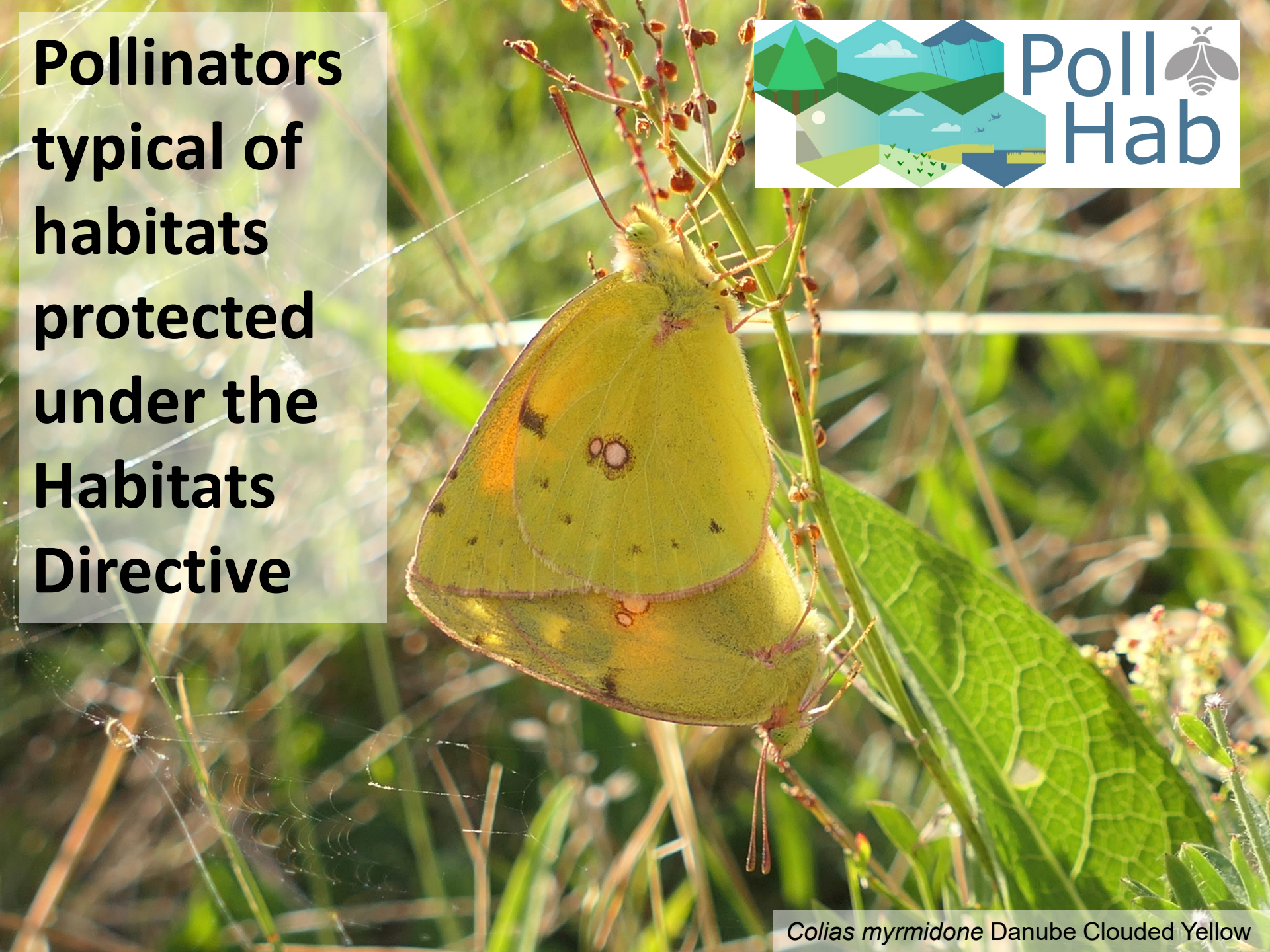
Pollinators typical of habitats protected under the Habitats Directive



Colias myrmidone Danube Clouded Yellow

Project overview




EU Pollinators Initiative includes Action 4.2. "*The Commission will identify pollinators typical of habitats protected under the Habitats Directive. Member States should ensure that the measures implemented for these habitats, in particular under Natura 2000 management plans, take pollinator conservation into account. Member States should secure adequate funding for those measures*".


Project overview

Main objective: identify 10 typical pollinator species for each protected Annex 1 habitat type

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Dirk Maes

De Vlinderstichting

Jurriën van Deijk

Butterfly Conservation Europe

Sam Ellis
Aidan Whitfield

Other project leads:

Wild Bees – Denis Michez (University of Mons)

Hoverflies – Ante Vujic (University of Novi Sad)


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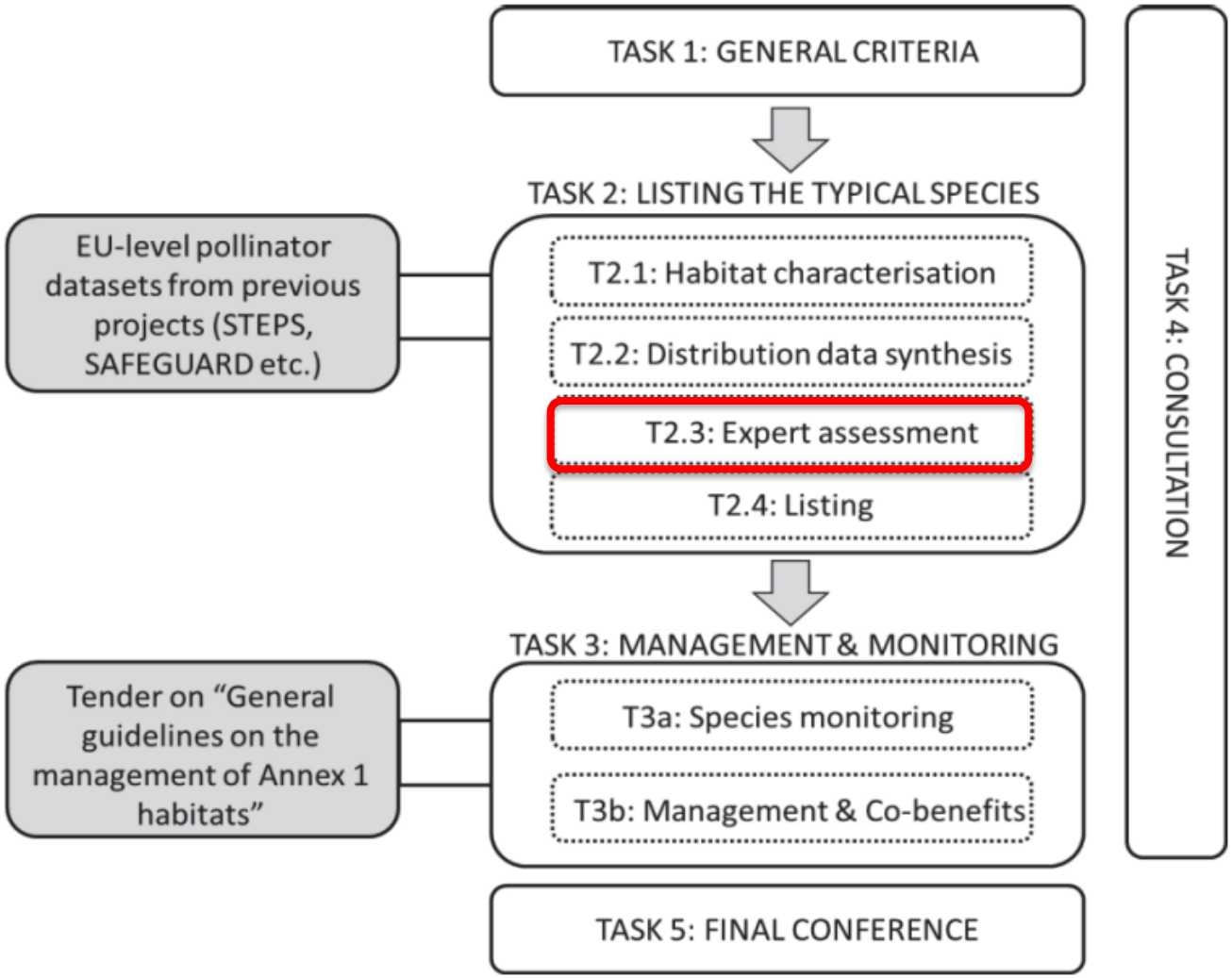
Organisation of the work



Two-year project

Start date: 4th Dec 2024

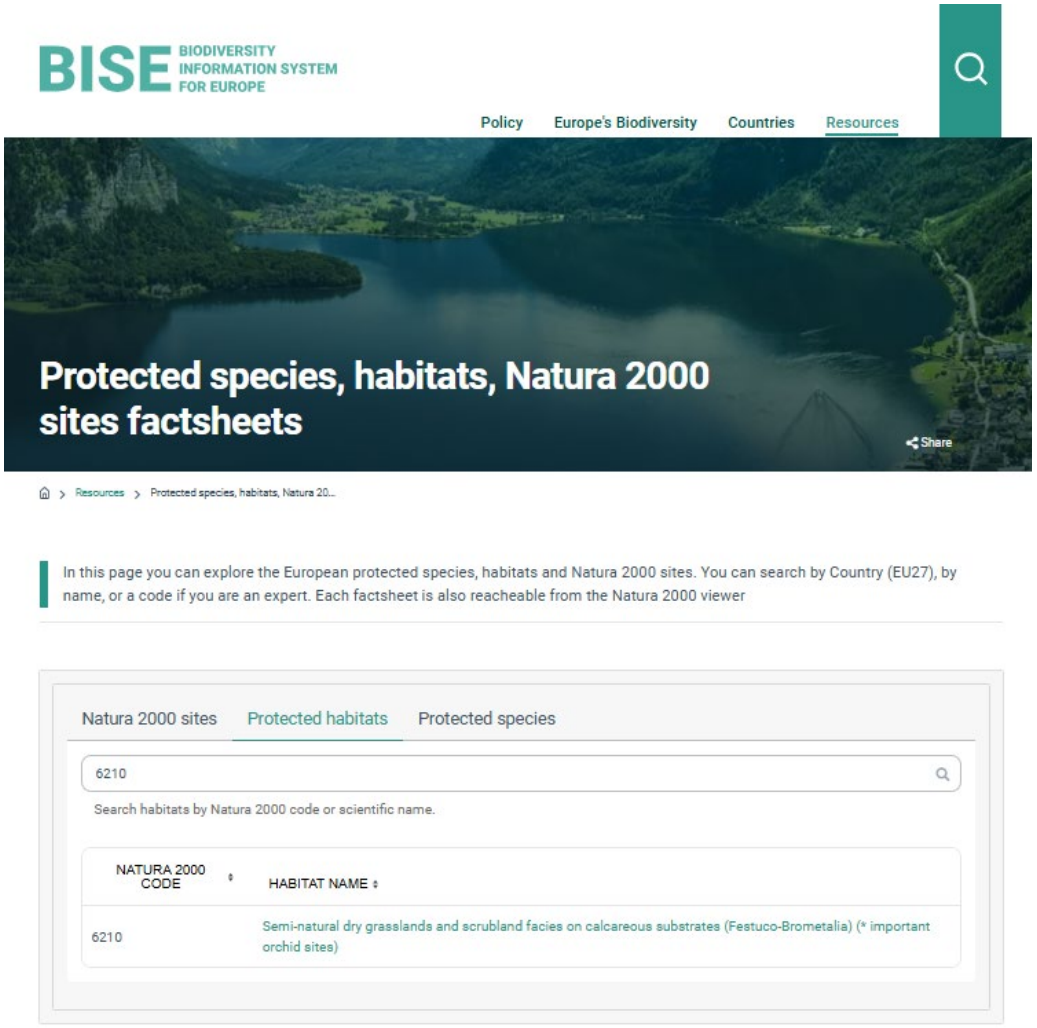
End date: 3rd Dec 2026

Annex 1 habitats

233 Annex 1 habitats:

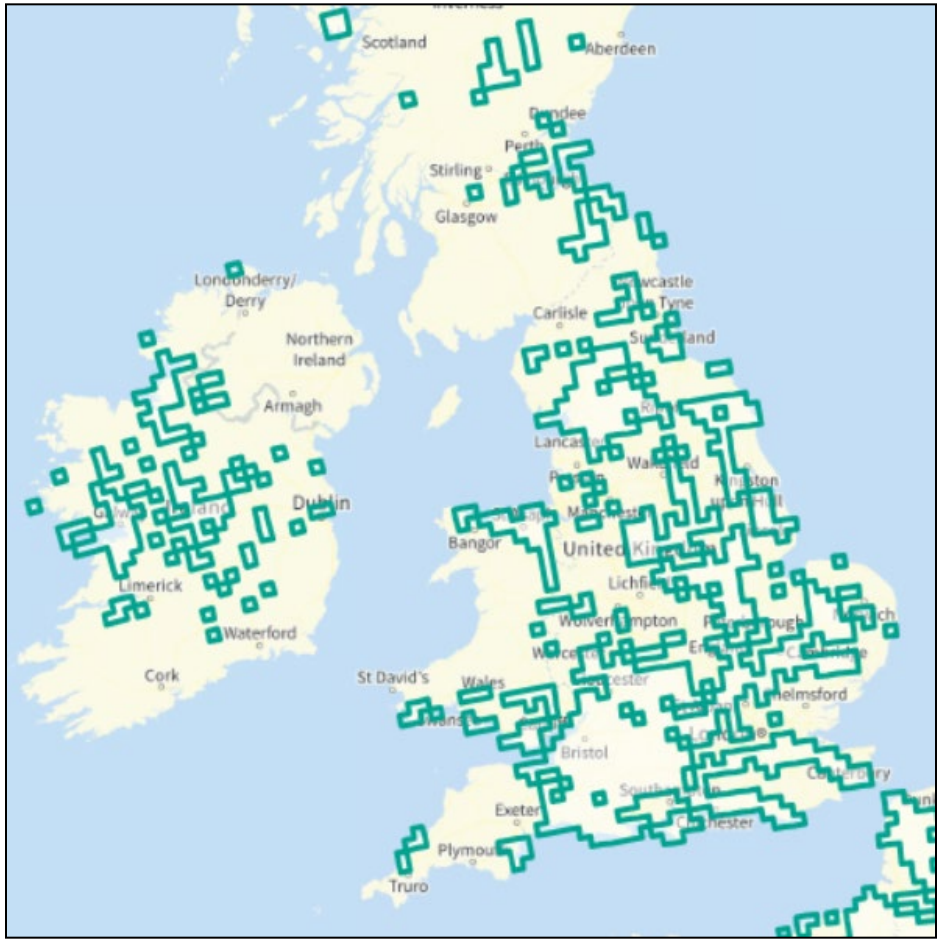
1. Coastal and halophytic habitats (28)
2. Coastal sand dunes and inland dunes (21)
3. Freshwater habitats (20)
4. Temperate heath and scrub (12)
5. Sclerophyllous scrub (matorral) (13)
6. Natural and semi-natural grasslands (32)
7. Raised bogs, mires and fens (12)
8. Rocky habitats and caves (14)
9. Forests (81)

Annex 1 habitat resources

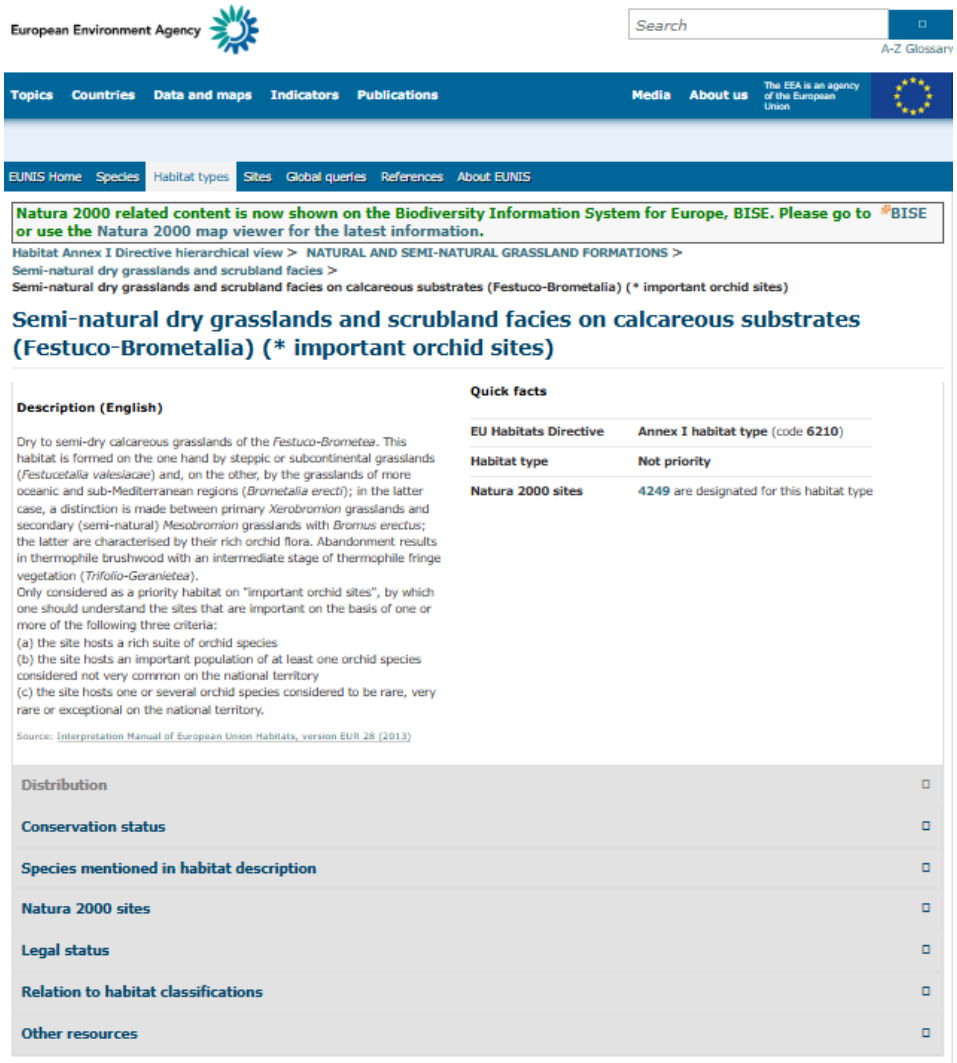


BISE Biodiversity Information System for Europe:

Annex 1 habitat resources



Annex 1 habitat resources



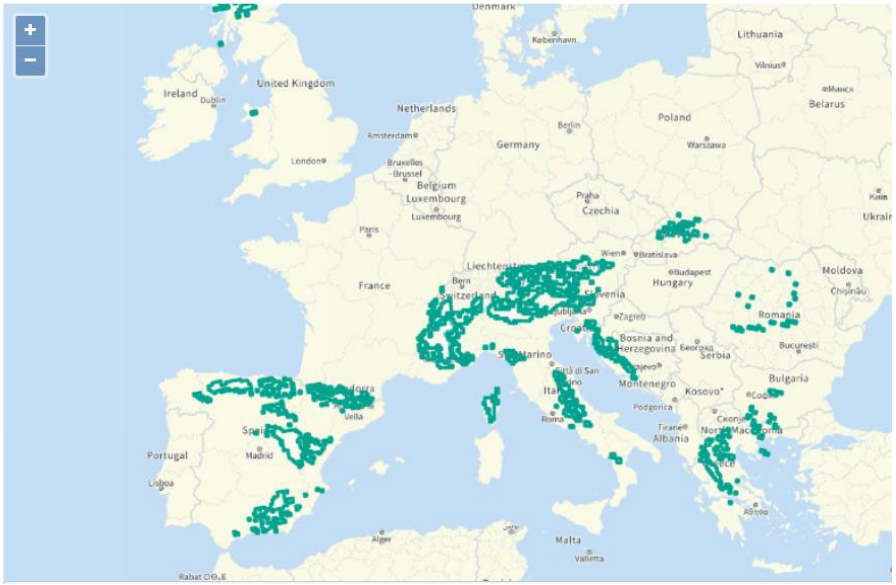
EUNIS European Nature Information System:

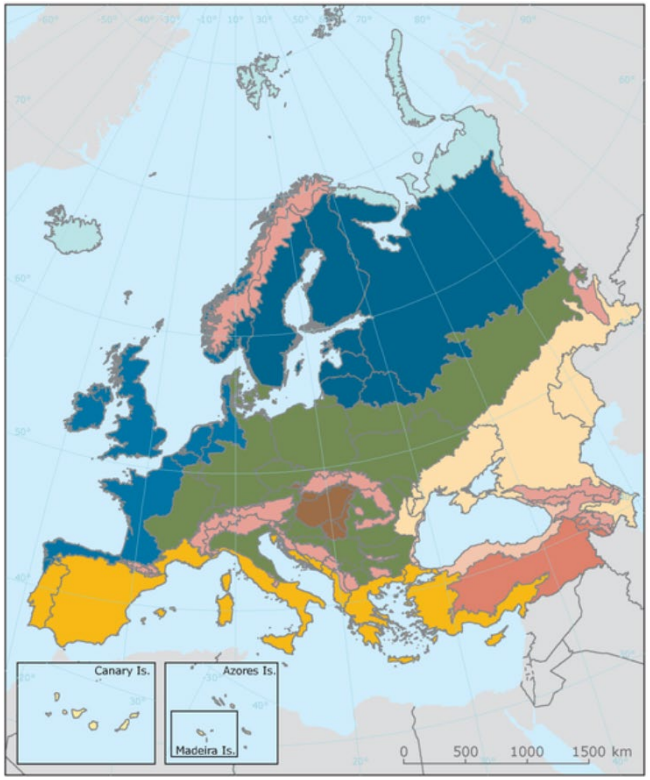
https://eunis.eea.europa.eu/habitats-annex1-browser.jsp?expand=#level_10001

Annex 1 habitats and geographical distribution

Distribution

This habitat occurs in **13** EU members states





Biogeographical regions in Europe, 2016

- Alpine
- Anatolian
- Arctic
- Atlantic
- Black Sea
- Boreal
- Continental
- Macaronesia
- Mediterranean
- Pannonian
- Steppic
- Outside data coverage

For each Annex 1 habitat: ID typical species separately for each biogeographical region

Habitat and biogeographical region matrix

ANNEX 1 HABITATS		BIOGEOGRAPHICAL REGIONS							
		ALP	ATL	BLS	BOR	CON	MED	PAN	STE
6110	Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi	439	134	17	55	1294	925	47	
6120	Xeric sand calcareous grasslands		158	1	95	3324	28	10	1
6130	Calaminarian grasslands of the Violetalia calaminariae	29	109			82	43		
6140	Siliceous Pyrenean Festuca eskia grasslands	98							
6150	Siliceous alpine and boreal grasslands	1224	215		50	32			
6160	Oro-Iberian Festuca indigesta grasslands		93				220		
6170	Alpine and subalpine calcareous grasslands	1353	214			73	744		
6190	Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)	102				162		183	
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* impo	1405	1763	53	893	4527	1487	461	
6220	Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea	44	298	43		358	5586		
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Co	1400	1271		860	2277	548	13	
6240	Sub-Pannonic steppic grasslands	126	12	2		498		302	
6250	Pannonic loess steppic grasslands					215		567	
6260	Pannonic sand steppes					13	2	371	
6270	Fennoscandian lowland species-rich dry to mesic grasslands	69			3562	188			
6280	Nordic alvar and precambrian calcareous flatrocks				252	11			
62A0	Eastern sub-mediteranean dry grasslands (Scorzoneratalia villosae)	168		15		230	563		
62B0	Serpentinophilous grassland of Cyprus						9		
62C0	Ponto-Sarmatic steppes			21		52			29
62D0	Oro-Moesian acidophilous grasslands	93				26	5		
6310	Dehesas with evergreen Quercus spp						2173		
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	857	1958	3	1913	3782	962	412	2
	TOTAL NUMBER OF ASSESSMENTS	**118**	**110**	**52**	**81**	**155**	**148**	**56**	**25**

Total: 745 – but 106 are freshwater and rocky habitats

What is a typical species?

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WILD BEES SYRPHIDS MOTHS AND BUTTERFLIES

Species pool in the biogeographical region

At least 10 typical species

Criterion A: Species which occur regularly at a high constancy

SubA1 Species and habitat distribution should overlap at least within a biogeographical region

AND

SubA2 Species should have a strong functional link with a plant species that regularly occur in the habitat

OR

SubA3 Species nest in the habitat

OR

Sub A4 During larval stage, species use microhabitats occurring in the habitat

AND

Criterion B: Species which are good indicators of favourable habitat quality and/or a wider group of other species with specific habitat requirements

(AND)

Criterion C. Species which can be monitored relatively easily by non-destructive and/or inexpensive means should be favoured

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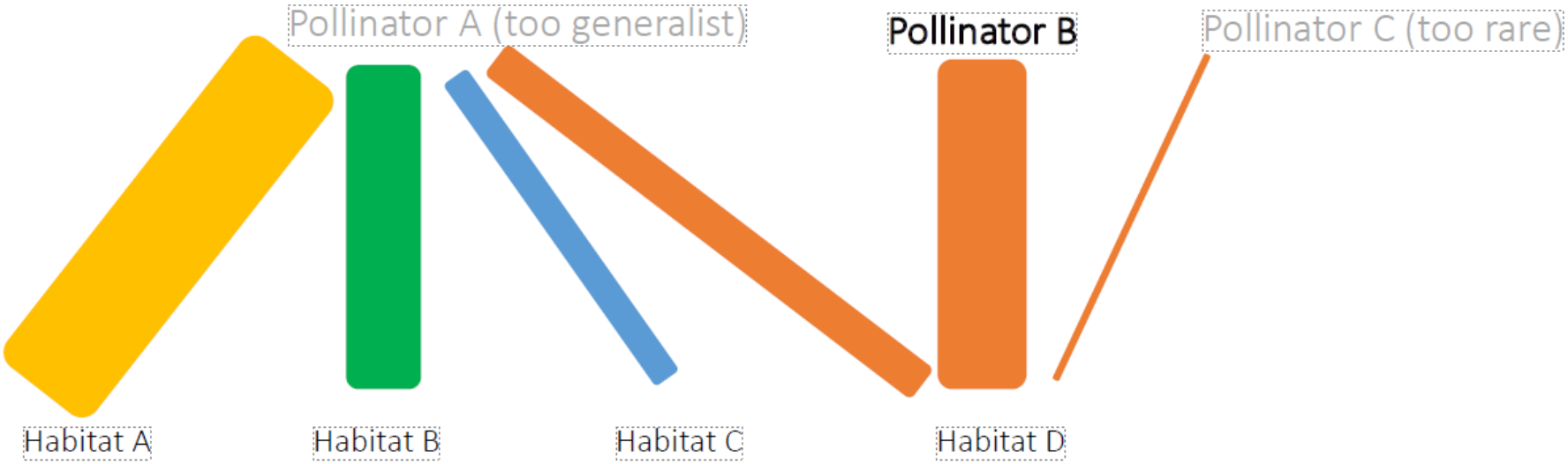
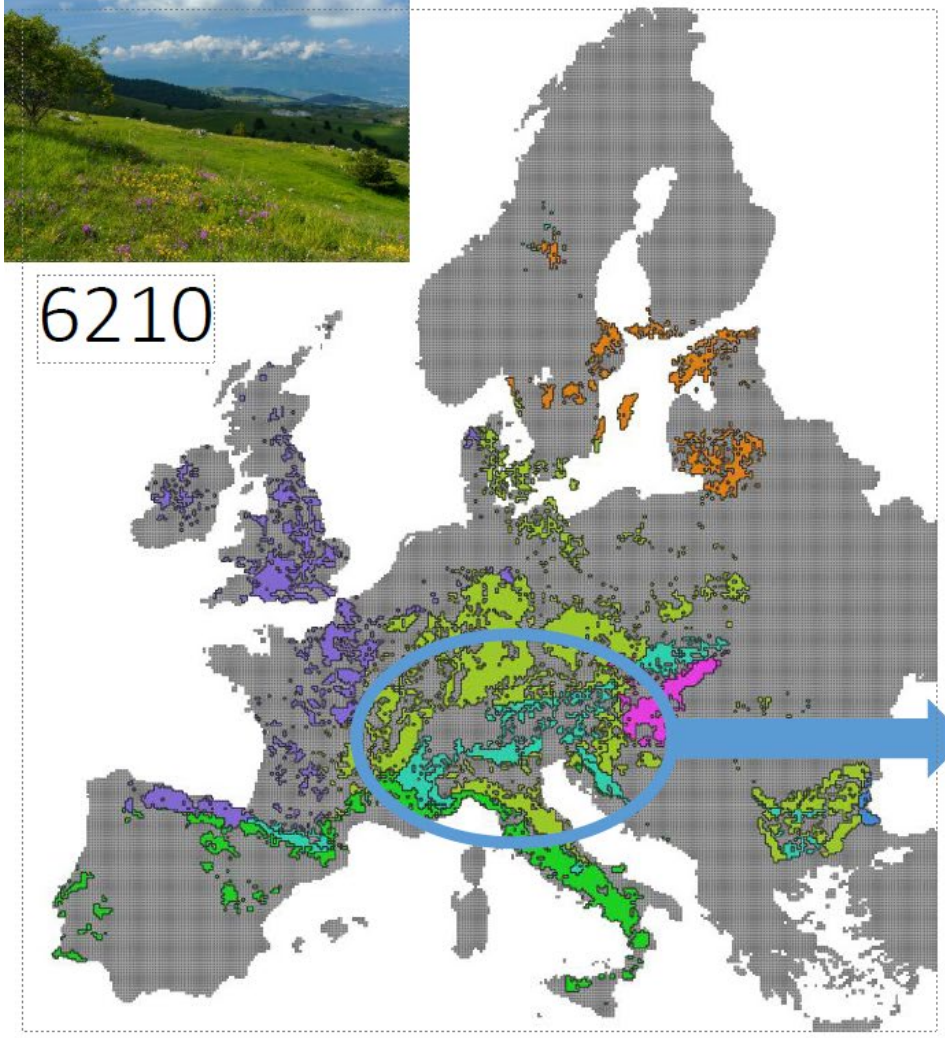
Criterion A: distribution overlap

Species which occur regularly at a high constancy (i.e. are 'characteristic') in a habitat type or at least in a major subtype or variant of a habitat type




Criterion A Sub A1: distribution overlap

6210



50%

- Andrena_clutacea
- Andrena_combinata
- Andrena_congruens
- Andrena_curvungula
- Andrena_humilis
- Andrena_polita
- Andrena_russula
- Andrena_saxonica
- Anthidium_oblongatum
- Bombus_argillaceus
- Bombus_barbutellus
- Bombus_humilis
- Bombus_mesomelas
- Bombus_mucidus
- Bombus_ruderarius
- Bombus_soroeensis
- Bombus_wurflenii
- Ceratina_chalybea
- Chelostoma_distinctum
- Chelostoma_foveolatum
- Dufourea_minuta
- Halictus_maculatus
- Halictus_sexcinctus
- Hoplitis_adunca
- Hoplitis_dalmatica
- Hoplitis_mitis
- Hoplitis_villosa
- Lasioglossum_aeratum
- Megachile_ligniseca
- Megachile_pyrenaea
- Nomada_armata
- Nomada_braunsiana
- Nomada_errans
- Nomada_facilis

75%

- Bombus_barbutellus
- Bombus_humilis
- Bombus_ruderarius
- Bombus_wurflenii
- Nomada_braunsiana

90%

- Bombus_humilis

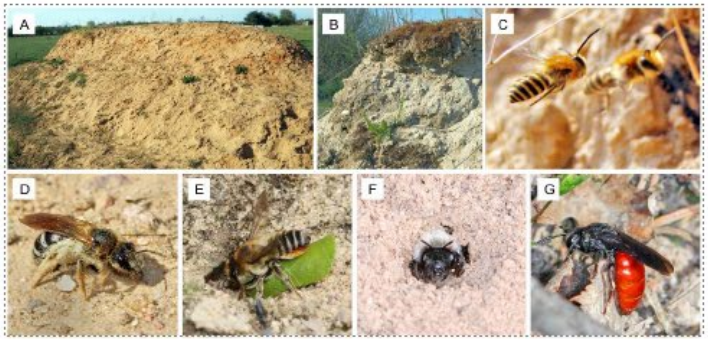

12:20 31/JUL/2016

Criterion A Sub A2, A3 and A4

Sub A2: Functional link with plants

- Butterfly/moth host plants
- Oligolectic bees
- Syrphid larvae associated with plant roots, ...

Sub A3: Nesting



Sub A4: Microhabitats (e.g. deadwood, cavities, soil organic matter)

Criterion Sub A2: functional link with plants

Species	Level	Host Plant
Aglais_io	Species	Humulus lupulus
Aglais_io	Species	Urtica dioica
Aglais_urticae	Species	Urtica dioica
Agriades_aquilo	Species	Empetrum nigrum
Agriades_aquilo	Species	Saxifraga aizoides
Agriades_aquilo	Species	Saxifraga oppositifolia
Agriades_dardanus	Species	Androsace kosopoljanskii
Agriades_dardanus	Species	Androsace villosa
Agriades_glandon	Species	Androsace obtusifolia
Agriades_glandon	Species	Androsace chamaejasme
Agriades_glandon	Species	Vitaliana primuliflora

Butterfly larval hostplant spreadsheet
(source: European Red List)


Criterion Sub A2: functional link with plants

Region	Habitat ID	Group	Phylum	Order	Family	Genus	Species
ATL	6210	Animals	Arthropoda	Lepidoptera	Hesperiidae	Erynnis	Erynnis tages
ATL	6210	Animals	Arthropoda	Lepidoptera	Hesperiidae	Pyrgus	Pyrgus cirsii
ATL	6210	Animals	Arthropoda	Lepidoptera	Hesperiidae	Thymelicus	Thymelicus sylvestris
ATL	6210	Animals	Arthropoda	Lepidoptera	Lycaenidae	Cupido	Cupido minimus
ATL	6210	Animals	Arthropoda	Lepidoptera	Lycaenidae	Polyommatus	Polyommatus dorylas
ATL	6210	Animals	Arthropoda	Lepidoptera	Nymphalidae	Chazara	Chazara briseis
ATL	6210	Fungi	Ascomycota	Lecanorales	Cladoniaceae	Cladonia	Cladonia furcata
ATL	6210	Fungi	Ascomycota	Lecanorales	Cladoniaceae	Cladonia	Cladonia rangiformis
ATL	6210	Fungi	Ascomycota	Lecanorales	Psoraceae	Psora	Psora decipiens
ATL	6210	Fungi	Ascomycota	Peltigerales	Peltigeraceae	Peltigera	Peltigera rufescens
ATL	6210	Animals	Chordata	Passeriformes	Emberizidae	Emberiza	Emberiza citrinella
ATL	6210	Animals	Chordata	Passeriformes	Motacillidae	Anthus	Anthus trivialis
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Bunium	Bunium bulbocastanum
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Bupleurum	Bupleurum falcatum
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Bupleurum	Bupleurum longifolium
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Daucus	Daucus carota
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Eryngium	Eryngium bourgatii
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Eryngium	Eryngium campestre
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Laser	Laser trilobum
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Laserpitium	Laserpitium latifolium
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Libanotis	Libanotis pyrenaica
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Peucedanum	Peucedanum cervaria
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Peucedanum	Peucedanum officinale
ATL	6210	Plants	Streptophyta	Apiales	Apiaceae	Peucedanum	Peucedanum oreoselinum

Annex 1 habitat typical plant species: includes some animals

Criterion Sub A2: functional link with plants

Region	Habitat ID	Group	Phylum	Order	Family	Genus	Species
ALP	4060	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria chariclea
ALP	4060	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria napaea
ALP	4060	Animals	Arthropoda	Lepidoptera	Nymphalidae	Euphydryas	Euphydryas iduna
ALP	6150	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria chariclea
ALP	6150	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria napaea
ALP	6150	Animals	Arthropoda	Lepidoptera	Nymphalidae	Erebia	Erebia pandrose
ALP	6150	Animals	Arthropoda	Lepidoptera	Nymphalidae	Euphydryas	Euphydryas iduna
ALP	6150	Animals	Arthropoda	Lepidoptera	Nymphalidae	Oeneis	Oeneis bore
ALP	6150	Animals	Arthropoda	Lepidoptera	Nymphalidae	Oeneis	Oeneis norna
ALP	6170	Animals	Arthropoda	Lepidoptera	Lycaenidae	Albulina	Albulina orbitulus
ALP	6170	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria chariclea
ALP	6170	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria napaea
ALP	6170	Animals	Arthropoda	Lepidoptera	Nymphalidae	Euphydryas	Euphydryas iduna
ALP	6170	Animals	Arthropoda	Lepidoptera	Pieridae	Colias	Colias hecla
ALP	6170	Animals	Arthropoda	Lepidoptera	Pieridae	Colias	Colias werdandi
ALP	6190	Animals	Arthropoda	Lepidoptera	Papilionidae	Parnassius	Parnassius apollo
ALP	6210	Animals	Arthropoda	Lepidoptera	Lycaenidae	Aricia	Aricia artaxerxes
ALP	6230	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria euphrosyne
ALP	6230	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria selene
ALP	7310	Animals	Arthropoda	Lepidoptera	Hesperiidae	Pyrgus	Pyrgus centaureae
ALP	7310	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria aquilonaris
ALP	7310	Animals	Arthropoda	Lepidoptera	Nymphalidae	Boloria	Boloria freija
ALP	7310	Animals	Arthropoda	Lepidoptera	Nymphalidae	Clossiana	Clossiana frigga
ALP	7310	Animals	Arthropoda	Lepidoptera	Nymphalidae	Proclossiana	Proclossiana eunomia

Annex 1 habitat typical butterfly species extracted

Criterion Sub A4: use of microhabitats

Larval host plants: Specific plant species for egg-laying and larval food: some species select larval hostplants with specific growth forms (e.g. flowering, in proximity to bare ground)

Ant nests: Hosts for myrmecophilous species - obligate for Phengaris spp. and facultative for other Lycaenids

Flowering plants: Provide nectar as a primary food source for adults

Structural variation: Different vegetation heights provide different microclimates and egg-laying sites: especially important in grassland habitats

Bare ground patches: Used for thermoregulation (basking), male territorial behaviour and hostplant selection

Open sunny spots: Important for thermoregulation and feeding

Microtopography: Refuges under extreme weather conditions (e.g. flooding, drought):

Aspect variation: Different aspects can provide suitable habitat under extreme weather conditions: in drought conditions north-facing slopes can support larval hostplants more likely to be in a suitable condition

Leaf litter and other decaying vegetation: Habitat for overwintering stages

Decaying organic matter: Some species are attracted to fermenting fruits or carrion.

Tall grasses and shrubs: Offers shelter from predators/harsh weather and overwintering sites.

Understorey vegetation: Larval host plants and adult nectar sources

Canopy gaps and edges: Larval host plants and adult nectar sources in sunny situations

Tree trunk sap flows and aphids: some adult butterflies feed on tree sap or honeydew

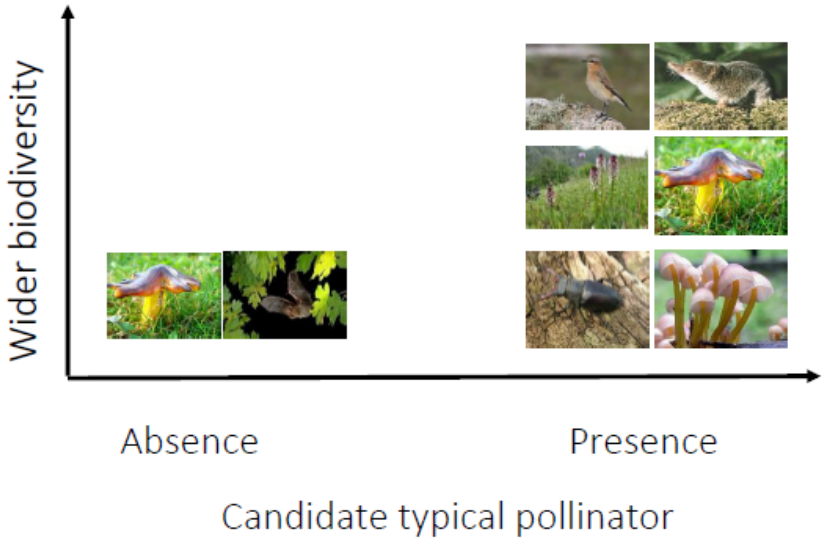
Criterion Sub B1 and Sub B2

Sub B1 Indicator of habitat quality AND/OR Sub B2 indicator of wider group of species

Sensitivity to the major pressures

Correlation with other sensitive species

Candidate	Pressure A	Pressure B	Pressure C
Species A	→	→	→
Species B	↘	↘	↘
Species C	?	?	?
Species D	↘	↘	?
Species E	?	?	?



Criterion C: ease of monitoring

Criterion C: Species that could be easily monitored SHOULD be preferred

Potential biases towards more conspicuous species


Callophrys rubi


Speyeria aglaja


Fabriciana adippe


Fabriciana niobe

Uncertainty measures

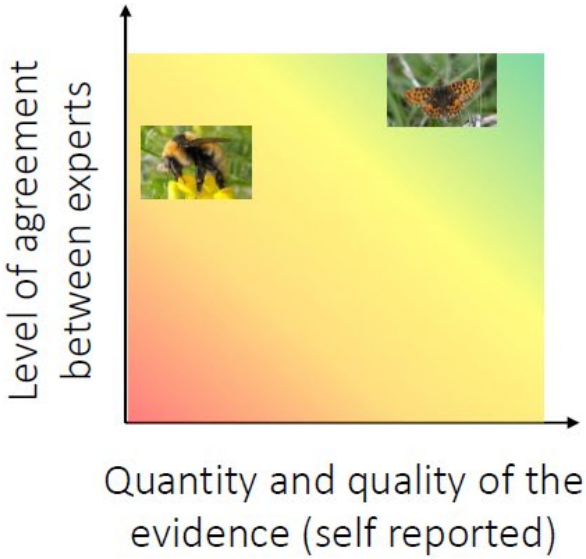
Habitat 6210

Typical

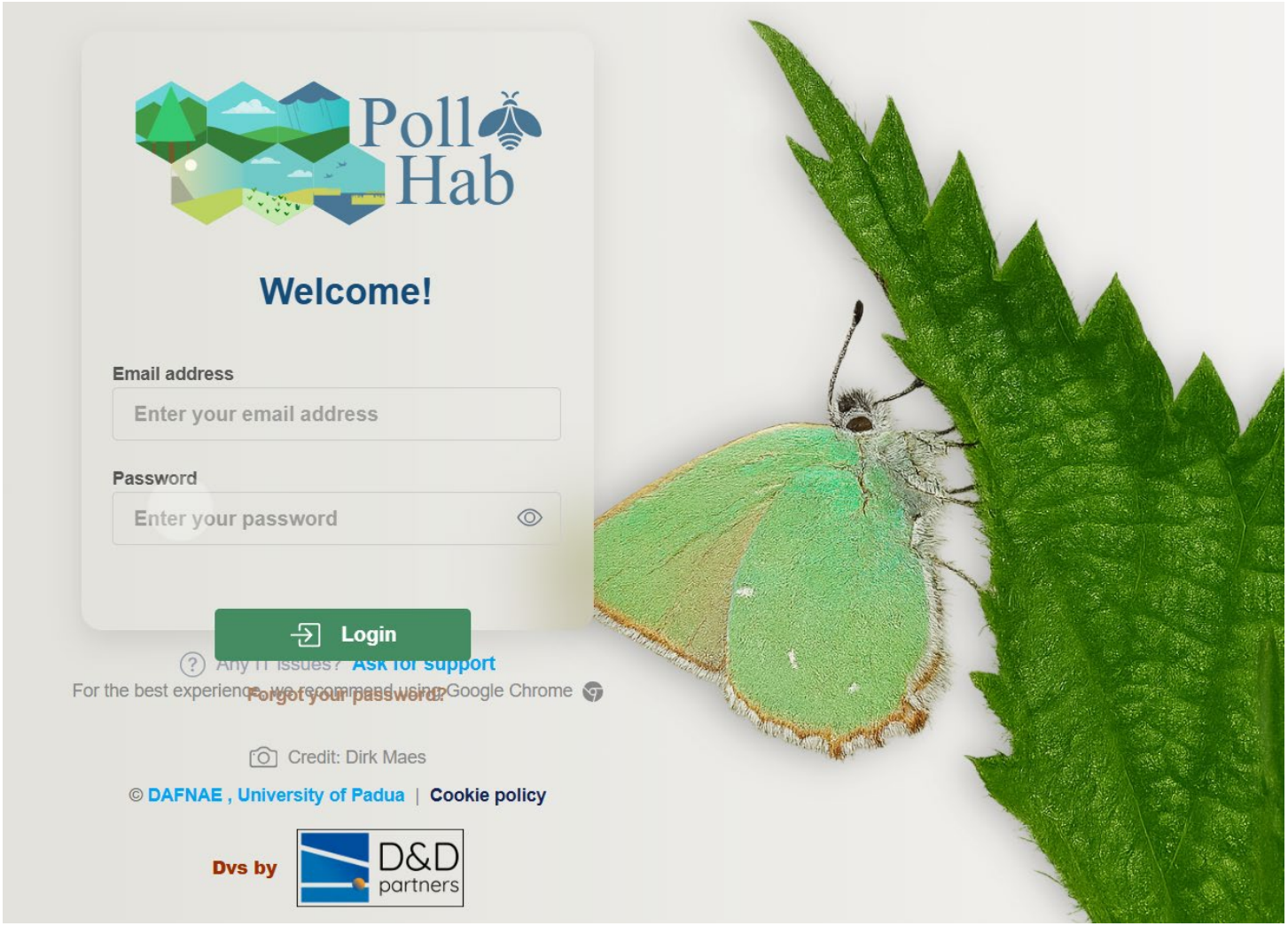
Listing

Sub A1	Sub A2	Sub A3	Sub A4	Sub B1	Sub B2	C
77%	●			●	●	●
81%		●	●		●	●

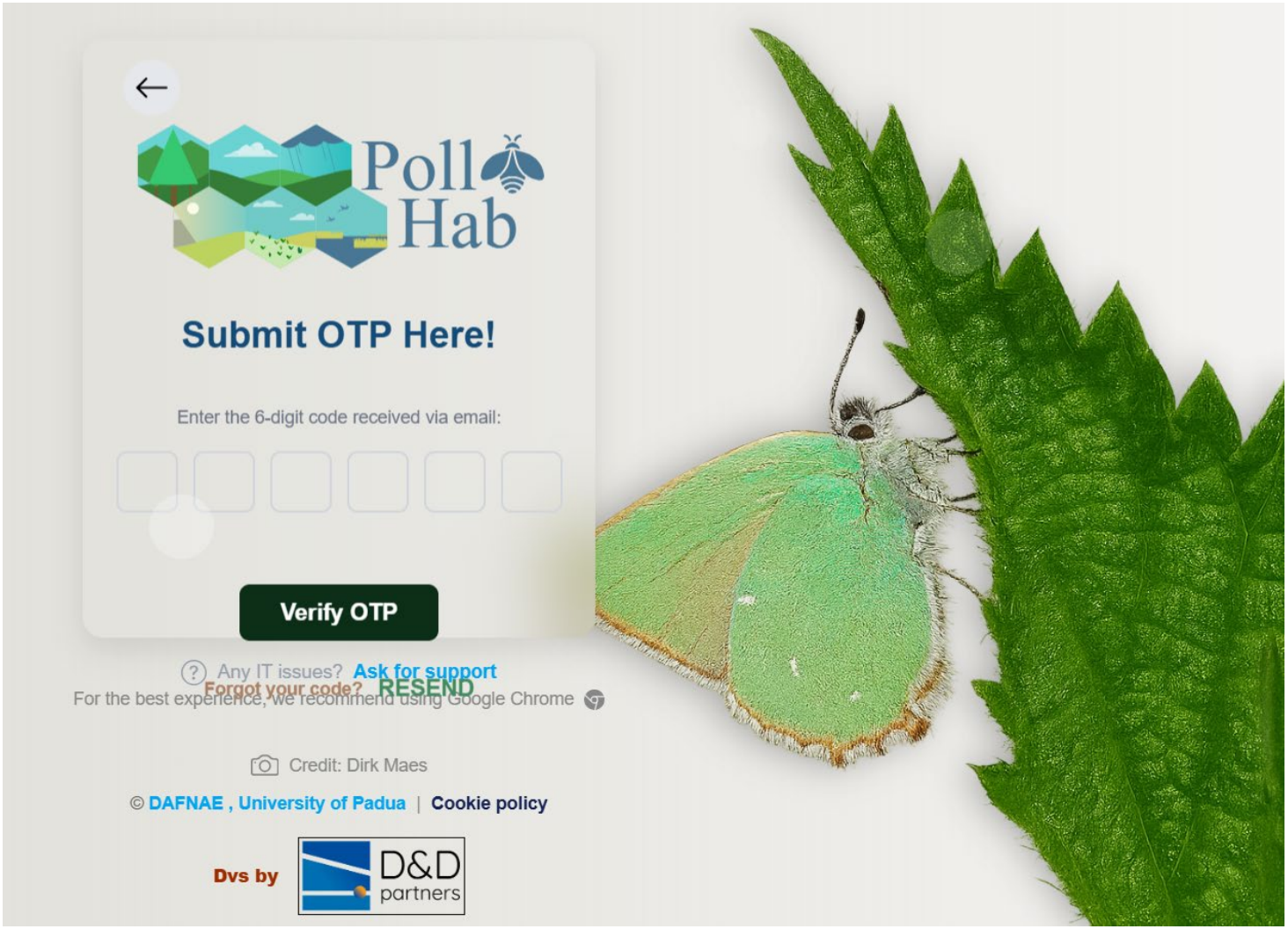
Uncertainty measures



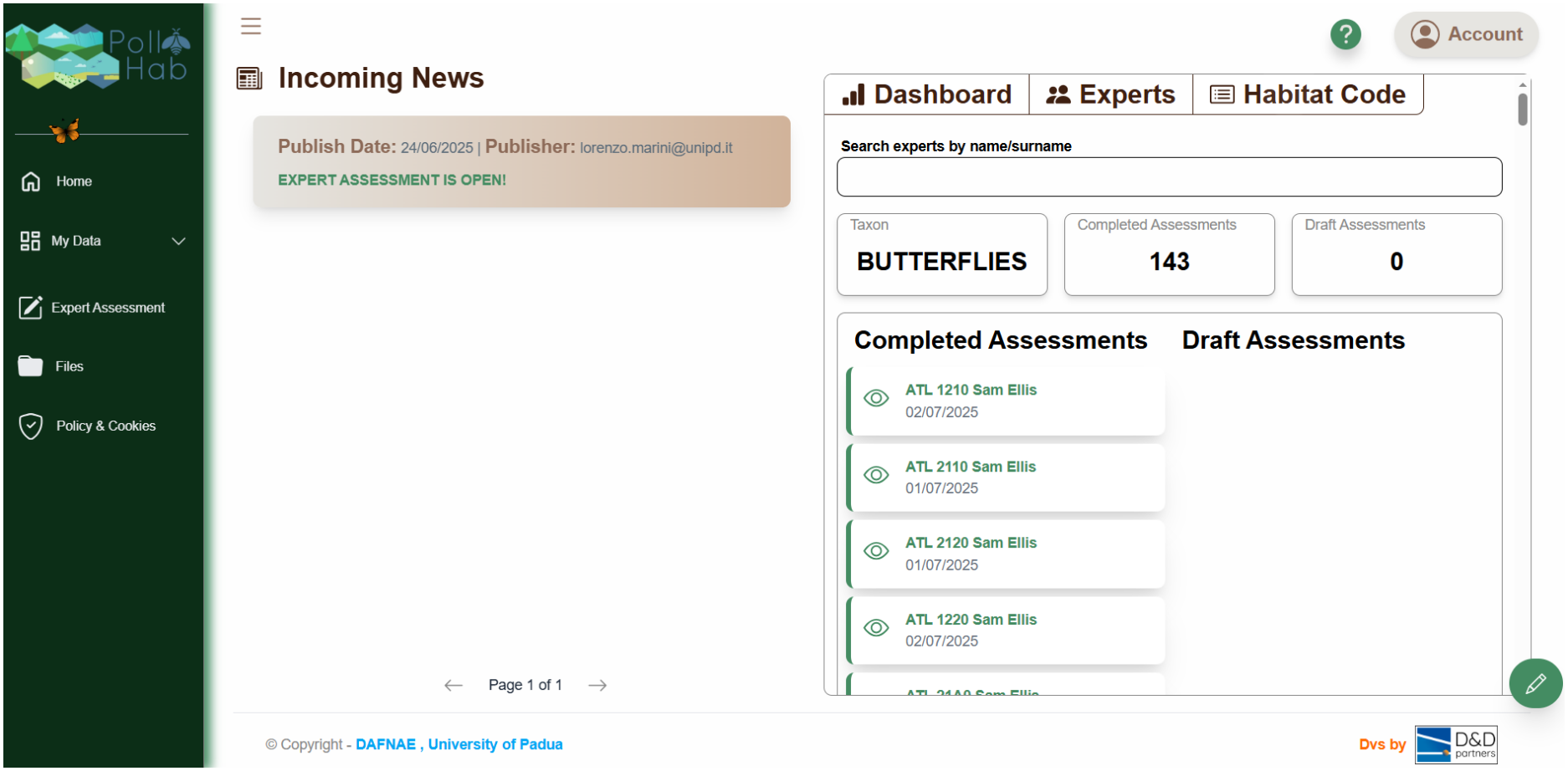
Poll Hab web tool: https://application.pollhab.eu/login



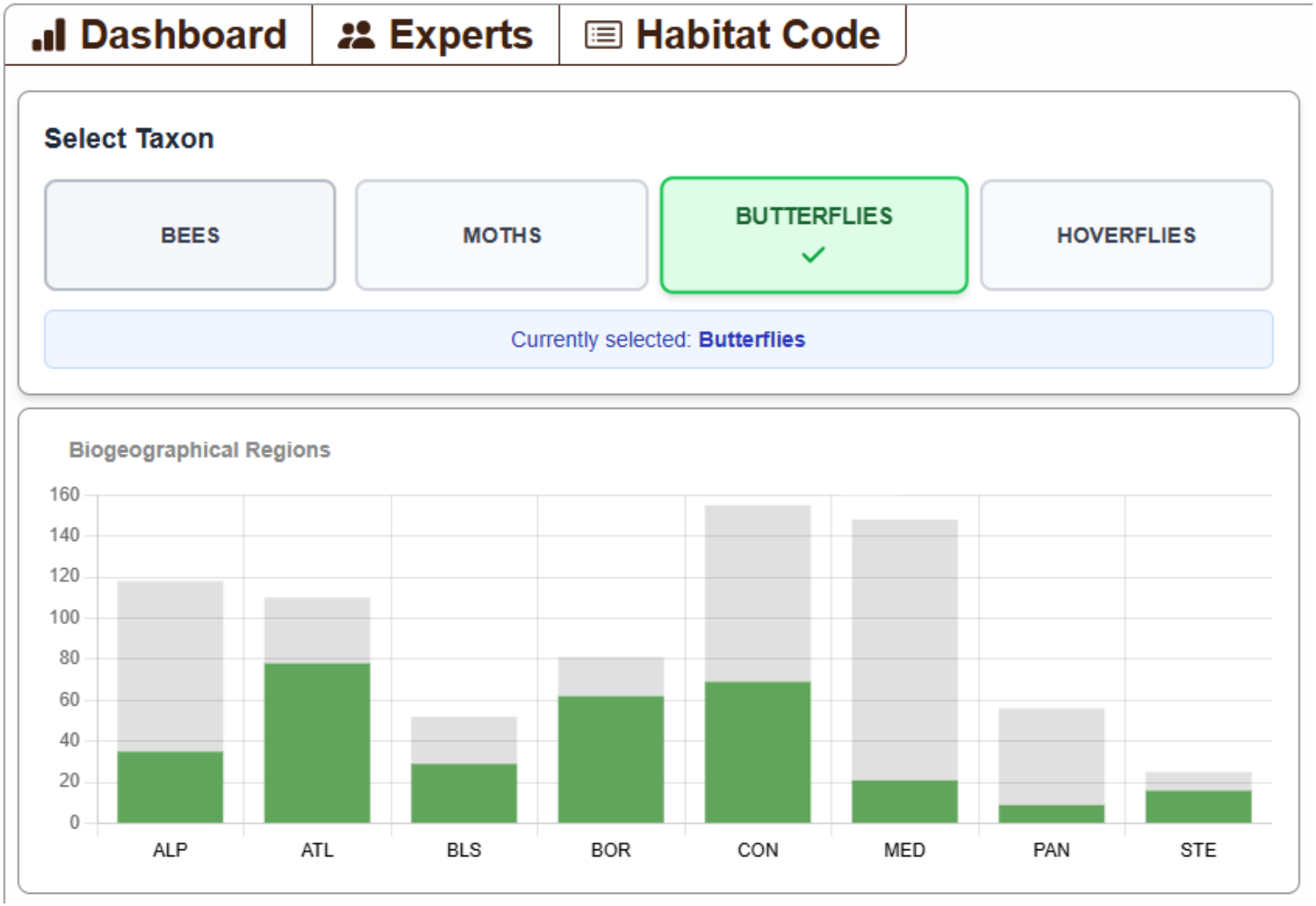
Poll Hab web tool: https://application.pollhab.eu/login



Poll Hab web tool: experts



Poll Hab web tool: dashboard



Total no. of assessments:

319 (30.11.25)

43% (target 40%)

More than one assessment for some

Poll Hab web tool: dashboard

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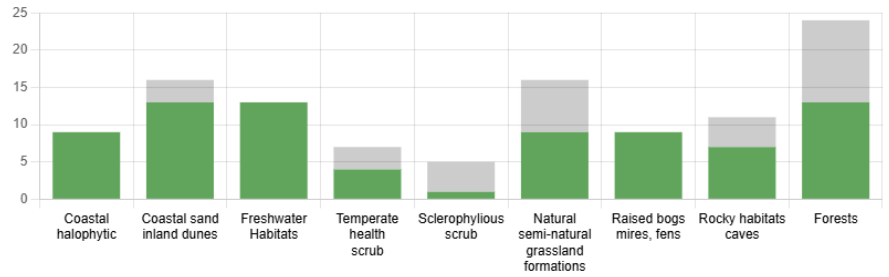
Select a biogeographical region

ATL

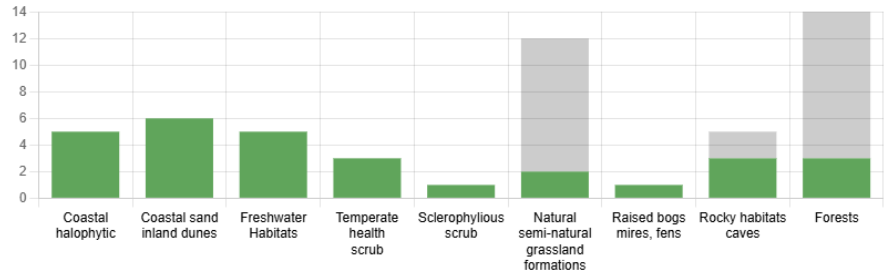
ATL charts



Select a biogeographical region

BLS

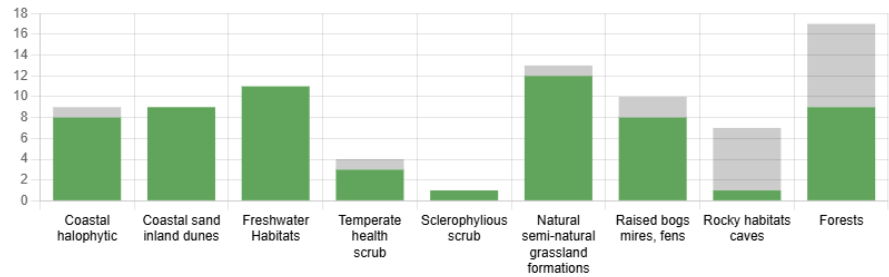
BLS charts



Select a biogeographical region

BOR

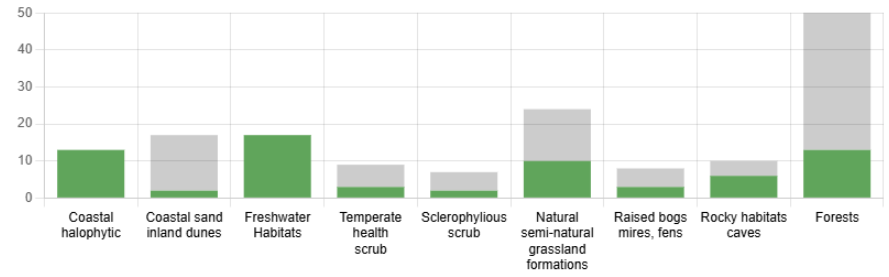
BOR charts



Select a biogeographical region

CON

CON charts



Poll Hab

Poll Hab web tool: habitat codes

Dashboard | Experts | Habitat Code

Habitat \ Bioregion	ATL	BLS	BOR	CON	MED	STE	ALP
1210	✓	✓	✓	✓			
1220	✓		✓	✓			
1230	✓			✓			
1240		✓		✓			
1310	✓	✓	✓	✓			
1320	✓			✓			
1330	✓		✓	✓			
1340	✓			✓			
1410	✓	✓		✓			
1420	✓			✓			

Check which assessments have been completed


Poll Hab web tool: habitat codes

Habitat \ Bioregion	ATL	BLS	BOR	CON	MED	STE	ALP
3120	✓				✓		
3130	✓	✓	✓	✓	✓	✓	✓
3140	✓	✓	✓	✓	✓	✓	✓
3150	✓	✓	✓	✓	✓	✓	✓
3160	✓		✓	✓	✓	✓	✓
3170	✓			✓	✓		✓
3180	✓		✓	✓	✓		✓
3190	✓		✓	✓			✓
31A0							
3210			✓	✓			✓
3220	✓		✓	✓	✓		✓

Assessments for some likely 'No Typical Species' completed across all biogeographic regions:

Freshwater standing
Freshwater: running water (some)
Rocky habitats & caves: other rocky habitats


Start a new assessment

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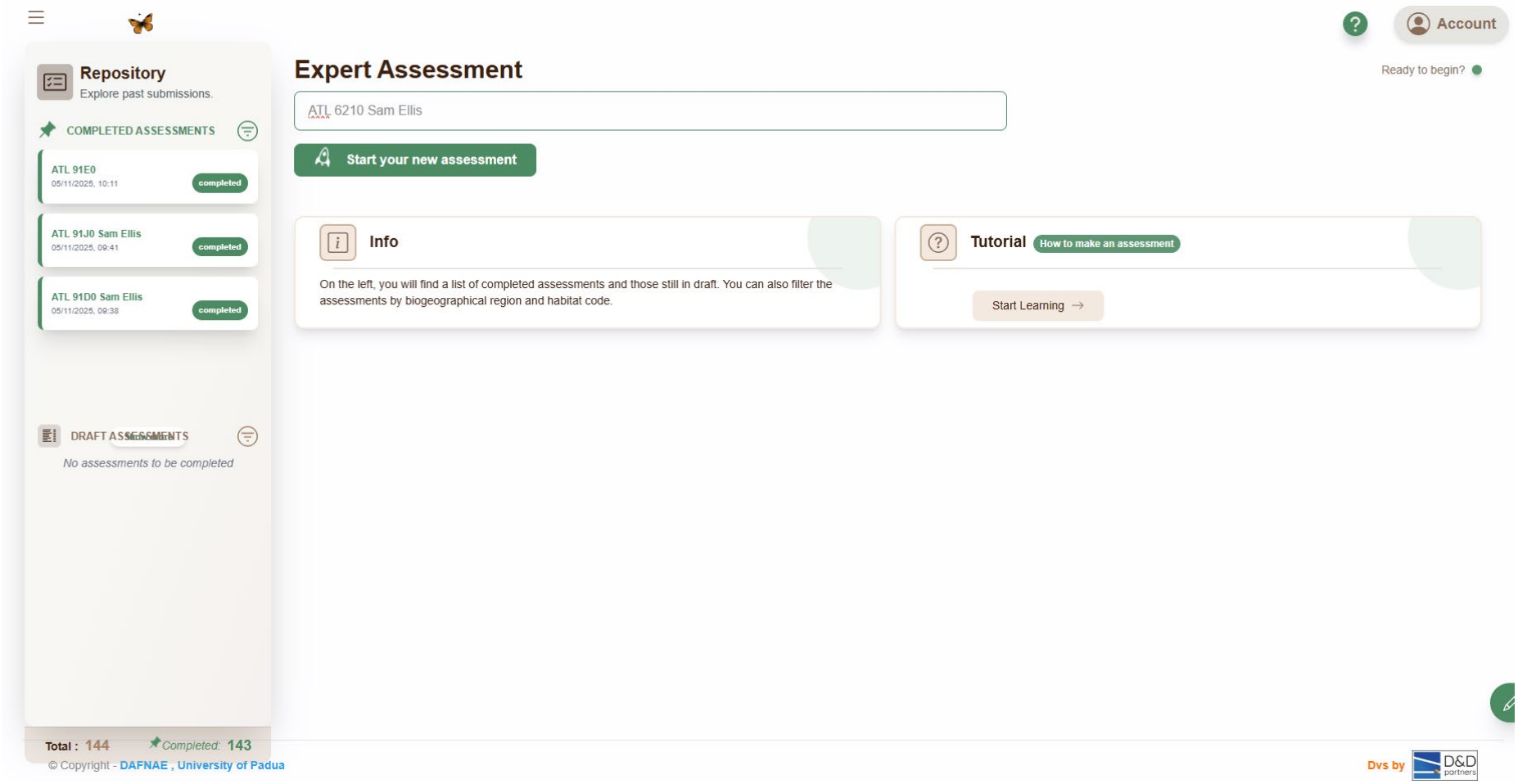

PollHab

Find the data for that region/habitat combination

Butterfly CONSERVATION EUROPE

Repository
Explore past submissions.

COMPLETED ASSESSMENTS

- ATL 91E0 — 05/11/2025, 10:11 — completed
- ATL 91J0 Sam Ellis — 05/11/2025, 09:41 — completed
- ATL 91D0 Sam Ellis — 05/11/2025, 09:38 — completed

DRAFT ASSESSMENTS

- ATL 6210 Sam E — 22/11/2025, 11:05 — in-progress

Assessment: ATL 6210 Sam E

Rename | Save draft | Download | Assessment's note

Follow the criteria below to complete your assessment

1 **Subcriterion A1** — Distribution overlap
2 **Subcriteria A2 A3 A4** — Functional link with habitat
3 **Criterion B** — Indicator of habitat quality and biodiversity

Pollinator data

Select filters to begin working with your assessment:

Biogeographical region: ATL | Habitat ID: 6210 | Taxon: butterflies | Overlap Threshold: ≥ 50 (0 – 100)

BIO. REGION	ID HAB.	TAXON	SPECIES	OVERLAP
ATL	6210	butterflies	Aglais_io	99
ATL	6210	butterflies	Aglais_urticae	81
ATL	6210	butterflies	Anthocharis_cardamines	98
ATL	6210	butterflies	Apatura_iris	52
ATL	6210	butterflies	Aphantopus_hyperantus	76
ATL	6210	butterflies	Argynnis_paphia	85
ATL	6210	butterflies	Aricia_agestis	79
ATL	6210	butterflies	Azanus_ubaldus	N/A
ATL	6210	butterflies	Callophrys_rubi	81
ATL	6210	butterflies	Carcharodus_stauderi	N/A
ATL	6210	butterflies	Celastrina_argiolus	94
ATL	6210	butterflies	Coenonympha_pamphilus	100

« Backward

Species selected after A1: 47

No typical species


PollHab

Select candidate typical species

Butterfly CONSERVATION EUROPE

Repository
Explore past submissions.

COMPLETED ASSESSMENTS

ATL 91E0
05/11/2025, 10:11 — completed

ATL 91J0 Sam Ellis
05/11/2025, 09:41 — completed

ATL 91D0 Sam Ellis
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DRAFT ASSESSMENTS

ATL 6210 Sam E
22/11/2025, 11:05 — in-progress

Assessment: ATL 6210 Sam E

Rename | Save draft | Download | Assessment's note

Ready to begin?

Follow the criteria below to complete your assessment

1 **Subcriterion A1** — Distribution overlap
2 **Subcriteria A2 A3 A4** — Functional link with habitat
3 **Criterion B** — Indicator of habitat quality and biodiversity
4 **Criterion C** — Ease of monitoring

Pollinator data

Select filters to begin working with your assessment:

Biogeographical region: ATL | Habitat ID: 6210 | Taxon: butterflies | Overlap Threshold: ≥ 50 (0 – 100)

BIO. REGION	ID HAB.	TAXON	SPECIES	OVERLAP	
ATL	6210	butterflies	Colias_crocea	80	☐
ATL	6210	butterflies	Cupido_minimus	72	☑
ATL	6210	butterflies	Erynnis_tages	86	☑
ATL	6210	butterflies	Euphydryas_aurinia	53	☐
ATL	6210	butterflies	Favonius_quercus	84	☐
ATL	6210	butterflies	Gonepteryx_rhamni	89	☐
ATL	6210	butterflies	Hipparchia_semele	57	☐
ATL	6210	butterflies	Kretania_eurypilus	N/A	☐
ATL	6210	butterflies	Lasiommata_megera	92	☐
ATL	6210	butterflies	Limenitis_camilla	77	☐
ATL	6210	butterflies	Luthrodes_galba	N/A	☐
ATL	6210	butterflies	Lycaena_phlaeas	97	☐

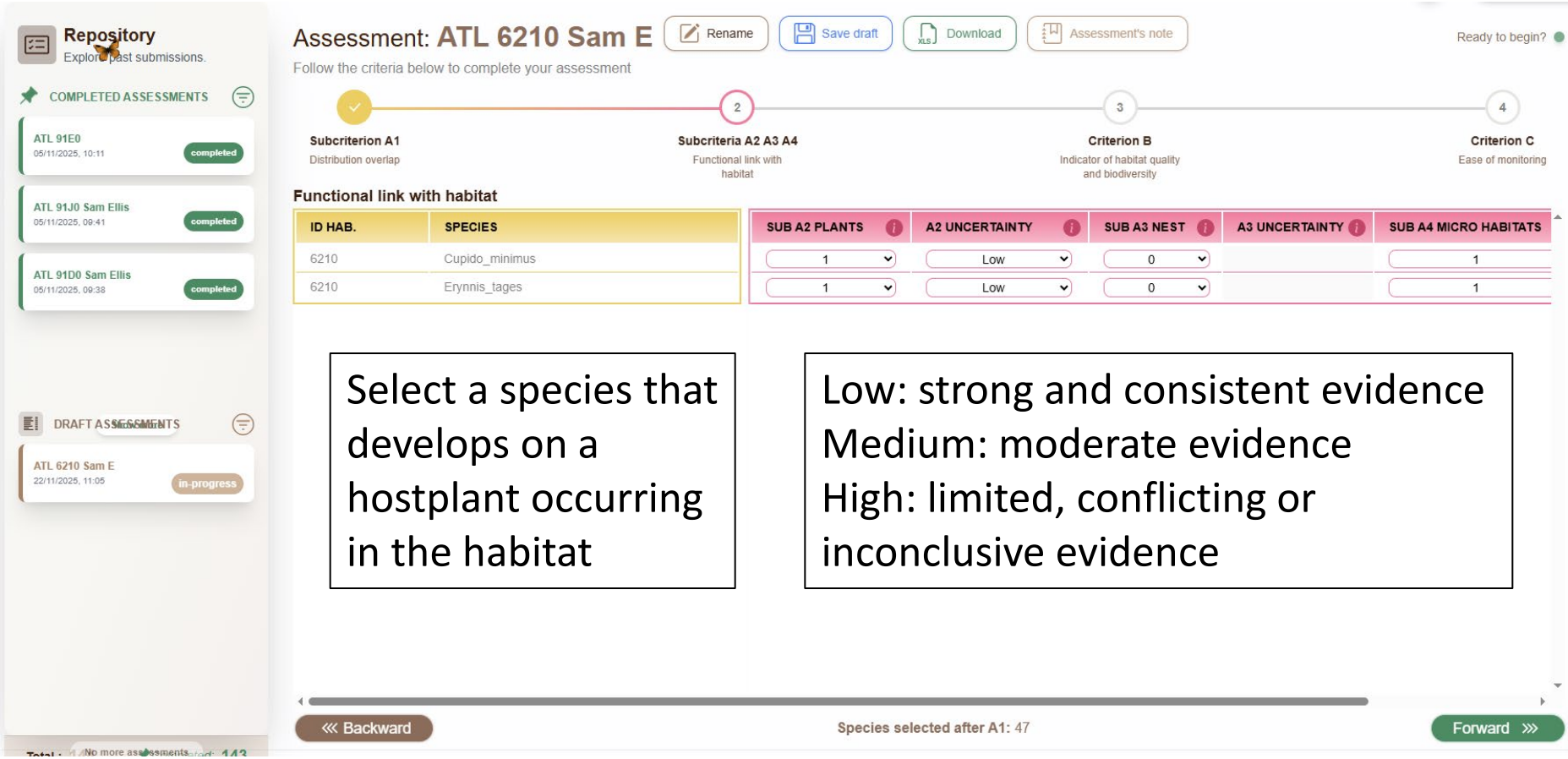
« Backward

Species selected after A1: 47

Forward »


PollHab

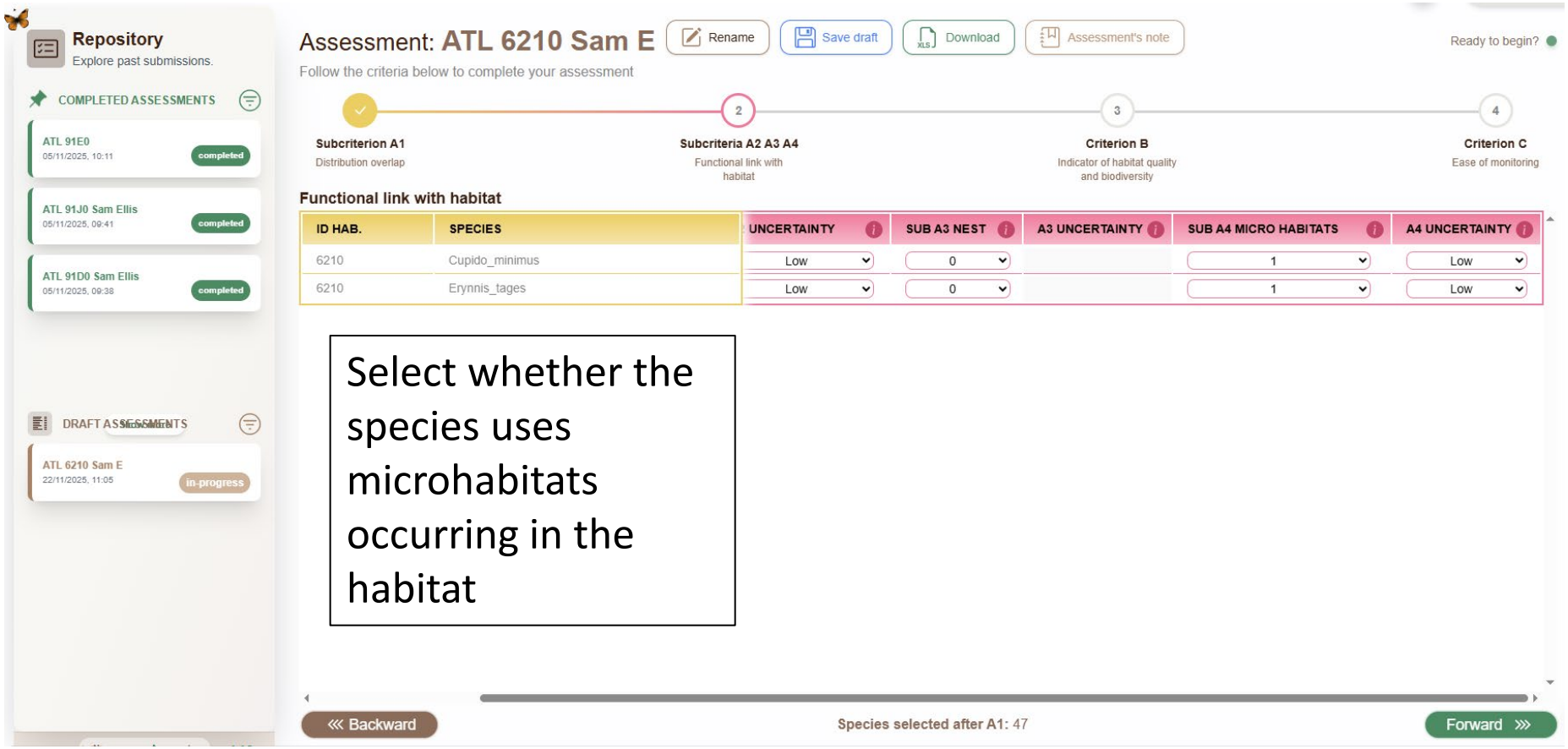
Functional link with habitat



Select a species that develops on a hostplant occurring in the habitat

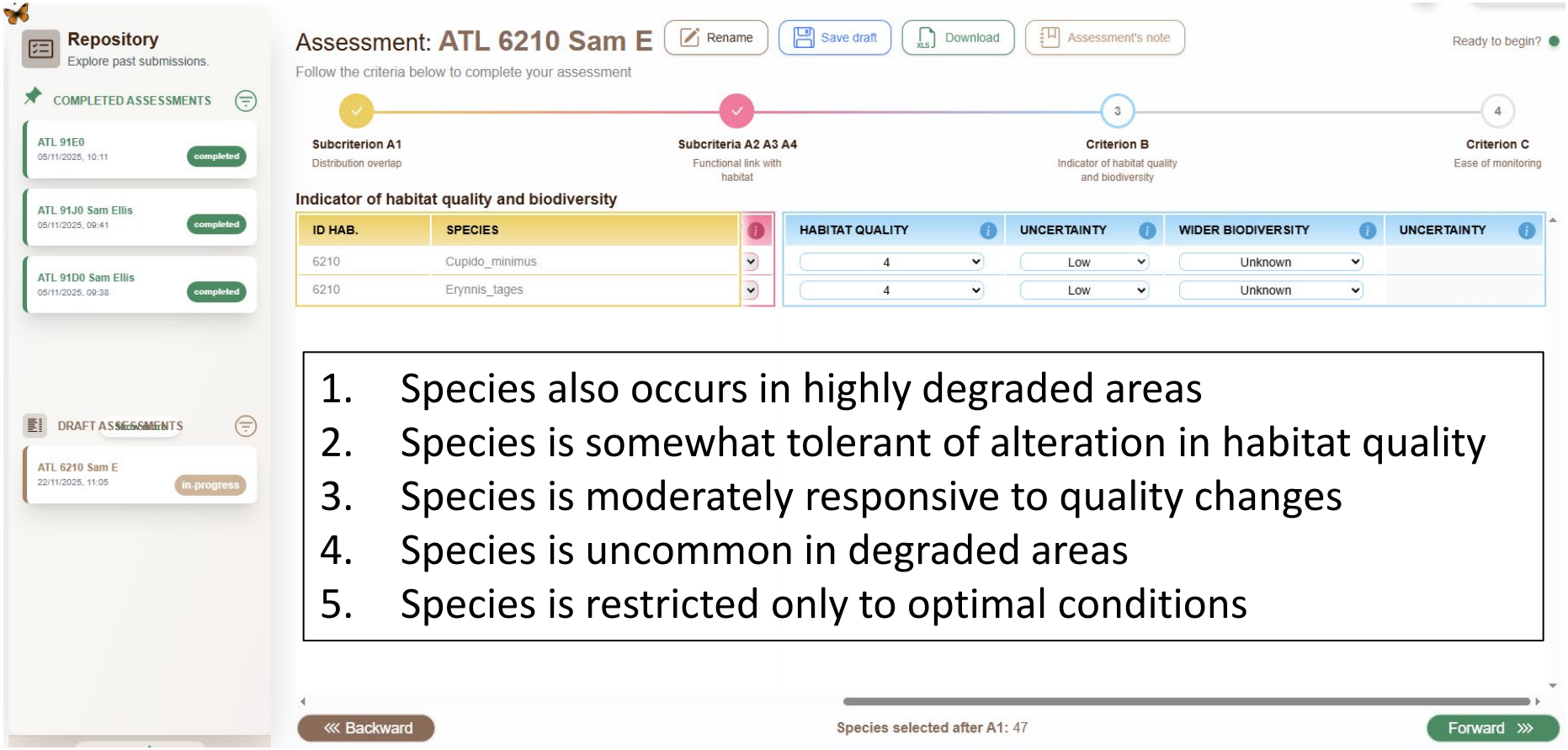
Low: strong and consistent evidence
Medium: moderate evidence
High: limited, conflicting or inconclusive evidence

Functional link with habitat

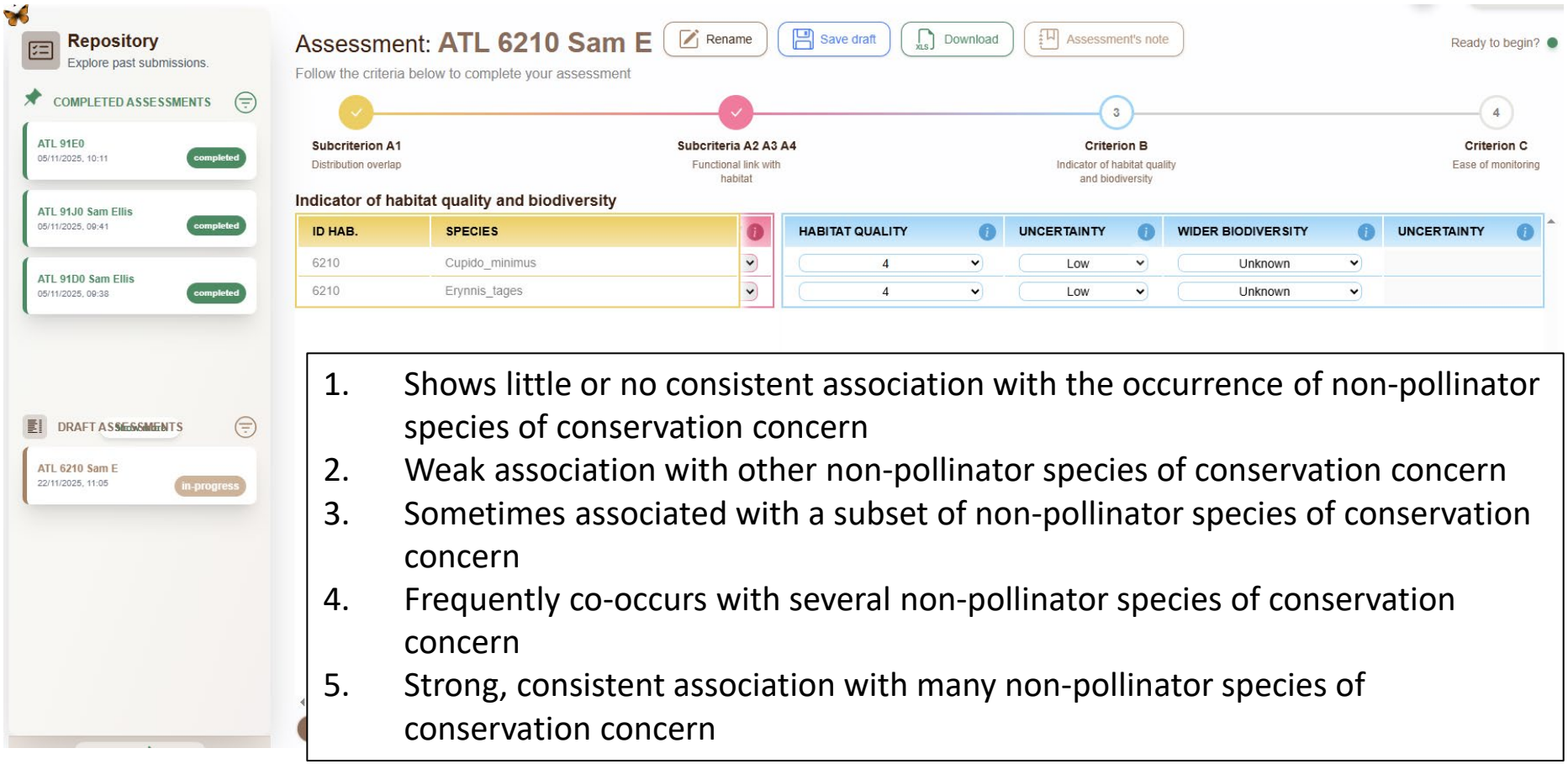


Select whether the species uses microhabitats occurring in the habitat

Indicator of habitat quality and biodiversity

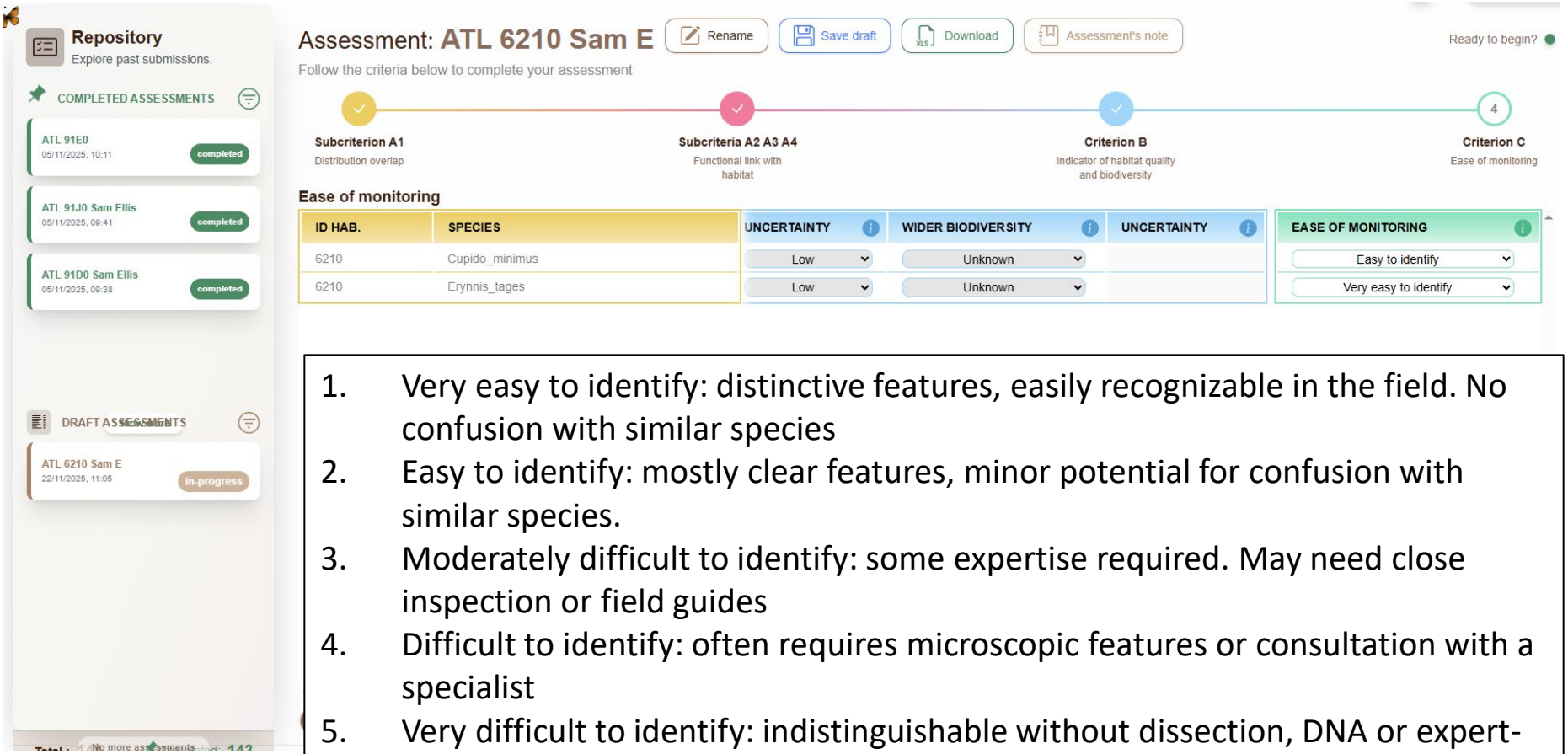


Indicator of habitat quality and biodiversity



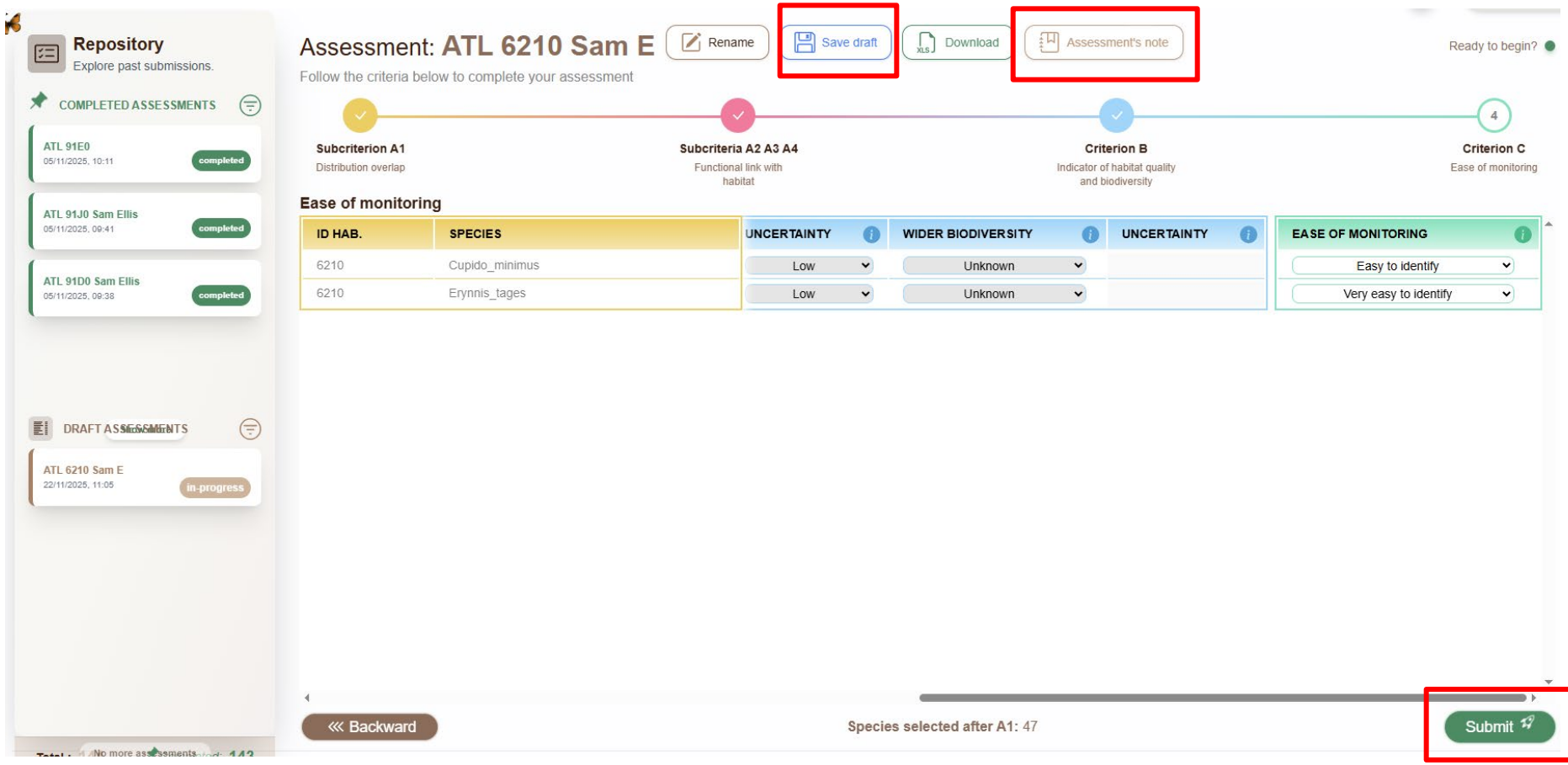
1. Shows little or no consistent association with the occurrence of non-pollinator species of conservation concern
2. Weak association with other non-pollinator species of conservation concern
3. Sometimes associated with a subset of non-pollinator species of conservation concern
4. Frequently co-occurs with several non-pollinator species of conservation concern
5. Strong, consistent association with many non-pollinator species of conservation concern

Ease of monitoring



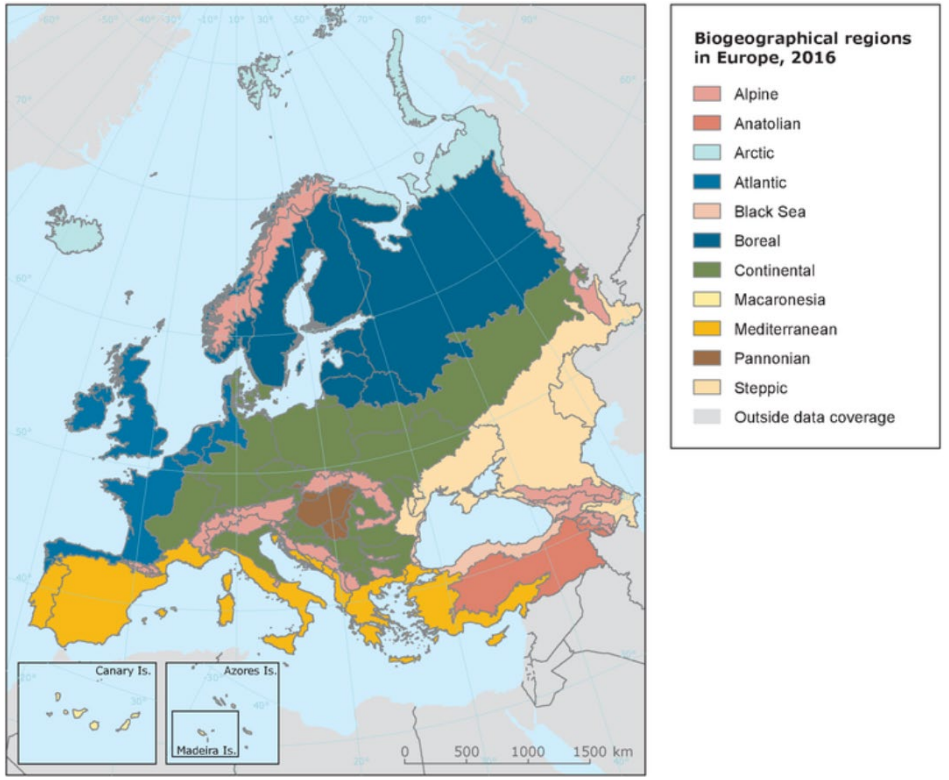
1. Very easy to identify: distinctive features, easily recognizable in the field. No confusion with similar species
2. Easy to identify: mostly clear features, minor potential for confusion with similar species.
3. Moderately difficult to identify: some expertise required. May need close inspection or field guides
4. Difficult to identify: often requires microscopic features or consultation with a specialist
5. Very difficult to identify: indistinguishable without dissection, DNA or expert-level taxonomic skills

Submit or save draft assessment



Workshop groups

1. Alpine (Alps, Balkans)
2. Atlantic
3. Black Sea/Pannonian/Steppic/ Alpine (Carpathians)
4. Boreal and Alpine (Scandinavian)
5. Continental
6. Mediterranean (western)
7. Mediterranean (central and eastern)



Still to do:

Atlantic (western France; northern Spain)

Alpine (Pyrenees)

Macaronesia

Workshop groups

1. Alpine (Alps)

Goran Dusej
Johannes Rüdisser
Martin Wiemers

2. Alpine (Balkans)

Miloš Popović
Chris van Swaay
Martina Šašić

3. Atlantic (France, Spain)

Nigel Bourn
Mathieu De Flores
Constanti Stefanescu
Cristina Sevilleja

4. Black Sea/Pannonian/Steppic/ Alpine (Carpathians)

Daniela Lehner
Andras Szabadfalvi
Zdravko Kolev
Karen Aghababyan
Iulia Muntean
László Rákosy

5. Boreal and Alpine (Scandinavian)

Janne Heliola
Lars Pettersson
Anu Tiitsaar
Egle Viciuviene

6. Continental (western)

Anne Eskildsen
Elisabeth Kühn
Xavier Mestdagh
Aidan Whitfield

7. Continental (eastern)

Zdenek Fric
Marcin Sielezniew
Irma Wynhoff

8. Mediterranean (western)

José Miguel Barea
Eva Monteiro
Miguel Munguira
Martin Warren

9. Mediterranean (central and eastern)

Simona Bonelli
Leonardo Dapporto
Evrim Karaçetin
Özge Özden
Albert Vliegenthart

10. Moths

Helder Cardoso
Jurriën van Deijk
Stefano Scalercio