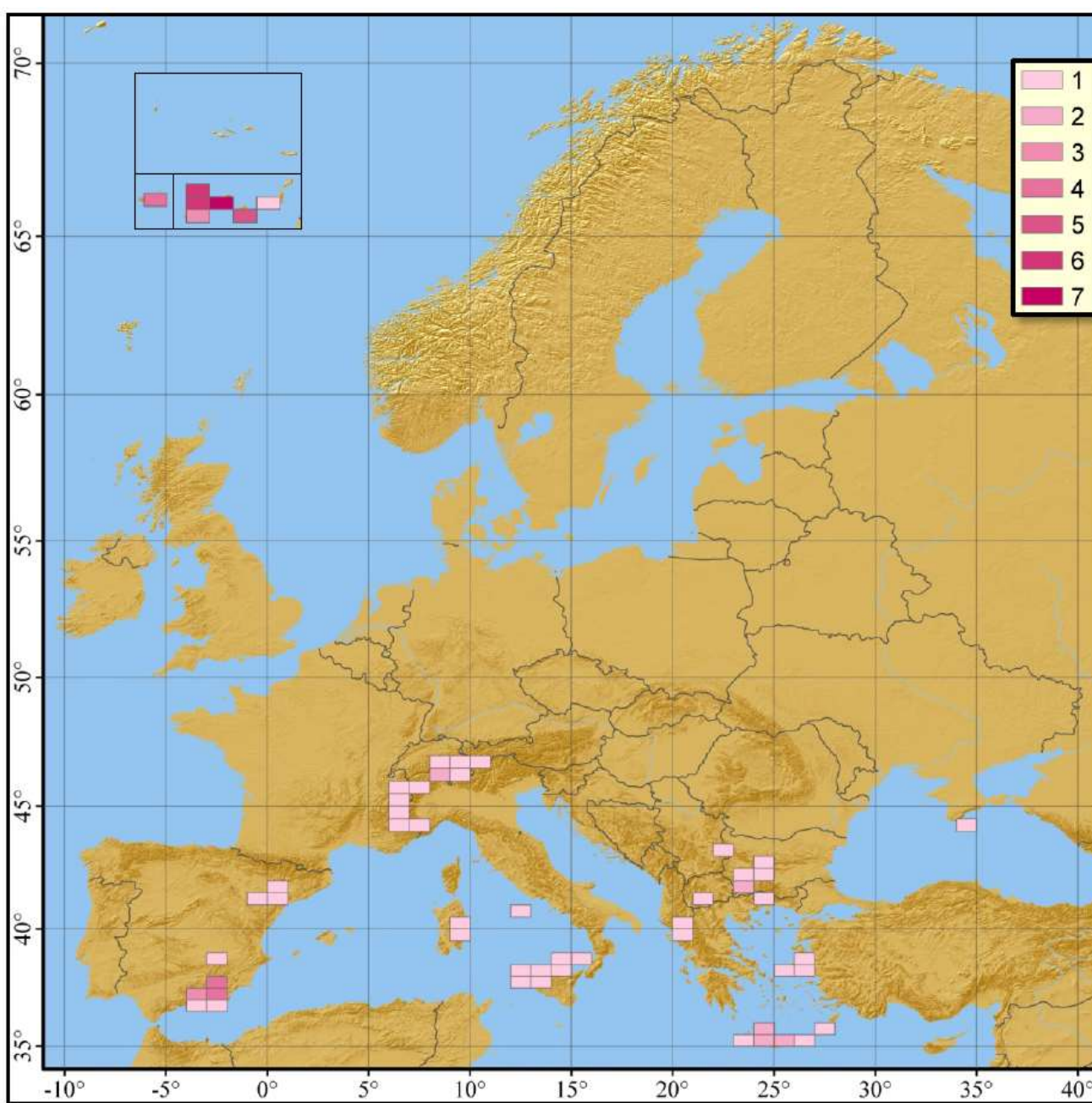




Die Tagfalter der Kanaren und Madeiras

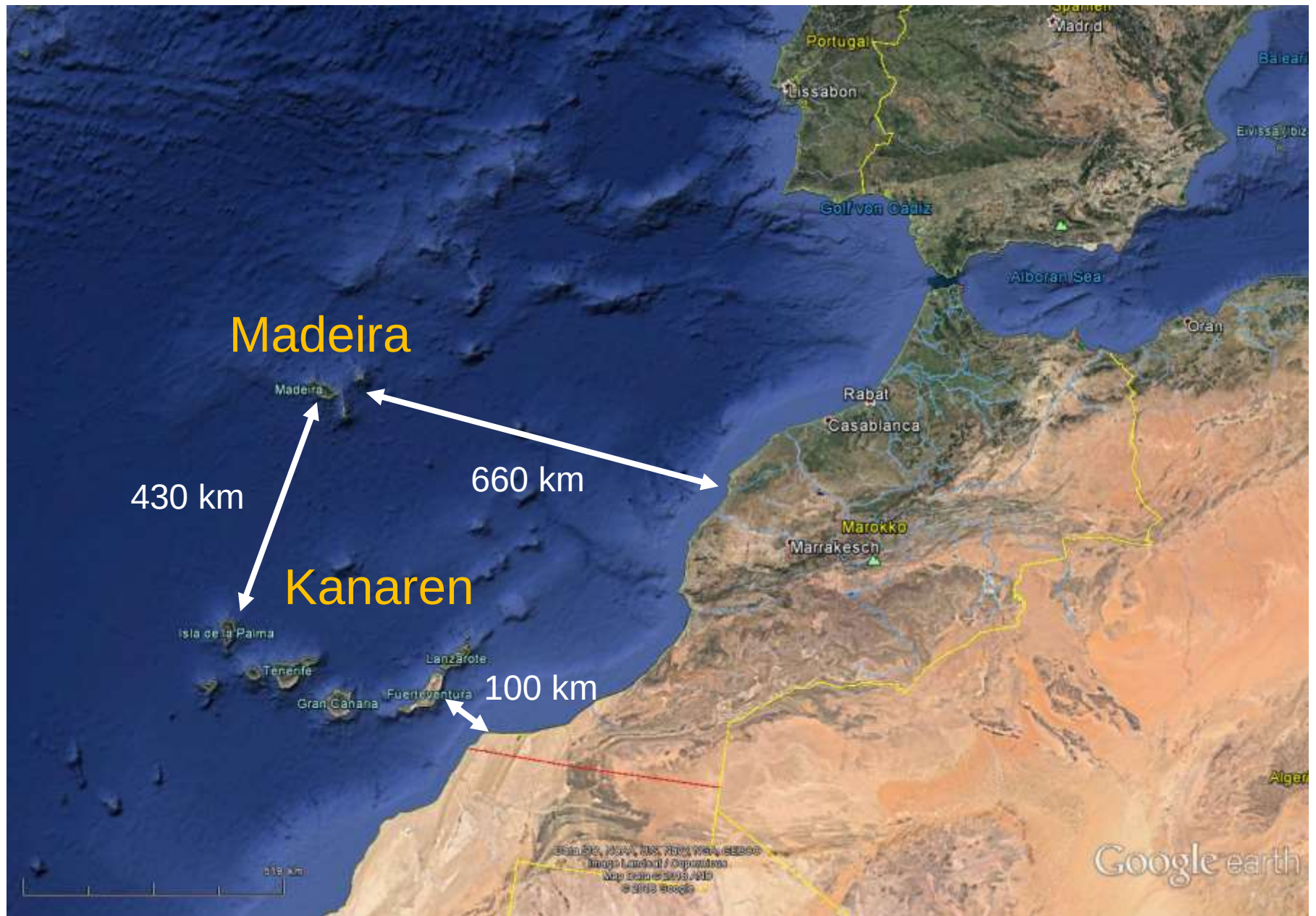
•
Besiedlungsgeschichte, genetische Differenzierung,
Ökologie und Gefährdung

•
Martin Wiemers



Kudrna et al. (2011):
Distribution Atlas of
Butterflies in Europe

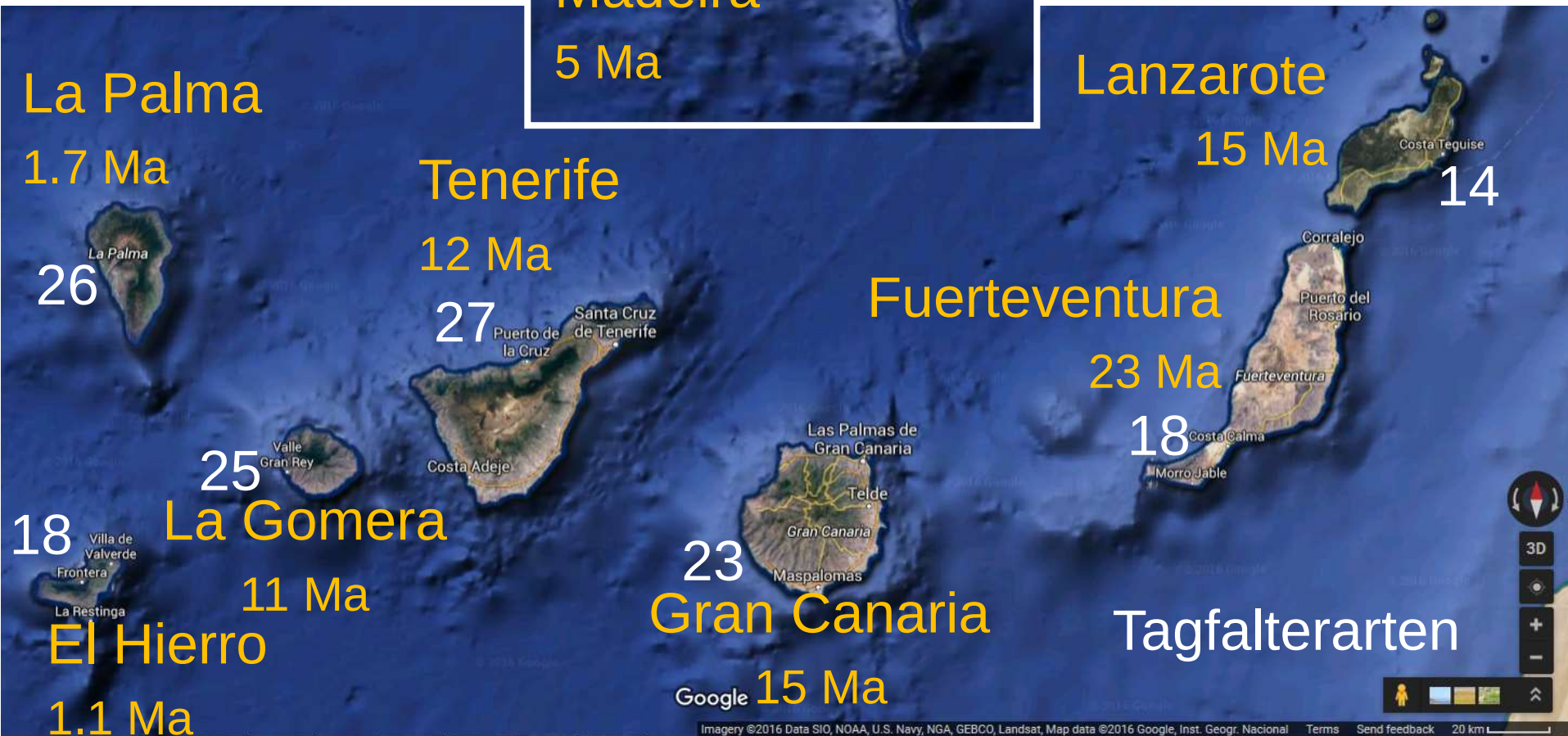
Fig. 9. Coincidence map showing the concentration of European Rare Endemic species.



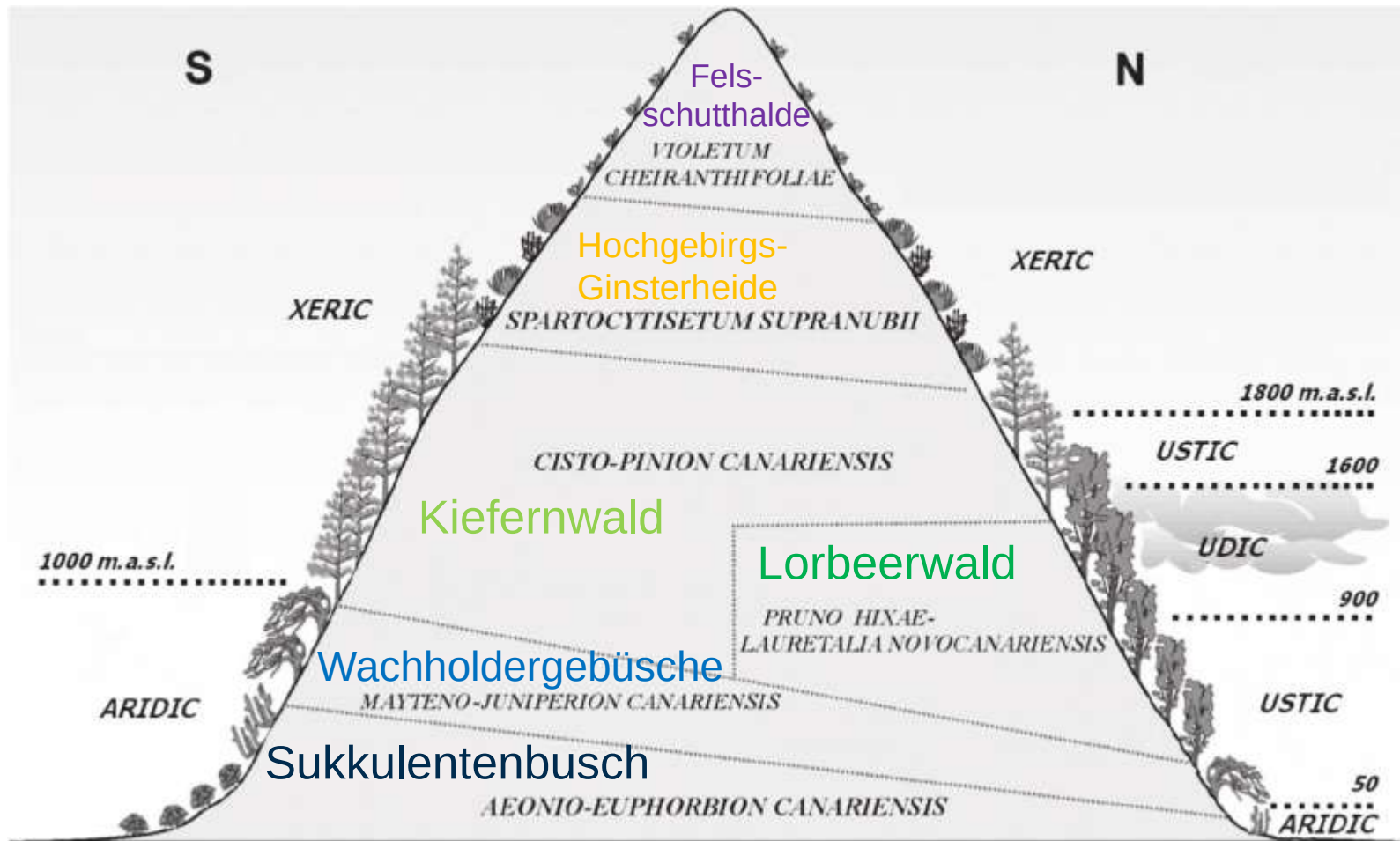
Madeira & Kanaren



Ursprung:
Miozän
– [MSC 6-5.3 Ma] –
Pliozän
– 2.58 Ma –
Gelasium



Potentielle natürliche Vegetation auf Tenerife



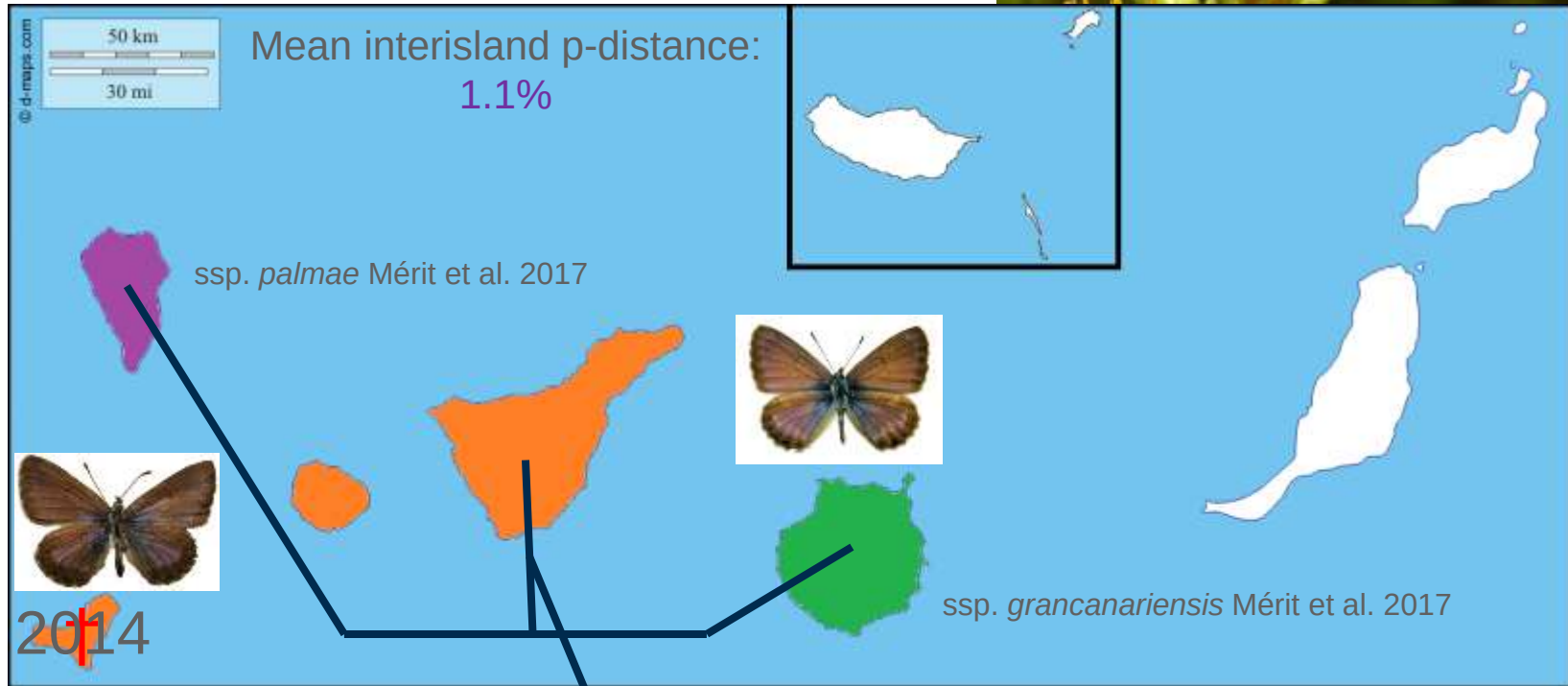
After Neris et al. 2013 in Soil Science Society of America Journal 77(1):624;
which was taken from del Arco and Rodríguez 2006 & modified by M. Tejedor



Leptotes webbianus

Habitat: Wälder & Heiden

Lfp: Fabaceae



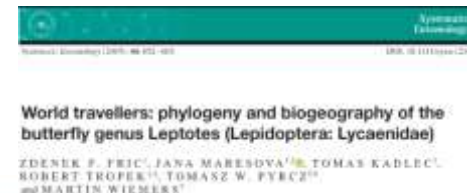
2014



? *Cyclotrius mandersi*
Mauritius

12 Ma

Leptotes callanga
S America





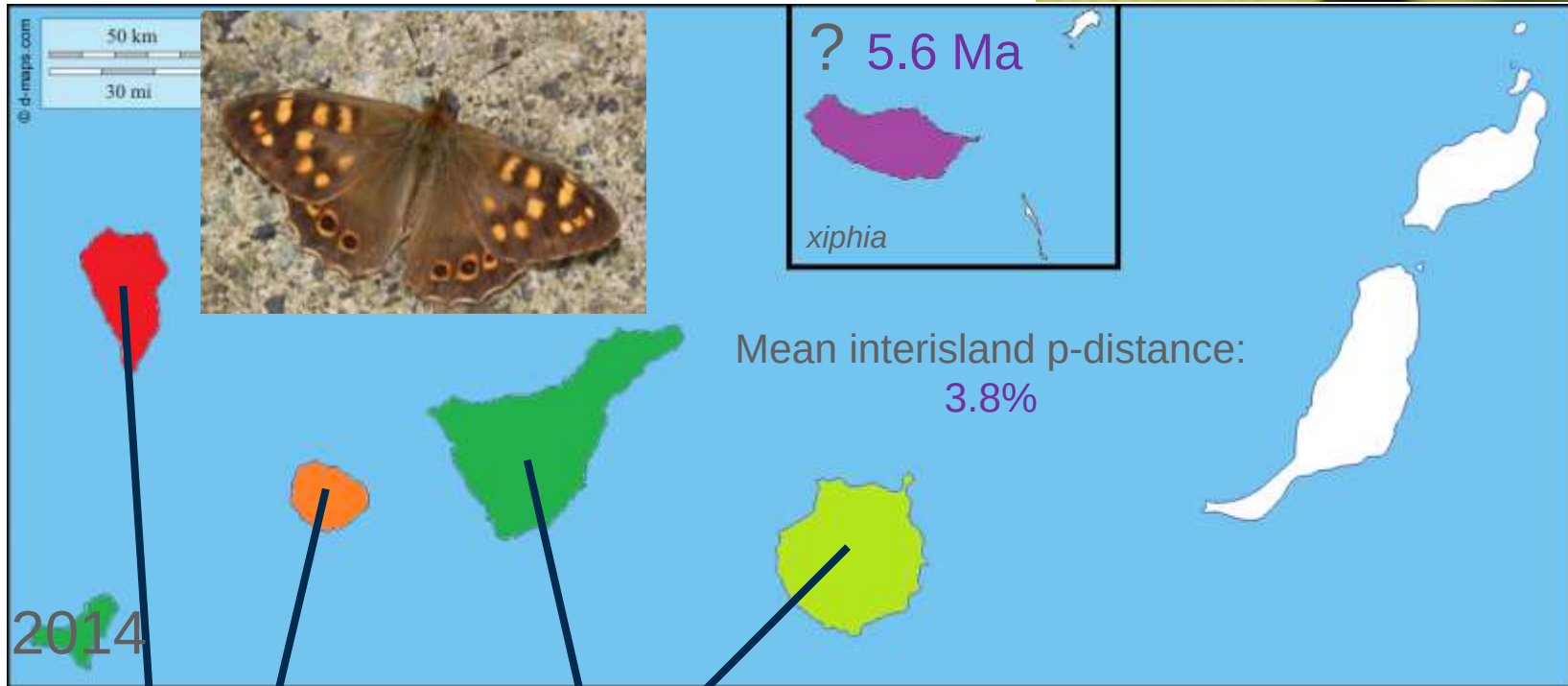




Pararge xiphioides - *xiphia*

Habitat: Lorbeerwälder

Lfp: Poaceae



*Pararge
aegeria*



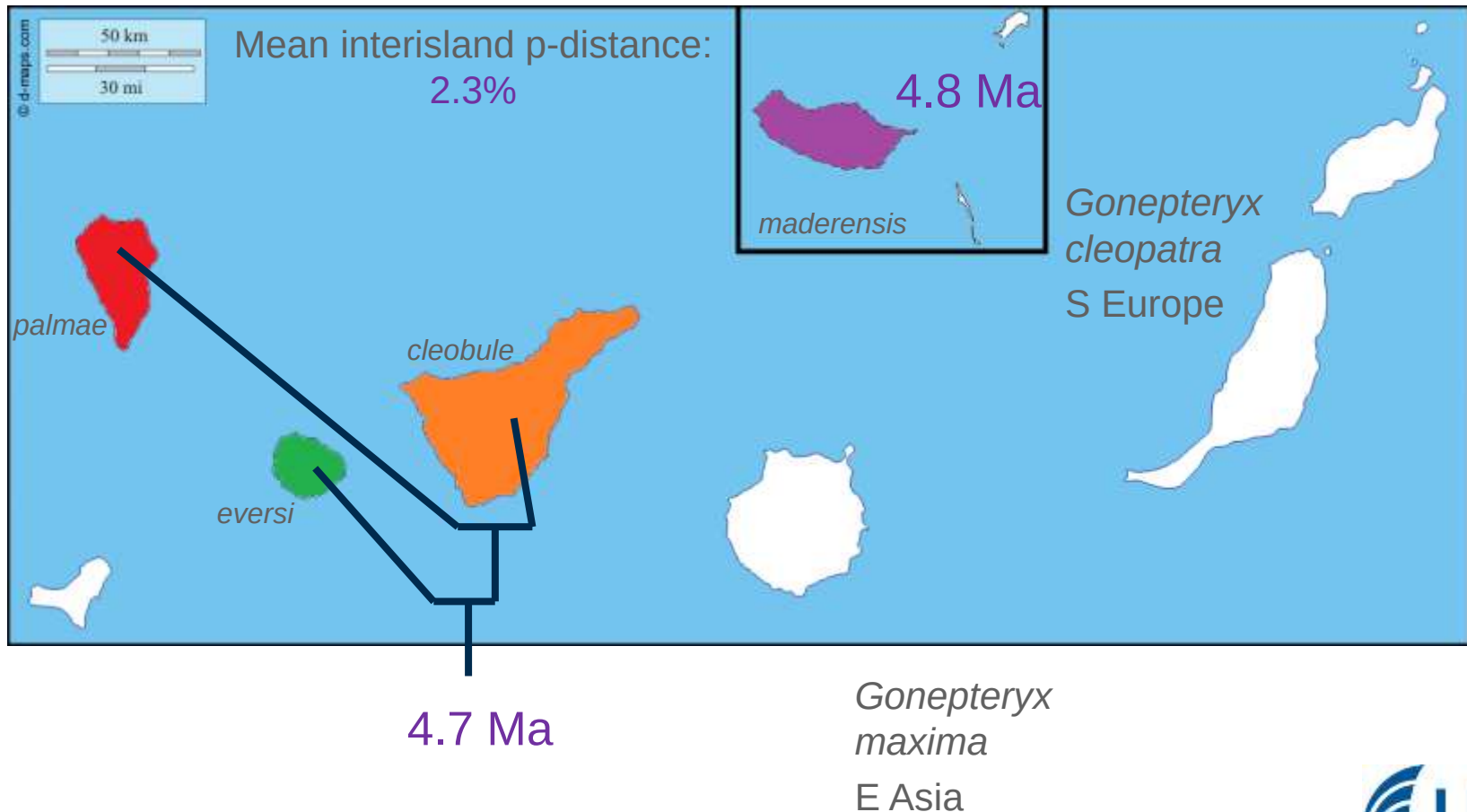




Gonepteryx cleobule & *maderensis*

Habitat: Lorbeerwälder

Lfp: *Rhamnus* spp.



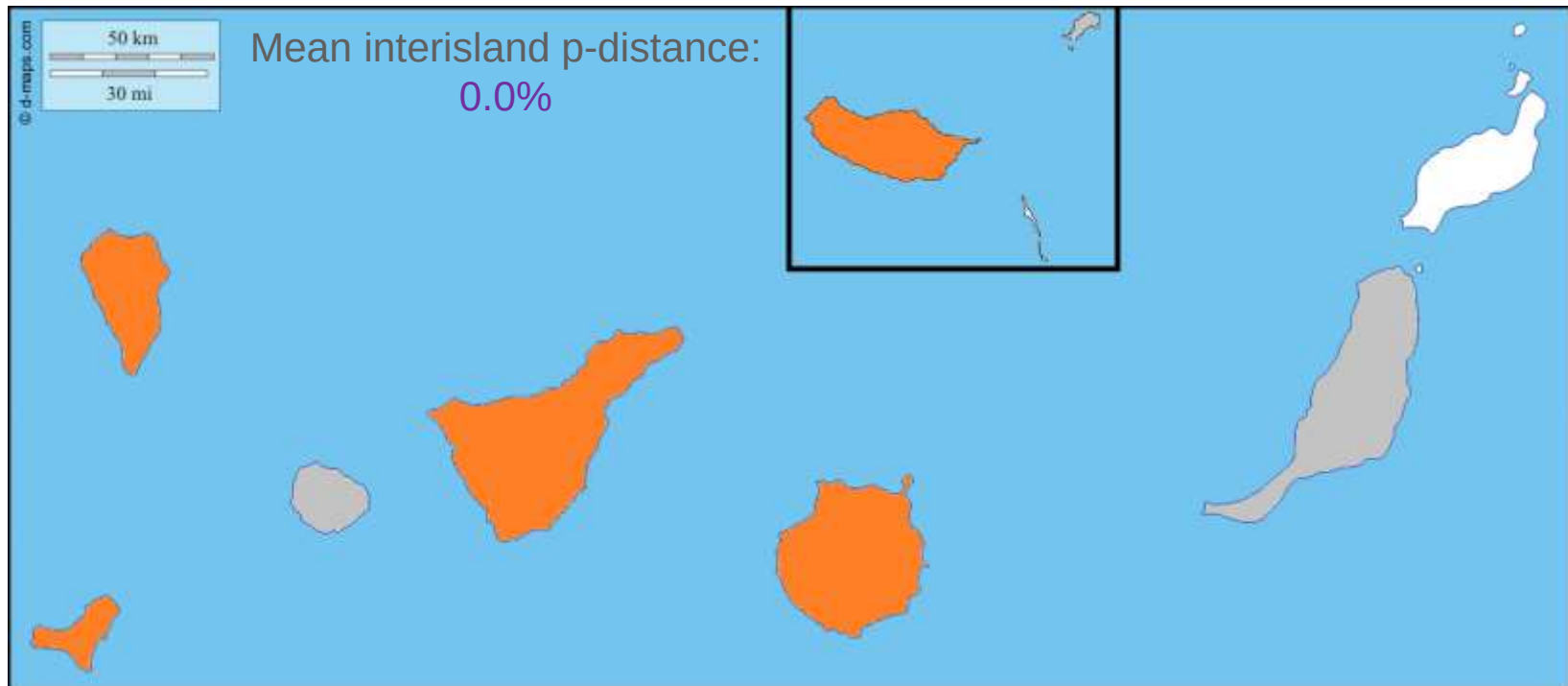




Vanessa vulcania

Habitat: Wälder

Lfp: *Urtica morifolia*

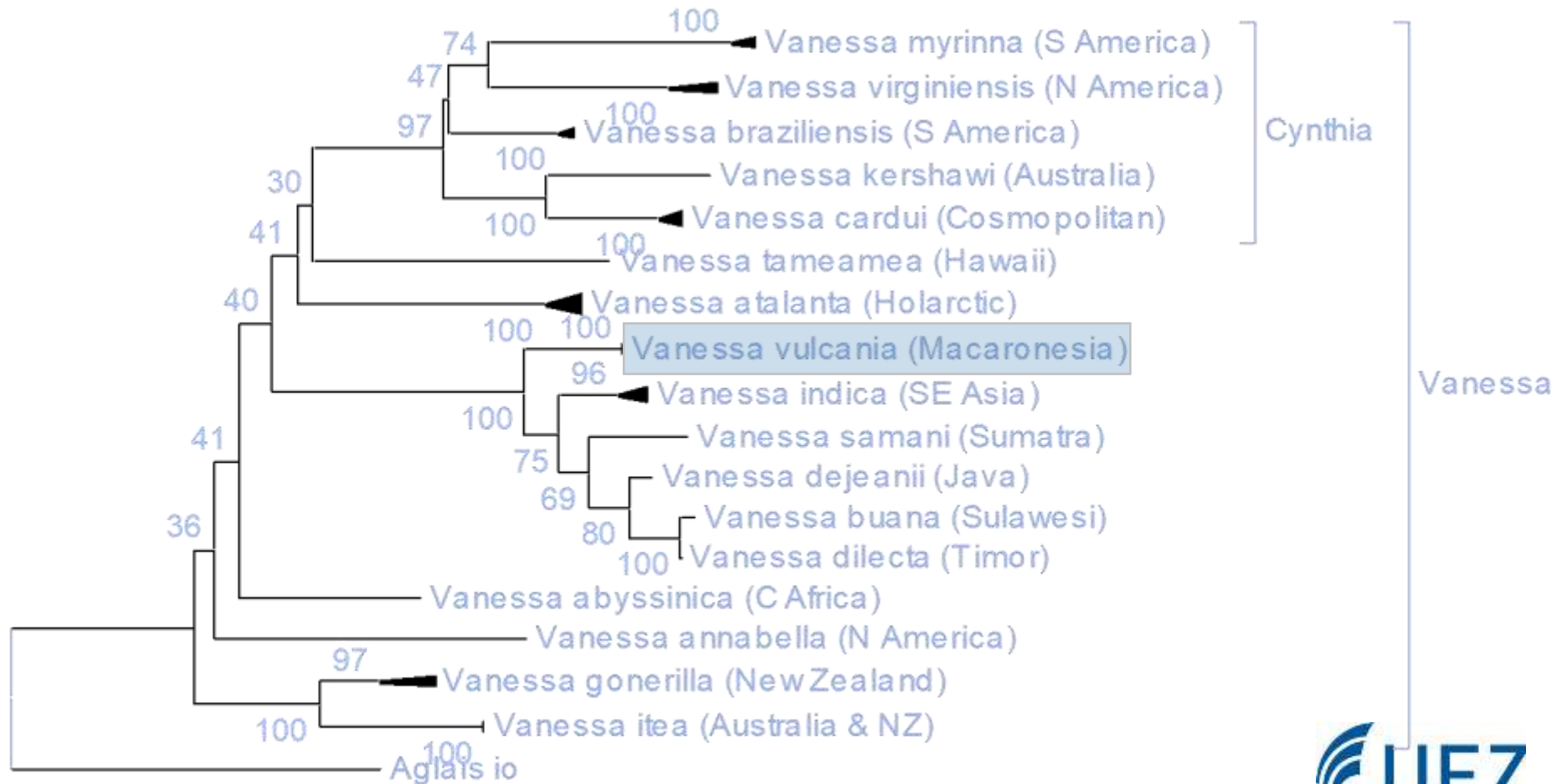


3 Ma



*Vanessa
indica*
S & SE Asia

Phylogenie von *Vanessa*



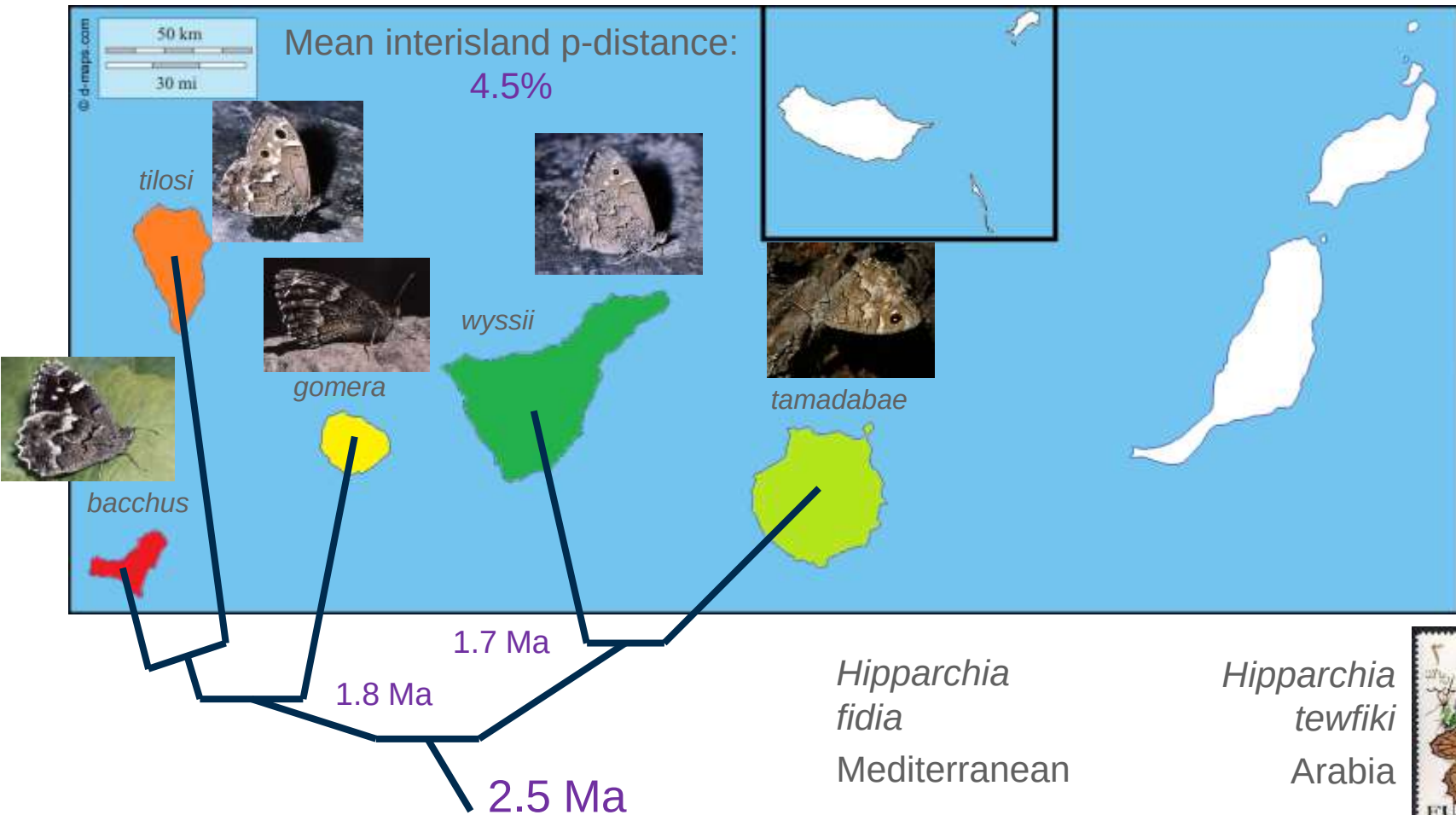
p-distance between *V. indica* and *V. vulcania*: 2,2%





Hipparchia wyssii - complex

Habitat: Barrancos im Sukkulentenbusch & Wälder
Lfp: Poaceae











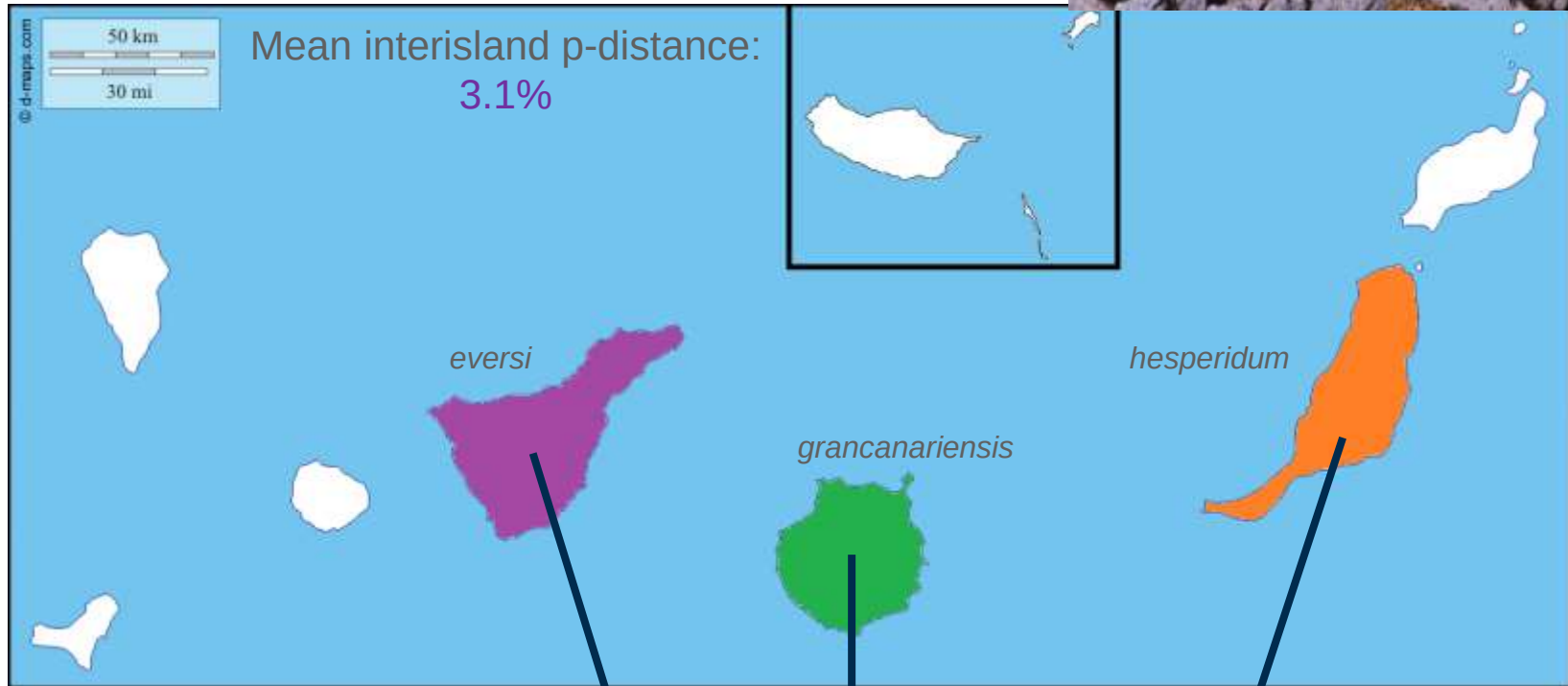




Euchloe belemia - complex

Habitat: Halbwüste & Wiesen

Lfp: Brassicaceae



*Euchloe
belemia*
Mediterranean

2.5 Ma

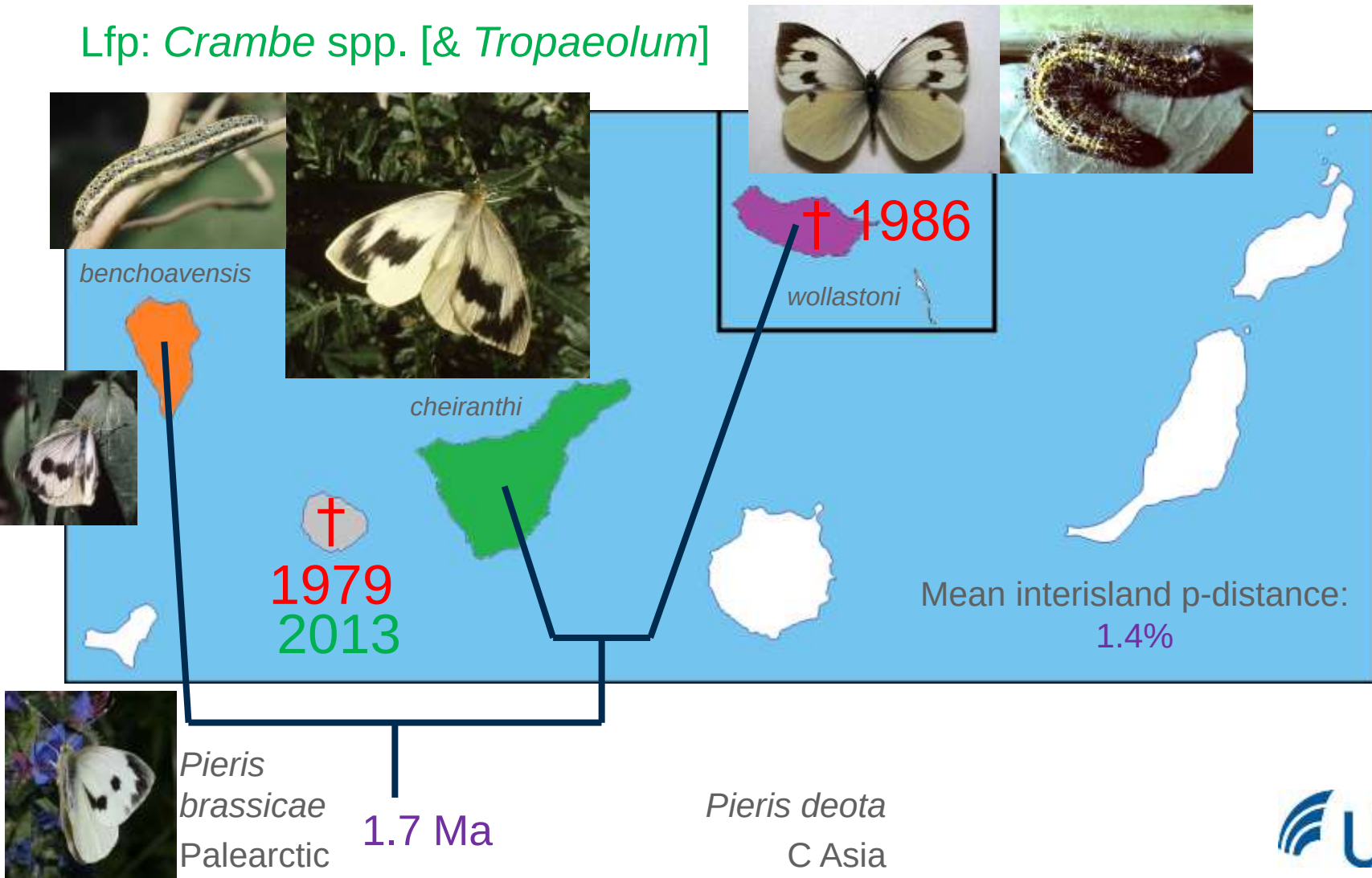




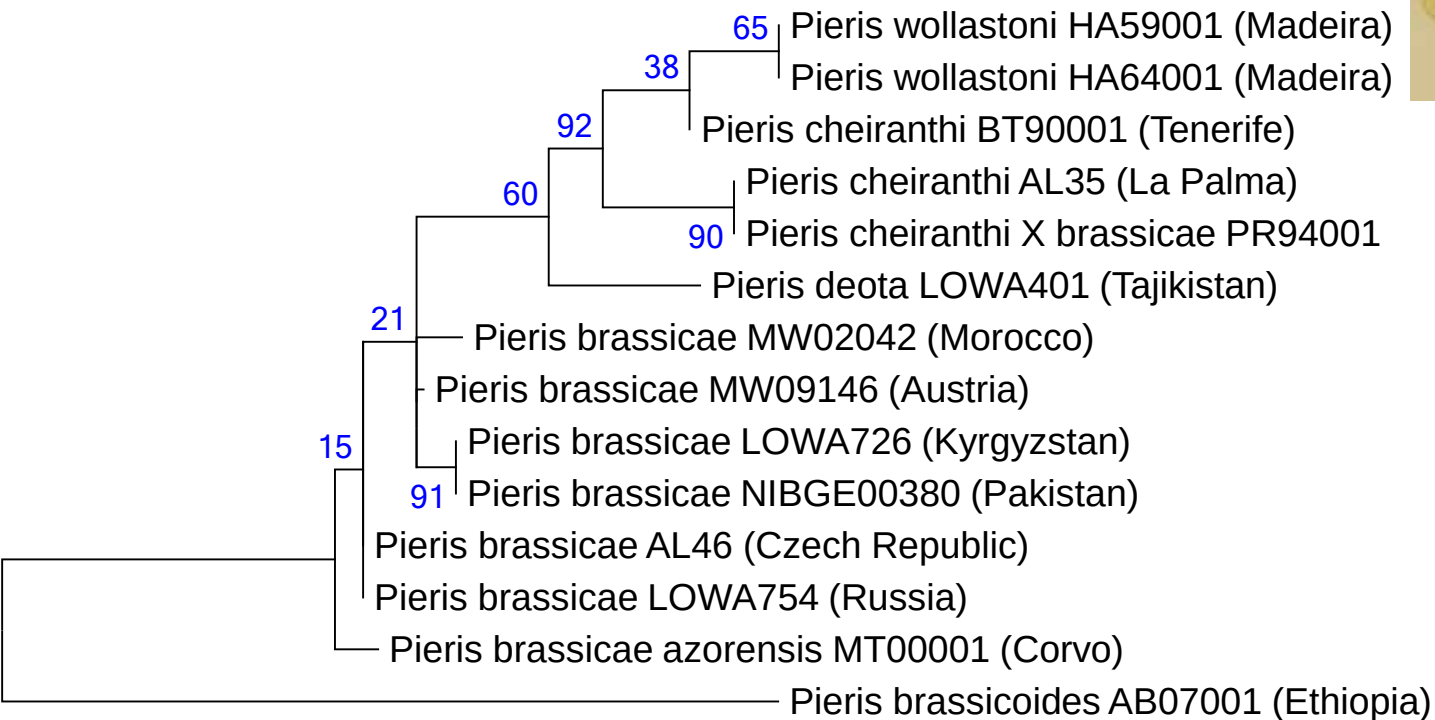
Pieris cheiranthi - *wollastoni*

Habitat: Barrancos im Lorbeerwald

Lfp: *Crambe* spp. [& *Tropaeolum*]



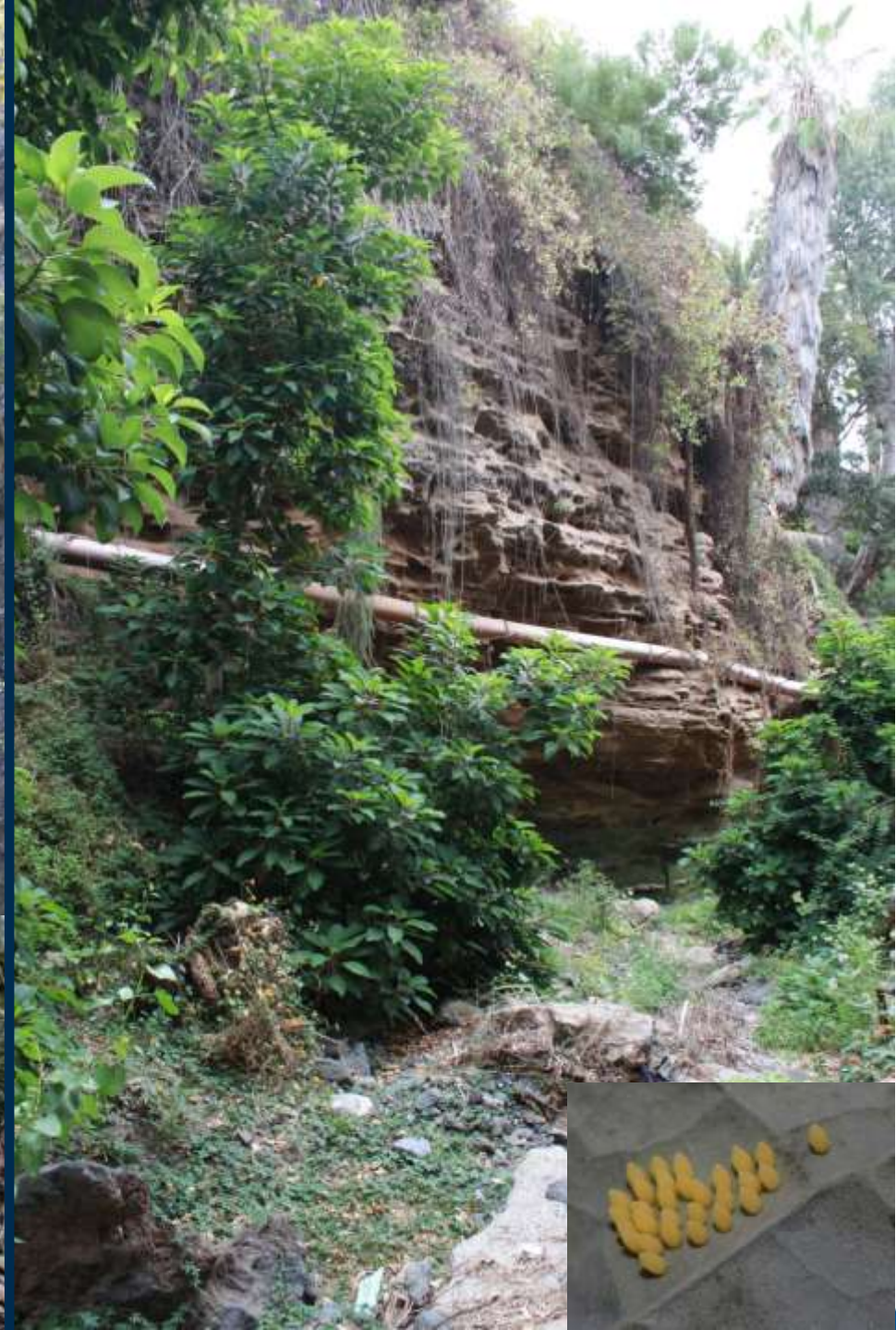
Pieris cheiranthi - *wollastoni*



P-Distances: *P. wollastoni* – *P. cheiranthi*: 1,0%; *P. wollastoni* – *P. brassicae* (Morocco): 2,6%









P. cheiranthi (Tenerife)



P. brassicae (Terceira)



P. cheiranthi (La Palma)



P. cheiranthi (Tenerife)

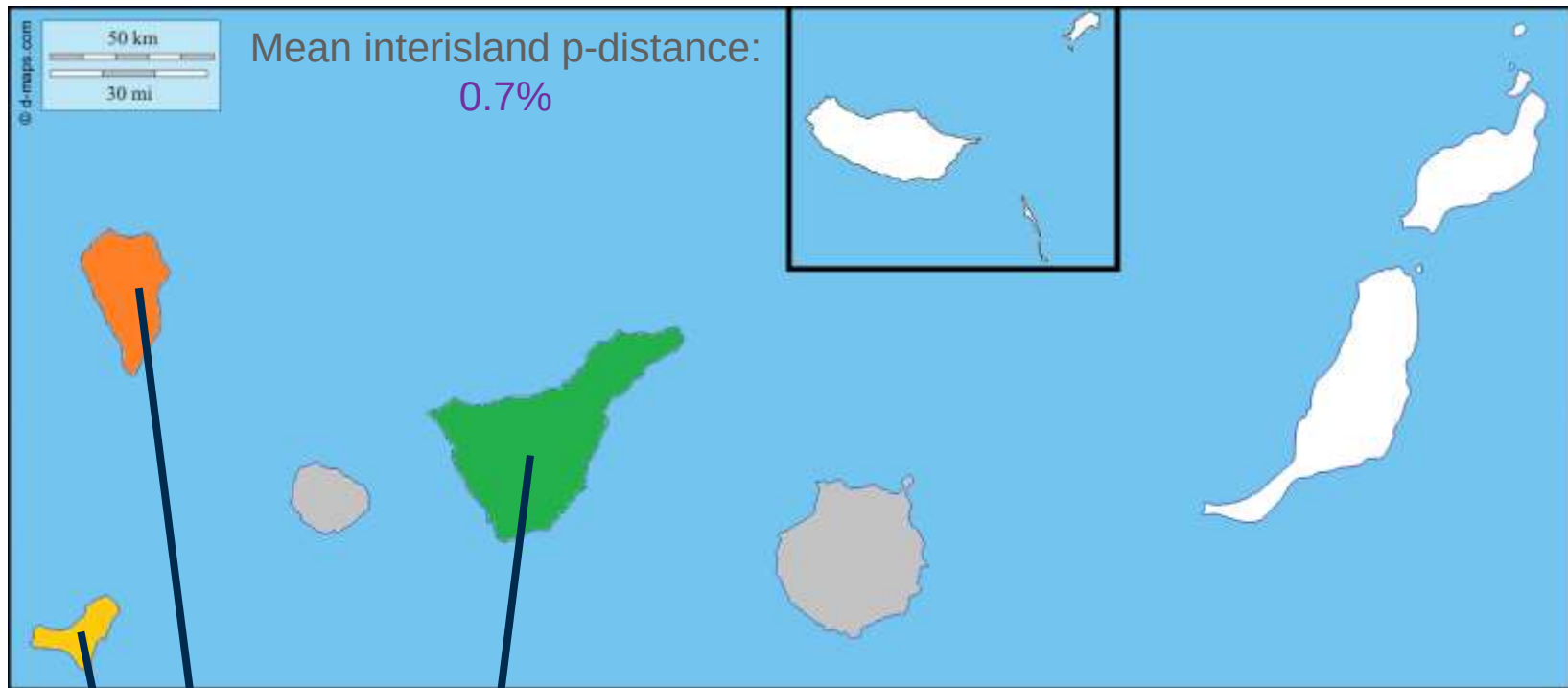


P. wollastoni (Madeira)

Thymelicus christi

Habitat: Waldlichtungen

Lfp: Poaceae



1 Ma

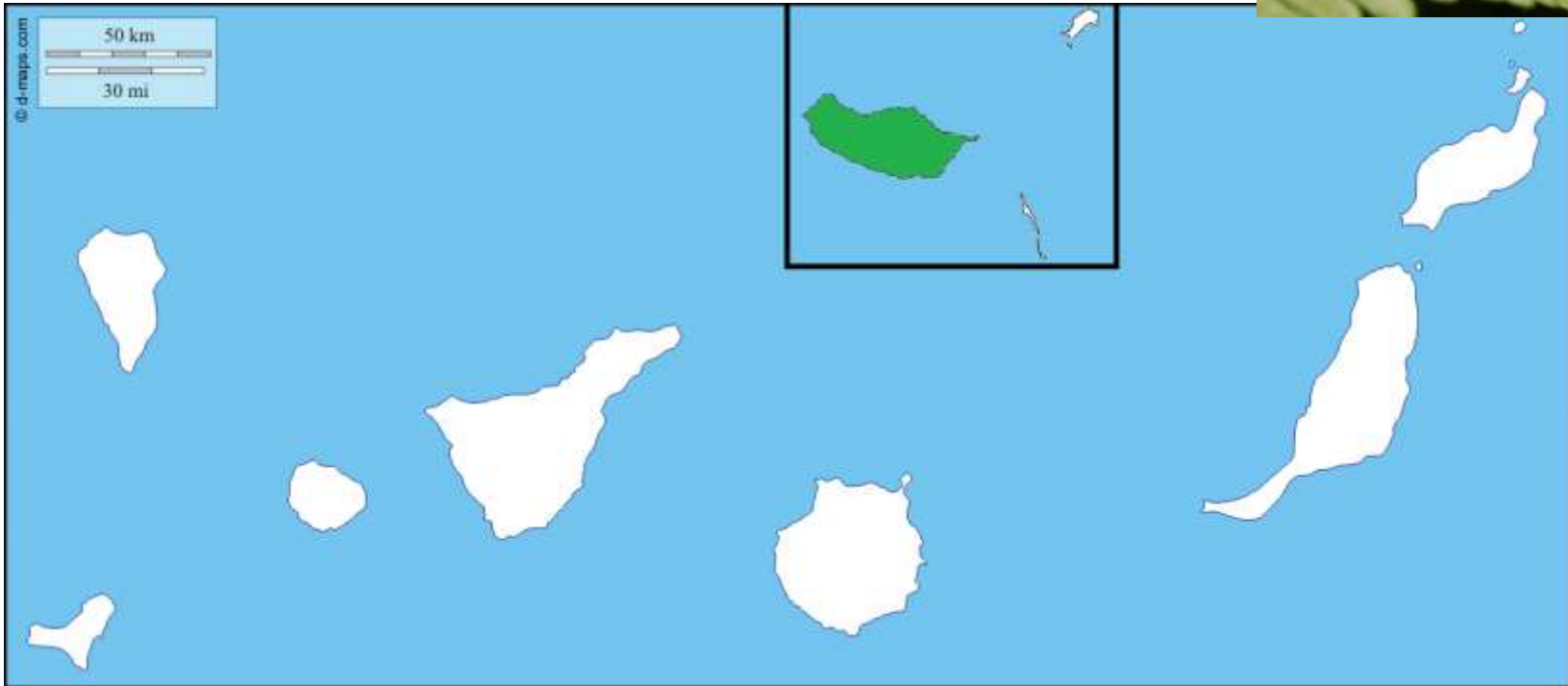


Thymelicus acteon
Mediterranean

Hipparchia maderensis

Habitat: Montane Grassländer, Heiden & Wälder

Lfp: Poaceae



0.5 Ma *Hipparchia algerica*
N Africa



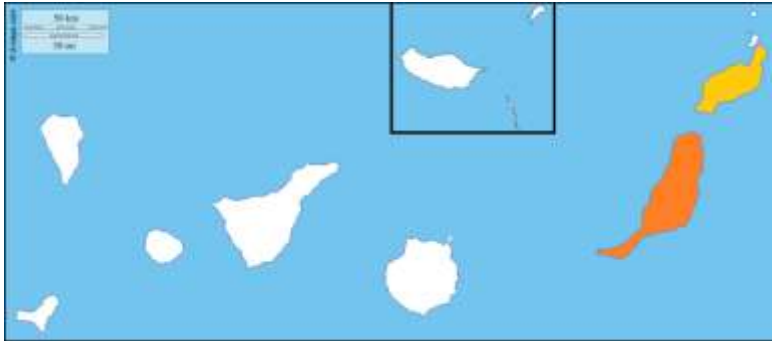


Endemische Tagfalter: Übersicht

Art	Alter der Besiedlung		Mean interisland distance	Habitat
<i>L. webbianus</i>	12 Mya	Miozän	1.1%	Wälder & Heiden
<i>P. xiphia</i>	5.6 Mya	Messinische Salinitätskrise		Lorbeerwald
<i>G. maderensis</i>	4.8 Mya	Pliozän		Lorbeerwald
<i>G. cleobule</i>	4.7 Mya		2.3%	Lorbeerwald
<i>P. xiphioides</i>	3.1 Mya		3.8%	Lorbeerwald
<i>V. vulcania</i>	3.0 Mya		0.0%	Wälder
<i>H. wyssii</i>	2.5 Mya		4.5%	Barrancos
<i>E. belemia</i>	2.5 Mya		3.1%	Halbwüste
<i>P. cheiranthi</i>	1.7 Mya	Gelasium	1.4%	feuchte Schluchten
<i>T. christi</i>	1.0 Mya		0.7%	Lichter Wald
<i>H. maderensis</i>	0.5 Mya	Pleistozän		Grassland

Nordafrikanische Arten auf den östlichen Kanaren

Polyommatus celina

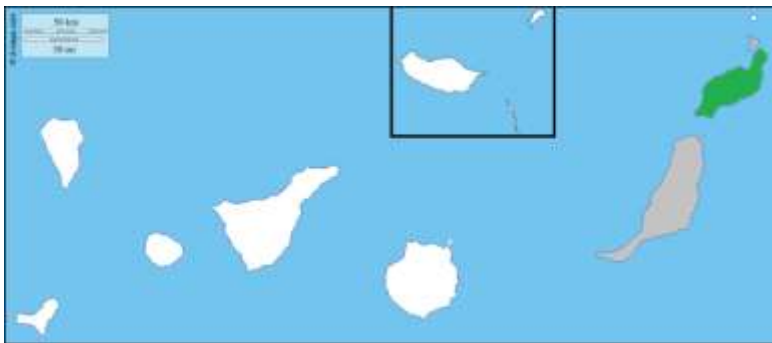


Habitat: Grassland

Lfp: *Lotus*



Euchloe charlonia



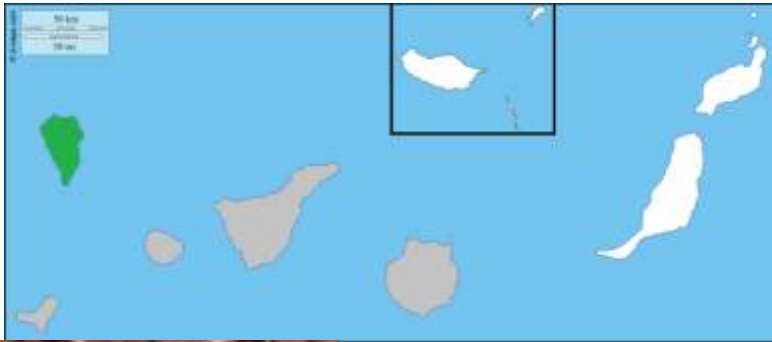
Habitat: Halbwüste
& Brachen

Lfp: Brassicaceae

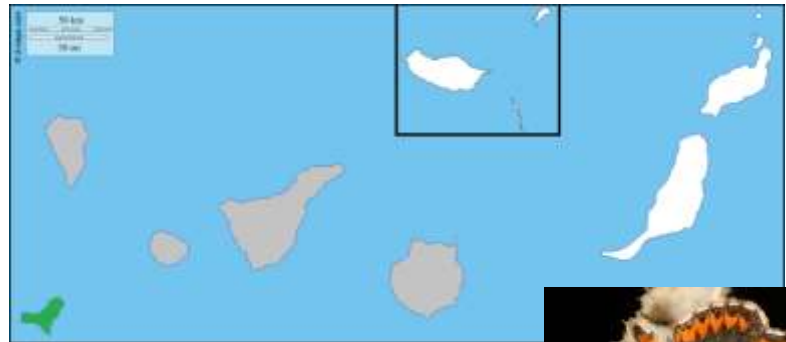


Mediterrane Waldarten auf den westlichen Kanaren

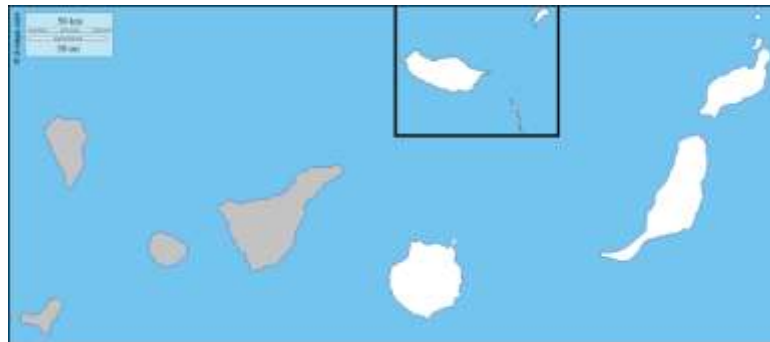
Maniola jurtina



Aricia cramera



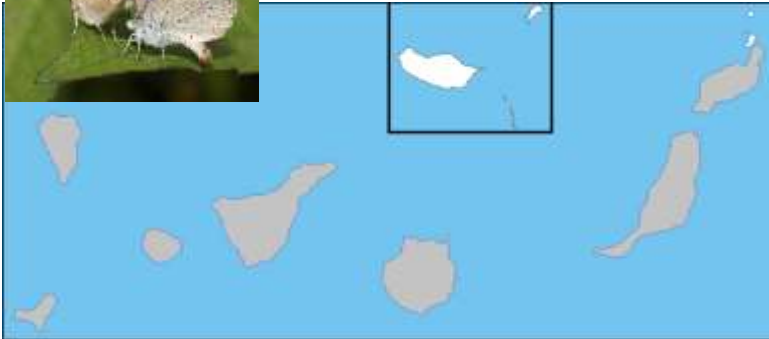
Argynnis pandora



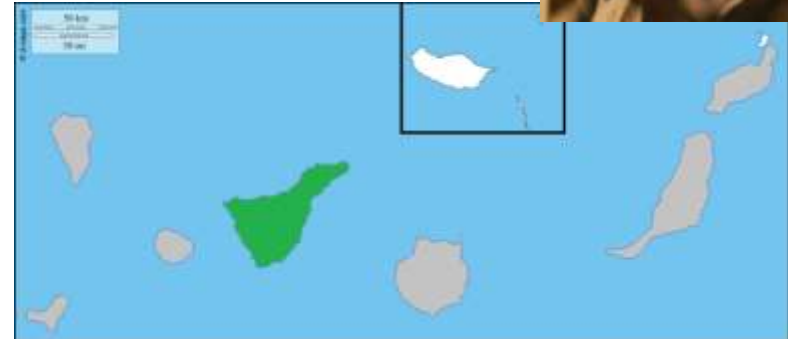
Kanaren – Offenland



Zizeeria knysna



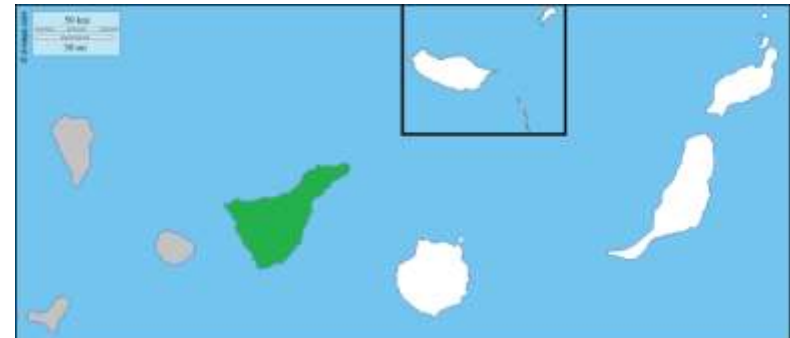
Pontia daplidice



Danaus chrysippus



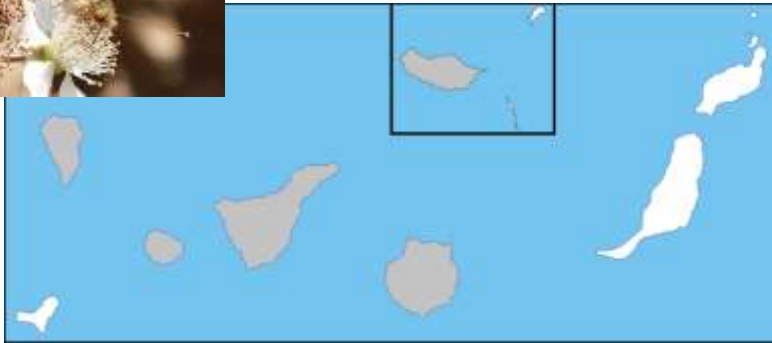
Vanessa virginiensis



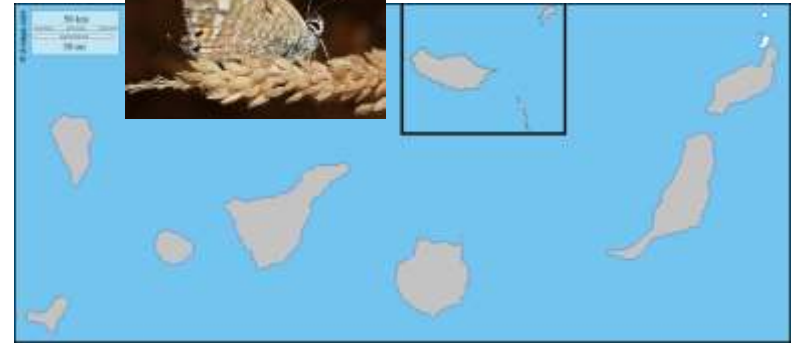
American

Kanaren & Madeira – Offenland

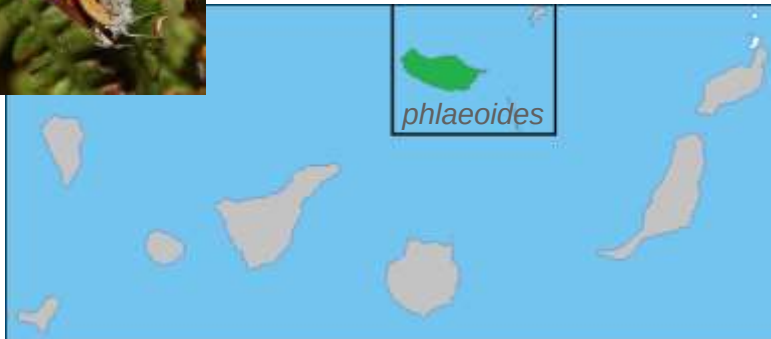
Issoria lathonia



Lampides boeticus



Lycaena phlaeas

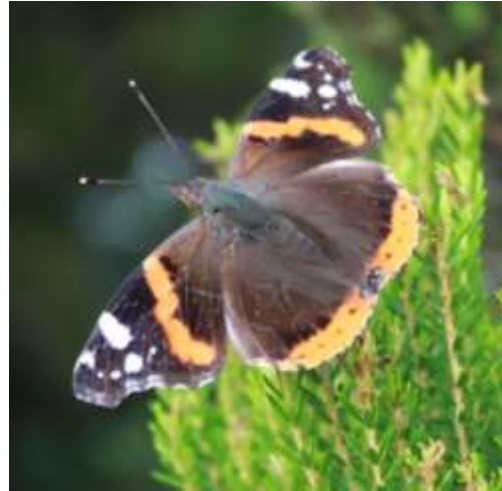
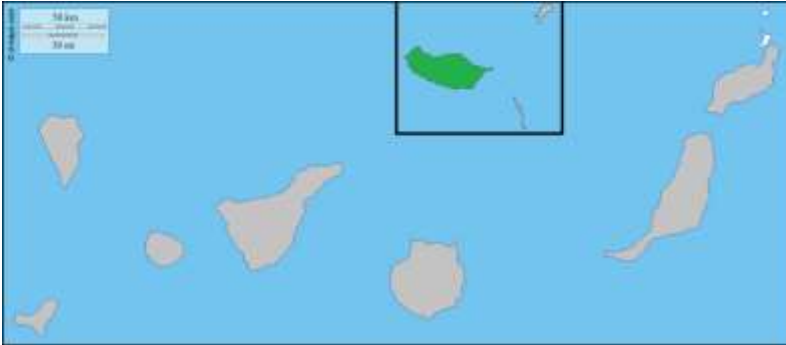


Colias crocea



Saisonale Migranten

Vanessa atalanta



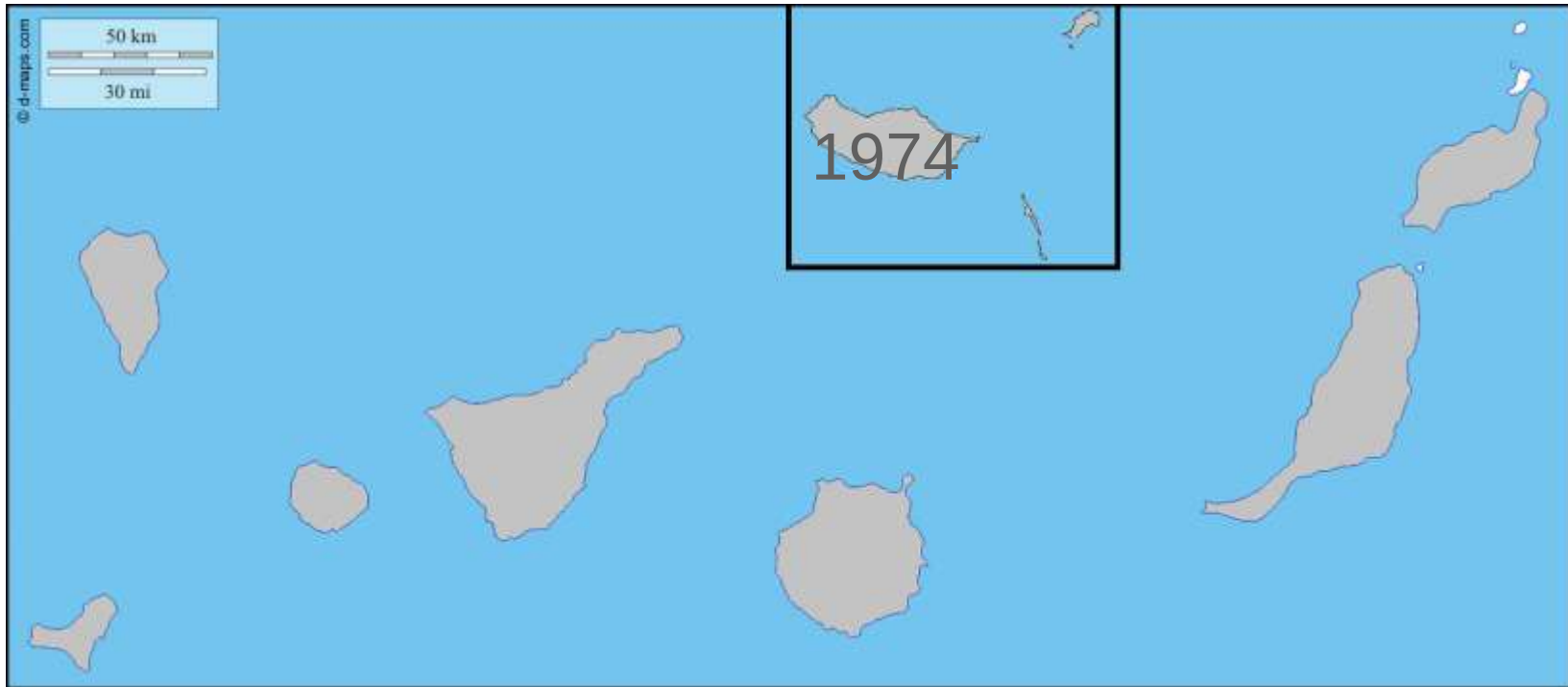
Vanessa cardui



Pieris rapae

Habitat: Offenland

Lfp: Brassicaceae & Tropaeolaceae

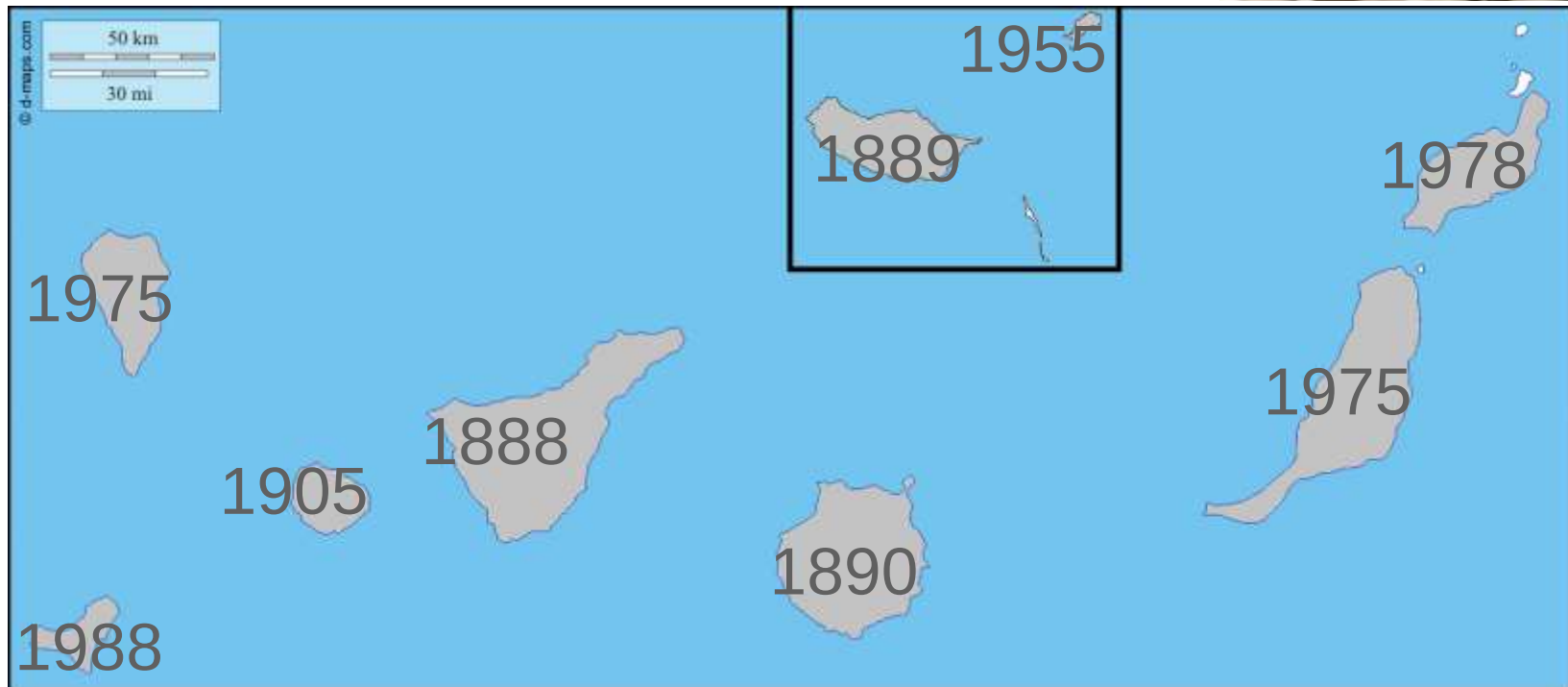


Palearctic

Danaus plexippus

Habitat: Parks & Gärten

Lfp: *Asclepias curassavica*



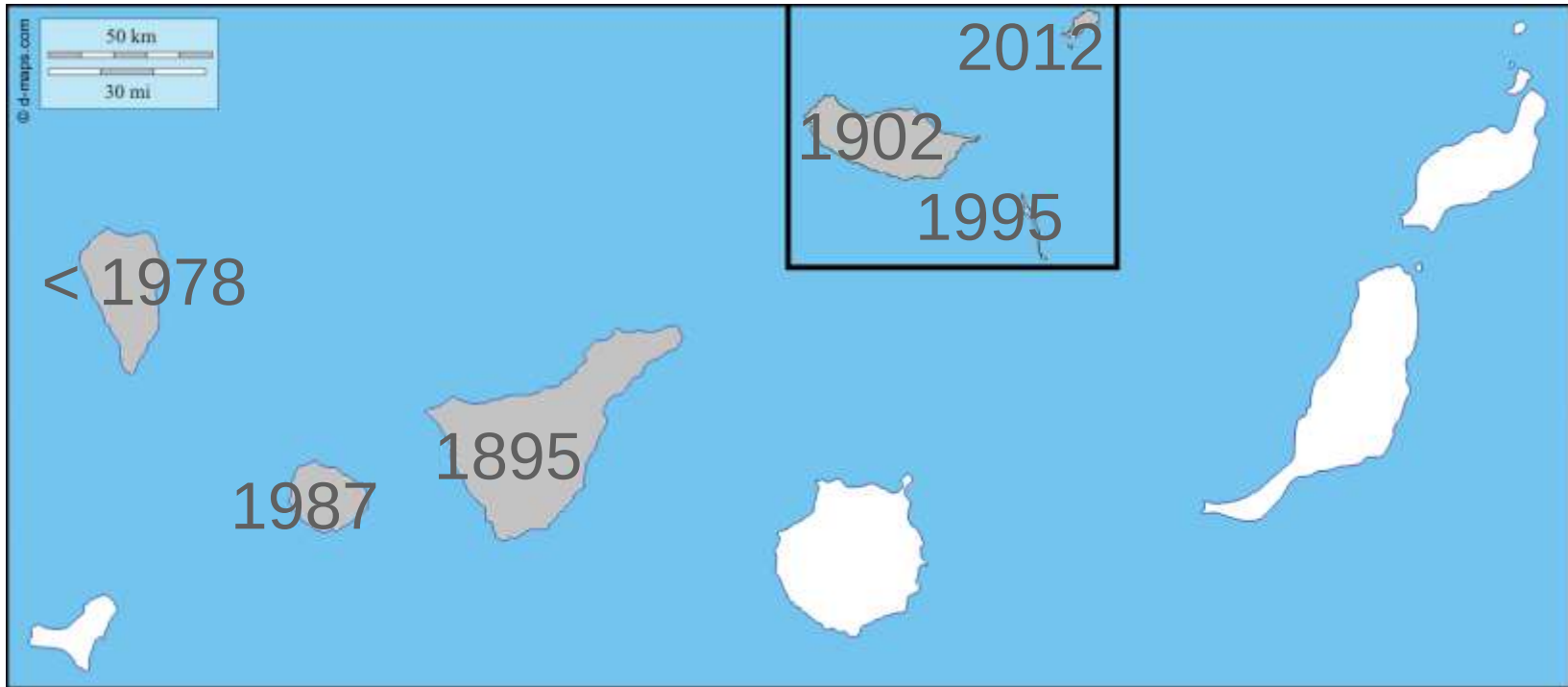
Nearctic



Hypolimnast misippus

Habitat: Parks & Gärten

Lfp: Polyphagous

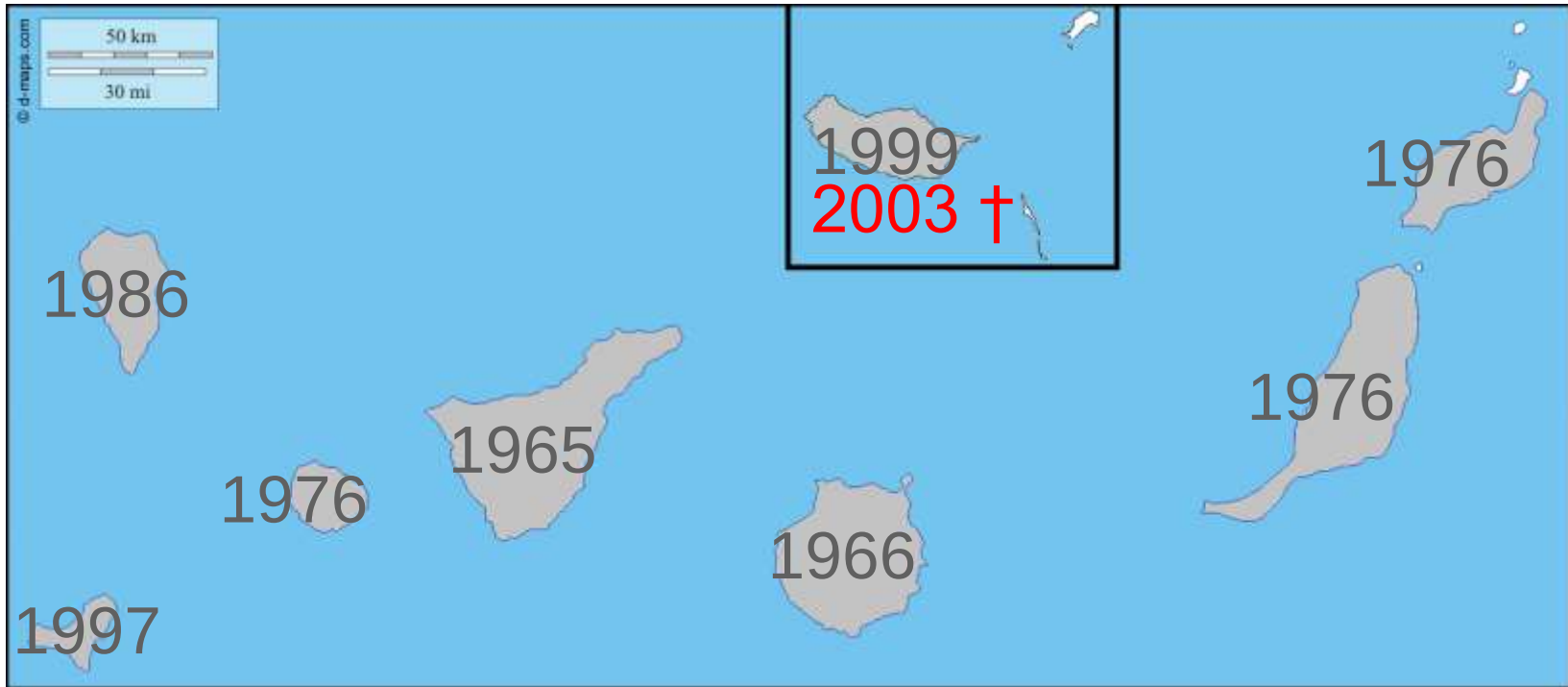


Afrotropical & Oriental

Catopsilia florella

Habitat: Parks & Gärten

Lfp: *Cassia*

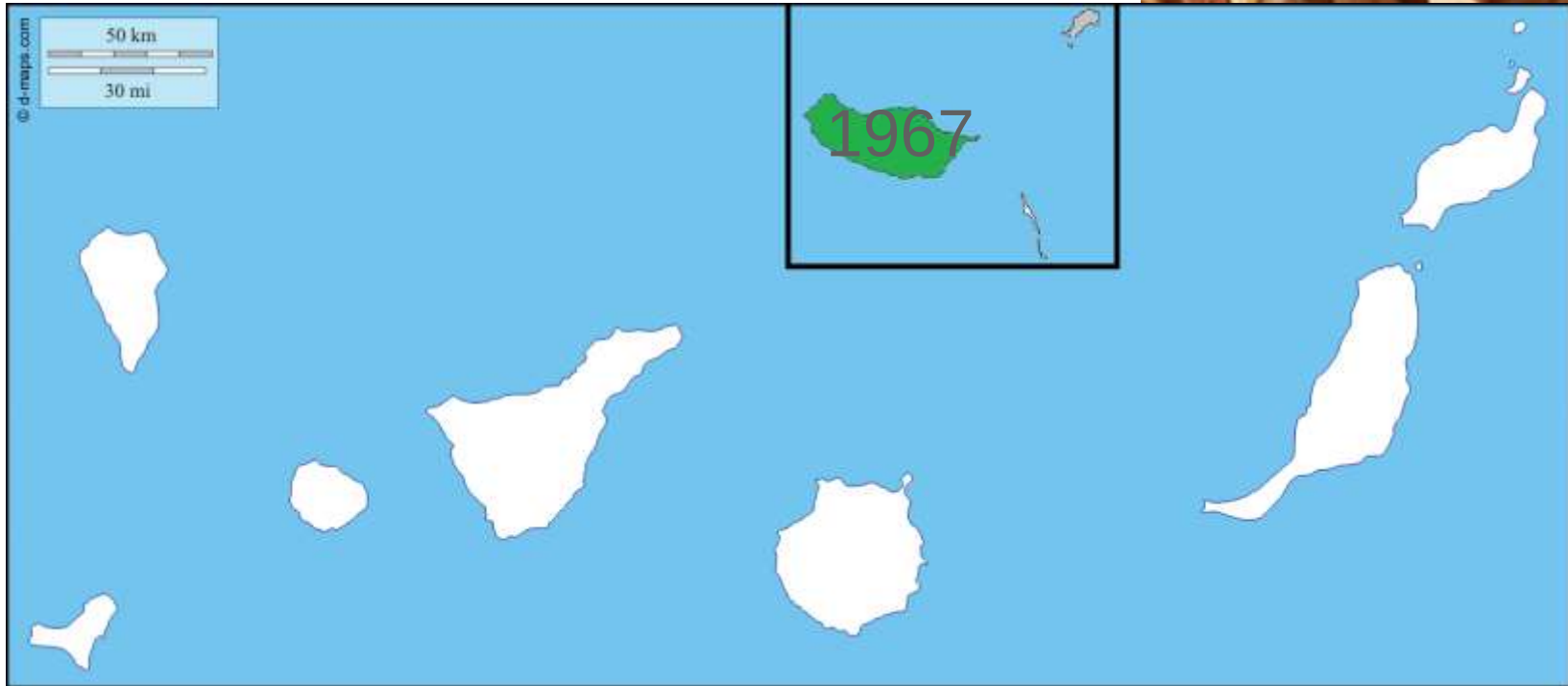


Afrotropical & Oriental

Pararge aegeria

Habitat: Wälder & Heiden

Lfp: Poaceae



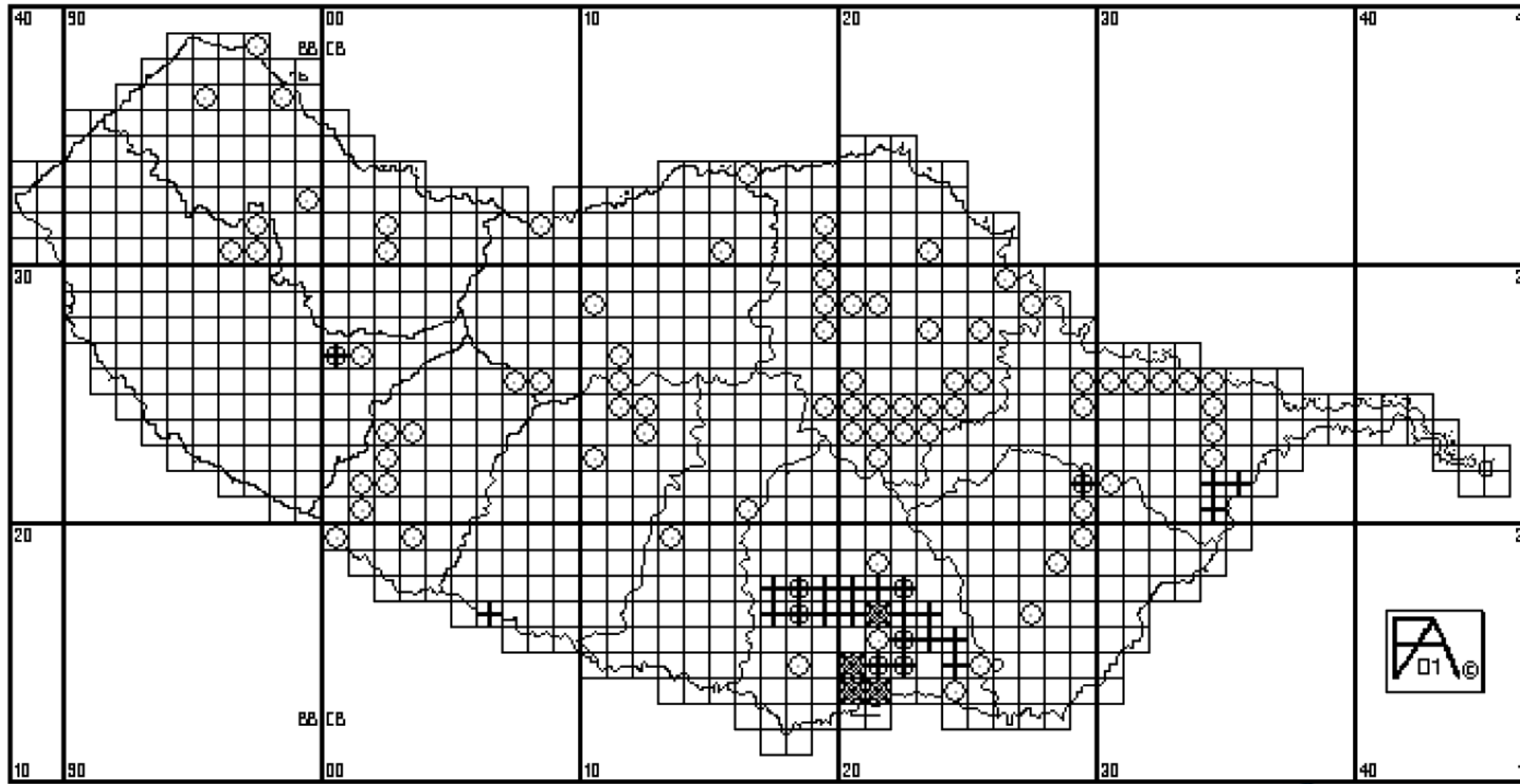
N Africa







Pararge xiphia Verbreitung auf Madeira



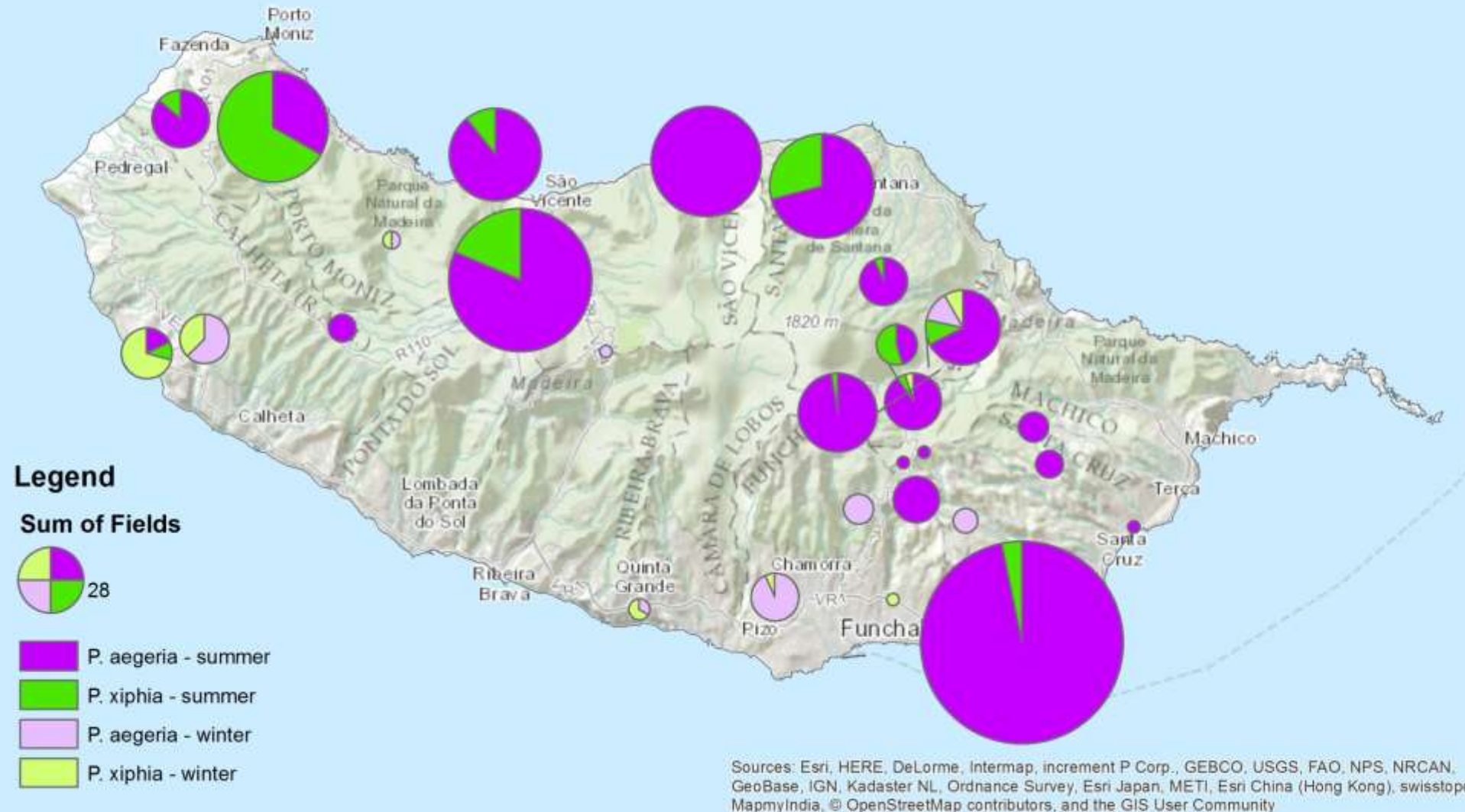
X : 1850-1900 + : 1900-1950 O : 1950-2000

1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

10 Km **UFZ**

Pararge aegeria verdrängt *P. xiphia*

Beobachtungen im Juli 2016, Februar 2017 & August 2017





Azanus ubaldus

Habitat: Halbwüste

Lfp: *Acacia*

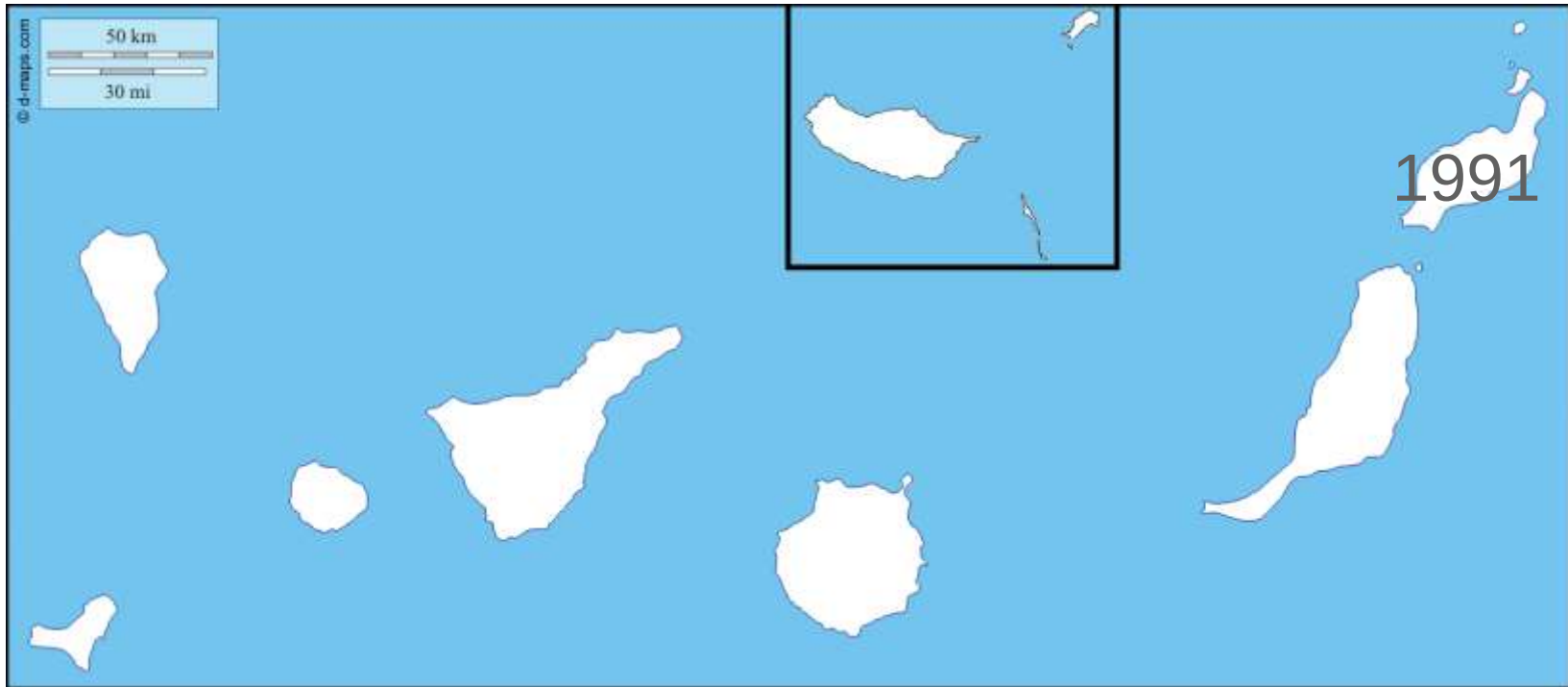


Afrotropical & Oriental

Pieris brassicae

Habitat: Kulturland

Lfp: Brassicaceae

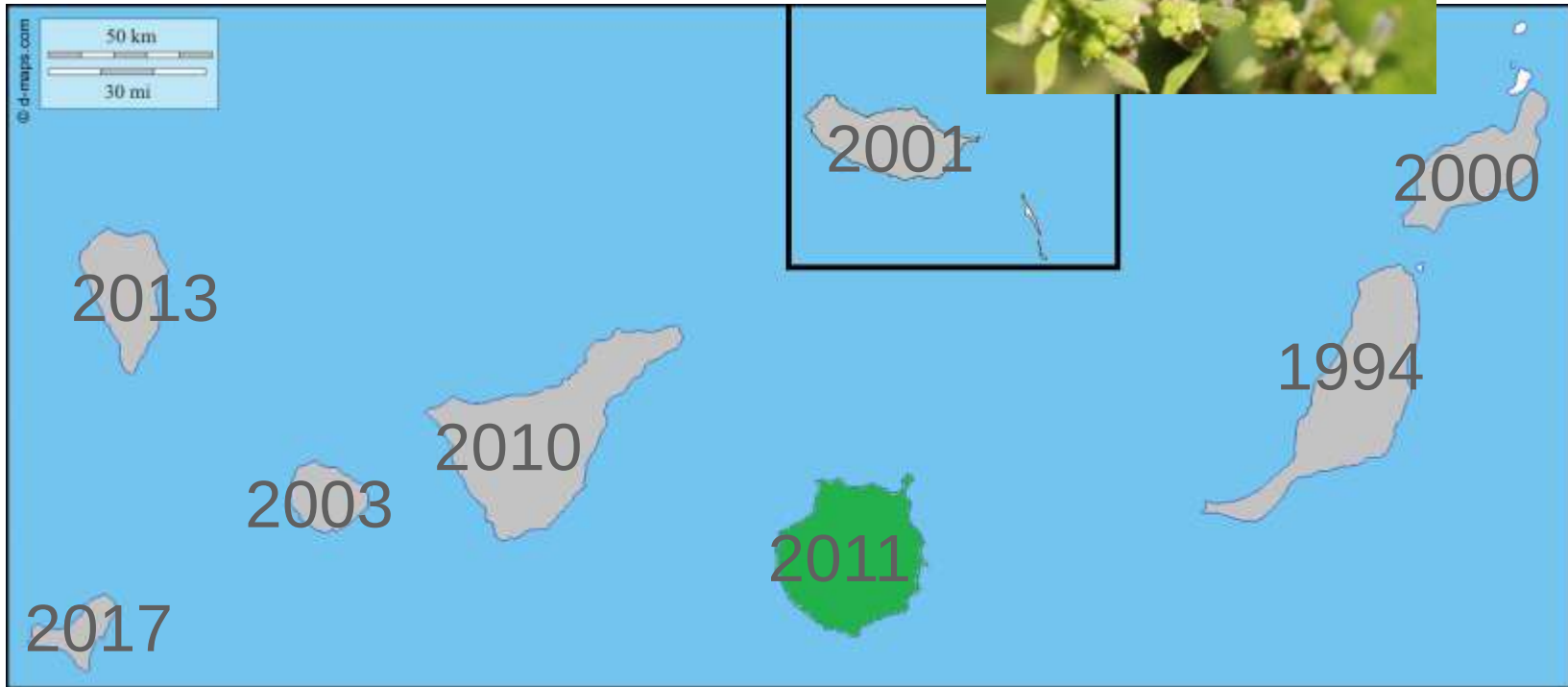


Palearctic

Leptotes pirithous

Habitat: Parks & Gärten

Lfp: Polyphagous



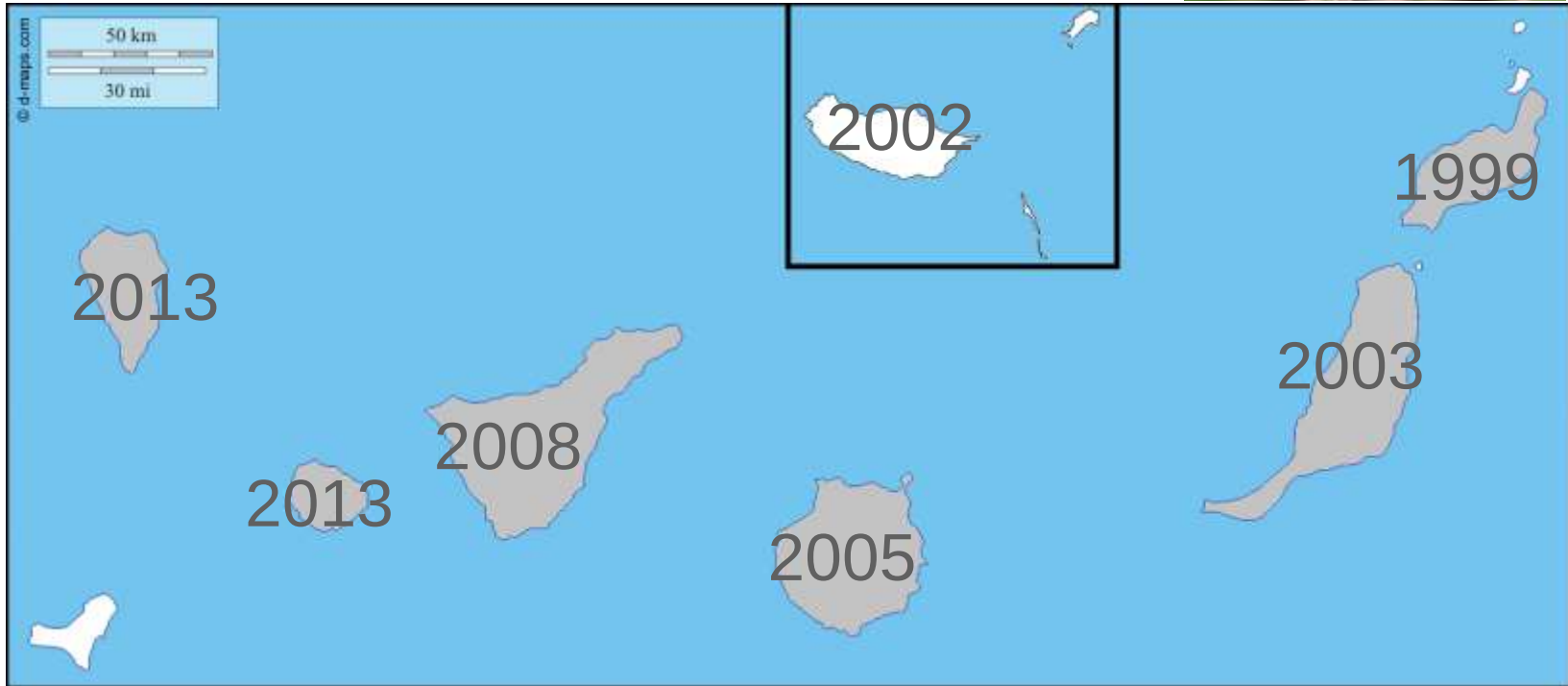
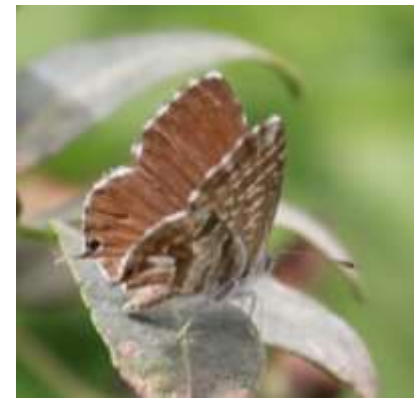
Afrotropical & Mediterranean



Cacyreus marshalli

Habitat: Parks & Gärten

Lfp: *Pelargonium*



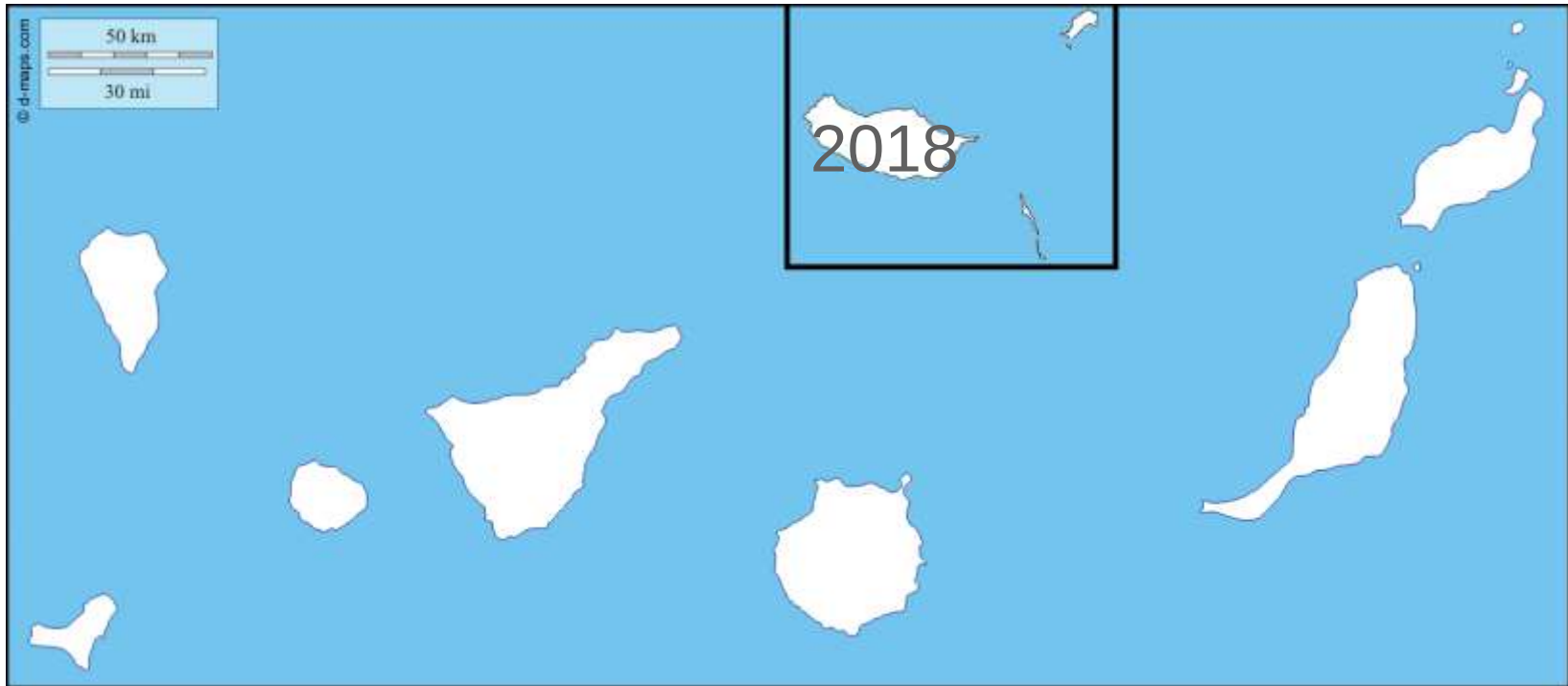
South African & introduced to the Mediterranean (since 1988; Morocco 1997)



Papilio machaon

Habitat: Offenland

Lfp: Apiaceae



Palearctic



Schlußfolgerungen

Teide, Tenerife,
3718 m

- Besiedlung der Endemiten hauptsächlich im Pliozän (Messinische Salinitätskrise – Gelasium)
- Herkunft: hauptsächlich N Afrika (feuchter als heute bis vor 3 Mio. Jahren), selten Amerika
- Schnelle Besiedlung des Archipelagos
- Starke interinsuläre Differenzierung der meisten Endemiten
- Die meisten Endemiten sind abhängig von Wald
- Hauptgefährdung:
 - Habitatzerstörung (z.B. Lorbeerwald)
 - Invasive Arten (speziell nahe verwandte)

✉ martin.wiemers@senckenberg.de

Vielen Dank fürs Zuhören!