F4.3 Macaronesian heath

Summary

This habitat includes shrub communities in the Azores, Madeira and Canaries dominated by bushy *Erica*, *Daboecia* or *Calluna* spp. that are pioneer or permanent on thin soils or seral or marginal to mature Macaronesian forests. Variation on the different island groups is considerable and related to local climate and topography, reflecting also the distinctive biogeography. Intense disturbance from grazing, firewood cutting and afforestation reduced this type to marginal situations in the past but now, with the rural abandonment, it is improving in extent and quality. Where artificial disturbance does not recover, the heaths will progress to forest.

Synthesis

The situation of this type does not present any threat nor concern as far as disturbance regime does not change its current tendency and climate maintains its rainfall regime constant over the Macaronesian archipelagos. The conclusion therefore is Least Concern (LC).

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Sub-habitat types that may require further examination

There are two main subtypes, one from the Azores and another from the Madeira and Canaries. Both are in a similar conservation state.

Habitat Type

Code and name

F4.3 Macaronesian heath
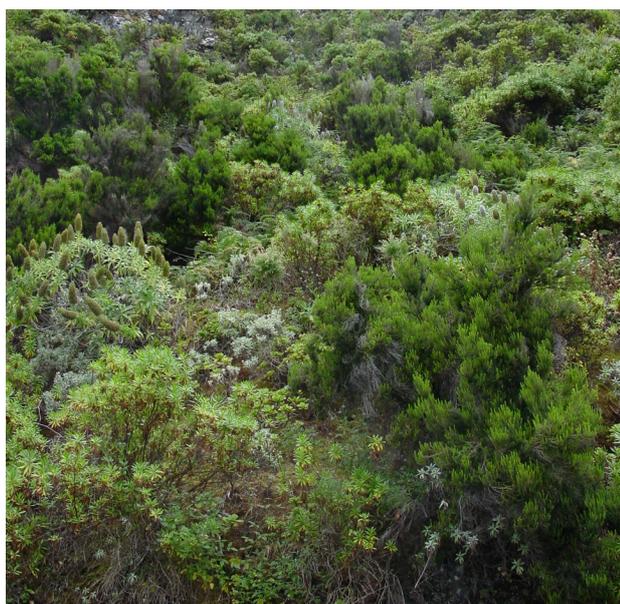
Macaronesian heath, north coast of Madeira island (Portugal) with *Erica playcodon* subsp. *maderincola*, *E. canariensis*, *Echium candicans* and *Globularia salicina* (Photo: Jorge Capelo).
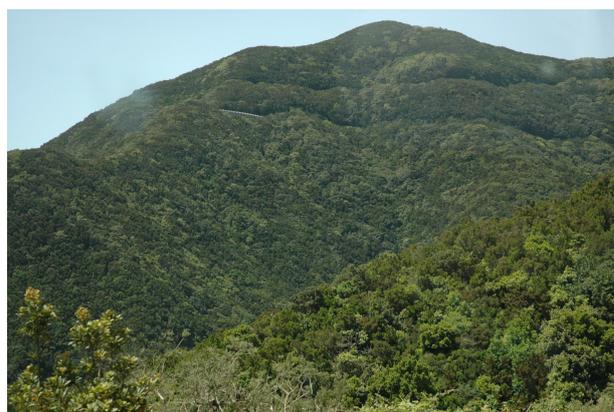
Slope with Macaronesian heath with *Erica canariensis* and *Morella faya* in Barranco de Las Huertas in San Andrés, Anaga, Northeast of Tenerife Island, Canaries, Spain (Photo: Marcelino del Arco).

Habitat description

Shrub communities of Azores, Madeira and the Canaries dominated or co-dominated by *Erica*, *Daboecia* or *Calluna* that are either i) pioneer, ii) permanent in thin soils or iii) seral or hedge of mature macaronesian forests (i.e. G2.7, G2.3). Although *Erica azorica*, *E. playcodon* subsp. pl. and *Erica canariensis* (= E. arborea sensu auct. can. & mad. non L.) may participate in the G2.7, G2.3 forest habitats, we strictly circumscribe the F4.3 type to the i), ii) and iii) conditions adding also iv) being nanophanerophytic. See also the G2.7 factsheet. This is a heterogeneous habitat with relation to biogeography, composition, structure and ecological context. Two main subtypes should be considered:

1) *Azorean heathland*. Azorean heahlands include several variants. i) A community dominated by *Daboecia azorica* with *Thymus caespititius* sitrictly permanent in pyroclast or volcanic rock nutrient-poor acidic leptosols, in the supratemperate belt of the Pico mountain (Pico island); ii) permanent communities of *Calluna vulgaris* with *Huperzia dentata* in recent lava fields (sometimes with post-XV century age); iii) *Erica azorica* pioneer communities that colonize former patches of *Juniperus brevifolia* mesotemperate microforest (G3.9c – *Culcito macrocarpae-Juniperenion brevifoliae* suballiance) and that collapsed by gravitational disturbance, *i.e.* catastrophic soil mass movements removing the juniper microforest, its blanket bog, the peat layer, and the placic (iron-pan) horizon. This heath is part of a 'cyclic-climax' dynamics that will lead again, by sucession, to juniper microforest and the above referred geomorphology; iv) Thermotemperate, occasionally thermomediterranean (S. Miguel island) low altitude, *Erica azorica* with *Morella faya* (= *Myrica faya*) heathland seral of *Picconia azorica* mature woodlands (G2.3 – *Myrico fayae-Pittosporion undulatti*) or permanent community in leptosols and rock outcrops or younger lava fields. A special variant of the later case are the *Corema azorica* termophyllous heaths in lava-fields up to 20 m.s.m.

2) *Madeiran and Canarian heathland*. Several variants of the habitat can be recognized. i) Shrub , sometimes tall-shrub, communities dominated by *Erica canariensis*, *E. platycodon* subsp. *platycodon* or *E. platycodon* subsp. *maderincola* along with *Morella faya*, *Ilex canariensis* (and sometimes in Madeira *Picconia excelsa*) that are the tall hedge of the laurel /heathy forests (G2.7, G23 – *Ixantho-Laurion, Sibthorpio-Clethrion and Polysticho-Ericion*) or many times their first seral stage (they are included in *Myrico-Ericion* in both archipelagos). Therefore, sometimes they include elements of the laurel forest (*Laurus, Prunus, Viburnum*, etc.). The *Erica platycodon* subsp. *maderincola* mantles of tree-heath forests in the summits of Madeira are, nevertheless, species-poor. In thin, rocky or dry soils it can have a permanent character. ii) Heath / broom communities that are, in general, seral stages of laurus /heathy forest, in concrete:- the second seral stage following the *Myrico-Ericion* stage. In steep, near-vertical slopes, they are admitted to be permanent communities. Along with the *Erica* species mentioned in 2) of low height, it also includes *Erica maderensis* (summits of Madeira only) and several species of genus *Teline, Adenocarpus, Argyranthemum, Echium, Chamaecytisus* that can be co-dominant in the heath /broom variant (see characteristic species, flora).

Indicators of good quality:

As its biogeography and ecological is so diverse, there isn´t a unique set of bioindicators of degradation. Thus, on each habitat stance, the loss of characteristic set of bioindicators must be evaluated in comparison to well-conserved descriptions of it (published phytosociological tables, for instance). In general, poorer versions tend to be dominated by just one or two species, few characteristics, less elements of the laurel /heathy forest and more plants of grassy stages. Also, the presence of aliens tends to be greater. In the case of the Azores: *Pittosporum undulatum, Clethra arborea, Melaleuca sp. pl., Metrosideros excelsa, Banksia integrifolia, Solanum mauritianum, Laurus azorica x nobilis, Hedychium gardneranum, Criptomeria japonica (*shrubby), *Acacia* sp. pl.; in the case of Madeira and the Canaries: *Ulex, Cytisus scoparius, Arundo, Acacia, Hackea, Callotropis, Opuntia, Ailanthus, Eucalyptus*, etc..

Characteristic species:

Vascular plants: For subtype #1): D*aboecia azorica* (dom.), *Erica azorica* (dom.), *Thymus caespititius* (dom.), *Calluna vulgaris* (dom.), *Dyphasiastrum maderense, Huperzia dentata, Huperzia suberecta, Palhinhaea cernua, Grammitis marginella subsp. azorica, Hypericum foliosum, Oreopteris limbosperma, Vaccinium cylindraceum* (dom.), *Corema azorica* (dom.). Also those of habitat G2.7 in the Azores tend to occur to some extent, especially: *Euphorbia stygiana, Myrsine retusa, Viburnum treleasi* and *Ilex azorica, Rubia agostinhoi (s. str.)* For subtype #2) : *Erica canariensis (= E. arborea sensu auct. can. & mad. non L.), Erica platycodon subsp. platycodon, E. platycodon subsp. maderincola, Erica maderensis, Morella faya (=Myrica faya), Ilex canariensis, Picconia excelsa, Marcetella maderensis, Andryala pinnatifida subsp. pinnnatifida, Bencomia caudata, Cedronella canariensis, Hypericum inodorum, Rubia fruticosa subsp. periclymenum, Bystropogon canariensis, Bystropogon punctatum, Dracunculus canariensis, Gesnouinia arborea, Hypericum grlandulosum, Hypericum grandifolium, Phyllis nobla, Sideritis canariensis, Sideritis macrostachys, Rhamnus glanulosus, Smilax canariensis, Canarina canariensis, Convolvulus canariensis, Cryptotaenia elegans, Adenocarpus foliosus, Chamaecytisus proliferus, Chamaecytisus canariae, Chamaecytisus palmensis, Cistus chinamandensis, Teline canariensis, Teline pallida, Teline uerifolia, Teline splendens, Teline stenopetala subsp. microphylla, Teline stenopetala subsp. stenopetala, Teline maderensis, Argyranthemum pinnatifidum subps. pinnatifidum, Argyranthemum pinnatifidum subsp. montanum, Bunium brevifolium, Echium candicans, Plantago arborescens subsp. costae, Plantago malato-belizii, Sideritis candicans.*

Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS:

F4.3 Macaronesian heath.

EuroVegChecklist (alliances):

Daboecion azoricae

Culcito macrocarpae-Juniperion brevifoliae (part).

Myrico fayae-Ericion arboreae (canariensis)

Telino canariensis-Adenocarpion foliolosi

Bystropogono puncatati-Telinion maderensis

Annex 1:

*4050 Endemic Macaronesian heaths

Emerald:

F4.3 Macaronesian heaths

MAES-2:

Heathland and shrub

IUCN:

3.4 Temperate shrubland

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?

Yes

Regions
Macaronesian

Justification
This type exclusively occurs in the Macaronesian region (Azores, Madeira and Canaries archipelagos).

Geographic occurrence and trends

EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Portugal	Madeira: Present Portugal Azores: Present Savage Islands: Present	963 Km^2	Increasing	Unknown
Spain	Canary Islands: Present	149 Km^2	Increasing	Increasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	537850 Km^2	120	1112 Km^2	
EU 28+	537850 Km^2	120	1112 Km^2	

Distribution map
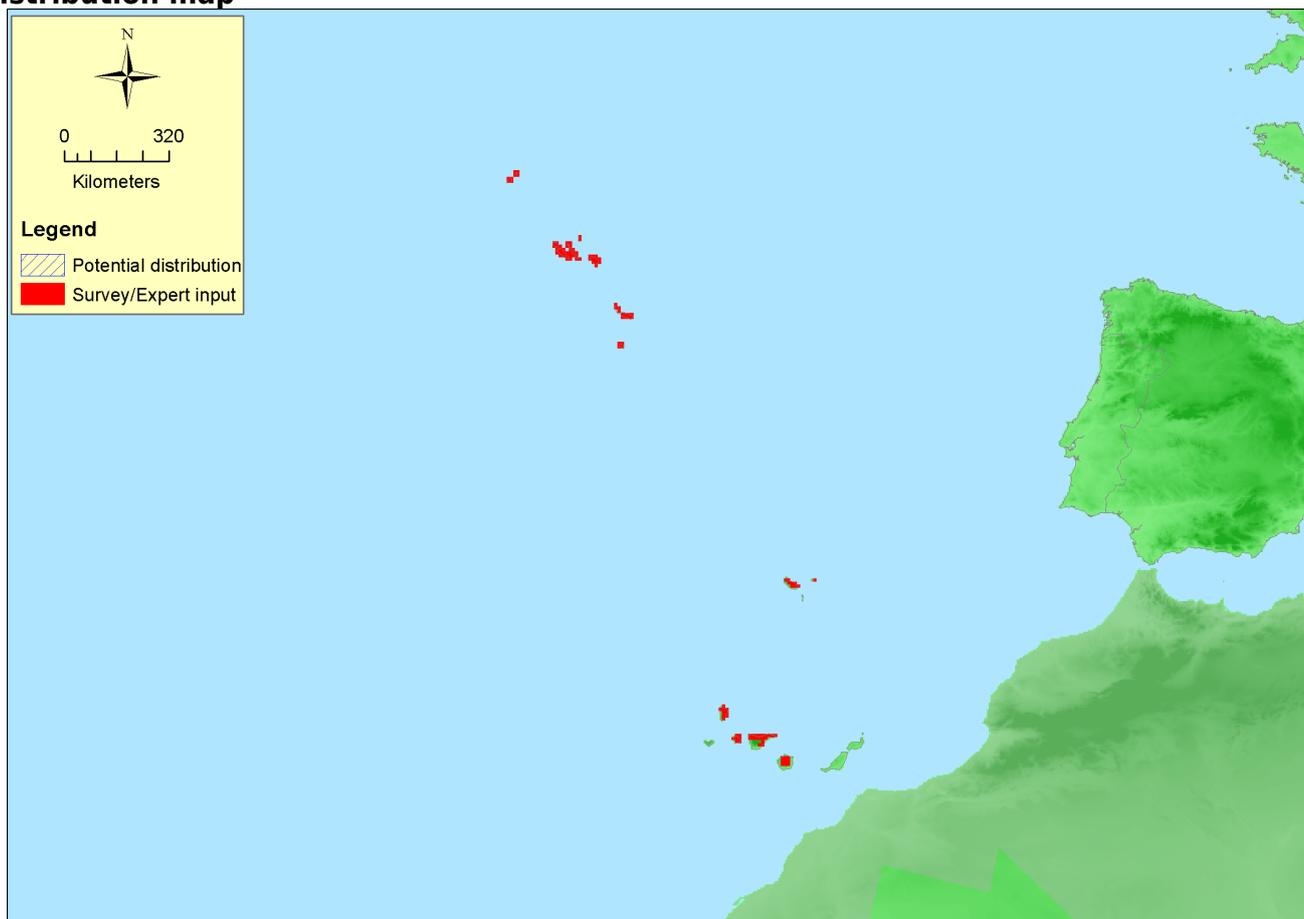
Map is complete. Data sources: Art17.

How much of the current distribution of the habitat type lies within the EU 28?

This habitat lies totally (100%) within the EU28 territory.

Trends in quantity

This habitat has increased in the recent decades as a result of some farmland abandonment in the midlands of the Macaronesian Islands. Due to its pioneer character, it has established in many of the old fields. Regeneration after logging of pine and eucalyptus plantations and the cutting of the lauroid forest also has caused an increase in its extent. In any case, if no disturbance (logging) happens for a long time, this heath will evolve toward lauroid forest and reduce in area.

- Average current trend in quantity (extent)
  EU 28: Increasing
  EU 28+: Increasing
- Does the habitat type have a small natural range following regression?
  No
  Justification
  The habitat has a No decline in this habitat as it is a secondary vegetation which establishes when disturbance regime releases. Thus it is now increasing due to the abandonment of many steep areas from sheep and goat herding, logging of pine and eucalyptus plantations.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The habitat is restricted to the Macaronesian archipelagos under high humidity conditions and thus is restricted to that area. It can occupy large sites however.

Trends in quality

The current tendency of the quality of this habitat is positive as far as many sites are still in a developmental stage after release of disturbance, but in the future it can be expected that maturation will advance and many of the sites will be in a transitional stage towards a natural forest.

- Average current trend in quality
  EU 28: Increasing
  EU 28+: Increasing

Pressures and threats

The most relevant threats are the pine and eucalyptus plantations, the invasion of exotic species of flora and fauna (rats), particularly intense in the Azores archipelago, and the climatic change with decrease of precipitation.

List of pressures and threats

Sylviculture, forestry

Artificial planting on open ground (non-native trees)

Transportation and service corridors

Paths, tracks, cycling tracks

Urbanisation, residential and commercial development

Dispersed habitation

Invasive, other problematic species and genes

Invasive non-native species

Climate change

> Droughts and less precipitations

Conservation and management

For the habiat it is best to keep the human intervention at a moderate level of logging and low frequency burning. In this way succession towards forest is limited.

List of conservation and management needs

Measures related to forests and wooded habitats

> Adapt forest management

Measures related to spatial planning

> Establish protected areas/sites
> Legal protection of habitats and species
> Manage landscape features

Conservation status

Annex 1:

4050: MAC FV

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

As a habitat linked to a quite high disturbance level, its recovery after disturbing episodes is relatively quick.

Effort required

10 years	20 years	50+ years	200+ years
Through intervention	Naturally	Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	4.8 %	-0.2 %	unknown %	unknown %
EU 28+	4.8 %	-0.2 %	unknown %	unknown %

Currently, a stable situation in quantity has been reported in most of the cases, with a low decrease expected for the next future in some others.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	537850 Km^2	Unknown	Unknown	unknown	120	No	Unknown	unknown	unknown
EU 28+	537850 Km^2	Unknown	Unknown	unknown	120	No	Unknown	unknown	unknown

Geographic distribution encompasses the archipelagos of the Azores, Madeira and Canaries, in which a

high number of localities are found. Although it has a restricted distribution, the EOO and AOO values and number of locations are higher than the thresholds for criteria B1, B2 and B3.

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	0.27 %	25 %	unknown %	unknown %	unknown %	unknown %
EU 28+	0.27 %	25 %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%

The quality assessment results in a low score due to the stable situation reported.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	unknown

There is no quantitative analysis available that estimates the probability of collapse of this habitat type.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	LC	LC	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	LC	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Confidence in the assessment
Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

Assessors
J. Loidi

Contributors

Habitat description: J. Capelo

Territorial data: J. Capelo, D. Espírito-Santo, J. Loidi

Working Group Heathland & Scrub: M. Aronsson, F. Bioret, C. Bita-Nicolae, J. Capelo, A. Čarni, P. Dimopoulos, J. Janssen, J. Loidi

Reviewers

J. Janssen

Date of assessment

15/10/2015

Date of review

17/03/2016

References

Arco, M.J., Wilpret de la Torre, W., Pérez de Paz, P.L., Rodríguez, O., Acebes, J.R., García, A., Martín, V.E., Reyes, J.A., Salas, M., Díaz, M.A., Bermejo, J.A., González, R., Cabrera, M.V. & García, S. (2006). *Mapa de vegetación de Canarias*. Santa Cruz de Tenerife. GRAFCAN.

Capelo, J. (2006, ed.). A paisagem vegetal de ilha da Madeira. *Quercetea* 6: 3-200.

Rodríguez Delgado, O. (2003, ed.). *Apuntes sobre flora y vegetación de Gran Canaria*. Guía de la excursión geobotánica de las XIX Jornadas de Fitosociología y Simposio Internacional de la FIP, Cabildo Insular de Gran Canaria (Medio Ambiente y Aguas), Gran Canaria, 271 pp.