Research of Aquatic Warbler in Biebrza valley

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Bagno Ławki (Ławki Marsh)

It's the biggest breeding site of Aquatic Warbler in the European Union and the second biggest in the world. Local population of this species constitutes 90% of the Polish, 70% of the EU, and 16% of the global population.

Biebrza Valley and Biebrza National Park are located in north-eastern Poland, near the border with Belarus. Core Aquatic Warbler habitats are fen mires and moss bogs in the Bagno Ławki marsh, which host about 60% of Biebrza's population.

Researches of Aquatic Warbler in Biebrza valley:

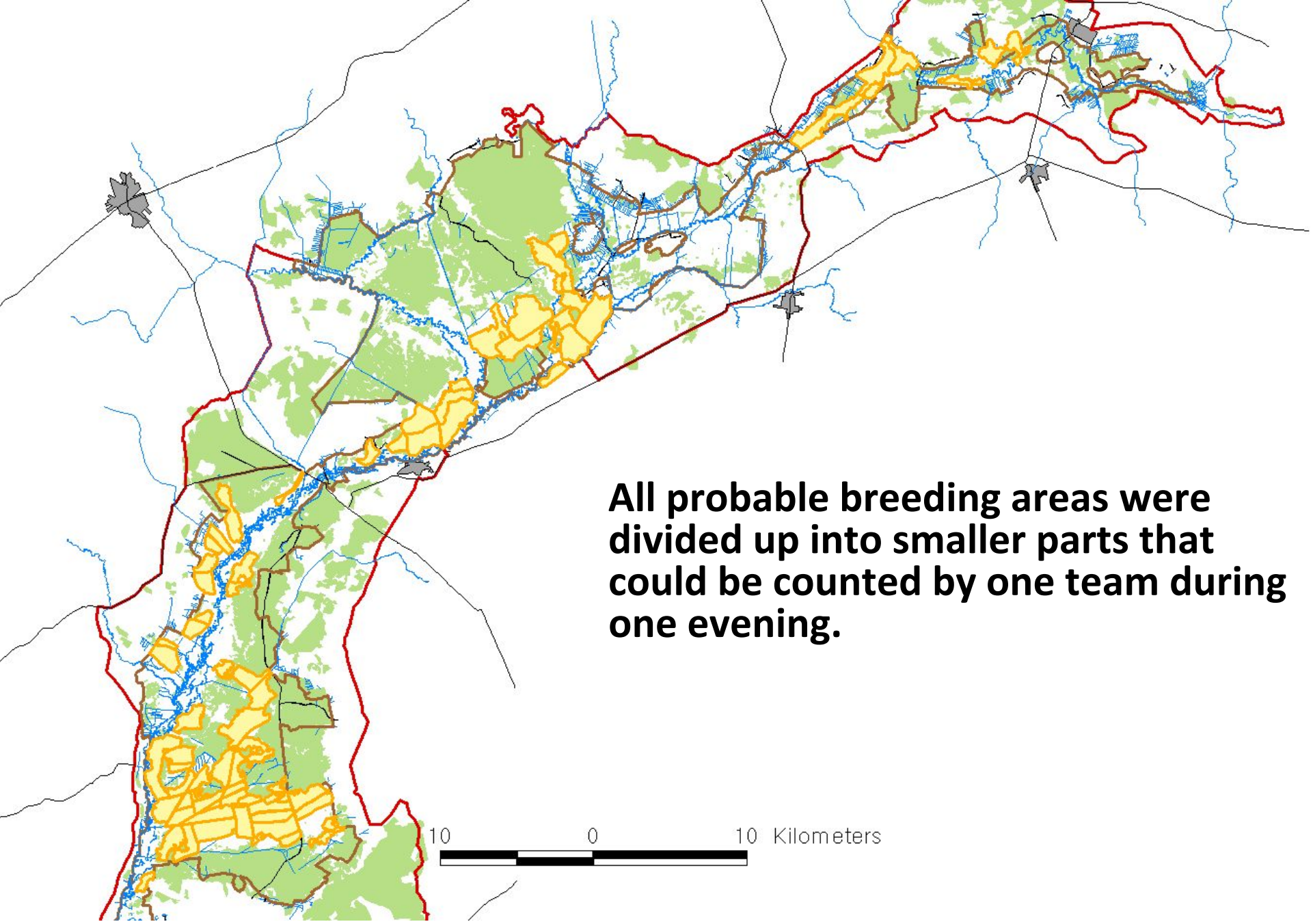
- Biology
- Census (number and distribution)
- Model of the “optimal habitat”

Aquatic Warbler census

- Assessment of AW number and distribution
- Improving of counting method
- Mapping important areas for AW
- Mapping potential AW breeding areas
- Mapping areas which need to be improved for AW

Methodology

- Birds were counted from mid-May to beginning of July, within 2 hours around sunset.
- A team of 5-8 observers formed a line and each member of the team counted singing males on the strip between himself and one of his neighbours.
- Only probable breeding areas were covered by censuses

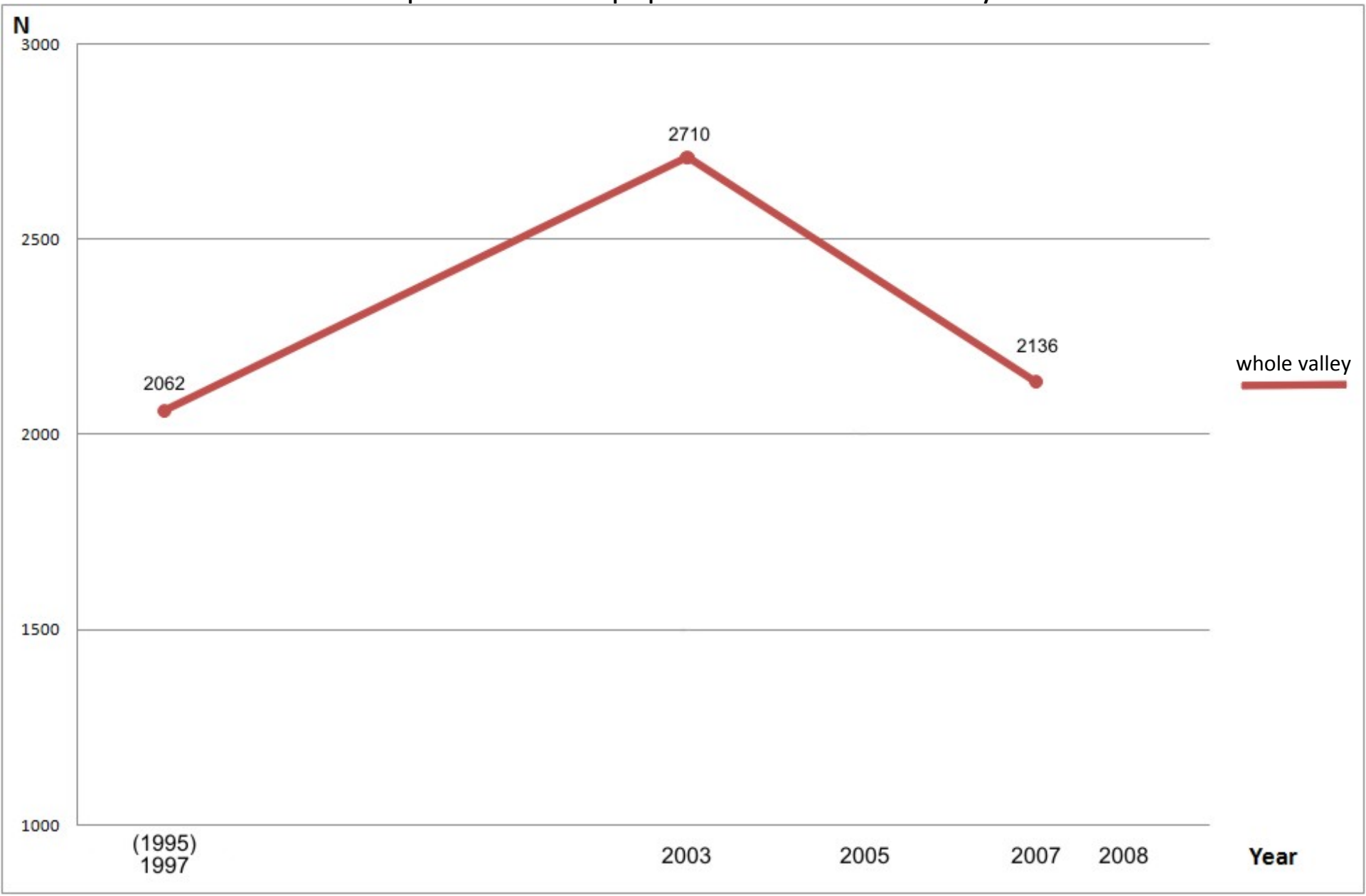


All probable breeding areas were divided up into smaller parts that could be counted by one team during one evening.

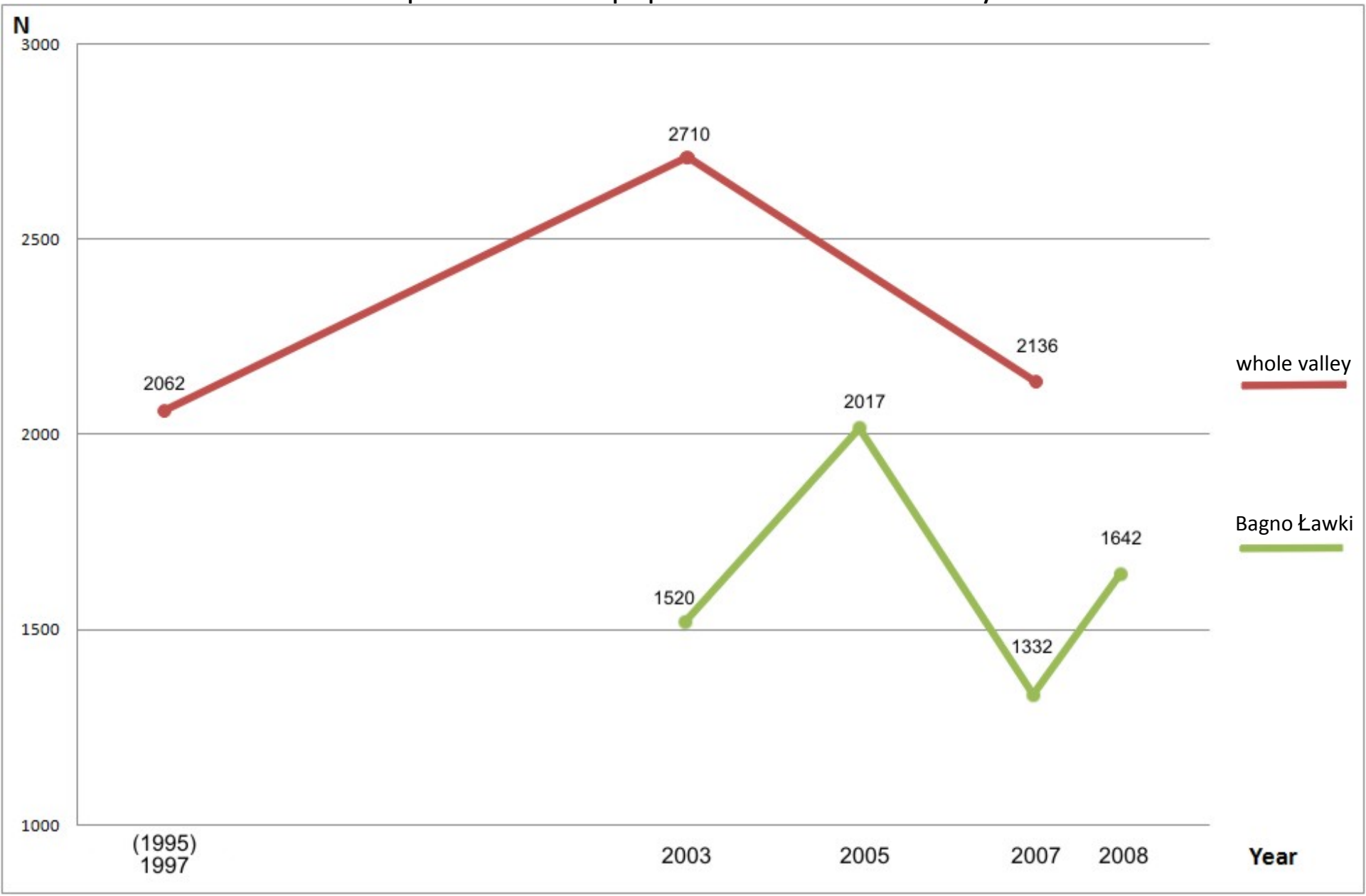
Singing males were marked on field maps or GPS receivers. All those record were summed up, sometimes also marked on a map.

Censuses are possible only thanks to work of volunteers

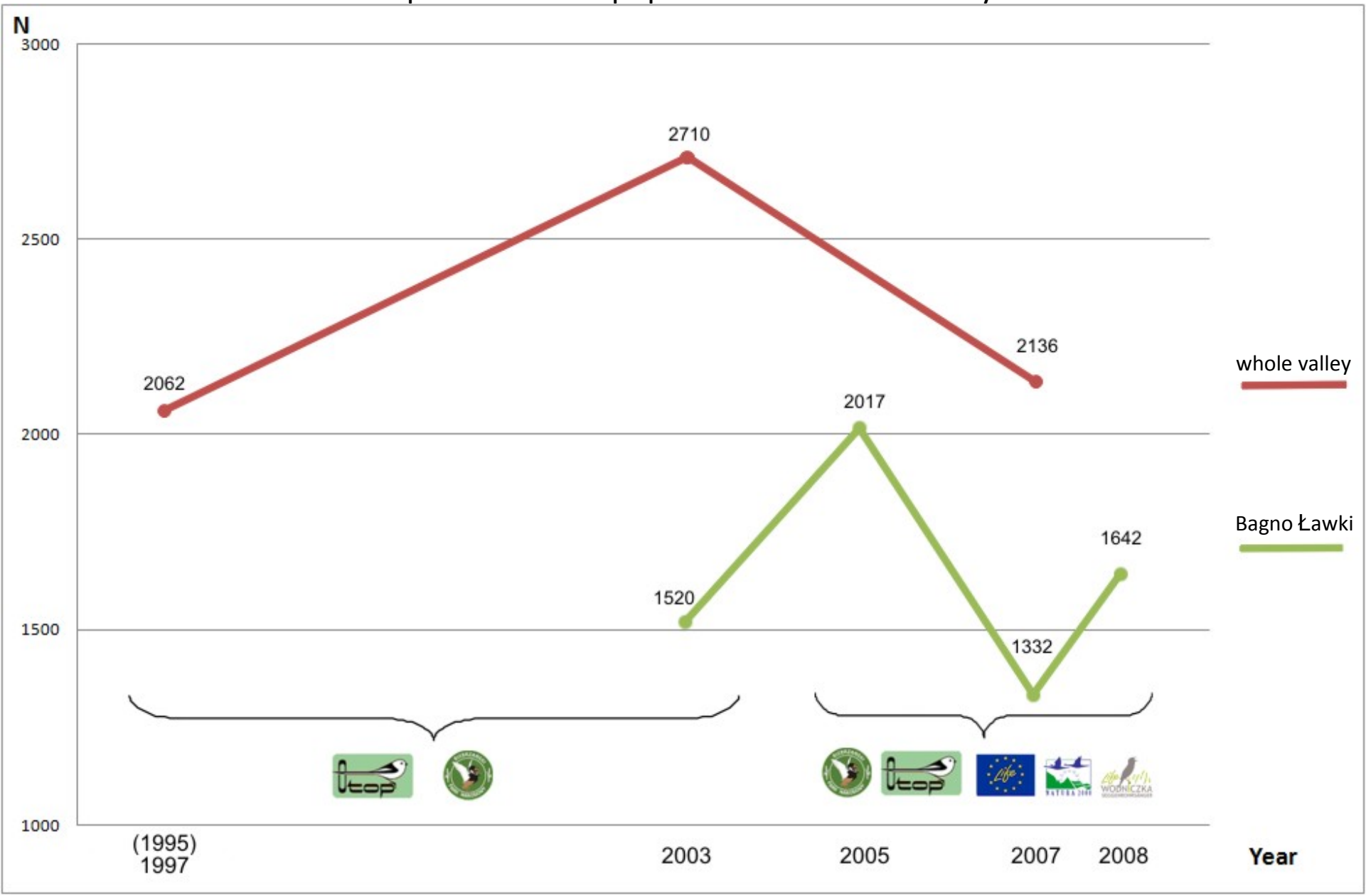
Aquatic Warbler population in Biebrza valley

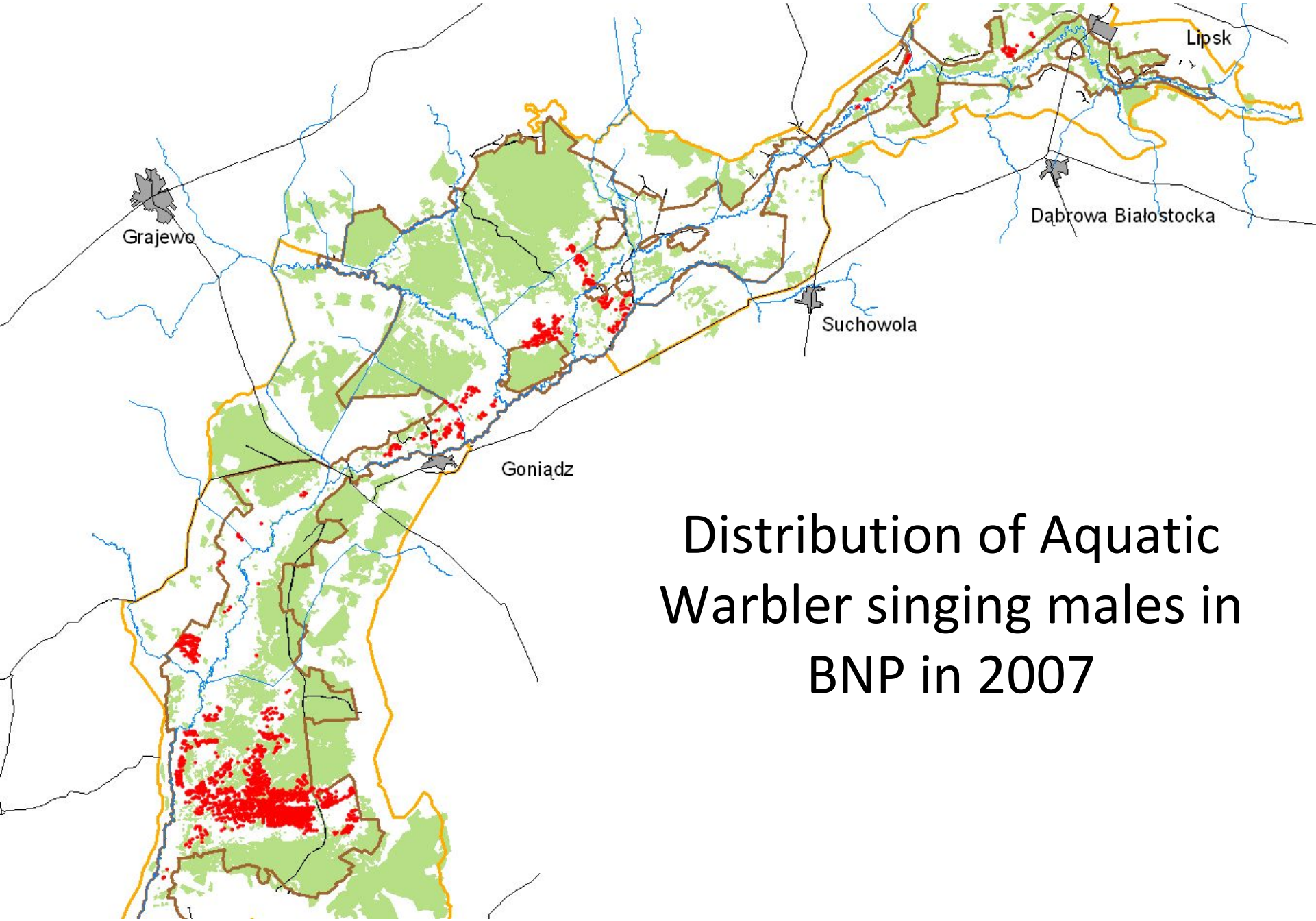


Aquatic Warbler population in Biebrza valley



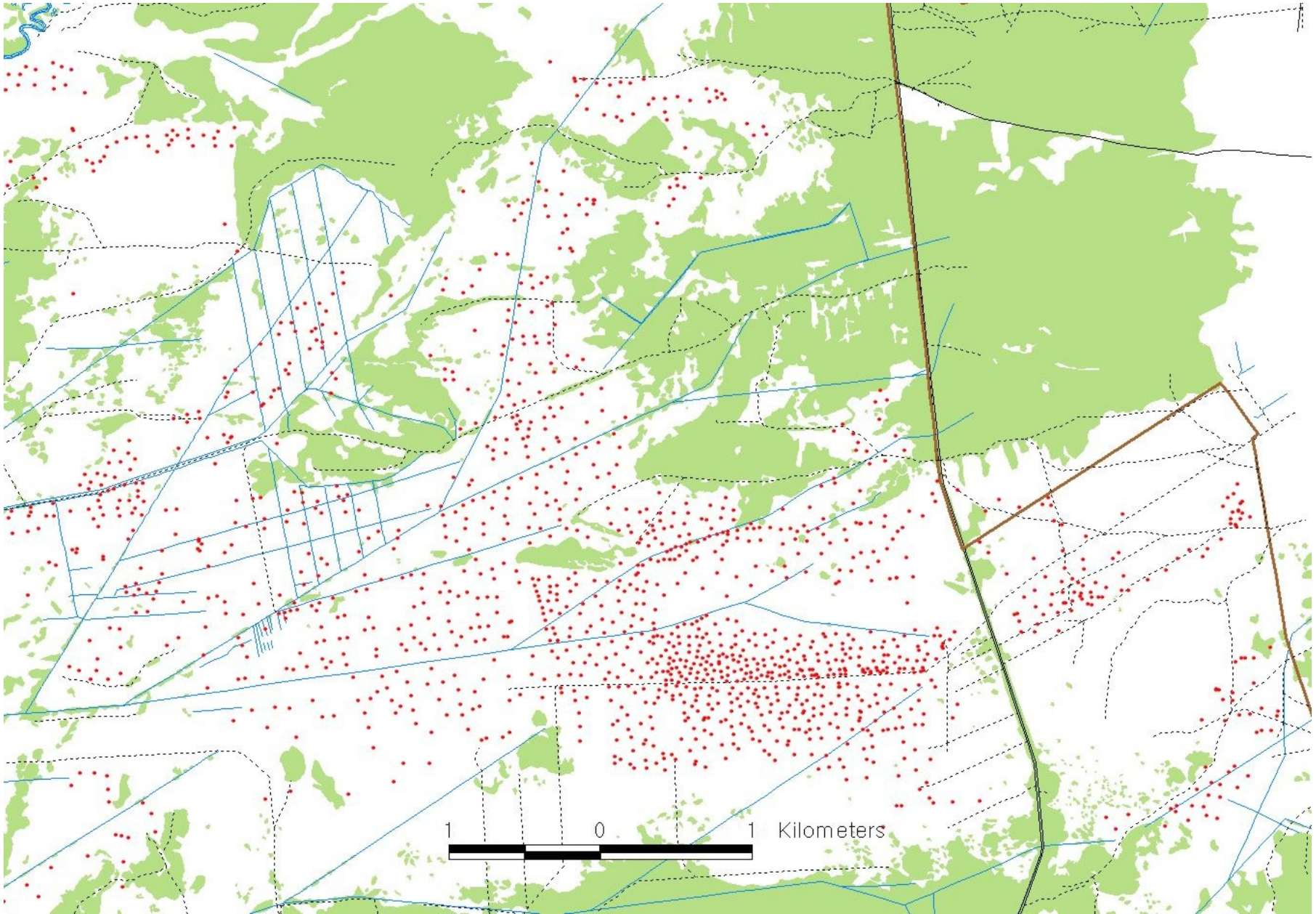
Aquatic Warbler population in Biebrza valley



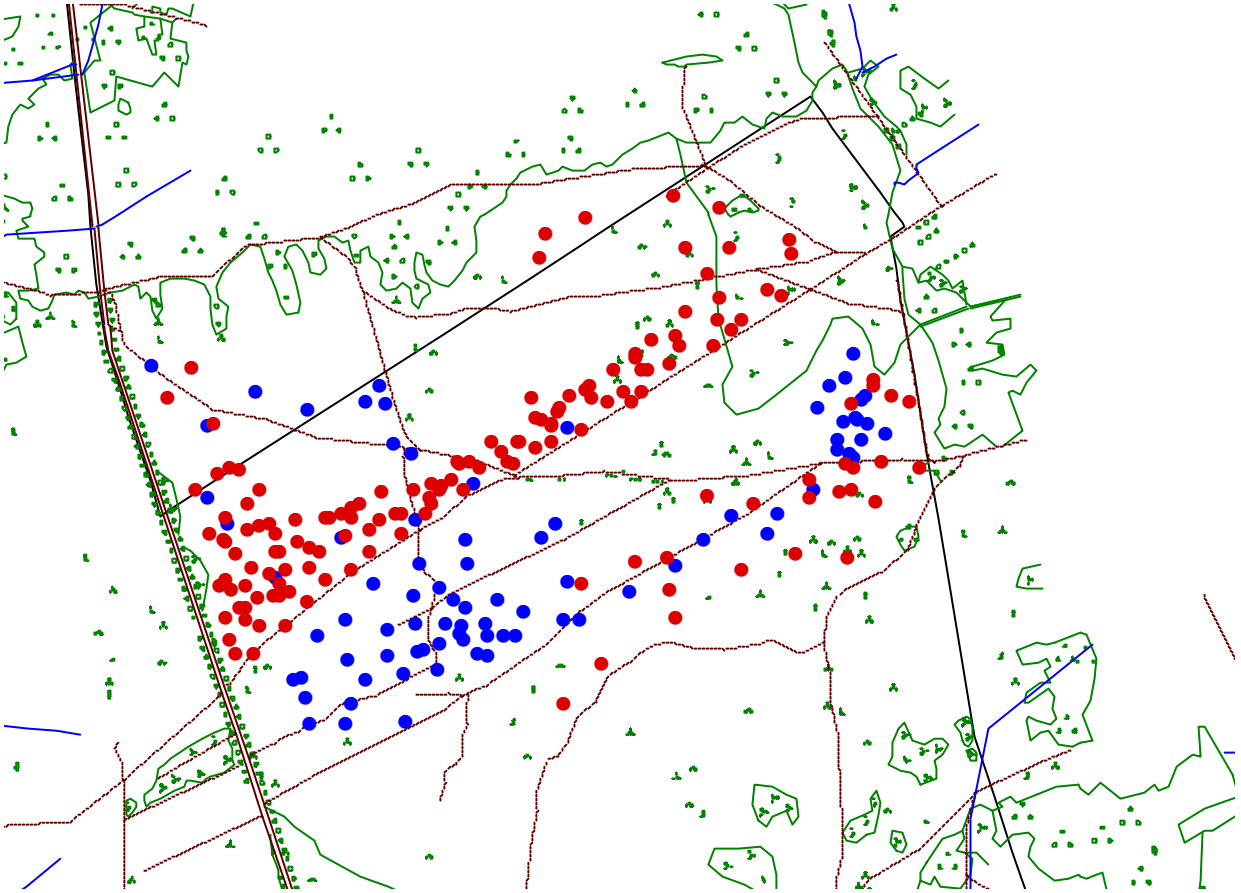


Distribution of Aquatic Warbler singing males in BNP in 2007

Distribution of Aquatic Warbler singing males on Bagno Ławki in 2007



Changes in number and distribution of singing AW males on exemplary area, Bagno Ławki, Biebrza valley



1997: 0 males

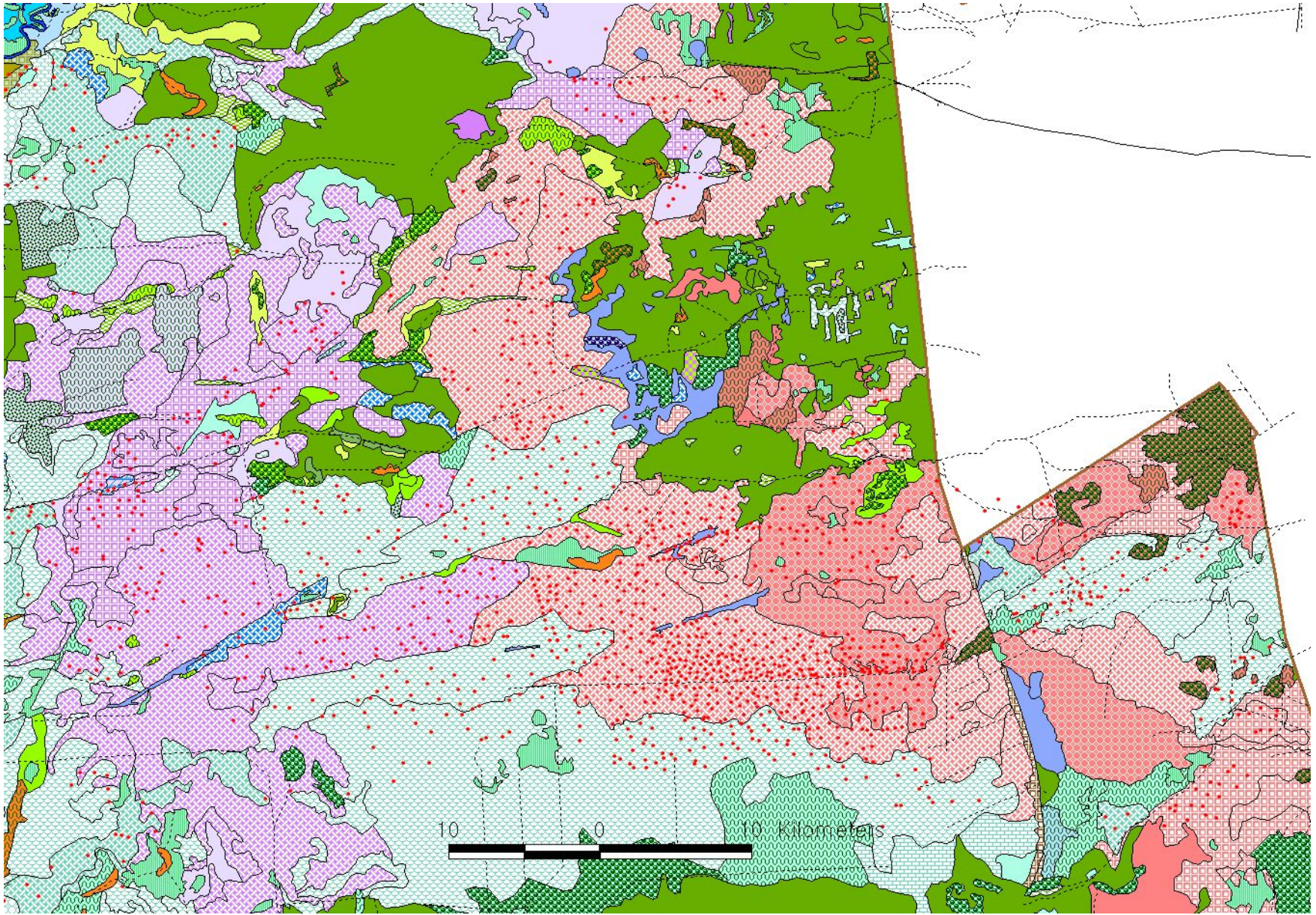
2003: approx. 150 ♂♂

2007: approx. 80 ♂♂

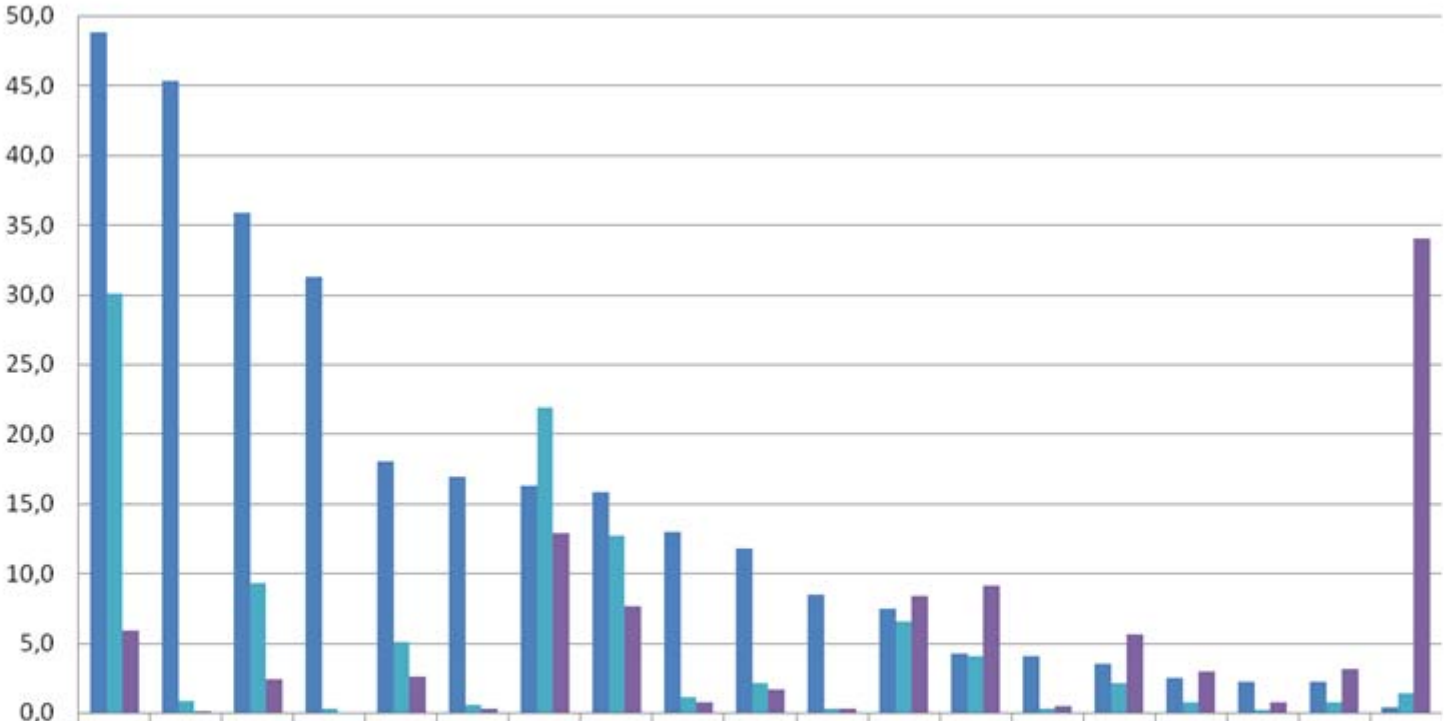
● **– distribution ♂♂ in 2003**

● **– distribution ♂♂ in 2007**

Distribution of Aquatic Warbler singing males on Bagno Ławki in 2007 and the vegetation cover

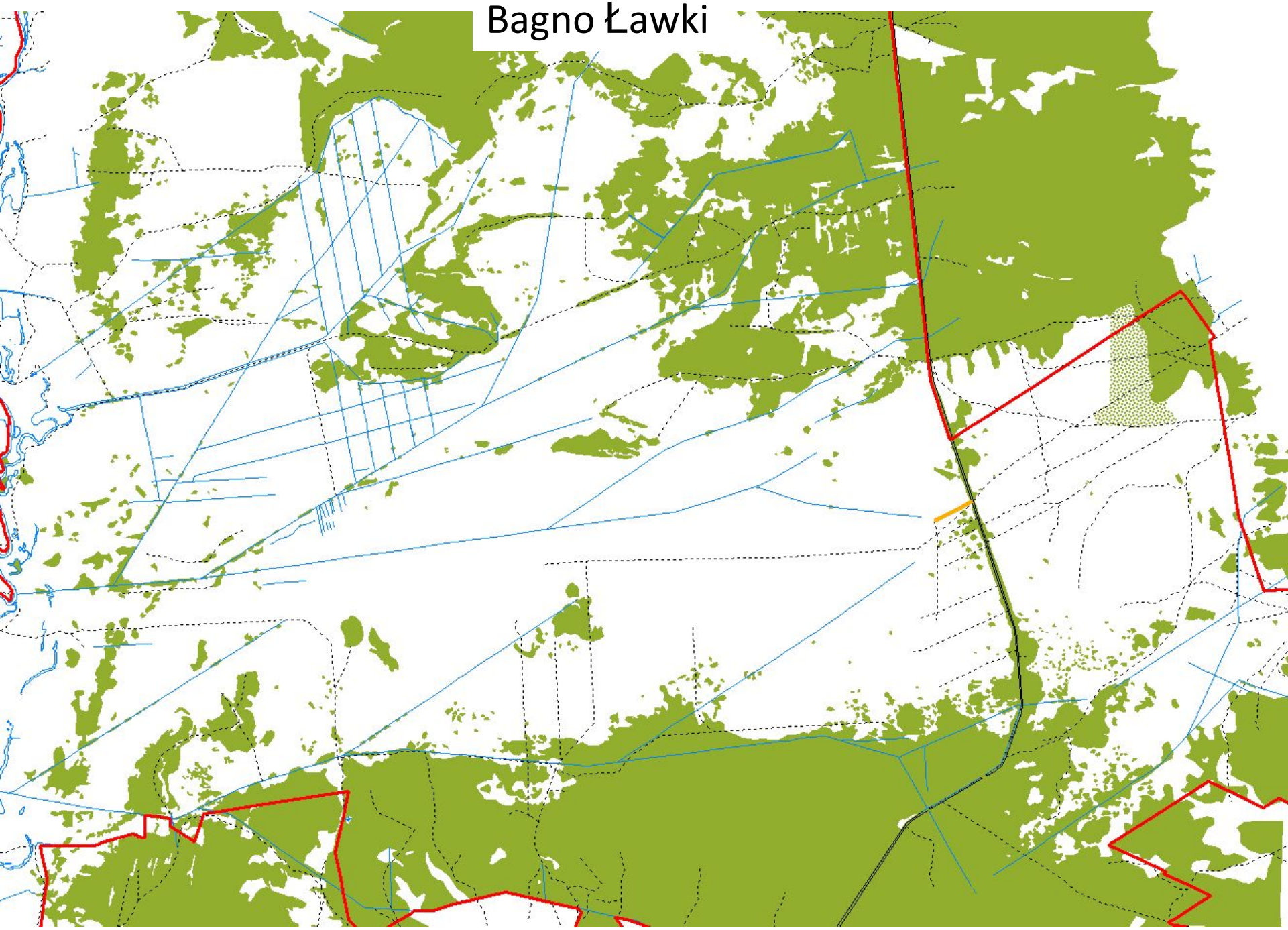


Aquatic Warbler selection of non-forest vegetation communities, Biebrza Lower Basin, 2007

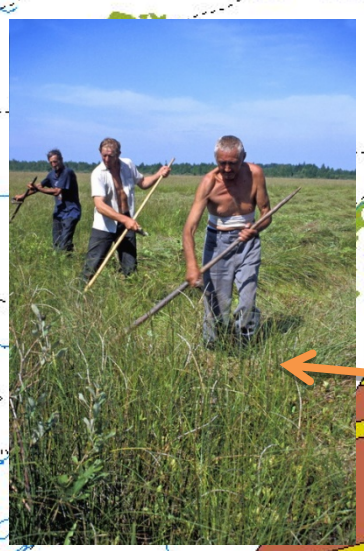


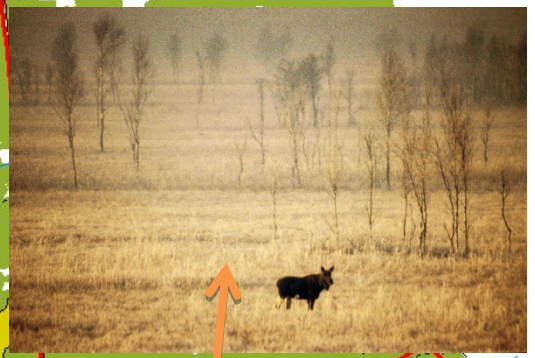
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
density [n/km^2]	48,8	45,3	35,9	31,3	18,1	16,9	16,2	15,8	13,0	11,8	8,4	7,4	4,2	4,0	3,5	2,5	2,2	2,2	0,4
AW [%]	30,0	0,8	9,3	0,2	5,0	0,6	21,9	12,7	1,1	2,1	0,3	6,5	4,0	0,2	2,1	0,8	0,2	0,7	1,4
Area [%]	5,9	0,2	2,5	0,1	2,7	0,3	12,9	7,7	0,8	1,7	0,3	8,4	9,1	0,6	5,7	3,0	0,8	3,2	34,0

1 - Caricetum diandrae var. with Carex appropinquata
2 - Mosaic of moss-sedge communities and meadows
3 - Carex diandrae
4 - Mosaic of moss-sedge communities and sedge communities
5 - Carici-Agrostietum caninae var. with Carex diandra
6- Caricetum rostratae
7- Caricetum appropinquatae
8 - Carici-Agrostietum caninae variation with Carex appropinquata
9 - Mosaic of wet meadows and pastures
10 - Caricetum lasiocarpae
11 - Agropyro-Rumicion crispi x Sparganio-Glycerion x Magnocarici
12 - Caricetum elatae
13 - Caricetum gracilis
14 - Tall herbs of Filipendulion
15 - Carici-Agrostietum caninae
16 - Phragmitetum communis
17 - Litter meadows of Molinion
18 - Tall sedges of Magnocaricion
19 - Others

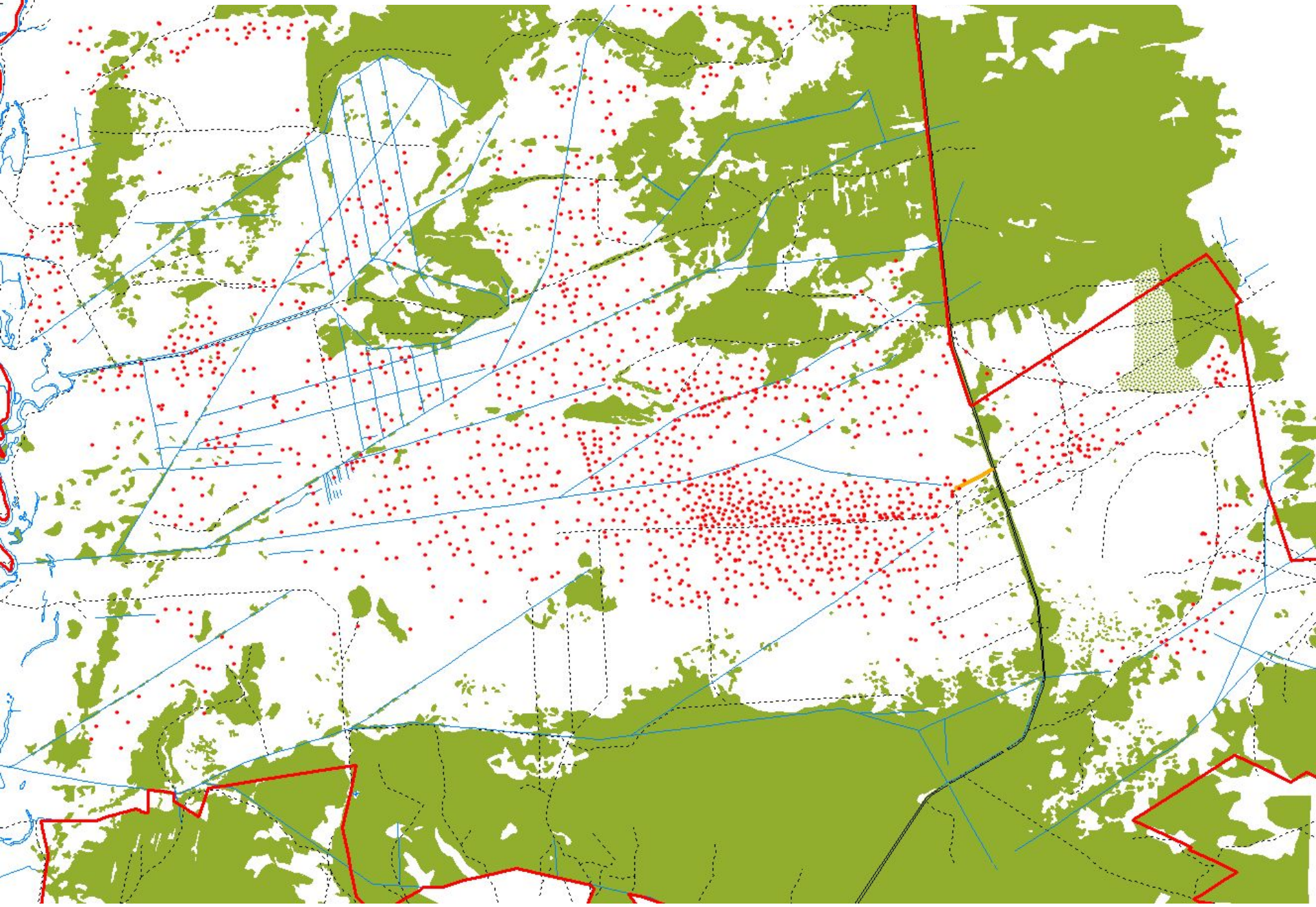

Bagno Ławki

Protection activities on Bagno Ławki, 2007/2008

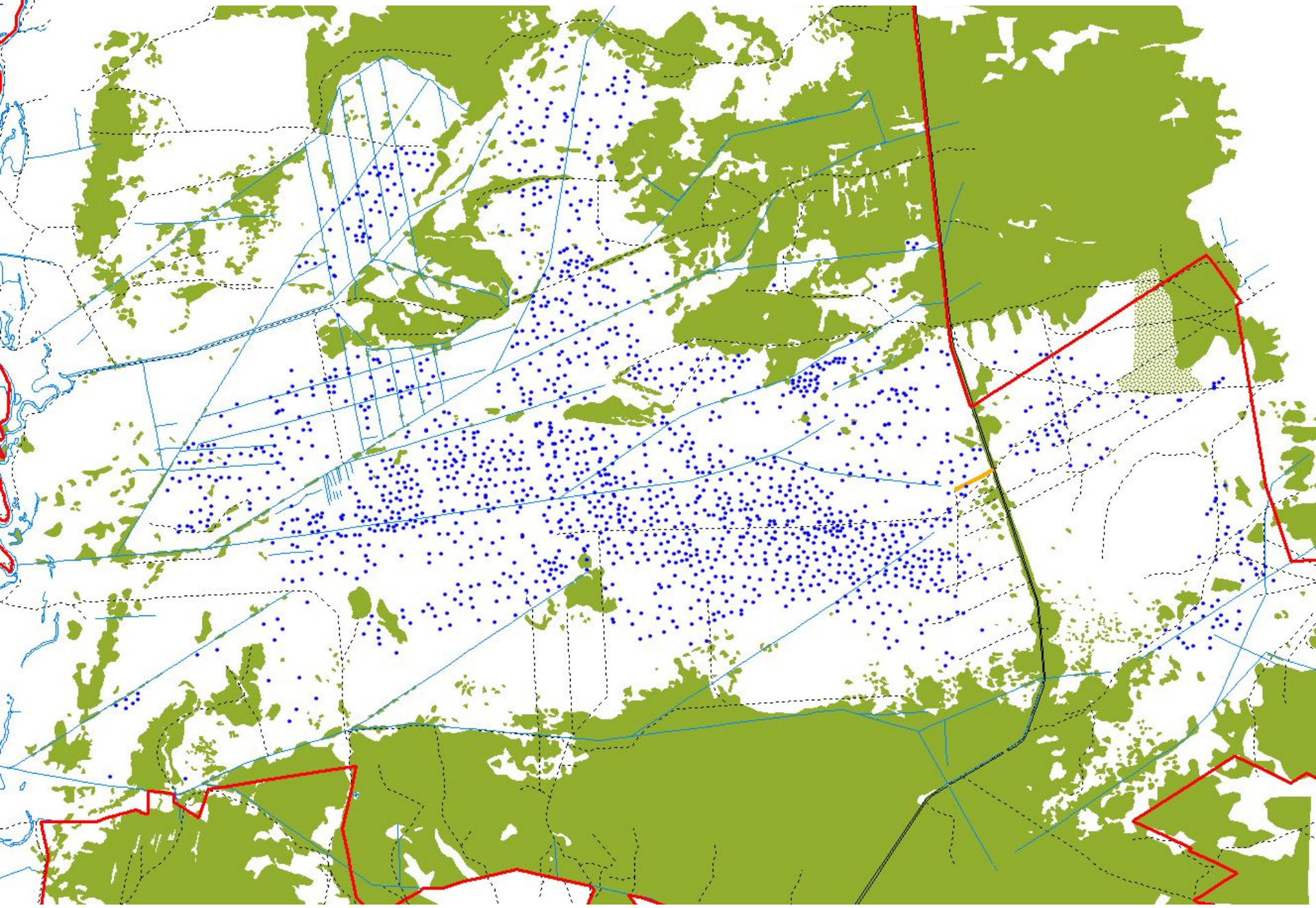


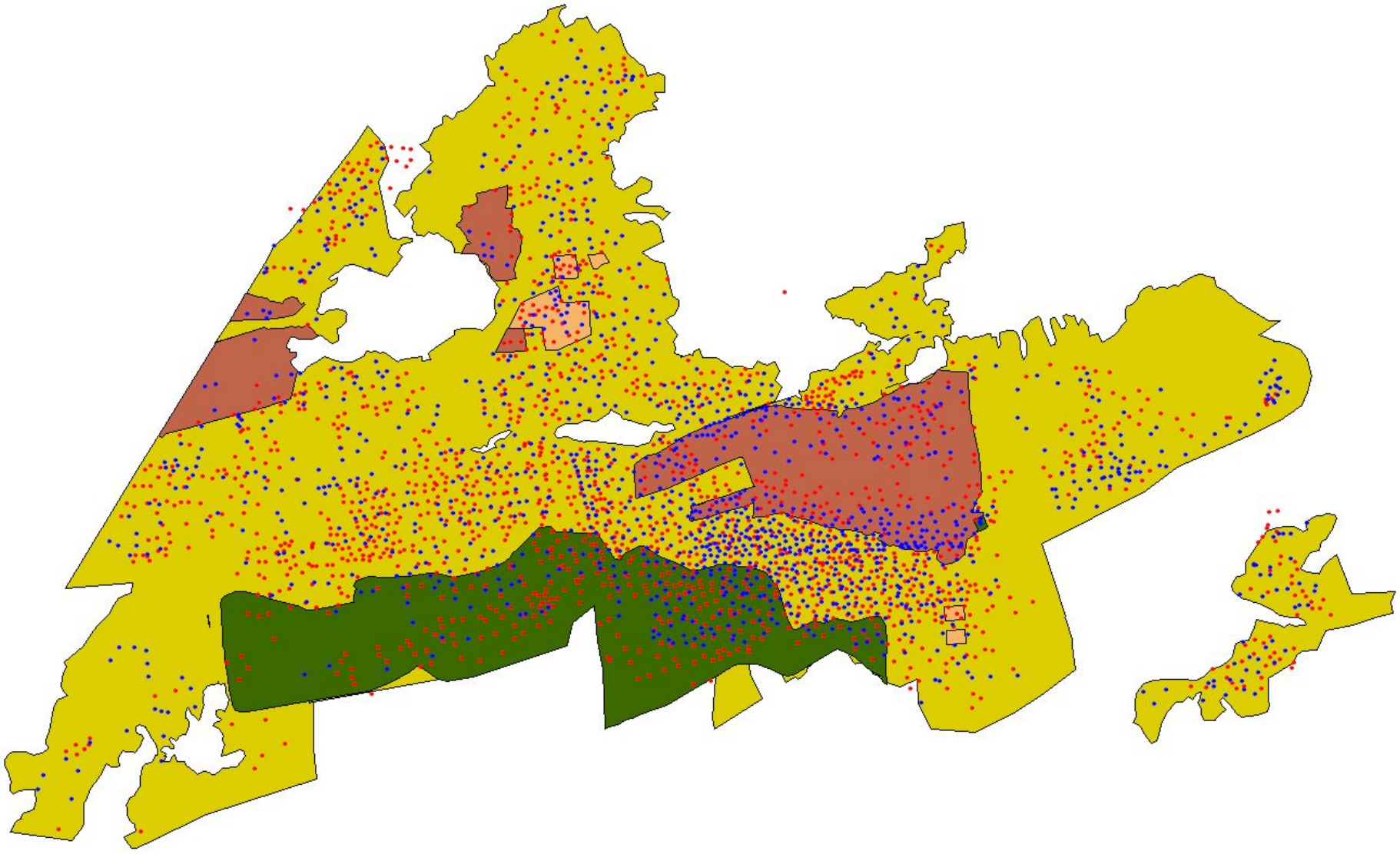


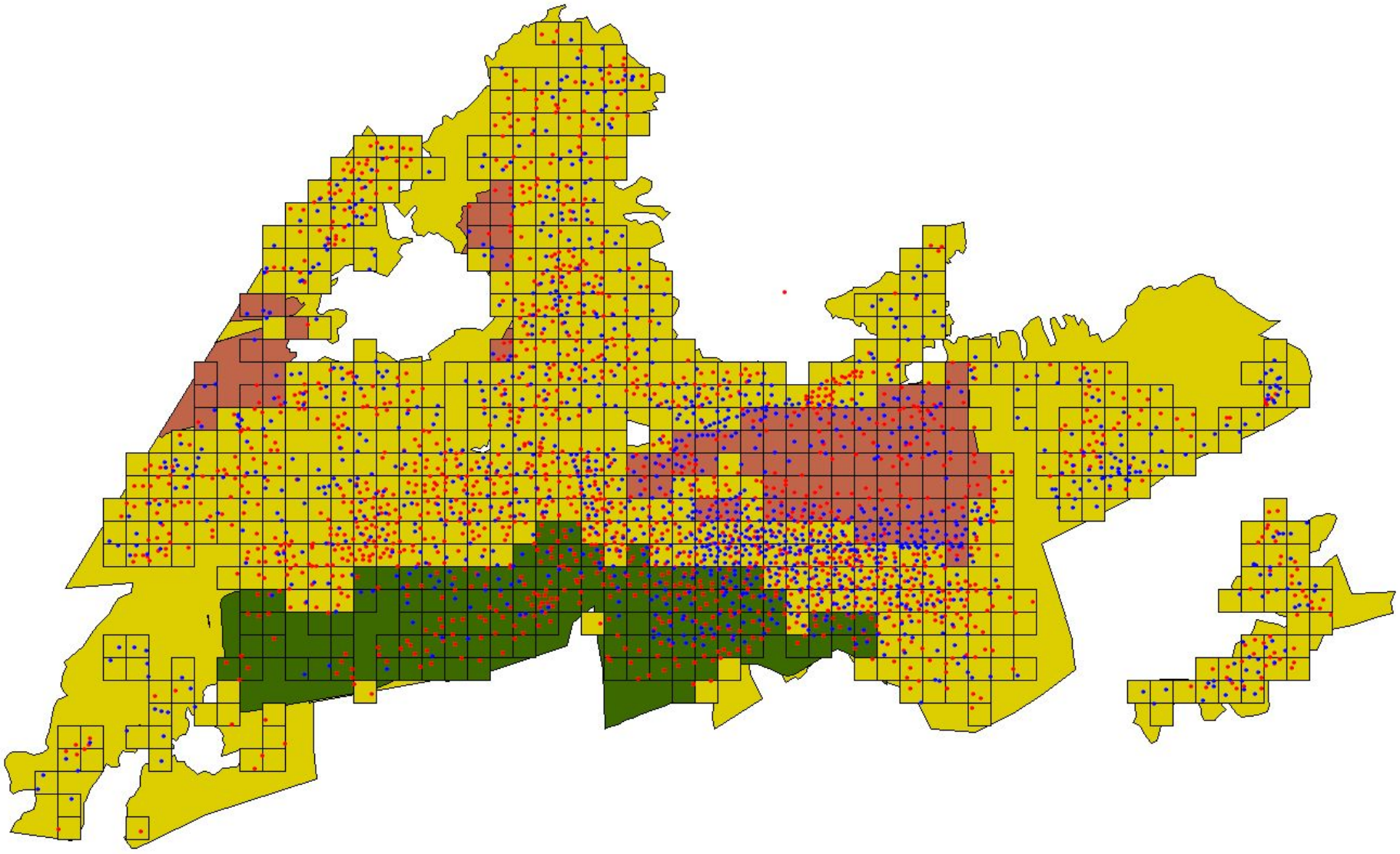
Distribution of Aquatic Warbler singing males in 2007

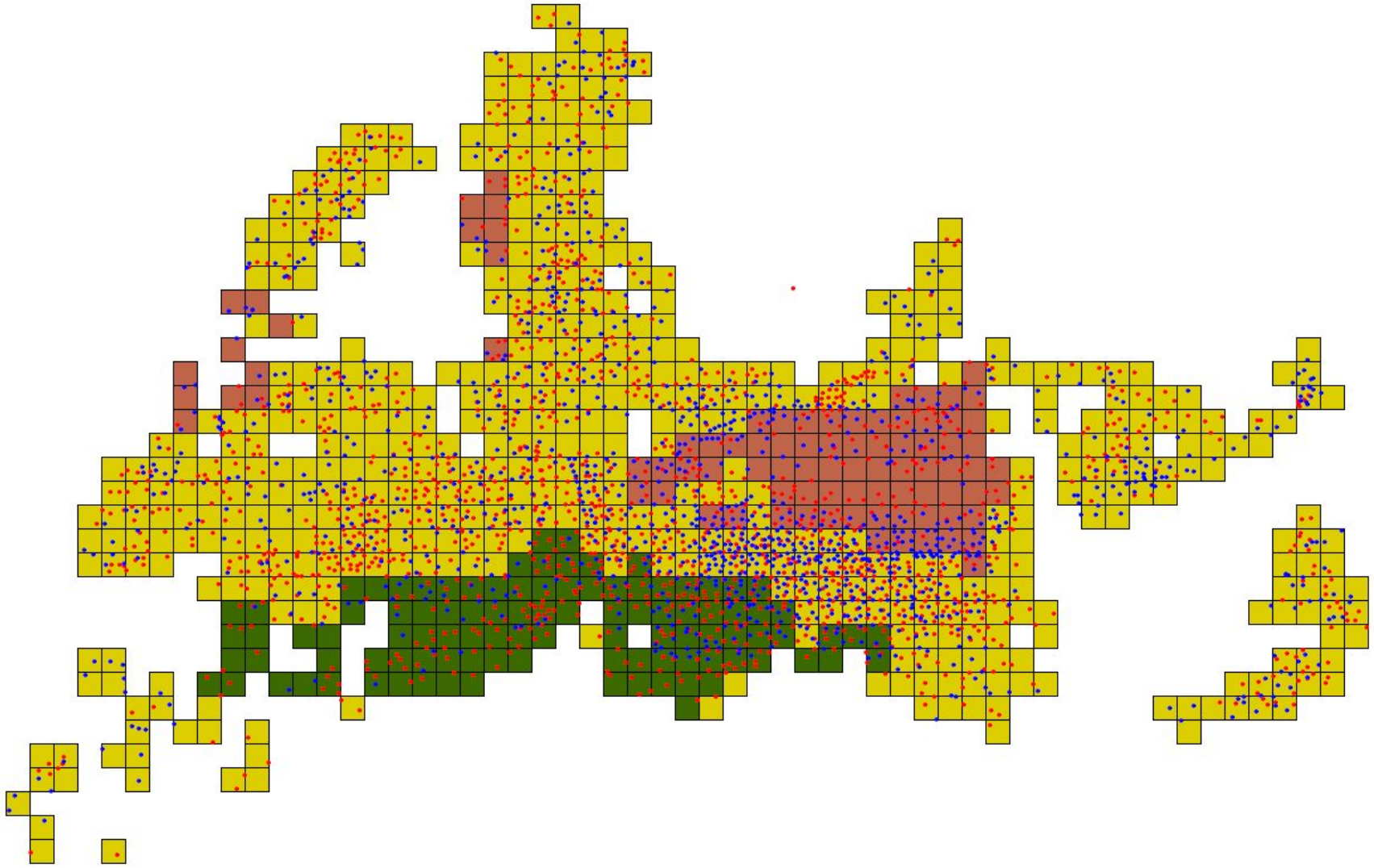


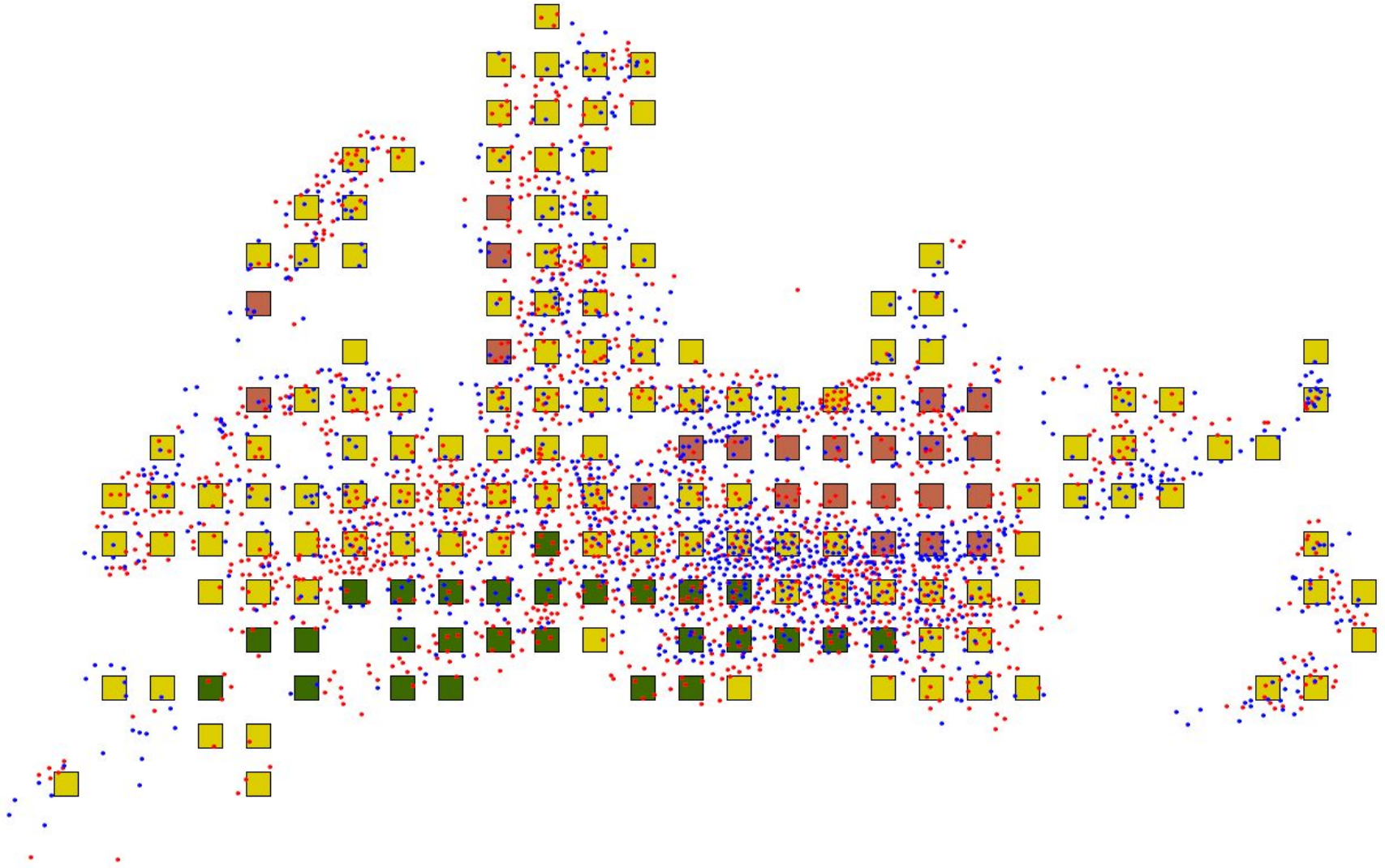
Distribution of Aquatic Warbler singing males in 2008





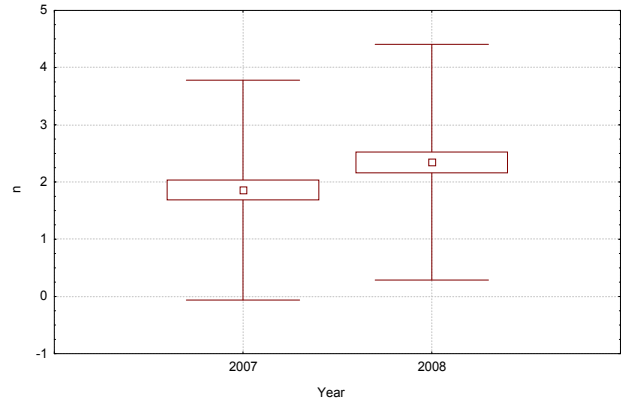




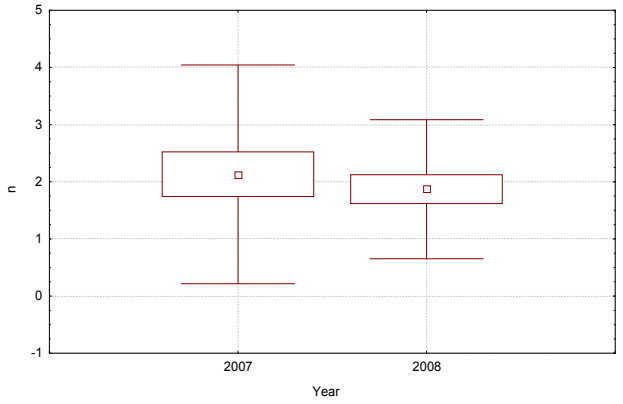


Number of singing males on areas with different protecting activities, years 2007 and 2008

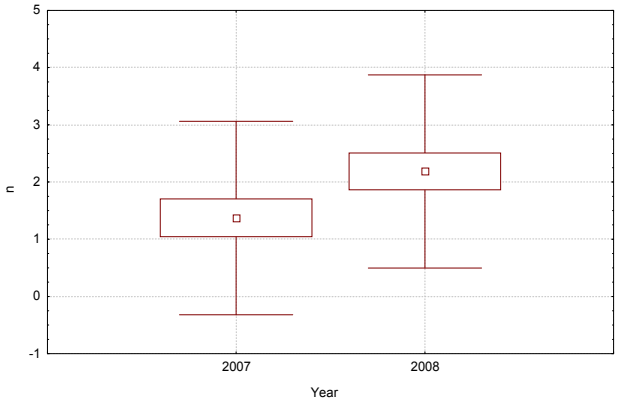
No activity (n=127)



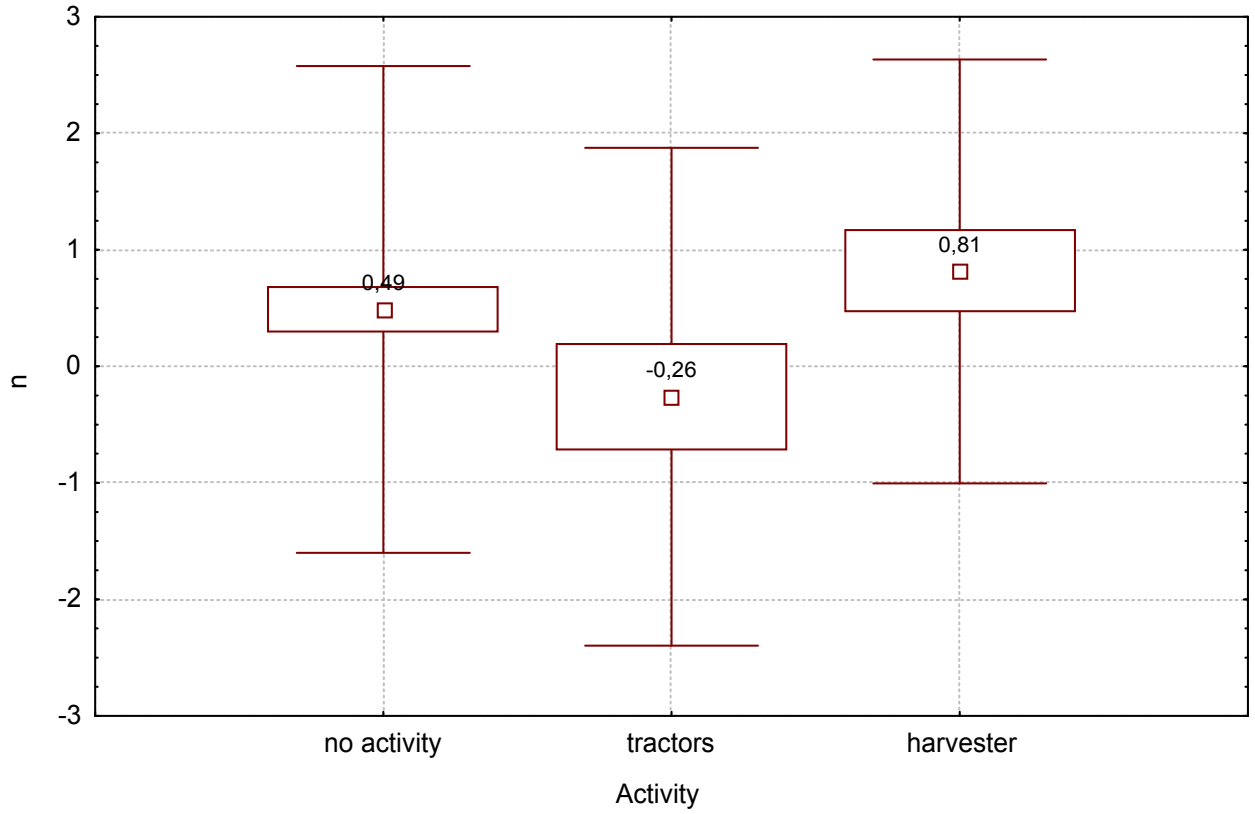
Tractors (n=23)



Harvester (n=27)



Change of singing males numbers on areas with different protecting activities, years 2007 and 2008



Standard deviation

Standard error

Mean

	p
no-activity--harvester:	0,452
no activity--tractors:	0,117
harvester--tractors:	0,060

Aquatic Warbler optimal habitat

Objectives:

- **Describing the optimal conditions** (food and vegetation) for Aquatic Warbler to breed

- **Developing a model** against which the situations creating by implementation of habitat management measures can be compared

Methodology

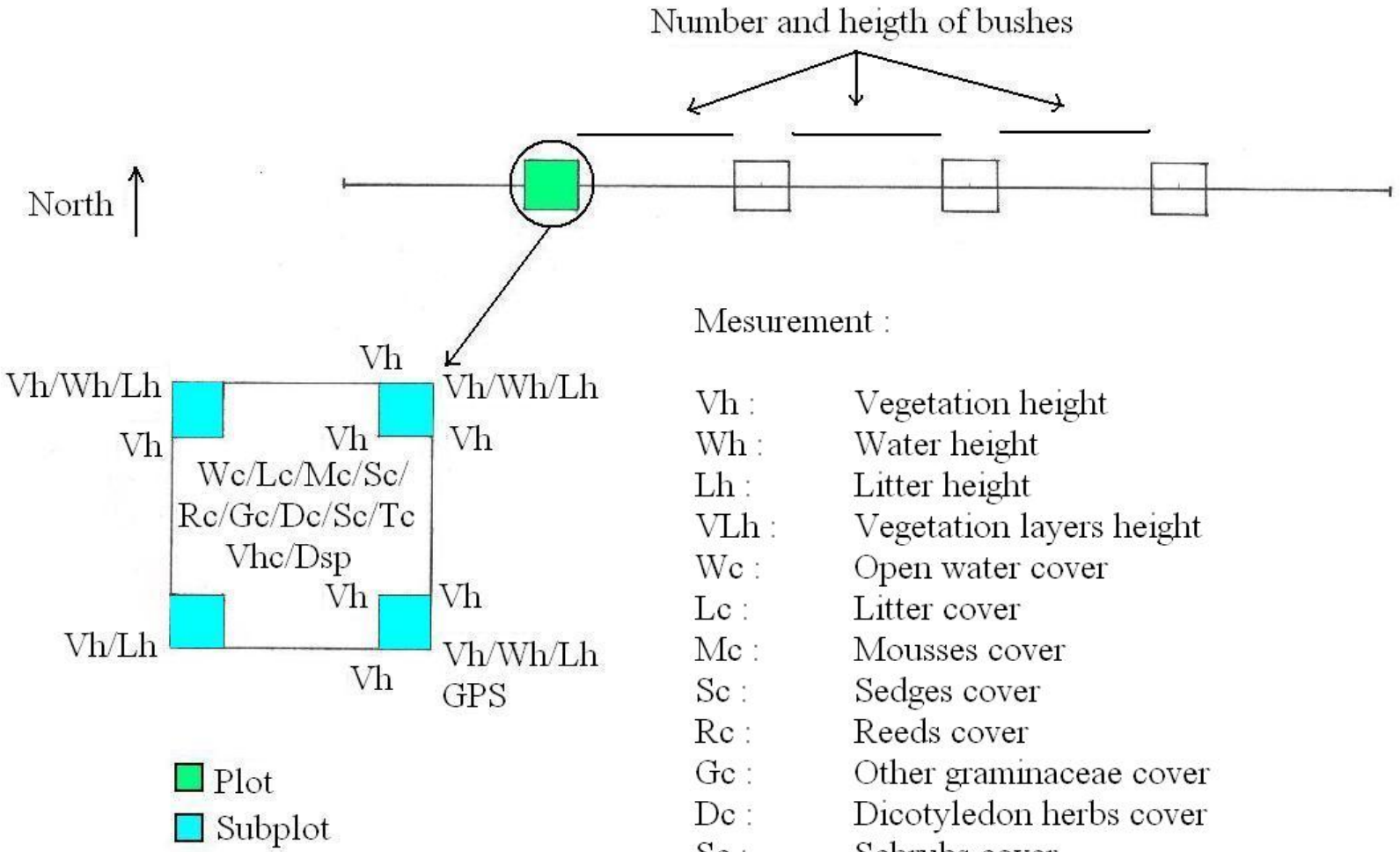
Sampling data on transects:

1. **Ornithological module -** density of Aquatic Warbler singing males on 100m x 1000m strip

2. **Vegetation module -** structure and plant species composition

3. **Invertebrates module -** abundance of arthropods of main potential prey groups

Vegetation



Mesurement :

Vh :	Vegetation height
Wh :	Water height
Lh :	Litter height
VLh :	Vegetation layers height
Wc :	Open water cover
Lc :	Litter cover
Mc :	Mousses cover
Sc :	Sedges cover
Rc :	Reeds cover
Gc :	Other graminaceae cover
Dc :	Dicotyledon herbs cover
Sc :	Schrubs cover
Tc :	Area covered by tussocks
Vhc :	Height and cover of the vegetation layers
Dsp :	Three dominating species in each layers

[1] **Plot number:**

☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW ..... m distance
from reference point ..... in site .....

[2] **GPS-coordinates**

Northing		Easting		Deviation	m

[3] **Releve**

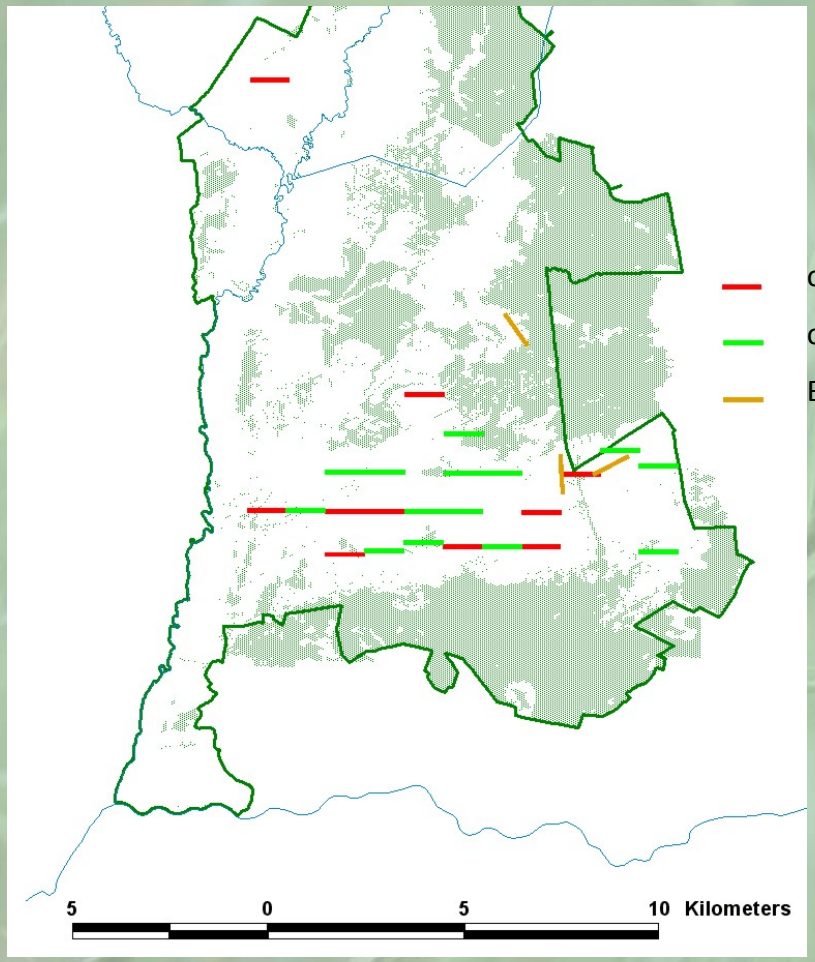
	Plot	Subplot1	Subplot2	Subplot3	Subplot4
Picture numbers					
Overview					
Vertical Board	-		-	-	-
General					
Water height (cm)	-				
Soil moisture (see Explanations)	-				
Litter layer (cm)	-				
Nb.of reed stalks (0.5*0.5m only)	-		-	-	-
Cover (after Londo 1984; see Explanations)					
Open water		-	-	-	-
Litter		-	-	-	-
Mosses		-	-	-	-
Sedges		-	-	-	-
Reed		-	-	-	-
Other *Graminacea*		-	-	-	-
Dicotyledon herbs		-	-	-	-
Shrubs		-	-	-	-
Area covered by tussocks (%)		-	-	-	-
Flagship/Habitat Directive species (if present)					
		-	-	-	-
		-	-	-	-
		-	-	-	-
Height layers and their cover					
Height C1		-	-	-	-
Cover C1		-	-	-	-
Height C2		-	-	-	-
Cover C2		-	-	-	-
Height C3		-	-	-	-
Cover C3		-	-	-	-
Three dominating species in	**C1**	**C2**	**C3**		

Invertebrates

Transects

- **Optimal habitat transects:**
  25 (2007 – 11; 2008 – 14)

- **BACI transects:**
  3 (every year from 2006)




Thank you