

Online Behaviour & Evolution Seminars



Winter Semester 2021-22
On Wednesdays in ZOOM



| Date | Time | Speaker | Title |
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| 13.10.2021 | 12.15 | Nicholas P. Moran Centre for Ocean Life DTU-Aqua, Technical University of Denmark (Host: Alfredo Sánchez-Tójar) | Behaviour, Individual Variation and Animal Invasions: A case study from the Baltic Sea |
| <p>Summary: Individual variation plays an important role in biological invasions. Among—individual differences in behavior can influence the spread of invasive animals, for example, more active, bolder and less social individuals are often found driving range expansion at invasion fronts. Animals can also show among—individual differences in their ecological interactions, which may be closely related to behavioral variation. This research considers the interactive relationship between behaviour, individual variation and invasive species impacts, with a particular focus on the high invasive round goby (<i>Neogobius melanostomus</i>).</p> | | | |
| 20.10.2021 | 12.15 | José Carlos Brito University of Porto (Host: Isabel Damas Moreira) | Armed conflicts and wildlife decline: challenges and recommendations for effective conservation policy in the Sahara-Sahel |
| <p>Summary: In the Sahara-Sahel, megafauna has experienced recent continuous decline due to unsustainable hunting pressure. The best available data on distribution and population trends of threatened, large vertebrates, illustrated how escalating regional conflict (565% growth since 2011) was hastening population decline in areas that were formerly refugia for megafauna. Without conservation action, the unique and iconic biodiversity of Earth's largest desert will be forever lost. The relevant international partners needed to tackle these challenges and to make strong policy change for biodiversity conservation and regional stability are identified.</p> | | | |
| 27.10.2021 | 16.00 | Keaton Tremble University of Utah (Host: Joe Hoffman) | Ceps! |
| <p>Summary: Understanding the mechanisms that generate and maintain biodiversity is one of the fundamental goals of evolutionary biology. Despite this, these mechanisms and processes have been difficult to identify and elucidate outside of a few select taxa. In this talk, I will introduce recent work that identifies the primary forces driving population divergence in the globally distributed and abundant "Porcini mushroom" (<i>Stein Pilz</i>), <i>Boletus edulis</i>, using large-scale population genomic sequencing. This work is a novel insight into the speciation process at the global scale, and one of the first studies investigating population divergence within the Fungi, arguably the most diverse group of eukaryotic organisms on earth.</p> | | | |
| 03.11.2021 | 12.15 | Gabrielle Davidson University of Cambridge (Host: Öncü Maraci) | Thinking with the gut: Does microbiome variation matter in wild birds? |
| <p>Summary: Emerging research on 'wild microbiomes' points to links between diet, habitat, host physiology and phylogeny. Observational and descriptive studies of avian microbiomes provide the important groundwork for developing and testing predictions regarding evolutionary and ecological processes associated with microbes and their hosts. Using great tits (<i>Parus major</i>) as a system, I will explore how the nestling gut microbial community shapes development and survival. I will discuss that while the gut microbiome may be an important trait mediating behavioural plasticity, evidence supporting this theory is lacking in wild animals. Using an experimental approach to manipulate the gut microbiome, I will show that diet may influence host behaviour via the gut microbiota. Finally, I will highlight the benefits and limitations of manipulative studies for pinpointing causal relationships between behaviour and the gut microbiome.</p> | | | |
| 10.11.2021 | 12.15 | Christopher Cooney University of Sheffield (UK) (Host: Toni Gossmann) | The drivers of avian diversification |
| <p>Summary: Understanding the processes promoting the diversification of life is crucial, now more so than ever. Achieving this goal requires integrating data from diverse sources with suitable analytical methods to make sense of them. In this talk, I will describe insights from my own research into macro-scale avian diversity patterns and the processes by which they arise. I will focus on recent work examining key drivers of ecological and sexual trait diversity among bird lineages that have provided insight both into the processes governing global-scale biodiversity patterns and into the eternal question of why some branches of the Tree of Life are more diverse than others.</p> | | | |
| 17.11.2021 | 12.15 | Lysanne Snijders Wageningen University (NL) (Host: Barbara Caspers) | Predictors and consequences of being a social animal: studying the social behaviour of two model organisms in the wild |
| <p>Summary: Via social companions, individuals can receive information on, and access to, resources and threats in their environment. Intriguingly, we see ample variation in the social tendencies of individual animals, within species, but also populations or groups. Why do we see this variation and what consequences does it have? Here, I will address these questions, referring to my studies on the role of animal personality in the social behaviour of wild great tits (<i>Parus major</i>), as well as on the consequences of being social for foraging success in wild Trinidadian guppies (<i>Poecilia reticulata</i>).</p> | | | |

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| 24.11.2021 | 12.15 | Richard Merrill LMU (Host: David Kikuchi) | Adaptive introgression of alleles underlying visual mate preference evolution in tropical butterflies. |
| <p>Summary: Many species remain separate not because they fail to produce hybrids, but because their individuals effectively 'choose' not to mate in the first place. Although the significance of behavioural barriers has been recognized since the Modern Synthesis, we still know little about the genetic changes that underlie the evolution of mating preferences, or variation in behaviours across natural populations more broadly. The warning patterns of the Neotropical <i>Heliconius</i> butterflies are often under disruptive selection for mimicry, and are also used during mate recognition. Using a combination of behavioural experiments and classic genetic crosses, as well as population genomic and gene expression analyses, we have begun to uncover the genetic basis of variation in visual mating preference behaviours. We provide evidence that adaptive introgression underlies the evolution of visual preference behaviours (in addition to the colour pattern cue) in the <i>H. melpomene-cydnoides</i> clade. Specifically, we show that divergent visual mate preferences across this group are associated with the same genetic location, and that this is associated with genomic signatures of adaptive introgression between red-preferring species. This region includes a <i>regucalcin</i>, whose expression is strongly linked to preference behaviours across the clade, making it an excellent candidate gene underlying visual preference evolution.</p> | | | |
| 01.12.2021 | 12.15 | Ralf Stanewsky University of Münster (Host: Klaus Reinhold) | Synchronization of the <i>Drosophila</i> circadian clock by the daily cycles of light and temperature |
| <p>Summary: Circadian clocks orchestrate the timing of behavioural patterns and physiological processes with the natural daily fluctuations of light and temperature. They thereby contribute to the fitness of organisms, as exemplified by their importance for regulating predator avoidance and economical use of energy. Molecularly, circadian clocks consist of transcriptional and translational feedback loops of clock genes expressed throughout the body. In the brain of the fruit fly, a network of about 150 specialized 'clock neurons', defined by the expression of clock genes and organized in seven anatomically distinct clusters, regulate the daily rhythms of locomotor activity and sleep.</p> <p>In our group we are interested in how daily light and temperature cycles synchronize clock gene expression within the brain clock neurons and the behavioural rhythms controlled by these neurons. I will present findings about a recently evolved clock gene variant that apparently provides a fitness advantage for flies living in Northern latitudes and therefore spreads northward by directional selection. In the second part, I will discuss recent findings about how temperature sensors, located in the peripheral nervous system, contribute to temperature resetting of clock neurons in the brain. Interestingly, the neuronal clusters targeted by light and temperature seem to be partially distinct, pointing to the mode by which the clock neuronal network may integrate light and temperature information to generate properly timed behavioural activity rhythms.</p> | | | |
| 08.12.2021 | 12.15 | André Martins University of São Paulo (USP), São Paulo, Brazil (Host: Meike Wittmann) | Models of evolutionary senescence and models of opinion spread: an overview of my work |
| <p>summary: In this talk, I will present my two main contributions so far, an evolutionary model for senescence and a general framework for opinion dynamics. For a long time, it was thought that senescence could not be an adaptation as it causes too much damage to the individual. However, by introducing a spatial model where conditions change and agents must adapt to remain competitive, I was able to demonstrate there are conditions where, even including only individual competition, evolution might lead non-aging populations to extinction due to the formation of groups and slower evolvability. In opinion dynamics, I proposed the use of Bayesian-inspired models to create update rules and, from that, a general framework. Using that framework, I was able to categorize other models as special cases and apply variations of my models to several problems, from the appearance of extremists and the emergence of polarization to more applied problems such as the diffusion of innovations and the adoption of leisure-related exercise practices.</p> <p>(André is an incoming postdoc in the new InChangE initiative.)</p> | | | |
| 15.12.2021 | 12.15 | Amanda Bretman University of Leeds, UK (Host: Steve Ramm) | No fly is an island: How <i>Drosophila</i> respond to socio-sexual environments |
| <p>Summary: We all modify our behaviour in different social situations to adapt, fit in or to become more competitive. Fruit flies also have complex social lives, aggregating independently of any resources, engaging in social learning, forming social networks and having a genetic propensity for different types of social environments. Using <i>Drosophila melanogaster</i> fruit flies as a model, we can investigate both the fitness consequences of changes of social environment and the mechanisms by which individuals can respond to such changes.</p> <p>One aspect of the social environment that has a particular impact on males is how much mating competition (both before and after mating) they encounter. Theory predicts that if males can mate more than once they need to trade-off current and future mating opportunities, hence they should modify their mating effort at a particular mating depending on the amount of competition they face. Males of many species use plastic strategies to cope with this uncertainty, taking cues from the presence of other males or the mating status of females, and making adjustments to behaviour and ejaculate content accordingly. In <i>D. melanogaster</i>, after being exposed to a potential competitor, males mate for longer and transfer a higher quality ejaculate. This has fitness benefits, at least in the short term, but is costly, a strong selective pressure for mechanisms that allow males to make the right decisions. By combining behavioural and life history data with transgenics, transcriptomics and epigenetics, we can investigate how such responses are coordinated and regulated, an important step in understanding how sophisticated, flexible social behaviours evolve.</p> | | | |
| 12.01.2022 | 12.15 | (Hosts: Tim Schmolli) | |
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| 19.01.2022 | 12.15 | Stephanie Kalberer, Frankfurt Zoological Society (Host: Nayden Chakarov) |
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| 26.01.2022 | 12.15 | (Host: Irene Godoy / Peter Korsten) |
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| 02.02.2022 | 12.15 | (Host: Oliver Krüger) |
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All interested are welcome!

Questions or comments?

e-mails: isabel.damas@uni-bielefeld.de / alfredo.sanchez-tojar@uni-bielefeld.de