In situ CWR populations in EURISCO: LITHUANIA

Juozas Labokas, Domas Uogintas
Nature Research Centre, Vilnius, Lithuania

Two approaches used

1. Country-wide CWR priority species distribution analysis by employing large databases (BIGIS, EU-LT-001, GBIF)
2. Targeted inventories of preselected individual sites located on state-owned land and, mostly, in protected areas

No formal CWR genetic reserves established so far.

Summary of CWR prioritization

Second iteration (after 2016) focused on PGRFA

Family	Genera #	Species #	Species %	Genera with numbers of species
Poaceae	19	47	32.6	Agrostis (5), Alopecurus (4), Anthoxanthum (3), Arrhenatherum (1), Avenula (1), Briza (1), Bromus (1), Cynosurus (1), Dactylis (1), Deschampsia (2), Elymus (1), Festuca (8), Glyceria (4), Helictochloa (1), Leymus (1), Lolium (1), Phalaris (1), Phleum (2), Poa (8)
Fabaceae	11	46	31.9	Anthyllis (1), Astragalus (3), Lathyrus (7), Lotus (2), Medicago (2), Melilotus (2), Onobrychis (2), Ononis (1), Securigera (1), Trifolium (14), Vicia (11)
Rosaceae	5	16	11.1	Fragaria (3), Malus (2), Prunus (3), Pyrus (2), Rubus (6)
Lamiaceae	3	6	4.2	Mentha (3), Origanum (1), Thymus (2)
Brassicaceae	2	5	3.5	Barbarea (2), Rorippa (3)
Amaryllidaceae	1	6	4.2	Allium (6)
Ericaceae	1	5	3.5	Vaccinium (5)
Apiaceae	4	4	2.8	Angelica (1), Carum (1), Daucus (1), Pastinaca (1)
Grossulariaceae	1	3	2.1	Ribes (3)
Asparagaceae	1	1	0.7	Asparagus (1)
Asteraceae	1	1	0.7	Cichorium (1)
Betulaceae	1	1	0.7	Corylus (1)
Cannabaceae	1	1	0.7	Humulus (1)
Papaveraceae	1	1	0.7	Papaver (1)
Elaeagnaceae	1	1	0.7	Hippophae (1)
Total: 15	**53**	**144**	**100**	

Legally protected CWR priority species*

#	Species	IUCN category and criteria
1	Allium angulosum L.	EN B1ab(ii,iii)+2ab(ii,iii)
2	Allium scorodoprasum L.	VU A4ac
3	Allium vineale L.	EN B2ab(iii,iv,v)
4	Alopecurus arundinaceus Poir.	VU D2
5	Astragalus danicus Retz.	NT B2b(iii); B1b(iii)
6	Festuca altissima All.	DD
7	Festuca psammophila (Čelak.) R. M. Fritsch	EN B1ab(ii,iii,v)+2ab(ii,iii,v)
8	Glyceria lithuanica (Gorski) Gorski	VU B1ab(iii)+2ab(iii)
9	Helictochloa pratensis (L.) Romero Zarco	VU D2
10	Lathyrus laevigatus (Waldst. & Kit.) Gren.	NT B2
11	Lathyrus pisiformis L.	EN B1ab(iv)+2ab(iv)
12	Poa remota Forselles	NT B2
13	Prunus spinosa L.	VU B1ab(ii,iii,v)+2ab(ii,iii,v)
14	Trifolium lupinaster L.	EN B2b(iii)c(iv)
15	Trifolium rubens L.	EN B2ab(i,ii,iii,iv)
16	Vicia lathyroides L.	EN B2b(iii)c(ii)
17	Vicia pisiformis L.	NT B1+2

* Rašomavičius, V., (ed.). 2021. Red Data Book of Lithuania. Animals, plants, fungi. – Vilnius. https://gamtosknyga.lt/leidinys/lietuvos-raudonoji-knyga/

1. Country-wide CWR priority species distribution analysis

Results of QGIS hotspot analysis of 140 CWR priority species occurrences in 4×4 km grid cells in Lithuania. Different shades of green indicate different ranges of unique species numbers per cell with numbers of such cells in square brackets.

... overlapped with ...

2. Preselected CWR site inventories

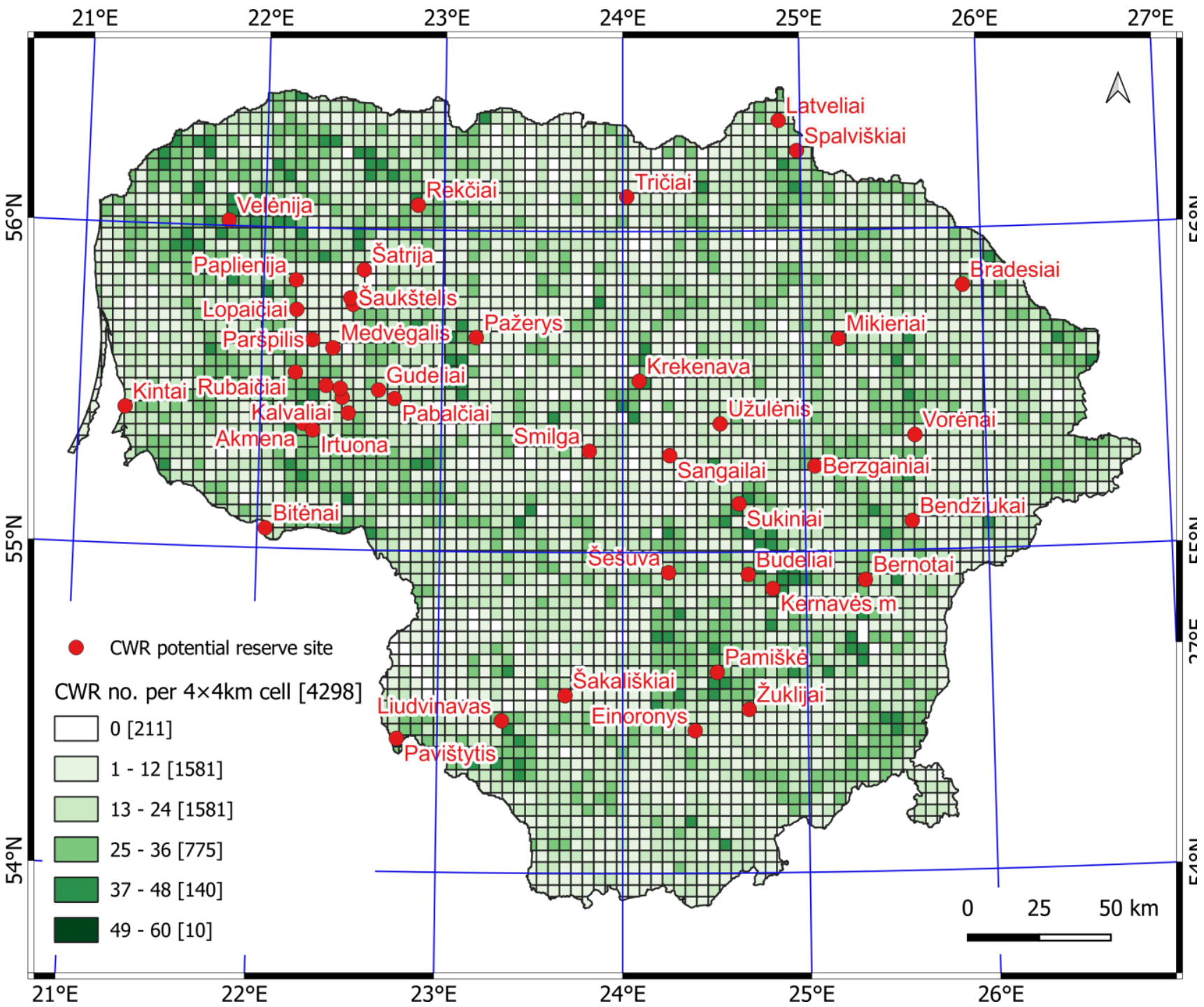
Red dots indicate potential CWR sites established by targeted inventories of preselected sites located on state-owned land, and mostly in PAs.

The 45 red dot sites (0.22–23.4 ha each) contain 83 CWR priority species (57.6% of the priority list) with 748 records in total.

Out of these 83 CWR species:

– 47 spp. are represented by ≥5 populations;

– 27 spp. are represented by ≥10 populations



Distribution of 45 potential CWR genetic reserve sites (red dots) in the context of climatic subdivisions of Lithuania.

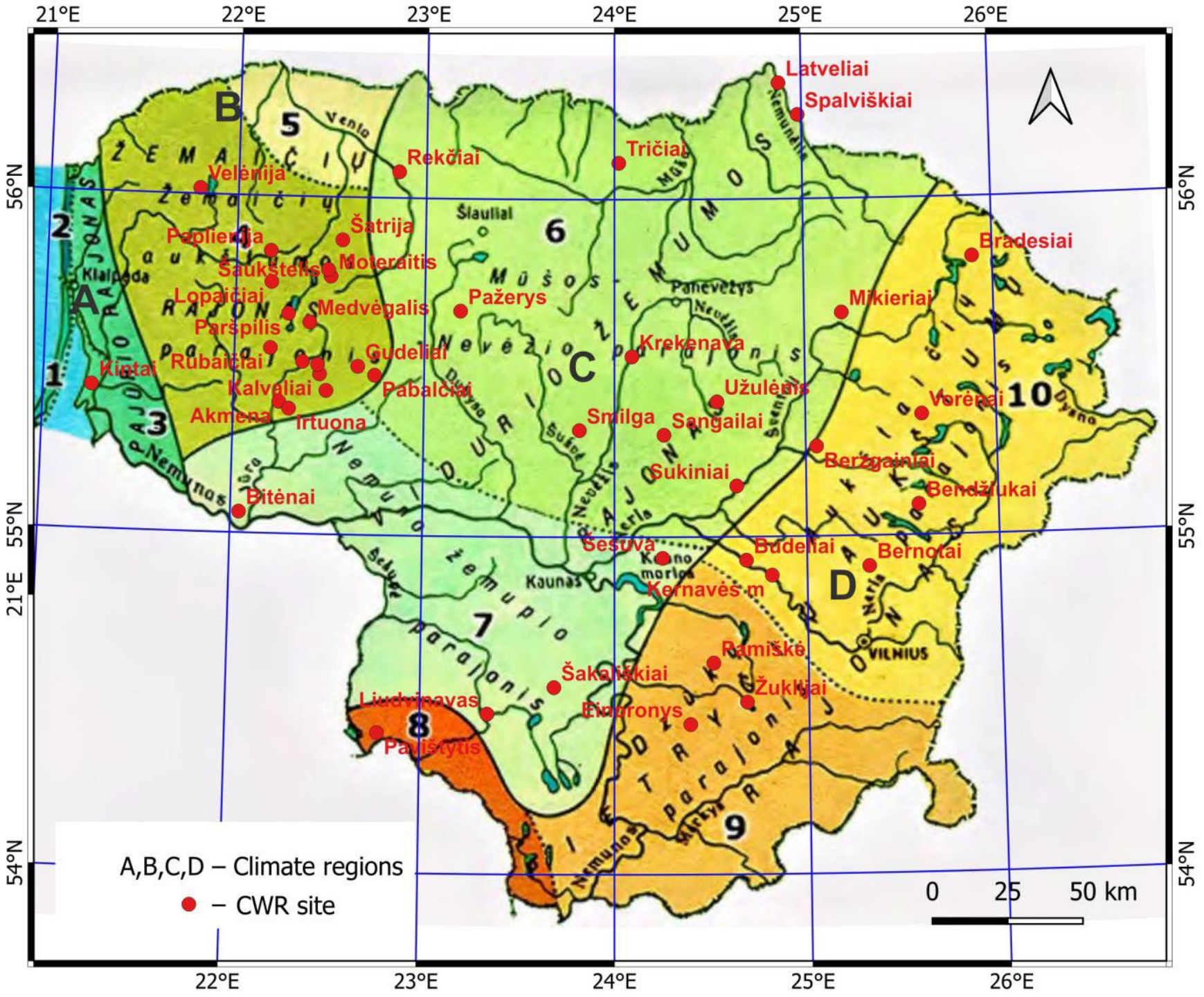
Climate regions with numbers of subregions and CWR sites:

A – Littoral (1, 2, 3) – 1 CWR site;

B – Samogitian (4, 5) – 17 CWR sites;

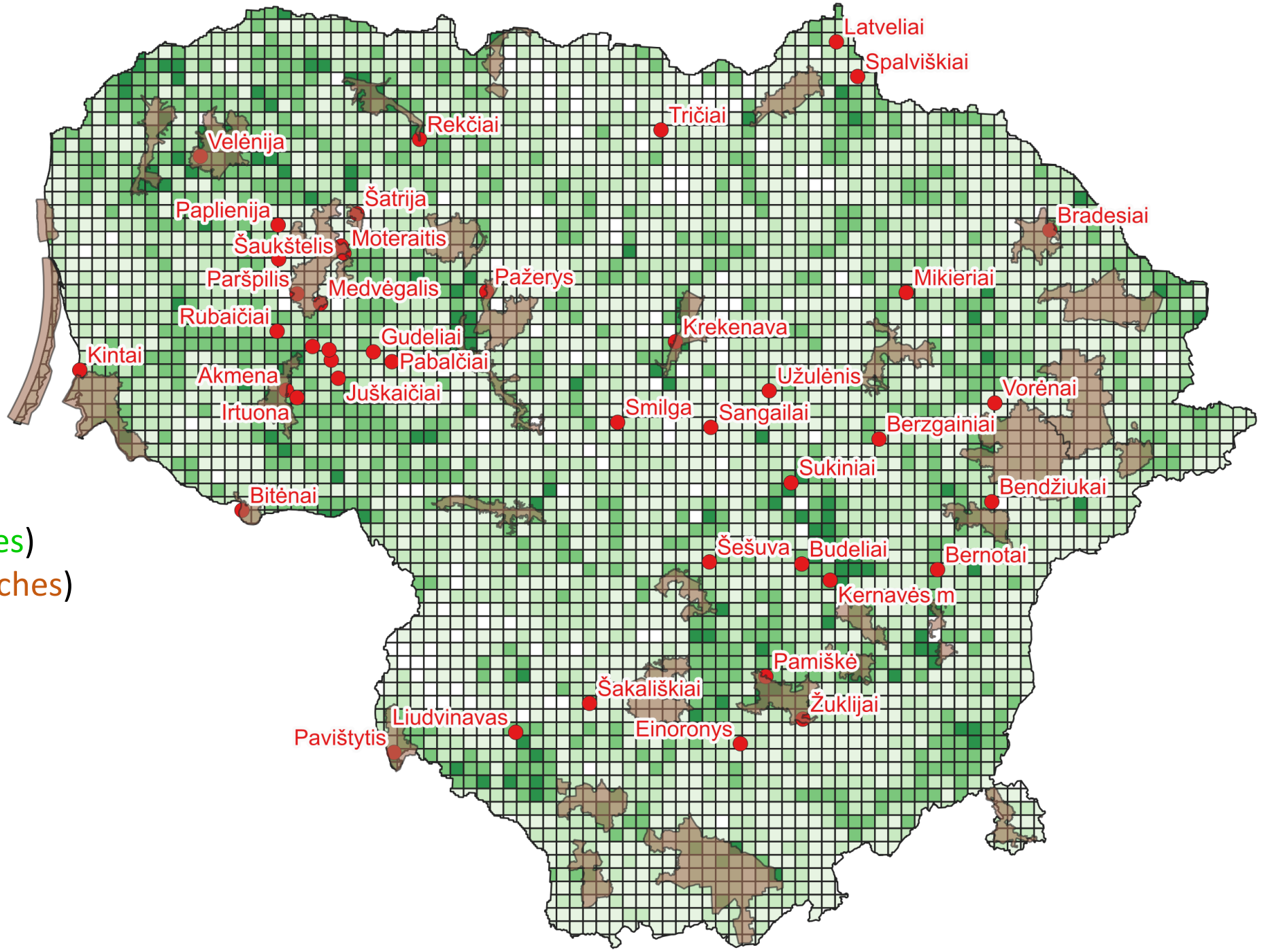
C – Middle Lowland (6, 7) – 13 CWR sites;

D – Southeast Uplands (8, 9, 10) – 14 CWR sites.



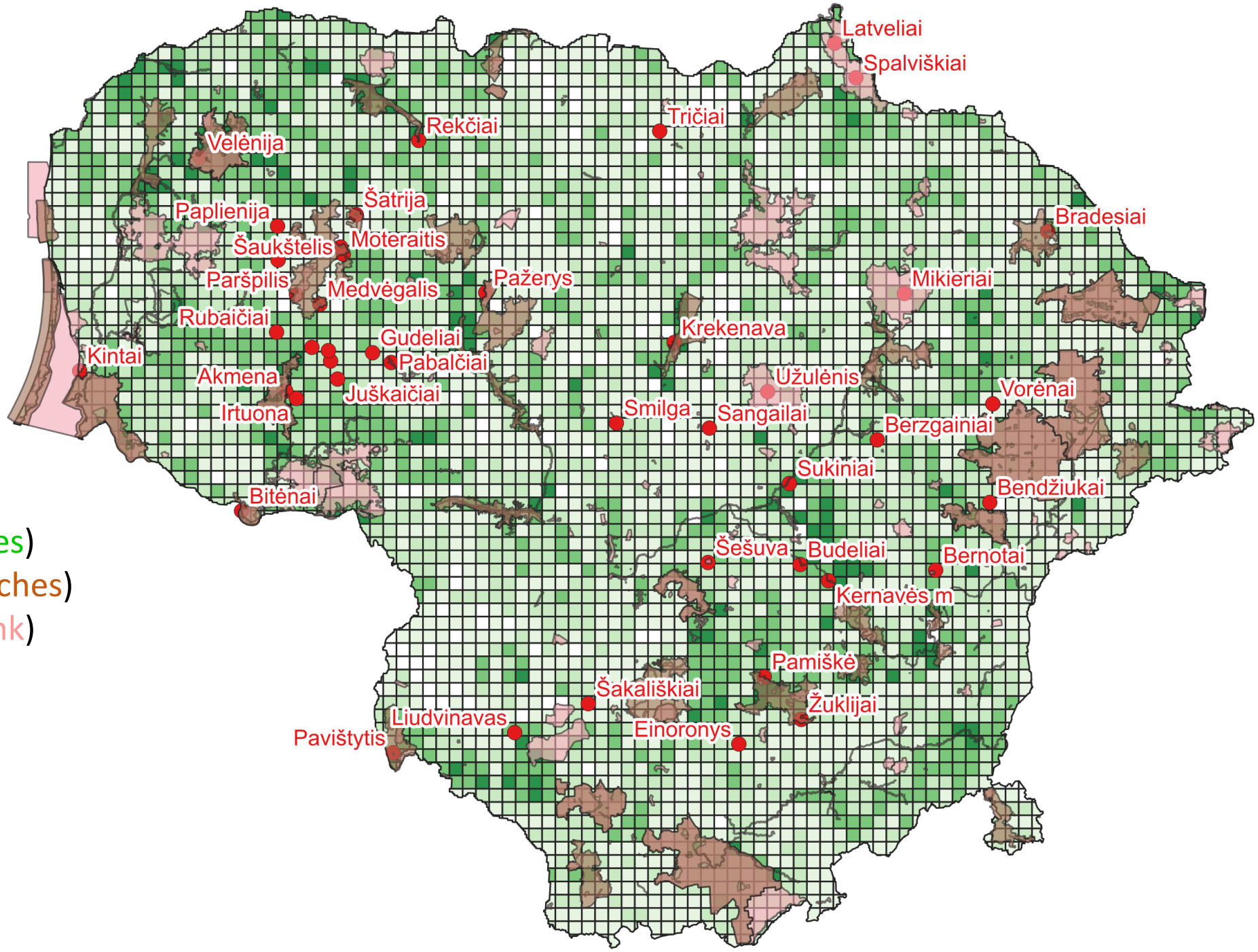
Finding out CWR sites and hotspots occurring in protected areas (state parks):

CWR sites (red dots)
CWR hotspots (green squares)
State parks (light brown patches)



Finding out CWR sites and hotspots occurring in protected areas (state parks and NATURA 2000 sites):

CWR sites (red dots)
CWR hotspots (green squares)
State parks (light brown patches)
NATURA 2000 sites (light pink)



Distribution of 83 CWR priority species across 45 potential CWR genetic reserve sites

Frequency group	No. CWR sites	No. CWR species	% CWR priority list
1	1–4	36	25.0
2	5–9	20	13.9
3	10–14	3	2.1
4	15–19	13	9.0
5	≥20	11	7.6
Total species in 45 sites		83	57.6
Full priority list		144	100.0
Total records in 45 sites	748		

Conclusions

The recommendation of ≥10 populations per CWR species per country* has been met as follows:

- with the first approach (country-wide CWR priority species distribution analysis by employing large databases) – for 98% of CWR priority species;
- with the second approach (targeted inventories of preselected sites located on state-owned land) – for 33% of the CWR priority species.

Data of the country-wide CWR priority species distribution analysis should be used to facilitate selection of the rest of the most appropriate CWR populations by reinventoring target species populations in place (as was done by the second approach).

A grid with smaller cell size could be used to more exactly select the potential CWR sites/populations, e.g., 1 × 1 km instead of the current 4 × 4 km.

* Whitlock W., Hipperson H., Thompson D.B.A., Butlina R.K., Burke T., 2016: Consequences of *in-situ* strategies for the conservation of plant genetic diversity. Biological Conservation, 203: 134–142.