

Habitat preferences of and management recommendations for the Pomeranian population

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with Jochen Bellebaum, Cosima Tegetmeyer
and Martin Flade



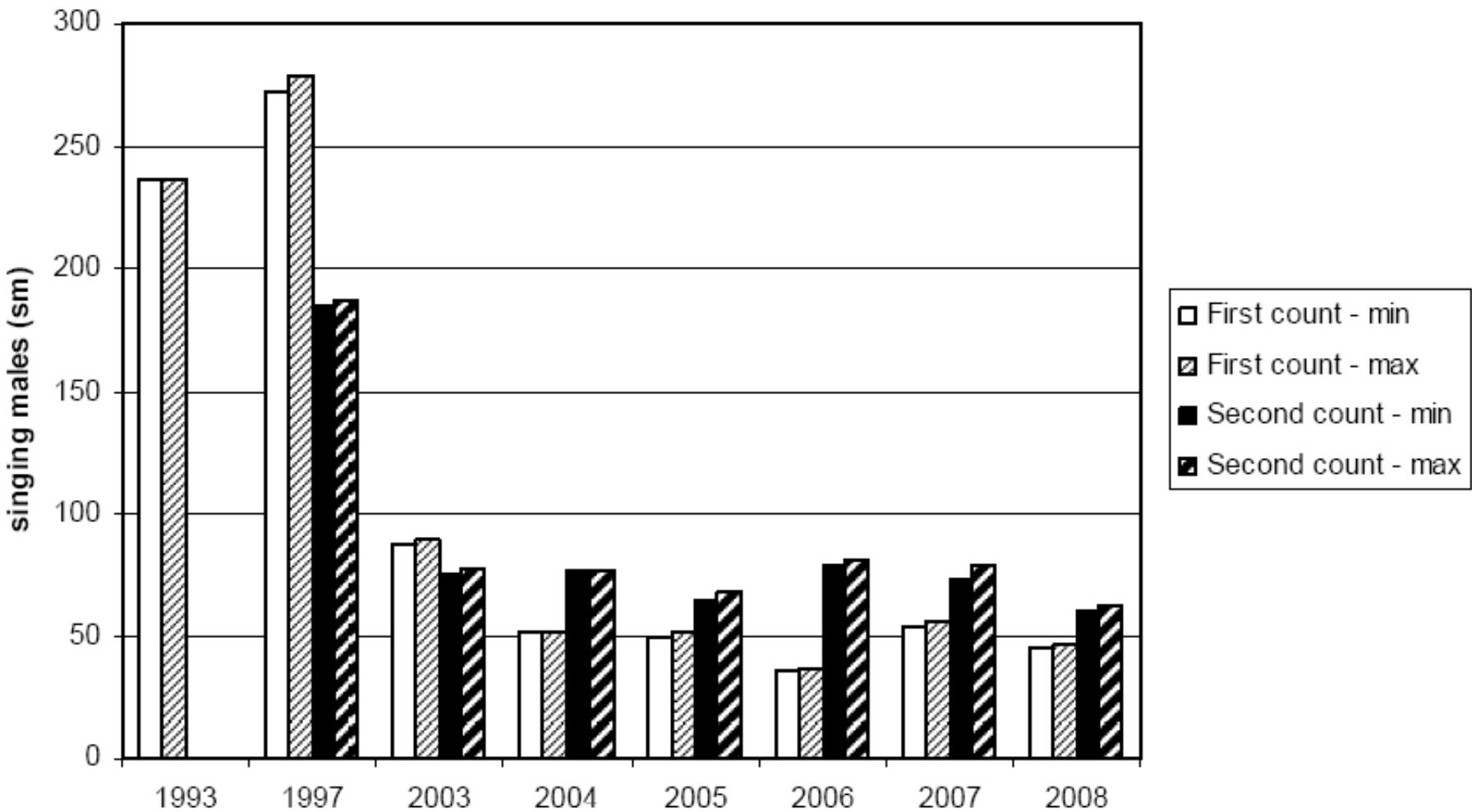
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Studienstiftung
des deutschen Volkes



Population size 1993-2008



The Pomeranian Population



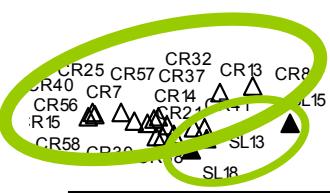
Decrease – reasons???

Study of :

- Plant communities
- Vegetation structure
- Food supply
- Land use

Plant communities

LOWER ODER
VALLEY:
SEDGES +
GRASSES



Lower Oder
Valley
National
Park

less productive

more salt influence

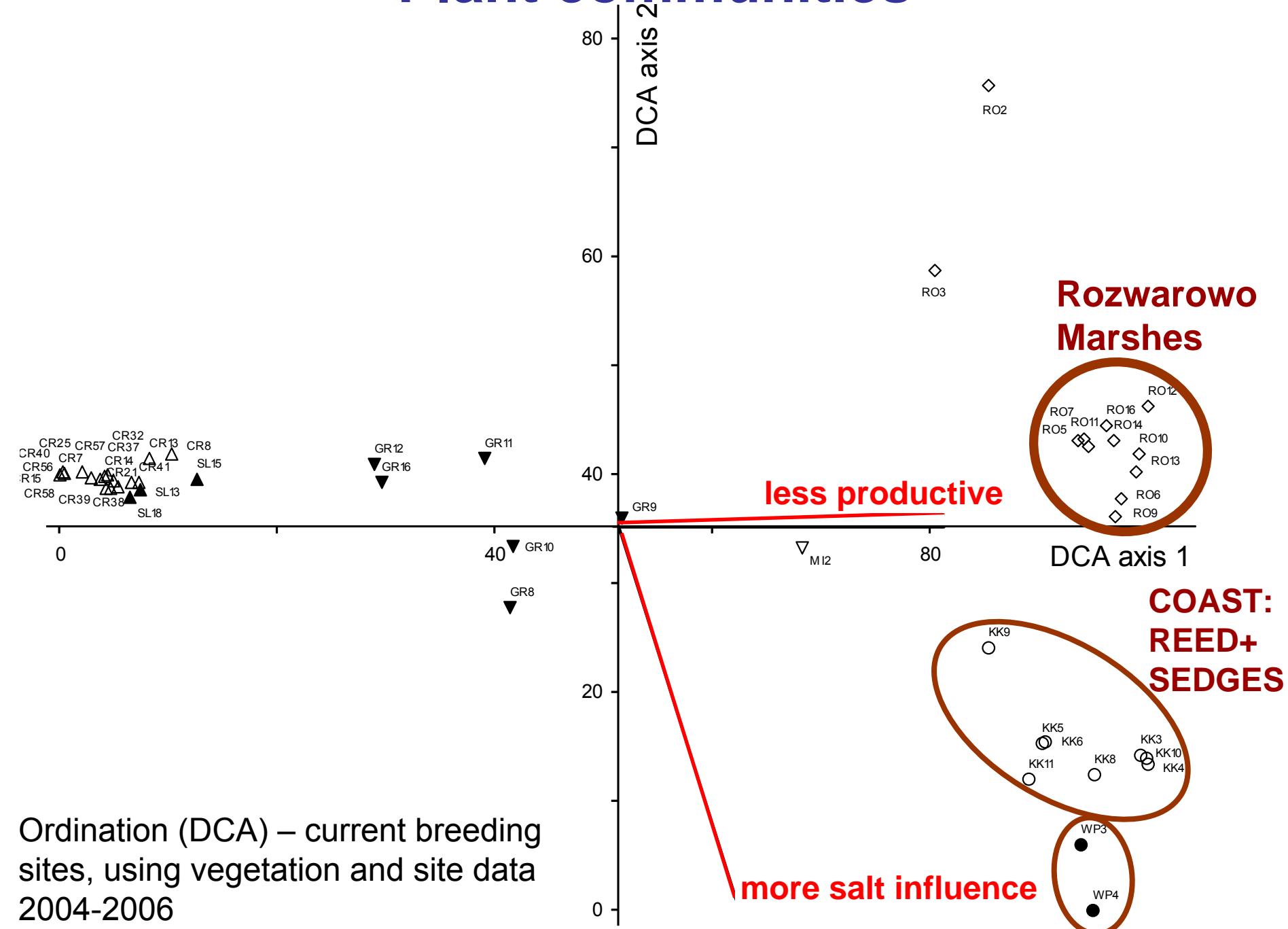
Ordination (DCA) – current breeding sites, using vegetation and site data
2004-2006

Lower Oder Valley National Park



the last breeding site in Germany

Plant communities



Rozwarowo Marshes

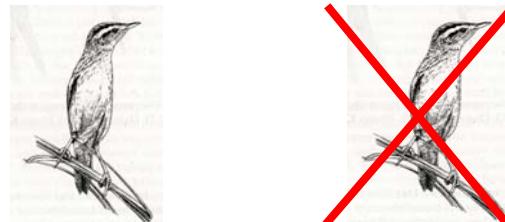


different species/communities → similar structure!



the largest Pomeranian breeding site

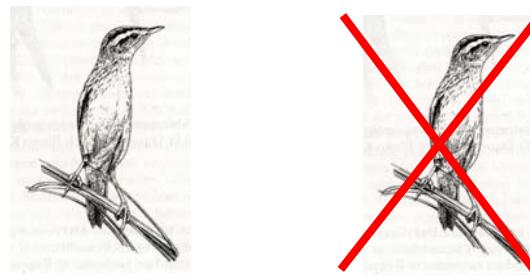
Vegetation structure



Early May	current	abandoned	test	p
Number of plots	12	15		
Mean vegetation height (cm)	65 ± 7	86 ± 8	$t = 6.905$	0.005
Cover of herb layer (%)	14.8 ± 10.2	2.6 ± 3.6	$t = -3.969$	0.005
Thickness of litter layer (cm)	4.4 ± 6.6	10.3 ± 7.3	$t = 2.224$	0.035
Vegetation density in 60-80 cm height ($\text{dm}^3 1000 \text{ dm}^{-3}$)	12.1 ± 11.2	35.9 ± 19.7	$t = 3.861$	0.005



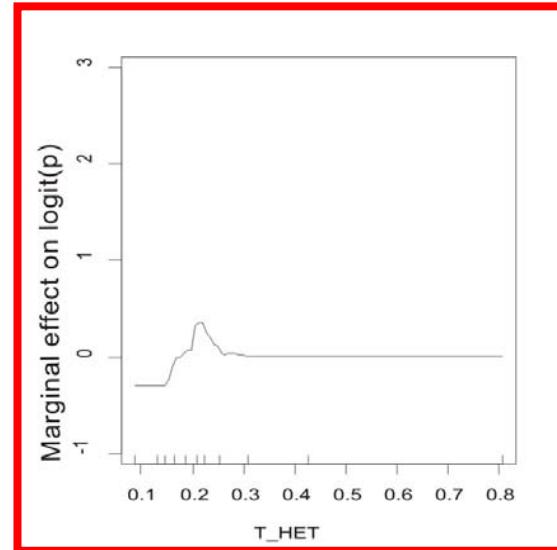
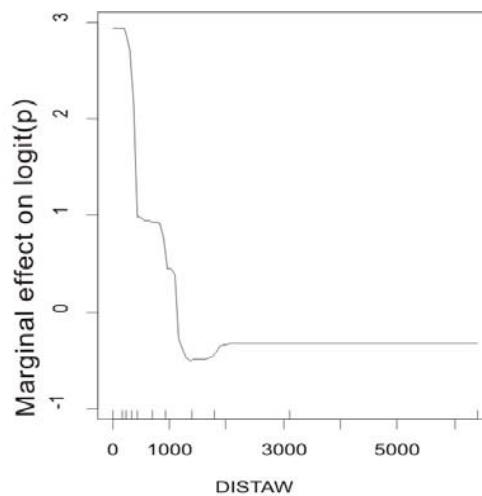
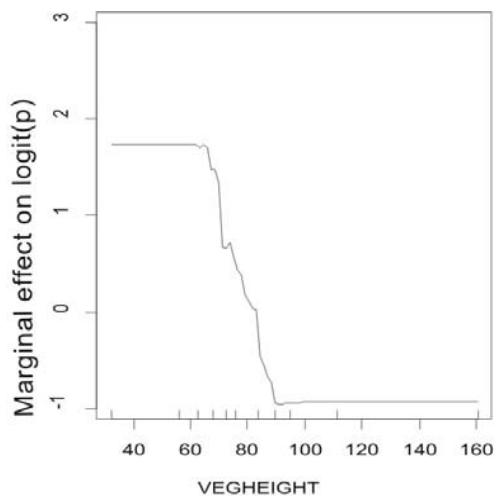
Vegetation structure



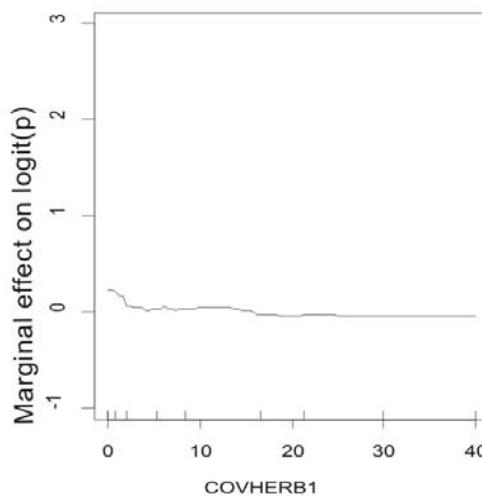
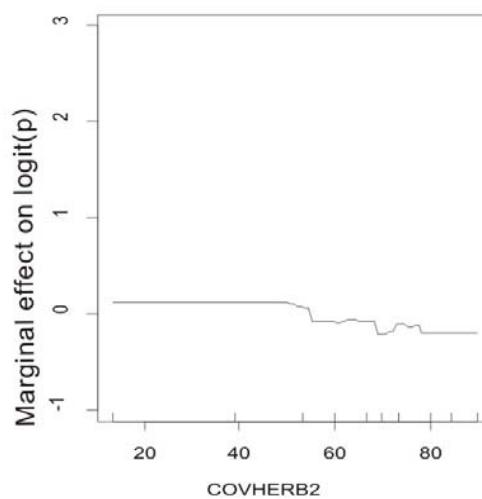
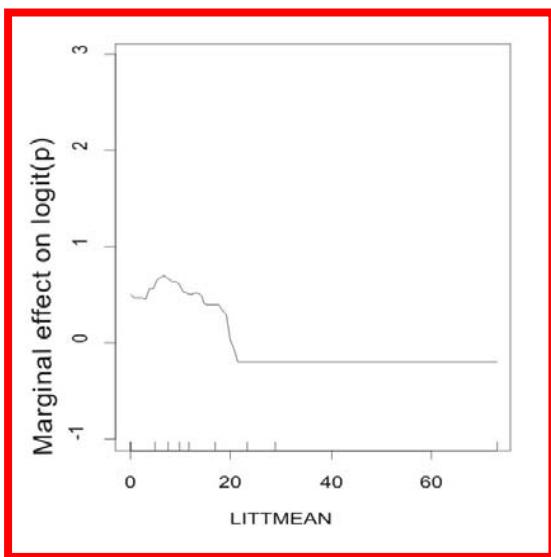
Early May	current	abandoned	test	p
Number of plots	21	20		
Mean vegetation height (cm)	64 ± 5	110 ± 8	$t = 6.905$	0.005
Cover of herb layer (%)	26.2 ± 13.5	9 ± 6.5	$t = -3.969$	0.005



Habitat model results

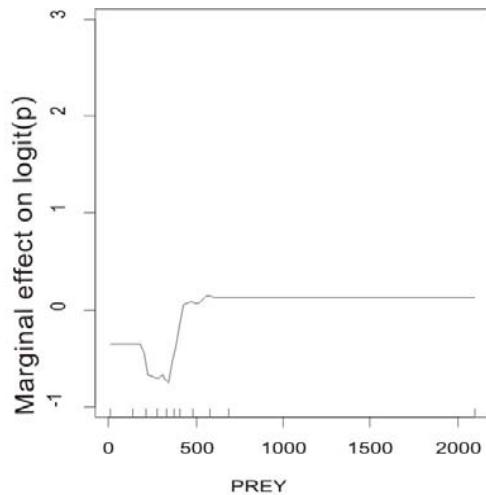


contrast to core population sites

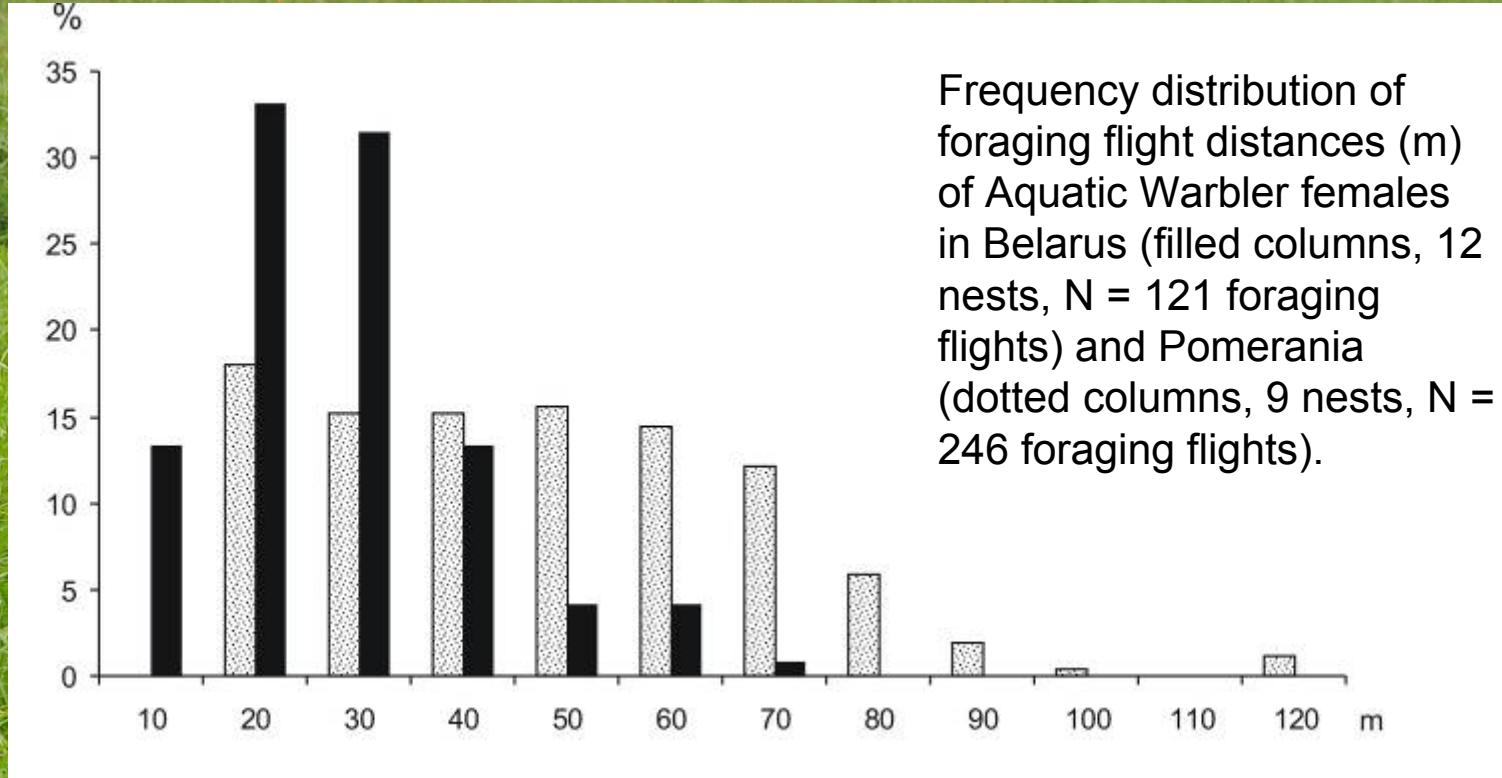


Data: all Pomeranian breeding sites (N=98 plots) 2006, boosted regression tree model

Food supply



another important factor
in the habitat model



Reference	Nests	Distance	Preference
Biebrza (Dyracz & Zdunek 1993)	8	31.7 m	no
Biebrza (Schulze-Hagen et al. 1989)	17	18 m	no
Belarus (A. Kozulin unpubl.)	12	25.5 m	no
Pomeranian Population	9	60 ± 12 m	yes



1. Mowing edges

2. Mown areas



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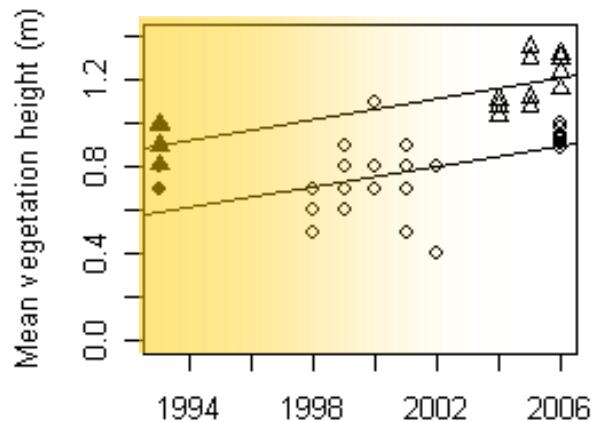
Food supply

Site type	N	Median	Quartiles
Mown/grazed sedge vegetation	44	474.59 mg	358.74 - 556.23 mg
Unmown/ungrazed sedge vegetation	41	298.87 mg	160.33 - 377.11 mg
Mown/grazed reed vegetation	32	345.77 mg	172.98 - 567.91 mg
Unmown/ungrazed reed vegetation	4	54.72 mg	44.54 - 88.67 mg

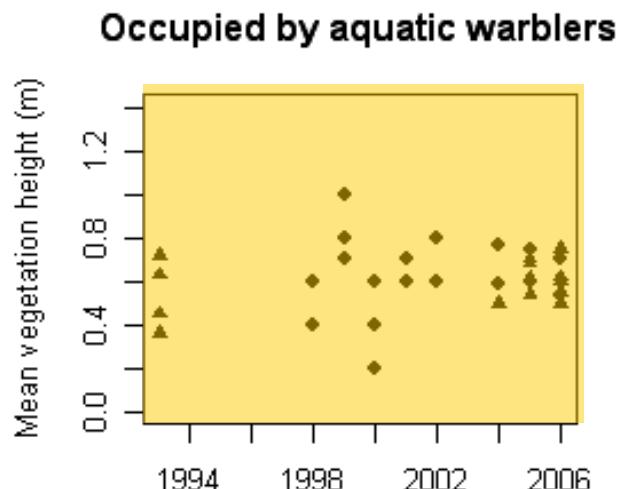
→ differences between sedge and reed vegetation and influence of mowing/grazing!

Influence of land use

Abandoned by aquatic warblers

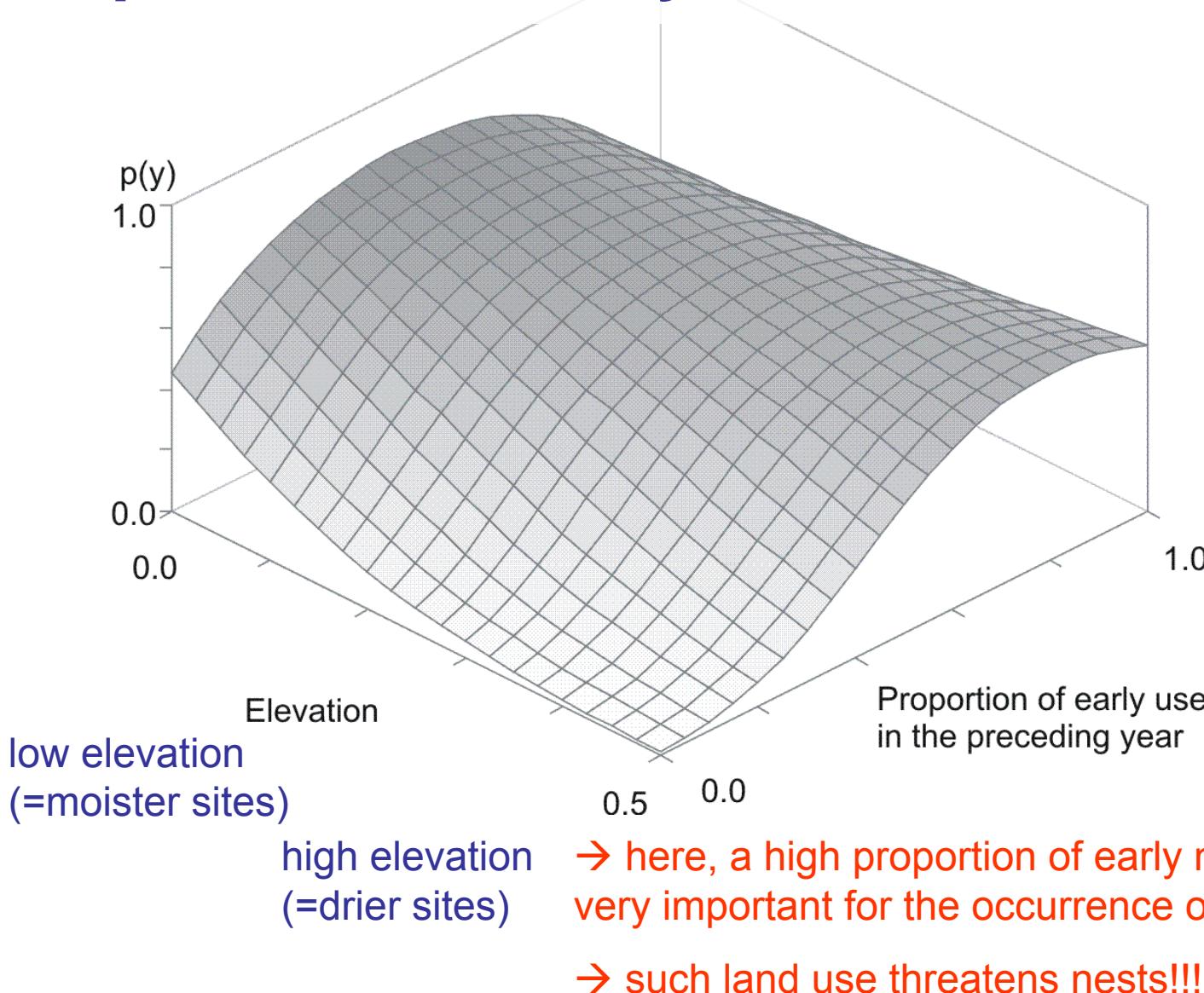


Intensity of mowing/grazing



Data: Lower Oder Valley National Park 1993-2006

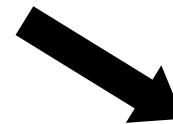
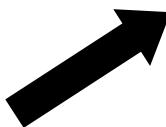
Importance of early summer mowing



Data: Lower Oder Valley National Park 1998-2007; GLM mit AUC = 0.73, Nagelkerke's R² = 0.228

Alternating land use on more eutrophic sites

Year 1
(3,5,...)



Vegetation suitable

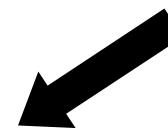
Delayed land use
(after 15./30.8.)



Land use in June/July

Vegetation too high and dense

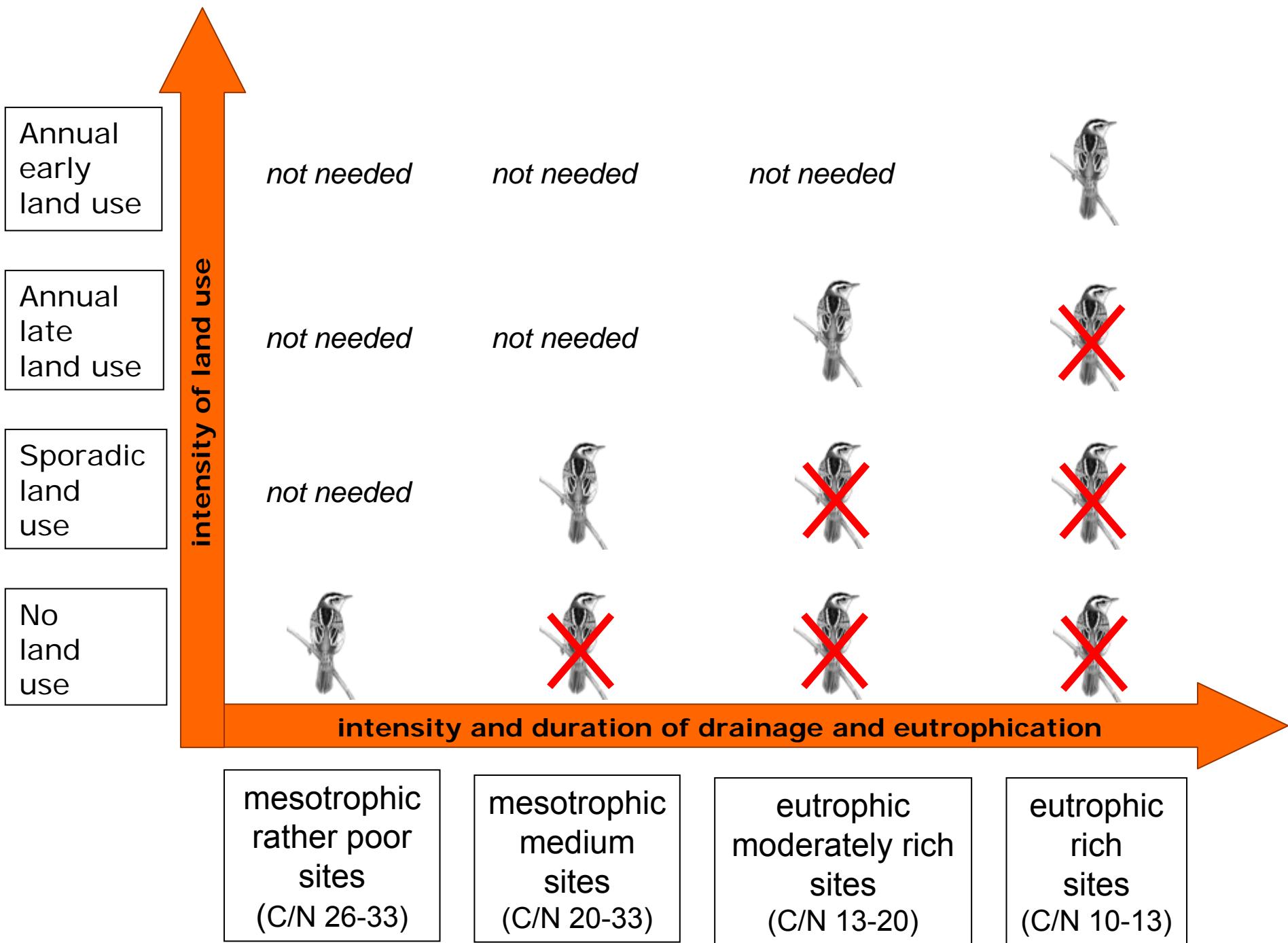
Year 2
(4,6,...)



Summary and conclusions

- more vs. less productive sites (Oder Valley vs. coast)
- optimal conditions: low, sparse vegetation (as further east)
- contrast to core population: sites drier; low litter layer and heterogeneous habitats preferred → probably connected to food supply (better) → therefore longer foraging flights to specific foraging habitats

more productive sites with AW	early summer mowing with nest protection → mosaic, alternating land use
more productive sites without AW	early summer mowing
less productive sites with AW	late (winter) land use, monitoring of potential vegetation succession!
less productive sites without AW	late (winter) land use; in case of reed overgrowth: early summer mowing



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