NVG NEWSLETTER 34.1

September 2024

Foreword

By Kat Bebbington

Over the summer I came across a news article about 'self-medicating' chimps. A team led by researchers in Oxford had used behavioural observations of foraging behaviour by sick and injured chimpanzees to identify plants with medicinal properties – it turned out that virtually all the plant species sick chimps sought out were either antibacterial or anti-inflammatory. Some cursory googling has doubled the length of my mental list of self-medicating great apes; gorillas and orangutans have been spotted using medicinal plants as food and to cover open wounds, respectively. This sort of stuff makes the news for obvious reasons – public fascination with our hominid siblings runs deep. But between the lines of the 'they're just like us' sentiment, I would argue there's a very powerful message in these news stories about the importance of our field. Under the dual threats of emerging zoonotic diseases and decreased effectiveness of antibiotic medicines, the hunt for plant metabolites that can be used to synthesise new drugs has put natural environments in the spotlight. Rather than having to trawl through countless acres of vegetation, our primate relatives can apparently help us to target our efforts. Is it a huge revelation that other great apes know how to heal themselves using chemicals in their environment? From an evolutionary perspective, probably not. But what about the fact that the study of animal behaviour can lead to discoveries with potentially world-changing impacts for human health and epidemiology? The papers behind these news articles about 'apes that are just like us' involve an army of scientists with years of training in creating and using ethograms, conducting behavioural assays, performing fieldwork, not to mention their cumulative in-depth knowledge of their study species, social systems, habitat preferences, movement ecology…

Fundamental scientists are not the popular kids at the party of public or political favour. But in a world that seems to always demand instant gratification for every single investment, let these self-medicating simians be the reminder that we all occasionally need: the study of behavioural biology is timely, relevant and conductive towards creating a better quality of life for people and animals alike.

On the note of celebrating the value of our field, this newsletter serves two purposes. Firstly, to publicise our upcoming yearly conference in Egmond aan Zee – see below for more information about the great line up of invited speakers! Secondly, to get excited about some of the excellent work young behavioural biologists have been up to over the last few years. Read on to find out what the almost- or recently-promoted PhD student members of the Society want you to know about the contents of their newly-minted theses.

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NVG annual meeting 2024

Save the date: 27-29th November, Hotel Zuiderduin, Egmond aan Zee

Baerends & Dobberke lectures & key-note speakers confirmed

We are very happy to announce the Baerends and Dobberke lectures and key-note speakers for the NVG meeting. Further details on the programme and registration will follow later this month – keep an eye on our social media (twitter, Linkedin) and website!

Baerends Lecture: Prof. Andy Radford

Andy Radford is a behavioural ecologist at the University of Bristol, UK. Andy has two main research interests. One is the conflicts and collaborations that arise within and between groups, and how vocal communication is used to mediate these social interactions. For these questions, he mainly works on a variety of wild bird populations, dwarf mongooses and meerkats in South Africa (he ran the long-term Dwarf Mongoose Research Project for 13 years) and a captive population of cichlid fish. Andy's second line of research concerns the impact and mitigation of human activities on wildlife. Here, a particular focus has been on marine noise pollution, documenting effects on the behaviour, physiology, development as well as testing potential management solutions. Beyond research, Andy is an award-winning lecturer and supervisor, and is passionate about public engagement.

Dobberke Lecture: Prof. Rose Thorogood

Rose Thorogood is a behavioural ecologist at the University of Helsinki, Finland. With her research Rose seeks to understand why and when animals use information from personal experience versus information they have gathered by observing the actions of others, or if these sources of information are in fact combined. The way an individual uses information is actually not only relevant for the individual itself, but it may also have implications for others in their community. Individuals could benefit from social information, as knowledge comes from a wider network of individuals. Yet, if information is gathered or passed on with error, this could have negative consequences as well. With her studies in captivity and in the wild, Rose ultimately aims at investigating how information use might affect evolutionary outcomes. She studies this in brood parasites (such as cuckoos), in predator-prey interactions (using great tits as model predators), and in a conservation context, as the ways how animals acquire and use information could influence their abilities to adapt.

Key-note speakers

Karline Janmaat is a **cognitive behavioural ecologist** and is based at the Institute for Biodiversity and Ecosystem Dynamics (IBED) at the University of Amsterdam and she holds a complementary position at Artis and Leiden University. Karline's main research goal is to understand the evolutionary function and diversity of cognition among individual animals and primates in particular. She uses a combination of detailed individual-based observations, longitudinal data, as well as state of the art modelling techniques.

Buddhamas Pralle Kriengwatana works at the Department of Biosystems, at KU Leuven where she works at the intersections between behavioural ecology, animal welfare, and cognitive sciences. She is particularly interested in bioacoustics and animal acoustic management, with the aim of understanding and improving emotional states, health and behaviour of animal in farming environments.

Thomas Blankers was recently appointed at the Institute for Biodiversity and Ecosystem Dynamics (IBED) at the University of Amsterdam. Thomas studies speciation and evolutionary change by integrating insights at the level of genes, organisms, populations and communities. To achieve this he combines population genetics, experimental evolution, and behavioural experiments in nematodes, moths and crickets.

PhD theses in behavioural biology

Several young NVG members have successfully completed their PhD research in 2024. In celebration of some of the excellent work produced by young scientists in the Society, we are very proud to present the following thesis abstracts:

Jacob R. L. Gismann, Rijksuniversiteit Groningen

The Eco-Evo-Devo of Stickleback Personalities

The term 'animal personality' refers to the phenomenon that in virtually all animal species individuals differ systematically and consistently in their behaviours. These differences can have important eco-evolutionary implications. In my PhD project, I studied personality variation in three-spined sticklebacks from an integrative developmental, ecological, and evolutionary perspective. As controlled field experiments in aquatic environments are difficult and behaviour under lab conditions often lacks ecological validity, we developed a seminatural experimental mesocosm system where large groups of sticklebacks could be followed individually over extended periods of time.

In a number of experiments, we investigated how social and ecological conditions can shape behaviour over different time scales and how personality differences in turn can affect ecological processes. We showed that a brief history of isolation (~60 years) was sufficient to induce divergence in movement behaviour between two stickleback populations, and that individuals' behaviour can be affected by the composition of their social group, but to a lesser degree than often concluded from the lab. We also investigated the consequences of personality variation for dispersal and found that certain personality types may facilitate movement and establishment in novel environments. Furthermore, we found that social environmental conditions experienced early in life can affect social associations later in life.

Judith A.H. Smit, Vrije Universiteit Amsterdam
From the rainforest to the concrete jungle: On the causes and consequences of altered sexual communication in urban túngara frogs
Humans are rapidly changing the planet, including via urbanisation, thereby posing challenges for populations to persist. Urban túngara frogs (*Engystomops pustulosus*) produce more conspicuous mating calls compared to their forest counterparts, presumably an adaptive response to lower predation pressure. While such population differences have been reported across taxa, we generally lack knowledge on underlying mechanisms and fitness consequences. The aim of my thesis was therefore to assess the causes and consequences of altered sexual signalling in urban túngara frog populations. By exposing frogs to urban and forest conditions in the lab, I discovered that light and noise pollution change calling behaviour and associated hormone levels, similar to patterns found in urban areas. Phenotypic differences between urban and forest frogs, however, remained after some days in the lab. Therefore, I conducted a common garden experiment standardising the developmental environment. This experiment showed heritable differences in behaviour and body size between urban and forest populations, indicating that selection could act upon these traits. Last, I found that fitness consequences of rival interactions and mate choice under urban conditions differed between urban and forest populations. Taken together, I suggest that sexual communication could have the potential to adaptively evolve in response to urbanization.

Tom Roth, Universiteit Utrecht
Tinder for orang-utans: comparing sexually selective cognition among Bornean orang-utans (Pongo pygmaeus) and humans (Homo sapiens)
Cognitive processes play an important role in human mate choice. However, far less is known about this topic in non-human animals. In this thesis, I take a comparative approach to sexually selective cognition by studying humans (*Homo sapiens*) and Bornean orang-utans (*Pongo pygmaeus*). I start by reviewing the literature on sexually selective cognition. Hereafter, I show that visual, but not auditory or olfactory attractiveness, plays a major role in initial human mate choice. Furthermore, I show that attractiveness has a profound influence on visual attention in humans, and that attentional biases towards attractive conspecifics may be associated with mate choice. I explore the same topic in Bornean orang-utans by presenting them with stimuli of fully developed males or males experiencing arrested development. The results of these studies suggest that orang-utans preferentially attend to fully developed males, but only in the eye-tracking task and not in touchscreen tasks. The last chapter explores vocalisations, and suggests that orang-utan mate preferences might reflect in female vocal behaviour. Altogether, the results of this thesis suggest that humans and orang-utans show cognitive biases towards mate-relevant traits. However, better understanding of the link between such biases and actual mate choice remains of pivotal importance.

Andrew D. Cronin, Vrije Universiteit Amsterdam
Calling males and tadpole tales: Effects of urbanization across different life stages in the túngara frog
Urbanization represents a dramatic way that humans alter the environment. Species able to survive in human-dominated environments face shifts in abiotic conditions, including sensory

pollution, as well as biotic conditions, including predator-prey interactions. Although phenotypic differences between urban and forest populations are common, we are often unaware of the drivers and ultimate consequences of these differences. In my dissertation, I examined how urbanization alters sexual signaling and selection pressures on these behaviors in túngara frogs (Engystomops pustulosus). Via field experiments, I found that sensory pollutants, specifically light and noise pollution, can directly influence male signaling behavior. Additional field experiments showed that these sensory pollutants shift selection pressures on sexual signals, with light pollution reducing predation and female attraction. Like sexual behaviors, phenotypes expressed in early development can have significant fitness consequences, but the effects of urbanization on early stages are understudied. Using a reciprocal transplant experiment with urban and forest tadpoles, I found that urban populations developed faster and showed higher plasticity in behavioral responses, whereas the urban environment led to smaller tadpoles. Overall, this thesis demonstrates the striking relevance of sensory pollutants on sexual signals and their evolution, and highlights the importance of considering how urbanization effects early development.

Other news items

New textbook out now: Methods in Animal Behaviour

Marc Naguib, Gretchen F. Wagner, Lysanne Snijders & E. Tobias Kruase

Are you interested in animals and do you want to scientifically study their behaviour through observations or experiments? With this book, you will gain the necessary knowledge to conduct scientific research objectively, design experiments rigorously, and start analysing behavioural data effectively. Most importantly, you will learn to measure animal behaviour using different sampling techniques. In addition, you will read about the most used and latest technical devices that are advancing the study of animal behaviour. Thus, read this book if you want to learn how to design, conduct, analyse and write up your animal behaviour research or if you wish to refresh your knowledge and look up specific behavioural methods.

Available now to download or buy at:
Methods in Animal Behaviour | SpringerLink

In Memorandum: Prof. dr. Frans de Waal (1948 – 2024)

With great sadness we would like to acknowledge the passing of a great behavioural biologist, Frans de Waal, earlier this year. Prof. de Waal was a prominent primatologist who made great contributions to our understanding of conflict and empathy in non-human animals. The NVG was very proud to host him as Baerends plenary speaker at the 2022 and he will be greatly missed by the behavioural biology community in the Netherlands, Belgium and internationally.

You can read the obituary written by Prof. de Waal's colleagues at Utrecht University here:
In Memoriam Prof. Frans de Waal (1948 – 2024) - News - Utrecht University (uu.nl)