Environmental factors influencing the diet and spatial distribution of the signs of Eurasian otter *Lutra lutra* in Vistula valley, central Poland

G. Butrykowska* University of Gdańsk, Faculty of Biology, ul. Jana Bażyńskiego 8, 80-309 Gdańsk, Poland
grazyna.butrykowska@phdstud.ug.edu.pl
A. Zwolicki University of Gdańsk, Faculty of Biology, Gdańsk, Poland
J. Romanowski Cardinal Stefan Wyszyński University, Faculty of Biology and Environmental Sciences, Warsaw, Poland

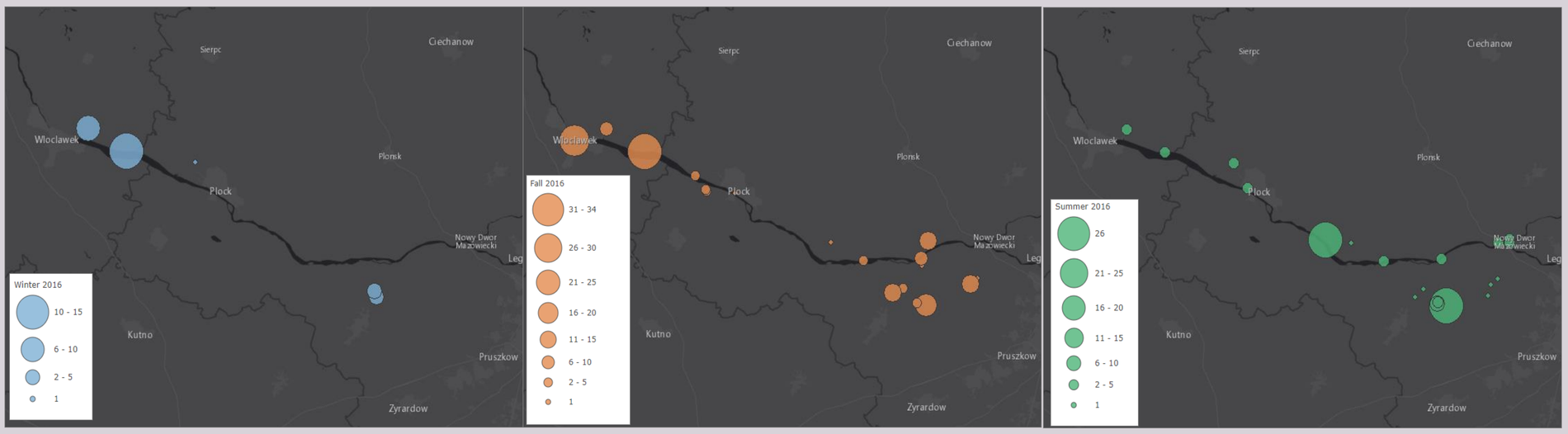
FACULTY of BIOLOGY
UNIVERSITY of GDAŃSK

INTRODUCTION

After severe decline of Eurasian otter population in Europe in mid XXth century, its recolonization of Poland was successful. It is currently widespread, and becomes addressed as a conflict species. This situation creates the opportunity for the research, as the otters occupy not only preferable, but also suboptimal habitats. The aim of the study was to explore which environmental factors influence the diet and the activity of the otters. These preliminary results are a part of the project, which also regards chosen stress hormone and contaminant levels in otters.

METHODS

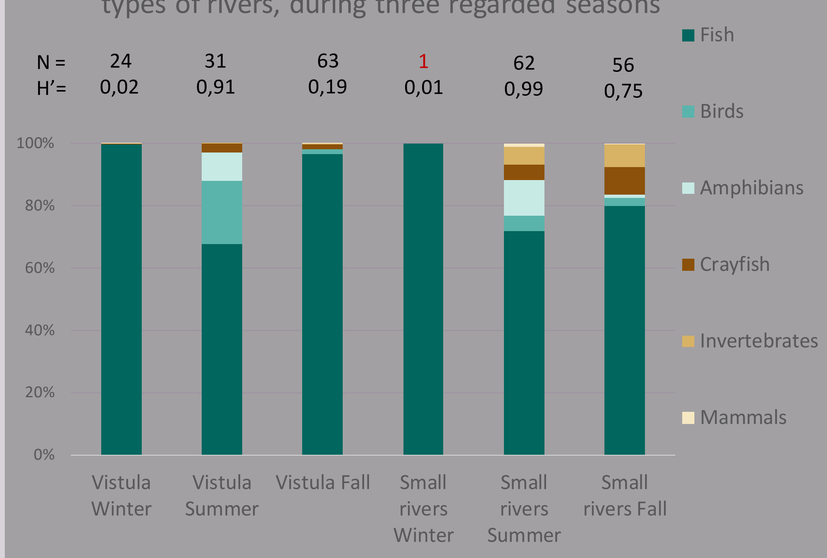
Research area included the Vistula and nearby smaller rivers between Warsaw and Włocławek. The area is very diverse, contains highly urbanized parts as well as nature reserves and Kampinos National Park. Field survey was carried out in 2016, during six field trips. Each time, the same locations were visited. Diet composition was analyzed using the standard method, resulting with estimated biomass percentage of prey groups. The number of faeces per site served as a measure of otter presence.

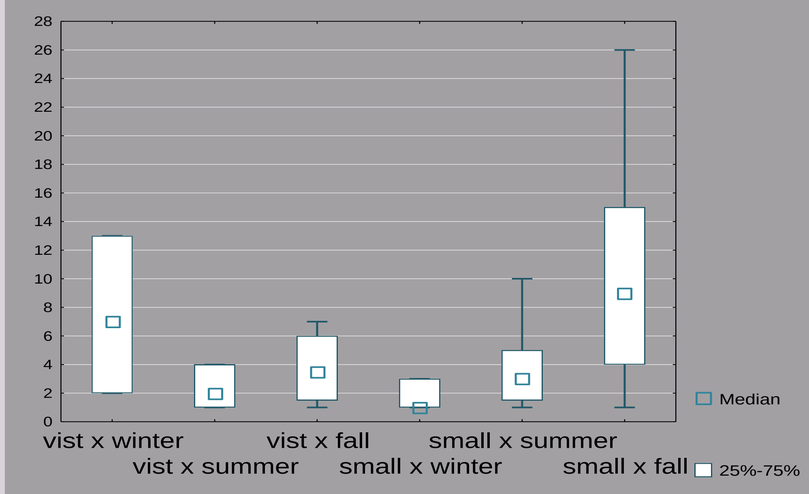


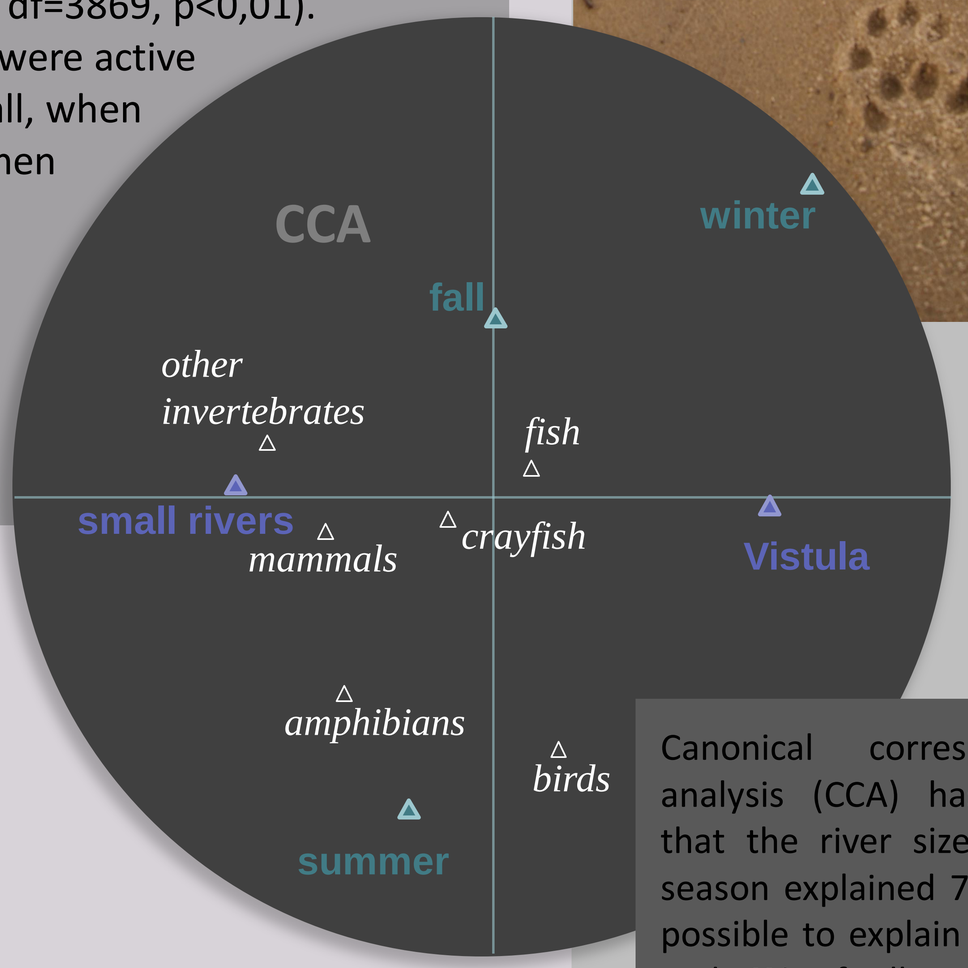
RESULTS

The numer of otter faeces found in three regarded seasons differed between Vistula and small rivers (df=2, chi2=20,19, p<0,01). Activity of otters, expressed as the number of faeces per positive site, appears higher on Vistula during the winter, and on small rivers during the summer (although not tested due to data structure). Otters shown very low activity on small rivers during the winter time. The diet of otters by the Vistula river consisted mostly of fish, while by small rivers it was more diverse, included moreamphibians, crayfish and other invertebrates (T-test for two Shannon-Wiener indexes(log), T=15,22, df=3869, p<0,01).
On small rivers otters were active During summer and fall, when their diet was supplemen -ted by food other than fish, especially amphibians, crayfish and other invertebrates.

Diet composition and activity of the otters in two types of rivers, during three regarded seasons







Canonical correspondence analysis (CCA) has shown, that the river size and the season explained 7 % of the possible to explain variation, and 4% of all variation in otter diet (pseudo-F=6,9 p=0.002).

CONCLUSIONS

- Otter diet during winter season on Vistula consisted almost exclusively of fish. As the small rivers in the research area are often frozen during the winter time, fish are only available in Vistula. Moving to more favorable habitat for the winter is a probable explanation of low otter activity on small rivers.
- River size and season are significant factors explaining the variation in otter diet, but the share of the variation they are responsible for is low.
- The study is continued with higher field effort, which allowed to collect more samples, and also environmental data that can allow to explain spatial variation of otter activity.