

# Ecological fundamentals, methodology and practice in FRV assessment of Macaronesian habitat types

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FRV are the minimal proportions of range/area that, in principle, allow the global viability of the habitat

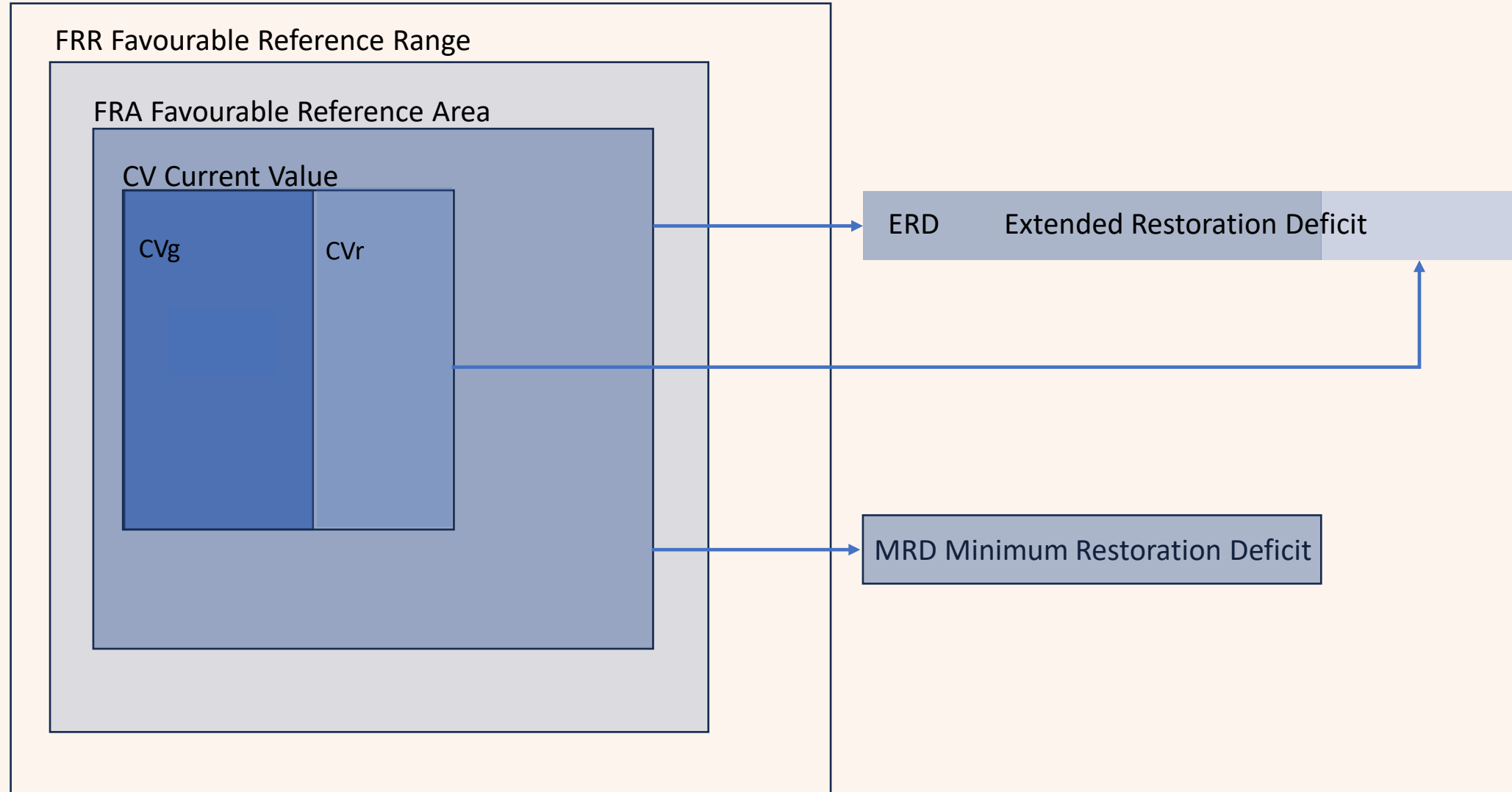
**Table 2.1** *Definitions of favourable reference values by the Habitats Committee in 2004 (European Commission, 2005)*

FRV	Definition
FRR	Range within which all significant ecological variations of the habitat/species are included for a given biogeographical region and which is sufficiently large to allow the long term survival of the habitat/species; favourable reference value must be at least the range (in size and configuration) when the Directive came into force.
FRA	Total surface area of habitat in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the habitat type; this should include necessary areas for restoration or development for those habitat types for which the present coverage is not sufficient to ensure long-term viability; favourable reference value must be at least the surface area when the Directive came into force.

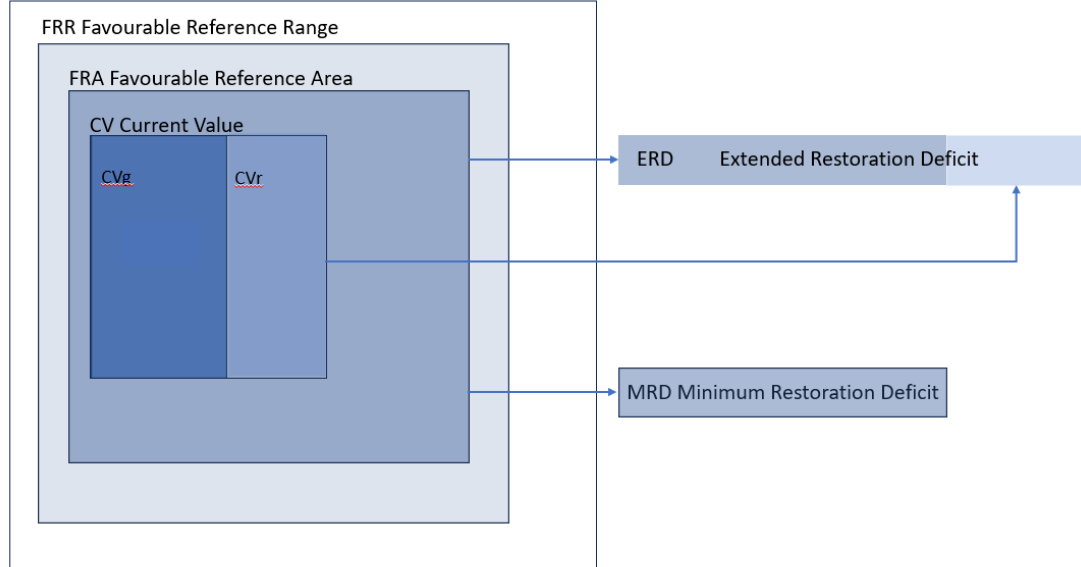
Bijlsma et al. (2019)

# FRV proportions of range/area differentiate by potential, actual and ecological quality (conservation status)

AT Area of Territory



AT Area of Territory



FRV – Favourable Reference Values ( of areas of habitat) :

1. FRR Favourable Reference Range
2. FRA Favourable Reference Area (*minimum FRA area or proportion FRA/FRR viable*)
3. CV Current Value
4. CVg Current Value in good Conservation Status
5. CVr Current Value not good CS, but restorable
6. MRD Minimum Restoration Deficit  $MRD = FRA - CV$  or  $MRD = FRA - CVg - CVr$
7. ERD Extended Restoration Deficit  $ERD = MRD + CVr$
8. *Repeat for every sub-type [goto #1]*



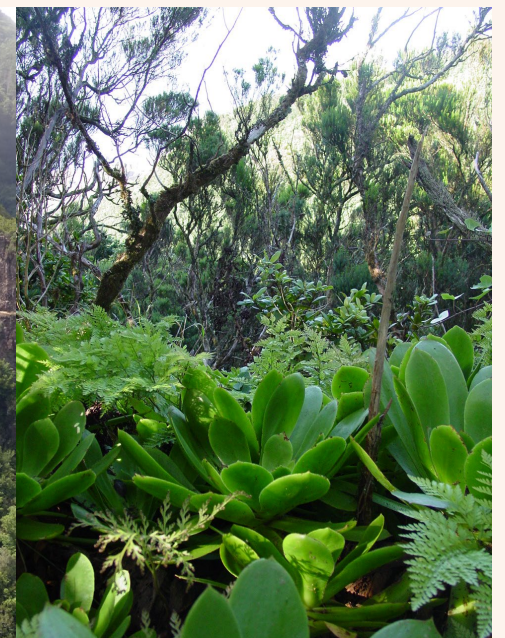
*Picconia* forest Azores



*Laurus – Ilex* forest Azores

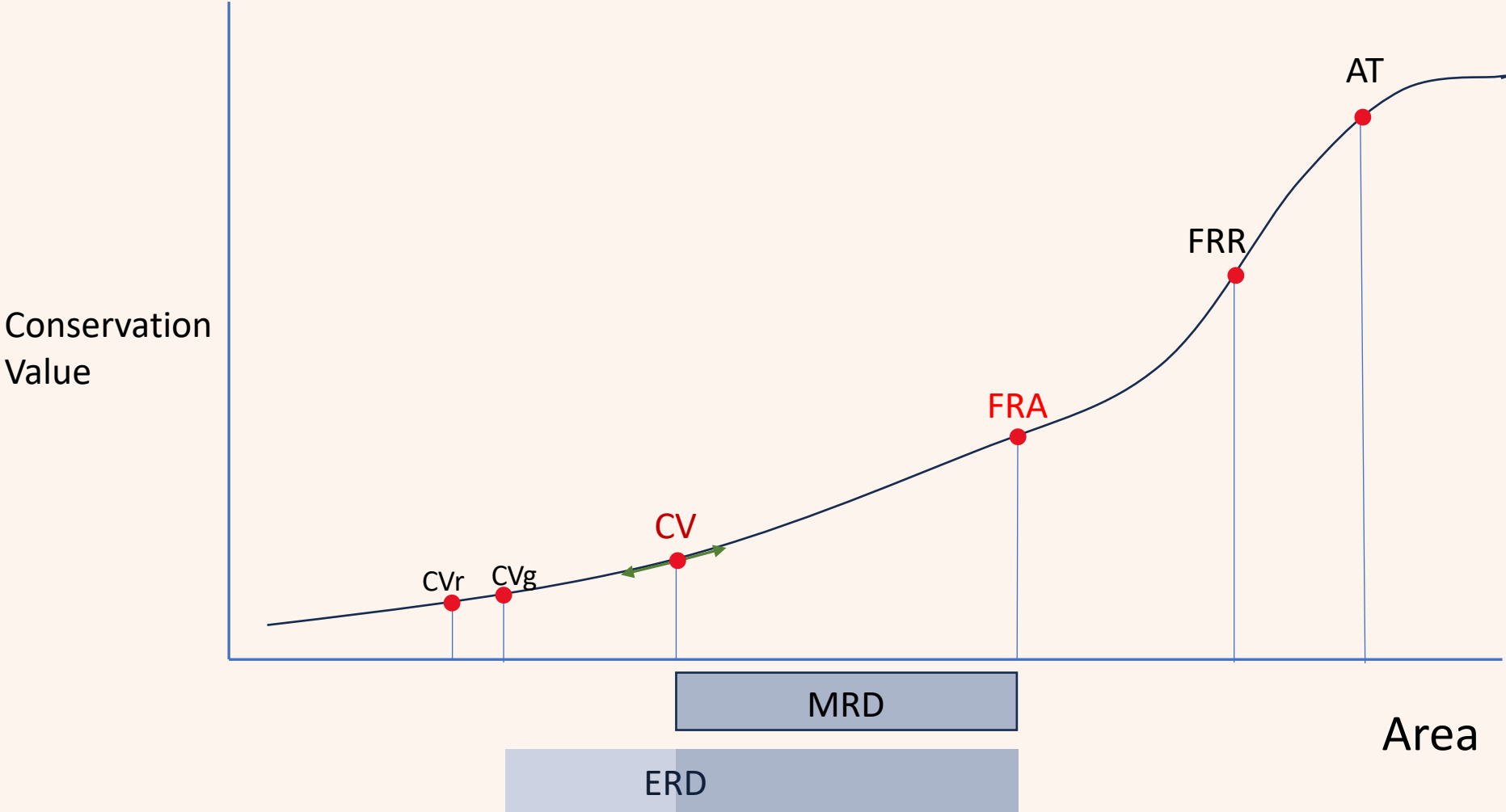


*Ocotea* forest Madeira



*Arbutus* forest Canaries

FRV – Area criteria

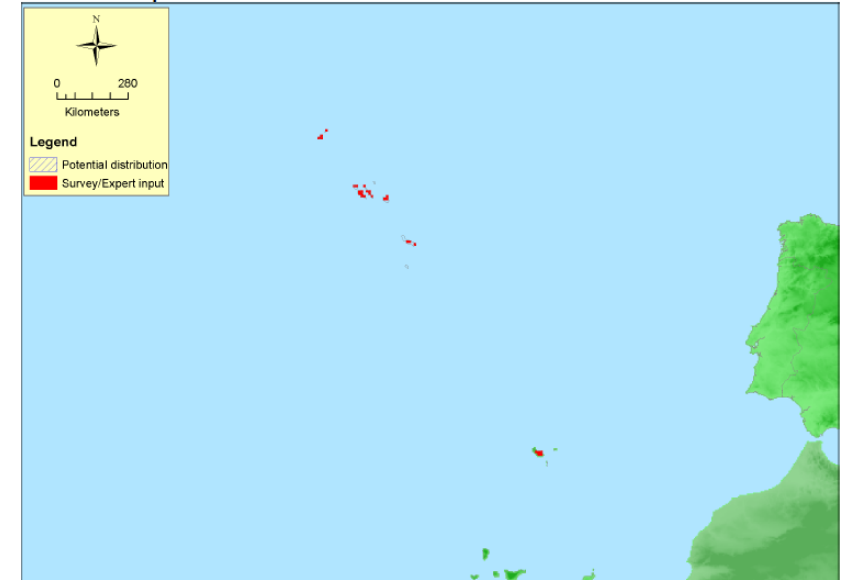


## FRV assessment SOURCES

1. FRR
  - a) *EOO Extent of Occurrence*
  - b) *NPV Natural Potential Vegetation*
  - c) *SDM Species [habitat] Distribution Models Maxent*
  - d) *historical references*
2. FRA
  - a) *UICN 'vulnerable'*
  - b) *cf. RED List habitats of Europe*
  - c) *keystone population or functional - based*
  - d) *minimal-area methods*
  - e) *Probabilistic methods*
  - f) *expert judgement*
  - g) *connectivity models*
3. CV Current Value
  - a) *land use*
  - b) *remote sensing*
4. CVg Current Value in good Conservation Status
  1. *in-field assessment*
  2. *Remote sensing*
5. CVr Current Value not good CS, but restorable [*idem 4*]

Extent of Occurrence, Area of Occupancy and habitat area				
	Extent of Occurrence (EOO)	Area of Occupancy (A00)	Current estimated Total Area	Comment
EU 28	107950 Km <sup>2</sup>	28	8 Km <sup>2</sup>	
EU 28+	107950 Km <sup>2</sup>	28	8 Km <sup>2</sup>	

Distribution map



Criterion A: Reduction in quantity

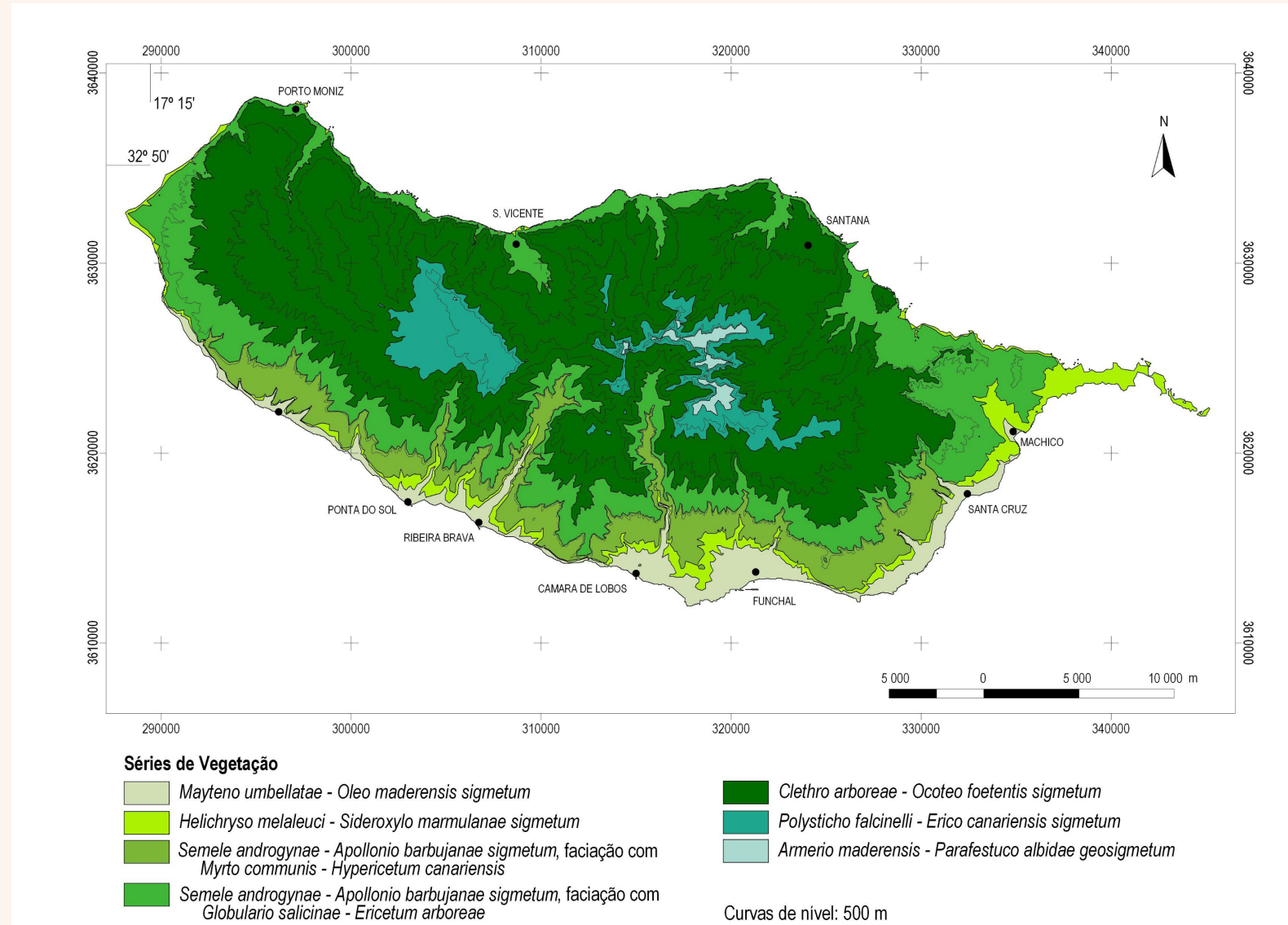
Criterion A	A1	A2a	A2b	A3
EU 28	-53 %	stable %	stable %	>-50 %
EU 28+	-53 %	stable %	stable %	>-50 %

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	A1	Endangered	A1

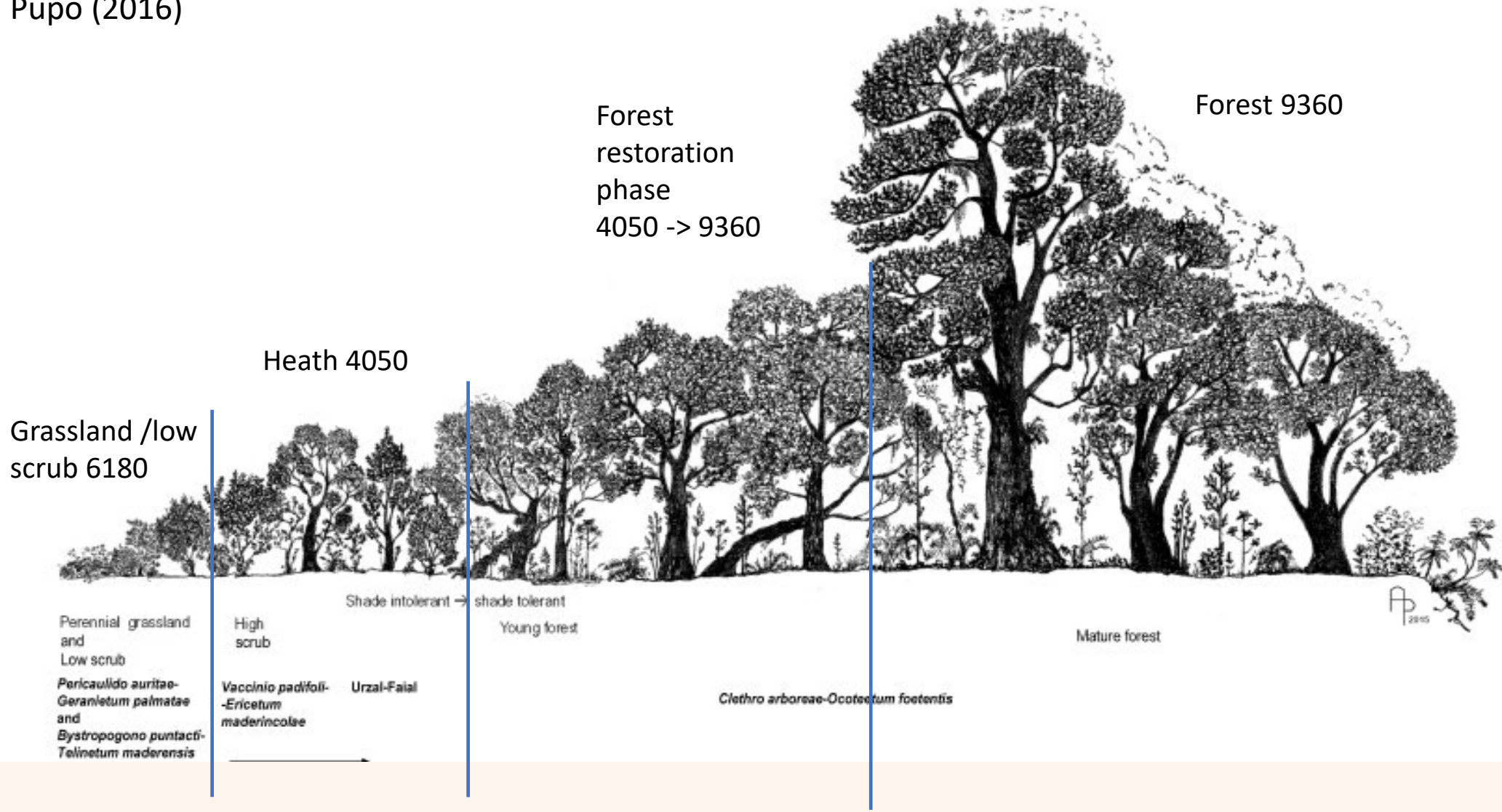
EXAMPLE : *Madeira archipelago*

*Habitats: Forests 9360, heath 4050, grassland 6180*

1. FRR Natural Potential Vegetation model (NPV, Capelo et al., 2004, 2010)
2. FRA WIP of the MAC 'Laurel Forest' WG
3. CV estimates from geobotanical vs. Land Use Models (Mesquita et al. 2014)
4. Idem 3.
5. Idem 3.
6. To evaluate
7. To evaluate

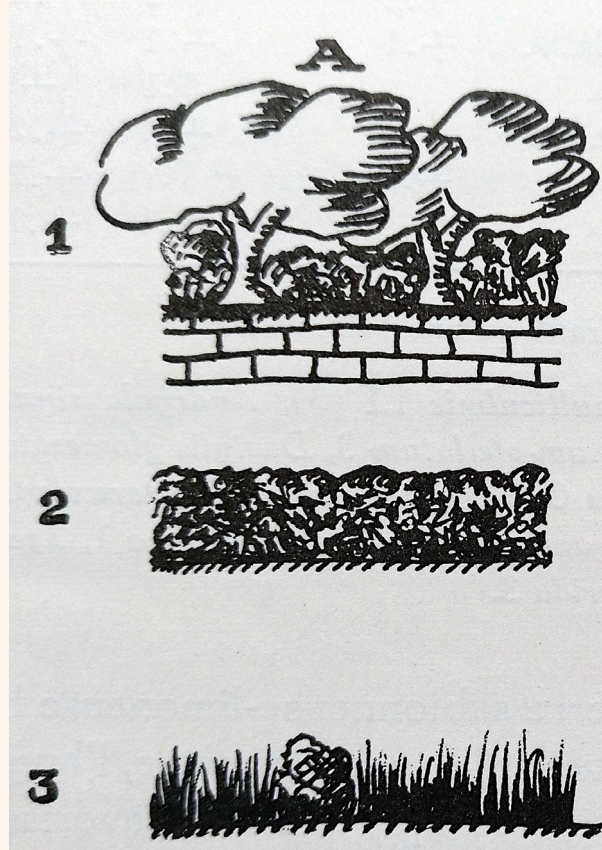


Pupo (2016)

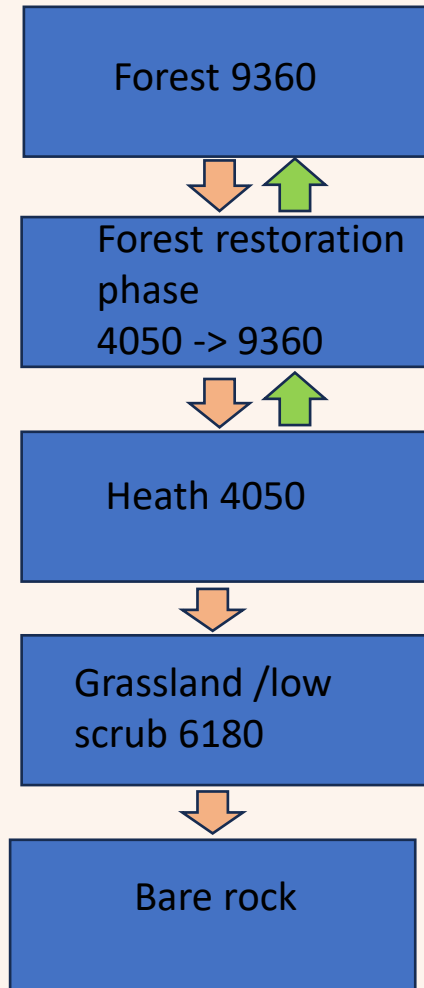




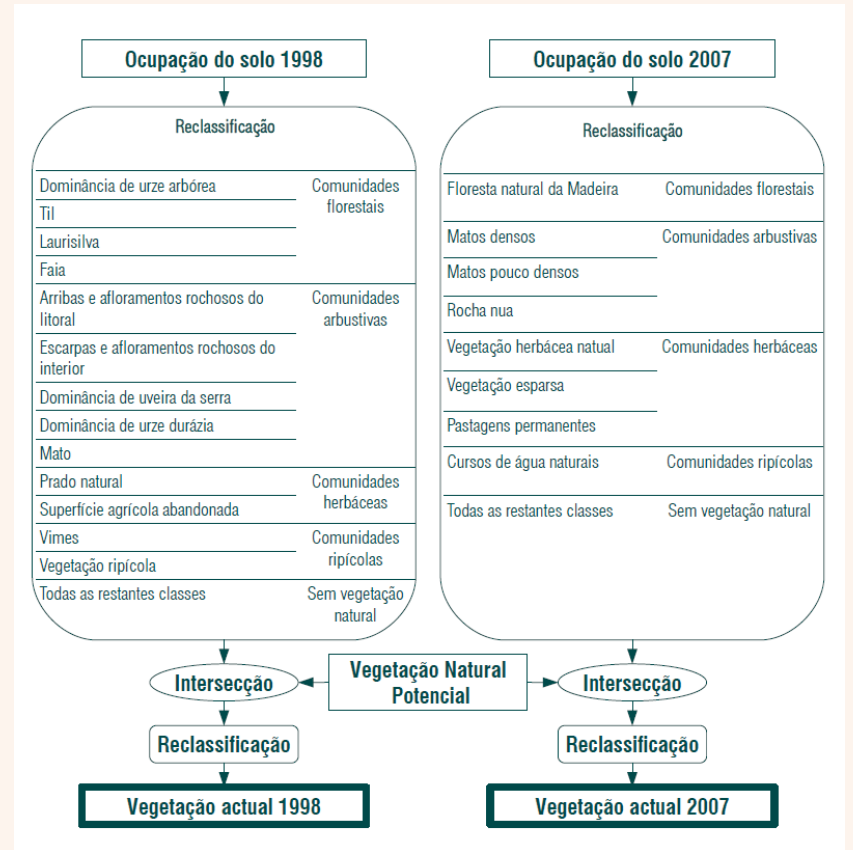
Braun-Blanquet et al. (1956)



Mesquita, Capelo & Sequeira (2010)

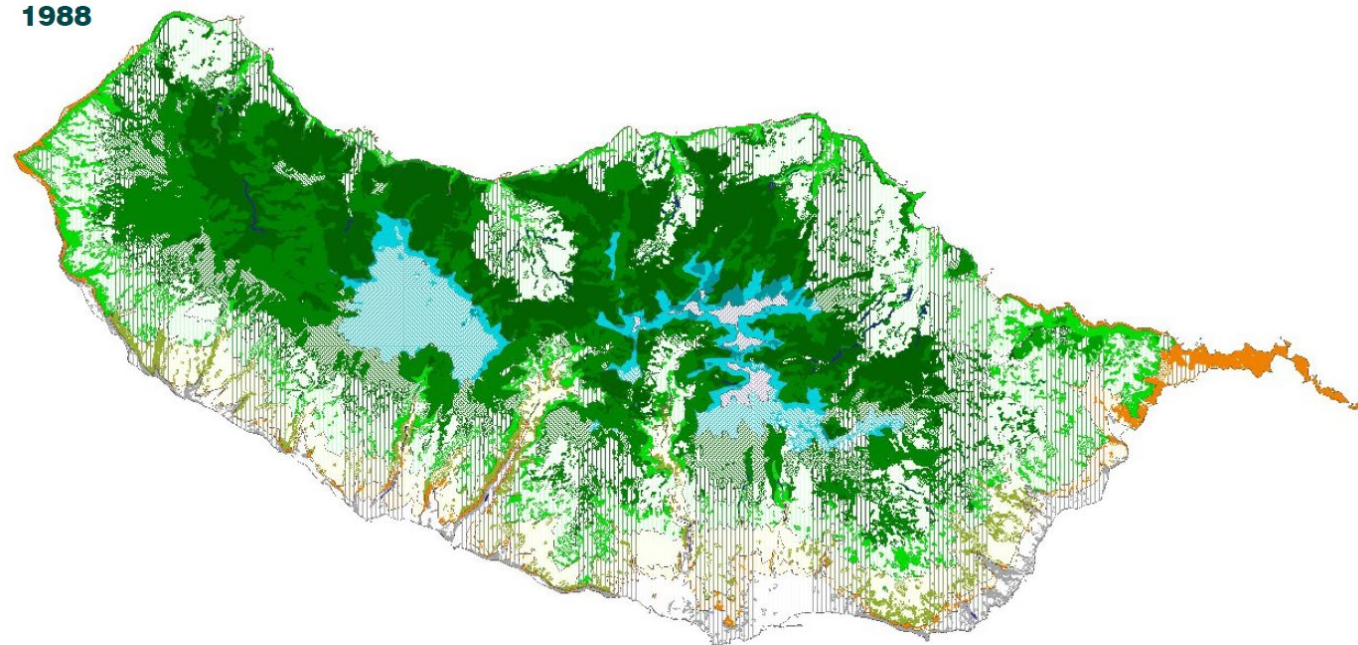


collapse  
 sucession /restoration

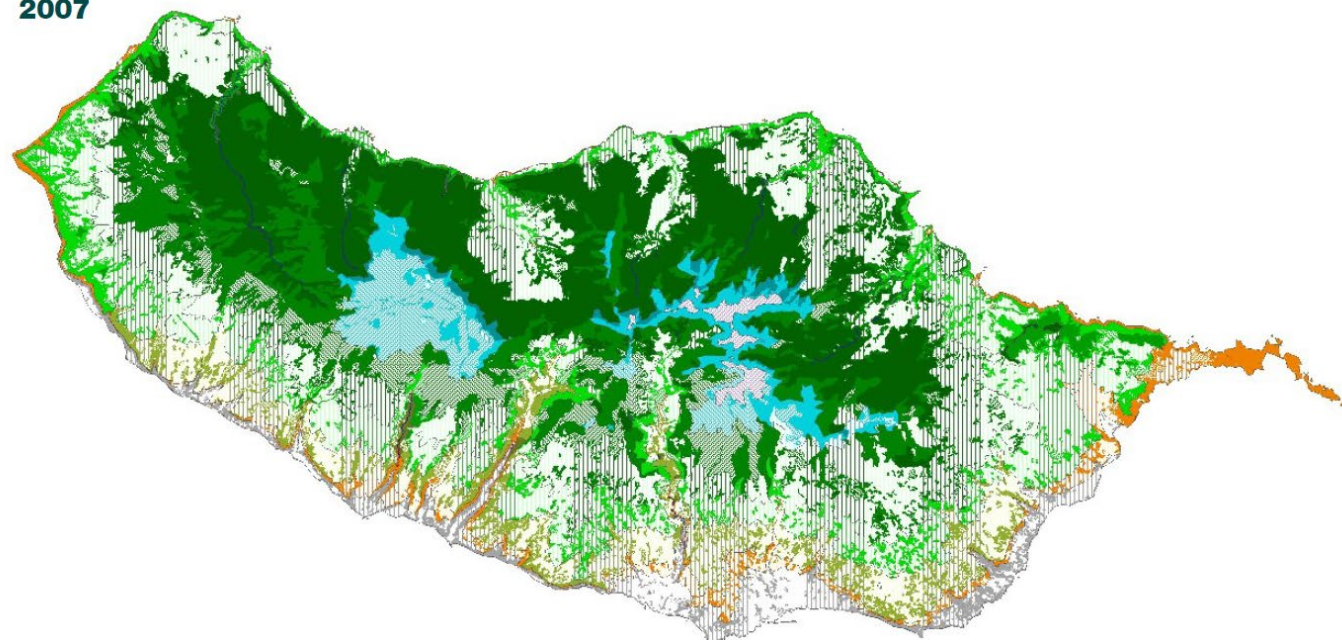


	Nº de endemismos da Madeira	Área em 1988 (ha)	Área em 2007 (ha)	Varição de área (ha)
<b>Mayteno umbellatae-Oleeo maderensis Sigmetum</b>	90	802	1164	<b>362</b>
Comunidades florestais	15	0	4	4
Comunidades arbustivas	34	613	1032	419
Comunidades herbáceas	41	189	128	-61
Sem vegetação	-	2763	2397	-366
<b>Helichryso melaleuci-Sideroxylo marmulanae Sigmetum</b>	80	1255	1451	<b>196</b>
Comunidades florestais	16	0	30	30
Comunidades arbustivas	17	1056	1272	216
Comunidades herbáceas	47	199	149	-50
Sem vegetação	-	2094	2397	303
<b>Semele androgynae-Apollonio barbujanae S. fac. seca</b>	61	1439	2229	<b>790</b>
Comunidades florestais	18	11	124	113
Comunidades arbustivas	24	842	1579	737
Comunidades herbáceas	19	586	526	-60
Sem vegetação	-	5889	5114	-775
<b>Semele androgynae-Apollonio barbujanae S. fac. húmida</b>	100	4824	5168	<b>344</b>
Comunidades florestais	18	501	1267	766
Comunidades arbustivas	36	2581	2883	302
Comunidades herbáceas	46	1742	1018	-724
Sem vegetação	-	10692	10397	-295
<b>Clethro arboreae-Ocoteo foetentis Sigmetum</b>	186	26160	25600	<b>-560</b>
Comunidades florestais	87	10797	14125	3328
Comunidades arbustivas	67	10310	7672	-2638
Comunidades herbáceas	32	5053	3803	-1250
Sem vegetação	-	12087	12731	644
<b>Polysticho falcinelli-Erico arboreae Sigmetum</b>	93	4991	4881	<b>-110</b>
Comunidades florestais	21	510	557	47
Comunidades arbustivas	33	1574	1917	343
Comunidades herbáceas	39	2907	2407	-500
Sem vegetação	-	132	229	97

**1988**



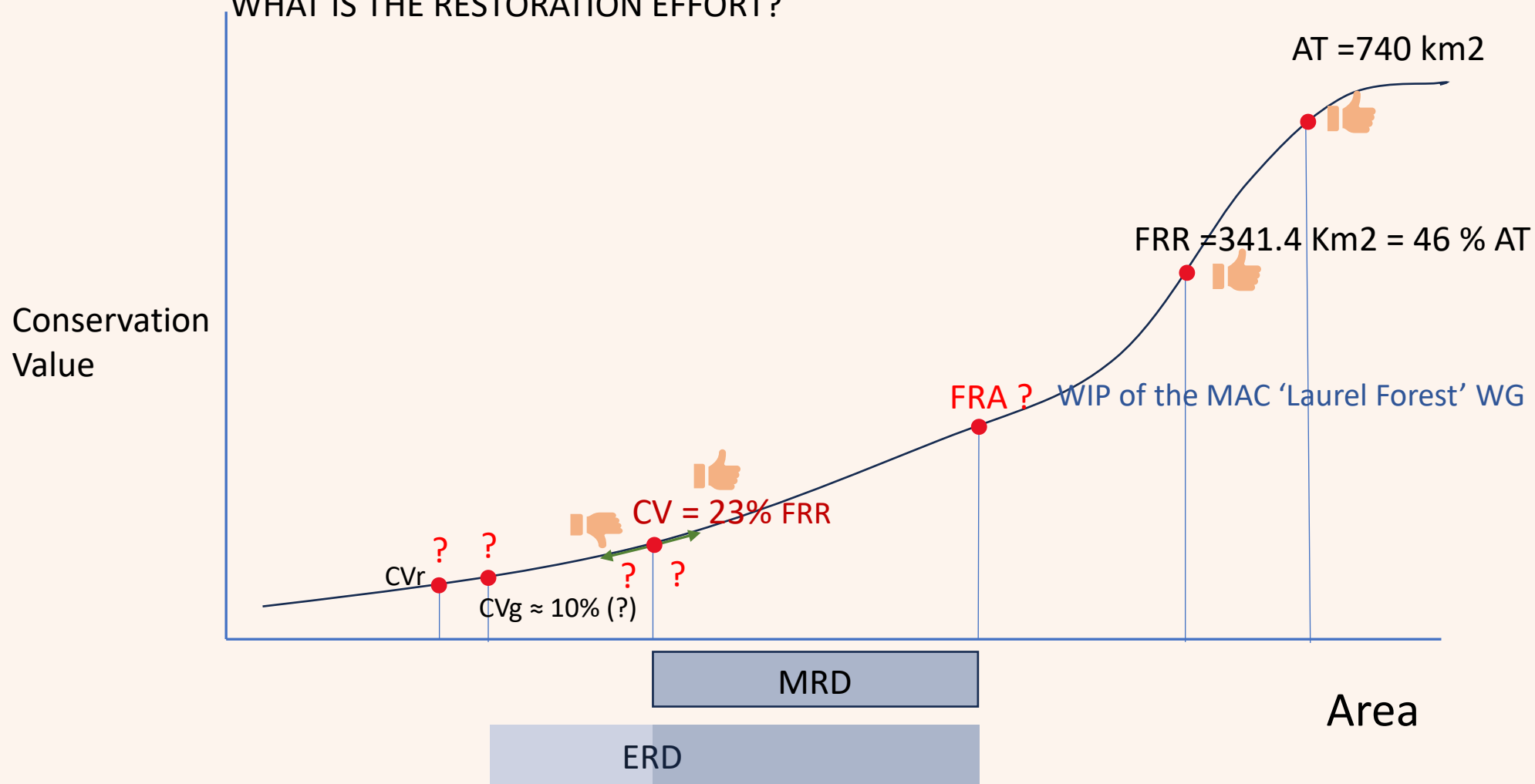
**2007**



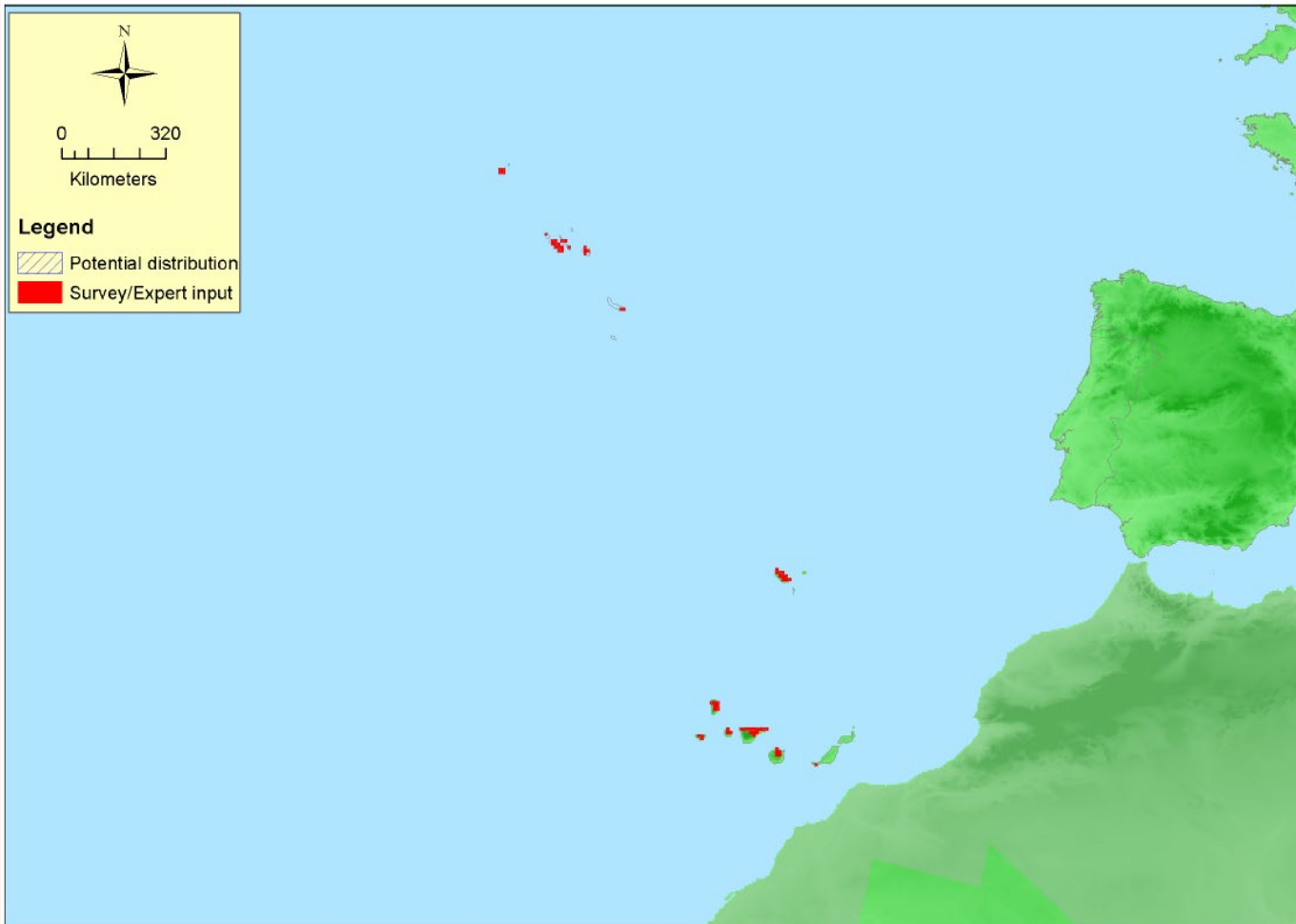
# MACARONESIAN LAUREL FOREST 9360 SUB-TYPE OF MADEIRA ISLAND :

WHERE REALLY LIE FRVs?

WHAT IS THE RESTORATION EFFORT?



## G2.3 Macaronesian laurophyllous woodland



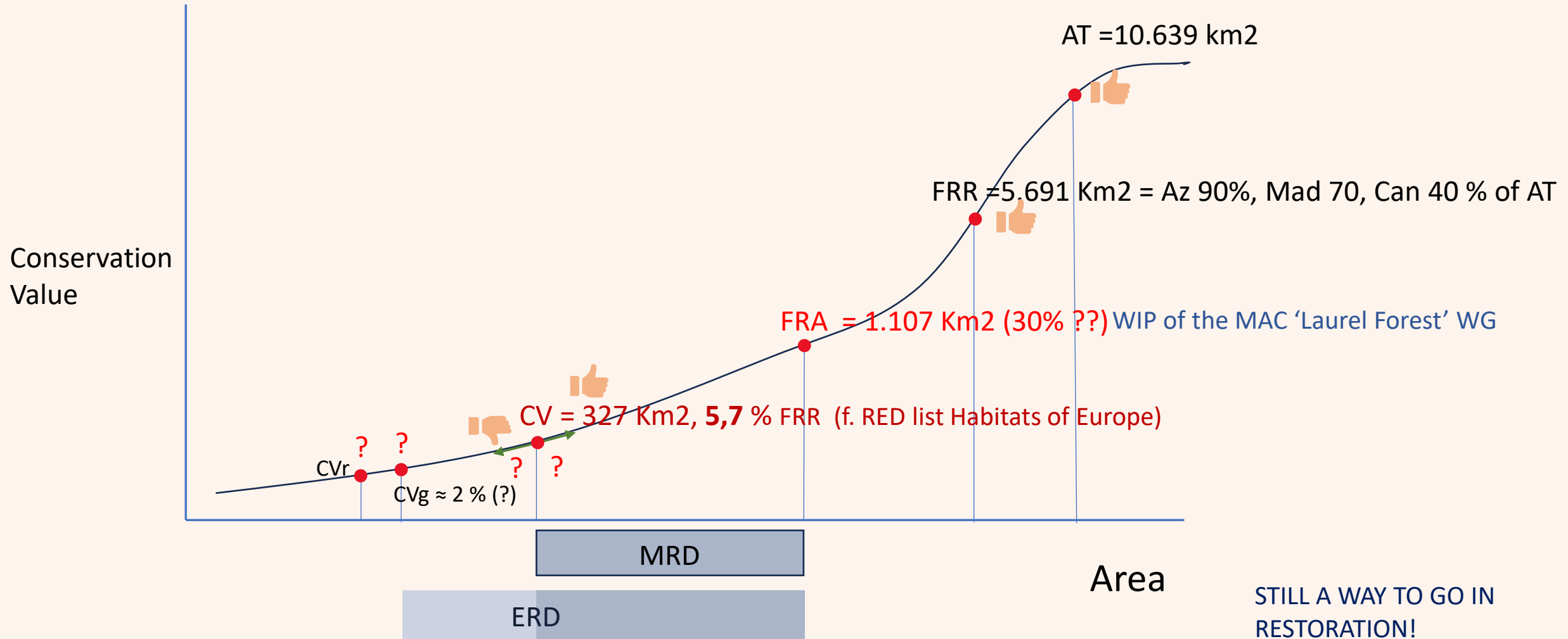
### Geographic occurrence and trends

EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Portugal</i>	Madeira: Present Portugal Azores: Present	267 Km <sup>2</sup>	Increasing	Unknown
<i>Spain</i>	Canary Islands: Present	60 Km <sup>2</sup>	Increasing	Decreasing

### Overall Category & Criteria

EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A3	Vulnerable	A3

MACARONESIAN LAUREL FOREST 9360 CANARIES, MADEIRA & AZORES : WHERE REALLY LIE FRVs?  
 WHAT IS THE RESTORATION EFFORT?



STILL A WAY TO GO IN RESTORATION!  
**THANK YOU!**