Notas do Herbário da Estação Florestal Nacional (LISFA): Fasc. XVIII

3. The vegetation of Madeira VIII: Advances on the phytosociological survey of non-nitrophyllous vegetation of the Madeira archipelago

1. ***Myrto communis - Hypericetum canariensis*** ass. nova hoc loco

Thermomediterranean, dry to low sub-humid high scrub dominated by *Hypericum canariensis*, *Myrtus communis, Globularia salicina, Maytenus umbellatus* and *Asparagus scoparius* found along most of the southern slope of Madeira island in the 100-450 m.s.m. altitude range. This high-scrub is the first sub-seral stage of the *Apollonias barbujana* thermomediterranean forest. Thus, defines the southern slope *syn-facies* of the *Semele androgynae-Apollonio barbujanae sigmetum*. [The equivalent high scrub stage in the northern slope, in the same series, is *Globulario salicinae-Ericetum arboreae*]. Syntaxonomical affinities with the *Mayteno umbellatae-Oleetum maderensis* are obvious. Nevertheless the later is in itself the permanent climax community of the lower vegetation stage between the sea level and the *Semele-Apollonietum* on rocky habitats (ca. 100-150 m.s.m. in the southern slope): *Mayteno umbellatae-Oleeo maderensis sigmetum*. Both series seem to share the thermomediterranean tree-spurge com-munities [*Euphorbietum piscatoriae*] and sometimes the *Cisto-Micromerietalia* communities as shruby stages. [*Typus*: Table 1, rel. # 1; *Rhamno crenulatae-Oleetea cerasiformis; Rhamno crenulatae-Oleetalia cerasiformis; Mayteno umbellatae-Oleion maderensis*].

Table 1 - *Myrto communis-Hypericetum canariensis*

# order of relevé	1	2
Altitude	340	60
Área m²	100	50
Aspect	NW	NW
Characteristics		
Hypericum canariensis	4	5
Myrtus communis	1	2
Globularia salicina	1	1
Maytenus umbellata	1	1
Asparagus aspargoides	1	1
Laurus novocanariensis	(X)	(X)
Euphorbia piscatoria	.	1
Asparagus scoparius	.	1
Tamus edulis	.	+
Erica maderinicola	.	+
Phyllis nobla	.	+
Apollonias barbujana	.	(X)
Companions		
Opuntia tuna	1	2
Aeonium glutinosum	2	+
Hyparrhenia sinaica	+	+

Mais: nº 1: 1*Rhus coriaria,* 1*Bituminaria bituminosa +Melica canariensis, +Geranium purpureum, +Brachypodium sylvaticum, +Davallia canariensis, +Vitis vinifera, +Leontodon taraxacoides, +Picris echioides, +Galium productum,* nº 2: 1*Argeratina adenophora, +Rubus ulmifolius*

Sites: 1 Sítio das Fontes, Quinta Grande; 2 Ribeira Brava

1. ***Helichryso melaleuci-Sideroxyletum marmulanae*** ass. nova hoc loco

In the northern slope of Madeira, between Porto da Cruz and Porto Moniz, in the thermomediterranean sub-humid stage, in steep shallow soil rocky habitats, exposed to the trade winds, from 0 to 150 m.s.m., low micropha-nerophytic forest communities are found forming patches where *Sideroxylum marmulano* dominates. *Pruno-Laurelatia* elements (*Phyllis nobla, Hedera maderensis, Hypericum grandifolium, Teucrium betonicum, Smilax pendulina, Semele androgyna, Myrica faya*) are combinated with more xeric elements of the *Rhamno-Oleetea* class such as: *Helichrysum melaleucum*, *Maytenus umbellata*, *Globularia salicina*, *Echium nervosum*. *Asparagus scoparius* subsp. *lowei* and *Juniperus canariensis*, wich is rare in Madeira, belong also to the characteristic combination of the community.

It seems to be the climax of a thermomediterranean series of rocky steep slopes [*Helichryso-Sideroxylo marmulanae sigmetum*] close to the sea, in a ecological situation analogous [vicariant]

to the *Mayteno-Oleeo maderensis sigmetum*. The water availability in the *Helichryso-Sideroxyletum marmulanae* habitat seems to be due mostly from fog and humid winds. Low altitude rock thickets of both slopes share a wealth of *Rhmano-Oleetea* elements, but *Helichryso-Syderoxyletum* has a wealth of mesic elements, and climbers that are absent in *Mayteno-Oleetum maderensis* and favours syntaxonomical positioning in *Pruno-Lauretea novocanariensis* rather than in *Rhamno-Oleetea cerasiformis*. Another argument favouring *Pruno-Lauretea* is that *S. marmulano*, although rare inside the *Apollonias barbujana* forest in Madeira, is a common and typical forest element in the understory of the vicariant thermomediterranean communities of the *Visneo mocanerae-Apollonion barbujanae* in the Canary islands (e.g. Anaga, Tenerife). [*Typus*: Table 2, rel. # 5; *Pruno hixae-Lauretea novocanariensis, Pruno-Lauretalia novocanariensis, Visneo mocanerae-Apollonion barbujanae*].

Table 2 – *Helichryso melaleuci-Sideroxyletum marmulanae*

# order of relevé	1	2	3	4	5	6	7	8
Altitude	90	100	70	95	80	50	30	280
Área m²	40	60	60	50	80	60	50	100
Aspect	N	NW	N	NW	N	NE	NW	NE
Characteristics								
Sidroxylon marmulano	4	4	4	3	4	3	4	2
Phyllis nobla	.	.	.	+	+	+	2	1
Hedera madeirense	.	.	.	.	1	+	+	1
Hypericum grandifolium	.	.	+	+	+	+	.	.
Argyranthemum pinnatifidum	.	.	.	+	+	.	.	1
Sonchus pinnatus	.	+	+	+	.	.	.	.
Teucrium betonicum	.	.	.	.	.	.	2	1
Smilax pendulina	.	1	.	.	.	.	1	.
Asparagus lowei	.	1	+	.	.	.	.	.
Myrica faya	.	.	.	.	.	.	.	2
Semele androgyna	.	.	.	.	.	.	.	1
Prasium medium	.	.	.	+	.	.	.	.
Carduus squarrosus	.	.	.	.	.	.	.	+
Characteristics of *Oleo-Rhamnetea crenulatae*								
Helichrysum melaleucum	1	1	+	2	1	2	+	2
Maytenus umbellatus	1	1	2	1	2	2	2	1
Globularia salicina	3	1	1	2	+	1	2	.
Echium nervosum	1	+	1	2	1	1	1	.
Carlina salicifolia	.	.	.	.	.	+	+	.
Juniperus canariensis	.	.	.	.	.	.	.	3
Euphorbia piscatoria	.	.	.	.	.	.	1	.
Companheiras								
Aeonium glandulosum	+	1	+	1	1	1	1	+
Psoralea betuminosa	+	.	+	+	+	+	+	.
Dactylis hilodes	+	+	+	+	.	+	+	+
Davallia canarienis	+	+	+	1	.	+	+	.
Brachypodium sylvaticum	+	+	.	+	.	.	.	.
Rubus ulmifolius	.	.	.	.	.	.	1	1
Pteridium aquilinum	.	.	.	+	.	.	.	1
Synapidendron gymnocalix	+	.	.	.	.	+	.	.
Plantago leiopetala	+	.	.	+	.	.	.	.

More: nº 2: +*Polypodium macaronesicum;* nº 4: +*Hyparrhenia sinaica;* nº8: 1*Argeratina adenophara*, +*Aeonium glutinosum*
Sites: 1, 4 Véu da Noiva; 2 Ribeira do Inferno; 3, 5 S. Vicente; 6 Seixal; 7 Ribeira da Janela; 8 Rocha do Navio

3. *Campanulo erini - Wahlenbergietum lobelioidis* ass. nova hoc loco

Low-biomass annual non-nitrophyllous community of small annuals on which *Campanula erinus, Briza maxima, Wahlenbergia lobelioides, Trifolium campestre, Leontodon taraxacoides* subsp. *longirrostris, Vulpia myurus, Brachypodium distachyon*. Dominate. This association is an endemic of Madeira and probably reaching also the Canary Islands, in rocky grounds with discontinuous patches of soil. It is found mostly in the thermomediterranean area of the southern slope of Madeira (*Semele-Apollonio barbujanae sigmetum*). [*Typus*: table 3, rel. # 2; *Helianthemetea, Tuberarietalia, Tuberarion guttatae*].

Table 3 - *Campanulo erini-Wahlenbergietum lobelioidis*

# order of relevé	1	2	3	4
Altitude	100	120	150	540
Área m²	2	1	6	4
Aspect	NW	SW	W	SE
Characteristics				
Campanula erinus	3	1	3	+
Briza maxima	+	1	3	1
Wahlenbergia lobelioides	3	2	2	.
Trifolium campestre	.	2	2	2
Leontodon longirostris	1	.	1	2
Vulpia myurus	.	1	+	4
Brachypodium distachyon	.	2	.	2
Linum tryginum	.	.	+	2
Trifolium arvense	.	.	1	+
Vulpia muralis	+	+	.	.
Lotus ornithopoides	+	.	+	.
Petrorhagia nanteuilii	.	+	+	.
Cynosurus echinatus	.	.	1	.
Trifolium striatum	.	.	.	1
Medicago minima	+	.	.	.
Aira caryophylla	.	+	.	.
Vulpia bromoides	.	.	+	.
Ornithopus pinnatus	.	.	+	.
Tolpis barbata	.	.	.	+
Logfia galica	.	.	.	+
Companions				
Avena barbata	+	+	1	+
Polycarpon tetraphyllum	2	1	+	.
Trifolium glomeratum	.	1	+	.
Misopates orontium	.	.	+	1

More: nº1: +*Sonchus oleraceus*, +*Silene gallica*; nº 2: +*Carlina salicifolia* (pl.); nº3: 1*Lagurus ovatus*, +*Euphorbia peplus*, +*Sherardia arvensis*; nº 4:1*Erodium chium*, +*Bromus diandrus*, +*Galactites tomentosa*
Sites: 1, 2, 3 Meia Légua, 4 Cabo Girão

4. *Cytisus scoparius* and *Ulex latebracteatus* community

The probable neophytes *Cytisus scoparius* and *Ulex latebracteatus* [=*U. europaeus* subsp. *latebracteatus*] are abundant in the higher altitudes of Madeira and frequently replace natural communities after wildfire or other disturbances. It ranges from the mesotemperate to supratemperate, sub-humid to ultra-hiper-humid in the scope of the series *Polysticho falcinello-Ericetum arboreae* and *Clethro arboreae-Ocoteetum foetentis*. To consider the presence of the *Cytisetea scopario-striati* vegetation class in Madeira, would imply that all the communities dominated by neophytes in the island should be systematized in the syntaxonomical system. This assumption would create methodological problems yet to be solved.

Table 4 - *Cytisus scoparius* and *Ulex latebracteatus* community

# order of relevé	1	2	3	4	5	6	7
Altitude	1710	1650	740	1550	1500	800	840
Área m²	20	20	40	50	40	20	60
Aspect	E	SE	SW	SW	W	SW	SW
Cytisus scoparius	5	4	+	+	4	3	3
Ulex latebracteatus	.	+	5	5	2	3	+
Pteridium aquilinum	.	.	.	2	2	3	1
Cytisus striatus	.	.	2	.	.	.	2
Erica arborea	.	.	.	.	.	.	2
Agrostis castellana	2	2	.	1	1	.	.
Erica maderensis	2	1	.	.	.	.	.
Viola paradoxa	2	+	.	.	.	.	.
Teline maderensis	.	1	.	.	.	.	+
Erygeron kransvikianu	.	.	1	.	.	1	.
Rubus ulmifolius	.	.	.	.	.	1	+
Meloselinum decipens	.	.	+	.	.	.	+
Digitalis purpurea	.	.	.	.	+	+	.
Anthoxantum maderensis	+	+	.	.	.	.	.

More: nº 1: 2*Ranunculus minor,* 1*Hypochaeris radicata, +Andryala varia, +Polypodium vulgare;* nº 3: 2*Rubus lusitanicus;* nº 7: 2*Erica maderinicola,* 1*Phyllis nobla,* 1*Festuca donax, +Rumex maderensis*
Sites: 1 Pico do Cidrão; 2 Pico do Gato, 3 Vale Paraíso; 4, 5 Bico da Cana; 6 between Rabaçal and Calheta; 7 Encumeada

5. *Vicio capreolatae-Odontitetum hollianae* ass. nova hoc loco

In the higher altitudes of Madeira, around Pico do Areiro and Pico Ruivo, in the clearings of the *Polysticho falcinelli-Ericetum arboreae* forest community [semi-nitrophyllous, shady habitats], the madeiran endemics *Odontites holliana* and *Vicia capreolata* are found along with *Cardamine hirsuta, Centranthus calcitrapa*, *Draba muralis, Galium murale, Geranium purpureum, Teesdalia nudicaulis*. etc. We propose, for sake of typology, the new name *Vicio capreolatae-Odontitetum hollianae* to stand for these communities [Typus: Table 5, inv. # 3; *Cardamino hirsutae-Geranietea purpurei, Cardamino-Geranietalia, Geranio perpusilli-Antheriscion caucalidis*].

Table 5 - *Vicio capreolatae-Odontitetum hollianae*

# relevé	1	2	3	4	5	6
Altitude	1570	1700	1590	1710	1600	1550
Area	2	4	2	4	2	1
Aspect	NW	E	NE	W	SW	E
Characteristics						
Odontites holliana	1	3	3	2	3	3
Cardamine hirsuta	1	2	1	2	+	2
Centranthus calcitrapa	1	2	1	1	1	+
Draba muralis	3	2	1	1	+	.
Vicia capreolata	.	1	2	+	1	.
Galium murale	1	1	1	.	.	+
Geranium purpureum	.	.	1	+	1	2
Geranium rotundifolium	1	+	.	.	+	.
Cynosurus echinatus	1	+	.	.	.	.
Myosotis ramosissima	+	.	+	.	.	.
Cerastium diffusum	2	.	.	.	.	.
Anthriscus caucalidis	.	.	.	1	.	.
Fumaria capreolata	.	.	.	.	+	.
Companions						
Teesdalia nudicaulis	2	1	1	+	.	2
Senecio vulgaris	1	.	+	.	+	+
Arabidopsis thaliana	2	+	.	.	.	+
Aphanes microcarpa	1	.	.	.	1	+
Senecio sylvaticus	.	+	.	.	+	+
Vulpia bromoides	1	.	+	.	.	.
Silene vulgaris	+	+	.	.	.	.
Leontondon longirrostris	.	.	+	+	.	.

Mais: nº 1: 1*Galium parisiense,* 1*Trifolium hirtum, +Geranium rotundifolium;* nº 2: +*Logfia minima;* nº 3: +*Hypochaeris glabra;* nº 4: +*Tolpis barbata;* nº 5: +*Ornithopus perpusilus;* nº 6: 1*Agrostis castellana, +Umbilicus rupestris*
Sites: 1 Pico das Torres; 2, 6 Pico do Gato; 3 Near the gate to the old track to Pico Ruivo; 4 Pico do Cidrão; 5 near the new gate to Pico Ruivo

6. ***Notholaeneteum subcordatae*** ass. nova hoc loco

Termophyllous association of mafic substrata, namely trachyte and andesite rock walls in exposed, hot, biotopes, dominated by *Notholaena marantha* subsp. *subcordatum.* It occurs on rocky spots in the scope of *Mayteno umbellatae-Oleetum madeirensis* potential area. [*Typus*: table 6, rel. # 2; *Asplenietea trichomanes, Cheilanthetalia maranto-maderensis, Cheilanthion pulchellae*].

Table 6 - *Notholaenetum subcordatae*

# relevé	1	2	3	4	5	6
Altitude	100	120	150	50	55	200
Area	1	1	1	1	1	1
Aspect	S	E	SE	W	W	S
Characteristics						
Notholaena marantha subsp. *subcordatum*	3	3	2	1	1	3
Companions						
Aeonium glutinosum	1	1	1	1	1	3
Davallia canariensis	.	2	4	1	+	+
Wahlembergia lobelioides	+	.	+	1	.	.
Polypodium macaronesicum	+	.	.	+	+	.
Aichrysum villosum	.	.	.	+	+	.
Umbillicus rupestris	.	.	.	+	+	.
Sedum nudum	.	.	.	.	.	1
Mercurialis annua	.	.	.	+	.	.

Sites: 1, 2, 3 Meia Légua (Ribeira Brava); 4 Ribeira Brava; 5 Boletos

7. *Adiantetum reniformis* ass. nova hoc loco

In rock crevices and walls of basalt, in the bioclimatic thermo-mesomediterranean humid to hiper-humid stages, a species-poor community of *Adiantum reniforme* subsp. *reniforme* can be found. It occurs in the scope of the *Semele-Apollonio barbujanae sigmetum* and *Clethro-Ocoteetum foetentis sigmetum* series. It is a madeiran vicariant of the *Adianto pusilli-Cheilanthetum pulchellae* from the Canary Islands. [*Typus*: Table 7, rel. # 6; *Asplenietea trichomanis, Cheilantheletalia marantho-maderensis, Cheilanthion pulchellae*]

Table 7 - *Adiantetum reniformis*

# relevé	1	2	3	4	5	6	7	8
Altitude	100	80	900	950	960	800	600	50
Area	NW	W	N	NE	W	SW	S	NW
Aspect	1	1	1	1	1	2	2	1
Characteristics								
Adiantum reniforme	3	3	3	2	3	3	5	3
Asplenium trichomanes	.	.	.	.	.	1	+	+
Asplenium monanthes	.	.	.	1	+	.	.	.
Notholaena marantha	.	.	.	.	.	.	.	+
Companions								
Davallia canariensis	1	1	.	.	+	+	+	1
Polypodium macaronesicum	.	1	.	1	.	.	.	+
Selaginella denticulata	.	.	.	.	+	2	.	.
Aeonium glandulosum	+	.	.	.	.	.	+	.
Cystopteris diaphana	.	.	.	.	.	1	.	.
Aichrysum villosum	.	.	+	.	.	.	.	.
Aichrysum divaricatum	.	.	+	.	.	.	.	.
Aeonium glutinosum	.	.	.	.	.	.	+	.

Sites: 1, 2, 8 Ribeira da Janela; 3 Levada do Caldeirão Verde; 4, 5 Ribeiro Frio, 6 Levada de João de Deus; 7 Curral das Freiras

8. *Soncho maderensis-Asplenietum marini* ass. nova hoc loco

In the northern slope of Madeira in the sea-cliffs where salt spray from both waves and salt-rich winds is present (up to a 40 *m.s.m.*), a arero-halo-nitrophillous rock community is found: *Soncho maderensis-Asplenietum marini.* Catenal [spatial] contacts are with the rosetted communities of *Sinapidendro angustifoliae-Aeonion glutinosae*. Nevertheless, its very specific ecology, combining the presence of sodium cloride, nitrogen compounds and the rock habitat associated with the presence of a specific floristical combination supports its independence from the communities of *Sinapidendro-Aenion glutinosae*. [*Typus*: table 8, rel. # 3; *Parietarietea, Parietarietalia, Asplenion marini*].

Table 8 - *Soncho maderensis-Asplenietum marini*

Nº de ordem	1	2	3	4	5	6	7
# relevé	15	5	5	7	5	2	20
Altitude	4	2	2	2	4	4	2
Area	NW	NE	NE	NW	W	N	NE
Characteristics							
Asplenium marinum	2	3	3	2	2	4	2
Tolpis succulenta	.	.	2	2	+	.	.
Adiantum capillus-veneris	.	.	.	+	+	1	.
Parietaria judaica	.	.	.	.	.	1	+
Cymbalaria muralis	.	.	.	.	.	+	.
Cyrtomium falcatum	.	+	.	.	.	.	.
Companions							
Sonchus maderensis	1	+	+	1	1	+	1
Aeonium glandulosum	+	1	1	+	.	+	+
Crithmum maritimum	.	+	+	1	+	.	+
Plantago coronopus	.	2	1	2	+	.	+
Andryala varia	.	1	+	+	1	.	.
Helichrysum devium	+	.	.	.	.	.	.
Mathiola maderensis	.	.	.		+	.	.
Helichrysum melaleucum	.	.	.	.	.	.	+

Sites: 1 Foz d Ribeira da Janela; 2, 3, 4, 6 Sítio da Laje (Seixal); 5 Porto Moniz; 7 Foz da Ribeira do Inferno

9. *Selaginello denticulatae - Cystopteridetum viridulaee* ass. nova hoc loco

The briophyte and fern communities of earthy walls, in conditions of shade, high soil moisture, and organic thin soil, that can be found, for instance, along the sides of the *levadas* channels correspond to a great extent to a single community combining *Cystopteris viridula* (Desv.) Desv. [syn.= *Cystopteris diaphana* (Bory) Blasdell] with other pteridophytes, mosses and *hepaticae*. Altough its floristical character and variation will only be known when studies in brio-sociology are carried out, from the point of view of the *pteridophyta* alone we can nevertheless recognize it clearly as an independent and well characterised community. [Type: table 9, rel # 2; A*nomodonto- Polypodietea, Anomodonto-Polypodietalia, Sellaginello denticulatae-Anogrammion leptophyllae*].

Table 9 - *Selaginello denticulatae-Cystopteridetum viridulae*

# relevé	1	2	3	4	5
Altitude	1540	900	905	1365	1000
Area	1	2	2	1	2
Aspect	N	N	N	N	N
Characteristics					
Selaginella denticulata	4	3	1	1	4
Cystopteris viridula	+	3	2	3	2
Anogramma leptophylla	2	.	.	.	.
Asplenium anceps	.	1	.	.	.
Frullania polisticha	.	.	.	.	1
Davallia canariensis	.	.	.	.	+
Polypodium macaronesicum	.	.	.	.	+
Porella canariensis	.	.	.	.	+
Frullania microphylla	.	.	.	.	+
Companions					
Stenogramma pozoi	.	1	2	1	.
Briophyta	.	2	3	2	.
Anthocerus sp.	2	+	+	.	.
Sibthorpia peregrina	.	2	3	.	+
Viola stellata	.	+	+	.	+
Asplenium monanthes	.	+	.	.	+
Aichrysum divaricatum	.	.	+	.	+
Carex peregrina	.	.	+	.	+
Erygeron karwiskianus	.	.	+	.	+

More: nº 1: 2*Corcenia coriandrena,* 1*Targionia hypophylla*, 1*Trifolium dubium*, 1*Bryum* sp., 1*Funaria* sp., +*Eryophila verna,* +*Myosotis ramosissima,* +*Sagina procumbens,* +*Polia*; nº 2 *Conocephalum* sp., +*Woordia radicans* (plant.); nº 4: 3*Marchantia sp.;* nº 5: +*Huprezia suberecta*

Sites: 1 Pico das Torres; 2, 3 Vereda do Caldeirão Verde; 4 Vereda do Montado dos Pessegueiros; 5 Folhadal

10. *Hymenophylletum thumbrigensi - maderensis* ass. nova hoc loco

Very rare filmy-fern (*Hymenophyllaceae*) community of shady humid biotopes, occuring in dead wood on the ground of the *Clethro-Ocoteetum foetentis* forest. Endemic to Madeira [*Typus*: dead log near the levada of Caldeirão Verde, 2 m², R. Jardim & J. Capelo: 2*Hymenophyllum maderense*, 3*Hymenophyllum thumbrigense*, 2*Sellaginella denticullata*, 1*Trichomanes speciosum*, 1*Asplenium anceps*, +*Asplenium monanthes*, +*Stenogramma pozoi*, +*Erygeron karvinskianus*, 4*Briophyta*; *Anomodonto-Polypodietea*, *Anomodonto-Polypodietalia*, *Hymenophyllion thumbrigensis*].

11. ***Davallio canariensis-Saxifragetum portosanctanae*** R. Jardim, J. Capelo, M. Sequeira, C. Aguiar ass. nova hoc loco

In Porto Santo island, a community of earthy crevices in rocky habitats combi-ning the endemic *Saxifraga portosanctana, Davalia canariensis and Polypodium macaronesicum* is found. For this community the name *Davallio canariensis-Saxifragetum portosanctanae* is proposed. [*Typus*: at the summit of Pico Branco mountain, Porto Santo, 4 m², R. Jardim, J. Capelo, M. Sequeira & C. Aguiar: 3*Saxifraga portosanctana*, 4*Davallia canariensis*, 1*Polypodium macaronesicum*; *Anomodonto-Polypodietea*, *Anomodonto-Polypodietalia*; *Polypodion serrati*, *Bartamio strictae-Polypodienion cambrici*].

12. ***Erysimo arbusculae-Artemisietum argenteae*** R. Jardim, J. Capelo, M. Sequeira, C. Aguiar & J. C. Costa ass. nova hoc loco

Agricultural field that were abandoned a few years ago are, in Porto Santo island, now covered by a species-poor community dominated by *Artemisia argentea*. In primary positions, this community is found combined with *Erysimum arbuscula*, which is endemic to Porto Santo. Affinities with the *Pegano-Salsoletea* vegetation [c.f. communities of *A. thuscula* in the Canary islands] are evident, we prefer to keep it in the *Cisto-Micromerietalia* for the sake of biogeographical consistency. [*Typus*: Chão da Farinha, Porto Santo, 20, R. Jardim, J. Capelo, M. Sequeira, C. Aguiar; 4*Artemisia argentea*, 2*Erysimum arbuscula*, +*Phagnalon hansenii*; *Rhamno-Oleetea cerasiformis, Cisto-Micromerietalia hyssopifolia, Soncho ustulati-Artemision argentei*].

13. ***Sonchetum pinnati*** ass. nova hoc loco

The endemic caulirostted *Sonchus pinnatus* seems to stand for this peculiar physiognomic – evolutive strategy in dryer extra-forest habitats, [regardless of thermotype] in Madeira. We now propose that the communities of this plant shoud be included in the caulirosetted canary-madeiran alliance *Euphorbion melliferae*. [*Typus*: S. Vicente, moisty wall, *85 msm, SE, 4 m²* characteristic: 4*Sonchus pinnatus* companions: 3*Aonium glutinosum*, +*Davalia canariensis*, 1*Ageratina adenophora*, +*Psoralea bituminosa*, 1*Rumex maderensis*, +*Torilis arvensis* +*Galactites tomentosa*; *Pruno-Lauretea, Pruno-Lauretalia, Euphorbion melliferae*].

Nomenclature

Scientific names of vascular plants follow PRESS & SHORT (1994) Flora of Madeira. BM. London and also the Checklist of taxa of RIVAS-MARTÍNEZ, DÍAZ, FERNANDEZ-GONZÁLEZ, IZCO, LOIDI, LOUSÃ & PENAS (2002) Itinera Geobotanica 15(2): 697-813. Sometimes infra-specific names are shortened to the last infra-specific epiteth.

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