

Estimation of soil quality for habitat directive areas an application of bio-indication

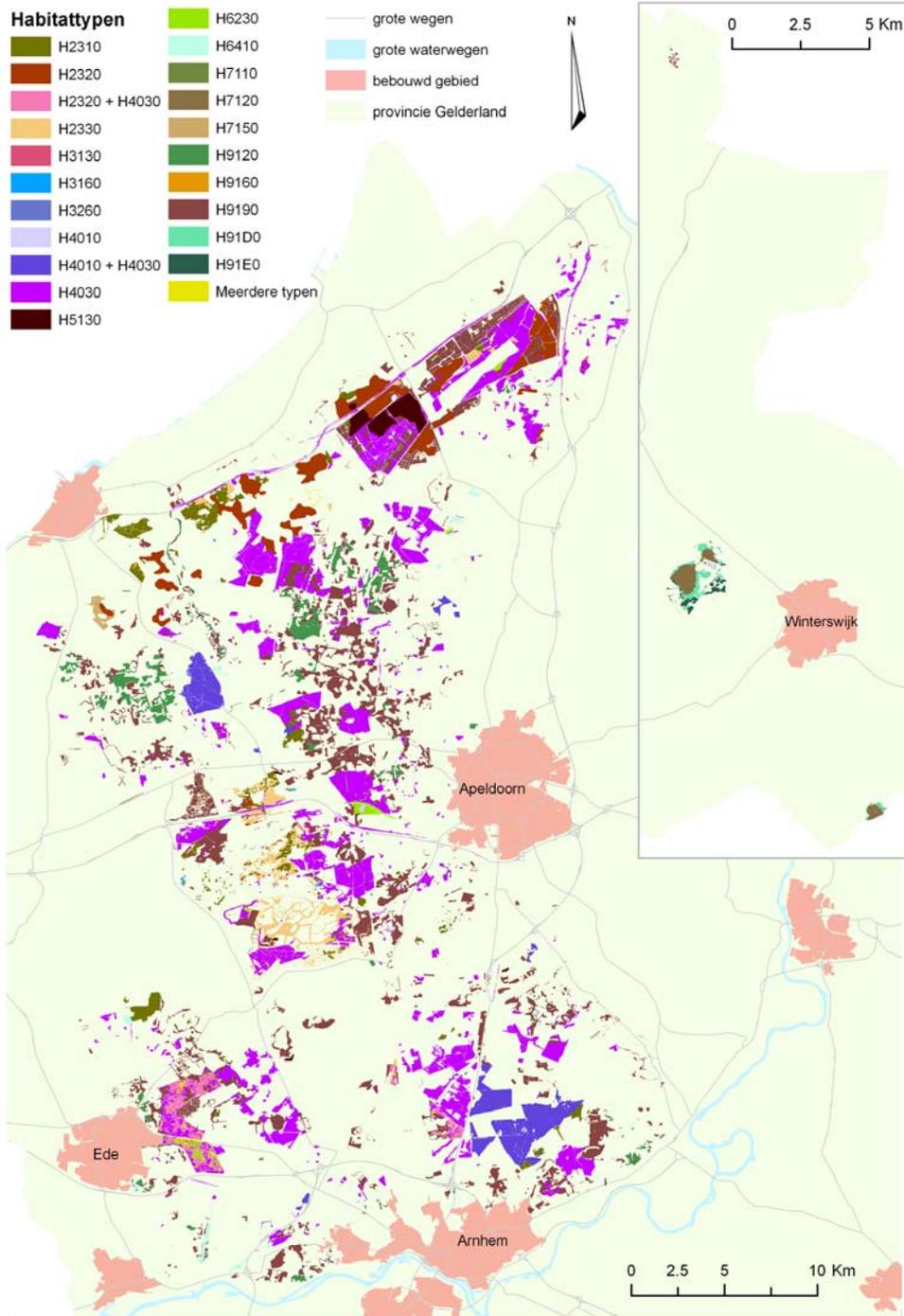


Wieger Wamelink
Marjolein van Adrichem
Han van Dobben

Goal

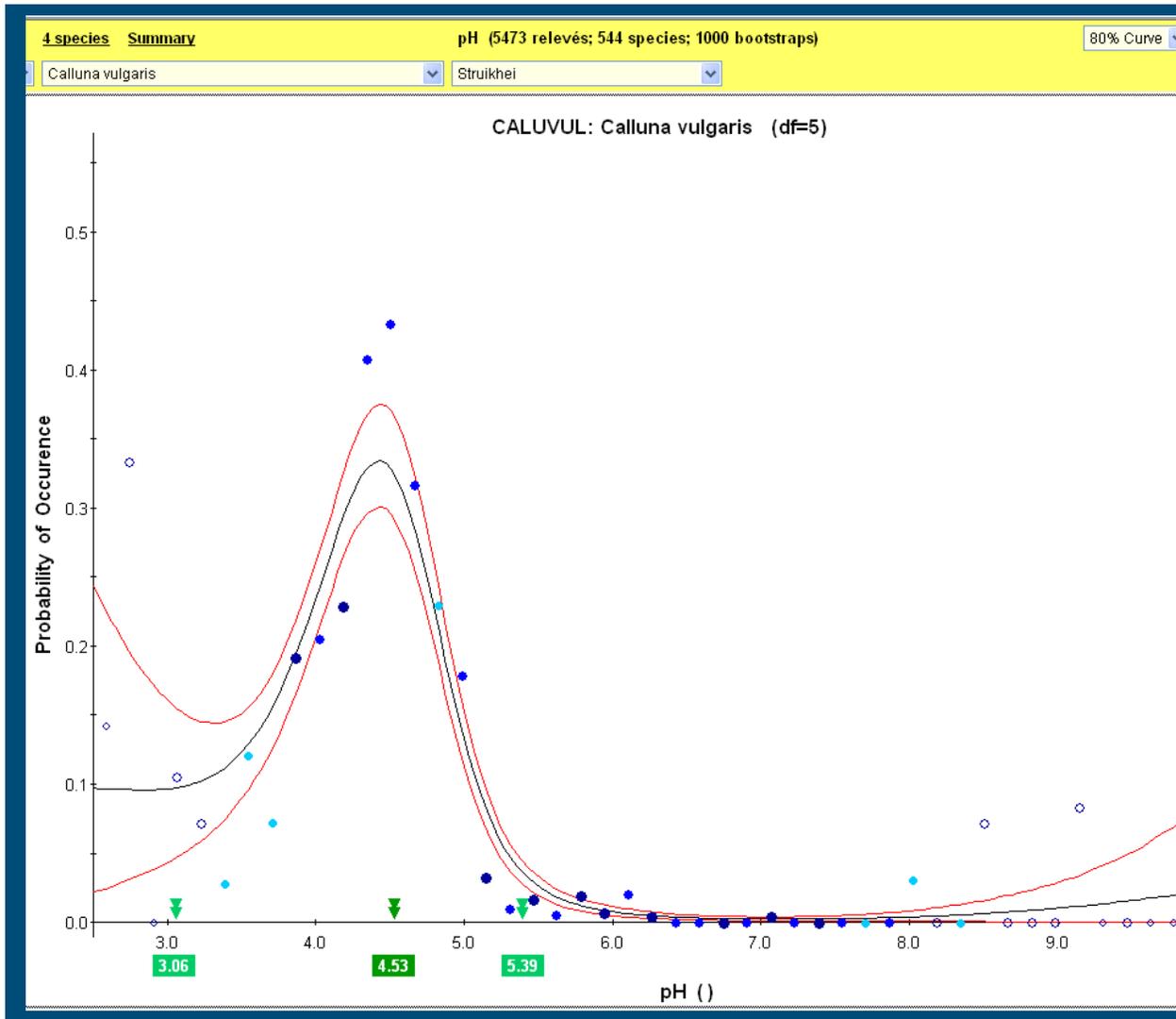
Estimate the habitat quality of habitat directive areas in the province of Gelderland in The Netherlands





Habitat directive types in the province Gelderland, The Netherlands

Response curve of *Calluna vulgaris* (pH)



Database with:
Abiotic measurements
Relevés



Response curves
Average response



Indicator value

CD/website with results (Means)

LatinName	C_N	Ca	Cl	ghg	glg	gvg	K	Mg	Na	Ntot	nh4
	-	mg/g	mg/kg	cm	cm	cm	mg/kg	mg/kg	mg/kg	g/kg	mg/kg
Acer campestre				52.42	122.87	70.03					
Acer platanoides				61.70							
Acer pseudoplatanus				55.35	120.47	68.81					
Achillea millefolium	13.12	52.89	904.80	35.50	112.16		25.27	34.18	8.99	1.13	
Achillea ptarmica				19.17	80.67						
Adoxa moschatellina				30.97	92.34	43.46					
Aegopodium podagraria				47.11	107.24	67.56				1.70	
Agrimonia eupatoria							45.47		9.29		
Agrostis species	9.62			27.96	125.49		18.37				0.79
Agrostis canina	20.45	145.67	361.25	9.70	79.55	19.10	10.87	22.56	21.75	2.46	1.25
Agrostis capillaris	16.05	47.35	1516.06	43.87	105.18	47.39	21.01	33.00	9.97	1.40	1.23
Agrostis gigantea							40.66		9.26		
Agrostis stolonifera	17.88		1236.26	22.81	67.49	29.76	27.95		32.81	1.61	1.19

www.abiotic.wur.nl

Calculation of field circumstances based on vegetation relevés

Turboveg for Windows 2.68

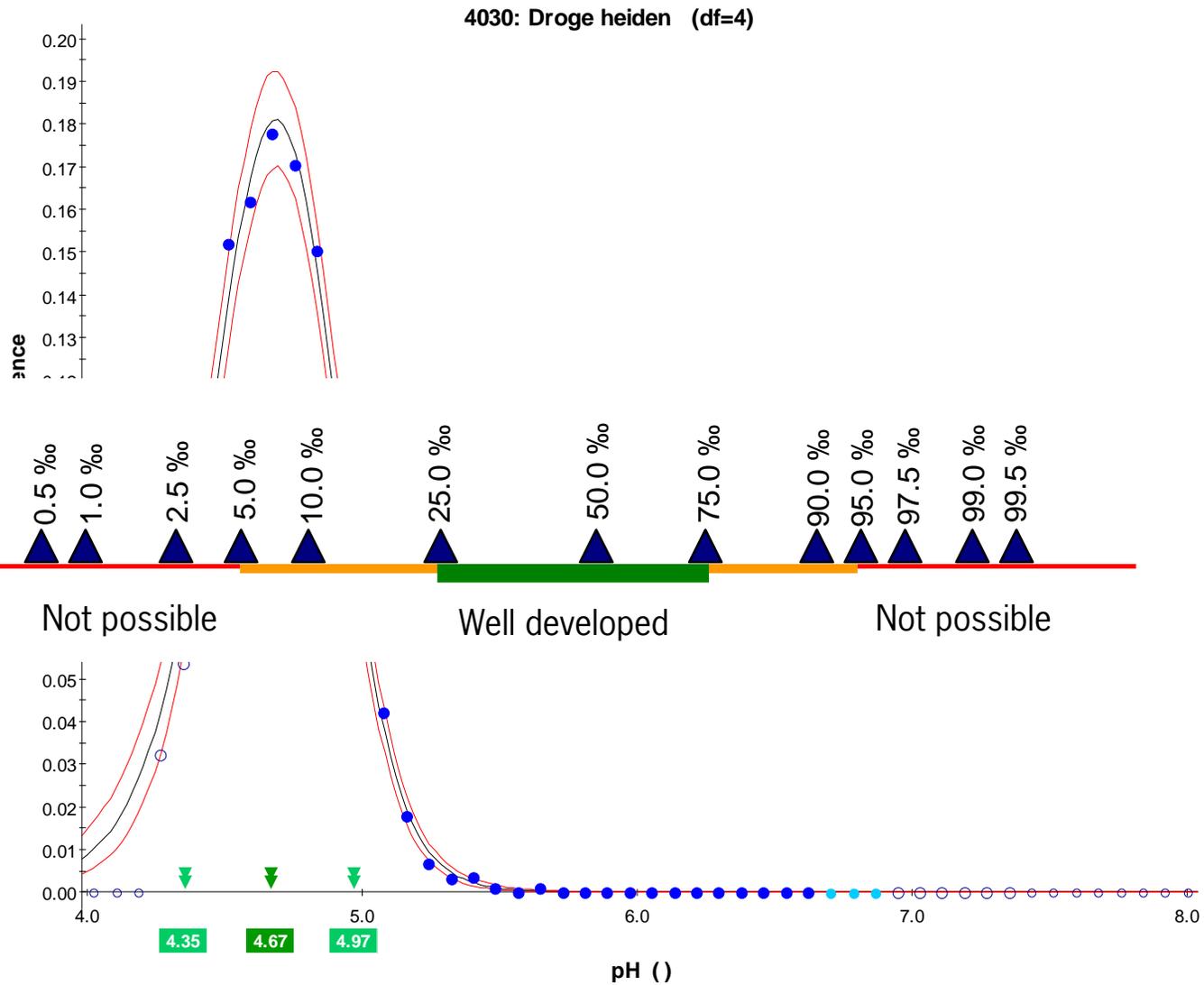
Database Edit Import Select Export Manage Window Help

Database: Ketner2006 - Data - Private

Oplnamenummer

	✓	Oplnamenummer	Perc_p	C_n	Cec	Basenbez	H_bez	Associa_01	Associa_02	_ph_mea_b	_ph_std_b	_ph_med_b	_ph_obs_b
▶	✓	200040	0.008/-	120/-				14AA01A	23AB01A	6.13		6.13	1
	✓	200041	0.011/0.010	-/-				14AA01A	14DG02	5.94	0.28	5.94	2
	✓	200042	0.008/0.007	14/300				14AA01A	14AA01B	5.44	0.88	5.74	3
	✓	200043	0.007/0.008	12				14AA01A	14AA01B	5.24	0.73	5.29	5
	✓	200044	0.006	13	28.2	15	85	14AA01B	14AA01A	4.86	0.73	4.57	6
	✓	200045	0.021/0.010	15/13				14AA01B	14AA01A	4.85	0.37	4.79	4
	✓	200046	0.010/0.006	11/16	66.8	7	93	14AA01B	14AA01A	5.40	0.73	5.52	4
	✓	200047	0.016/0.010	16/9				14AA01B	14AA01A	5.10	0.65	5.01	7
	✓	200048	0.017/0.007	15/17				14AA01B	14AA01A	5.13	0.62	5.01	7
	✓	200049	0.019/0.009	22/20				14AA01B	14AA01A	4.64	0.43	4.51	6
	✓	200050	0.014	19	55.4	28	72	14AA01B	14AA01A	5.27	0.92	5.15	10
	✓	200051	0.013	35				14AA01B	14AA01A	4.91	0.53	4.65	11
	✓	200052	0.009/0.007	13/140	21.8	13	87	14AA01A	14AA01B	5.40	0.73	5.52	4
	✓	200053	0.010/0.010	20/-				14AA01A	14AA01B	5.40	0.73	5.52	4

Abiotic range for habitat type dry heath



Calculation of the habitat abiotic quality

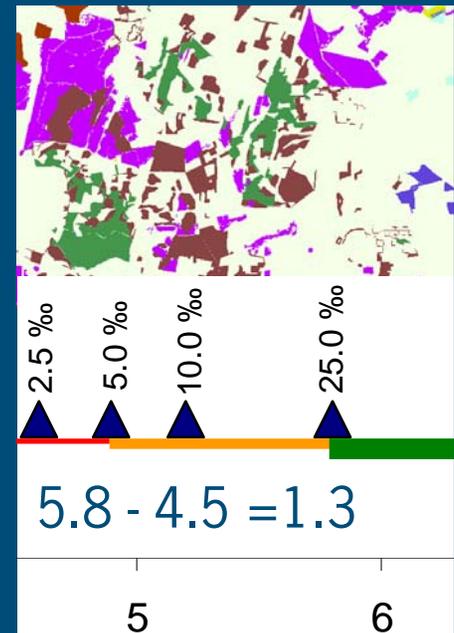
1 Average abiotic value for a relevé

2 Linked to the habitat type map by coordinates

3 Calculate the difference between the habitat types' abiotic range and the calculated abiotic value

4 Make the difference relative by using the difference of the 5 and 25 percentile of the range of the habitat type

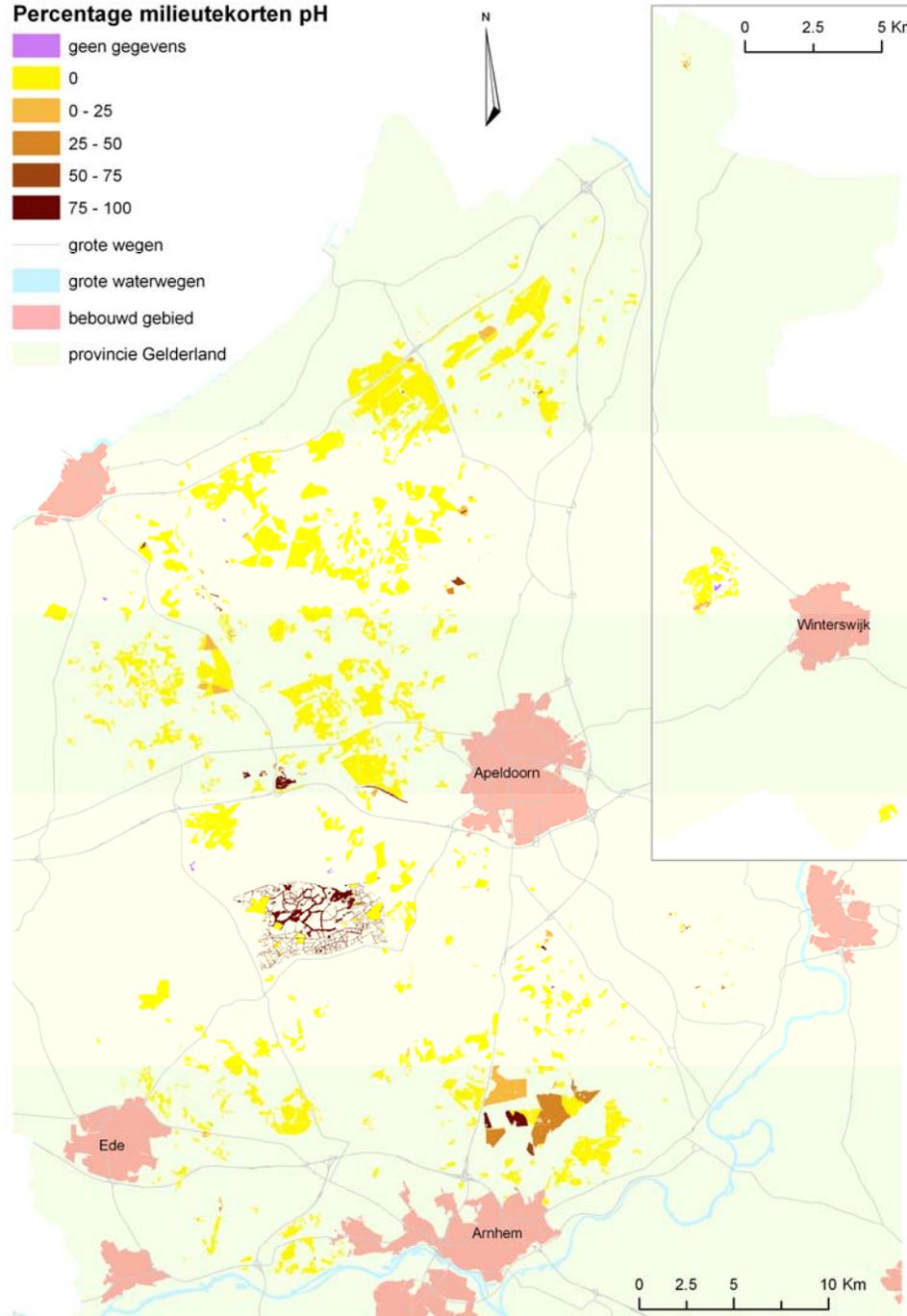
pH = 4.5



$$1.3 / 0.9 * 100\% = 100\%$$

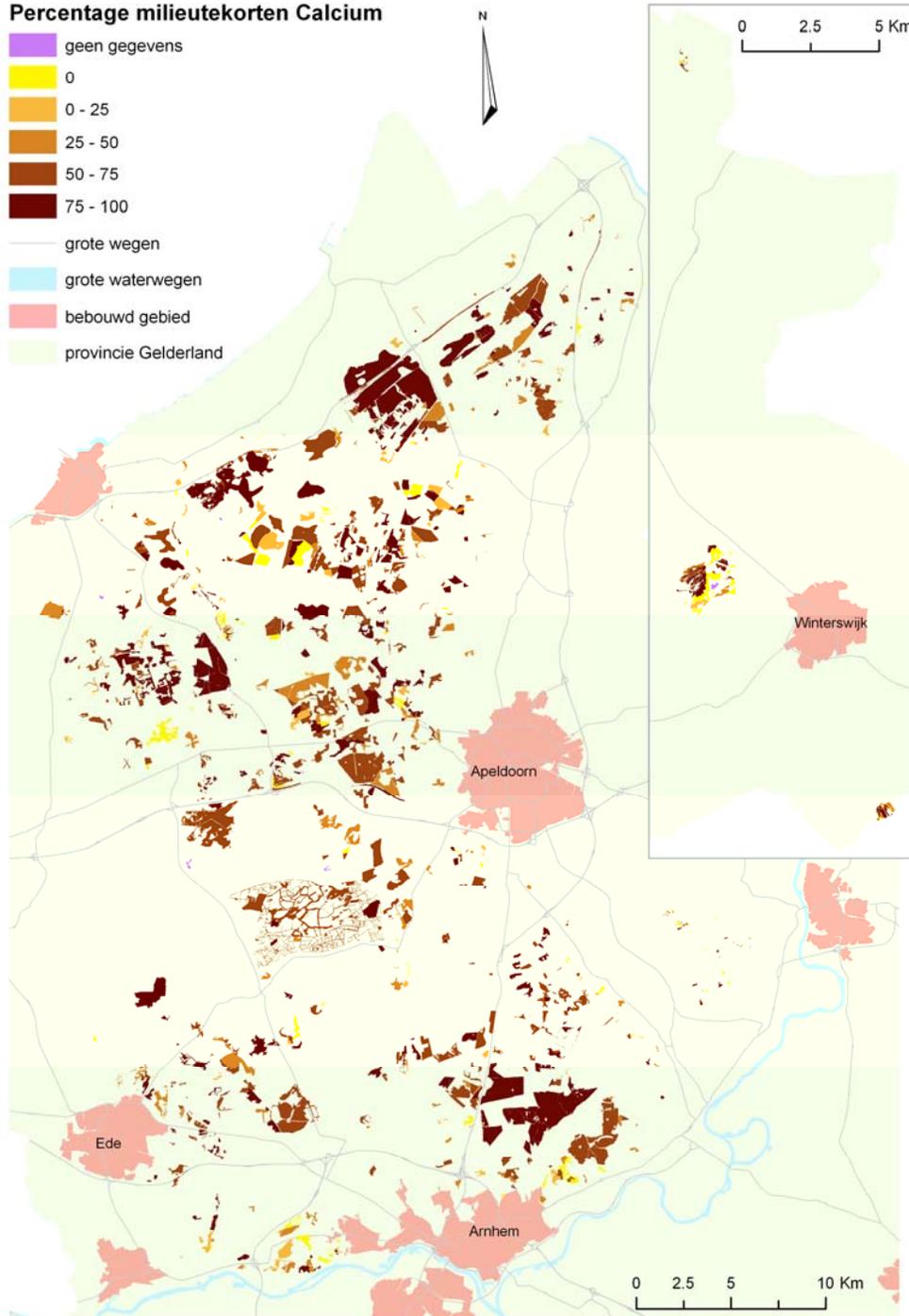
Percentage milieutekorten pH

- geen gegevens
- 0
- 0 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- grote wegen
- grote waterwegen
- bebouwd gebied
- provincie Gelderland

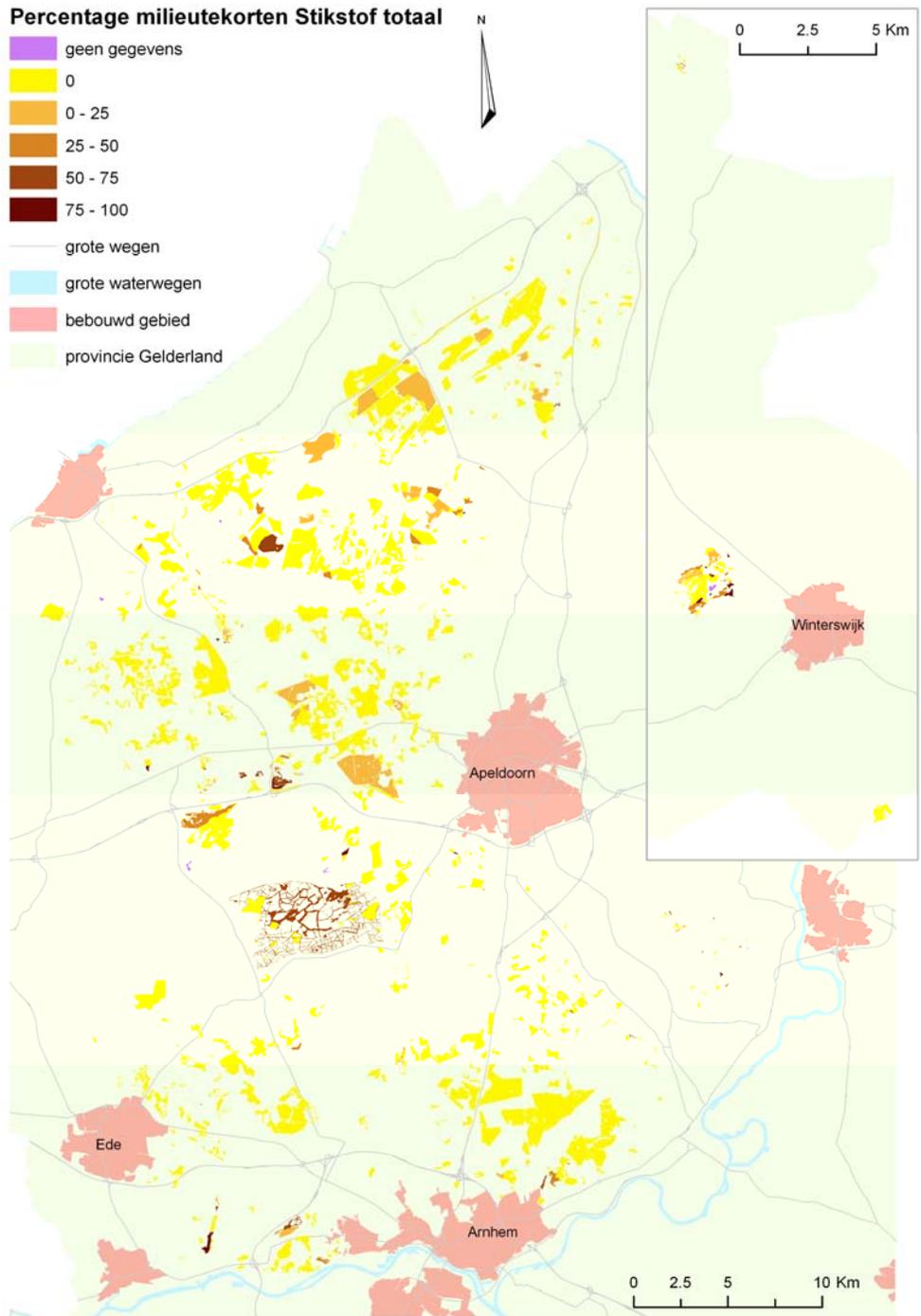


Abiotic quality for pH

Percentage milieutekorten Calcium



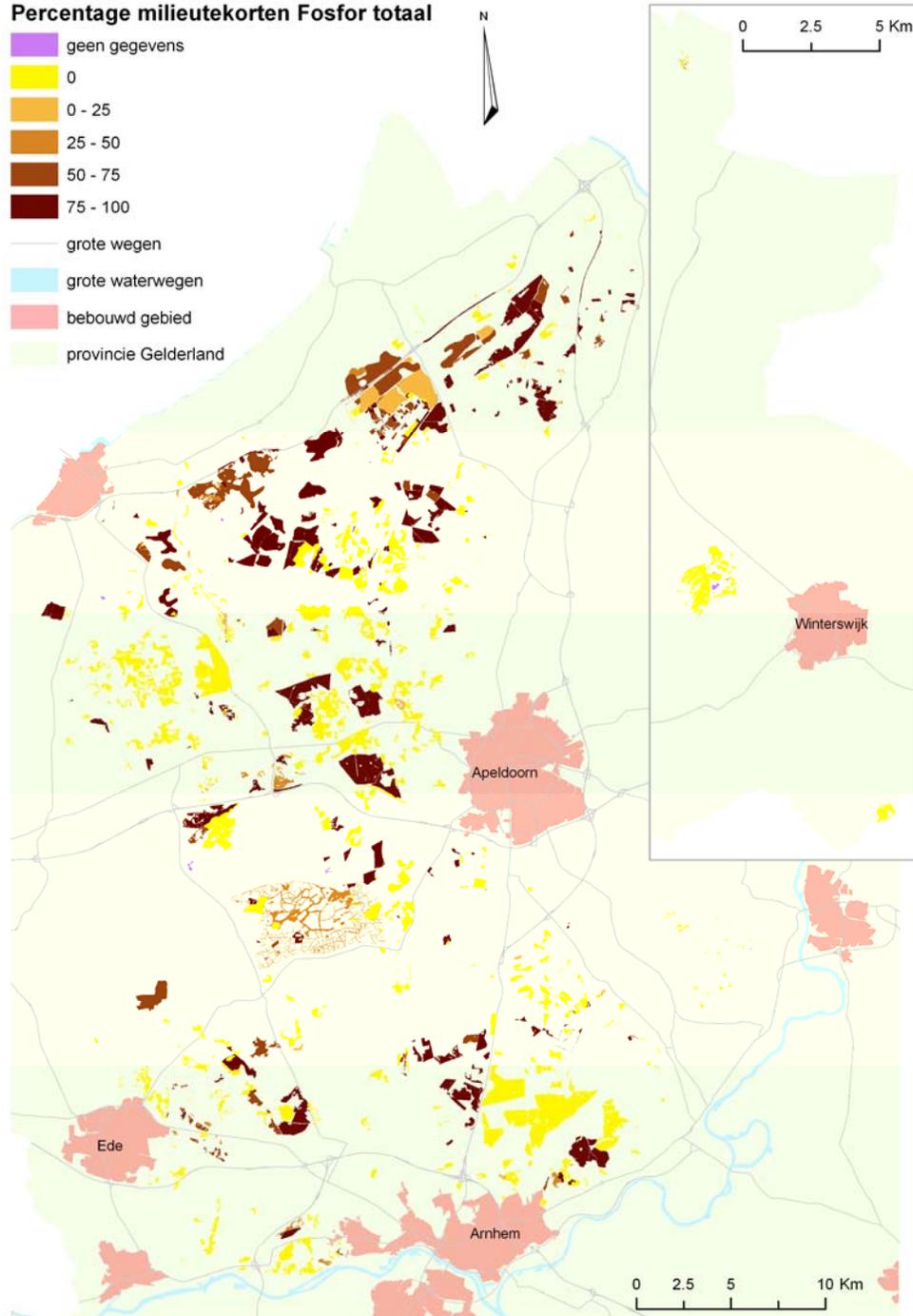
Abiotic quality for Ca



Abiotic quality for total Nitrogen

Percentage milieutekorten Fosfor totaal

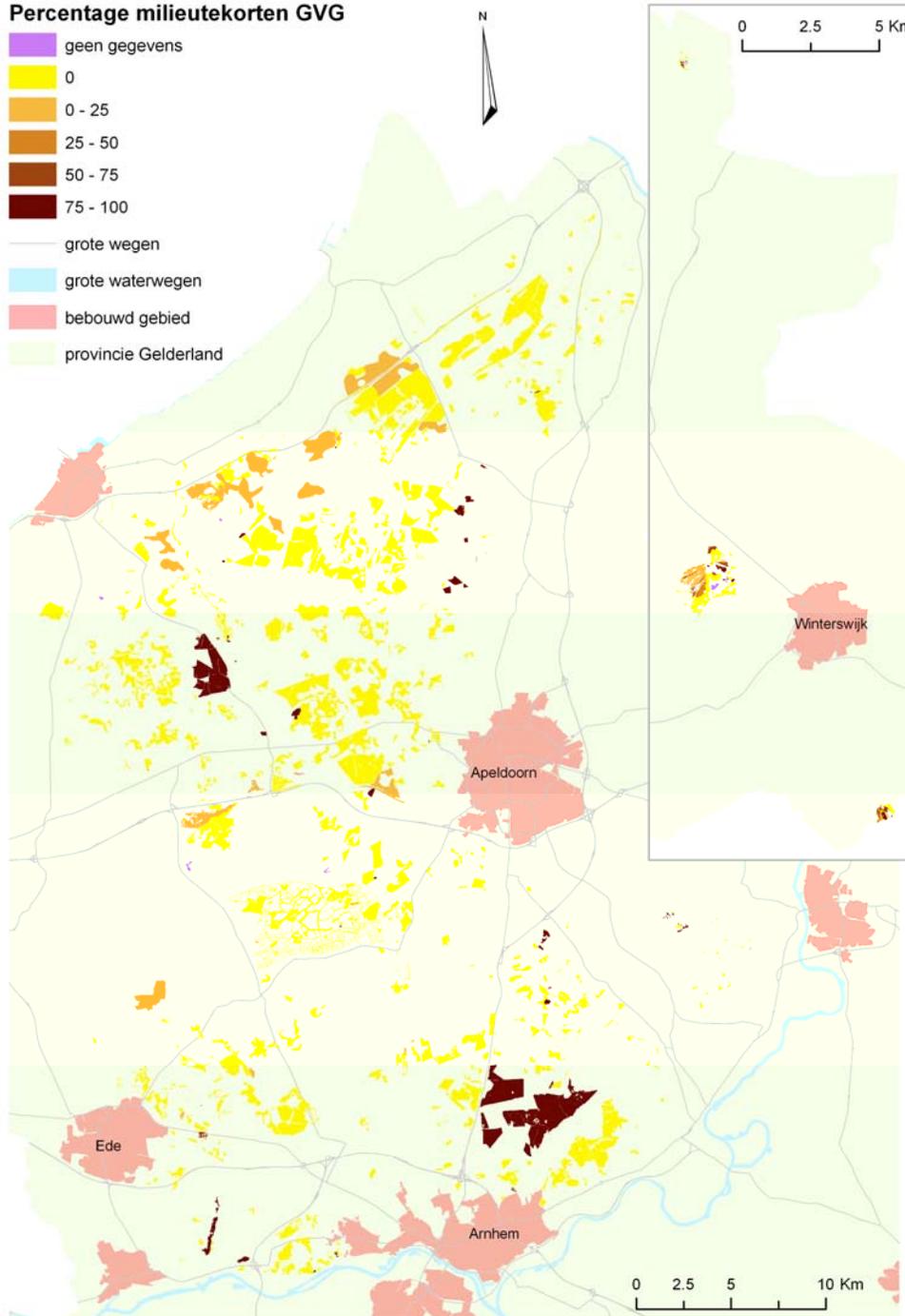
- geen gegevens
- 0
- 0 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- grote wegen
- grote waterwegen
- bebouwd gebied
- provincie Gelderland



Abiotic quality for total phosphorus

Percentage milieutekorten GVG

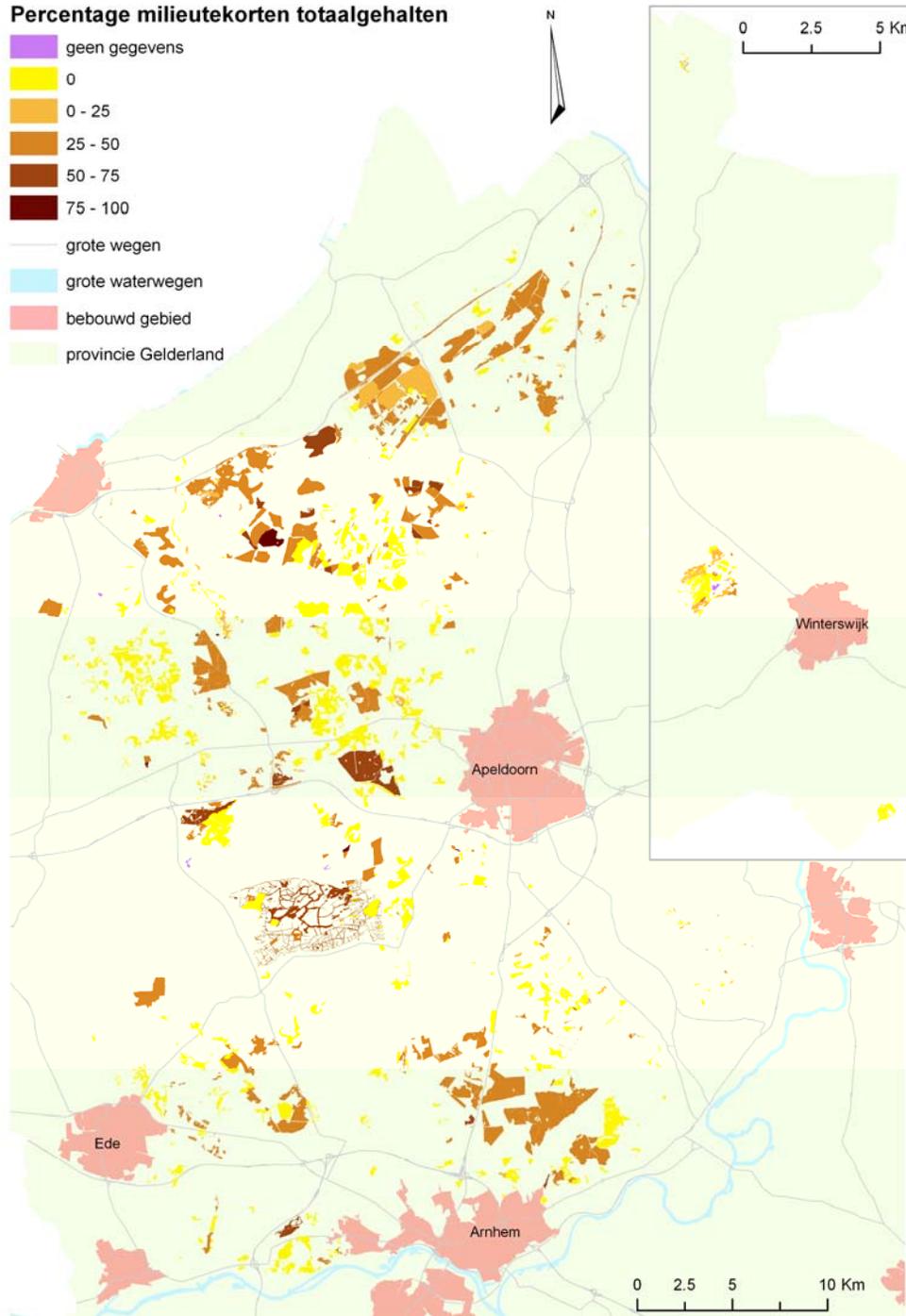
- geen gegevens
- 0
- 0 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- grote wegen
- grote waterwegen
- bebouwd gebied
- provincie Gelderland



Abiotic quality for spring groundwater table

Percentage milieutekorten totaalgehalten

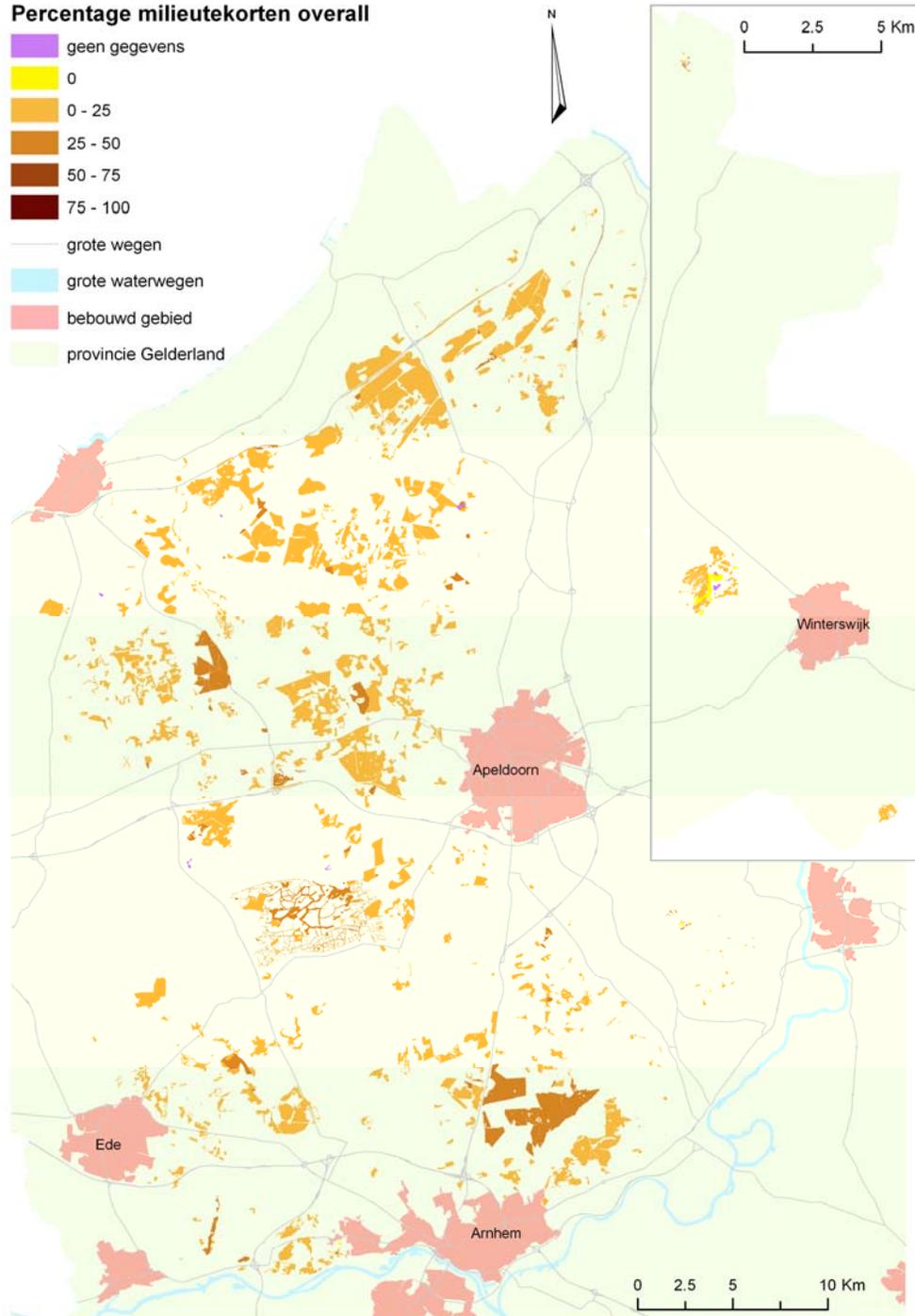
- geen gegevens
- 0
- 0 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- grote wegen
- grote waterwegen
- bebouwd gebied
- provincie Gelderland



Abiotic quality for N and P (averaged)

Percentage milieutekorten overall

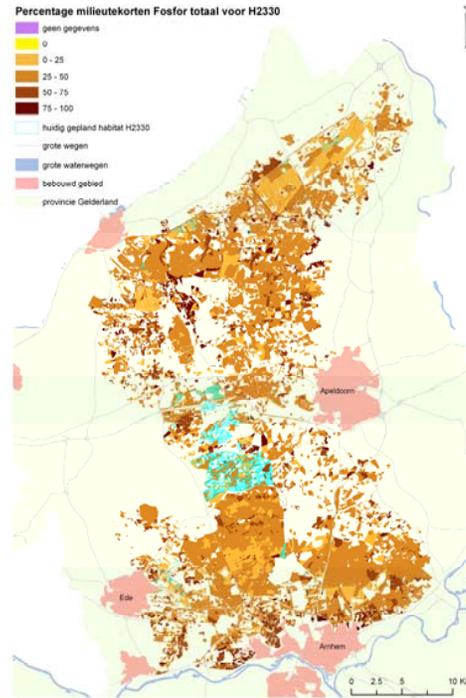
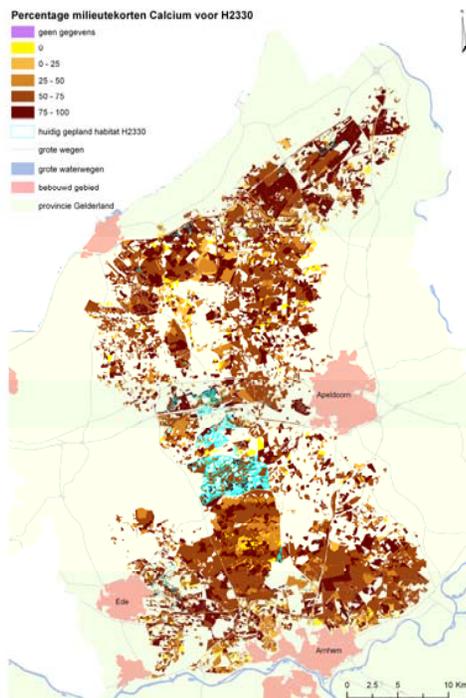
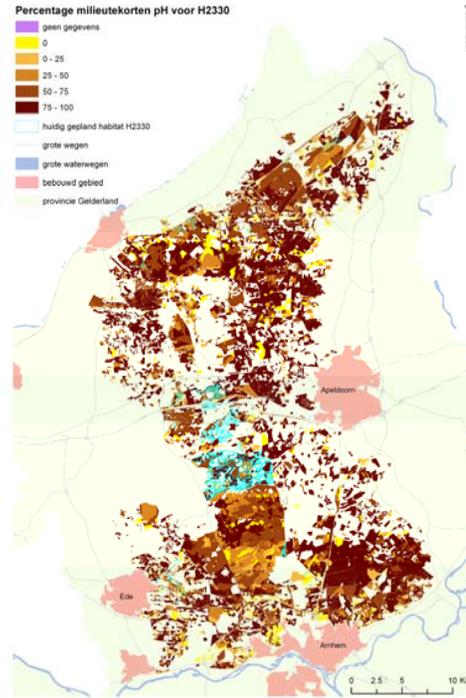
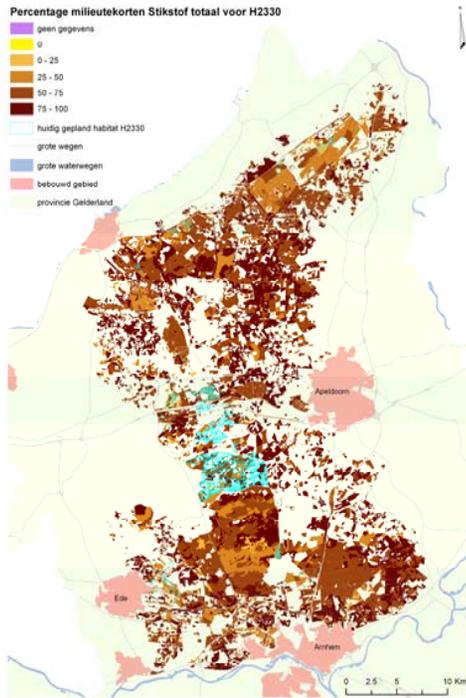
- geen gegevens
- 0
- 0 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- grote wegen
- grote waterwegen
- bebouwd gebied
- provincie Gelderland



Overall average:
Almost all sites show a
to low abiotic quality



Thank you for your
attention



Planning device

Where can I develop
new habitat?

Inland dunes