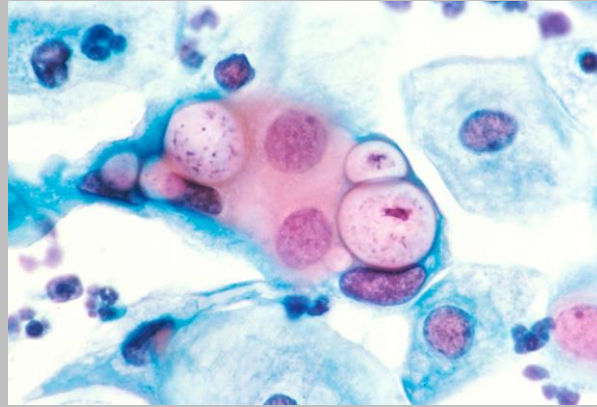




BECO

**Behavioural Ecology
and Ecophysiology**

University of Antwerp



Feral Pigeons (Antwerp)

- Disease transmission
- Movement ecology
- Urbanisation
- Individual variation

- in collaboration with EVECO



Tracking Feral Pigeon Movement in Antwerp

- Pigeons are thought to occupy a small area, but this is not shown in detail.
- Compare spatial resolution and performance of different GPS devices.
- Quantify home range sizes and assess spatial connectivity among pigeons.
- Analyze how urban landscape elements influence movement patterns.

Description of tasks: Students will deploy multiple GPS trackers on feral pigeons in Antwerp, collect and clean spatial data, compare device performance, and use spatial analysis (e.g. kernel density, movement models) to link movement behaviour to environmental features.

This project sits at the scientific forefront, offers opportunities for high-impact publications, and allows students to develop cutting-edge analytical and technical skills that are highly valuable for their future careers.

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Connectivity Between Urban and Rural Landscapes in Wood Pigeons

- Wood pigeon are expected move over larger distances, linking cities and rural environments.
- GPS-track wood pigeons moving between Antwerp and surrounding rural areas.
- Assess how connected urban habitats are to the surrounding countryside.

Description of tasks: Students will equip wood pigeons with GPS trackers across an urban–rural gradient and analyse how individuals move between city environments and nearby rural zones. By evaluating connectivity and tracker performance, this project contributes to understanding landscape permeability and urban wildlife ecology. It also offers strong publication potential and provides students with advanced technical and analytical skills valuable for their scientific careers

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Pigeons as Reservoir Hosts for Arboviruses in Urban Environments

- Detect West Nile virus in feral pigeons to assess whether the virus is circulating in Antwerp/Flemish cities.
- Examine the role of pigeons as mosquito feeding hosts to understand their potential as urban reservoirs.
- Combine field sampling and PCR diagnostics to link infection patterns with geography and host traits.

Description of tasks: Students will sample pigeons across Antwerp and other regions in Flanders, collect biological material, and screen for West Nile virus using PCR techniques. This is a high-risk, high-impact project: the chances of detection are uncertain, but any positive finding would be scientifically significant and highly publishable. The core scientific questions focus on whether pigeons contribute to the urban transmission cycle of arboviruses and what this implies for public and wildlife health. The project blends fieldwork and labwork and offers valuable training in disease ecology and molecular diagnostics

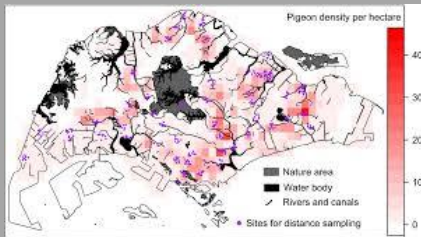
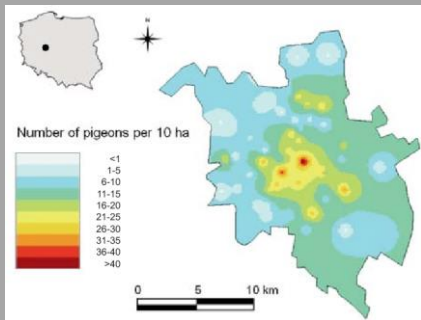


Antimicrobial Resistance in Urban Pigeons

- Determine the prevalence of antimicrobial-resistant (AMR) bacteria in feral pigeons in Antwerp.
- Investigate pigeons as potential urban reservoirs and spreaders of AMR due to close contact with humans and waste.
- Combine pigeon field sampling in Antwerp/Flanders with PCR-based detection and resistance profiling.

Description of tasks: Students will capture and sample feral pigeons across different urban areas and screen them for AMR bacteria using molecular and microbiological techniques. The scientific questions focus on how common AMR strains are in pigeons, whether urban environments facilitate their spread, and what this means for public health. The project combines impactful fieldwork with hands-on lab experience and contributes to emerging research on urban AMR dynamics.

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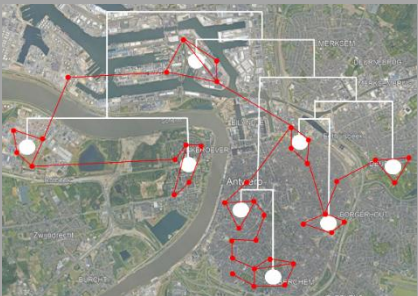
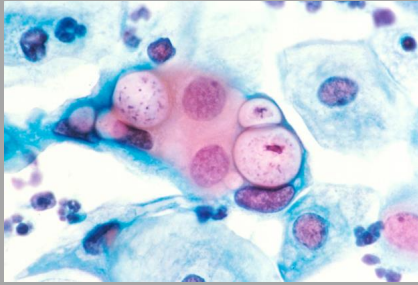


Pigeon Density and Disease Transmission in Urban Environments

- Quantify feral pigeon density across neighbourhoods in Antwerp.
- Identify environmental factors (e.g. food availability, buildings, green spaces, human activity) that influence pigeon aggregation.
- Link spatial variation in density to potential pathogen transmission risk in cities.

Description of tasks: Students will measure pigeon densities across Antwerp through field counts and other methods and relate these patterns to environmental variables such as land use, waste hotspots, and urban structure. The core research question is how urban features drive pigeon density and, in turn, shape opportunities for disease transmission. This project combines field ecology, GIS/spatial analysis and urban epidemiology

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Genetic Diversity of Urban Hosts and Their Pathogens in Antwerp

- Assess genetic variation in urban wildlife hosts (e.g. pigeons, rats) to understand population structure across Antwerp.
- Sequence pathogens (e.g. *Chlamydia psittaci*, helminths, viruses) to compare strain diversity across neighbourhoods.
- Link host and pathogen genotypes to urban environmental gradients and transmission risk.

Description of tasks: Students will collect samples from pigeons and/or rats in different parts of Antwerp and use molecular tools (e.g. PCR, sequencing, genotyping) to analyse both host and pathogen genetic diversity. The key scientific questions are whether urban populations show genetic structuring across neighbourhoods, and whether pathogen strains cluster spatially or mirror host movement and connectivity.

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Lesser black-backed gulls (Zeebrugge)

- Parental cooperation
- Foraging ecology
- Early development
- Individual variation





Food stealing behaviour in gulls?

- Herring Gulls are known for their food stealing behaviour, typically during the touristic season.
- How do they learn about food stealing opportunities? And what makes a gull most successful? Can they even read the human's mind?
- By combining behavioral observations and field experiments (e.g., food opportunities) in Ostend we aim at gaining a better understanding of human-wildlife conflicts and their resolution

Description of tasks: Possibility to do fieldwork with wild seabirds (about 1 day per week during March and April). The rest of the year the work will be based at CDE. The student will receive support with statistical analysis.

Contact: wendt.mueller@uantwerpen.be



Day and night – what determines activity patterns in Lesser black-backed gulls?

- For nearly 150 individual Lesser black-backed gulls we have detailed information on their daily routines, including the onset and offset of activity.
- This data set was created in the last 10 years of GPS tracking, but thus far it has not been analyzed.
- The aim of this MP is therefore to investigate whether individuals are consistent in the timing of their foraging activities, how their intrinsic rhythm is aligned with reproductive activities, and whether they adjust their timing of activities during migration.

Description of tasks: Possibility to analyze GPS tracking data and to do a project with impact. You will be based at CDE and learn skills that are likely relevant for a career in science and conservation, for this you will receive support and training with statistical analysis.

Contact: wendt.mueller@uantwerpen.be



On the spot: how to establish a territory?

- High breeding density areas are characterized by a higher breeding success. This suggests that there is a high level of competition to get and maintain these territories.
- By combining time lapse photography, behavioral observations and field experiments (manipulations of breeding density), we aim at understanding:
 - 1) how gulls invest their time to successfully establish a territory, offspring care and self-maintenance,
 - 2) how social interactions shape the acquisition and maintenance of territories, and ultimately
 - 3) relating those aspects to reproductive success

Description of tasks: Possibility to do fieldwork with wild seabirds (about 1 day per week during March and April). The rest of the year the work will be based at CDE. The student will receive support with statistical analysis.

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**WE WANT
YOU !**

