

# Master thesis proposal

## Comparing plovers' foraging habits

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### Background

Two plover species live along the Wisła river: the common ringed plover and little ringed plover. It is hypothesized that they have different foraging habits that also depend on the age of the bird.

A number of foraging sites have been observed along the Wisła river, with respect to their resource abundance and birds' foraging habits (time and intensity) over a period of time. Furthermore, information is available on the age of the individual birds.

### Thesis project

The aim of the thesis is to develop a modelling framework that captures the foraging dynamics and statistical procedures that are able to compare the two species and birds' age groups. The collected data is on a daily level, over many months, hence the modelling should take into account seasonality.

The thesis will be done in collaboration with the Department of Vertebrate Ecology and Zoology, University of Gdańsk, who will provide support from the "biological" side and the data (already prepared).

### Goals

1. Development of stochastic models and statistical approaches for the biological problem.
2. Carrying out the analysis, including a study if some variables have non-linear effects.
3. Providing all the methodology in R code that the biological community can easily use.

### Data

The topic can be illustrated with both real and simulated data. The Department of Vertebrate Ecology and Zoology, University of Gdańsk will provide a data set concerning the different foraging sites and species' behaviour there.

## References

- [1] R. Kozik, W. Meissner, B. Listewnik, J. Nowicki, and R. Lasecki. Differences in foraging behaviour of a migrating shorebird at stopover sites on regulated and unregulated sections of a large European lowland river. *Journal of Ornithology*, 163:791–802, 2022.
- [2] W. Meissner, R. Kozik, B. Listewnik, J. Nowicki, and R. Lasecki. The effects of river regulation on diet diversity, dietary niche overlap and foraging habitat preferences of two sympatric plover species. *Acta Oecologica*, 119:103915, 2023.