
Floral Checklist of Ghadira Wetland

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ABSTRACT

The current knowledge of the macrophytic flora colonizing Ghadira Reserve is viewed based on literature and field studies. Several species (such as *Carex extensa* and *Triglochin barrelieri*) are marked as extinct whilst others, most notably *Halimione portulacoides*, *Limonium* sp. *nova* and *Ruppia drapanensis* have shown extensive population accrual. New records are also included.

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INTRODUCTION

Locally about thirty, mostly small, saline wetlands have been recorded, out of which only six can be said to remain in a relatively 'good' ecological state, whilst the others can be classified as degraded, heavily degraded or in some cases, even extinct (Anderson & Schembri, 1989; Lanfranco, S., 2002). Therefore, their constrained distribution signifies that the resident biota is currently under threat, whereas their vulnerability has resulted in loss of many species.

This report deals with the flora of Ghadira wetland, a saline lagoon, as delineated by figures 1 and 2. The area underwent considerable changes over the years due to habitat engineering works aimed at the restoration of the original saltmarsh habitat, which changes were evaluated in a vegetation study by Lanfranco, E. (1990) and consequently by Casha (2002)

METHOD

The lists were accumulated from literature and a series of field visits carried out by the author from September 2004 to September 2005.

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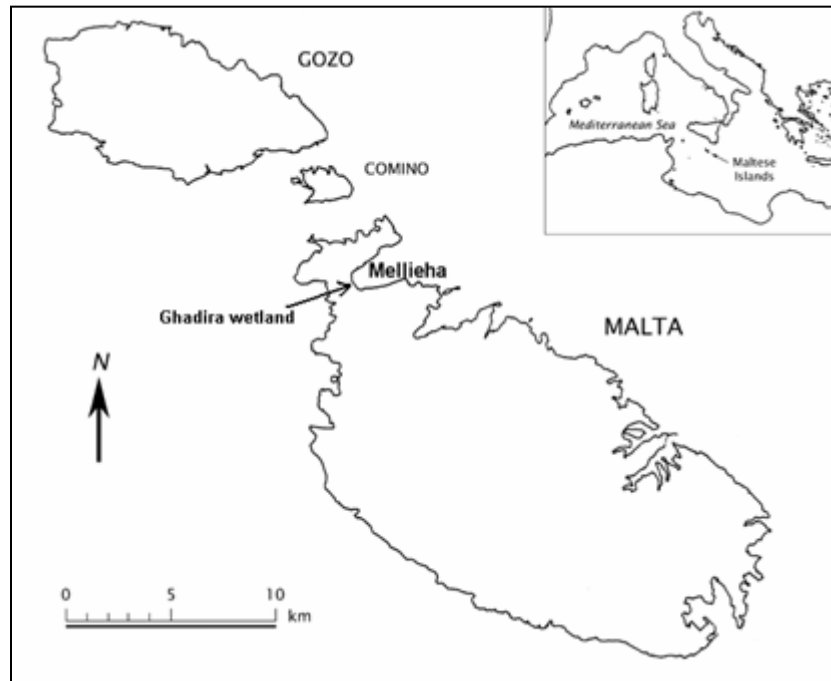


Figure 1: Map of Maltese Islands showing position of Ghadira Wetland.



Figure 2: Orthophoto map (2004) depicting area of Ghadira Reserve. (Adapted from www.mepa.org.mt; scale bar 100m)

SPECIES LIST

Table 1: List of vascular plants recorded from I-Ghadira Reserve. Keys to symbols-

Key 1: 1- confined to saline marshes; 2- growing on a variety of saline substrates; 3- dune species; 4- frequent also on non-saline substrates; 5- weed species; 6- planted as a protection measure; 7- planted in limited quantities; 8- introduced into perimeter as a boundary; 9- decrease at Ghadira since previous studies; 10- increase at Ghadira since previous studies; 11- endangered at Ghadira.

Key 2 (Records): L1: Lanfranco, 1974; L2: Lanfranco, 1990; C: Casha, 2002; P: present study.

Key 3 (Status at Ghadira during present study): EX- extinct; VR- very rare; R- rare; C- common; VC- very common; F= Frequent; U- unsubstantiated records; A- naturalised alien.

	Type	Records	Status
<u>Gymnosperms</u>			
family: PINACEAE			
<i>Pinus brutia</i> Ten.	4, 7, 8	C, P	R
<i>Pinus halepensis</i> Mill.	4, 7, 8	L2, C, P	C
<i>Pinus pinea</i> L.	4, 7, 8	C, P	R
family: CUPRESSACEAE			
<i>Cupressus sempervirens</i> L.	4, 7, 8	C, P	R
<i>Tetraclinis articulata</i> (Vahl) Mast.	4, 7, 8	C, P	R
<u>Dicotyledons</u>			
family: AIZOOACEAE			
<i>Mesembryanthemum nodiflorum</i> L.	2, 10	C, P	F
family: ACANTHACEAE			
<i>Acanthus mollis</i> L.	4, 10	C, P	R
family: ALISMATACEAE			
<i>Alisma pantago-aquatica</i> L.	4	C	R
family: ANACARDIACEAE			
<i>Pistacia lentiscus</i> L.	4, 8	C, P	F
family: APIACEAE (UMBELLIFERAE)			
<i>Apium nodiflorum</i> (L.) Lag.	4	C	R
<i>Foeniculum vulgare</i> Miller	4, 5	L2, C, P	R
<i>Ferula communis</i> L.	4, 5	C, P	R

<i>Smyrniolum olusatrum</i> L.	4, 5	C, P	R
family: ARACEAE			
<i>Arisarum vulgare</i> Targ. Tozz.	4, 5	C, P	R
<i>Arum italicum</i> Mill.	4, 5	C, P	R
family: ARALIACEAE			
<i>Hedera helix</i> L.	7	L2, C, P	R
family: ASTERACEAE (COMPOSITAE)			
<i>Aethiorhiza bulbosa</i> (L.) Cassini	5	L2, C, P	F
<i>Aster squamatus</i> (Sprengel) Hieron	5	C, P	F
<i>Bellis annua</i> L.	5	L1, L2, P	R
<i>Calendula arvensis</i> L.	5	C, P	R
<i>Carduus pycnocephalus</i> L.	5	C	R
<i>Carthamus lanatus</i> L.	5	C, P	R
<i>Centaurea nicaensis</i> Allioni	5	L1, L2	R
<i>Chondrilla juncea</i> L.	1	L2	EX
<i>Chrysanthemum coronarium</i> L.	5	L2, C, P	R
<i>Cichorium intybus</i> L.	4	C	R
<i>Conyza bonariensis</i> (L.) Cronq.	5	C, P	R
<i>Cynara cardunculus</i> L.	5	C, P	R
<i>Dittrichia viscosa</i> (L.) Greuter (= <i>Inula viscosa</i> (L.) Aiton)	5	C, P	R
<i>Evax pygmaea</i> (L.) Brot.	4	P	R
<i>Galactites tomentosa</i> L.	5	L2, C, P	R
<i>Hedypnois rhagadioloides</i> L. (Willd.)	5	C, P	F
<i>Inula chritmoides</i> L.	2, 10	L2, C, P	VC
<i>Phagnalon graecum</i> Boiss. & Heldr.,	4	C	R
<i>Reichardia picroides</i> (L.) Roth	5	L2, C, P	F
<i>Scolymus hispanicus</i> L.	5	C, P	R
<i>Sonchus asper</i> (L.) Hill	5	C, P	R
<i>Sonchus oleraceus</i> L.	5	L2, C, P	R
<i>Silybum marianum</i> (L.) Gaertn.	5	C, P	R
<i>Urospermum picroides</i> L. Scopoli Ex FW Schmidt	5	L2, C, P	F
family: BORAGINACEAE			
<i>Borago officinalis</i> L.	5	C, P	R
<i>Echium arenarium</i> Guss.	3	C	F
<i>Heliotropium europaeum</i> L.	5	C, P	R

family: BRASSICACEAE (=CRUCIFERAE)

<i>Cakile maritima</i> Scopoli	2, 3	C, P	R
<i>Diplotaxis eruroides</i> L.	5	C, P	R
<i>Diplotaxis tenuifolia</i> (L.) DC	5	C, P	R
<i>Lobularia maritima</i> L.) Desv.	5	C, P	R

family: CACTACEAE

<i>Opuntia ficus-indica</i> (L.) Miller	7	L2, C, P	A, R
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family: CAPPARACEAE

<i>Capparis orientalis</i> Duhamel	7	C, P	R
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family: CARYOPHYLLACEAE

<i>Silene colorata</i> Poirer	5	L2, C, P	F
<i>Spergularia bocconeii</i> (Scheele) Ascherson & Grabner	4, 5	L2, C, P	F

family: CHENOPODIACEAE

<i>Atriplex halimus</i> L.	2, 6, 8	L2, C, P	C
<i>Atriplex prostrata</i> Boucher ex. DC (= <i>A. hastata</i> L.)	2, 5	L2, C, P	C
<i>Arthrocnemum macrostachyum</i> (Moriciand) Morris & Delponte (= <i>A. glaucum</i> (Delili) Ungern- Sternberg)	2, 8	C, P	C
<i>Beta maritima</i> (L.) Arcangeli	4, 5	L2, C, P	C
<i>Chenopodium murale</i> L.	5	P	R
<i>Chremnophyton lanfrancoi</i> Brullo & Pavone	7	C, P	R
<i>Darniella melitensis</i> Brullo	2, 7	C, P	R
<i>Halimione potulacoides</i> (L) Aellen	1, 8, 10	L2, C, P	VC
<i>Salicornia ramosissima</i> J. Woods (= <i>S. herbaceae</i> Auct.)	1	L2, C, P	F
<i>Salsola kali</i> L.	3	C, P	R
<i>Salsola soda</i> L.	2	L2, P	R
<i>Suaeda maritima</i> (L.) Dumort	1	L2, C, P	F
<i>Suaeda vera</i> JF Gmelin	2	P	R

family: CONVULVULACEAE

<i>Cressa cretica</i> L.	A	L2, C, P	F
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family: EUPHORBIACEAE

<i>Euphorbia chamaesyce</i> L.	3	C	R
<i>Euphorbia dendroides</i> L.	7, 8	C, P	R

<i>Euphoria helioscopa</i> L.	4, 5	C, P	R
<i>Euphorbia pinea</i> L.	4	L2, C, P	F
<i>Euphorbia terracina</i> L.	3	L2, C, P	F
<i>Mercurialis annua</i> L.	5	C, P	F
family: FABACEAE (= LEGUMINOSAE)			
<i>Anagyris foetida</i> L.	7	C, P	R
<i>Astragalus beatiscus</i> L.	5	L2, C, P	F
<i>Ceratonia siliqua</i> L.	7	L2, C, P	F
<i>Cercis siliquastrum</i> L.	7	L2, C, P	F
<i>Lotus ornithopodioides</i> L.	4	L2, C, P	F
<i>Lotus cytisoides</i>	4	C, P	F
<i>Medicago littoralis</i> Rohde ex. Loiseleur	4	L2	U
<i>Medicago polymorpha</i> L.	4, 5	L2, C, P	F
<i>Medicago truncatula</i> L.	5	C, P	F
<i>Melilotus messanensis</i> (L.) Allioni	1, 9	L2, C, P	R
<i>Melilotus sulcatus</i>	5	C, P	F
<i>Ononis natrix</i> subsp. <i>ramosissima</i> L.	2	C, P	F
<i>Psoralea bituminosa</i> L.	4	L2	U
<i>Trifolium nigrescens</i> Viv.	5	C, P	R
<i>Vicia sativa</i> L.	5	C, P	R
family: FAGACEAE			
<i>Quercus ilex</i> L.	7	C, P	R
family: FRANKENIACEAE			
<i>Frankenia hirsuta</i> L.	2	L2	U
<i>Frankenia pulverentula</i> L.	2	L2, C, P	F
family: FUMARIACEAE			
<i>Fumana</i> spp.	5	C, P	R
Family: GENTIANACEAE			
<i>Centaurium erythraea</i> Rafn.	4, 5	C	U
<i>Centaurium spicatum</i> (L.) Fritsch	4, 5	C, P	F
family: GERANIACEAE			
<i>Erodium malacoides</i> (L.) Willd.	5	C, P	F
<i>Erodium moschatum</i> (L.) L'Her	5	C	U
<i>Gernium molle</i> L.	7	C, P	R

family: LAURACEAE

<i>Laurus nobilis</i> L.	7	L2, C, P	R
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family: LABIATAE

<i>Ajuga iva</i> (L.) Schreber	5	L2	U
<i>Mentha pulegium</i> L.	4	C, P	R
<i>Prasium majus</i> L.	7	C, P	R
<i>Rosmarinus officinalis</i> L.	7	C, P	R
<i>Thymbra capitata</i> L.	7	C, P	R
<i>Tuecium fruticans</i> L.	7	C, P	R

family: LYTHRACEAE

<i>Lythrum junceum</i> Banks & Sol	4	C	U
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family: MALVACEAE

<i>Lavatera arborea</i> L.	2, 5	L2, C, P	F
<i>Lavatera cretica</i> L.	4, 5	L2, C, P	F
<i>Malva parviflora</i> L.	4, 5	L2, C, P	F

family: MIMOSACEAE

<i>Acacia cyanophylla</i> L.	5	C, P	A, F
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family: MORACEAE

<i>Ficus carica</i> L.	7, 8	C, P	R
<i>Morus alba</i> L.	7, 8	L2, C, P	A, R

family: MYOPORACEAE

<i>Myoporum tetrandum</i> (Labillardiere) Domin	7, 8	L2, C, P	R
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family: MYRTACEAE

<i>Eucalyptus gomphocephala</i> A. DC	7, 8	C, P	A, R
<i>Myrtus communis</i> L.	7	C, P	R

family: OLEACEAE

<i>Fraxinus angustifolia</i> Vahl	7	L2, C, P	R
<i>Olea europaea</i> L.	7	L2, C, P	R

family: OROBANCHACEAE

<i>Orobanche pubescens</i> D'Urville	4	L2	U
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family: OXALIDACEAE

<i>Oxalis pes-caprae</i> L.	4, 5	L2, C, P	A, F
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family: PAPAVERACEAE

<i>Papaver setigerum</i> DC	5	C	U
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<i>Papaver rhoeas</i> L.	5	C, P	R
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family: PITTOSPORACEAE

<i>Pittosporum tobira</i> (Thunberg) Aiton fil.	7	L2, C, P	A, R
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family: PLANTAGINACEAE

<i>Plantago coronopus</i> L.	4	C, P	R
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<i>Plantago lagopus</i> L.	5	C, P	R
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Family: PLUMBAGINACEAE

<i>Limonium</i> sp aff. <i>L. virgatum</i> (Willdenow) Fourreau	2, 10	L2, C, P	C
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family: POLYGONACEAE

<i>Rumex bucephalophorus</i> L.	4	L2, C, P	R
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<i>Emex spinosa</i> (L.) Campd.	5	C, P	F
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family: PRIMULACEAE

<i>Anagallis arvensis</i> L.	4, 5	L2, C, P	F
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family: PUNICACEAE

<i>Punica granatum</i> L.	7	L2, C, P	A, R
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family: RANUNCULACEAE

<i>Adonis microcarpa</i> DC	5	C	U
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family: RHAMNACEAE

<i>Rhamnus alaternus</i> L.	7	C, P	R
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<i>Rhamnus oleoides</i> L.	7	L2, C, P	R
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family: ROSACEAE

<i>Crataegus monogyna</i> Jacq.	7	C, P	R
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<i>Eriobotrya japonica</i> (Thunberg) Lindley	7	L2, C, P	A, R
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<i>Prunus dulcis</i> (Mill.) DA Webb.	7	C, P	A, R
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<i>Rubus ulmifolius</i> Schott	7	L2, C, P	R
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family: RUBIACEAE

<i>Rubia peregrina</i> L.	5	C, P	R
<i>Valantia muralis</i> L.	5	C, P	R

family: SALICACEAE

<i>Populus alba</i> L.	7	L2, C, P	R
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family: SCROPHULARIACEAE

<i>Scrophularia peregrina</i> L.	5	C, P	R
<i>Verbascum sinuatum</i> L.	5	C, P	R
<i>Veronica polita</i> Fr.	5	C, P	R

family: SOLANACEAE

<i>Hyoscyamus albus</i> L.	5	C, P	R
<i>Lycium barbarum</i> L.	7	C, P	R
<i>Solanum nigrum</i> L.	5	C, P	F
<i>Solanum villosum</i> Mill.	5	C, P	R

family: TAMARICACEAE

<i>Tamarix africana</i> Poiret	2, 8	L2, C, P	F
<i>Tamarix gallica</i> L.	2, 8	L2, C, P	F
<i>Tamarix parviflora</i> DC	2, 8	L2, P	F

family: Urticaceae

<i>Parietaria judaica</i> L.	5	C, P	R
<i>Urtica pilulifera</i> L.	5	L2	U
<i>Urtica membranacea</i> Poir.	5	C, P	R

family: VERBANACEAE

<i>Lantana camara</i> L.	7	L2, C, P	R
<i>Verbana officinalis</i> L.	5	C, P	R
<i>Vitex agnus-castus</i> L.	2, 7	L2, C, P	F

Monocotyledons

family: AMARYLLIDACEAE

<i>Narcissus tazetta</i> L.	7	C, P	R
<i>Pancratium maritimum</i> L.	3, 6	L2, C, P	F

family: CYPERACEAE

<i>Carex extensa</i> Goodenough	1, 6, 11	L2	EX
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family: IRIDICAEAE

<i>Gladiolus italicus</i> Miller	4, 5	L2, C, P	R
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family: JUNCACEAE

<i>Juncus acutus</i> L.	4	L2, C, P	F
<i>Juncus hybridus</i> Brotero	4	L2, P	R
<i>Juncus subulatus</i> Forsskal	2	L2, C, P	F

family: JUNCAGINACEAE

<i>Triglochin barrelieri</i> Loiseleur	1, 11	L2, C	EX
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family: LILIACEAE

<i>Asparagus aphyllus</i> L.	5	L2, C	R
<i>Asphodelus aestivus</i> Brot.	7	C, P	R
<i>Iris pseudopumila</i> Tineo	7	C, P	R
<i>Ornithogalum arabicum</i> L.	4, 7	L1, L2, C, P	R
<i>Romulea ramiflora</i> Tenore	5	C, P	R
<i>Urginea maritima</i> (L.) Baker	7	C, P	R

family: Orchidaceae

<i>Ophrys bombyliflora</i> Link.	4	C	U
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family: POACEAE (= GRAMINAE)

<i>Arundo donax</i> L.	5, 7	C, P	R
<i>Avena barbata</i> Pott ex Link	4, 5	L2, P	R
<i>Avena sterilis</i> L.	4, 5	C, P	R
<i>Bromus diandrus</i> Roth	4, 5	L2, P	R
<i>Bromus madritensis</i> L.	4, 5	L2	U
<i>Bromus rigidus</i> L.	2	L2	U
<i>Crypsis aculeata</i> (L.) Aiton	1	L2	EX
<i>Cynodon dactylon</i> (L.) Persoon	4, 5	P	R
<i>Elymus farctus</i> (Viviani) Runemark ex Melderis	3	L2, C, P	R
<i>Festuca arundinacea</i> Schreber	4	L2	U
<i>Hordeum leporinum</i> Link	4, 5	L2	U
<i>Hordeum marinum</i> Hudson	2	L2	U
<i>Lagarus ovatus</i> L.	4	L2, C, P	R
<i>Lolium rigidum</i> Gaudin	4, 5	L2	U
<i>Parapholis filiformis</i> (Roth) C.E. Hubbard	1	L2	U

<i>Parapholis incurva</i> (L.) C.E. Hubbard	2	L2, C, P	R
<i>Parapholis marginata</i> Runemark	2	L2	U
<i>Phalaris minor</i> Retzius	4, 5	L2	U
<i>Phalaris paradoxa</i> L.	4, 5	L2	U
<i>Phragmites australis</i> (Cavanilles) Trinius ex Steudel (= <i>P. communis</i> Trinius)	2, 7	L2, C, P	F
<i>Piptatherum miliaceaum</i> (L.) Cosson	4, 5	L2, P	R
<i>Polypogon monspeliensis</i> (L.) Desfontaines	4, 5	L2	U
<i>Sporobolus arenarius</i> Duval-Jouve	3	L2	U
family: RUPPIACEAE			
<i>Ruppia drepanensis</i> Tineo	1, 10	L1, L2, C, P	C
family: TYPHACEAE			
<i>Typha domingensis</i> Persoon	7	C, P	R

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