Metsäiset kausikosteikot, niiden esiintyminen ja lajisto

METSÄBIOLOGIAN SEURA 23.1.2024

PETRI NUMMI

- VERNAL POOL

- Temporary or semi-permanent
- No permanent in- or outflow
- Small and shallow

Evo, ”Miroplotti” 3.6.2022

- THREATS
- Dried for agriculture and forestry
- New threat:
- Climate warming
- Poorly known

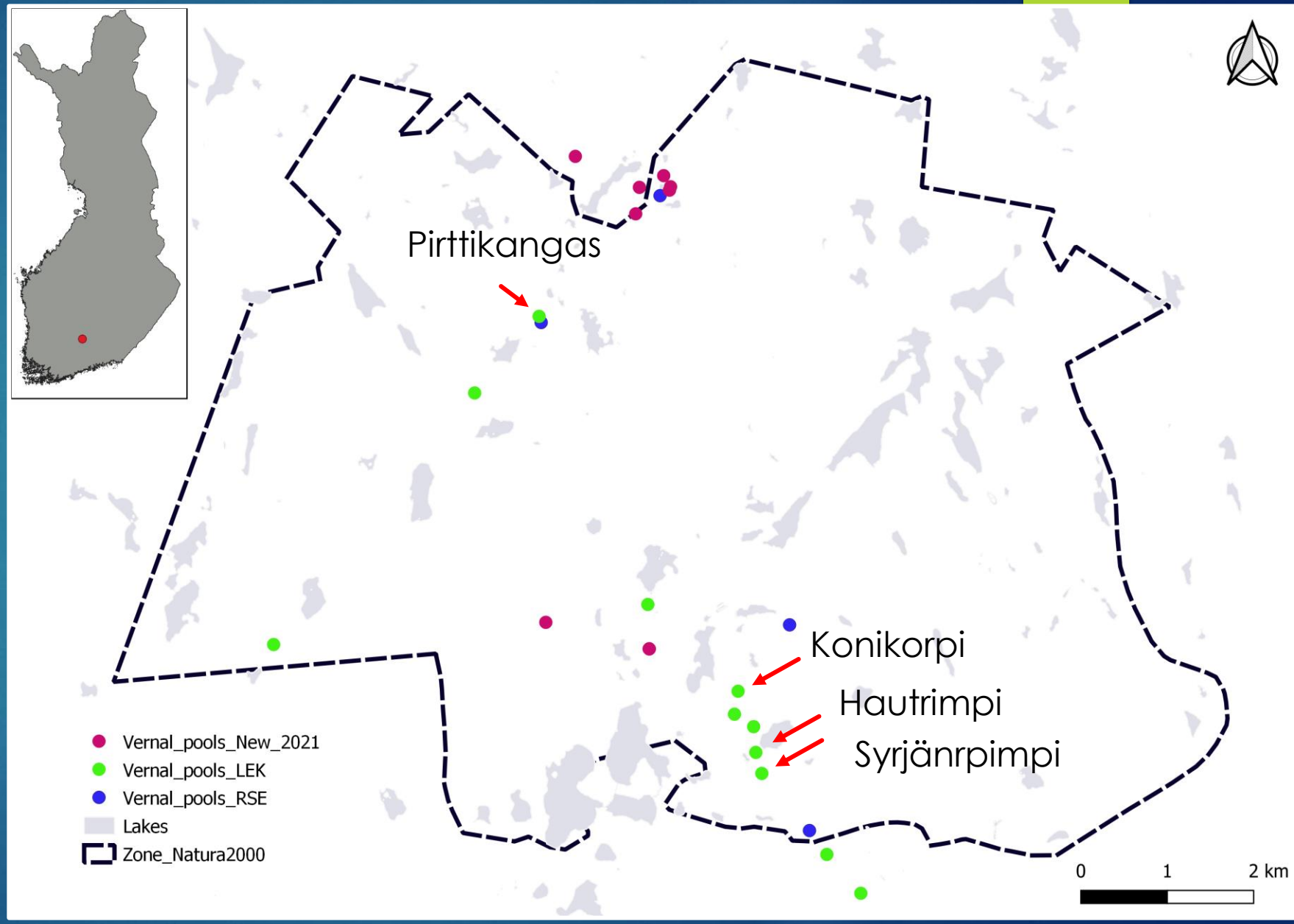
Hautrimpi 19.5.2019

Locations of Evo vernal pools

- variable hydrology:

- some (Syrjänrimpi) hardly lose all its water

- some (Konikorpi) has formed only ca 5 times during 30 yrs



Vernal pools marked differently in maps

- Konikorpi: paludifed area
- Hautrimpi: easy to traverse marsh
- Syrjänrimpi: water

- partly reflects the permanence of the vernal pool

Konikorpi: erilaiset vuodet

Konikorpi 3.5.2018

Konikorpi 4.5.2018

Konikorpi 19.5.2019

Hautrimpi: erilaiset vuodet

Hautrimpi 19.5.2019

Hautrimpi 22.5.2021

Konikorpi: eri vuodenajat

Konikorpi 5.5.2021

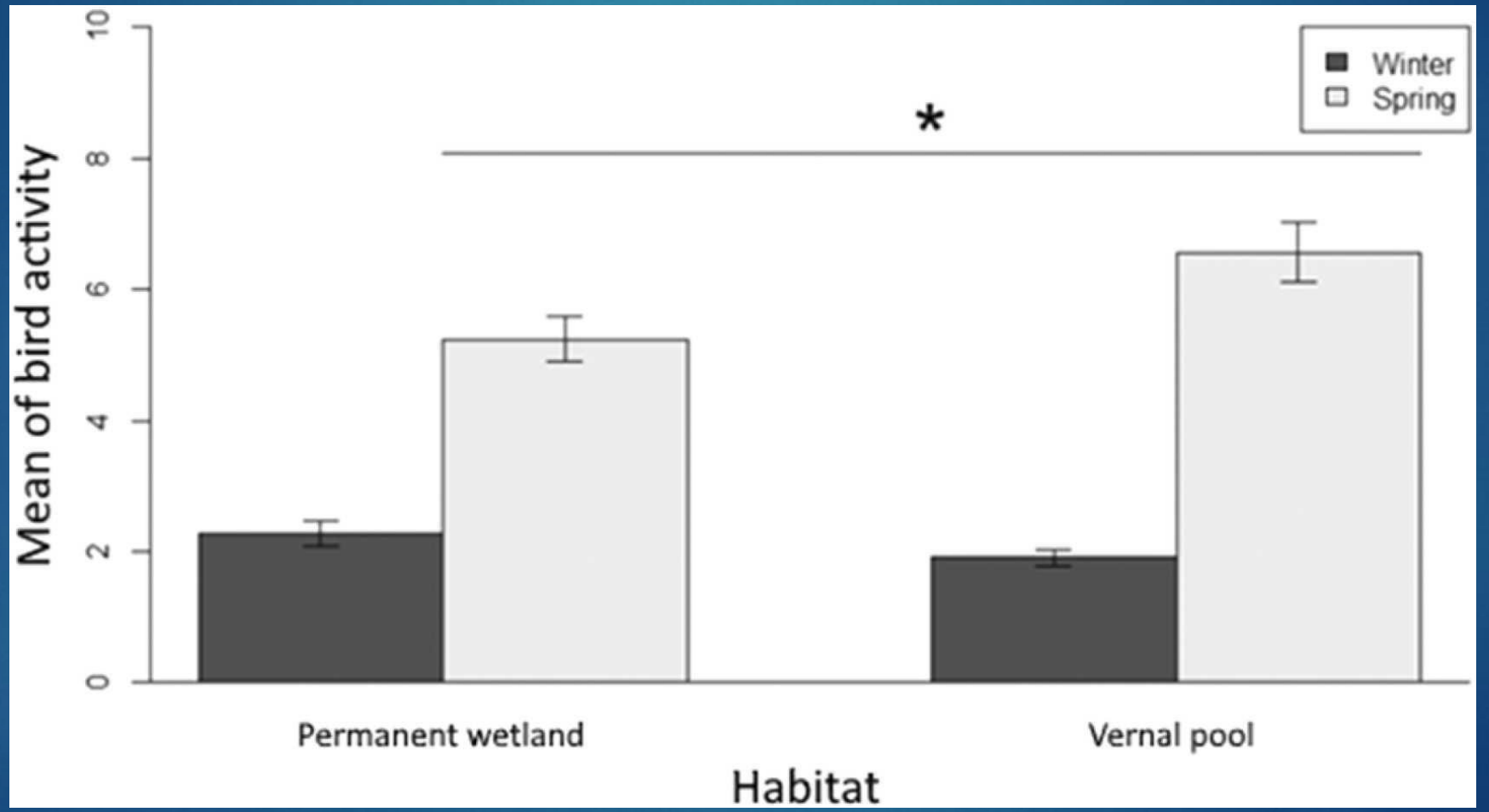
Konikorpi 23.9.2020

Kasvillisuus vaihtelee

Pirttikangas 4.5.2021

Konikorpi 5.5.2021

Birds in vernal pools

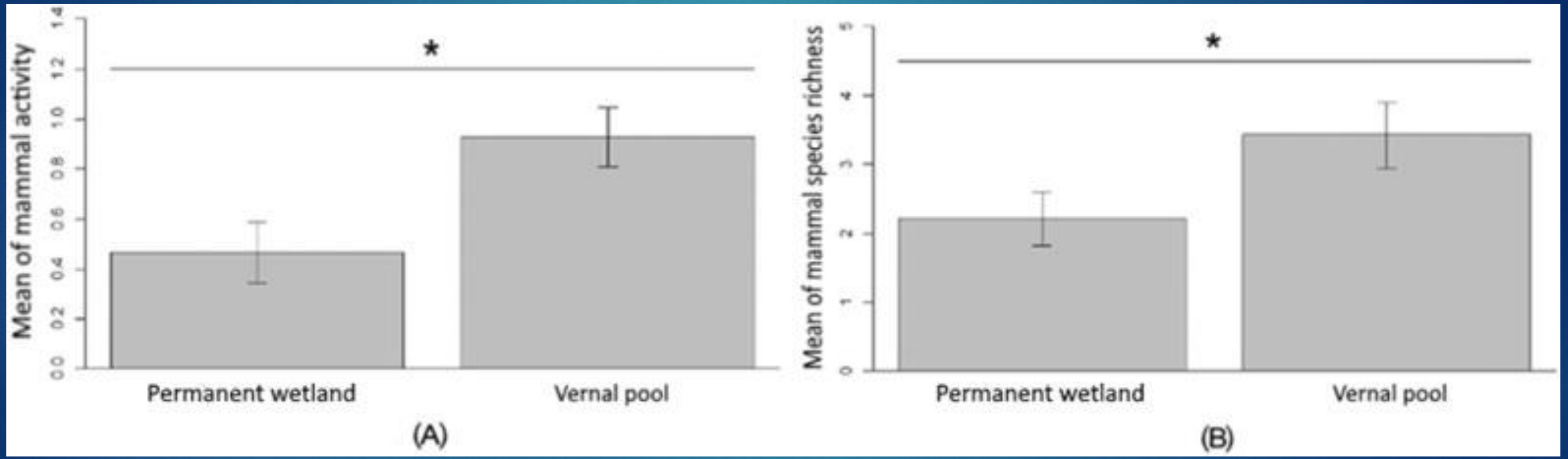


Dixneuf et al. 2021

Mammals in vernal pools

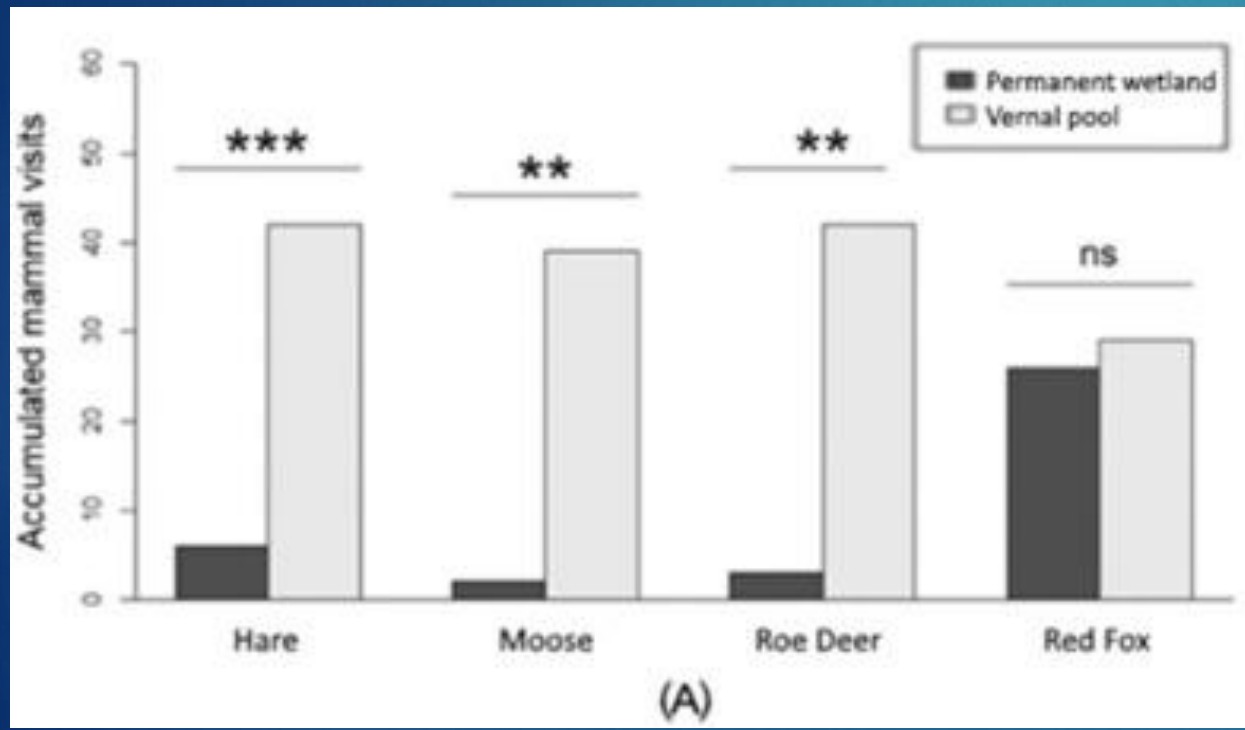
Activity

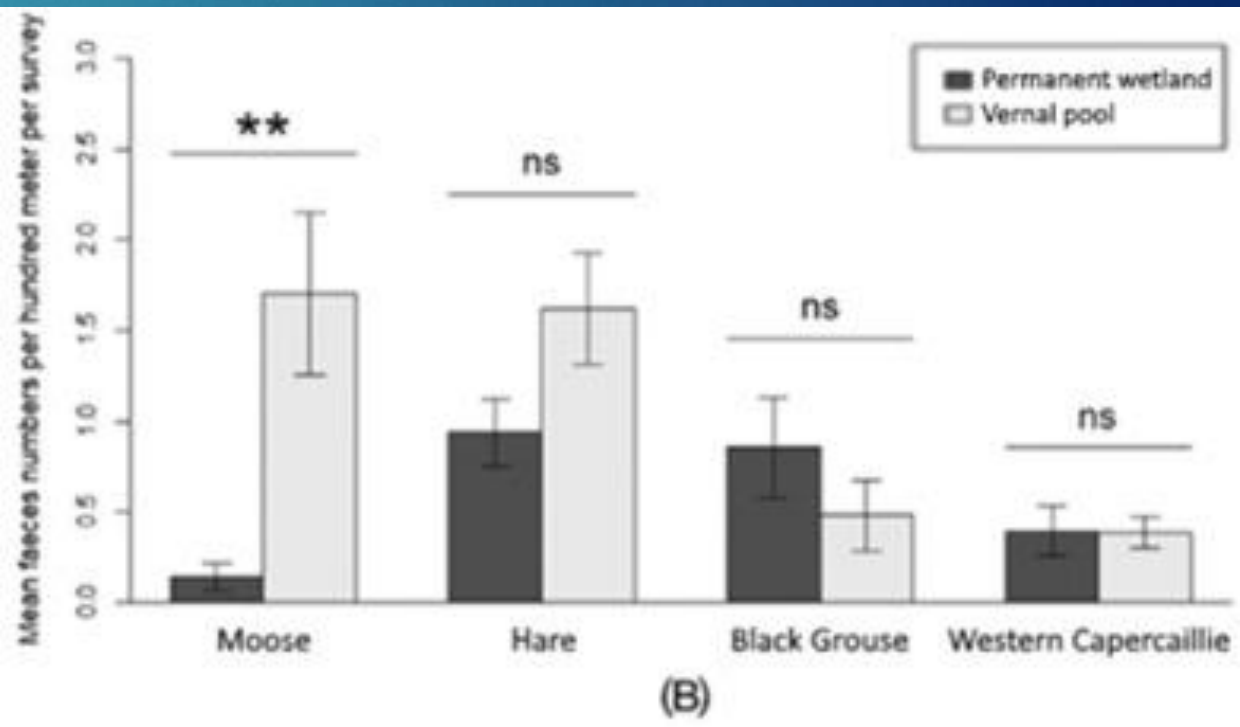
Species richness



Dixneuf et al. 2021

Selected mammals and birds

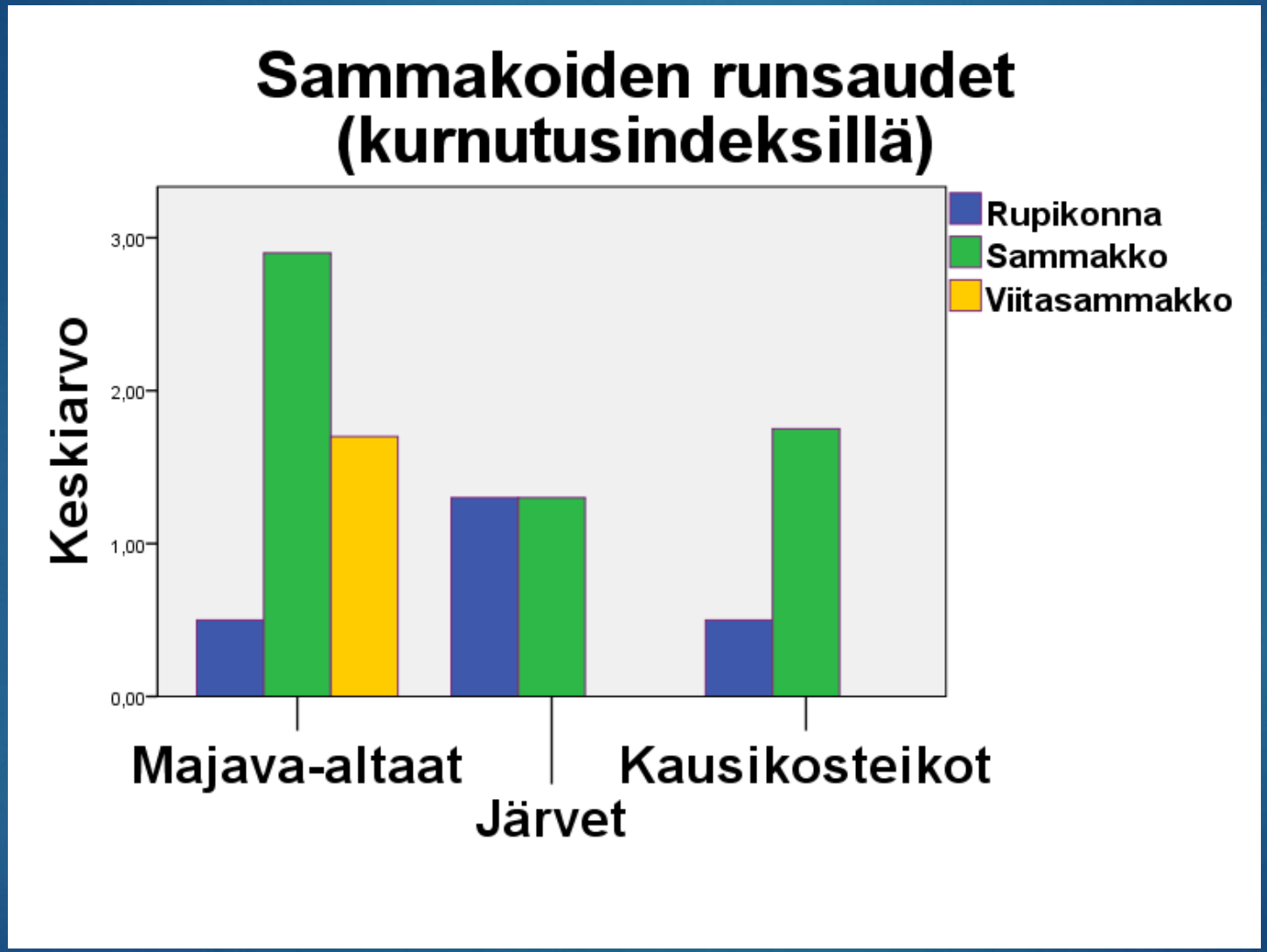




A) Camera observations

B) Feces

Frog abundance in different wetlands



Croak index

Bufo bufo
Rana temporaria
Rana arvalis

Note!
Newts not included

Beaver ponds Lakes Vernal pools

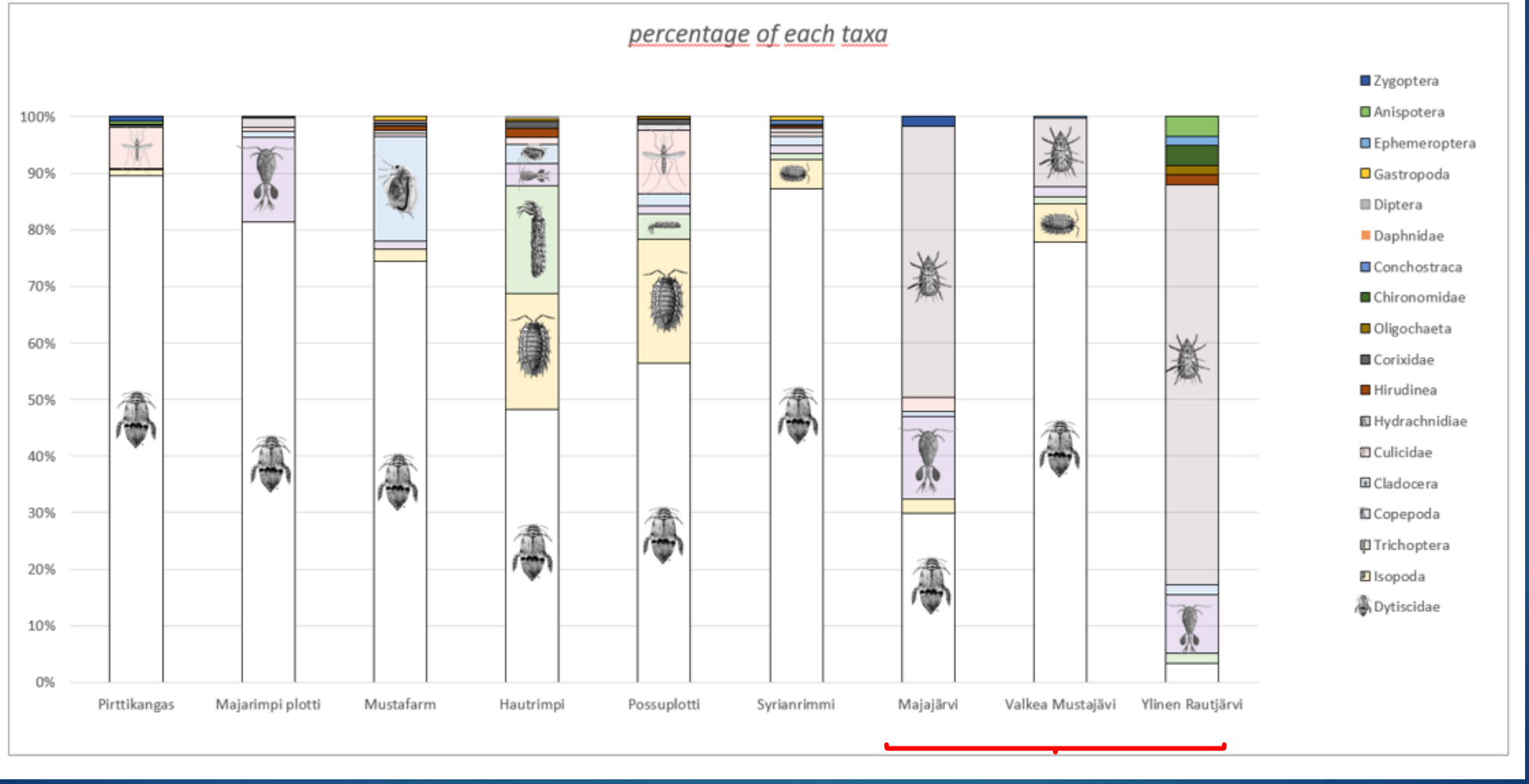
Vehkaoja & Nummi 2015

Invertebrates in different wetlands

Taulukko 2. Taulukossa on esitetty lahko-/sukukohtaiset selkärangatonindeksit eri kosteikkotyypeille sekä niiden vaihteluvälit. Taulukossa on myös merkitty kunkin kosteikkotyypin Simpsonin indeksi. Kunkin kosteikkotyypin viisi runsainta selkärangatonlahkoa/-sukua on merkitty paksummalla fontilla.

Invertebrata	Majavakosteikot	Vaihteluväli	Allikot	Vaihteluväli	Muut järvet	Vaihteluväli
Oligochaeta	0,0		0,0		0,3	(0-5,9)
Hirudinae	0,3	(0-1,6)	0,0		0,5	(0-8,2)
Cladocera	0,1	(0-0,4)	0,1	(0-0,4)	2,5	(0-14,0)
Copepoda	2,9	(0-6,4)	2,4	(0-5,3)	**7,8**	(0-92,8)
Isopoda	**14,0**	(0-38,2)	**21,1**	(0-83,4)	**9,2**	(0-99,5)
Hydracarina	0,5	(0-2,3)	0,5	(0-0,9)	3,1	(0-14,4)
Ephemeroptera	**44,7**	(0-77,4)	2,3	(0-9,0)	**13,5**	(0-70,4)
Anisoptera	9,0	(0-32,6)	0,0		1,8	(0-12,2)
Zygoptera	0,0		2,0	(0-8,2)	0,4	(0-4,9)
Hemiptera	0,0		0,3	(0-1,0)	0,0	
Corixidae	**11,8**	(2,5-34,2)	0,5	(0-1,1)	**5,8**	(0-117.6)
Tricoptera	**7,5**	(0-24,5)	**17,3**	(0-53,8)	**7,1**	(0-31,0)
Lepidoptera	0,0		0,0		0,2	(0-4,1)
Coleoptera	0,0		**16,3**	(0-34,7)	0,2	(0-2,0)
Dytiscidae	**91,0**	(17,9-180,9)	**48,9**	(14,7-71,7)	**13,2**	(0-101,9)
Diptera 2	7,0	(0-34,3)	**555,0**	(0-1305,4)	0,5	(0-5,6)
Diptera 3	0,0		0,0		0,2	(0-2,5)
Chironomidae	2,4	(0-7,6)	2,9	(0-11,6)	5,3	(0-38,4)
Valvatidae	0,0		0,0		0,1	(0-1,5)
Pelycypoda	0,0		0,0		0,1	(0-1,0)
Notonectidae	0,7	(0-3,3)	0,0		0,0	
Yhteensä	191,8		669,6		71,7	
Simpsonin indeksi	3,4		1,4		8,1	

Invertebrates in different wetlands



Kubin 2019

Vernal pools

Lakes

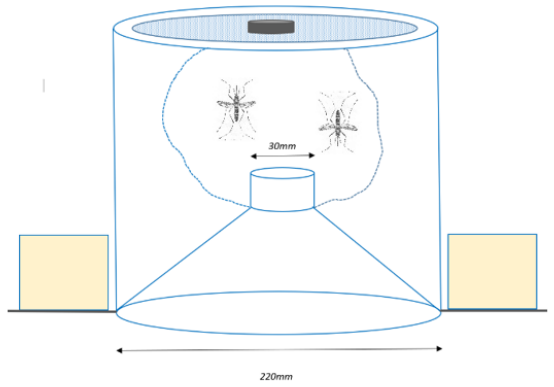
	Vernal	Permanent	Vernal	Permanent
Dytiscid species	**May**		**July**	
	Fazer	Kone	Fazer	Kone
Acilius canaliculatus	1		1	1
Acilius sulcatus	4			
Agabus congener	2			
Agabus sturmii		4		
Dytiscus marginalis			1	
Graptodytes granularis	4			
Graphoderus zonatus	1		1	
Hydaticus seminiger	1	1		
Hydroporus angustatus		5		
H. incognitus			3	
H. palustris	2			
H. pubescens	4			
H. striola		4		
Hygrotus inaequalis		6		
Hyphydrus ovatus	1			
Ilybius ater			1	
Rhantus exsoletus	1			
R. frontalis	1			
Suphodytes dorsalis	1			
Abundance	23	20	7	1
Species Richness	12	5	5	1

More abundant and species rich dytiscid fauna in vernal pools

Helsinki wetlands
(Liao, unpubl.)

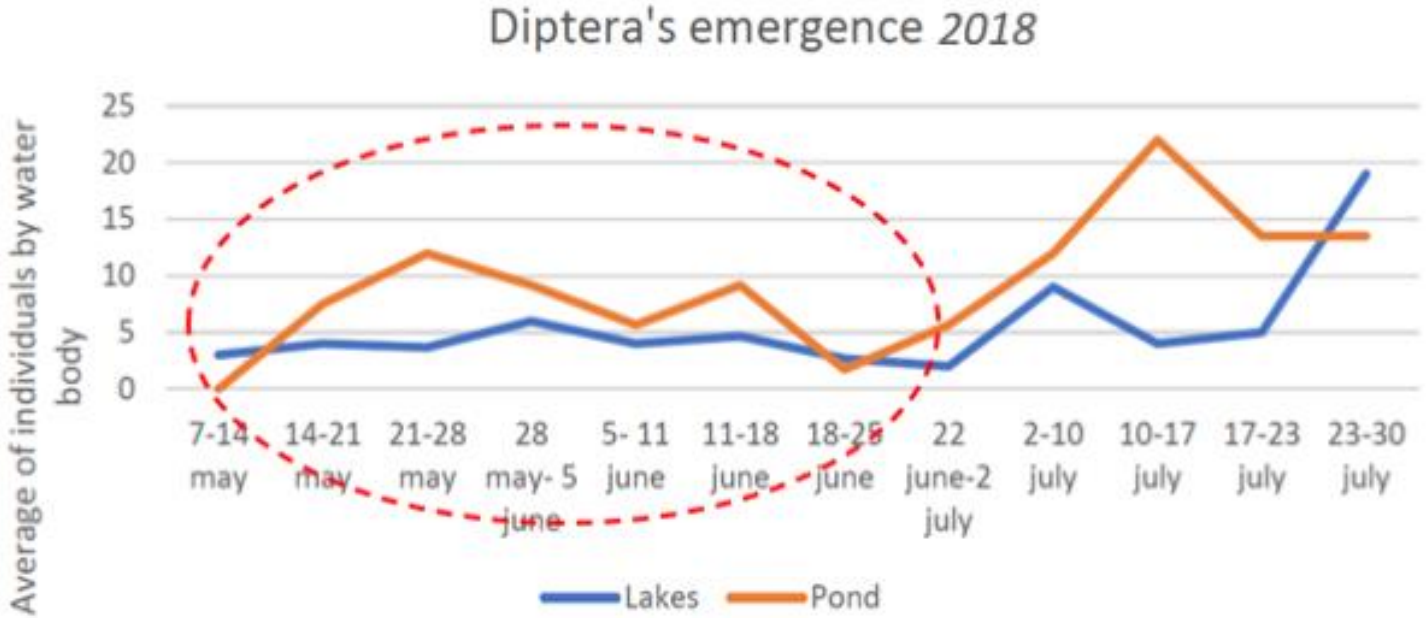
Emerging insects from vernal pools and lakes

- three emergence traps per site

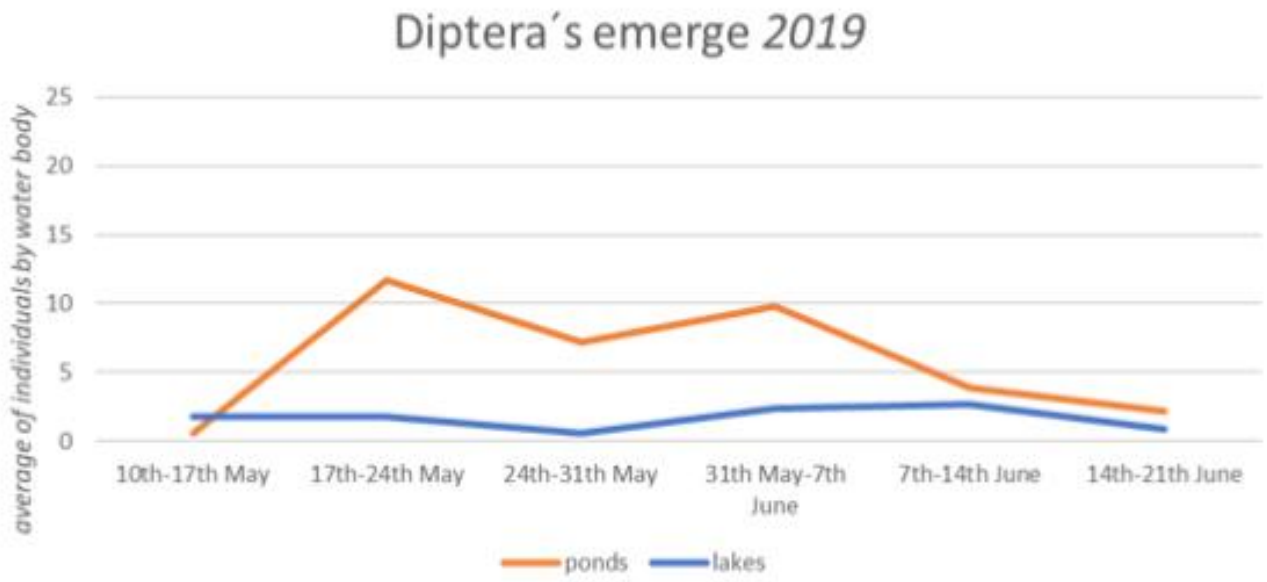


Emergence trap, floating on the water surface for from the water hatching flying insects

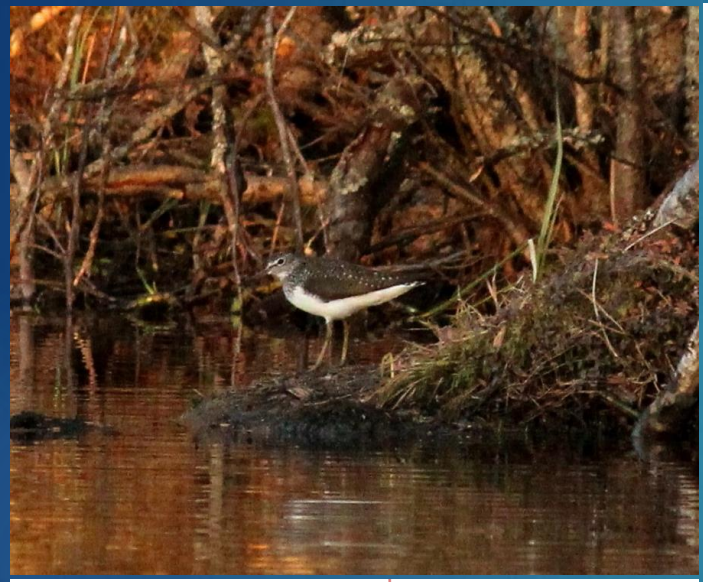
Dessein-Lepasteur 2018



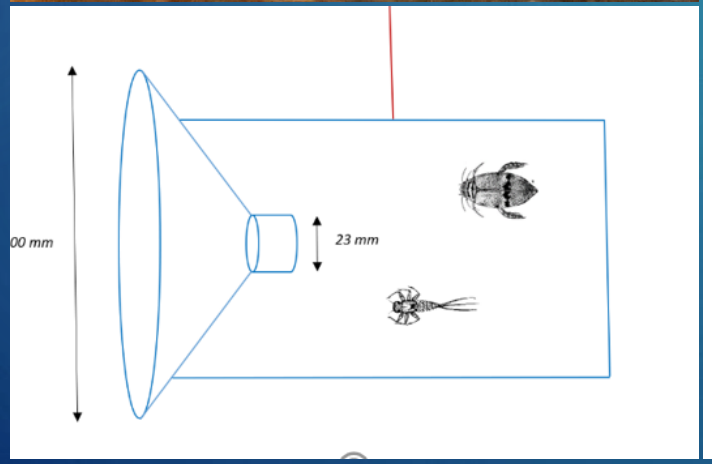
Kubin 2019

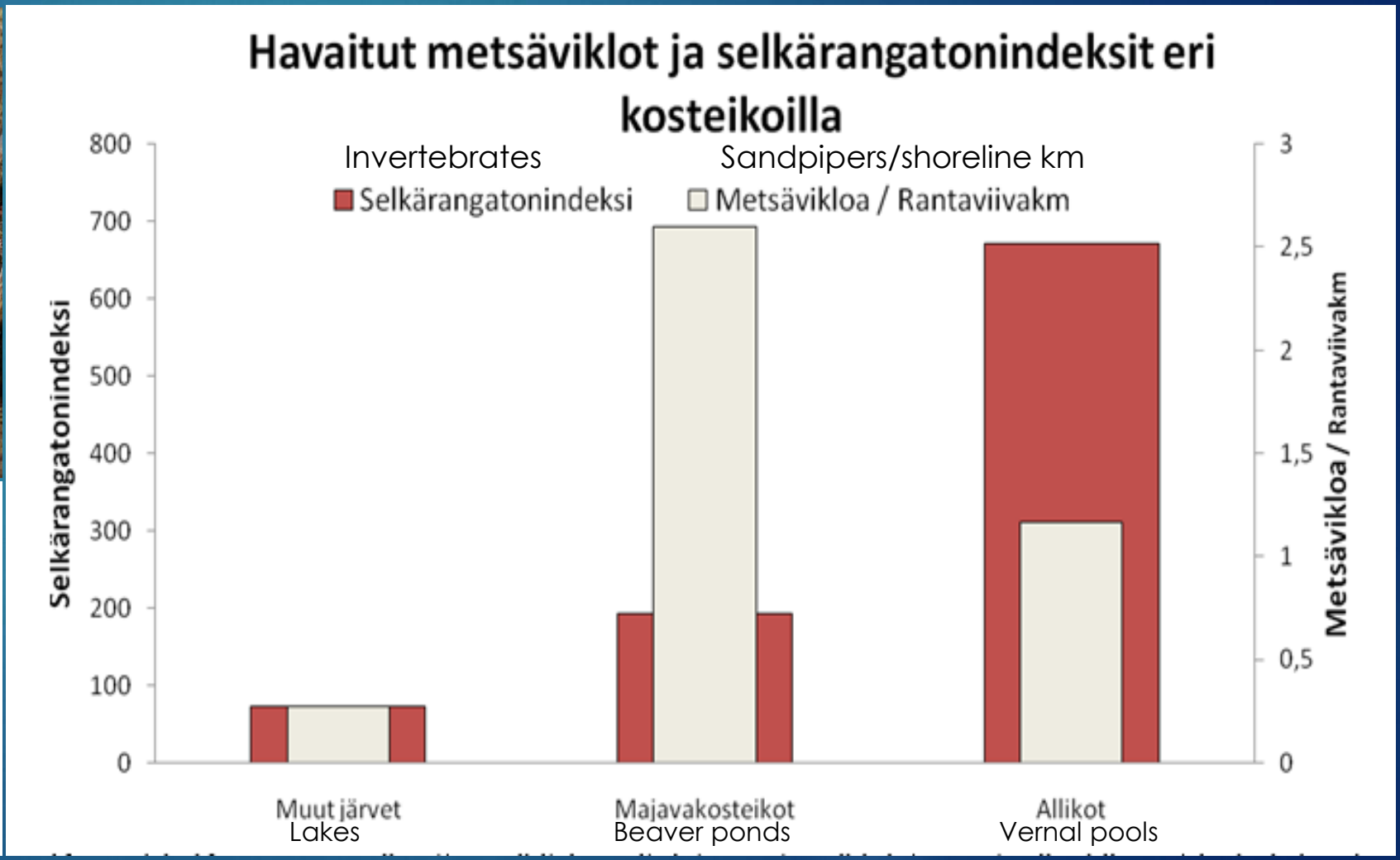


Green sandpipers and invertebrates



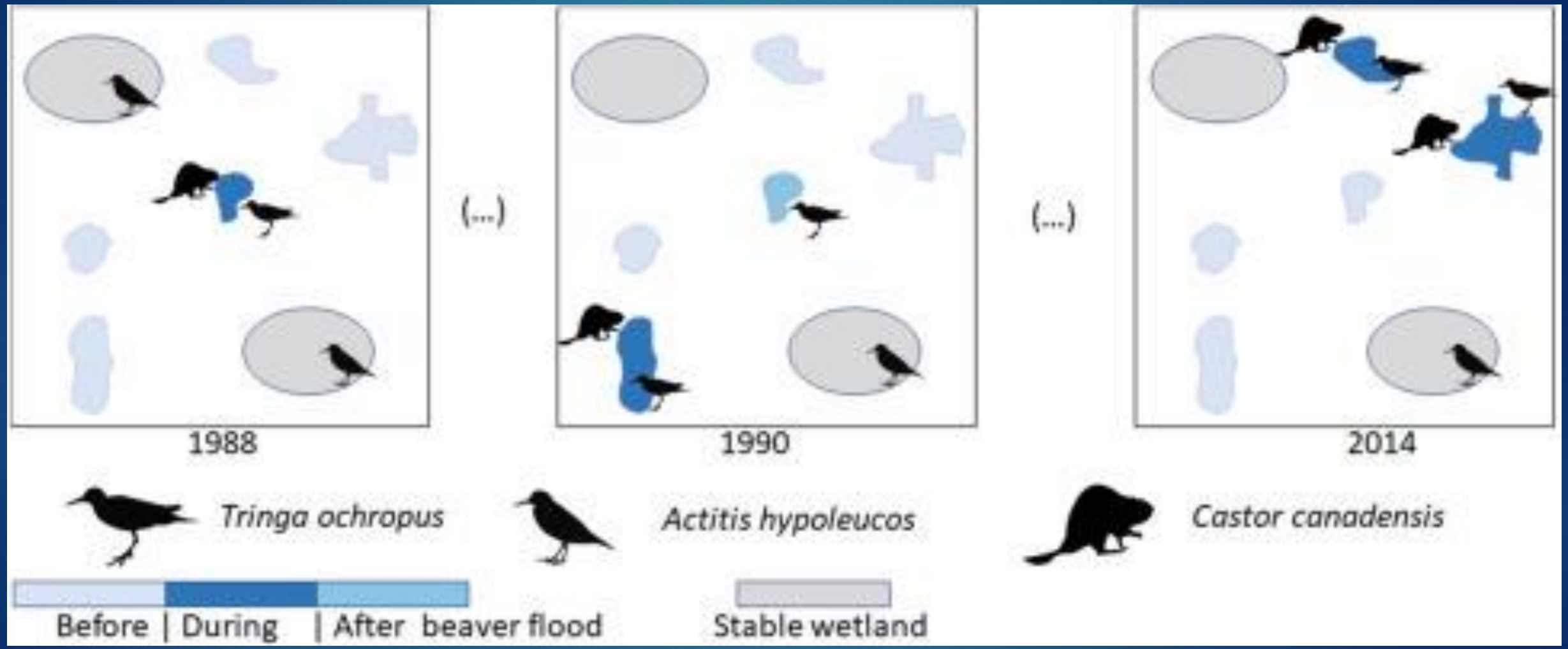
Sari Holopainen





Kattainen 2008

Landscape: Stable and variable habitats



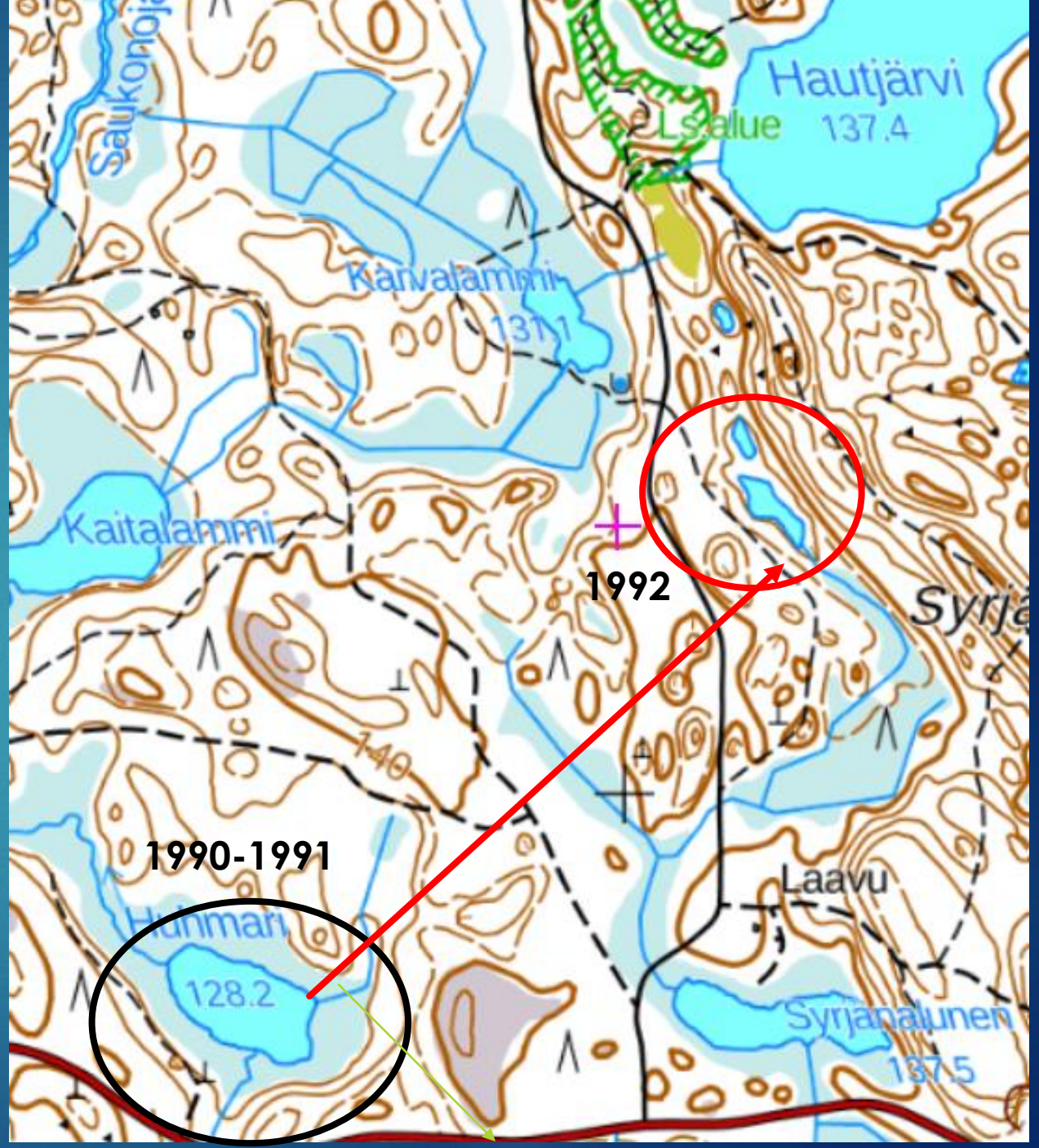
Nummi et al. 2021

Goldeneye broods and flowages

- nesting and brood rearing in Huhmari in 1990 & 1991 when the pond had beavers

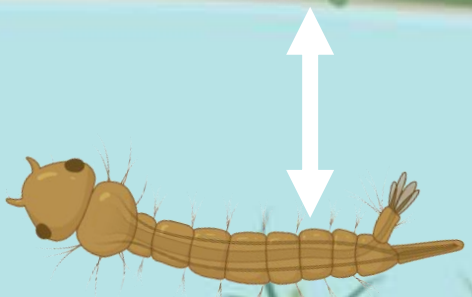
- drawdown after 1991

- 1992 nesting still in Huhmari, but brood immediately moved to Syrjänrimpi (continued to Karvalammi and Saukonoja)



Basile Marteau, PhD study
Roosa Pesonen, MSc study

Food abundance
~~Predation~~
~~Food competition~~



Duckling study design

Duckling study design

Invertebrate trapping 24

Activity trap

Index = Abundance*Size

Duckling experiment

More death in lake group

Death count

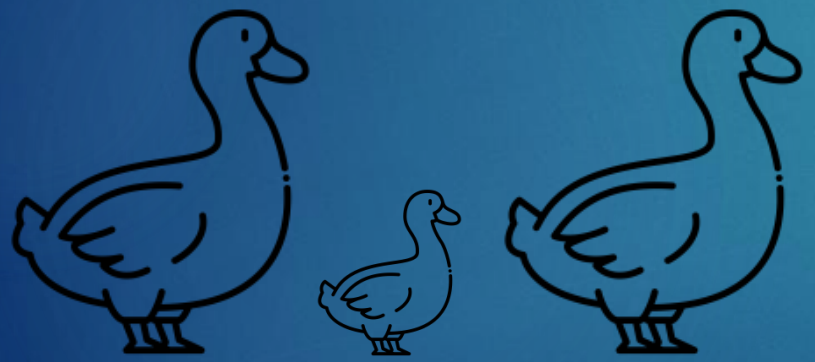
Dead

Alive

VP

Lake

Pikes



Weak

1

12

7

6

5

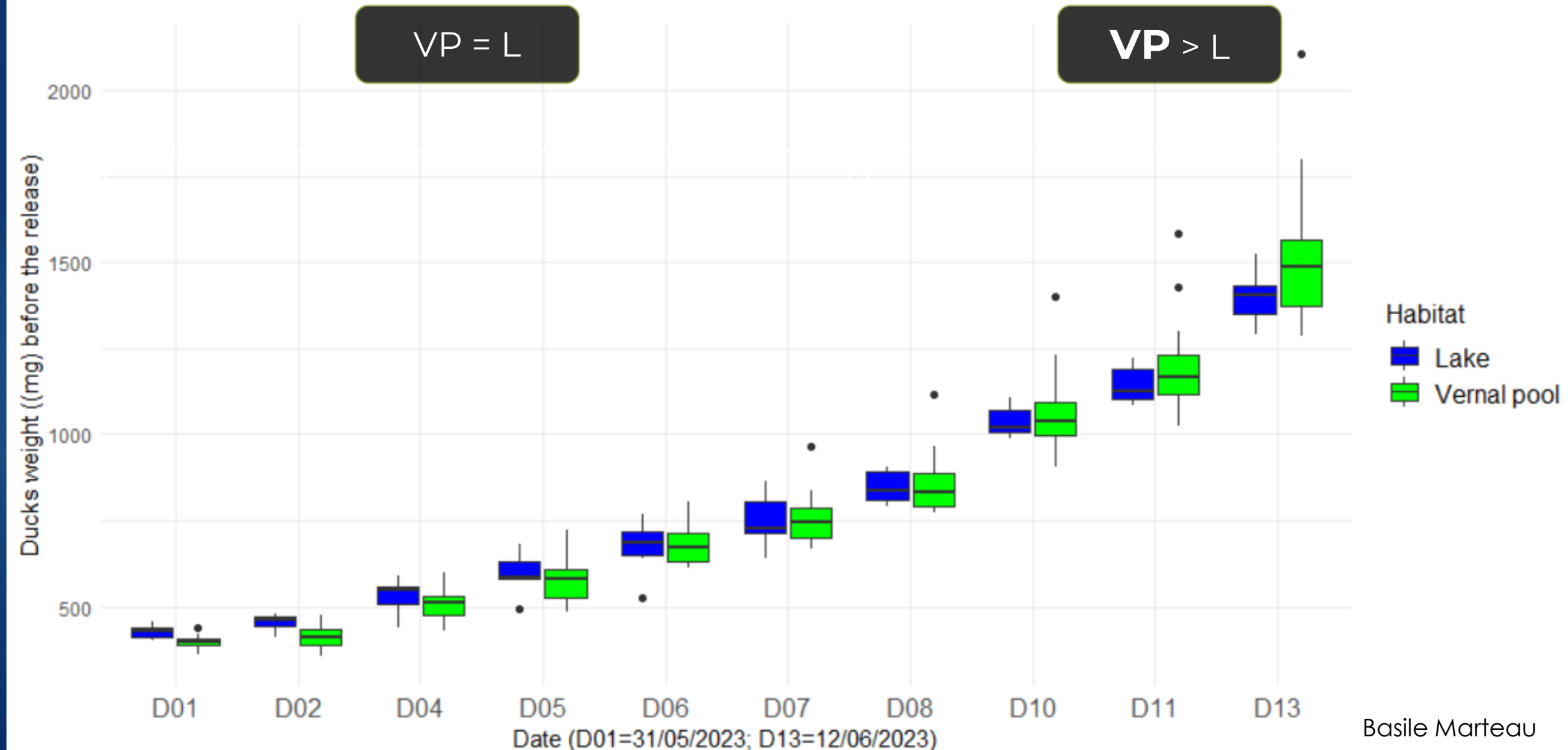
2

?

Disease ? No reason found yet

Basile Marteau

Heavier ducks in the VP

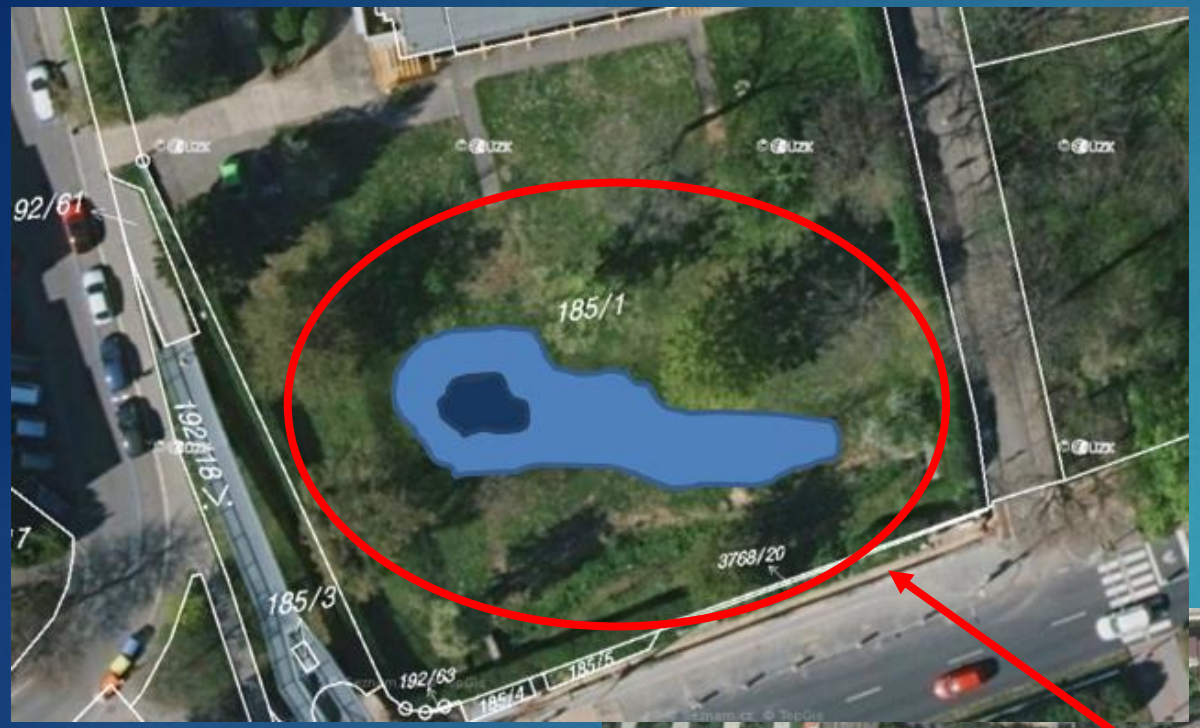


Basile Marteau

Constructed vernal pools

Amphibian pool in Prague (Šarecké valley)

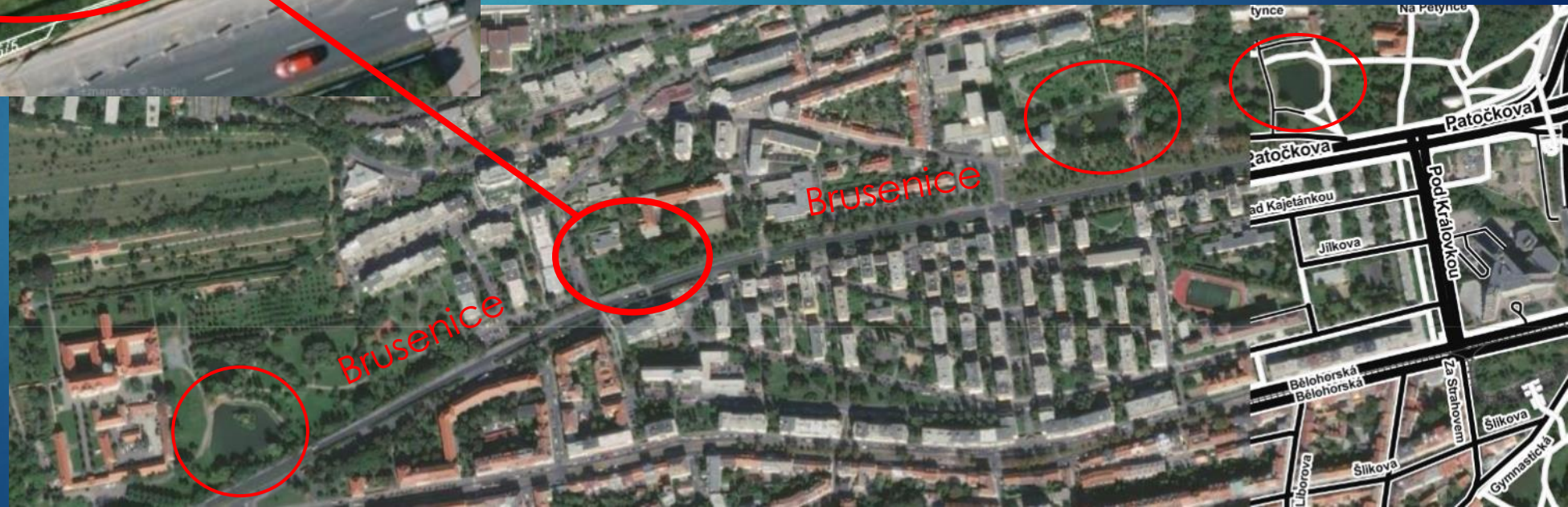
New vernal pool for connecting Prague wetlands



M. Čehovská

- Increasing connectivity of wetlands by the Brusenice brook

- Increasing fishless habitat for amphibians and invertebrates



Flood parks as flood mitigation

Angers, France 8.2.2019

Flood park acts as pasture and bird habitat

Les basses prairies
Parc de Balzac

Situées en partie ouest du parc, elles couvrent environ 8 hectares. Comme le marais, elles sont caractérisées par une inondabilité forte. Séparées du marais voisin par une langue de remblais en pointe extrême de l'ancienne décharge de pondéreux contrôlée des années 70, elles longent l'autoroute Paris/Nantes.

Lors de l'étude, il a été proposé d'en faire simplement une pâture pour des animaux telles des vaches "Highlands Cattle" dont la caractéristique est l'aspect placide, le régime alimentaire, la petite taille, la douceur et l'autonomie (le vêlage se fait sans intervention de l'homme, le sevrage également).

Au total naissent 2 ou 3 petits par an et les animaux paissent en été, loin des périodes d'inondations, sur le site du Parc de Balzac ou l'hiver au parc de Loisirs du Lac de Maine.

Les accompagnent, d'une humeur toujours égale, des Baudets du Poitou et des ânes du Cotentin ; ils montrent l'intérêt de la Ville pour les races protégées.

Enfin, le long de l'allée permettant la promenade, des perchis de châtaignier de décoration et une éolienne montrent le souci qu'on peut avoir de conserver, préserver et montrer le patrimoine d'hier afin de construire celui de demain.

C'est dans cet espace que l'on peut observer, en automne et en hiver lors des inondations, quelques oiseaux : canard col vert, aigrette garzette, héron cendré et mouette rieuse.

The Low-lying grasslands

In seeking to manage this area in an ecological and original way, it has been possible to develop the low-lying grasslands as pastureland, with the introduction of Poitou donkeys and a small herd of Highland Cattle. In addition, in collaboration with the league for the protection of Birds, the town of Angers is able to delay the mowing of these low-lying grasslands to protect and encourage the reintroduction of animal species characteristic of this ecosystem

Les chiens doivent être tenus en laisse dans le parc

POOL = vernal pool project funded by Koneen Säätiö, 2022-2025

- **to improve knowledge** about **fauna and flora community structure and water quality** in harvested forest landscapes at the functional scale of the catchment area
- **to raise public awareness** about the importance of **protecting and restoring networks of seasonal wetlands** (V2.09 & S08 in [4]) as a cost-effective way **against loss of biodiversity and ecological functions**
- Universities of Helsinki, Turku**,** and Angers
- Vanajavesikeskus, SYKE, Metsähallitus, Suomen Riistakeskus, UPM
- Art Group: dacemusic/video, photography, painting, science communication

Thanks