

Setting favourable reference values for grassland habitats



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*Current state and ongoing developments
(challenges/successes) of setting favourable
reference values for grassland habitats in the Natura
2000 network*

Contents

- ▼ Background
- ▼ Methodological approach
- ▼ Results for grassland habitats
- ▼ Application of results

EU Habitats Directive

Habitat and species conservation objectives

Improved,
simplified
procedure and
contents of **site
management
plans** (within
LIFE-IP
LatViaNature)

National level

FRVs – Favourable Reference Values

**National-level habitat and
species conservation plans
&
HabDir Art.17 report**

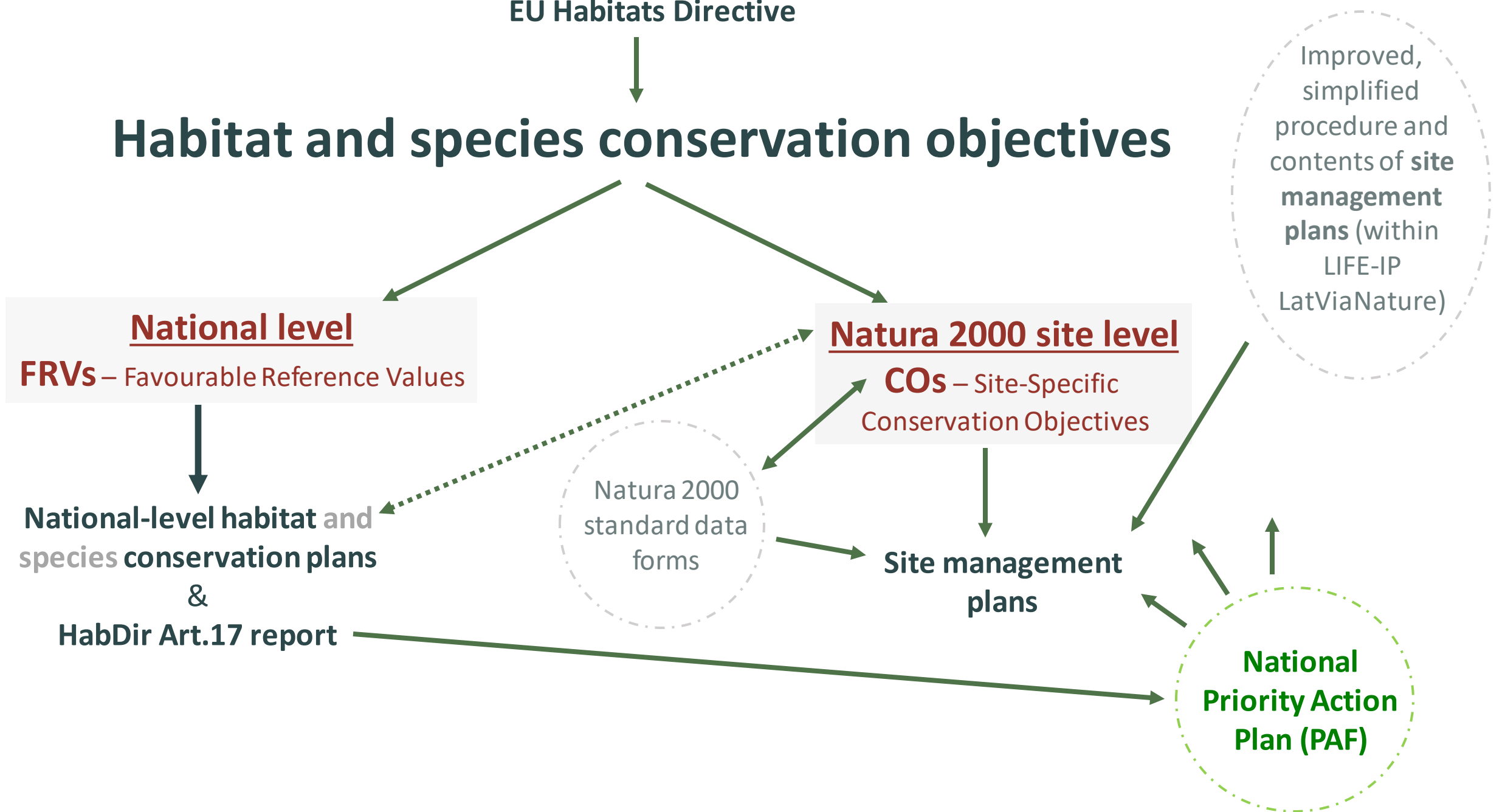
Natura 2000 site level

COs – Site-Specific
Conservation Objectives

Natura 2000
standard data
forms

**Site management
plans**

**National
Priority Action
Plan (PAF)**



What are COs?

Site-specific conservation objectives

Natura 2000 site level

Habitats

Target area

Target condition

Species

Target population

What are FRVs?

Favourable reference values

National level

Habitats

FRR – favourable reference range

FRA – favourable reference area

Species

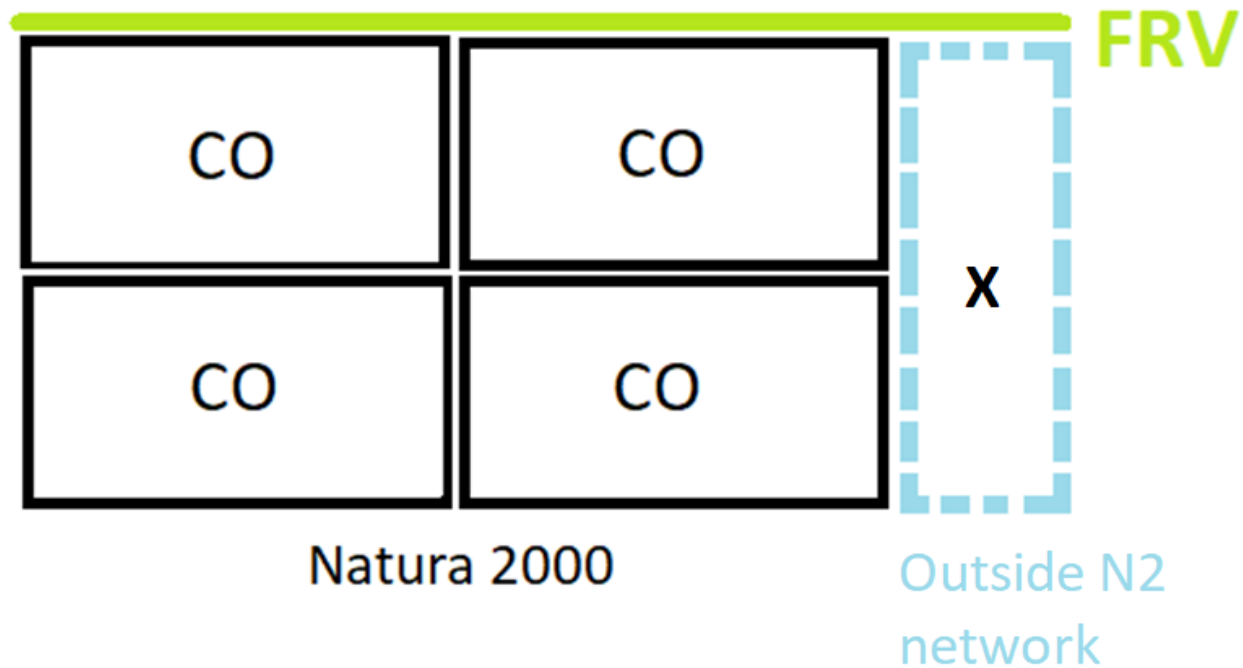
FRR – favourable reference range

FRP – favourable reference population

Both must be quantitative!

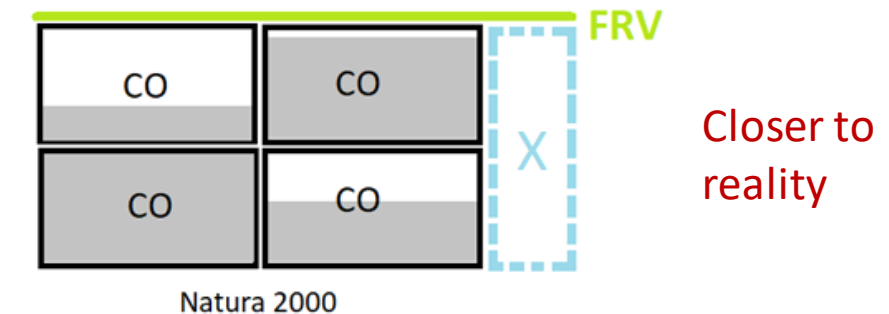
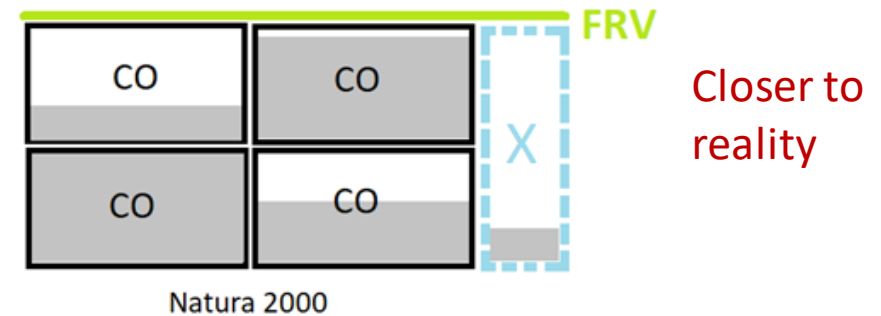
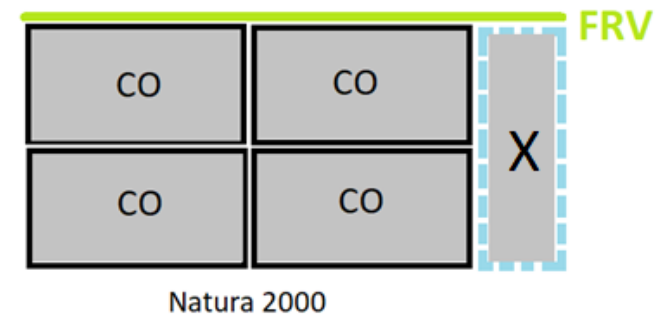
COs – all HD Annex I habitat types and Annex II species in each N2k site (unless insignificant areas or populations)

FRVs – all HD Annex I habitat types and Annex II+V taxa



FRV – composed of N2 sites + outside
FRV = CO1 + CO2 + CO3... + X

Different situations



How are conservation objectives being defined in Latvia?

- ❖ Until 2021, no systematic approach (mainly based on expert opinion).
Site-specific objectives rarely quantitative.
- ❖ In 2019, a national methodology for defining COs and FRVs was developed, based on EC recommendations (2012) and Art. 17 guidelines.
- ❖ **In 2021, within LIPE-IP LatViaNature two expert groups were hired (species, habitats) to develop site-level and national-level conservation objectives.**
- ❖ The results are supposed to be ready by early March 2024 (habitats) and June 2024 (species).

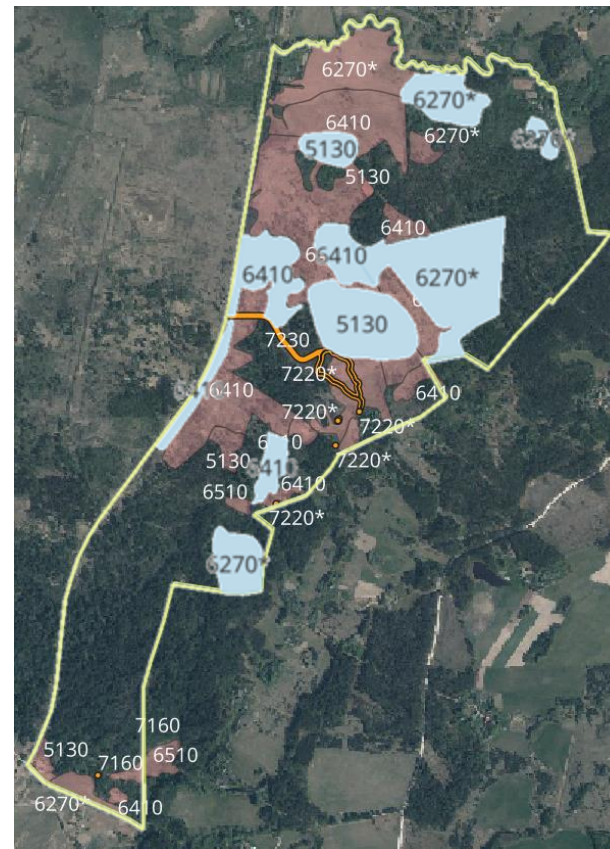


How do the conservation objectives look like (N2k site level)?

Habitat type	Current cover, ha	Target cover, ha	Compered to current area	Current condition of the habitat type (SDF Degree of conservation)	Target condition of the habitat type (coherent with SDF Conservation objectives)					
					Prevent deterioration	Maintain the habitat type's surface area and its good condition	Enlarge the area of the habitat type	Improve the habitat type condition	Re-establish the habitat type	Other
3260	0,44	0,44	=	B	yes	yes	no	no	no	no
5130	1,72	9,67	> (+7,95 ha)	C	yes	yes	yes	yes	no	yes
6270	15,10	47,00	> (+32,00 ha)	C	yes	yes	yes	yes	no	yes
6410	35,92	43,84	> (+7,92 ha)	B	yes	yes	yes	yes	no	yes
6510	1,29	1,29	=	C	yes	yes	no	yes	no	yes
7160	0,04	0,04	=	A	yes	yes	no	no	no	no
7220	0,17	0,17	=	A	yes	yes	no	no	no	no
7230	1,75	1,75	=	A	yes	yes	no	no	no	no



Orthophoto of the nature area



Present cover of habitats of EU importance
Blue – potential area for restoration/creation

Sample area: N2k Diļļu meadows

How are the area of target (potential) grassland habitats determined?

Data sources:

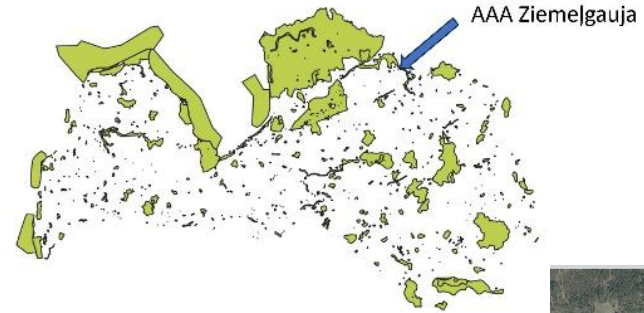
- orthophoto – all 7 or 8 cycles;
- historical topographic map (1921–1940);
- LIDAR land surface models;
- data of the State Forest Register;
- information on field blocks (particularly codes declared as 710 and 720 – permanent and sown grasslands);
- site management plans (if available);
- available geospatial data of habitats and species of EU importance; semi-natural grasslands (historical data) from 2013, etc.;
- different project results;
- EIA, opinions of certified experts;
- expert knowledge;
- etc.

Main criteria to exclude polygons from the potential EU habitat layer:

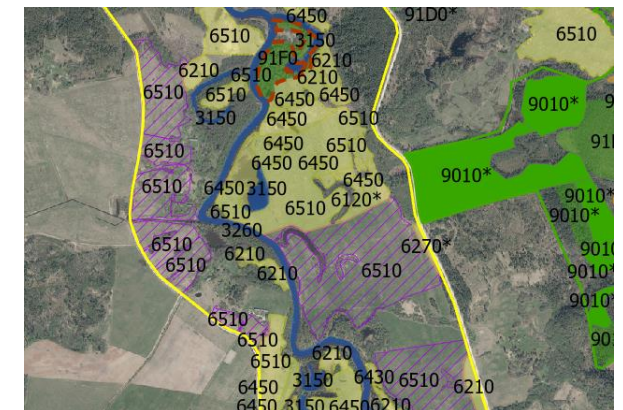
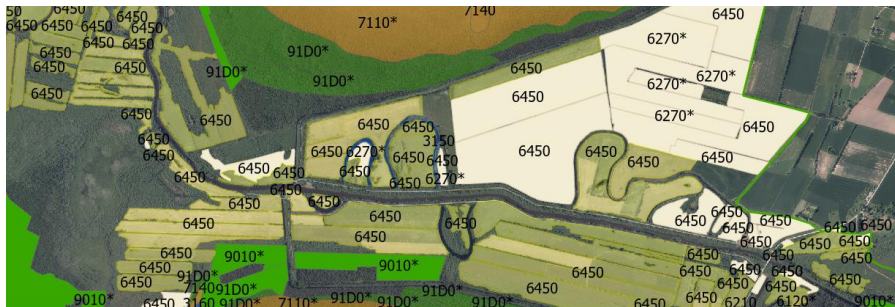
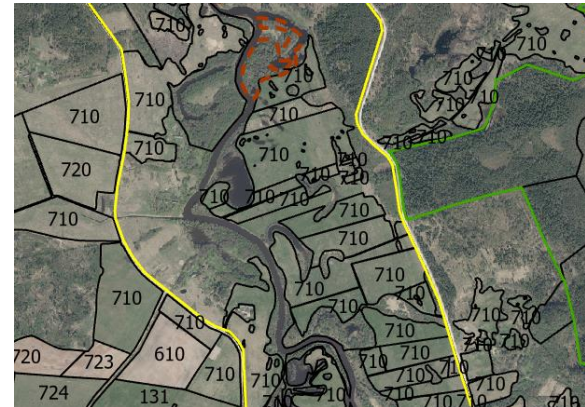
- registered as forest land (both planted or naturally overgrown);
- overgrowth with trees and shrubs cover exceed 75%, although it is still an agricultural land;
- other type of land use than grasslands, e.g. buildings, ponds, recreation, lawn, arable land, etc.;
- has been declared something else than 710 or 720 for the period of 2012–2023 (field blocks of agricultural land);
- after assessment (done by a certified expert) does not meet neither the criteria of EU grassland habitat nor has potential to become an EU habitat.

! There are always exceptions depending on the site-specific and landscape context, expert knowledge of the site, accessibility, population, regional economic activity, etc.

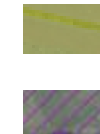
Examples



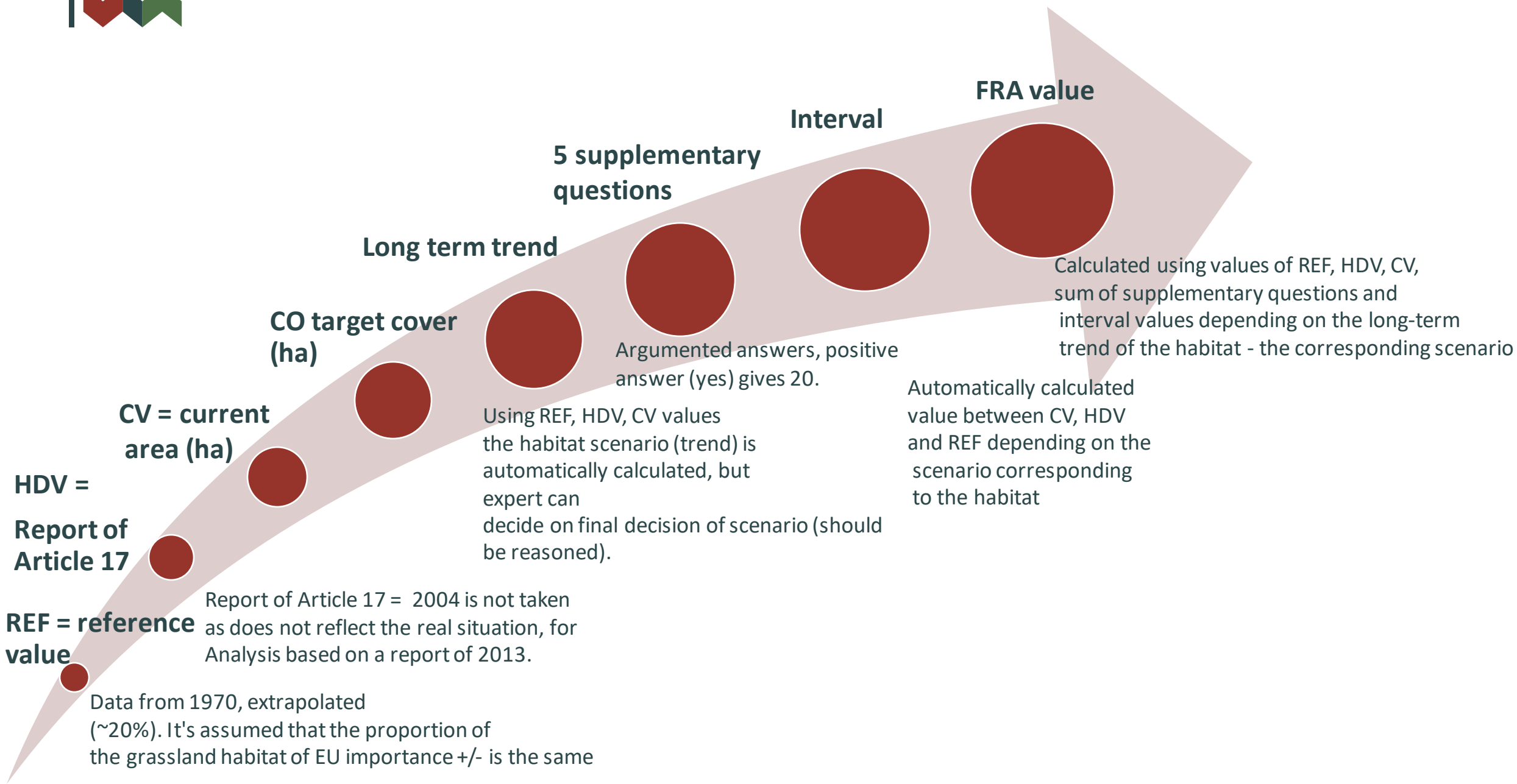
Field blocks with declared codes in 2023



Habitats of EU importance
potential grassland habitats



Determining FRV – after EC recommendations (2012)



Determining CO – development of habitat-specific algorithm

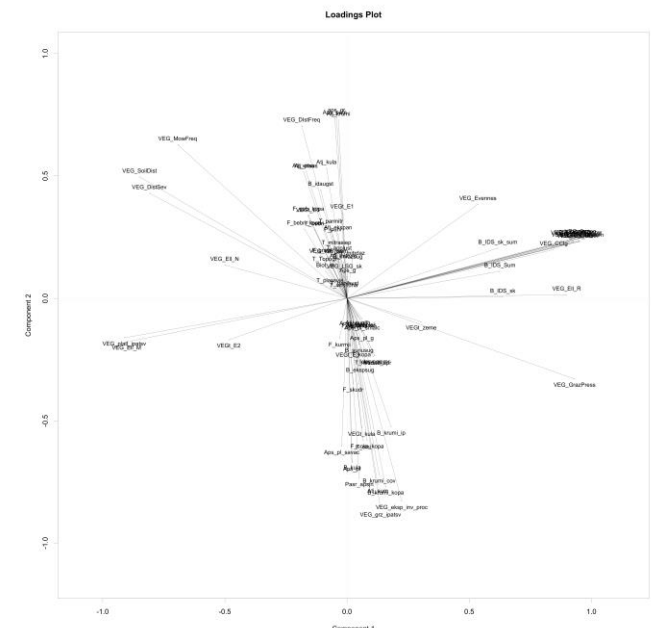
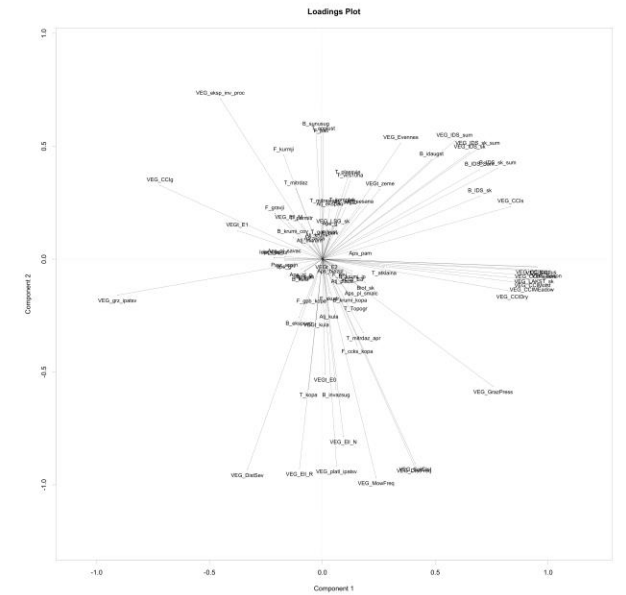
Habitat groups	Alliances
6120*	Corynephorion canescentis, Koelerion glaucae, Armerion elongatae
6210	Filipendulo-Helictotrichion, Trifolion medii, Geranion sanguinei
6410	Molinion caerulea
6230* + 6270*-2	Violion caninae, Cynosurion in acid soils
6270*-3 + 6450-3	Calthion
6270*-1 + 6510-1	Arrhenatherion, Cynosurion
6450-2 + 6510-2	Deschampsion
6450-1	Caricion elatae, Caricion acutae

Parameters from grassland inventory field form + calculated parameters = ca. 98 parameters

Categorical PCA to select indicators

**Two groups of indicators:
plant species composition;
structures/ecological processes/functions**

Group	PC1, %	PC2, %	PC3, %	Total, %
1630	28	19	12	59
2327	14	12	10	37
2745	21	11	5	37
2751	17	11	6	34
4551	23	9	8	40
6120	18	16	11	45
6210	18	10	9	37
6410	18	13	8	39
6430	25	14	12	51
64501	19	12	7	38



Translate into quality classes (conservation degree) – based on literature or percentiles in training dataset



<10% - excellent
10-20% - good
20-50% - inadequate
>50% - bad



<10% - excellent
10-24% - good
25-50% - inadequate
>50% - bad



Bad

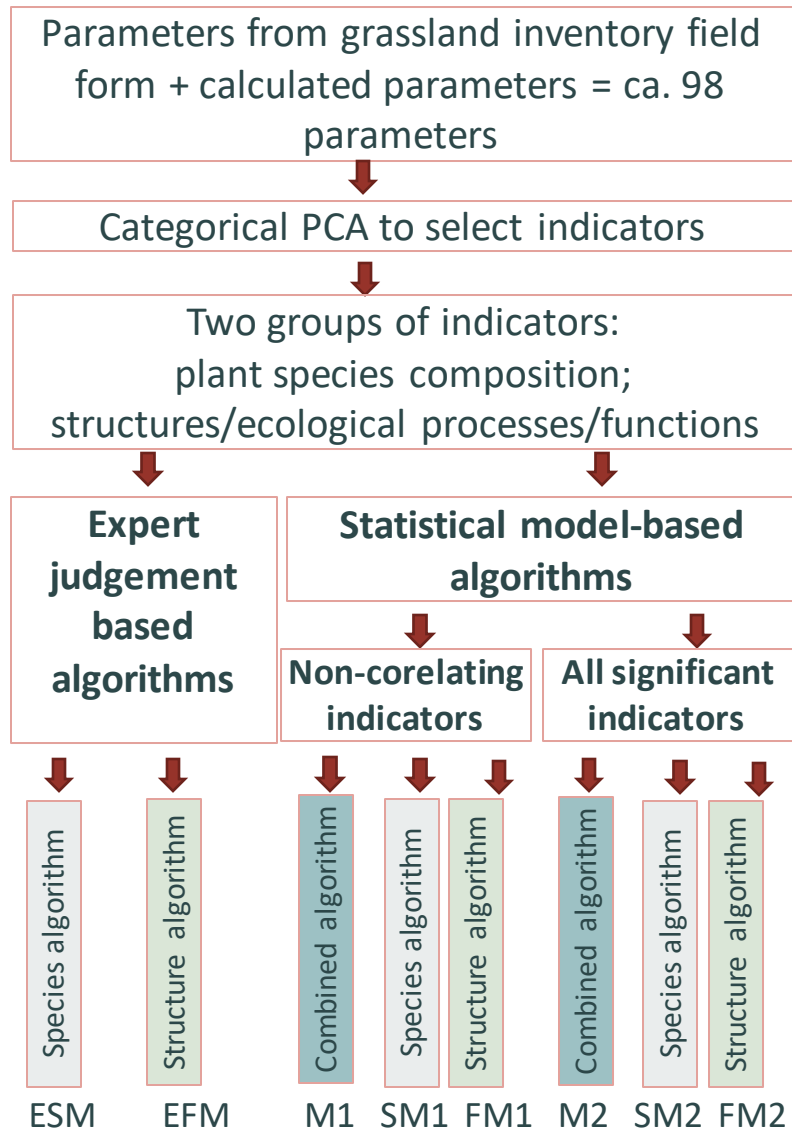
Inadequate

Good

Excellent

1630	<7	7...9	10...11	>11
2327	<5	5...7	8...10	>10
2745	<4	4...5	6...8	>8
2751	<6	6...7	8...10	>10

Biotops ▾	0% ▾	34% ▾	64% ▾	89% ▾	100% ▾
1630_opt	3	6	9	11	11
2327_opt	0	4	7	10	18
2745_opt	0	3	5	8	18
2751_opt	0	5	7	10	18
4551_opt	0	2	3	6	12
6120_opt	1	4	7	10	16
6210_opt	1	7	9	13	20
6410_opt	1	7	10	14	21
6430_opt	0	0	1	2	4
64501_opt	0	1	1	3	15



Expert - Species:

$$(\text{Number_species25m2} * 50 + \text{Number_x_cover_IDspecies} * 50) / 100$$

Model - Species:

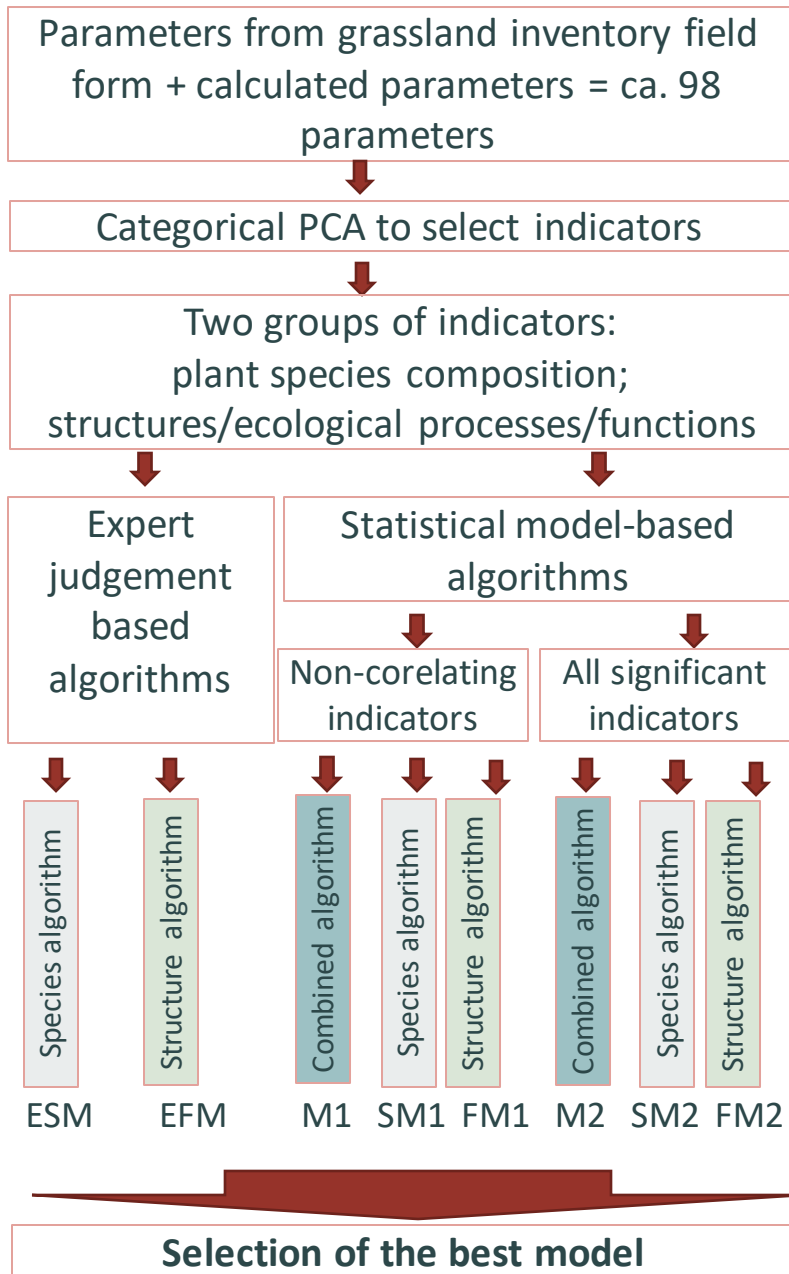
$$(\text{Community_compl_index} * \text{PCAcoeff} + \text{Ellenberg_N} * \text{PCAcoeff} + \text{Number_x_cover_IDspecies} * \text{PCAcoeff} + \text{Shannon} * \text{PCAcoeff} + \text{Number_IDspecies25m2} * \text{PCAcoeff} + \text{Number_species25m2} * \text{PCAcoeff} + \text{Ellenberg_M} * \text{PCAcoeff} + \text{Comm_compl_ind_generalists} * \text{PCAcoeff}) / \text{Summ_of_PCAcoeff}$$

Expert - Structures:

$$(\text{Uneven_surface} * 10 + \text{Litter_polygon} * 20 + \text{Management} * 20 + \text{Restoration_needs} * 10 + \text{Trees_polygon} * 20 + \text{Expansive_cover25m2} * 20) / 100$$

Model – Structures (*PCAcoeff):

$$(\text{Abandonment} + \text{Restoration_needs} + \text{Litter_polygon} + \text{IDspecies25m} + \text{Trees_polygon} + \text{Need_for_levelling} + \text{Expansive_cover25m2} + \text{Uneven_surface} + \text{Mowing} + \text{Removal_trees})$$



Choose the simplest model

IF conservation degree is the same at least in 70% of polygons

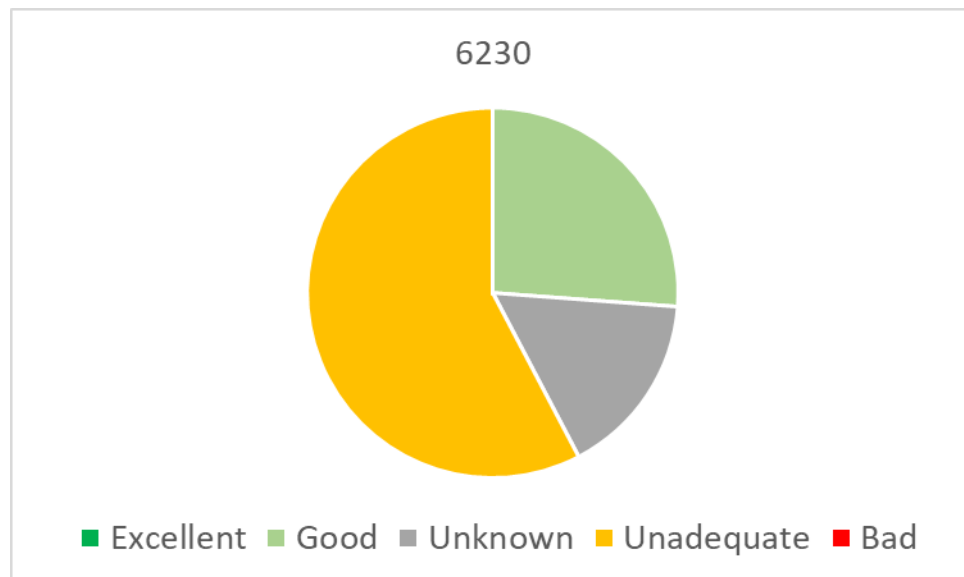
AND difference in average degree of conservation is non-significant

AND distribution of polygons in quality classes is the same

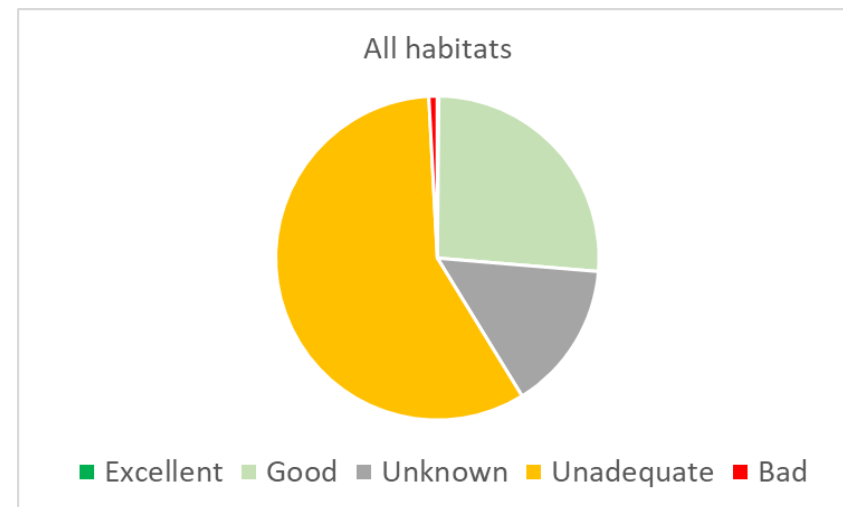
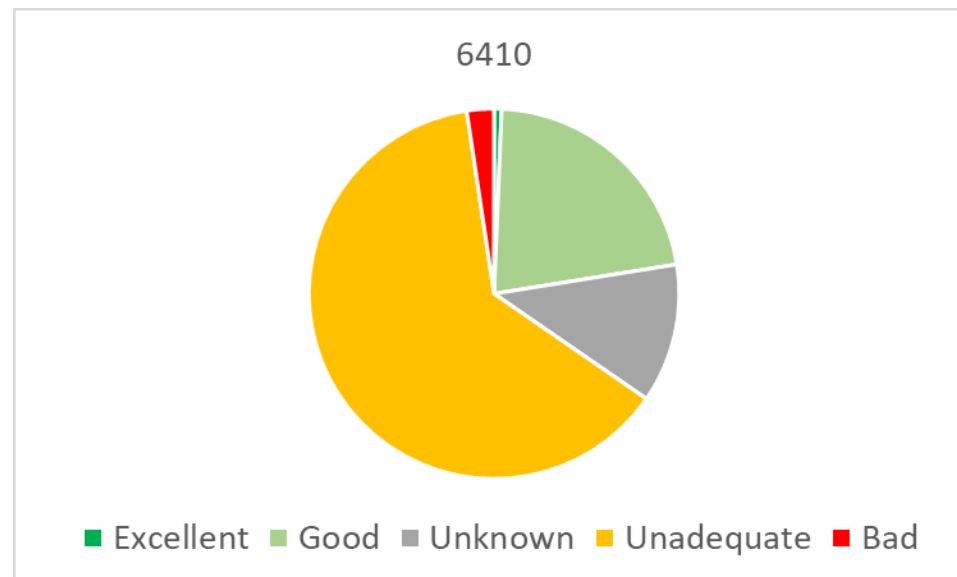
6.911126549 SITE_NAME		SITE_CODE	SITE_TYPE	SITE_AREA	OVERALL_ASSESSMENT_2019_2019	TREND	CURRENT_COVERAGE	SDF_COVERAGE	TOTAL_COUNTRY_COVERAGE	Relative_r%	RELATIVE_SURFACE	RELATIVE_SURFACE_BOTS	CONSERVATION_STATUS	CONSERVATION_STATUS	Biotops izcilā kvalitātē (A), ha	ipatsvars	Biotops labā kvalitātē (B), ha	ipatsvars	Biotops viduvējā un sliktā kvalitātē (C), ha	ipatsvars	Biotops nezināmā kvalitātē (X), ha	ipatsvars	nepietiekama kvalitātē	ipatsvars	sliktā kvalitātē	ipatsvars
6120	Abavas senleja	LV0302100	C	14857.98	U2	Unk	49.50	32.06	611.33	8.0972	C	B	B	C	0.00	0.00	3.26	8.94	23.68	64.90	9.55	26.16	23.68	76.59	0.00	0.00
6210	Abavas senleja	LV0302100	C	14857.98	U2	D	493.18	436.97	6352.47	7.7636	B	B	B	C	0.00	0.00	92.32	20.79	174.84	39.36	177.01	39.85	174.52	42.45	0.31	0.08
6270	Abavas senleja	LV0302100	C	14857.98	U2	D	97.52	39.96	24216.93	0.4027	C	C	B	C	0.00	0.00	23.24	24.23	53.46	55.74	19.21	20.03	53.46	61.28	0.00	0.00
6410	Abavas senleja	LV0302100	C	14857.98	U2	Unk	38.96	48.72	4042.17	0.9639	C	C	B	C	0.00	0.00	4.84	16.53	23.10	78.98	1.31	4.48	22.30	103.81	0.81	3.77
6430	Abavas senleja	LV0302100	C	14857.98	U1	S	5.21	5.51	760.74	0.6853	C	C	A	B	0.00	0.00	5.04	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6450	Abavas senleja	LV0302100	C	14857.98	U2	D	99.98	103.2	18869.20	0.5298	C	C	B	C	0.00	0.00	3.46	2.87	103.63	85.99	13.42	11.14	103.63	104.92	0.00	0.00
6510	Abavas senleja	LV0302100	C	14857.98	U2	D	47.65	43.81	5265.55	0.9050	C	C	B	X	0.00	0.00	0.00	0.00	22.63	48.65	23.89	51.35	22.63	65.07	0.00	0.00
6530	Abavas senleja	LV0302100	C	14857.98	U2	Unk	22.16	7.67	1406.66	1.5757	C	C	B	X	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!
6210	Adamovas ezers	LV0301600	B	760.89	U2	D	36.64	36.65	6352.47	0.5768	B	C	C	C	0.00	0.00	13.49	34.49	23.85	60.97	1.78	4.54	23.85	70.04	0.00	0.00
6270	Adamovas ezers	LV0301600	B	760.89	U2	D	28.15	28.15	24216.93	0.1163	B	C	C	C	0.00	0.00	6.22	14.38	34.19	79.05	2.84	6.57	34.19	105.08	0.00	0.00
6430	Adamovas ezers	LV0301600	B	760.89	U1	S	0.68	0.68	760.74	0.0899	C	C	C	B	0.00	0.00	0.68	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6450	Adamovas ezers	LV0301600	B	760.89	U2	D	3.35	3.32	18869.20	0.0177	C	C	C	C	0.00	0.00	0.00	0.00	2.53	100.00	0.00	0.00	2.53	100.00	0.00	0.00
6510	Adamovas ezers	LV0301600	B	760.89	U2	D	10.72	10.64	5265.55	0.2036	C	C	C	C	0.00	0.00	0.00	0.00	19.17	100.00	0.00	0.00	19.17	139.68	0.00	0.00
6120	Aiviekstes paliene	LV0305100	C	1154.43	U2	Unk	1.41	1.83	611.33	0.2311	C	C	B	C	0.00	0.00	0.00	0.00	1.07	100.00	0.00	0.00	1.07	100.00	0.00	0.00
6210	Aiviekstes paliene	LV0305100	C	1154.43	U2	D	3.59	2.04	6352.47	0.0566	C	C	B	C	0.00	0.00	0.00	0.00	3.85	100.00	0.00	0.00	2.30	72.29	1.55	48.85
6270	Aiviekstes paliene	LV0305100	C	1154.43	U2	D	76.65	80.09	24216.93	0.3165	C	C	C	C	0.00	0.00	9.69	13.97	48.41	69.77	11.28	16.25	48.41	84.06	0.00	0.00
6410	Aiviekstes paliene	LV0305100	C	1154.43	U2	Unk	3.58	3.57	4042.17	0.0885	C	C	C	B	0.00	0.00	1.64	51.18	1.57	48.82	0.00	0.00	1.57	56.24	0.00	0.00
6430	Aiviekstes paliene	LV0305100	C	1154.43	U1	S	12.77	12.71	760.74	1.6783	C	C	B	B	0.00	0.00	9.01	82.07	0.00	0.00	1.97	17.93	0.00	0.00	0.00	0.00
6450	Aiviekstes paliene	LV0305100	C	1154.43	U2	D	319.82	309.48	18869.20	1.6950	C	C	B	C	0.00	0.00	112.88	29.41	250.12	65.16	20.83	5.43	250.12	88.26	0.00	0.00
6510	Aiviekstes paliene	LV0305100	C	1154.43	U2	D	28.57	28.57	5265.55	0.5426	C	C	C	B	0.00	0.00	13.55	47.15	10.45	36.33	4.75	16.52	10.45	41.81	0.00	0.00
6120	Ances purvi un meži	LV0523400	C	10141.16	U2	Unk	4.59	1.12	611.33	0.7504		C	B	C	0.00	0.00	0.00	0.00	2.72	100.00	0.00	0.00	2.72	108.18	0.00	0.00
6210	Ances purvi un meži	LV0523400	C	10141.16	U2	D	3.91	2.48	6352.47	0.0615	C	C	B	C	0.00	0.00	0.00	0.00	2.17	100.00	0.00	0.00	0.59	29.37	1.58	78.47
6230	Ances purvi un meži	LV0523400	C	10141.16	U2	D	0.33	0.33	699.50	0.0472	C	C		C	0.00	0.00	0.00	0.00	0.33	100.00	0.00	0.00	0.33	111.11	0.00	0.00
6270	Ances purvi un meži	LV0523400	C	10141.16	U2	D	26.98	20.01	24216.93	0.1114	C	C		C	0.00	0.00	0.00	0.00	3.65	98.57	0.05	1.43	3.65	106.34	0.00	0.00
6430	Ances purvi un meži	LV0523400	C	10141.16	U1	S	1.18	1.18	760.74	0.1557	C	C	B	X	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!
6450	Ances purvi un meži	LV0523400	C	10141.16	U2	D	47.57	17.49	18869.20	0.2521	C	C		C	0.00	0.00	16.65	39.71	21.66	51.67	3.62	8.62	21.66	86.99	0.00	0.00
6510	Ances purvi un meži	LV0523400	C	10141.16	U2	D	9.57	10.07	5265.55	0.1817	C	C		X	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!
6530	Ances purvi un meži	LV0523400	C	10141.16	U2	Unk	68.90	69.9	1406.66	4.8979		B		X	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!
6510	Ašu purvs	LV0532300	B	75.9	U2	D		0						X	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!
6270	Augšdaugava	LV0600400	C	4006.83	U2	D	13.41	13.08	24216.93	0.0554	C	C	B	B	0.00	0.00	7.57	56.44	5.84	43.58	0.00	0.00	5.84	44.86	0.00	0.00
6510	Augšdaugava	LV0600400	C	4006.83	U2	D	2.12	2.12	5265.55	0.0403	C	C	B	C	0.00	0.00	0.00	0.00	2.12	100.00	0.00	0.00	2.12	100.00	0.00	0.00
6110	Augšdaugava	LV0600400	C	52078.29	U2	D	1.94							X	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!	0.00	#DIV/0!
6120	Augšdaugava	LV0600400	C	52078.29	U2	Unk	18.07	18.56	611.33	2.9566	B	B	B	C	0.00	0.00	0.00	0.00	16.70	73.16	6.13	26.84	16.70	100.12	0.00	0.00
6210	Augšdaugava	LV0600400	C	52078.29	U2	D	380.58	383.7	6352.47	5.9911	B	B	B	C	0.00	0.00	100.51	33.74	146.26	49.09	51.15	17.17	144.11	57.55	2.15	0.86
6230	Augšdaugava	LV0600400	C	52078.29	U2	D	1.36	1.36	699.50	0.1939	C	C	C	B	0.00	0.00	0.65	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Share of area in four degrees of conservation

6230 – 212 ha; 30 N2

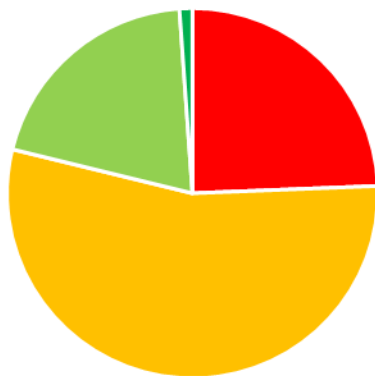


6230 – 1738 ha; 60 N2





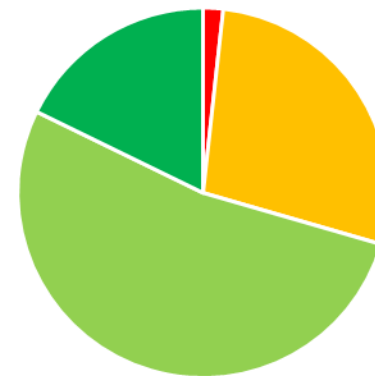
Species composition



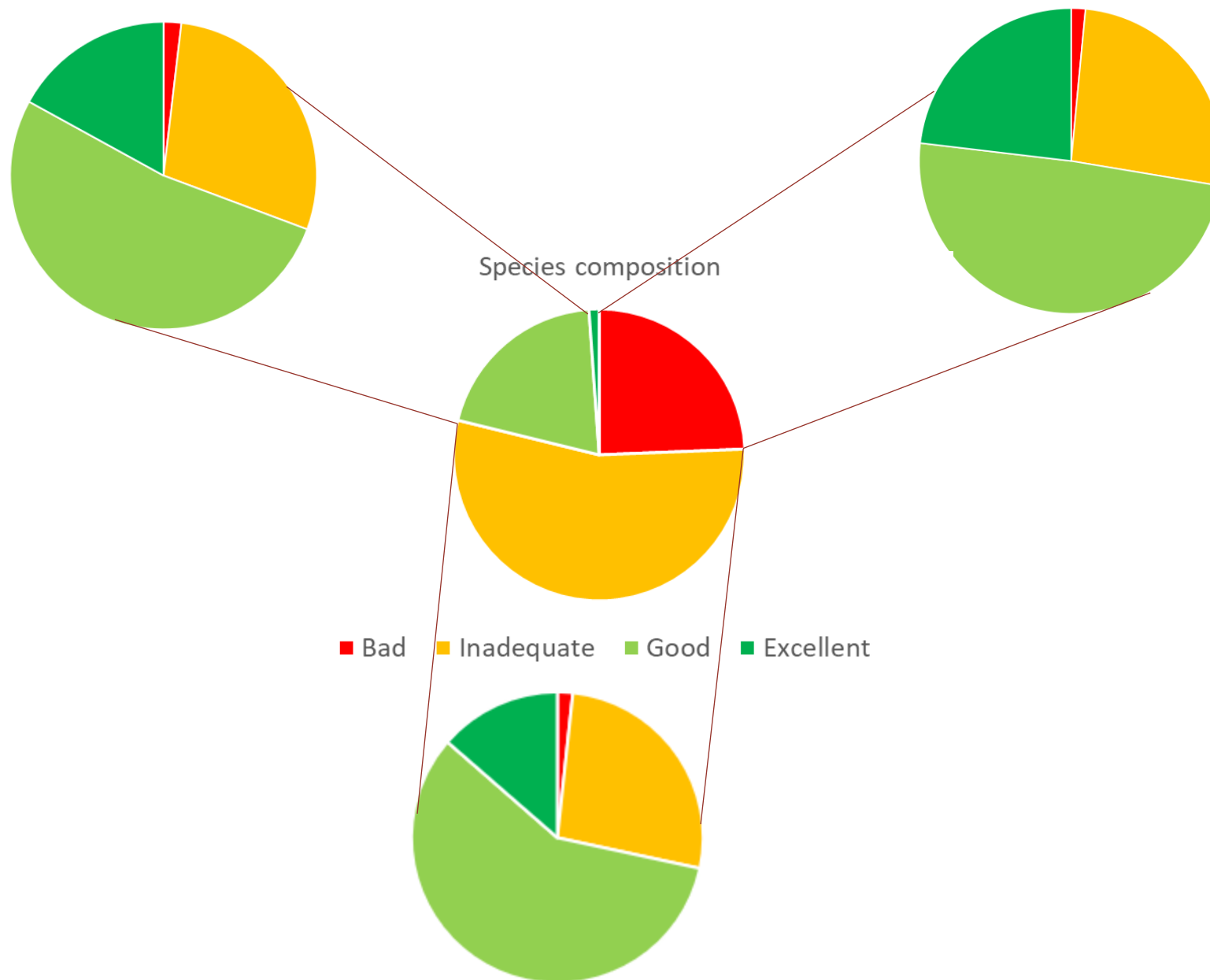
Bad Inadequate Good Excellent

Number of polygons

Structures

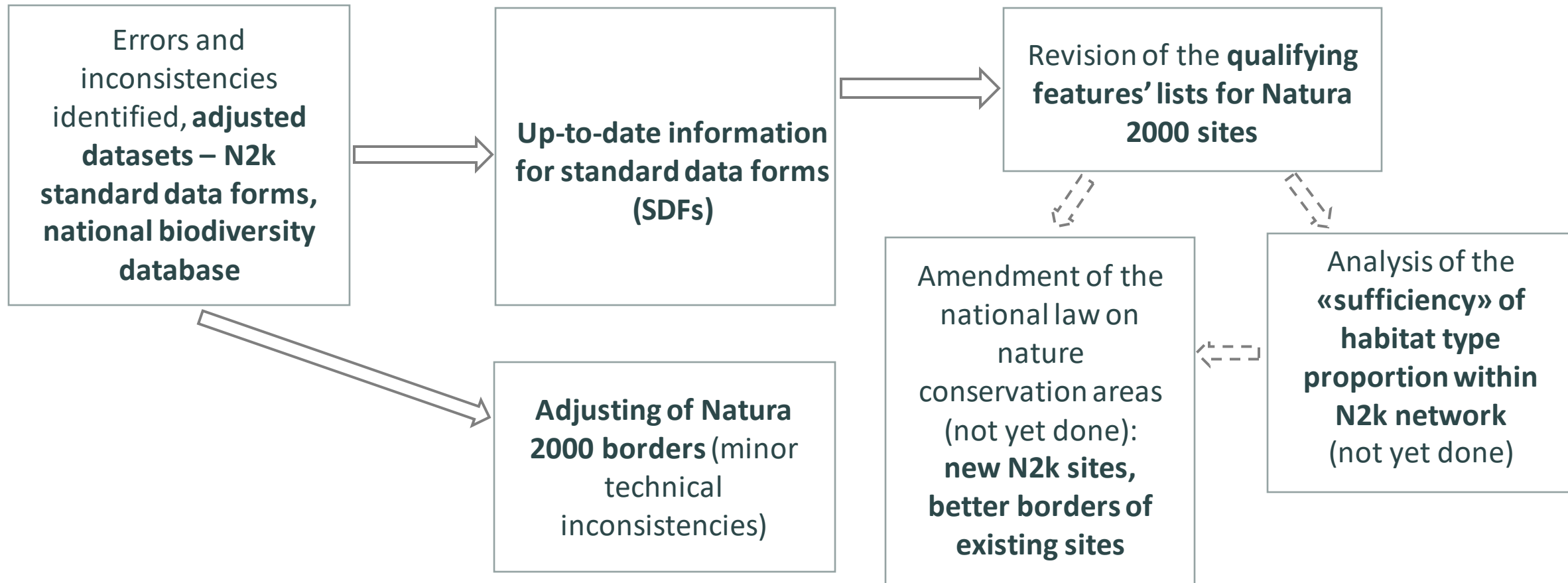


Bad Inadequate Good Excellent



■ Bad ■ Inadequate ■ Good ■ Excellent

Results - Multiple benefits





ES LIFE Programas projekts
"Natura 2000 aizsargājamo teritoriju pārvaldības
un apsaimniekošanas optimizācija"
(LIFE19 IPE/LV/000010 LIFE-IP LatViaNature)



Paldies!