

2nd Mediterranean Plant Conservation Week

"Conservation of Mediterranean Plant Diversity: Complementary Approaches and New Perspectives"

CONTINUOUS MONITORING OF ENDANGERED FLORA IN MENORCA (BALEARIC ISLANDS, SPAIN) AS A SOURCE FOR GENERATING LONG-TERM CONSERVATION TOOLS

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Background: an overview of Menorca

Surface: 702 km²

Main length: 48,4 km

Rainfall: 572,6 l/m²

Highest point: 357 m

Temperature Av. max. 20,5 °C

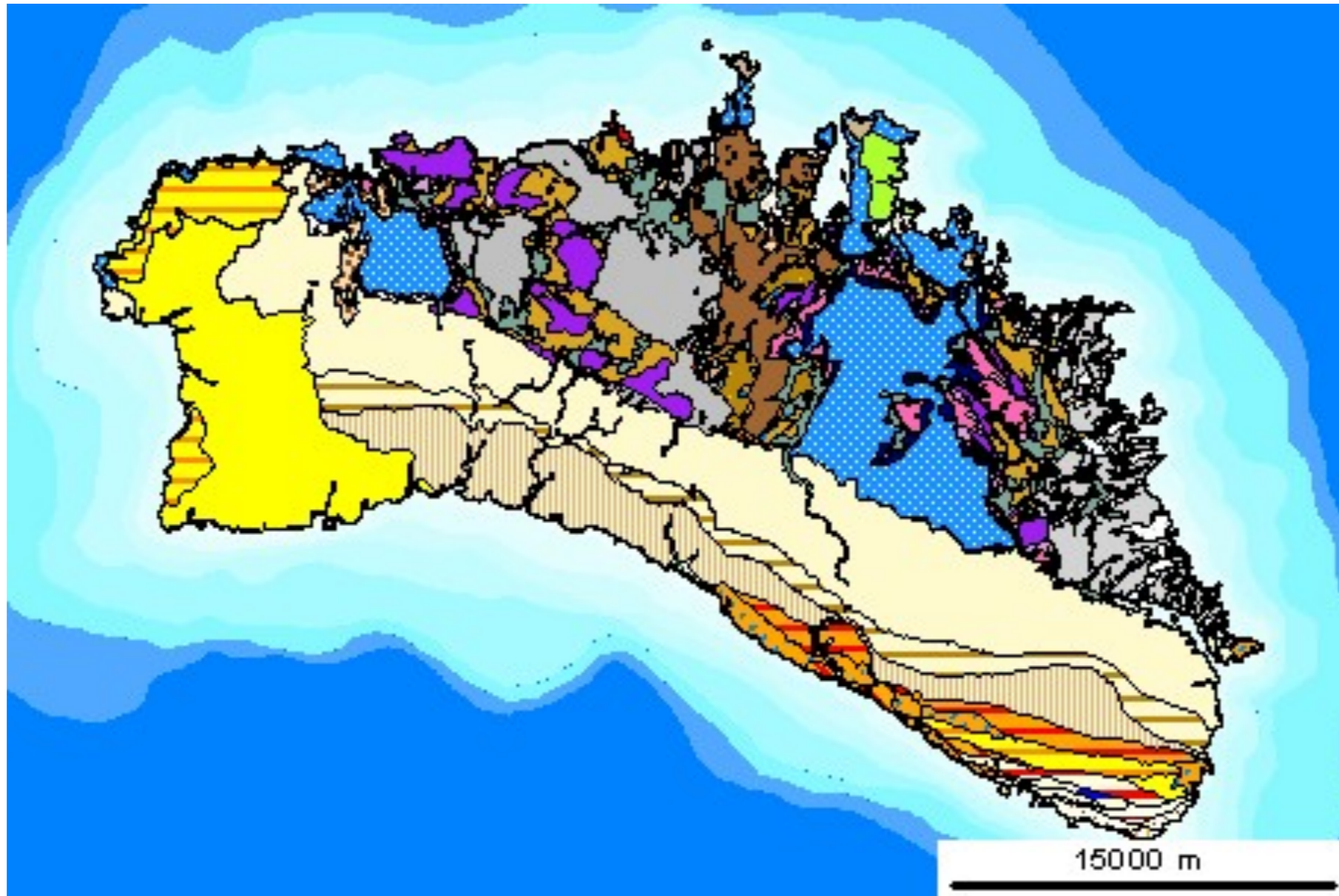
Av. min. 13,5 °C

Main width: 23,2 km



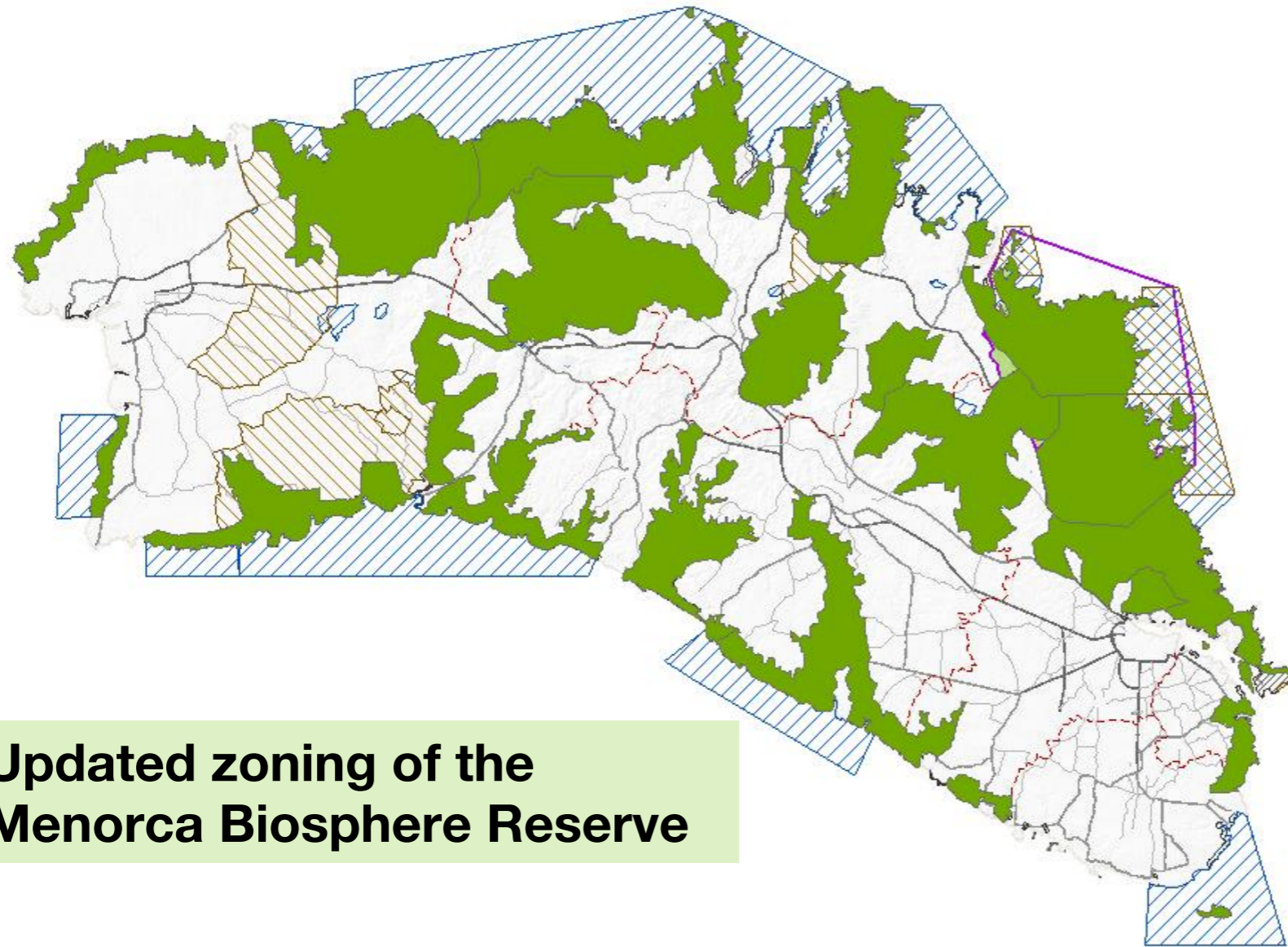
Background: an overview of Menorca

A territory with a diversified geology



Background: an overview of Menorca

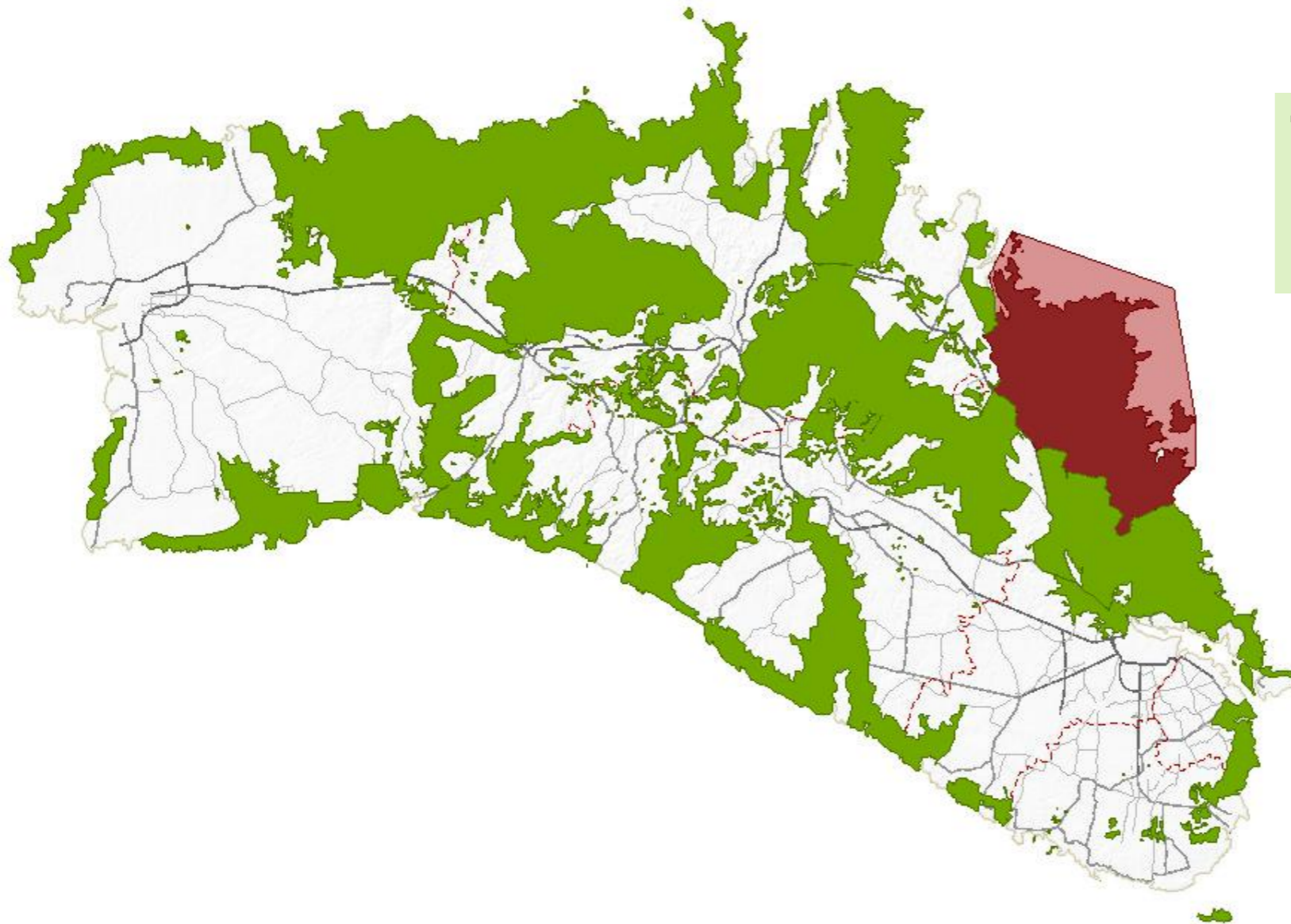
Evolution of the environmental protection of the territory



**Natura 2000
+
Regional land
protection (ANEI)**

**Updated zoning of the
Menorca Biosphere Reserve**

Background: an overview of Menorca

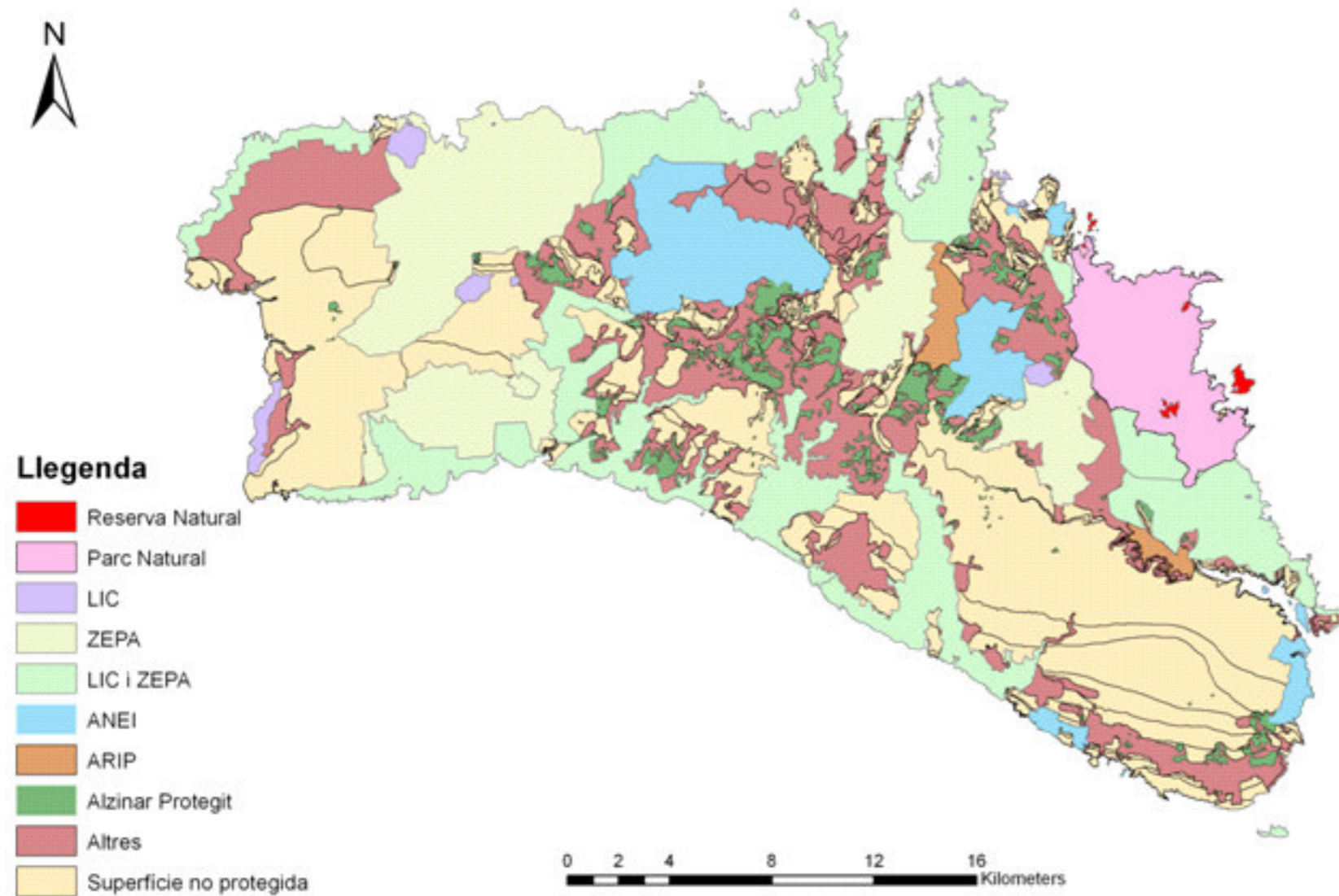


**The whole island is
Biosphere Reserve
since 1993**



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Background: an overview of Menorca



In 2003 the approval of the Insular Territorial Plan (PTI) created new protected areas

67% of the island has some type of environmental protection

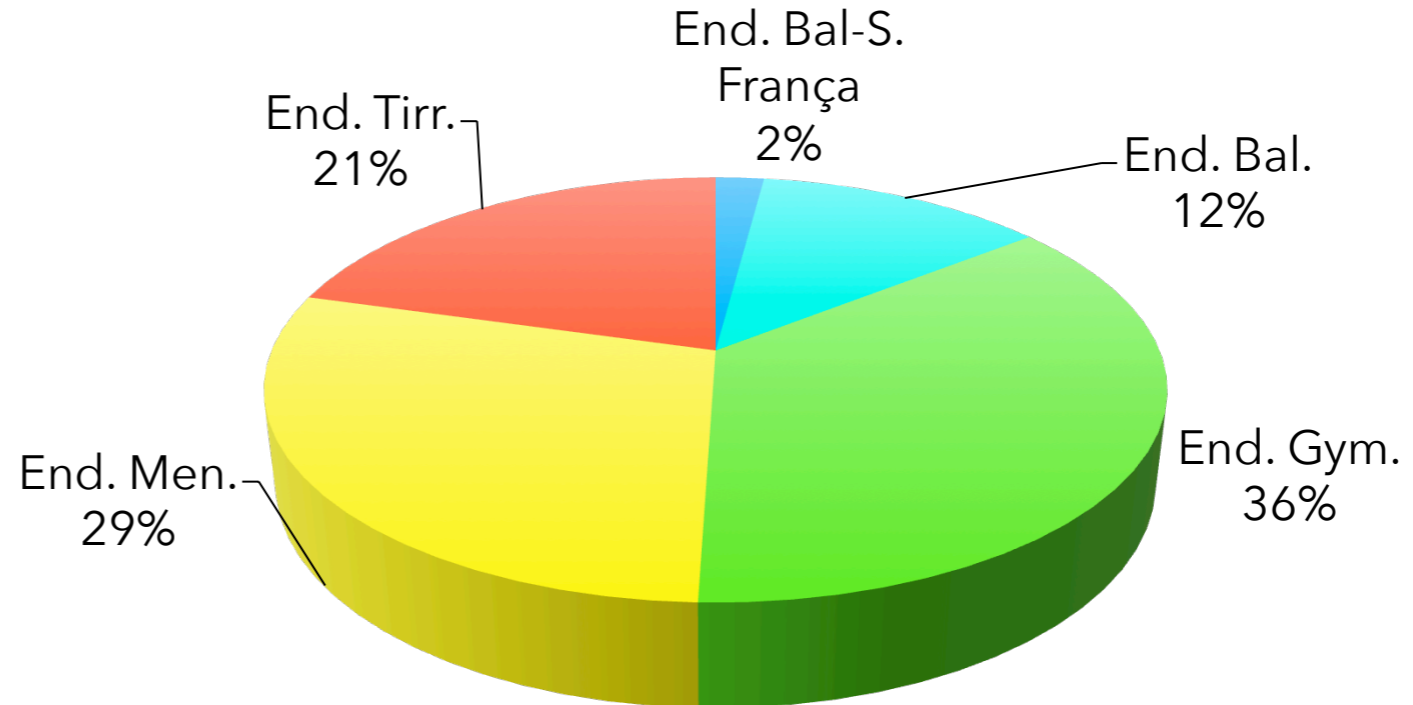
Source: LIFE+ BOSCOS

[http://lifeboscos.cime.es/WebEditor/Pagines/Territori%20amb%20figures%20de%20proteccio%20ambiental\(10\).pdf](http://lifeboscos.cime.es/WebEditor/Pagines/Territori%20amb%20figures%20de%20proteccio%20ambiental(10).pdf)



Background: an overview of Menorca

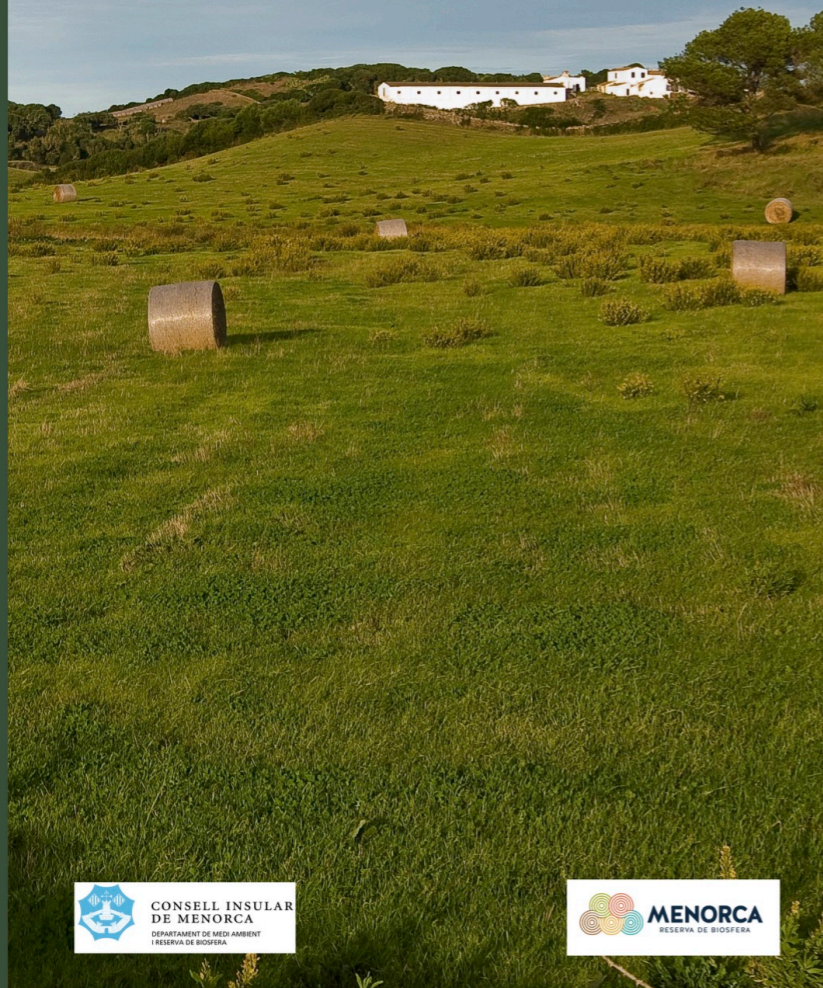
Vascular flora of Menorca: 1.412 taxa
Endemics: ca. 90 (7%)
Introduced: 233 (16%)
Endangered (< 5 localities): 408 (29%)
Legal protection: 51 (4%)



Biodiversity Monitoring of Menorca

DEPARTAMENT DE MEDI AMBIENTE I RESERVA DE BIOSFERA

ESTRATEGÍA DE CONSERVACIÓN DE LA BIODIVERSIDAD EN LA RESERVA DE BIOSFERA DE MENORCA



2015 - BIODIVERSITY CONSERVATION STRATEGY IN THE MENORCA BIOSPHERE RESERVE

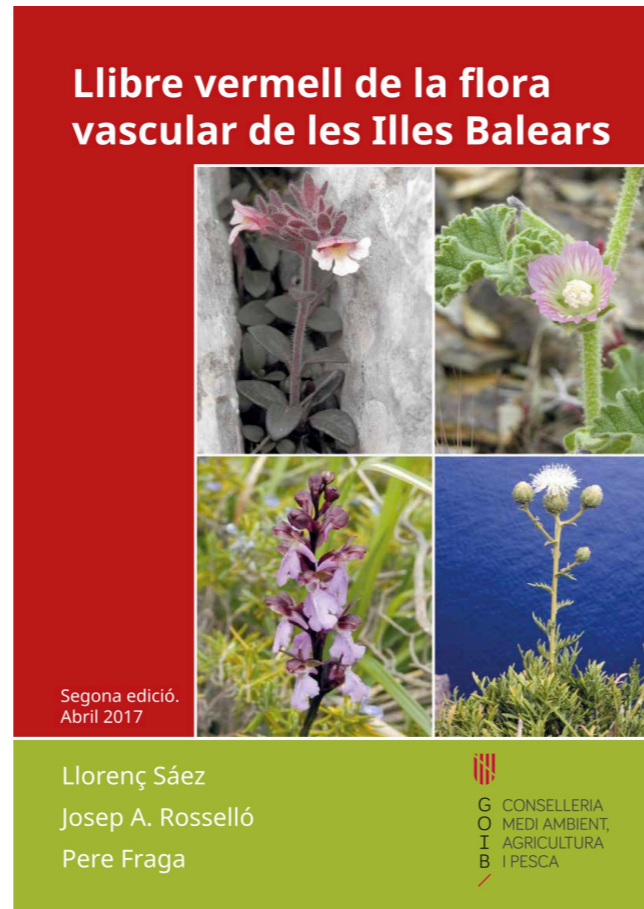
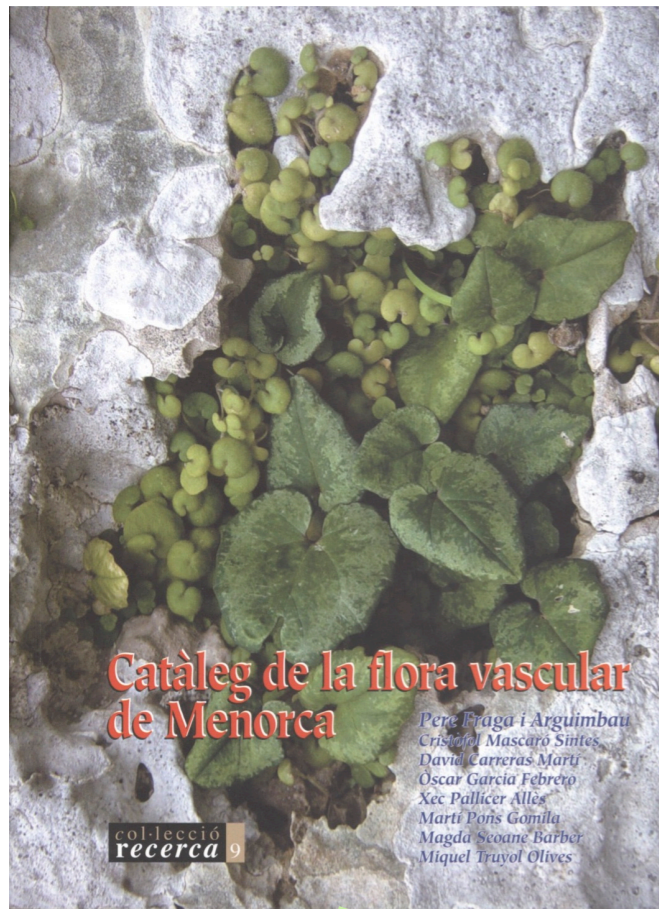
Main objective: To stop the loss of biodiversity and achieve a favourable conservation status of habitats and species

WORKING OBJECTIVES:

1. Scientific-technical knowledge to make planning and management decisions
2. To promote biodiversity conservation actions
3. Facilitate access to information about biodiversity
4. Improve coordination and cooperation between all entities that work in the conservation of biodiversity.
5. Create new opportunities through the conservation of biodiversity
6. Guarantee the existence of sufficient economic, material, human, technical and conservation resources for the established objectives.



Biodiversity Monitoring of Menorca: vascular flora



COMISSIÓ DE BOTÀNICA



**CONTINUOUS AND
CRITICAL UPDATE ON
THE FLORA OF MENORCA**

SELECTION OF PLANT TAXA FOR MONITORING



Biodiversity Monitoring of Menorca: vascular flora

GROUP I (2015). INTENSIVE MONITORING OF ENDANGERED ENDEMIC (wide sense). Wit

GROUP II (2016). INTENSIVE MONITORING OF ENDANGERED NO ENDEMIC.
Evaluation of group I.

GROUP III (2017). INTENSIVE MONITORING OF MEDITERRANEAN TEMPORARY PONDS TAXA. Evaluation of groups I & II.

GROUP IV (2018). INTENSIVE MONITORING OF PLANTS OF CULTIVATED FIELDS.
Evaluation of groups I, II & III.

GROUP I (2019). INTENSIVE MONITORING OF ENDANGERED ENDEMIC (wide sense). Without approved management plan. Evaluation of groups II, II & IV

GROUP II (2020). INTENSIVE MONITORING OF ...



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Endemics: 16 taxa

Allium antonii-bolosii
Allium savii
Anthyllis hystrix
Aristolochia bianorii
Cymbalaria fragilis
Daphne rodriguezii
Erodium reichardii
Femeniasia balearica
Helichrysum crassifolium
Limonium fontqueri
Malva minoricensis
Pastinaca lucida
Rhamnus ludovici-salvatoris
Urtica atrovirens subsp. *atrovirens*
Vicia bifolilata
Viola stolonifera



Malva minoricensis



Urtica atrovirens

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No endemics: 20 taxa

Allium nigrum
Althaea officinalis
Anthemis secundiramea
Asplenium billotii
Calamintha nepeta subsp. *nepeta*
Calystegia silvatica
Fumana juniperina
Lotus gracile
Lotus preslii
Malcolmia littorea
Matthiola tricuspidata
Orobanche cernua
Orobanche foetida
Ranunculus repens
Rumex intermedius subsp. *algarbiensis*
Rumex palustris
Scilla obtusifolia
Scolymus grandiflorus
Sonchus aquatilis
Tripolium pannonicum



Orobanche foetida



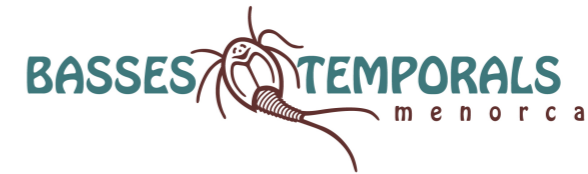
Anthemis secundiramea



Allium nigrum

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Temporary ponds: 15 taxa



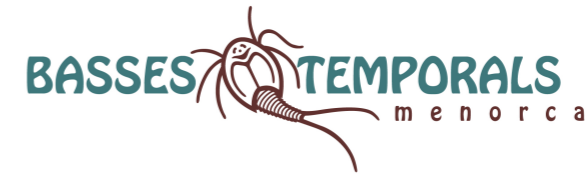
Eleocharis acicularis
Eleocharis mamillata
Galium debile
Isoetes longissima
Isolepis pseudosetacea
Lysimachia minima
Marsilea strigosa
Myriophyllum alterniflorum
Pilularia minuta
Pulicaria vulgaris
Trifolium micranthum
Trifolium ornithopodioides
Trifolium striatum subsp. *brevirens*
Thymelaea gussonei
Verbena supina



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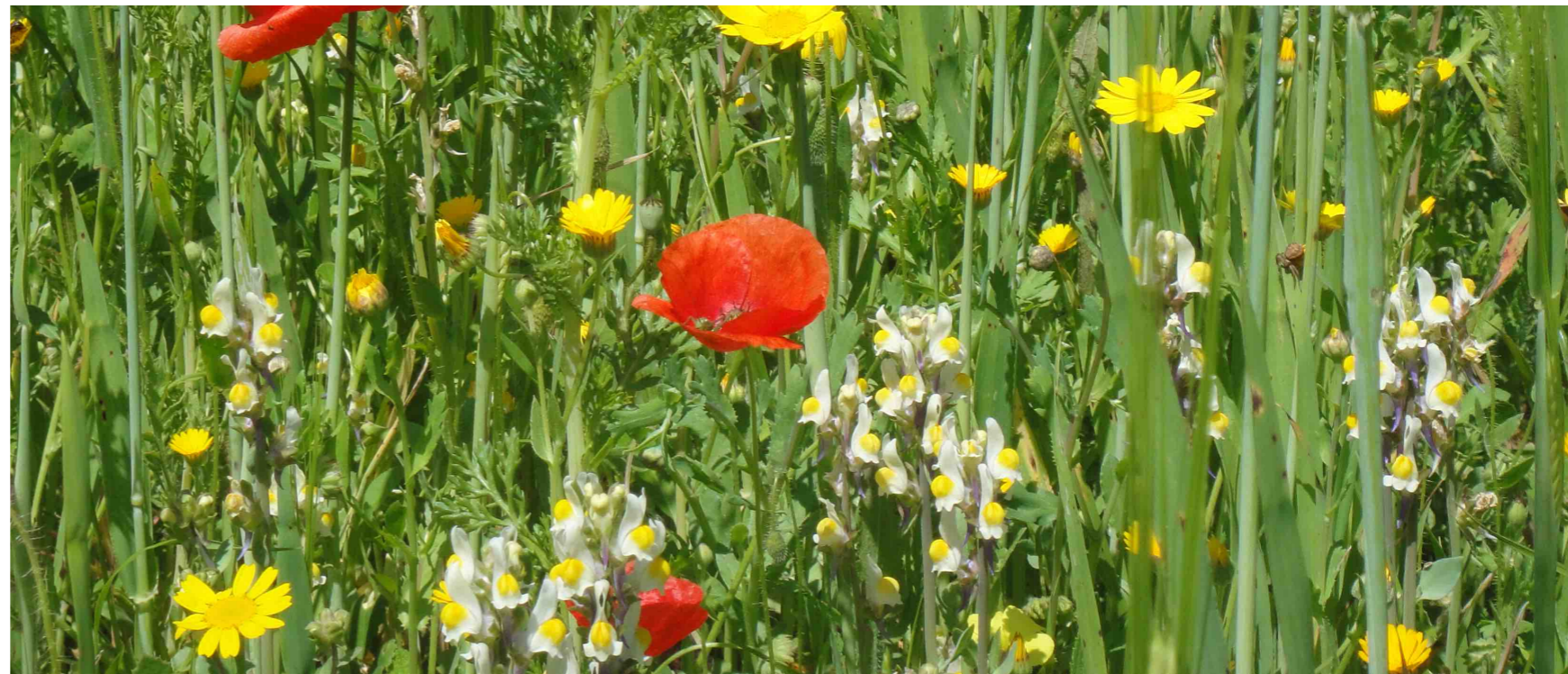
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Flora of cultivated fields: 28 taxa

Agrostemma githago
Asperula arvensis
Biscutella auriculata
Camelina microcarpa
Caucalis platycarpus
Centaurea cyanus
Conringia orientalis
Corrigiola litoralis
Daucus muricatus
Descurainia sophia
Erucastrum nasturtiifolium
Fallopia convolvulus
Fumaria agraria Lag.
Geropogon hybridus
Glaucium corniculatum
Hypecoum pendulum

Lathyrus aphaca var. *affinis*
Lathyrus hirsutus
Lolium temulentum
Malva trimestris
Neslia paniculata
Ranunculus arvensis

Ridolfia segetum
Scorzonera laciniata
Silene muscipula
Silene rubella subsp. *segetalis*
Vicia dasycarpa
Vicia eriocarpa



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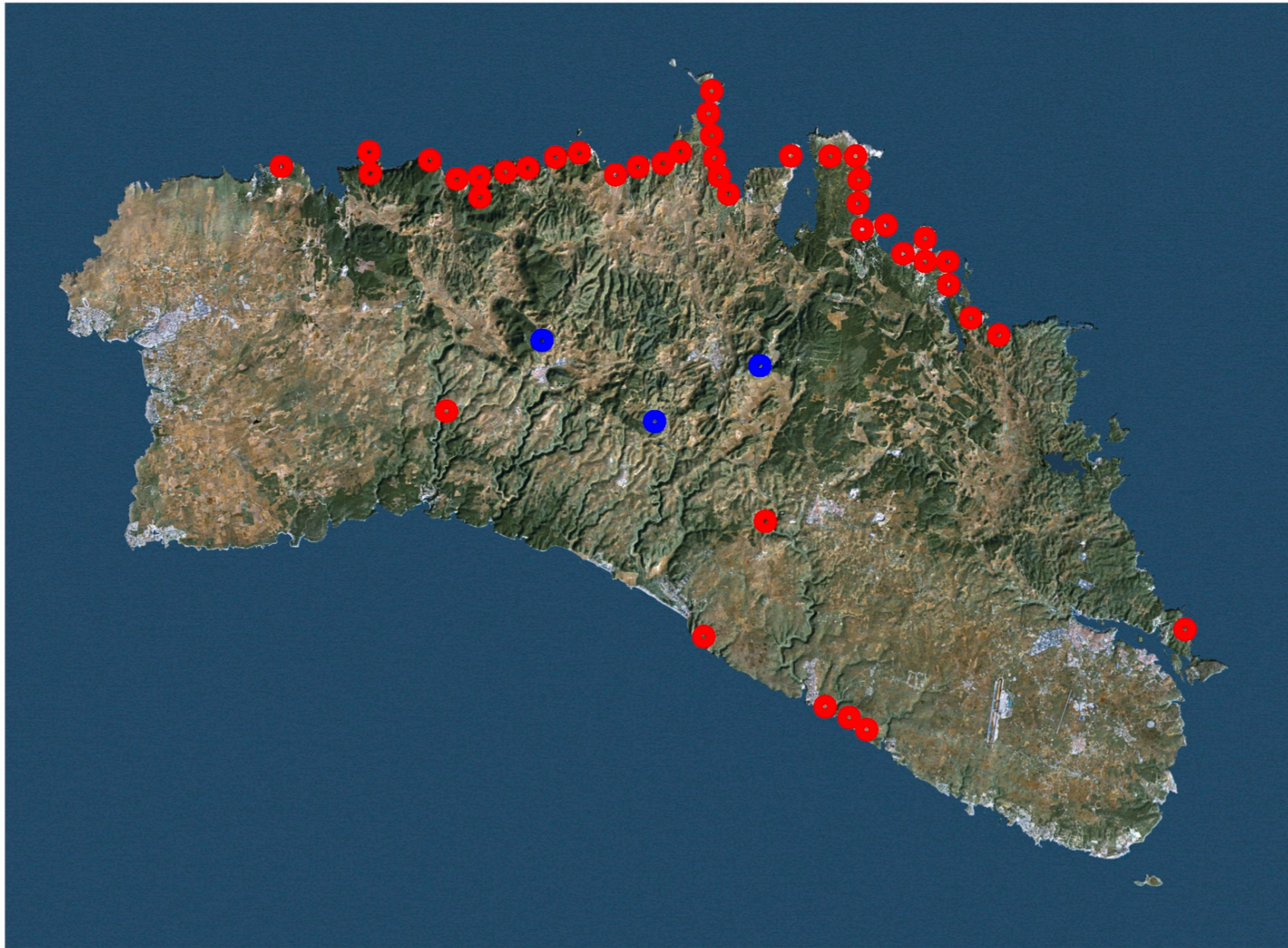
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G	Tàxon	T	Actual		Anterior			Valoració estat conservació
			Categoria	Criteris	Categoria	Criteris	Referència o font	
B	<i>Eleocharis mamillata</i>	=	VU	D2	VU	D2	Sáez <i>et al.</i> (2017)	Preocupant
S	<i>Erucastrum nasturtiifolium</i>	=	CR	B1ac(i, ii, iv)+2ac(i, ii, iv); C2b; D				Bo
S	<i>Fallopia convolvulus</i>	↑	CR	A2ac+3c+4ac; B1ac+2ac; C2a(i, ii)b; D				Bo
S	<i>Fumaria agraria</i> Lag.	↑	VU	D2	NE EN	A2c B1ab(iii)+2ab(iii) C2b	Sáez <i>et al.</i> (2016)	Bo
B	<i>Galium debile</i>	=	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Sáez <i>et al.</i> (2017)	Acceptable
S	<i>Geropogon hybridus</i>	↑	CR	B1ac(iv)+2ac(iv)	NE CR	B1ac(iv)+2ac(iv) C2b D	Sáez <i>et al.</i> (2016)	Bo
S	<i>Glaucium corniculatum</i>	=	CR	A2ac+3ac; D				Preocupant
S	<i>Hypocoum pendulum</i>	↑	VU	B1ac+2ac; C2a(i, ii)b	NE EN	B1ac(iv)+2ac(iv) C2b	Sáez <i>et al.</i> (2016)	Bo
B	<i>Isoetes longissima</i>	↑	VU	B1ac(i, ii)+2ac(i, ii); D2	VU	B1ac(i, ii)+2ac(i, ii); D2	Sáez <i>et al.</i> (2017)	Bo
B	<i>Isolepis pseudosetacea</i>		VU	B1ac(i, ii, IV)+2ac(i, ii, IV); D2				Preocupant
S	<i>Lathyrus aphaca</i> var. <i>affinis</i>		EN	B1ac(i, ii)+2ac(i, ii)				Bo
S	<i>Lathyrus hirsutus</i>		CR	B1ac(i, ii)+2ac(i, ii); D				Alarmant
S	<i>Lolium temulentum</i>		CR	A2ac+3c+4ac B1ab(i, ii, iii)+2ab(i, ii, iii); C2a (i ii)				Alarmant
B	<i>Lysimachia minima</i>	=	VU	D2	VU	D2	Sáez <i>et al.</i> (2017)	Preocupant
S	<i>Malva trimestris</i>		EN	B1ac(i, ii, iv)+2ac(i, ii, iv)				Preocupant

Continuous monitoring of endangered flora

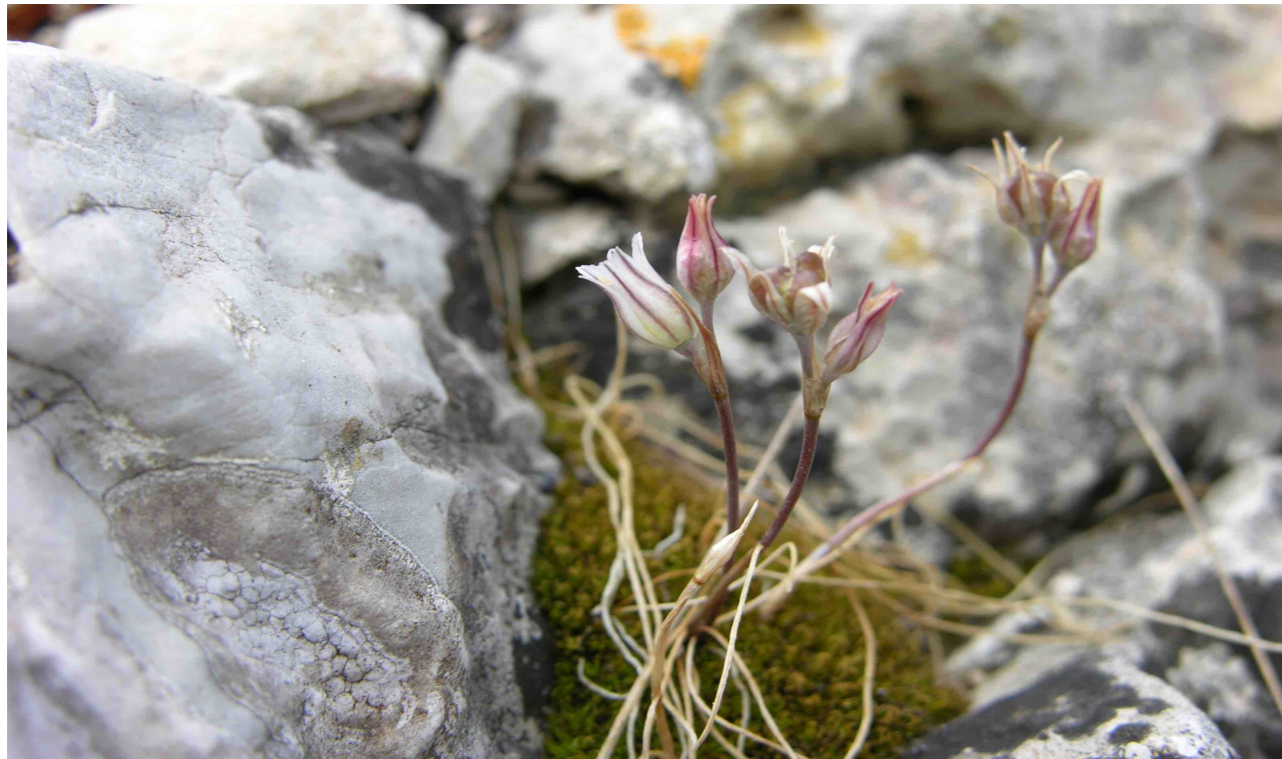
Tàxon	Alteració hàbitat	Alteració del sòl	Creixement urbanístic	Canvis usos del sòl	Pràctiques agrícoles inadequades	Creixement excessiu vegetació llenyosa	Espècies exòtiques invasores	Excés freqüentació humana	Desaparició ramaderia extensiva	Disminució / alteració recursos hídrics
<i>Allium nigrum</i>	•			•	•	•				
<i>Althaea officinalis</i>	•				•	•			•	•
<i>Anthemis secundiramea</i> subsp. <i>secundiramea</i>				•				•		
<i>Asplenium billotii</i>	•							•		
<i>Calamintha nepeta</i> subsp. <i>nepeta</i>	•									
<i>Calystegia silvatica</i>	•									
<i>Fumana juniperina</i>	•	•						•		
<i>Lotus gracile</i>	•									
<i>Lotus preslii</i>	•									
<i>Malcolmia littorea</i>	•							•		
<i>Matthiola tricuspidata</i>	•	•						•		
<i>Orobanche cernua</i>	•	•						•		
<i>Orobanche foetida</i>	•					•		•		
<i>Ranunculus repens</i>	•				•	•			•	•
<i>Rumex intermedius</i> subsp. <i>algarbiensis</i>	•									
<i>Rumex palustris</i>	•						•			
<i>Scilla obtusifolia</i>	•					•				
<i>Scolymus grandiflorus</i>	•		•	•	•					
<i>Sonchus aquatilis</i>	•					•				•
<i>Tripolium pannonicum</i>	•					•				•

Continuous monitoring of endangered flora

Tàxon	Localització noves poblacions	Delimitació de zones sensibles	Seguiment poblacions	Estudi diversitat genètica	Identificació d'amenaces	Elaboració d'un pla de gestió	Avaluació actuacions prèvies de conservació	Seguiment processos hibridació	Estudi taxonòmic	Millora coneixement processos ecològics	Desenvolupament pla de gestió (conservació o recuperació)	Comunicació i sensibilització	Control espècies invasores	Reforçament de poblacions	Creació de noves poblacions
<i>Allium antonii-bolosii</i>	•	•	•												
<i>Allium savii</i>	•	•	•			•									
<i>Anthyllis hystrix</i>		•	•	•											
<i>Aristolochia bianorii</i>	•														
<i>Cymbalaria fragilis</i>	•														
<i>Daphne rodriguezii</i>	•	•	•										•		
<i>Erodium reichardii</i>	•	•			•	•							•		
<i>Femeniasia balearica</i>			•				•								
<i>Helichrysum crassifolium</i>								•			•				
<i>Limonium fontqueri</i>	•								•						
<i>Malva minoricensis</i>	•		•							•					
<i>Pastinaca lucida</i>			•							•					
<i>Polycarpon dunense</i>		•										•			
<i>Rhamnus ludovici-salvatoris</i>		•											•	•	•
<i>Urtica atrovirens</i> subsp. <i>atrovirens</i>	•	•				•									•
<i>Vicia bifoliolata</i>											•				
<i>Viola stolonifera</i>			•				•					•			

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From field data to an effective preventive tool



From field data to an effective tool: DASFA

DASFA = Delimitation of sensitive areas for the conservation of threatened flora

A tool to prevent negative affectation to threatened plant taxa and their habitat

Summarize in a schematic and visual way (GIS) the most relevant information about the presence of threatened flora in the insular territory and what activities or actions may deteriorate its conservation status

It should not be a legal tool that necessarily implies protection of the territory or a need for active management

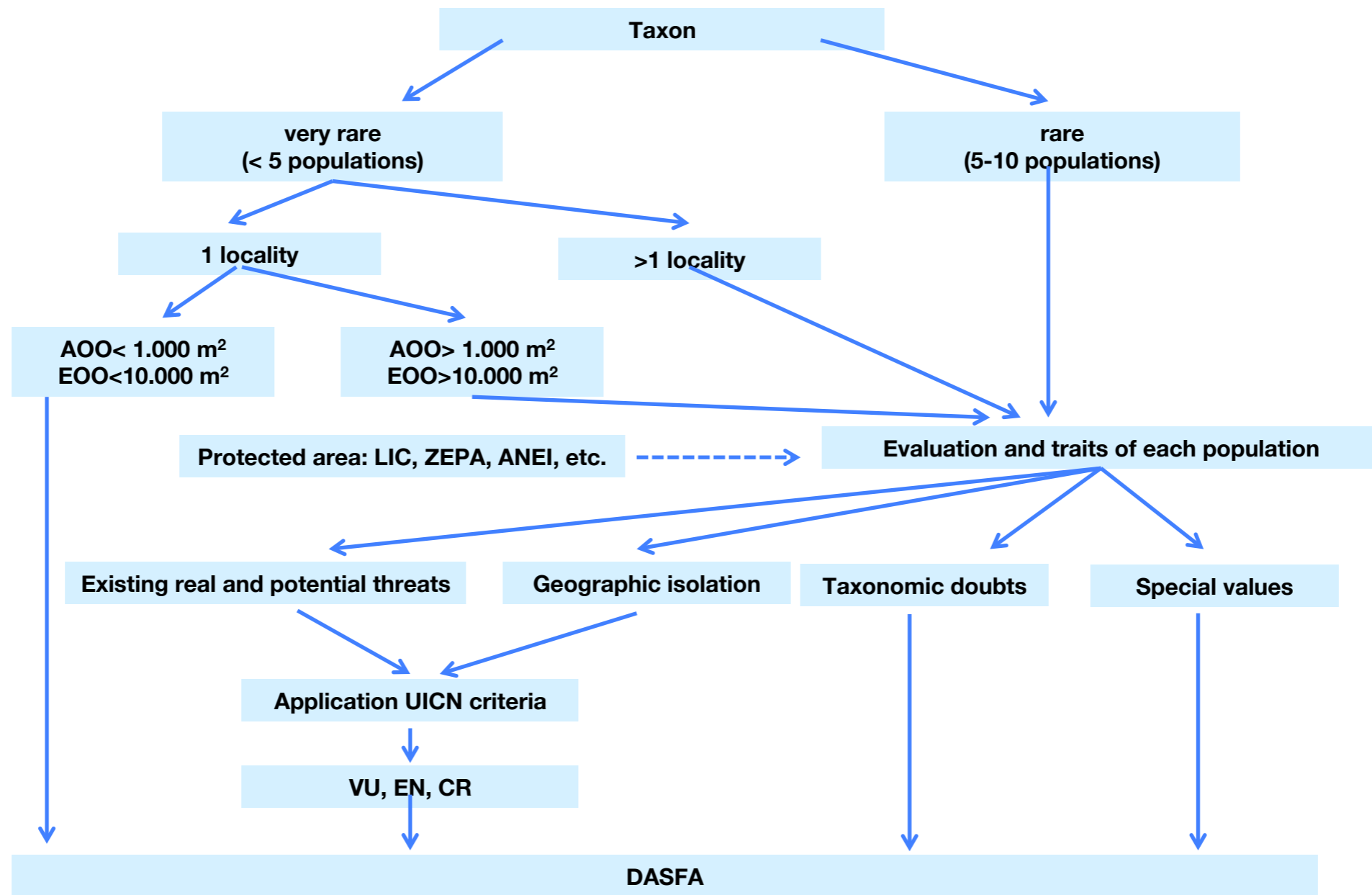


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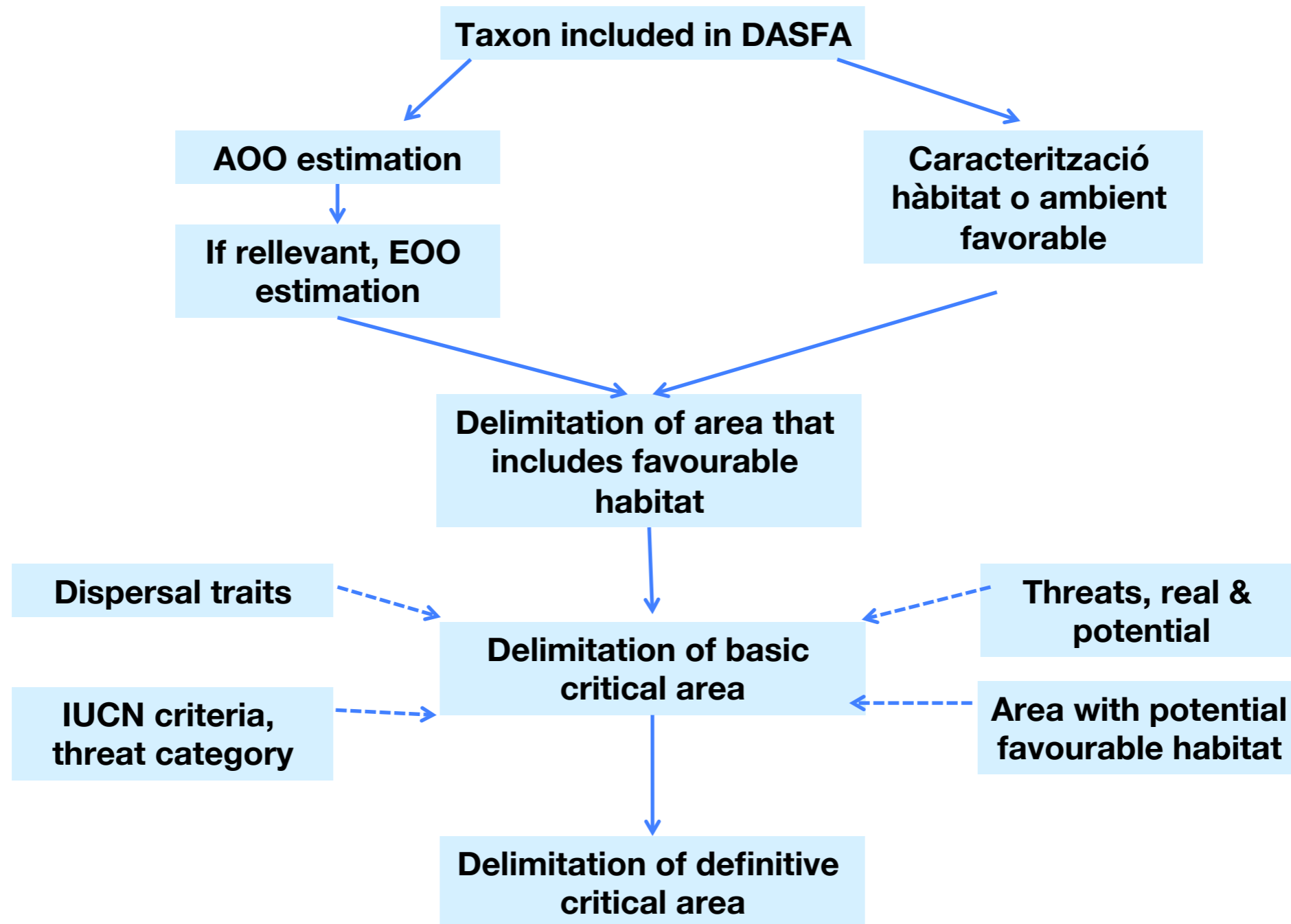
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From field data to an effective tool: DASFA



From field data to an effective tool: DASFA



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N: 5824420



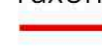
DELIMITACIÓ D'ÀREES SENSIBLES PER A LA FLORA AMENAÇADA DE MENORCA (DASFA)

UTM: 582,4420

T.M.: Ferreries

Data: 20-XII-2017

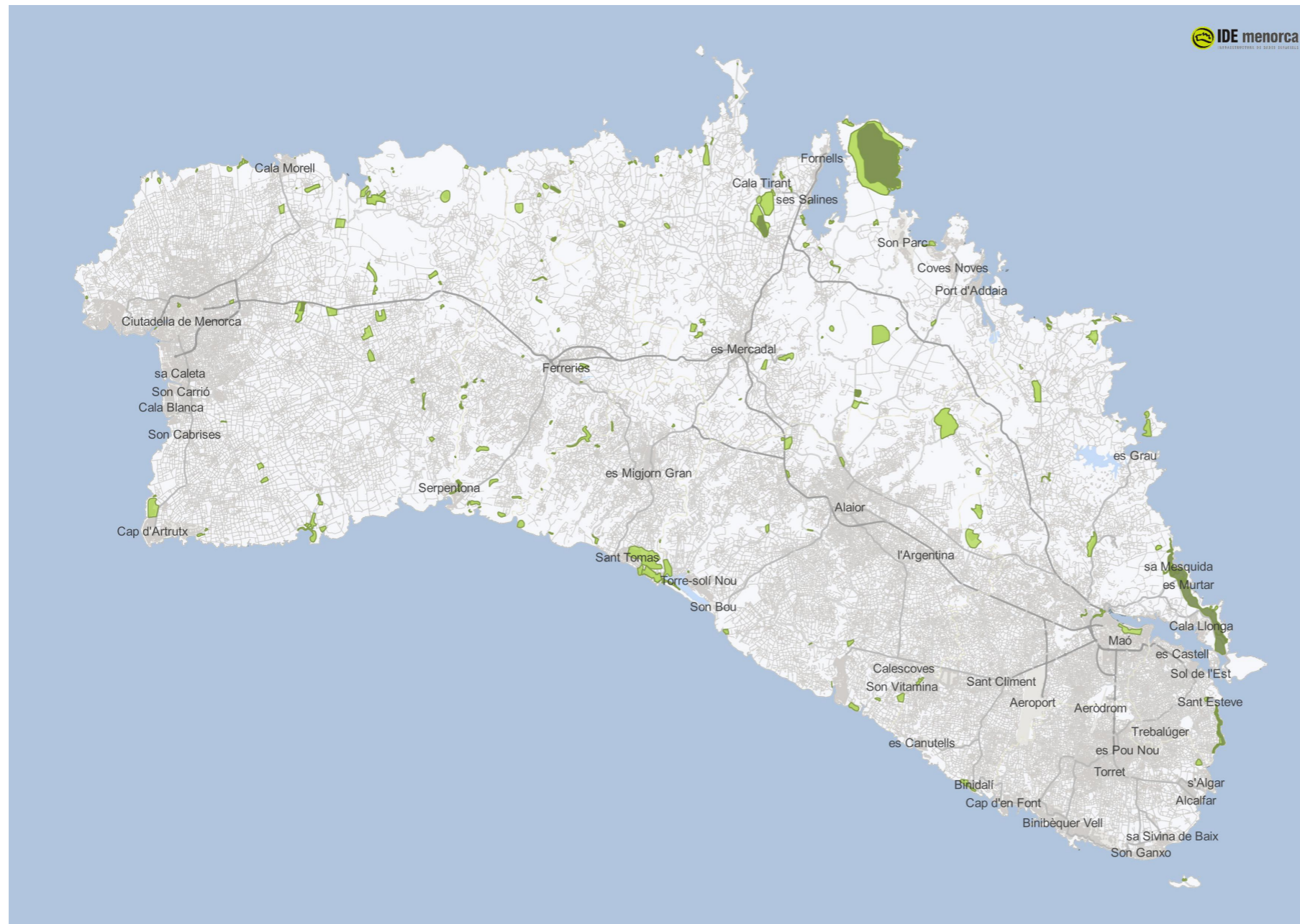
Tàxons:

 *Centaurea melitensis*

 *Rubia peregrina* subsp. *requienii*

 Franja seguretat

From field data to an effective tool: DASFA



It will be included as a layer of restricted access in the SIG cartography viewer of Menorca (IDE). There is also the possibility of being included in the new revision of the Territorial Insular Plan (PTI).



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From field data to an effective tool: DASFA

The objective is that any official or person in charge of authorizing and inspecting actions in the natural environment can easily assess if there may be affectations to the threatened flora

Procedure

- 1. Application to start activity or action that may affect the natural environment**
- 2. Determination of the affected UTM (1x1 km)**
- 3. Check Table 1 or Cartography (GIS) to determine if any of the grids contains DASFA**
- 4. Consult the corresponding map file to see the detailed DASFA and the activities or actions not allowed**



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A scenic view of a rocky coastline. In the foreground, a large, dense bush of yellow flowers grows on a rocky ledge. Scattered around the base of the bush are several white daisies. The background shows a rocky beach with a small stream of water flowing over the rocks. The overall scene is bright and natural.

Thanks!