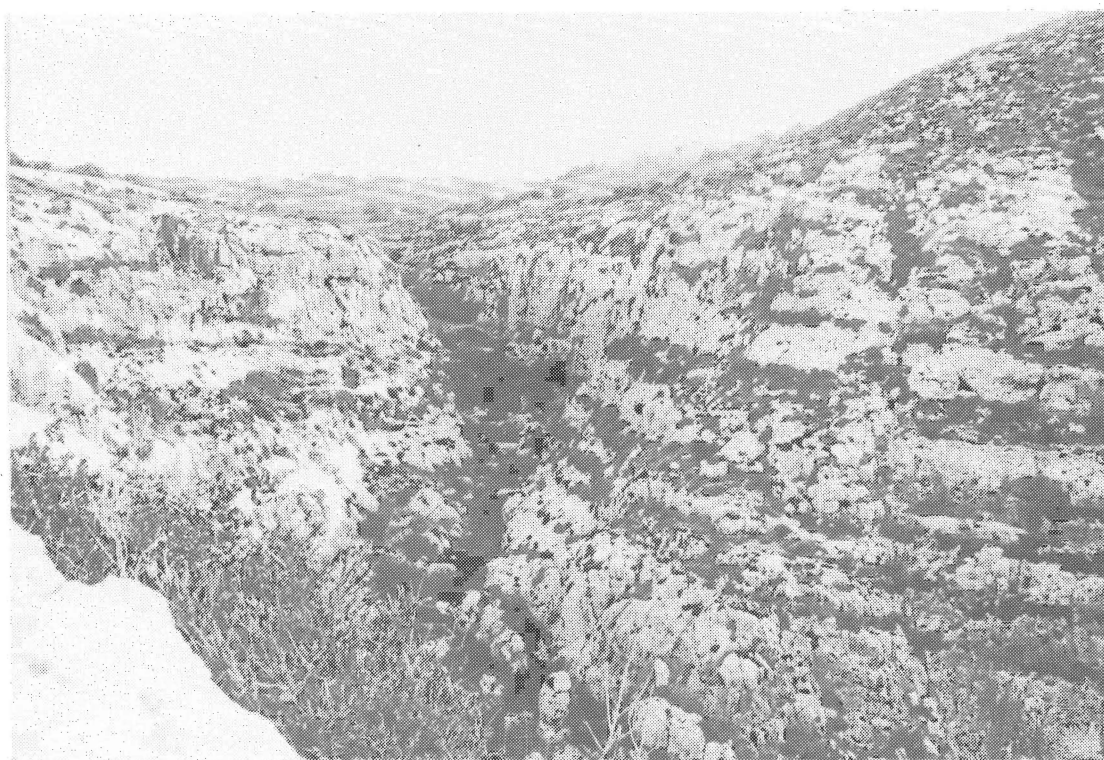
• IL-BLATA (Mistra Bay)

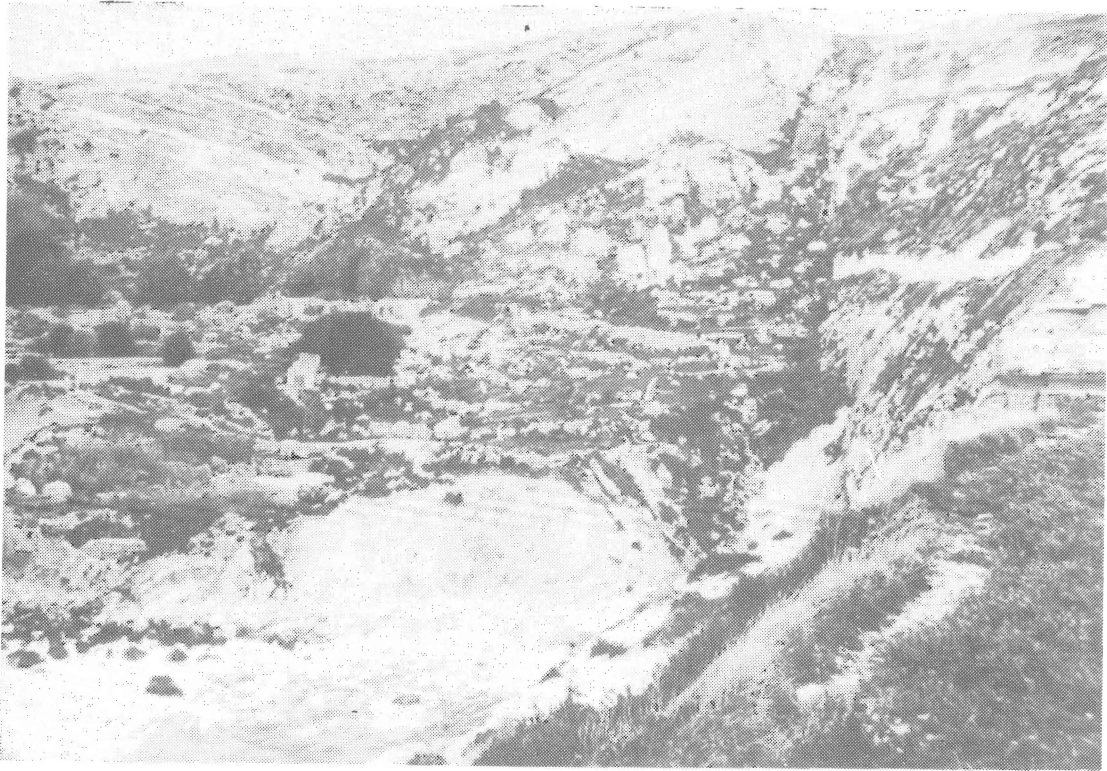
The type locality and only site for the endemic snail *Lampedusa scalaris*; the rare ant *Triglyphothrix lanuginosum* also occurs in this area.



Salina marsh (photo: A.E. Baldacchino)

Wied Babu, Zurrieq (photo: A.E. Baldacchino)





Fomm ir-Rih (photo: P.J.Schembri)

Is-Simar, Xemxija, aerial view (photo: Joe Sultana)





• SALINA

The largest of the remaining coastal marshlands; the only remaining populations of Borrer's Salt-marsh Grass *Puccinellia fasciculata* and Sea-couch *Elymus flaccidifolium* survive here; the only known locality for many saltmarsh invertebrates including: the earwig *Anisolabris maritima*, the jumping spider *Neaetha membrasa*, the grasshopper *Heteracris adspersa*, the staphylinid beetle *Querdus simplicifrons*, the carabid beetles *Anysodactylus virens winthemi* and *Acupalpus elegans*, and the pselaphid beetle *Brachygluta globulicollis aubei*; apart from Ghadira marsh, Salina is the only other locality for the amphipod *Gammarus aequicauda* and the social spider *Tetragnatha extensa*; other species with a limited distribution in the Maltese Islands which still occur at Salina include: the earwig *Labidura riparia*, the staphylinid beetles *Achenium striatum* and *Tachyporus tersus*, the carabid beetles *Pogonus chalceus* and *Tachys scutellaris* and the eumenid wasp *Eumenes dubius*; a small stream at **TA' MATTEW** supports the only local population of the brackish-water snail *Melania tuberculata*, a species of biogeographical interest; the salterns are very attractive to migratory waders which frequently stop there to rest and feed; the only breeding record to date of the Reed Warbler *Acrocephalus scirpaceus* [Baghal tal-Qasab] in Malta is from the reed beds at Salina.

• GHALLIS to MAGHTAB

Ghallis is the type locality and the only site known for the endemic isopod *Miktoniscus melitensis*; this area is a particularly good locality for many orthopterans including: tettigonid grasshoppers of the genus *Platycoleis*, the acridid grasshoppers *Oedaleus decorus* and *Pyrgomorpha conica*, and the mantid *Rivetina baetica*; between Ghallis and Qalet Marku is the pool known as **L-GHADIRA S-SAFRA**, a unique wetland which supports numerous very rare animals including the Tadpole Shrimp *Triops* sp.; the grass *Crypsis aculeata* is a specialized plant known only from this area; at Maghtab is a small population of the rare *Iris sicula* which is endemic to Sicily and Malta but which seems to have become extinct from Sicily; **BLATA L-BAJDA** is the type locality of the endemic *Limonium zeraphae* [Zerapha's Sea-lavender]; the whole area supports populations of the endemic Maltese Dwarf Garlic *Allium lojaconoi*.

• PEMBROKE (Rifle Ranges)

The rocky ground in this area supports the interesting shrub *Sarcopoterium spinosum* [Spiny Salad-burnet], this being the only locality from which it is known; apart from its rarity, this shrub is also of biogeographical interest; also present here is a large population of the rare *Catanache lutea* as well as single specimens of the rare orchid *Serapias vomeracea* [Long-lipped Serapias].

• IL-QALIET/DRAGUNARA

It is important to rehabilitate the small brackish-water pool close to Dragunara; in this area is a species of *Limonium*, as yet unnamed, which appears to be confined to this locality; there is also one of the few populations of Ice-plant *Mesembryanthemum crystallinum* [Kristallinal]; a number of animals are locally known only from the **DRAGUNARA/ST.JULIAN'S**

area; these include: the sphecid wasps *Pemphredon lethifer* and *Oxybelus dissectus*, the tipid wasps *Meria rousselii*, *Meria volvulus* and *Meria cylindrica* as well as other wasps and bees; in the nearby **WIED HARQ HAMIEM** there is a population of the very rare Birthwort *Aristolochia clusii*; in the same area is a cave known as **G HAR HARQ HAMIEM** containing a large freshwater pool, the largest subterranean freshwater habitat in the Maltese Islands; the rare ant *Paratrechina longicornis* is known from the entrance to this cave while the staphylinid beetle *Sepedophilus marshami* is only known from the cave proper; in the nearby **WIED GHONOR**, which is much degraded, is a small population of the rare Club-moss *Selaginella denticulata*.

• **TIGNE POINT** (Sliema)

As is to be expected, Sliema has very little wildlife; nevertheless parts of Tigne Point are still relatively wild and may be rehabilitated; the most important plants of the region are *Orobanche cernua* which is otherwise known only from Qawra and Comino, Sea-stock *Matthiola tricuspidata* [Gizi tal-Bahar], Bent Broomrape *Orobanche cernua* and Ice-plant *Mesembryanthemum crystallinum* [Kristallinal]; a large population of the rare snail *Helicella meridionalis* occurs here; the seaside rocks are highly fossiliferous.

• **DELIMARA**

Apart from its great scenic beauty, this locality supports important populations of the endemic shrub *Darniella melitensis* [Maltese Salt-tree; Kebb] and of Sea-stock *Matthiola tricuspidata* [Gizi tal-Bahar].

• **MARSASKALA 'FISHPONDS'**

One of the few remaining saline marshlands supporting many halophilic species; the only representative of the insect order Strepsiptera known to occur in the Maltese Islands, *Mengenilla chobauti*, was found at Marsaskala.

• **ST. THOMAS BAY**

The area towards **TAL-MUNXAR** has many Pleistocene deposits; also the type locality of the endemic subterranean cricket *Myrmecophilus baronii* which associates with ants and the only locality in Malta for the chrysidid wasp *Hedychridium dismorphum*, a species of biogeographical interest.

• **IL-MAGHLUQ** (Marsaxlokk)

A small but very important saline marshland which supports communities of halophilic plants and animals of scientific importance; of particular interest are the brackish-water snails which occur there including the possibly endemic *Ovatella kobelti*, for which this is the type locality and the only known site.

• **WIED HAS-SABTAN** (Birzebbuga)

An important valley which supports a population of the Wild Pear, *Fyrus pyraster* [Langas Salvagg].

• **G HAR IL-FRIEFET** (Birzebbuga)

This is a deep cave which supports a large population of the bat *Myotis blythi omani*, a subspecies found only in Malta and certain other Mediterranean islands; it also supports populations of many cave invertebrates including the woodlouse *Trichoniscus matulicii* for which it is the only known locality, and the beetles *Atheta* nr. *crassicornis*, *Atheta linderi* and *Gnathoncus buyssoni* from bat guano in the cave.

• **G HAR HASAN**

Type locality of the endemic cave woodlouse *Armadillidium aelleni*; also a small population of the bat *Myotis blythi omani*; the cliffs in the area support a large population of *Senecio leucanthemifolius* as well as a variety of other typical cliffside plants.

• **WIED BABU to G HAR LAPSI**

This whole area, which includes the valleys of **WIED BABU**, **WIED IZ-ZURRIEQ/WIED HOXT** and **WIED MAGHLAQ** is very important from a floristic, faunistic and geological point of view; the area supports many important plants such as the **National Plant**, *Palaeocyanus crassifolius* [Widnet il-Bahar] (of which Wied Babu is the type locality) as well as the endemic Maltese Pyramidal Orchid *Anacamptis urvilleana*, the very rare Naked-man Orchid *Orchis italica*, large populations of the otherwise rare Crown Vetch *Coronilla valentina*, the rare *Carex halleriana* and at Wied iz-Zurrieq/Wied Hoxt, populations of the rare *Aristolochia clusii* and of the important Sicilian Squill *Scilla sicula*, a plant endemic to Malta and Sicily but which is extremely rare in Sicily; Wied Babu is also the type locality of the endemic Click-beetle *Ischnodes schembrii* and supports a population of the rare ant *Leptothorax angustulus*; the **G HAR LAPSI** area is the only known locality for a recently discovered and possible new species of land snail *Trochoidea (XeroCLAUSA)* sp. and for the infrequent ant *Cardiocondyla nigra* which is of biogeographical interest; additionally, Wied iz-Zurrieq and Wied Babu are fine examples of river valleys and creeks while **WIED MAGHLAQ** has well preserved Pleistocene deposits and is a continuation of the Maghlaq fault system; **IX-XAQQA** at Ghar Lapsi is an excellent and uncommonly large example of a slickensided fault-plane.

• **GEBEL CIANTAR to FAWWARA**

This area is important both from the natural historic and the archaeological points of view; many endemic plants grow on the cliffs in this area including: the **National Plant** *Palaeocyanus crassifolius*, Maltese Salt-tree *Darniella melitensis* and an as yet unnamed species of *Limonium*; other important plants are Egyptian St. John's Wort *Triadenia aegyptica* and Rock Crosswort *Crucianella rupestris*, which are of North African affinity; the nearby **RDUM DIKKIENA** is the only locality for the very rare endemic snail *Lampedusa melitensis*; this is also the only locality in Malta where the Black-eared Wheatear *Oenanthe hispanica* [Kuda Dumnikanal] has bred.

• **RAS ID-DAWWARA to RAS IR-RAHEB**

These cliffs are the only known site for the rare endemic snail *Lampedusa imitatrix*; **MIGRA FERHA** is a locality in the Mthaleb area with a large population of a still unnamed shrub which is probably a new genus having affinities with *Halimione* and *Atriplex*; in addition the endemic Maltese Salt-tree *Darniella melitensis* and an unnamed *Limonium* are also common; **MTAHLEB** is one of the only two localities from which the endemic snail *Trochoidea cucullus* is known (the other is Fomm ir-Rih); the valleys in the Mthaleb area carry freshwater for most of the year and support populations of several species of freshwater snails, including the endemic *Pseudamnicola melitensis* as well as many rare plants such as the second population of Willow-leaved Water-pepper *Polygonum salicifolium*, the rare sedge *Carex hispida*, which is only known from here and the very rare Mediterranean Willow, *Salix pedicellata* [Zafzafa]; the **WIED HAZRUN/TA' BALDU** area supports a copse of Holm Oak, *Quercus ilex* [Ballut] which is perhaps the remnant of a wood which once covered the area, as well as specimens of the rare Evergreen Rose *Rosa sempervirens* and Rock-rose *Cistus creticus*.

• **FOMM IR-RIH to QAMMIEH**

This whole area is of great scenic beauty however it is endangered by development for touristic purposes; important plants include: the **National Plant** *Palaeocyanus crassifolius*, *Fagonia cretica*, *Convolvulus oleifolius*, Maltese Salt-tree *Darniella melitensis* and the yellow flowered form of *Iris pseudopumila* [Bellus]; **FOMM IR-RIH** displays several very important geological features especially faulting (Great Fault/Victoria Lines); the only known local population of the mullid wasp *Smicromyrme viduata* is found at **GHAJN TUFFIEHA**; **IL-KARRABA** is of geological interest for its Upper Coralline Limestone formations and is the type locality of the endemic pseudoscorpion *Chtonius maltensis*; **IC-CUMNIJA**, now serving as a rubbish dump, is the type locality of the jumping spider *Aelurillus schembrii*, which is endemic to Malta and parts of Sicily.

• **MIZIEB**

Afforestation with pines has been especially successful here and the area has now become a typical pine wood supporting populations of woodland species, otherwise rare in the Maltese Islands; the purple-flowered form of *Iris pseudopumila* [Bellus] also occurs.

• **IS-SIMAR (Pwales Valley)**

Supports one of the few remaining saline marshlands in the Maltese Islands.

• **WARDIJA**

A valuable site which includes the oldest known trees in Malta: a group of Holm Oaks, *Quercus ilex* [Ballut], which may be some 900 years old and are actually protected by a law enacted in 1933; this area also includes good populations of the rare Myrtle *Myrtus communis* [Rihan], Bay Laurel *Laurus nobilis* [Rand] and Rock-rose *Cistus creticus*, and is the only known locality for the pselaphid beetle *Tychomorpha integer*.

• SAN MARTIN

The most important feature of this locality is the permanent spring which apart from a variety of freshwater species supports a population of the Mediterranean Freshwater Crab, *Potamon fluviatile* [Qabru], which is present as an endemic subspecies; it is also the only site in Malta where *Cyperus fuscus* is known to exist.

• WIED QANNOTTA/WIED GHAJN RIHANA/WIED IL-GHASEL

These interconnecting valleys support large watercourses which become filled with rainwater during the wet season and support populations of plants and animals typical of such habitats; moreover, they are of great scenic beauty; some very rare plants are known from these areas including: Adder's Tongue Spearwort *Ranunculus fontanus* (Ghajn Rihana), a species of *Putoria* (Wied il-Ghasel), Sea Club-rush *Bolboschoenus maritimus* (Ghajn Rihana), important populations of Sicilian Squill *Scilla sicula* and the endemic Maltese Pyramidal Orchid *Anacamptis urvilleana*, the extremely rare Rusty-back Fern *Ceterach officinarum* (Wied il-Ghasel) and many others; the temporary rainwater pools on the sides of Wied il-Ghasel support many rare and interesting freshwater animals including the Fairy Shrimp *Branchipus stagnalis*, the Clam Shrimp *Eocyclus orientalis*, the Tadpole Shrimp *Triops* sp. and many others; this system of *widien* is of great entomological interest as it supports a large number of species locally known only from these valleys including: the ants *Ambylopone denticulatum* and *Stenammina petiolatum* which is very rare throughout its range, the eumenid wasps *Euodynerus dantici* and *Ancistocerus biphaleratus tripolitanus*, the sphecid wasp *Stizus ruficornis*, the chrysidid wasps *Chrysis interjecta* and *Chrysis persica*, the halictid bee *Halictus aegyptiacus* and at least ten species of staphylinid beetles, three of histerid beetles, and four of carabid beetles; Wied il-Ghasel is the only locality in Malta for the endemic ant *Strongylognathus insularis*; part of Wied il-Ghasel is in grave danger of being eliminated by quarries.

• FIDDIEN/QLEJGHA VALLEY/TA' L-ISPERANZA VALLEY

This important complex is better known as **CHADWICK LAKES** and is the drainage system for one of the largest catchment areas in the Maltese Islands; the valley watercourses carry rainwater runoff during the wet season and consequently support rich communities of freshwater species and species of moist environments including many locally known only from these valleys: the tettigonid grasshopper *Conocephalus conocephalus*, at least six species of staphylinid beetles, the carabid beetle *Stenolophus skrimshireanus*, the ant *Camponotus truncatus* and at least four species of sphecid wasps; these valleys are also good examples of stream processes and stream development and are suitable for geographical/geological fieldwork.

• BAHRIJA VALLEY

The most important permanent spring in Malta and supporting the largest population of the Mediterranean Freshwater Crab as well as numerous other freshwater animals, most of which are otherwise rare, including: freshwater snails some of which are endemic species, the freshwater amphipod

Echinogammarus pungens, the tettigonid grasshopper *Homorocoryphus nitidulus*, the rare mutillid wasp *Ronisia maroccana*, the eumenid wasp *Antepipona deflenda*, at least three species of sphecid wasps and the carabid beetles *Acupalpus notatus* and *Harpalus ardosiacus*; rare plants of this area include: Water Figwort *Scrophularia nodosa* and Water Germander *Teucrium scorodioides* for which Bahrija is the only known locality as well as the largest of the only two local populations of *Polygonum salicifolium*.

• **WIED GERZUMA**

This valley carries the only remaining plants of *Ampelodesmos mauritanicus* [in Maltese, *Dis*], as well as some fine specimens of Myrtle *Myrtus communis* [in Maltese, *Rihan*], plants after which several localities in the Maltese Islands are named (for example: Wied id-Dis, Ghajn Rihana) but which have long since disappeared from these places and which are in danger of disappearing from the Islands altogether!

• **GNEJNA VALLEY**

Supports a permanent spring with associated flora including the rare Mediterranean Willow *Salix pedicellata* [Zafzafal], the rare Sea Club-rush *Bolboschoenus maritimus* and the Reed Mace *Typha angustifolia*.

• **GNIEN IL-KBIR**

This locality is important for its single White Willow *Salix alba* [Zafzafa Bajdal], the **only** specimen in the Maltese Islands, a fine population of the other local willow, *Salix pedicellata* [Zafzafal], and the best local population of Mediterranean Elms, *Ulmus canescens* [Ulmu or Sagra tan-Nemus].

• **TA' WIED RINI**

This area includes the only population on Malta of White Rock-rose *Cistus monspeliensis* with which is associated a remarkable mushroom flora; also present are *Convolvulus cantabrica* and *Muscari commutatum*, for which this locality is the sole known station.

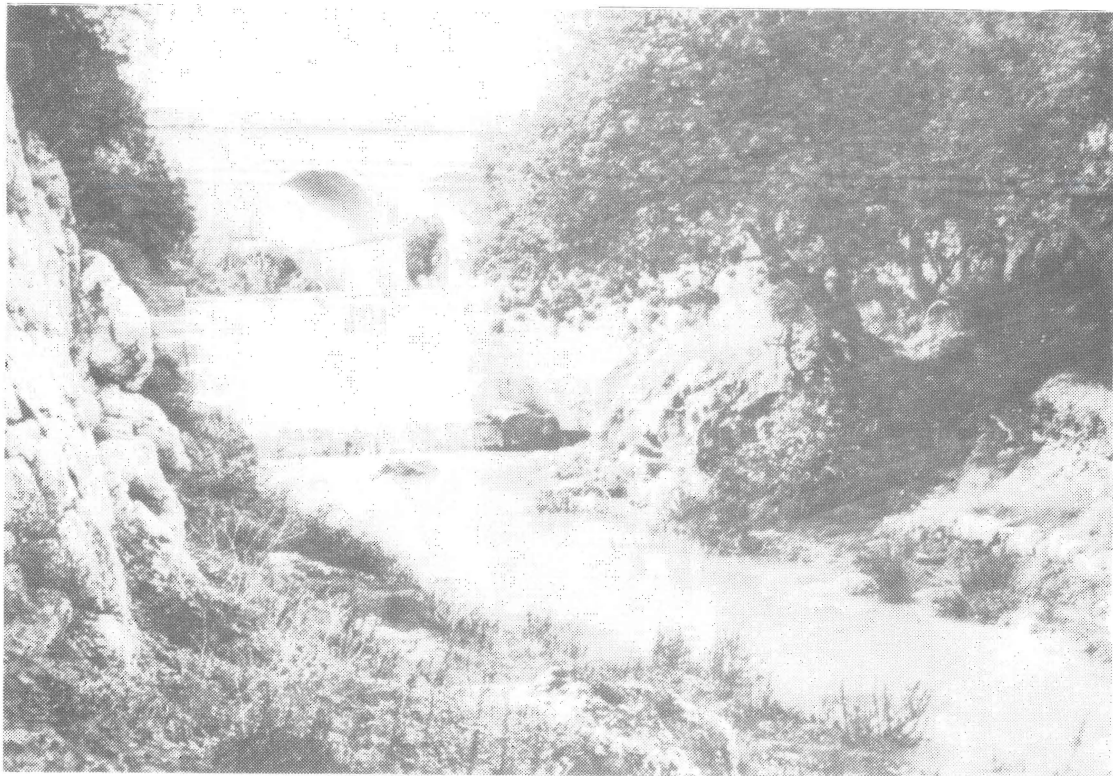
• **GIRGENTI/GHAJN IL-KBIRA**

An important locality in which a large pool of freshwater collects; here grow a profusion of Reed Mace *Typha latifolia* [Budal] and water plants including Water Millfoil *Myriophyllum verticillatum* and Pondweed *Potamogeton pectinatus*, which are only known to grow here; other very rare plants found in this area are *Verbascum creticum*, *Lathyrus annuus* and *Vicia bithynica*; also some fine Myrtle trees *Myrtus communis* [Rihan], Poplar trees *Populus alba* [Luq] and Bay Laurel *Laurus nobilis* [Rand]; this area is one of the strongholds of Cetti's Warbler *Cettia cetti* [Baghal ta' l-Gholliq] which started to breed there, for the first time in the Maltese Islands, in the early seventies; close to the Inquisitor's Palace at Girdenti is a large cave, **L-GHAR TA' L-INKWIZITUR** which supports some very interesting cave fauna including bats, the second population of the endemic cave woodlouse *Armadillidium aelleni*, and the only locality for the endemic cave pseudoscorpion *Chthonius girgentiensis*.



Il-Ballut tal-Wardiya (photo: Joe Sultana)

Wied il-Ghasel, Mosta (photo: P.J.Schembri)





Girgenti (photo: Joe Sultana)

Il-Maqluba, Qrendi (photo: A.E. Baldacchino)



• **IL-MAQLUBA** (Qrendi)

This is a typical subsidence structure of considerable geological interest; it also supports a unique population of the Sandarac Gum Tree, *Tetraclinis articulata* [Gharghar], which is a species endangered on a European scale and also a fine population of Maltese Salt-tree *Darniella melitensis*; Maqluba is the type locality of the endemic slug *Deroceras golcheri*; other species of interest from this site include the rare ants *Paratrechina longicornis* and *Leptothorax rabaudi* and a silverfish (*Lepismachilis* sp.) currently under study; this is one of the few inland areas in Malta where the Blue Rock-thrush *Monticola solitarius* [Merill] still breeds; Cetti's Warbler *Cettia cetti* [Baghal ta' l-Gholliq] also breeds here.

• **BUSKETT**

Buskett is a semi-natural wood and one of the most important woodland habitats in the Maltese Islands; many woodland species are known only from Buskett, for example: the isopods (woodlice) *Trichoniscus pigmaeus*, *Haplophthalmus avolensis* and *Philoscia affinis*, the spider *Argiope bruennichi* the ants *Myrmicina grammicola* and *Leptothorax* sp., the sphecid wasp *Tracheliodes quinquenotatus* and at least four species of staphylinid beetles and three of carabid beetles; some species are associated with the trees themselves, for example the cerambycid beetles, *Gracilia minuta* and *Stenidia troberti*, and the cockroach *Ectobius kraussianus* which is found on lichen growing on the trees and is of biogeographical interest; all these are also locally known only from Buskett; **WIED IL-LUQ**, the valley running through Buskett is important for its Poplar and Ash trees as well as for the rare *Iris foetidissima* of which this is the last remaining locality; it is also important as the only known station for several freshwater species including the caddisfly *Tinodes maclachlani* and the aquatic snail *Helisoma* sp.; on the rocky ground above Buskett is the only large population of *Crocus longiflorus* [Zaghfran Salvagg] and a population of the rare *Euphorbia characias*; also present are populations of rare orchids including Yellow Orchid *Ophrys lutea* and Early Spider-orchid *Ophrys sphegodes*; Buskett is the only area in the Maltese Islands which attracts birds of prey especially Honey Buzzards *Pernis apivorus* [Kuccardal] for roosting during the autumn migration; the extensive ivy hedges provide feeding sites for wintering passerines while fig trees and bramble provide food for many trans-Saharan autumn migrants.

• **BINGEMMA/DWEJRA**

A rich garigue area; includes one of the best populations of the rare Yellow Orchid *Ophrys lutea murbecki*; **BINGEMMA VALLEY** carries a permanent spring with associated vegetation and fauna.

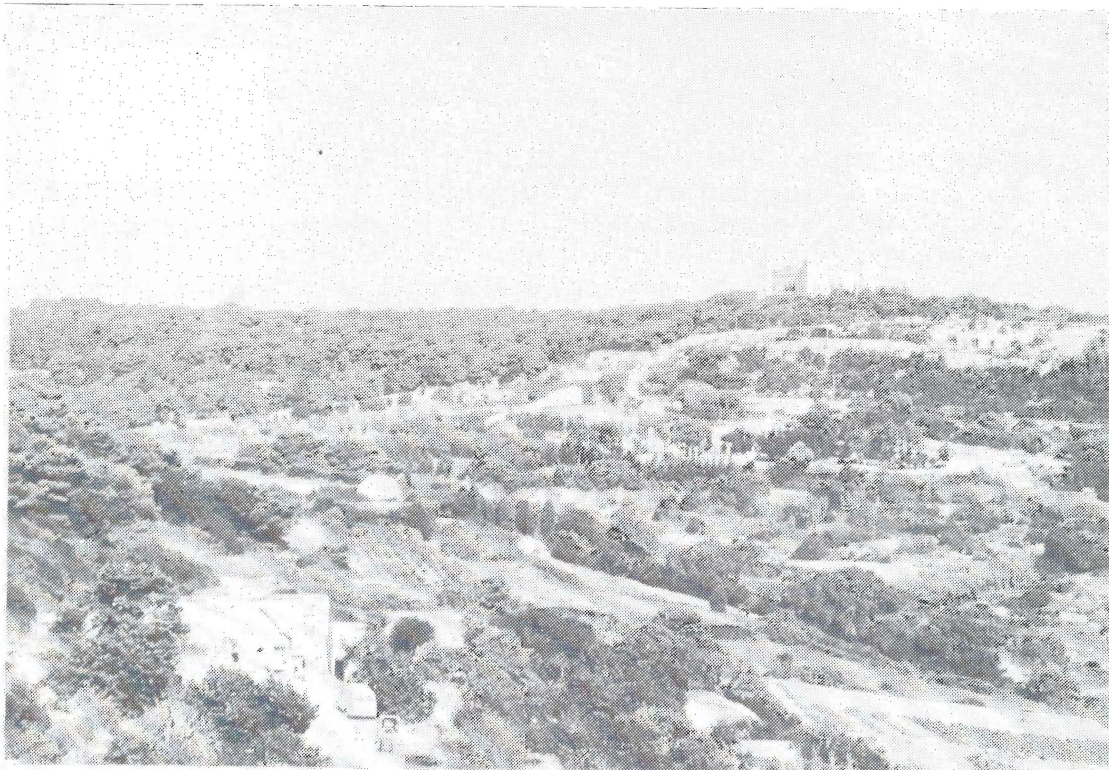
• **SAN PAWL TAT-TARGA**

This is an area of great natural beauty and also of natural historic interest; San Pawl tat-Targa holds numerous temporary rainwater pools which support a characteristic flora and fauna; of special interest is the aquatic plant *Damasonium alisma* [Starfruit] and several aquatic crustacea including the Fairy Shrimp *Branchipus stagnalis*, the Clam Shrimp *Eocyclus orientalis* and the Tadpole Shrimp *Triops* sp. which are otherwise rare in the Maltese

Islands; this site also harbours the best population of Stinking Bean Trefoil *Anagyris foetida* and is rich in orchid species including the rare Yellow Orchid *Ophrys lutea*, *Spiranthes spiralis* and one of the best populations of an endemic but as yet unnamed species of *Ophrys*; a group of Sicilian Squill *Scilla sicula* also occurs there.

• WIED IL-FAHAM/WIED ID-DIS/WIED ANGLU

These are beautiful valleys cut in Lower Coralline Limestone and which support rich maquis communities on their sides; species of note in these valleys include the Evergreen Rose *Rosa sempervirens* (Wied Anglu) and the rare Birthwort *Aristolochia clusii* (Wied id-Dis).



Buskett and Wied il-Luq (photo: A.E. Baldacchino)

LOCALITIES IN GOZO

• SAN DIMITRI POINT

A very important locality with a number of endemic plants of great scientific interest; here is found a population of the as yet unnamed endemic shrub already alluded to under Migra Ferha (Malta), the still unrecorded rare shrub *Lycium intricatum* [Mediterranean Box-thorn], the endemic Maltese Helichrysum *Helichrysum melitense* [Sempreviva ta' Malta] which is now confined to Gozo, an undescribed species of *Hyoseris* endemic to Gozo which is of particular scientific interest since it is a primitive form and therefore expected to throw light on the evolution of the group, and the local race of Wild Stocks *Matthiola incana* [Gizi Salvagg] which is possibly an endemic subspecies.

• WIED IL-GHASRI

One of the most picturesque valleys of the Maltese Islands; it also supports several rare plants including Sea Purslane *Halimione portulacoides*.

• REQQA POINT to IL-QALA TAX-XWIEINI

This area presents fine examples of tension features and erosion features in Globigerina Limestone.

• RAMLA

This is one of the most important localities in the Maltese Islands since it supports a habitat type, that of sand-dunes, which are elsewhere all but nonexistent and at best support only remnants of dune communities; the dunes at Ramla however still carry most of the typical dune flora and fauna; here are found the last populations of Sand Restharrow *Ononis variegata* and Marram-grass *Ammophila arenaria*, as well as the best populations of Sea Spurge *Euphorbia paralias* [Tenghud tar-Ramell] and *Echinophora spinosa*; the unrecorded Two-leaved Allseed *Polycarpon diphyllum* has also been found here as well as the largest specimens of Pygmy Ragwort *Senecio pygmaeus* which is a Maltese-Hyblean endemic; additionally Ramla is the habitat of a large variety of dune animals some of which are very rare elsewhere, including: the earwig *Labidura riparia*, the histerid beetle *Baeckmanniolus dimidiatus*, at least three species of carabid beetles, at least five species of sphecid wasps and the unrecorded ant *Trachymesopus darwini*, discovered recently.

• NUFFARA

One of the several hills for which Gozo is famous; still supports a population of *Hymenocarpus circinnatus*, a rare leguminous herb which is confined to Gozo.

• RDUM IL-KBIR to DAHLET QORROT

An area which includes rugged cliffs and boulder screes; the largest specimen (about 4 m!) of the endemic shrub *Darniella melitensis* [Maltese

Salt-tree; Xebbl is found here; this is also the only haunt in the Maltese Islands of the Bracken fern *Pteridium aquilinum* [Felci t'Ghawdex]; the rare *Tamus communis* grows in the ravines while there are also fine native stands of Tamarisk *Tamarix africana* [Brukal]; Rdum il-Kbir is one of the few areas where the Kestrel *Falco tinnunculus* [Spanjulett] has occasionally bred; **SAN BLAS VALLEY** and **SAN BLAS BAY** in this area are particularly picturesque sites.

• **RAS IL-QALA to HONDOQ IR-RUMMIEN**

Excellent exposition of recent faulting and outcrops of most local rock types; very suitable for geological fieldwork.

• **CHAMBRAY to MGARR IX-XINI**

This area supports a very peculiar clay-slope flora with *Scorzonera laciniata*, Clay Restharrow *Ononis mitissima* and the thistle *Onopordon argolicum*.

• **MGARR IX-XINI VALLEY/WIED SABBARA**

Mgarr ix-Xini Valley is the finest local example of a classical, steep-sided creek (drowned valley) in Lower Coralline Limestone; both valleys support an important flora including the very rare Spanish Broom *Spartium junceum* [Genista], wild populations of *Aloe vera* [Sabbara, hence the name Wied Sabbara] and the extremely rare Shrubby Champion *Silene fruticosa*; it is also one of the few remaining areas where the Barn Owl *Tyto alba* [Barbagann], a species nearly extinct from the Maltese Islands, breeds.

• **TA' CENC**

Apart from their majestic beauty, these cliffs are of interest for their geology (Lower Coralline Limestone), their cliff-top garigue vegetation and associated animal communities and as a locality for the rare ant *Messor caducus*; the cliffs support the largest colony of Cory's Shearwater *Calonectris diomedea* [Ciefal] in the islands and are a stronghold of the Blue Rock-thrush *Monticola solitarius* [Merill], the **National Bird** of Malta; one of the last known breeding pairs of Peregrine Falcon *Falco peregrinus* [Bies] bred here but were shot in the early eighties; a pair of Barn Owls *Tyto alba* [Barbagann] used to breed here in the seventies; the cliff-top rocky area is one of the best breeding sites for the Short-toed Lark *Calandrella brachydactyla* [Bilbla], Corn Bunting *Miliaria calandra* [Durrajsal] and Spectacled Warbler *Sylvia conspicillata* [Bufula Hamra].

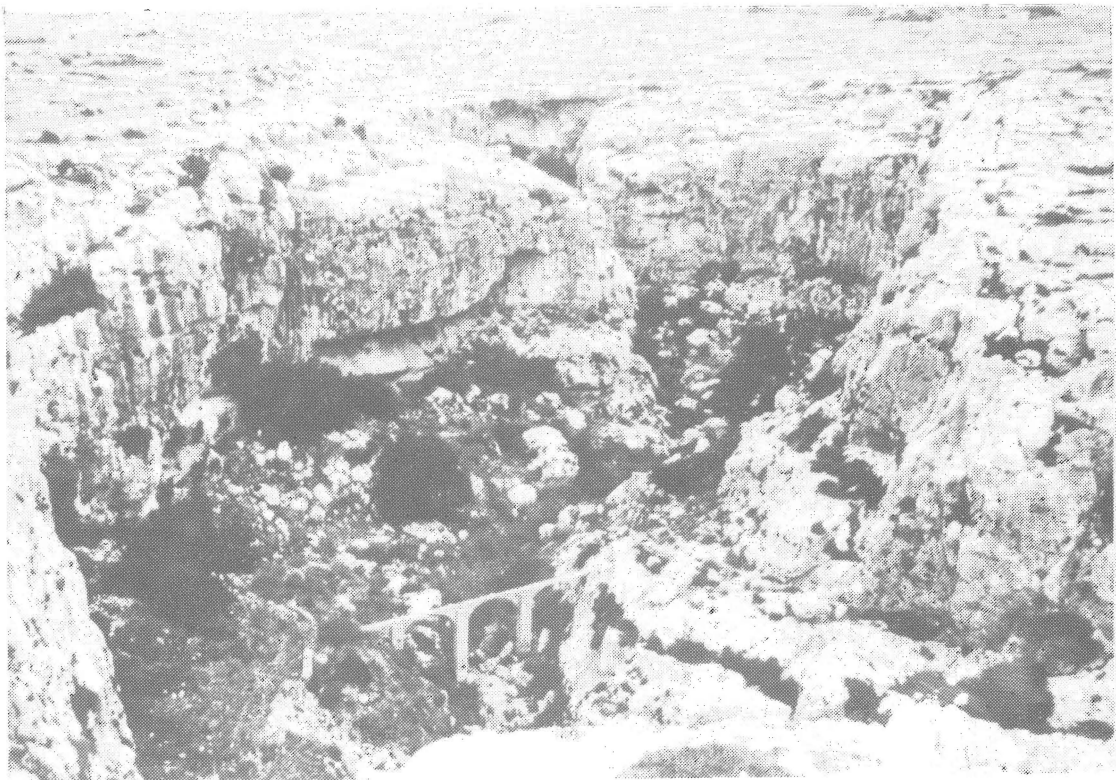
• **WIED TAX-XLENDI/WIED IL-LUNZJATA**

This is the most valuable valley system in Gozo; Wied il-Lunzjata carries a permanent spring and supports a variety of freshwater forms for many of which this is the only Gozitan station (e.g. the Mediterranean Freshwater Crab) while for others this is the only place in the Maltese Islands where they are found (e.g. the predatory leech *Haemopsis sanguisuga*, the freshwater amphipod *Echinogammarus ebusitanus*); also one of the last stations for the once common vespid wasp *Vespa orientalis* and a breeding ground for the semi-aquatic grasshopper *Paratettix meridionalis*; one stream feeding this



Ramla Bay sand dunes (photo: Richard Cachia Zammit)

Mgarr ix-Xini, Gozo (photo: Joe Sultana)





Ta' Cenc cliffs (photo; Joe Sultana)

Cominotto islet (photo; Joe Sultana)



valley system emerges from underground at **FONTANA** and here is found a unique amphipod of subterranean water, *Rhipidogammarus rhipidiophorus*; the **MUNXAR** side of Xlendi Valley supports a large population of the snail *Trochoidea ogygiaca* which is endemic to Gozo, while the sides of Xlendi Valley are the type locality, and only site, for another Gozitan endemic, the very rare *Lampedusa mamotica*; this valley system is also important from a floristic viewpoint; here grow fine specimens of the Gozitan endemic *Hyoseris* n.sp., the rare Shrubby Champion *Silene fruticosa*, fine stands of *Euphorbia characias* and Dwarf Elder *Sambucus ebulis* [Sebuka Salvaggal], and the best population of the rare *Iris sicula*; the whole length of the valley is one of the most attractive sites for birds especially spring and autumn migrants and winter visitors; large numbers of several insectivorous species occur from September to May; finally, Xlendi Valley shows many fine examples of faulting and erosion features.

• THE CITADEL

In spite of its being a built-up area, the Citadel includes some very interesting plants of which the most important are the extremely rare Golden Chamomile *Chamomilla aurea*, for which this is the only locality, and *Bupleurum semicompositum*; also present are the Pelago-Maltese endemic *Linaria pseudolaxiflora* [Maltese Toadflax; Xatbet l-Art ta' Malta] and Maltese Star-thistle *Centaurea melitensis* (in spite of its name, not an endemic, but nonetheless now a rare plant); The Citadel is the only known locality in the Maltese Islands for the histerid beetle *Onthophilus globulosus*; a small population of the endemic snail *Trochoidea spratti* is also found here.

• IL-GELMUS

The thickest outcrop of Greensand in the Maltese Islands with abundant fossils typical of this rock type.

• TA' SARRAFLU

Contains a large freshwater pool which is present all the year round and supports populations of plants and animals that require a constant supply of freshwater and which are therefore rare in the Maltese Islands due to the scarcity of this habitat type.

• DWEJRA

This is another very important site; the cliffs harbour the Gozitan endemic *Helichrysum melitense* [Sempreviva ta' Malta] and *Allium arvense* which is found only in Gozo; there are also fine stands of Chaste-tree *Vitex agnus-castus* [Sigra tal-Virgil] and the Pelago-Maltese endemic *Linaria pseudolaxiflora* [Xatbet l-Art ta' Malta]; **IL-QATTARA** is a freshwater pool near Qawra, Dwejra fed by a perennial spring and containing many species requiring a year-round supply of freshwater; Dwejra is also the type locality of the endemic isopod *Spelaeoniscus vallettai*; Corn Buntings *Miliaria calandra* [Durrajsal] congregate in large groups, sometimes numbering 500 individuals, at this pool during the summer months; the surrounding area is also important for Blue Rock-thrush *Monticola solitarius* [Merill] and for Spectacled Warbler *Sylvia conspicillata* [Bufula Hamra]; **QAWRA** (the

Inland Sea) and **DWEJRA BAY** are excellent examples of large-scale circular subsidence structures and associated infill sediments with clear fossil beds and also very good examples of marine erosion processes at work.

• **WIED IR-RIHAN/BINGEMMA**

Includes a fine population of White Rock-rose *Cistus monspeliensis*; also present are both the yellow and the purple-flowered forms of the rare *Iris pseudopumila* [Bellus].

LOCALITIES IN COMINO

It is recommended that the whole of Comino be declared a nature reserve; however, there are some areas of particular importance:

• SANTA MARIJA

This includes a unique sand-dune system where among other typical dune vegetation is the rare Sea Knot-grass *Polygonum maritimum* as well as native Tamarisk *Tamarix africana* [Bruka] and Chaste-tree *Vitex agnus-castus* [Sagra tal-Virgil]; dune animals of interest from this area include the sphecid wasp *Philanthus triangulum*, the mutillid wasp *Smicromyrme viduata* and the carabid beetle *Acinopus picipes*; also present is a saline marsh dominated by Common Reed *Phragmites australis* [Qasbet ir-Rih]; the rocky ground adjoining the area includes such rarities as *Futaria calabrica* and Blue Flax *Linum bienne* [Kittien Ikhall]; **SANTA MARIJA BAY** is one important locality for the endemic marine snail, the Maltese Top-shell, *Gibbula nivosa*.

• GHEMIERI PENINSULA

This lies east of Santa Marija and should be protected at all costs; it includes the only Maltese population (and a very small one!) of the extremely rare cruciferous herb *Hymenolobus revellieri* which may be an endemic local race and is currently under study; this is accompanied by two Hybleo-Maltese endemics: Pygmy Ragwort *Senecio pygmaeus* (which is very rare) and the grass *Desmazeria pignattii*; the last remaining population of *Althea hirsuta* occurs here; this peninsula also supports a population of the endemic land snail *Trochoidea spratti perplanata*; apart from the Ghemieri area, the rest of Comino is inhabited by another endemic land snail *Trochoidea schembrii*.

• REDOUBT AREA (Southeast Comino)

The most valuable elements here are the fine specimens of Wolfbane *Periploca angustifolia* [Sigret il-Harir].

• COMINO TOWER AREA

Here there is a population of the Pelago-Maltese endemic *Linaria pseudolaxiflora* [Maltese Toadflax; Xatbet l-Art ta' Malta]; this is also a locality for the rare ant *Leptothorax recedens*.

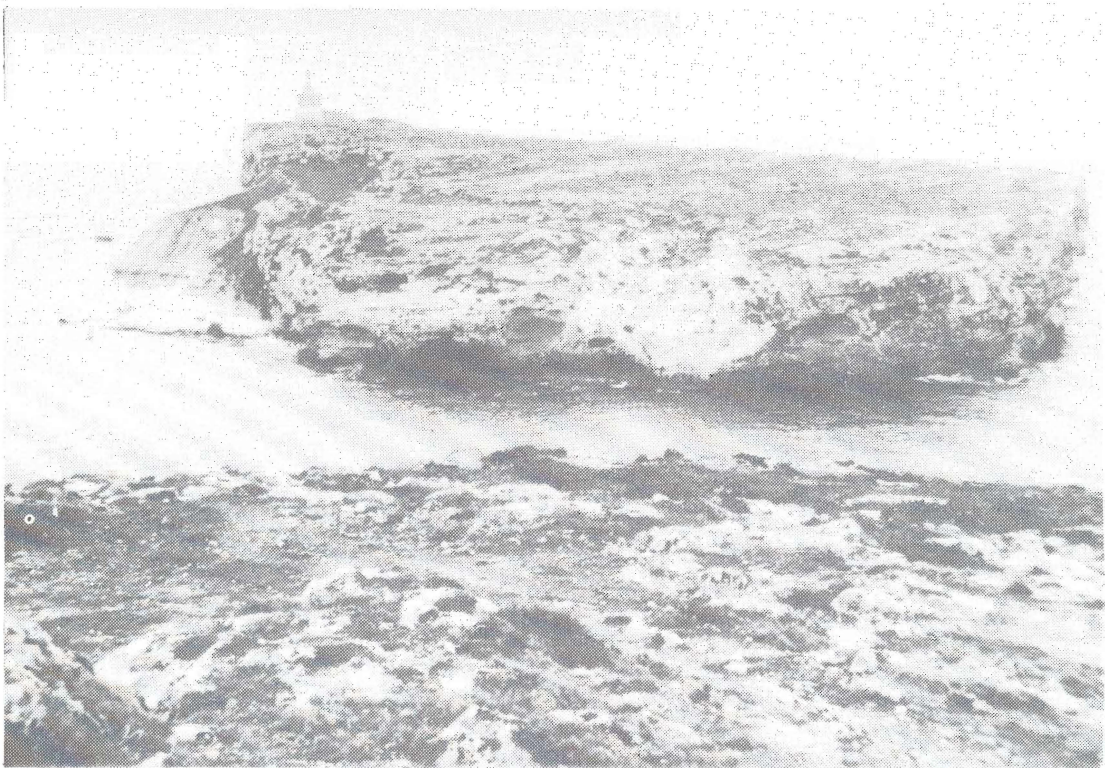
• VALLEY AT TAHT IL-MAZZ

A site directly north of Comino Tower; a rock-cut valley with populations of *Daucus rupester* (a Pelago-Maltese endemic) and Rock Crosswort *Crucianella rupestris*; also a still unnamed endemic species of *Limonium*; the underlying cliffs harbour populations of Maltese Salt-tree *Darniella melitensis* [Xebb].

• BEJN IL-KMIEMEN (Blue Lagoon)

This should be conserved for its scenic value; it also supports typical rocky coast vegetation.

The whole of Comino is a bird sanctuary. A pair of Short-eared Owls *Asio flammeus* [Kokka tax-Xaghril] nested here in 1983.



St. Paul's Islands (photo: P.J.Schembri)

MINOR ISLANDS

All minor islands should be conserved in their entirety:

• FILFLA

This island is important for many reasons; it harbours a large leek (*Allium*) of the *ampeloprasum* group which may be endemic; the lizard of Filfla is an endemic species, *Podarcis filfolensis filfolensis* known only from the island; two very rare endemic land snails are also known only from Filfla: *Trochoidea pyramidata despotti* and *Lampedusa gattoi*; the island also supports a population of the endemic tenebrionid beetle *Subterranea melitana*; Filfla supports one of the largest known Mediterranean colonies of the Storm Petrel *Hydrobates pelagicus* [Kangu ta' Filfla]; the largest local colony of the Herring Gull *Larus argentatus michahellis* [Gawwija Prima] is found on the plateau surface while a small colony of Cory's Shearwater *Calonectris diomedea* [Ciefa] uses the rubble screes beneath the cliffs; the area round Filfla would make an ideal site for a marine nature reserve due to its unpolluted waters and diversity of marine habitats and associated biota.

• ST. PAUL'S ISLANDS (off Selmun, Malta)

The only site for Cretan Pellitory *Parietaria cretica*; the lizards of these islets are an endemic race (*Podarcis filfolensis kieselbachi*) known only from this site; the dominant land snail of the islets is the Maltese endemic *Trochoidea schembrii*; the islets also support a thriving population of the Wild Rabbit.

• HAGRET IL-GENERAL (off Dwejra, Gozo)

The home of the famed *Cynomorium coccineum* - the 'Malta Fungus', as well as fine populations of *Helichrysum melitense* [Sempreviva ta' Malta], *Matthiola incana* [Gizi Salvagg] (a local race) and the undescribed endemic shrub referred to under Migra Ferha (Malta); the lizards of this island are an endemic subspecies (*Podarcis filfolensis generalensis*) of the Maltese Wall Lizard.

• GEBLA TAL-HALFA (Gozo)

This isle is still unexplored but shows interesting tectonic features.

• KEMMUNETT (Cominotto)

A small colony of the Mediterranean race of the Manx Shearwater *Puffinus puffinus yelkouan* [Garnija] is found here.

WHY CONSERVE THESE SITES?

P. J. Schembri

Reading the foregoing list, one might be prompted to ask: what is the use of declaring certain sites in the Maltese Islands conservation areas and controlling development and activities in these for the sake of a few rare wild plants and obscure animals which few people have heard about and even less have interest in? In the economic climate of today and given the expanding local population and the increasing scarcity of undeveloped land, these are pertinent questions. The rarity and obscurity of these organisms, the ever decreasing area of unexploited land in the Islands and the current economic recession are the very reasons why these areas should be preserved! The sites listed above, and the biota they support, should be preserved and protected because it is in the interest of the Nation to do so for their cultural, recreational, scientific, ecological, educational and economic value:

• Cultural

The rocks, plants and animals found in the Maltese Islands are part of our national heritage and contribute towards our geographical, biological and cultural identity; they help make us what we are - a distinct country and people separate from any other. Malta would not be Malta without its characteristic rubble walls, terraced fields, carob trees, indented coastline and a hundred other things. This is reason enough to conserve this heritage, however, over and above this, certain organisms are **endemic** to the Islands - unique life-forms found here and nowhere else in the world. These may be large and showy like the national plant, or small and obscure like some of our endemic insects, but they are all uniquely 'Maltese'. Just as we treasure other unique elements of our culture: the Hypogeum, the cart-ruts, the Caravaggios, our language - we should also treasure these living components of our heritage. Moreover, since these organisms occur here and nowhere else, we hold them in trust for all humanity and we have the responsibility to preserve them for future generations.

• Recreational

Man needs the countryside to escape from the drudgery of work and the dreariness of urban living. Most people prefer unspoilt natural landscapes to man-made ones dotted with buildings, cars and all the other trappings of human occupation. A Sunday afternoon walk or picnic in the countryside is part of our life-style. Wilderness areas should be preserved if for nothing else to provide a relaxing atmosphere where people can refresh themselves amongst natural surroundings.

• Scientific

The study of local wildlife is continuously shedding light on a number of scientific problems of both local and regional significance. Thus a study of the local endemic snails of the genus *Lampedusa* has revealed interesting facts about when and for how long the Maltese Islands were connected to

the European mainland; a study of an endemic plant of the genus *Hyoseris* found at San Dimitri Point in Gozo, is providing new information about the evolution of this group. All Mediterranean countries have research programmes on their natural environment; such research should also be encouraged locally if Malta is not to be left in a scientific backwater.

• Ecological

The survival of any human population depends on the smooth running of the ecosystem of which that population is part - our survival on the Islands depends on our own Maltese ecosystem. It is an established ecological principle that the more diverse the living component of an ecosystem, the more resistant to stress that particular system is: in simple terms, the larger the number of species, the lesser the chances of the balance of nature being upset. It is impossible to foretell which species are essential components of an ecosystem (in terms of human survival and comfort) and which are not. A pest may gain a foothold and spread simply because a parasite or predator that was keeping it under control became extinct. Numerous cases have been documented worldwide - the Maltese Islands are not immune!

• Educational

Maltese schoolchildren learn a great deal about the natural heritage of other countries: rain forests and coral reefs, pandas and kangaroos, processes and life in rivers, lakes and on tidal shores; they learn very little about their own natural heritage. Although this is slowly changing, so is the local environment and it is quite likely that in the not too distant future, the weasel, freshwater crab and the *Tulliera* will only be known by schoolchildren as effigies on our coins, the nearest natural stand of Oaks will be in Sicily rather than at Mgiebah and Wardija, and to see a sand-dune or salt-marsh one will have to travel abroad.

• Economic

It is often stated that what Malta needs is a better class of tourist: quality not quantity. One such class of 'quality tourist' is that of persons who travel not to sunbathe on beaches but to learn about the culture of the host country - not simply the monuments and history but also the natural environment and wildlife. Safari tours, bird-watching holidays, nature photography holidays and suchlike are a thriving business and one that many countries with a tourism industry are benefitting from. Malta has so far failed to attract this class of tourist and reap the benefits, in spite of having an exceptionally varied and interesting suite of habitats and species, for its size. Malta is unlikely to ever reverse this situation if the destruction of local habitats and wildlife continues at the present rate.

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