ZOOlogy 2025 keynote summaries

Dr. Emily Burdfield-Steel

Signalling across species

Species communication can act both within and between species. Aposematism (the combination of a conspicuous “warning” signal with a secondary defence) is intended to communicate to potential predators that a potential prey is unprofitable. However, the likelihood that such signals will effectively deter a predator depend both on the predator's knowledge of the signal, and on its state. Models built to predict human consumer behaviour can be applied to predators to better understand how they make decisions when faced with aposematic prey. We can then apply this perspective to better understand the finding that the benefit of aposematic signalling can vary greatly across habitats, both at a global scale – and also at a more local scale – for example when comparing rural and urbanised areas within the Netherlands.

Dr. Evy van Berlo

Innovations for zoo research: Opening a window into primates' minds through novel digital tools

Understanding how primates perceive and interact with their environment is critical not only for addressing fundamental questions in cognition and behaviour but also for improving welfare, enrichment, and education in zoos. The recent emergence of touchscreen-based virtual environments (VEs) allows for the design of non-invasive, interactive tasks that provide unique insights into primates’ preferences, learning processes, and cognitive strategies, which are otherwise difficult to study in the wild. In this talk, I present innovative methods that use serious games and VEs to study primate decision-making under controlled yet engaging conditions. I will discuss the available tools, their implementation in research, and practical considerations for integrating VEs into enrichment programs. Using examples from my work with chimpanzees (Pan troglodytes) at ARTIS Royal Zoo Amsterdam, I will show how virtual tasks can be used to study cognitive processes such as discriminating virtual quantities of food, navigating a virtual forest, and locating food patches with the help of virtual agents. Together, these approaches illustrate how interactive digital methods can advance comparative cognition research and provide a framework for investigating their potential welfare benefits in zoo-housed primates.

Dr. Lucy Bates

Elephant cognition and the impacts of social disruption for conservation

In this talk, I'll present an overview of what we know (so far) about the intelligence of elephants, based on studies in both wild and captive settings. We have learnt that elephants have extraordinary knowledge about their family and wider social network, and also that they are acutely aware of their environment and the threats within it – whether those threats are from predators such as lions, or from us humans. One of the most striking things we've learnt is how important elders are in elephant society – for providing knowledge and leadership to the rest of their family. Whilst we still have a lot to learn about this, I'll argue that this apparent reliance on elders has important consequences for conservation and management: losing knowledgeable individuals risks severely disrupting elephant society, which could have long-term implications for their continued survival.