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CONTRIBUTIONS TO THE KNOWLEDGE OF THE FLORA OF DESERTAS ISLANDS

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ABSTRACT: In August 1988 when measures for the protection and conservation of the monk seal (*Monachus monachus*) colony on the Desertas Islands were being implemented a systematic assesment of the flora was also undertaken. Over a four year period plants were collected from the three islands that make up the Desertas sub-archipelago. Particular attention was given to the less accessible parts and to the areas completely inaccessible to the introduced herbivours - rabbits and goats. A total of 26 plant species not previously recorded in literature as forming part of the Deserta Islands flora were verified.

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RESUMO: Em Agosto de 1988 com o apoio da Comissão das Comunidades Europeias, deu-se início nas Ilhas Desertas a medidas de acção urgente para a conservação da colónia de lobos marinhos (*Monachus monachus*). Em paralelo a esta acção de conservação, foi também dada especial atenção à flora das Desertas, tendo-se procedido desde então à sua avaliação sistemática e herborização do material colhido.

As três ilhas que compõem o subarquipélago das Desertas, foram, para o efeito, minuciosamente percorridas por várias vezes, e especial atenção foi dada aos locais menos acessíveis, ou mesmo inacessíveis aos herbívoros introduzidos (coelhos e cabras). Assim, e ao longo de quatro anos, foram detectadas 26 espécies de plantas ainda não descritas como constantes do conjunto florístico das Desertas.

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INTRODUCTION

In order to promote a better understanding of this isolated and interesting Portuguese territory a brief description of the three principal islands is given below.

The sub-archipelago is located about 12 nautical miles south-east of Madeira. The Ilhéu Chão or Deserta Chã is the most northerly island and the smallest, 617m wide by 1850m long - approx. 44 hectares. It is a flat-topped island rising to an altitude of 98m and falls almost vertically into the sea at the edges. Access is possible from three points but the easiest and safest way to the top is by the steps at Portinho de Santa Maria on the west shore.

The Deserta Grande, or simply Deserta, is the largest of the islands and this lies between Ilhéu Chão and the almost inaccessible southern island of Bugio or Deserta Pequena. The Deserta Grande is separated from Ilhéu Chão and Bugio by sea channels respectively called Boqueirão do Ilhéu Chão and Boqueirão do Bugio. Deserta Grande is a rough island 2500m wide by 13000m long - approx. area 1047ha and a maximum altitude of 480m near Pedregal. The top of Deserta Grande can be reached by climbing a path from Doca on the west coast or by a very steep approach from Corgo da Castanheira which is situated at the north end of the island.

Bugio, the most southerly island is 926m wide by 9000m long - approx. area 332 hectares. It rises to a height of 384 m and has a particularly hazardous mountain terrain and should only be climbed by suitably equipped and experienced mountaineers.

After the discovery of Madeira by the Portuguese navigator João Gonçalves Zarco in the XV century attempts were made to settle the islands. Livestock was introduced and there is evidence that barley, rye and wheat were cultivated; however, living conditions were harsh and the settlers eventually left the islands. Today, the remains of stone corrals and a complete paved barn-floor, are still visible.

There is no precise information as to when goats and rabbits were introduced to the Desertas but records suggest that this possibly happened during the latter part of XV century. Unfortunately there are no records as to what the vegetation was like at the time of settlement but it is assumed that the rabbits and goats which were left behind by the settlers radically depleted the original vegetation. On Ilhéu Chão where the goats were eliminated and the rabbits died out naturally, there has been a marked regeneration of the endemic taxa.

Despite the impact by the early settlers, the fauna and flora of the Desertas remains interesting and offers the naturalist a unique opportunity to address conservation issues. Especially the protection of a viable colony of the Mediterranean monk seal (*Monachus monachus* HERMAN) and the undisturbed shore and cliffs where sea-birds breed.

The flora of the Desertas is mainly rupicolous and halophytic and the grasses are more dominant away from the cliff edges and the shore line. On the slopes and "pockets" which have remained free from the intrusion of introduced mammals there is, where soil and water

conditions are favourable, authentic isolated relics of the native flora. However, the Desertas flora is poor when compared with that of Madeira. HANSEN and SUNDING (1985) listed 177 species of plants occurring on the Desertas of which 33 were endemic to the Madeira archipelago. Of the ca. 145 species listed as endemic to the archipelago and the Selvagens, *Sinapidendron sempervivifolium* is the only species which appears to be limited to the Desertas. This low representation of endemic species can largely be attributed to climate. An examination of the data (Table I) taken from the meteorological station established on Deserta Grande in 1991 tends to confirm the longheld opinion that the annual rainfall of the Desertas is extremely variable. This situation, coupled with a steep eroded terrain and shallow well drained soils clearly limits the establishment of many species.

	1991	1992
Rain fall	632mm	371mm
Average of relative humidity	43,3%	56,3%
Mean of annual temperature	18°C	21°C

Table I - Climatic data for 1991 and 1992; Doca, Deserta Grande.

METHODS

The assesment of the flora was done over a four year period and was incidental to the main activity, namely the protection and recovery of the monk seal population. Plant collecting was largely concentrated on those areas deemed inaccessible to goats and rabbits and to cliff ledges cut off by earlier landslides. Climbing equipment had to be used in these inaccessible situations. Extensive surveys were also made in all the accessible areas in order to verify earlier records. A total of 26 species not previously recorded on the Desertas were identified.

Specimens from all the taxa collected were deposited in the Herbarium of the Desertas Annex of Museu Municipal do Funchal (MADM-D) the Herbarium of the Museu Municipal do Funchal (MADM) and in the Herbarium of Jardim Botânico da Madeira (MADJ).

The last part of this paper includes on a complete and revised check list of the flora of the Desertas Islands.

Abbreviations and Codes

Codes for the archipelagoes and islands:

IC - Ilhéu Chão or Flat Deserta
 DG - Deserta Grande or Great Deserta
 B - Bugio or Southern Deserta
 Az - Azores
 Mad - Madeira
 Can - Canary Islands
 CV - Cape Verde Islands
 M - Madeira
 D - Desertas
 P - Porto Santo
 S - Selvagens

E - Endemic
 EM - Endemic to Macaronesia

Codes for the herbaria:

MADM - Museu Municipiapl do Funchal
 MADJ - Jardim Botânico da Madeira
 MADM-D - Desertas annex of Museu Municipal do Funchal

LIST OF NEW TAXA FROM THE DESERTAS ISLANDS

PTERIDOPHYTA

Fam . ADIANTACEAE

Adiantum reniforme L. 900

Distribution: Mad., Can., CV.

Remarks: collected 25th Dec 1988 on D.G. at an altitude of 350^m, above Porto do Vinho, in a humid and shaded cavity. Rare.

Exsiccc: I. Silva, 25-12-1988, DG (MADM-D), MADM.

Fam. POLYPODIACEAE

✓ *Polypodium macaronesticum* Bobrov. 940A

- P. australe* auct. Macar.
P. australe Fée ssp. *azoricum* (Vasc.) Nardi
P. azoricum (Vasc.) R. Fern.
P. vulgare L. var. *teneriffae* Milde

Distribution: Mad., Az., Can.

Remarks: collected 20th Nov. 1991 on DG at an altitude of 300^m above Malhas Brancas on the West slope, on a rocky and exposed place. MADJ-06846-Nóbrega, R. Stos/DG, 13-4-983. Common.

Exsicc: I. Silva, 20-11-1991, DG (MADM-D), MADM.

SPERMATOPHYTA

ANGIOSPERMAE

Fam. ASTERACEAE

✓ *Sonchus oleraceus* L. 420

Sonchus gorgadensis Bolle, non. dub.

Distribution: common throughout Macaronesia.

Remarks: collected Feb. 1990, on DG, at an altitude of 20^m, on Doca. This plant has been also recorded on the plateau of IC. 2XMADJ-06754-Nóbrega, R. Stos-IC/12-4-983. Common.

Exsicc: I. Silva, 2-1990, DG (MADM-D), MADM.

Fam. BRASSICACEAE

✓ *Cardamine hirsuta* L. 28

Distribution: Az., Mad., Can.

Remarks: collected 20th Dec. 1991 above Furadinho, west slope of DG at an altitude of 100^m. Common.

Exsicc: I. Silva, 20-12-1991, DG (MADM-D), MADM.

Fam. CACTACEAE

✓ *Opuntia tuna* (L.) Mill.

Distribution: Mad., Can.

Remarks: observed 14th August 1988, on Doca, west side of DG at an altitude of 50^m.
Rare.

Note: Due to the succulent structure of this plant material was not collected for the herbarium. Costa Neves, I. Silva, 14-8-1988 - DG.

Fam. CAMPANULACEAE

✓ *Musschia wollastonii* Lowe. 405

Distribution: genus endemic to Madeira.

Remarks: collected in flower, among a group of five plants on the 10th June 1992 above Vermelhos at an altitude of 350^m, on the west slope of DG in a basaltic rocky area. Another population was located above Porto das Môças on the east slope of DG at the altitude of 100^m. - Very rare

Exsicc: I. Silva, 10-6-1992, DG (MADM-D), MADM.

Fam. CARYOPHYLLACEAE

✓ *Petrorhagia nanteuilli* (Burn.) Ball et Heyw. 74

Dianthus prolifera. auct.

Kohlruschia nanteuilli (Buen.) Ball et Heyw.

Kohlruschia prolifera. auct., non (L.) Kunth

Tunica prolifera. auct., non (L.) Scop.

Distribution: Mad., Can.

Remarks: collected 23th Feb. 1990, on Doca, west side of DG at an altitude of 5^m.
Common.

Exsicc: I. Silva, 23-2-1990, DG (MADM-D), MADM.

Fam. CELASTRACEAE

✗ *Maytenus umbellata* (R. BR.) Mabb. 443

Catha dryandri Lowe

Celastrus umbellatus R. Br in Buch.

Maytenus dryandri (Lowe) Loes.

Distribution: endemic to Madeira.

Remarks: collected 25th Dec. 1988 at an altitude of 270^m, on DG, above Porto do Vinho, on a rocky cliff on the west slope of the island. Also recorded near Ponta do Pedregal (400^m), on the west side of DG. Rare.

Exsicc: I. Silva, 25-12-1988, DG (MADM-D), MADM.

Fam. CRASSULACEAE

✓ *Aeonium glutinosum* (Ait.) Webb et Berth.

Sempervivum glutinosum Ait

Distribution: endemic to Madeira.

Remarks: collected on the 8th April 1991, on the top of Porto do Vinho, on the west slope of DG, at an altitude of 150^m. Common.

Note: Due to the plants succulent structure the exsicata has not been successeful.

✓ *Aichryson divaricatum* (Ait.) Praeger

Sedum divaricatum Ait.

Sempervivum divaricatum (Ait) Lowe

Distribution: endemic to Madeira.

Remarks: collected on 31st Jan. 1991, on DG, near Ponta do Pedregal (400^m), and also recorded on the east side of DG at an average altitude of 400^m. - Very rare.

Exsicc: I. Silva, 31-1-1991, DG (MADM-D). Due to the succulent structure of this plant, the exsicata has not been successeful.

Fam. FABACEAE

✓ *Lotus macranthus* Lowe 206

Pedrosia macrantha (Lowe) Lowe

Distribution: endemic to Madeira.

Remarks: collected 23rd Feb. 1988 on Bugio, on the southern east slope, at an altitude of 280^m. Also recorded on DG, (10^m) and on the plateau of IC (80^m). Rare.

Exsicc: Costa Neves, 23-02-1988 B (MADJ). I. Silva, 9-04-1991, IC (MADM-D), MADM. 2

Teline maderensis Webb et Berth. var. *paivae* (Lowe) Arco 155

Teline paivae (Lowe) Gibbs et Dingw.

Cytisus candicans Holl

Cytisus maderensis (Webb et Berth.) Masf.

Cytisus paivae (Lowe) Masf.

Genista canariensis Buch, non L.

Genista maderensis (Webb et Berth.) Lowe

Genista paivae Lowe

Distribution: Endemic to Madeira.

Remarks: collected Jan. 1990 on DG, at an altitude of 430^m near Pedregal on the west slope of the island. This plant was found with other taxa not yet recorded on the Desertas, on a ledge where access can only be done with the use of ropes. - Very rare. Exsicc: I. Silva, 1-01-1990, - Costa Neves, 14-03-1992, DG (MADM-D), MADM.

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Fam. GLOBULARIACEAE

X *Globularia salicina* Lam. 596

Globularia longifolia Ait.

Lytanthus salicinus (Lam.) Wettst.

Distribution: Mad., Can.

Remarks: collected Dec. 1988 on DG, at an altitude of 25^m at Furna do Pedregal in a cave near the shore. Also recorded at other sites on the west side of DG at an average altitude of 100^m. MADJ-06814-Nóbrega, R.Stos-DG-16-05-1984. Rare.

Exsicc: Costa Neves, I. Silva, 25-12-1988, DG (MADM-D), MADM.

Fam. LAURACEAE

X *Apollonias barbujana* (Cav) Bornm 689

Apollonias canariensis (Willd) Nees

Laurus barbujana Cav.

Laurus canariensis Willd., non Webb et Berth.

Phoebe barbujana (Cav.) Webb et Berth.

Distribution: Mad., Can.

Remarks: collected 31st Jan. 1990 on DG, at an altitude of 430^m at Pedregal, with other plants on an inaccessible ledge. - Extremely rare.

Exsicc: I. Silva, 31-01-1990, Costa Neves, 14-03-1992, DG (MADM-D), MADM.

Fam. MYRSINACEAE

X *Heberdenia excelsa* (Ait.) Banks ex DC.

Heberdenia bahamensis (Gaertn.) Sprague

Distribution: Mad., Can.

Remarks: collected 31st Jan. 1990 on DG, at an altitude of 405^m, near Ponta do Pedregal, on a very inaccessible edge containing an extremely interesting plant community.

This plant has also been found both on west side of DG near of the top of the island. - Rare.

Exsicc: I. Silva, 31-01-1990, DG (MADM-D), MADM.

Fam. OROBANCHACEAE

✓ *Orobanche minor* J. E. Sm. 522*Orobanche barbata* auct., non Poir.**Distribution:** Az., Mad., Can.**Remarks:** collected 9th April 1991, on Doca, west side of DG at an altitude of 4^m, and also on the plateau of IC. Rare.

Exsicc: I. Silva, 9-04-1991, I.C. (MADM-D), MADM.

Fam. OXALIDACEAE

✓ *Oxalis corniculata* L. 432**Distribution:** Az., Mad., Can., CV.**Remarks:** collected 6th Jun. 1991 on top of DG, at an altitude of 440^m. The specimen was sheltered among *Pteridium aquilinum*. - Rare.

Exsicc: I. Silva, 6-06-1991, DG (MADM-D), MADM. (2 specimens)

Fam. ROSACEAE

Chamaemeles coriacea Lindl. 250**Distribution:** genus endemic to Madeira.**Remarks:** collected 31st Oct. 1988 on Doca, at an altitude of 270^m. Also recorded on Ponta da Amarela, (300^m), on Porto do Vinho (150^m) and on Ponta do Pedregal (400^m) on the west slope of DG. 3XMADJ-06849-Nóbrega, R. Stos-DG-13-04-1983, above Doca, and 3XMADJ-06850-Nóbrega, R. Stos-DG-13-04-1993. Rare.

Exsicc: I. Silva, 31-10-1988, DG, Costa Neves, 14-03-1992, DG (MADM-D), MADM.

Fam. RUBIACEAE

✓ *Rubia fruticosa* Ait. 365P*Rubia gratiosa* Mnzs**Distribution:** Mad., Can.**Remarks:** collected 19th Dec. 1991, above Ilhéu dos Garajaus, on the east slope of DG at an altitude of 250^m at a very shaded site. Extremely rare.

Exsicc: I. Silva, 19-12-1991, DG (MADM-D), MADM.

Fam. SAPOTACEAE

✓ *Sideroxylon marmulano* Banks ex Lowe 600

Sideroxylon mirmulans Buch

Distribution: Mad., Can., CV. (Endemic to Macaronesia).

Remarks: collected Oct. 1988 on Doca, at the altitude of 150m, on a very exposed site.

Common on the cliffs both on west and east sides of DG at an average altitude of 200m.

This species is also present on B. on the cliffs on both sides of the island. 3XMADJ-06855-Nóbrega, R. Stos-DG-13-04-1983. Common.

Exsicc: I. Silva, 31-10-1988, DG (MADM-D), MADM.

Fam. SCROPHULARIACEAE

✓ *Misopates orontium* (L.) Raf. var. *orontium* nađ vidi u jednom listu
na volio!

Antirrhinum orontium L.

Distribution: common throughout Macaronesia.

Remarks: collected On the 10th April 1991, at Doca, west side of DG at an altitude of 5^m. Common.

Exsicc: I. Silva, 10-04-1991, DG (MADM-D), MADM.

Fam. DIOSCOREACEAE

X *Tamus edulis* Lowe 238

Dioscorea canariensis Bourg. ex Webb et Berth

Tamus canariensis (Bourg. ex Webb et Berth.) Willd ex Kunth

Tamus comunis Link in Buch, non L.

Distribution: Mad., Can. (Endemic to Macaronesia)

Remarks: collected 29th Nov. 1988 on DG, at an altitude of 320^m on the west side of Doca, at a very protected site. This species has also been recorded above Ilhéu dos Garajaus on the east slope of DG, at an altitude of 250^m. Rare.

Exsicc: I. Silva, 25-11-1988, DG (MADM-D), MADM.

Fam. LILIACEAE

✓ *Asparagus umbellatus* Link 238

Asparagus lowei Kunth

Asparagus scaber Lowe

Distribution: endemic to Madeira.

Remarks: collected on the 14th March 1991 at Ponta do Pedregal, on west side of DG,

and is also localized on the east slope of DG at an altitude of 400^m. Very rare.
Exsicc: Costa Neves, 14-03-1992, DG (MADM-D), MADM.

X *Scilla maderensis* Mnzs. 45: não existe nenhuma de lá expl. na Madeira!

Scilla hyacinthoides Ait., non L.

Distribution: endemic to Madeira.

Remarks: collected on the 31st Oct. 1988 on DG, west of Doca at an altitude of 310^m, on a protected site. Also recorded on Ponta do Pedregal (west side of DG) and on the east side of DG at an altitude of 400^m. Rare. It blooms on the Desertas, October/November. It is considered to be var *maderensis*.

Exsicc: I. Silva, 31-10-1988, DG (MADM-D), MADM.

✓ *Semele androgyna* (L.) Kunth 46:

Danaë androgyna (L.) Webb et Berth.

Ruscus androgynus L.

Semele maderensis Costa

Semele menezesii Costa

Semele pterygophora Costa

Semele tristonis Costa

Distribution: Mad., Can. (Endemic to Macaronesia)

Remarks: collected on the 14th March 1992 at an inaccessible ledge on Pedregal, on the west side of DG at an altitude of 430^m. Extremely rare.

Exsicc: Costa Neves, 14-03-1992, DG (MADM-D), MADM. (2 April 1992)

det. I. Silva 1992

Fam. ORCHIDACEAE

Gennaria diphylla (Link) Parl.

Habenaria cordata (Willd.) R. Br.

Peristylus cordatus (Willd.) Lindl.

Distribution: Mad., Can.

Remarks: plant observed 18th Dec. 1991 on east slope of DG near Ilhéu dos Garajaus at an altitude of 250^m on a rocky and protected site. Extremely rare.

Exsicc: not collected

UPDATED CHECK LIST OF THE PLANT OF DESERTAS ISLANDS

ADIANTACEAE

- | | |
|--|-----|
| 1. <i>Adiantum capillus-veneris</i> L., var. <i>capillus veneris</i> | MDP |
| 2. <i>Adiantum reniforme</i> L. var. <i>reniforme</i> | MD |

ASPIDIACEAE

- | | |
|--|-------|
| 3. <i>Polystichum falcinellum</i> (Sw.) C. Presl | MD(E) |
|--|-------|

ASPLENIACEAE

- | | |
|--|------|
| 4. <i>Asplenium billotii</i> I.W. Schultz | MDP |
| 5. <i>Asplenium hemionitis</i> L. var. <i>hemionitis</i> | MDP |
| 6. <i>Asplenium marinum</i> L. | MDPS |

DAVALLIACEAE

- | | |
|---|-----|
| 7. <i>Davallia canariensis</i> (L.) J.E.Sm. | MDP |
|---|-----|

GYMNOGRAMMACEAE

- | | |
|---|-----|
| 8. <i>Anogramma leptophylla</i> (L.) Link | MDP |
|---|-----|

HYMENOPHYLLACEAE

- | | |
|---------------------------------------|-----|
| 9. <i>Hymenophyllum wilsonii</i> Hook | MDP |
|---------------------------------------|-----|

HYPOLEPIDACEAE

- | | |
|--|----|
| 10. <i>Pteridium aquilinum</i> (L.) Kuhn | MD |
|--|----|

POLYPODIACEAE

- | | |
|---|-----|
| 11. <i>Polypodium macaronesicum</i> Babrov. | MDP |
|---|-----|

SELAGINELLACEAE

- | | |
|--|-----|
| 12. <i>Selaginella denticulata</i> (L.) Link | MDP |
|--|-----|

AIZOACEAE

- | | |
|---|------|
| 13. <i>Aizoon canariense</i> L. | MDS |
| 14. <i>Mesembryanthemum crystallinum</i> L. | MDPS |
| 15. <i>Mesembryanthemum nodiflorum</i> L. | MDPS |

APIACEAE

- | | |
|----------------------------------|--------|
| 16. <i>Ammi majus</i> L. | MDPS |
| 17. <i>Crithmum maritimum</i> L. | MDP |
| 18. <i>Monizia edulis</i> Lowe | MDS(E) |

ASTERACEAE

- | | |
|--|----------|
| 19. <i>Ageratina adenophora</i> (Spreng.) King et Robins. | MDP |
| 20. <i>Andryala glandulosa</i> Lam. ssp. <i>gladulosa</i> | MDP |
| 21. <i>Argyranthemum haematomma</i> (Lowe) Lowe | MD(E) |
| 22. <i>Artemisia argentea</i> L'Hér. | MDP(E) |
| 23. <i>Asteriscus aquaticus</i> (L.) Less | DP |
| 24. <i>Calendula arvensis</i> L. | MDP |
| 25. <i>Calendula maderensis</i> DC | MD(E) |
| 26. <i>Carlina salicifolia</i> (L. fil.) Cav. var. <i>salicifolia</i> | MDP(EM) |
| 27. <i>Centaurea melitensis</i> L. | MDPS |
| 28. <i>Cotula australis</i> (Sieb. ex Spreng.) Hook. fil. | MDP |
| 29. <i>Crepis divaricata</i> (Lowe) F.W. Schultz | MDPS(E) |
| 30. <i>Cynara cardunculus</i> L. var. <i>ferocissima</i> Lowe | MDP |
| 31. <i>Filago pyramidata</i> L. var. <i>pyramidata</i> | MDP |
| 32. <i>Galactites tomentosa</i> Moench | MDP |
| 33. <i>Gnaphalium luteo-album</i> L. | MDP |
| 34. <i>Helichrysum melaleucum</i> Rchb. ex Holl | MDP(E) |
| 35. <i>Helminthotheca echioides</i> (L.) Lack. | MDP |
| 36. <i>Hypochoeris glabra</i> L. | MDP |
| 37. <i>Leontodon taraxacoides</i> (Vill.) Mérat ssp. <i>longirostris</i> Finch et Sell | MDP |
| 38. <i>Logfia minima</i> (Sm.) Dumort | MD |
| 39. <i>Phagnalon bennettii</i> Lowe | MDP(E) |
| 40. <i>Phagnalon saxatile</i> (L.) Cass. | MDPS |
| 41. <i>Senecio incrassatus</i> Lowe | MDPS(EM) |
| 42. <i>Senecio sylvaticus</i> L. | MDP |
| 43. <i>Senecio vulgaris</i> L. | MDP |
| 44. <i>Silybum marianum</i> (L.) Gaertn. | MDP |

- | | |
|--|---------|
| 45. <i>Sonchus asper</i> (L.) Hill ssp. <i>asper</i> | MDS |
| 46. <i>Sonchus oleraceus</i> L. | MDP |
| 47. <i>Sonchus ustulatus</i> Lowe ssp. <i>maderensis</i> Aldr. | MDP(E) |
| 48. <i>Tolpis succulenta</i> (Dryand. in Ait.) Lowe | MDP(EM) |
| 49. <i>Urospermum picroides</i> (L.) Scop. ex F. W. Schmidt | MDP |

BORAGINACEAE

- | | |
|--------------------------------------|--------|
| 50. <i>Echium nervosum</i> Dryand. | MDP(E) |
| 51. <i>Echium plantagineum</i> L. | MDPS |
| 52. <i>Heliotropium europaeum</i> L. | MDP |

BRASSICACEAE

- | | |
|--|--------|
| 53. <i>Arabidopsis thaliana</i> (L.) Heynh. var. <i>thaliana</i> | MD |
| 54. <i>Cardamine hirsuta</i> L. | MDP |
| 55. <i>Coronopus didymus</i> (L.) J. E. Sm. | MDPS |
| 56. <i>Crambe fruticosa</i> L. fil. | MDP |
| 57. <i>Hierschfeldia incana</i> (L.) Lagr.-Foss. | MD |
| 58. <i>Matthiola maderensis</i> Lowe | MDP(E) |
| 59. <i>Rapistrum rugosum</i> (L.) All. sens. lat. | MDP |
| 60. <i>Sinapidendron sempervivifolium</i> Mnzs. | D(E) |
| 61. <i>Sinapis arvensis</i> L. | MDP |

CACTACEAE

- | | |
|--|-----|
| 62. <i>Opuntia ficus-barbarica</i> A. Berger | MDP |
| 63. <i>Opuntia tuna</i> (L.) Mill. | MDP |

CAMPANULACEAE

- | | |
|--|----------|
| 64. <i>Campanula erinus</i> L. | MDP |
| 65. <i>Musschia aurea</i> (L. fil.) Dumort. | MD(E) |
| 66. <i>Musschia wollastoni</i> Lowe | MD(E) |
| 67. <i>Wahlenbergia lobelioides</i> (L. fil.) A. DC. ssp. <i>lobelioides</i> | MDPS(EM) |

CARYOPHYLLACEAE

- | | |
|---|------|
| 68. <i>Arenaria leptoclados</i> (Rehb.) Grus. | MDPS |
| 69. <i>Cerastium fontanum</i> Baumg. ssp. <i>vulgare</i> (Hartm.) Greuter et Burd | MDP |
| 70. <i>Cerastium glomeratum</i> Thuill. | MDP |

71. <i>Herniaria cinerea</i> DC.	MDPS
72. <i>Petrorhagia nanteuilli</i> (Burn.) Ball et Heyw.	MD
73. <i>Polycarpon tetraphyllum</i> (L.) L.	MDPS
74. <i>Sagina procumbens</i> L.	MDP
75. <i>Silene gallica</i> L.	MDPS
76. <i>Silene nocturna</i> L.	MDP
77. <i>Silene vulgaris</i> (Moench) Garcke ssp. <i>vulgaris</i>	MDP
78. <i>Silene vulgaris</i> ssp. <i>maritima</i> (With.) A. et D. Löve	MDPS
79. <i>Spergularia bocconei</i> (Scheele) A. et Gr.	MDP
80. <i>Spergularia fallax</i> Lowe	MDPS

CELASTRACEAE

81. <i>Maytenus umbellata</i> (R. Br.) Mabb.	MDP(E)
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CHENOPODIACEAE

82. <i>Beta patula</i> Ait.	MD(E)
83. <i>Chenoleoides tomentosa</i> (Lowe) Botsch.	MDPS
84. <i>Chenopodium murale</i> L.	MDPS
85. <i>Suaeda vera</i> Forssk. ex J. F. Gmel.	MDPS

CONVOLVULACEAE

86. <i>Convolvulus massonii</i> Dietr.	MD
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CRASSULACEAE

87. <i>Aeonium glandulosum</i> (Ait.) Webb et Berth.	MDP(E)
88. <i>Aeonium glutinosum</i> (Ait.) Webb et Berth.	MD(E)
89. <i>Aichryson divaricatum</i> (Ait.) Praeger	MD(E)
90. <i>Aichryson villosum</i> (Ait.) Webb et Berth.	MDP(E)
91. <i>Sedum nudum</i> Ait. ssp. <i>nudum</i>	MDP(E)
92. <i>Umbilicus rupestris</i> (Salisb.) Dandy	MDP

EUPHORBIACEAE

93. <i>Euphorbia peplus</i> L.	MDP
94. <i>Euphorbia piscatoria</i> Ait.	MDP(E)
95. <i>Mercurialis annua</i> L.	MDP

FABACEAE

96. <i>Biserrula pelecinus</i> L.	MDP
97. <i>Cytisus scoparius</i> (L.) Link	MDP
98. <i>Lotus argyroides</i> Murr.	MDP(E)
99. <i>Lotus glaucus</i> Ait. var. <i>glaucus</i>	MDPS(EM)
100. <i>Lotus macranthus</i> Lowe	MDP(E)
101. <i>Lotus suaveolens</i> Pers.	MDP
102. <i>Medicago minima</i> (L.) Bartal.	MDP
103. <i>Medicago polymorpha</i> L.	MDP
104. <i>Medicago truncatula</i> Gaerth.	MDP
105. <i>Melilotus indica</i> (L.) All.	MDP
106. <i>Ononis dentata</i> Sol. ex Lowe	MDP
107. <i>Ononis diffusa</i> Ten.	MDP
108. <i>Ononis mitissima</i> L.	MDP
109. <i>Teline maderensis</i> Webb et Berth. var. <i>paivae</i> (Lowe) Arco	MD(E)
110. <i>Trifolium angustifolium</i> L.	MDP
111. <i>Trifolium arvense</i> L.	MDP
112. <i>Trifolium campestre</i> Schreb.	MDP
113. <i>Trifolium glomeratum</i> L.	MDP
114. <i>Trifolium lappaceum</i> L.	MDP
115. <i>Trifolium ligusticum</i> Balb. ex Loised.	MD
116. <i>Trifolium scabrum</i> L.	MDP
117. <i>Trifolium suffocatum</i> L.	MDP
118. <i>Vicia capreolata</i> Lowe	MD(E)
119. <i>Vicia hirsuta</i> (L.) S. F. Gray	MDP
120. <i>Vicia sativa</i> L. ssp. <i>sativa</i>	MDP
121. <i>Vicia tenuissima</i> (Bieb.) Schinz et Thell	MDP

FUMARIACEAE

122. <i>Fumaria bastardii</i> Boreau	DP
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GERANIACEAE

123. <i>Erodium chium</i> (L.) Willd.	MDP
124. <i>Erodium cicutarium</i> (L.) L'Hér. ssp. <i>cutarium</i>	MDP
125. <i>Erodium malacoides</i> (L.) L'Hér	MDP
126. <i>Erodium moschatum</i> (L.) L'Hér	MDP
127. <i>Geranium rotundifolium</i> L.	MDP

GLOBULARIACEAE

128. *Globularia salicina* Lam. MDP

LAMIACEAE

129. *Marrubium vulgare* L. MDP
 130. *Micromeria varia* Benth. ssp. *thymoides* (Sol. ex Lowe) Pérez
 var. *thymoides* MDP(E)
 131. *Sideritis candicans* Ait. var. *crassifolia* Lowe MD(E)
 132. *Stachys arvensis* (L.) L. MDP
 133. *Teucrium heterophyllum* L'Hér MDC(EM)

LAURACEAE

134. *Appolonias barbujana* (Cav.) Bornm MDP

LYTHRACEAE

135. *Lythrum hyssopifolia* L. MDP

MALVACEAE

136. *Lavatera cretica* L. MDP
 137. *Malva parviflora* L. var. *parviflora* MDPS

MORACEAE

138. *Ficus carica* L. MDP

MYRSINACEAE

139. *Heberdenia excelsa* (Ait.) Banks ex DC. MD

OLEACEAE

140. *Jasminum odoratissimum* L. MD(EM)
 141. *Olea europaea* L. ssp. *maderensis* Lowe MDP

OROBANCHACEAE

142. *Orobanche minor* J. E. Sm. MDP

OXALIDACEAE

143. *Oxalis corniculata* L. MDPS

PAPAVERACEAE

144. *Papaver somniferum* L. MDP

PLANTAGINACEAE

145. *Plantago arborescens* Poir. ssp. *maderensis* (Done.)
A. Hans. et Kunk. MDP(EM)
146. *Plantago coronopus* L. MDPS
147. *Plantago lanceolata* L. MDP

POLYGONACEAE

148. *Polygonum maritimum* L. MDP
149. *Rumex bucephalophorus* L. ssp. *canariensis* (Steinh.) Rech. fil. MDP(EM)
150. *Rumex pulcher* L. ssp. *divaricatus* (L.) Murb. MDPS

PRIMULACEAE

151. *Anagallis arvensis* L. f. *arvensis* MDPS

RESEDACEAE

152. *Reseda luteola* L. MDP

ROSACEAE

153. *Chamaemeles coriacea* Lindl. MD(E)
154. *Rubus inermis* Pourr. MDP

RUBIACEAE

155. *Galium murale* (L.) All. MDP
156. *Phyllis nobla* L. MDP(EM)
157. *Rubia fruticosa* Ait. MDS

RUTACEAE

158. *Ruta chalepensis* L. MDP

SAPOTACEAE

159. *Sideroxylon marmulano* Banks ex Lowe MDP

SCROPHULARIACEAE

160. *Digitalis purpurea* L. MD
 161. *Misopates orontium* (L.) Raf. var. *orontium* MDP
 162. *Scrophularia lowei* Dalg. MDP(E)

SOLANACEAE

163. *Hyoscyamus albus* L. MDP
 164. *Lycopersicon esculentum* Mill. var. *esculentum* MDPS
 165. *Solanum nigrum* L. MDPS
 166. *Solanum tuberosum* L. MDP

URTICACEAE

167. *Parietaria debilis* Forst. fil. MDP
 168. *Parietaria judaica* L. MDP
 169. *Urtica membranacea* Poir. MDPS
 170. *Urtica subincisa* Benth. DP

DIOSCORACEAE

171. *Tamus edulis* Lowe MD

LILIACEAE

172. *Asparagus umbellatus* Link MD
 173. *Asphodelus fistulosus* L. MDP
 174. *Scilla maderensis* Mnzs var. *maderensis* MDP(E)
 175. *Semele androgyna* (L.) Kunth MDPC(EM)

ORCHIDACEAE

176. *Gennaria diphylla* (Link) Parl. MDP

POACEAE

177. <i>Avena barbata</i> Pott. ex Link	MDP
178. <i>Avena sterilis</i> L.	MD
179. <i>Briza maxima</i> L.	MDP
180. <i>Bromus hordeaceus</i> L. ssp. <i>molliformis</i> (Lloyd) Maire	MDP
181. <i>Bromus madritensis</i> L. ssp. <i>madritensis</i>	MDP
182. <i>Catapodium marinum</i> (L.) C. E. Hubb.	MD
183. <i>Catapodium rigidum</i> (L.) C. E. Hubb.	MDP
184. <i>Dactylis smithii</i> Link ssp. <i>marina</i> (Borr.) Parker	MDP
185. <i>Gastridium ventricosum</i> (Gouan) Schinz et Thell.	MDPS
186. <i>Haynardia cylindrica</i> (Willd.) Greuter	MDP
187. <i>Holcus lanatus</i> L.	MDPS
188. <i>Hordeum murinum</i> L. ssp. <i>leporinum</i> (Link) Asch et Graebn.	MDPS
189. <i>Lagurus ovatus</i> L.	MDP
190. <i>Lamarckia aurea</i> (L.) Moench	MDP
191. <i>Lolium lowei</i> Mnzs.	DP(EM)
192. <i>Lophochloa cristata</i> (L.) Hyl.	MDP
193. <i>Phalaris aquatica</i> L.	MDP
194. <i>Phalaris paradoxa</i> L.	MDP
195. <i>Polypogon maritimus</i> Willd.	MDP
196. <i>Polypogon monspeliensis</i> (L.) Desf.	MDP
197. <i>Setaria adhaerens</i> (Forssk.) Chiov.	MDP
198. <i>Stipa capensis</i> Thunb.	MDP
199. <i>Trachynia distachya</i> (Hasselq. ex L.) Link	MDP
200. <i>Vulpia bromoides</i> (L.) S. F. Gray	MDPS
201. <i>Vulpia muralis</i> (Kunth) Nees	MDP

Note: During the field study previously reported, the perennial taxa *Ulex europaeus* L., and *Arundo donax* L., (HANSEN & P. SUNDING 1985.) were never observed. As all the accessible areas on the Desertas were visited several times during a four year period it is concluded that these taxa are no longer represented on the islands.

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