ETHOLOGY

2026

Program and Abstract Booklet

Grünau im Almtal

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COGCOM PhD in Cognition and Communication

Annual Meeting of the Ethologische Gesellschaft

Program overview and Talk Schedule

Wednesday, 18 February 2026

- **13:00** Registration (Pfarrhof, Grünau im Almtal)
- **14:15** Official Opening
- **14:30** Plenary Talk: *Thomas Bugnyar*
- **15:30** Coffee break
- **16:00** Talks: **Session 1 - Social and sexual behavior**
- **18:15** Conference Dinner (Schobermühle, included in registration)

Session 1 – Social and sexual behavior

Talk format: 12-minute talk + 3-minute questions (15 minutes per speaker)

Wednesday, 16:00–18:15

Speakers:

16:00	WANG, Lin "Does relationship quality underpin cooperation during breeding in raven pairs?" (University of Vienna)
16:15	SEHNER, Sandro "Domestication or socialization? Following and contact-seeking in dogs and wolves" (Domestication Lab, Konrad Lorenz Institute of Ethology, University of Veterinary Medicine Vienna)
16:30	SORG, Tamara "Prosocial behavior in cooperatively breeding common marmosets (*Callithrix jacchus*)" (German Primate Center, Georg-August-University)
16:45	FERREIRA, Oceane "Effects of the early social environment on behavioural flexibility in a cooperatively breeding cichlid fish" (University of Bern)
17:00	DAMINI, Silvia "Plasticity of antipredator behavior in common ravens (*Corvus corax*) across developmental and social context" (Department of Behavioral & Cognitive Biology, Faculty of Life Sciences, University Of Vienna)
17:15	MOSNA, Marta "The legacy of privilege: Social inheritance reverses sex differences in reproductive inequality in spotted hyenas" (Leibniz Institute for Zoo and Wildlife Research, Ngorongoro Hyena Project)
17:30	OBERWEISER, Morgan "Flexibility of male investment: Plasticity of vibrational courtship in response to nuptial gift quality in a spider" (University of Greifswald)
17:45	KNAPWERTH Laura "Springbok mantis females cannibalise males to resist mating young" (Institute of Cell and Systems Biology of Animals, Department of Biology, University of Hamburg)
18:00	COMMON Lauren "Demographic responses of Darwin's finches to ecological release" (Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna)

Thursday, 19 February 2026

- **08:00** Registration & coffee (Pfarrhof)
- **09:00** Talks
- **10:30** Coffee break
- **11:00** Talks: **Session 2 – Personality**
- **12:30** Lunch at JUFA (bus from Pfarrhof)
- **12:45** Vostandstreffen (JUFA seminar room)
- **15:00** Plenary Talk: *Rosemary Grant*
- **16:00** Coffee break & poster session
- **17:30** Talks: **Session 3 – Movement and activity**
- **19:00** Pub Quiz at Pfarrhof with snacks & cocktails
  (optional dinner reservations at Almwirtinnen or Forellenhof, at own cost)

Session 2 – Personality

Thursday, 09:00–10:30

Speakers:

09:00	KATSIS Andrew "Ontogeny of personality in hand-raised greylag geese" (**Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna**)
09:15	MAZZA Valeria "Heads and tails of individual differences: The role of environmental complexity in cognitive development of juvenile lobsters" (University of Tuscia)
09:30	PLODERER, Johannes "Personality in owls" (Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna)
09:45	POORTHUIS Lars "When the heat is on: Decreased boldness and the emergence of behavioural syndromes in response to heatwaves" (Department of Behavioural Biology, University of Münster)
10:00	VEZYRAKIS Alexandros "Does personality drive female selectivity in mate choice? Combining observational and experimental evidence on wild house mice" (University of Hildesheim)
10:15	GARCIA LOOR Jefferson "Boldness is consistent over time and across contexts in five Darwin's finch species" (Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna)

Session 3 – Movement and activity

Thursday, 11:00–12:30

Speakers:

11:00	SUMASGUTNER Petra "Urban refuge or ecological trap? Energy expenditure and space use of African crowned eagles in Durban" (**Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna;** FitzPatrick Institute of African Ornithology)
11:15	GROND Sean Gwydion "From dusk till dawn: The sun goes down, the salamanders come out?" (Bielefeld University)

11:30	EBERHART-HERTEL Luke “Crossing an ocean or staying put: Decoding the diverse migratory strategies of banded dotterels” (Max Planck Institute For Biological Intelligence)
11:45	VON MERTEN Sophie “I give up! Patterns of activity and giving-up density of small mammals in rural and urban communities” (Department of Environment and Biodiversity, University of Salzburg, Centre for Ecology, Evolution and Environmental Changes, University of Lisbon)
12:00	ARTEAGA-TORRES Josue “Behavioral variation in inter-island movements of Galápagos short-eared owls” (Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna)
12:15	HURME Edward “Multispecies bat migration” (Max Planck Institute of Animal Behavior)

Session 4 – Physiology and behaviour

Thursday, 17:30–18:45

Speakers:

17:30	VARGA Marion “Staying cool? Eye temperature as a biomarker of reactivity along coping styles in small mammals” (Department of Behavioural Biology, University of Münster)
17:45	JANI Maitry “Eight legs, eight glands, endless possibilities: Rethinking spider silk use” (Zoological Institute and Museum, University of Greifswald)
18:00	PETIT Jules “Testing the emergence of alternative coping styles under urbanisation in wood mice (*Apodemus sylvaticus*)” (Department of Behavioural Biology, University of Münster, Joint Institute for Individualisation in a Changing Environment (JICE))
18:15	ROY Tamal “Fisheries-like selection causes evolutionary changes in the brain and cognitive behaviours related to catchability in a zebrafish harvest-selection model” (Humboldt Universität zu Berlin, Leibniz Institute of Freshwater Ecology and Inland Fisheries)
18:30	RIMBACH Rebecca “Limited evidence for a pace-of-life syndrome in three sympatric small rodent species” (University of Münster)

Friday, 20 February 2026

- **08:00** Registration & coffee (Pfarrhof)
- **09:00** Talks **Session 5 – Cognition**
- **10:30** Coffee break
- **11:00** Plenary Talk: *Lars Chittka*
- **12:00** Lunch at JUFA (bus from Pfarrhof)
- **12:30 Annual General Meeting of the Society (JUFA seminar room)**
- **14:00** Talks **Session 6 – Communication**
- **15:45** Coffee break & poster session 2
- **17:30** Wrap-up
- **18:00** Conference Dinner (self-paid; reserve online): *Romantikhotel Almtalhof* (max. 80 participants) or *Almwirtinnen* (max. 40 participants)

Session 5 – Cognition

Friday, 09:00–10:30

Speakers:

09:00	POWIS Raphael “Why do only a few bird species process food by dropping it?” (University Of Auckland)
09:15	BIEBER Claudia “Effects of hibernation on memory retention in edible dormice (*Glis glis*)” (Research Institute of Wildlife Ecology, University of Veterinary Medicine Vienna)
09:30	PASUKONIS Andrius “Single-trial place learning without route information in wild rainforest frogs” (Konrad Lorenz Institute of Ethology, Institute of Biosciences, Vilnius University)
09:45	COMIN Valentin “Investigating the development of early object manipulations in crow nestlings” (Department of Behavioral and Cognitive Biology, University of Vienna, Haidlhof Research Station)
10:00	KRAUS Sabine “Innate fear of snakes in zebra finches?” (Bielefeld University)
10:15	SANTACA Maria “Perceptual illusions shape social and sexual decision-making in ring doves (*Streptopelia risoria*)” (Department of Behavioural and Cognitive Biology, University of Vienna)

Session 6 – Communication

Friday, 14:00–15:45

Speakers:

14:00	SPERFELD Saskia “To boldly call where no gerbil has called before: Influences of behavioral traits on communication in the Mongolian gerbil” (University Of Veterinary Medicine Hannover)
14:15	GIES Lena “Investigating the structure of the greylag goose vocal repertoire: what can unsupervised methods tell us?” (Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna)
14:30	YELIMLIES Alper “Function of song and call duets in the Galápagos yellow warbler” (Konrad Lorenz Research Center for Behavior and Cognition, core facility of the University of Vienna)
14:45	AKYÜREK Naz Yasmin “Heatwaves crash the conversation: How heat-stress alters cricket mating across different climatic zones” (University Of Turin)
15:00	OESTREICH William “Biophysical variation shapes oceanic predator communication” (University Of Zurich, Dept of Evolutionary Biology & Environmental Studies, University of Washington, School of Aquatic & Fishery Sciences, Monterey Bay Aquarium Research Institute)
15:15	ELEUTERI Vesta “Chimpanzee buttress drumming shows subspecies-level regional variation” (University of Vienna)
15:30	AKCAY Caglar “High-frequency vocalizations in Darwin's finches” (Anglia Ruskin University)

Saturday, 21 February 2026 – Excursion Day

- **09:00** Excursion to the historic KLF: visit the greylag geese, walk at Almsee, or alternative tours (ravens, ibises)
- **12:00–14:00** Lunch buffet at the new KLF building (included in registration)
- **14:30** Travel to Vienna (bus to Grünau station)

TALKS

High-frequency vocalizations in Darwin's finches

Çağlar Akçay[1], Jefferson Garcia Loor[2,3], Alper Yelimlieş[2,3], Sonia Kleindorfer[2,3]
[1]Anglia Ruskin University, Cambridge, United Kingdom, [2]Konrad Lorenz Research Center for Behavior and Cognition, University of Vienna, Grünau, Austria, [3]Department of Cognitive and Behavioural Biology, University of Vienna, Vienna, Austria
Signals often co-evolve with receiver perceptual capabilities in order to be effectively processed. For instance, in many songbirds, vocalizations such as song have evolved to match the best hearing frequency range in receivers, which is generally between 2–6 kHz and vocalizations with fundamental frequencies exceeding 10 kHz are exceedingly rare. Darwin's finches represent a classic case study of adaptive radiation. While the male song in Darwin's finches has been studied extensively, they also have other vocalizations, called "whistles", that are unusual in that they are very high frequency for a songbird vocalization (between 10–19 kHz). We studied intra- and inter-specific acoustic variation in whistles in five species of Darwin's finches and asked whether Darwin's finches can hear these whistles via playback experiments. We found that whistles differed significantly in their acoustic structure (such as frequency modulation and duration) between species. A random-forest classifier was able to classify whistles correctly with more than 72% overall accuracy, with most errors occurring between species that are known to hybridize (e.g. cactus and medium ground finches). In two playback experiments, we found that male cactus finches and small tree finches 1) oriented towards whistles when these were played from a speaker and 2) could discriminate between conspecific and heterospecific whistles, suggesting that finches can both hear and get at least species identity information from whistles. We discuss how whistles and the perceptual and production mechanisms underlying them may have evolved during the adaptive radiation of Darwin's finches.

Heatwaves crash the conversation: How heat-stress alters cricket mating across different climatic zones

Yasmin Naz Akyürek[1], Cristina Tuni[1], Nina Sveva Mussat Sartor[1], Tuba Rizvi[2]
[1]University Of Turin, Turin, Italy, [2]University of Bielefeld, Bielefeld, Germany
Heatwaves are becoming more intense and frequent under climate change, imposing lethal and sublethal stresses on animals and disrupting key reproductive behaviours. In insects, successful mating relies on finely-tuned communication between mating partners, particularly male acoustic signals and female receptivity, making mating behaviour highly sensitive to thermal stress. Heatwaves may be especially detrimental for short-lived ectotherms with limited opportunities to recover and reproduce. Although heatwaves were historically rare in tropical climates, they now occur regularly; however, the majority of this work has focused on insects in temperate climates, even though the insect biodiversity is highest in tropical climates. To address this gap, we examined how heatwaves affect mating behaviour in the field cricket *Gryllus bimaculatus*, an invasive species on the tropical island of La Réunion that occupies a wide elevational gradient. Crickets collected from three elevations (100 m, 1100 m, 2100 m) were exposed to a simulated heatwave (4 h at 35°C), after which we quantified mating probability, male courtship effort and song structure, and female receptivity. We found that the heatwave exposure reduced mating probability for crickets collected from low and mid elevations. In those from highest elevations, the effect of heat exposure interacted with female body mass: lighter females had lower mating probabilities after a heatwave, while bigger females had higher mating probability. Our results highlight how heatwaves influence reproductive communication in tropical insect populations and the extent to which reproductive communication can exhibit plastic responses to heatwaves, with potential consequences for population dynamics across climatic contexts.

Behavioral variation in inter-island movements of Galápagos short-eared owls

Josue Arteaga-Torres[1], Shane Sumasgutner[1,2], Johannes Ploderer[1], Paula A. Castaño[3], Vivian Huacuja Garcia[3], Jens Koblitz[4], Martin Wikelski[4], Sonia Kleindorfer[1], Petra Sumasgutner[1]
[1]University of Vienna, Grünau im Almtal, Austria, [2]University of KwaZulu Natal, Scottsville, South Africa, [3]Island Conservation, Puerto Ayora, Ecuador, [4]Max Planck Institute of Animal Behavior, Konstanz, Germany

Understanding how animals navigate heterogeneous landscapes is central to linking movement ecology with conservation practice. In island systems, spatial constraints and patchy resource distribution can amplify behavioral variation within populations. We investigate the movement strategies of Galápagos short-eared owls (*Asio flammeus galapagoensis*), an endemic predator inhabiting a mosaic of natural and human-modified habitats across the archipelago. Using GPS telemetry, we examined broad-scale space-use patterns and applied dynamic Brownian bridge movement models to quantify variation in movement extent and inter-island travel. Since January 2023, we have tagged and tracked 65 individuals, with tracking durations ranging from 4 to 233 days. Trapping occurred on three islands, and owls have been detected travelling among five main islands and more than ten islets. Preliminary analyses suggest that owls flexibly adjust their movements in response to shifting prey availability and the seasonal dynamics of dry- and wet-season resource pulses. To uncover the behavioral mechanisms underlying these patterns, we will employ hidden Markov models to classify trajectories into discrete states, such as foraging, resting, and dispersal. By examining how individuals transition between states across islands, we aim to identify when and why owls initiate inter-island movements and how environmental seasonality shapes these decisions in a fragmented seascape. This integrative approach provides new insights into the behavioral ecology of a key Galápagos predator. It highlights the importance of accounting for behavioral variation when assessing predator–prey dynamics in restoration contexts, including invasive rodent eradication.

Effects of hibernation on memory retention in edible dormice (*Glis glis*)

Claudia Bieber[1], Jan Müller[1], Tabea Lammert[1], Thomas Ruf[1]
[1]Research Institute of Wildlife Ecology, University of Veterinary Medicine Vienna, Vienna, Austria

This study investigated the effects of hibernation and its associated physiological parameters on memory retention in edible dormice (*Glis glis*). We combined detailed hibernation data retrieved from bio-loggers with behavioural assessments. Two tasks were employed: a vertical maze to test spatial memory, and a jumping stand apparatus (JSA) to test visual discrimination prior to and after hibernation. Over three years, we monitored 51 dormice to examine whether their performance in the tests was affected by hibernation. Some dormice were prevented from hibernating, enabling us to compare the effects of hibernation with the effects of time. Although performance decreased in both tasks after winter, there was no difference between hibernating and non-hibernating individuals. Additionally, we examined the influence of hibernation duration, interbout euthermia (IBE) frequency, and minimum body temperature (Tb) on task performance in a group of dormice exhibiting increased variability in their hibernation patterns (above- versus below-ground hibernacula). Higher numbers of IBEs were found to correlate with increased escape latency and decreased symbol memory. Thus, high numbers of IBEs had a negative effect on memory retention in hibernating animals. These findings suggest that hibernation itself does not significantly impair memory retention under natural conditions; however, exposure to a higher ambient temperature (Ta) and thus a higher frequency of IBEs might cause such effects. This suggests that milder winters due to climate change could impact memory retention in hibernating animals. Due to the high degree of individual variation observed, our study highlights the importance of using a sufficient number of study animals.

Investigating the development of early object manipulations in crow nestlings

Valentine Comin[1,2], Barbara C. Klump[1,2,3,4]
[1]Department of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria, [2]Haidlhof Research Station, Bad Vöslau, Austria, [3]Cognitive and Cultural Ecology Research Group, Max Planck Institute of Animal Behavior, Radolfzell am Bodensee, Germany, [4]Vienna Cognitive Science Hub, University of Vienna, Vienna, Austria
From play to tool use, object manipulation shapes how animals perceive, learn about, and engage with their environment. Although birds are renowned for their impressive object manipulation skills, most developmental studies focus on the post-fledging period. While observations during the early-life phase are challenging because nestlings spend all day in their nest, they are important as nestlings have been shown to attend to and imprint on nest features. We investigated the development of object manipulation in hooded and carrion crows until fledging (10 to 28 days old) and the impact of access to objects. Chicks were taken from wild nests at 10–15 days and hand-raised in artificial nests supplemented with nest materials (e.g., twigs, feathers). The individuals' access to objects was either ad libitum or restricted to focal observations three times a week. We measured manipulation duration and the diversity of both motor actions and object types manipulated across age. We expected older chicks to manipulate objects more, with a broader behavioural and object repertoire. We also expected ad libitum access to materials to promote earlier and more diverse manipulations. We found that manipulations began as early as 15 days old and increased with age. Older chicks displayed a broader repertoire of actions and object types. Unexpectedly, access to objects had no significant effect, suggesting that early motor development may happen independently of practice opportunities. Our findings highlight the rapid early development of motor skills in young animals and the value of investigating this early-life period.

Demographic responses of Darwin's finches to ecological release

Lauren Common[1,3], Jefferson García-Loor[1,3], Jody A. O'Connor[2], Andrew C. Katsis[1,3], Alena Hohl[1,3], Petra Sumasgutner[1,3], Sonia Kleindorfer[1,3]
[1]Konrad Lorenz Research Center, University of Vienna, Grünau Im Almtal, Australia, [2]Murray Darling Basin Authority, Adelaide, Australia, [3]Department of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria
Island restoration projects provide valuable landscape-scale experiments to study the ecological effects of invasive predator removal. On Floreana Island, the largest ecological release in Galápagos history began with the 2023 removal of invasive mammalian predators led by the Galápagos National Park. This intervention provided an unprecedented opportunity to track long-term ecological changes in the island's landbirds in response to shifting predator regimes. We analyse 15 years of demographic and reproductive data spanning 21 years (2004–2025) from four Darwin's finch species, documenting shifts in finch abundance, breeding success, parasite loads, and predator pressure. Between 2004 and 2008, low rodent and *Philornis downsi* parasitic fly larvae abundance corresponded with high finch reproductive success. From 2010 to 2020, increased rodent predation and parasite loads led to steep declines in hatching and fledging success. Following predator removal, Darwin's finch nest predation and parasite intensity dropped sharply. The critically endangered medium tree finch (*Camarhynchus pauper*) showed notable recovery, with higher pairing success and survivorship of yearling males. These early results demonstrate promising ecological recovery, with patterns differing due to impacts of parasites and remaining predators. Ongoing monitoring is essential to understand the effects of predator removal and guide continuing restoration efforts on Floreana Island.

Plasticity of antipredator behavior in common ravens (*Corvus corax*) across developmental and social context

Silvia Damini[1], Avila Bold[1], Christian Blum[1,3], Petra Sumasgutner[1,2], Thomas Bugnyar[1,2,3]
[1]Department of Behavioral & Cognitive Biology, Faculty of Life Sciences, University Of Vienna, Vienna, Austria, [2]Konrad Lorenz Research Center for Behavior and Cognition, Core Facility, Faculty of Life Sciences, University of Vienna, Grunau im Almtal, Austria, [3]Haidlhof Research Station, University of Vienna and University of Veterinary Medicine Vienna, Vienna, Austria
Effective responses to predators are critical for survival, especially when antipredator behavior varies by context and requires adaptive flexibility. In ravens, mobbing behavior is influenced by learning, social context, and early-life experiences. Yet, most research focused solely on scolding, the vocal component of mobbing, often observed in adults. What still needs to be investigated are the other predator-directed or escape behaviors, the development of antipredator behavior, and what affects it. To fill this gap of knowledge, we performed two studies. In the first experiment, we investigated the ontogeny of antipredator behaviour in captive raven families by exposing 12 family groups to a potentially dangerous human predator at two developmental stages: when the offspring had just fledged and when they were nearing independence. In the second experiment, we investigated the effect of social context on young ravens' antipredator behavior, by exposing them to a potentially dangerous heterospecific (dog), first in the family group and then in a different social group of only peers. In the first experiment, we found that parents diminish their antipredator behavior as the offspring near independence, while the offspring ignore the dangerous heterospecific less as they grow older. In the second experiment, we found that young ravens investigate the predator less in the peer group as compared to the family group. The findings of this study provide insights into the developmental trajectory of antipredator behavior in ravens and explore the role of age-related vulnerability, social cues from parents, and social context in shaping effective responses to threats.

Crossing an ocean or staying put: decoding the diverse migratory strategies of banded dotterels

Luke Eberhart-Hertel[1], Bart Kempenaers[1]
[1]Max Planck Institute For Biological Intelligence, Seewiesen, Germany
Partial migration poses a central evolutionary paradox: if resident conspecifics are physiologically capable of over-wintering locally, why do some individuals accept the risk of migrating to unfamiliar destinations? The banded dotterel breeds exclusively in New Zealand, spanning environmental extremes from alpine tundra to coastal beaches. In winter, some individuals remain on breeding territories, while others migrate either within New Zealand or due west across the Tasman Sea to Australia—a ~3,000 km oceanic journey and one of the longest trans-oceanic migrations recorded for an austral-breeding landbird. My talk explores the drivers and fitness consequences of extraordinary individual variation in seasonal movement strategies. What are the key trade-offs of migration versus residency? Are strategies fixed or flexibly expressed within individuals? And how have both ancient and contemporary climate oscillations, including anthropogenic change, shaped migrant-resident demographic dynamics? By integrating animal tracking technology, genomics, and field observation, I aim to illuminate not just why individuals migrate, but when it pays to stay.

Chimpanzee buttress drumming shows subspecies-level regional variation

Vesta Eleuteri[1]
[1]University Of Vienna, Vienna, Austria

Chimpanzees drum by hitting the buttress roots of trees with their hands and feet, producing a long-distance signal that can be heard over a kilometre. Buttress drumming is often combined with pant hoots, the species-typical long-distance vocalisation. Previous studies have shown that, during traveling and resting contexts, chimpanzees drum with individually distinctive styles that can aid fission-fusion dynamics. However, whether drumming styles also varied regionally remained unclear. Here, we investigated regional variation in drumming rhythm and in how drumming is integrated into pant-hoots by exploring 11 chimpanzee communities across six populations of two subspecies in East and West Africa. We found subspecies-level regional variation, showing that western chimpanzees drum with regular rhythm, while eastern chimpanzees drum by alternating shorter and longer intervals between drumming hits. Western chimpanzees also produce more hits, drum at a faster tempo, and integrate drumming earlier into pant-hoots. Our findings suggests stable subspecies differences across diverse ecologies in chimpanzee buttress drumming and enhance our understanding of percussive behaviour in non-human primate long-distance communication.

Effects of the early social environment on behavioural flexibility in a cooperatively breeding cichlid fish

Oceane Ferreira[1], Birgit Szabo[2], Barbara Taborsky[1]
[1]University of Bern, Bern, Switzerland, [2]University of Ghent, Ghent, Belgium

The ability to adapt behaviour flexibly to the current situation, also referred to as 'behavioural flexibility', is crucial for survival and reproductive success. The early social environment is an important driver of variation in cognitive abilities, including behavioural flexibility. However, few studies have investigated this relationship across contexts. Likewise, few studies have investigated the development of modular versus general cognition (i.e. inconsistent versus consistent performance across social and nonsocial contexts) in social species. Here, we (1) investigated the influence of the early social environment (rearing group size) on behavioural flexibility in adult helpers of a cooperatively breeding cichlid fish (*Neolamprologus pulcher*) and (2) assessed the presence of general or modular cognition irrespective of early experience by using three nonsocial flexibility tests (innovation test, reversal learning, set shifting) and two social flexibility tests (hierarchy test, integration test). Overall, early social experience influenced social but not nonsocial flexibility. The early social environment did not affect nonsocial flexibility, although fish were able to adjust behaviour flexibly in both social and nonsocial contexts. For all fish, performances were not correlated across tests, implying the existence of domain-specific cognition. Nevertheless, results of a principal component analysis suggest an association between performances in social and nonsocial contexts, which may hint at domain-general cognition, albeit with the caveat that not all tests were associated with the same principal component. Future research should develop approaches that can clearly distinguish between general and modular cognition, and that compare species with different environmental predictability.

Boldness is consistent over time and across contexts in five Darwin's finch species

Jefferson García-Loor[1,2], Lauren K. Common[1,2], Andrew C. Katsis[1,2], Sonia Kleindorfer[1,2]
[1]Department of Behavioral and Cognitive Biology, University of Vienna, Vienna, Austria, [2]Konrad Lorenz Research Center for Behavior and Cognition, University of Vienna, Grünau im Almtal, Austria
Boldness is an animal's response to a non-novel risky situation, such as encountering a predator. To qualify as a personality trait, individual differences in boldness must be consistent over time and across contexts. A common measure of boldness is flight initiation distance (FID), a proxy for antipredator behaviour. Urban animals typically show shorter FIDs than non-urban animals, reflecting either plasticity to human disturbance or selection for bolder phenotypes. We assessed boldness in five species of Darwin's finches on Floreana Island, Galápagos, using three behavioural assays in two contexts: (1) two rapid-assessment handling assays during short-term captivity (554 back tests and processing tests); and (2) a field-based human-approach assay quantifying FID (606 trials, including 77 colour-banded birds that also underwent handling assays). We estimated the consistency of boldness scores within and across assay types and compared boldness between sites that differed in human activity. All three measures of boldness were highly repeatable (back-test R = 0.89, processing test R = 0.81, FID R = 0.49), indicating that boldness is a stable personality trait in these species. Individuals that struggled more during handling also allowed closer human approaches (back test r = –0.49, processing test r = –0.46), confirming consistency across contexts. As predicted, birds from sites with higher human activity were bolder, exhibiting shorter FIDs. Overall, our results demonstrate that boldness is a measurable and ecologically relevant trait in Darwin's finches and suggest that anthropogenic environments may shape behavioural variation in ways that could drive long-term evolutionary change.

Investigating the structure of the greylag goose vocal repertoire: what can unsupervised methods tell us?

Lena Gies[1,2], Jonas Lesigang[1,2], Tecumseh Fitch[1], Sonia Kleindorfer[1,2]
[1]University Of Vienna, Vienna, Austria, [2]Konrad Lorenz Research Center for Behaviour and Cognition, Grünau im Almtal, Austria
Defining a comprehensive signal repertoire is an important step to understanding a species' vocal communication system. We investigated the vocal repertoire of a well-investigated model species in ethology: the greylag goose (*Anser anser*). We applied unsupervised machine learning algorithms to a large dataset of vocalisations from a free-living population of greylag geese to investigate the acoustic structure of this species' vocal signals. We extracted four types of data representations, which were projected into two, 20, and 100 dimensions using the UMAP algorithm, and then grouped using two commonly-used clustering methods. Additionally, we successfully applied a graph-based clustering approach — Leiden community detection — which, to our knowledge, has not previously been employed in bioacoustics. Our analyses revealed a partly graded vocal repertoire that broadly matched early descriptions of the greylag goose call repertoire. Audio feature vectors, rather than more commonly used spectrographic representations, revealed clusters most congruent with human labels and offered the most comprehensive visualisation of the acoustic space. Leiden community detection performed comparably to established approaches but matched the number of human-defined classes closest. These findings highlight the impact of data representation on repertoire analysis and provide the first objective, quantitative characterisation of the greylag goose vocal repertoire.

From dusk till dawn: The sun goes down, the salamanders come out?

Sean Gwydion Grond[1], Max Mühlenhaupt[1], Pia Deimann[1], Cemil Durgut[1], Saskia Ebert[1], Laurence Jeanjean[1], David Kupitz[1], Jonas Loheide[1], Bulisa Masiga[1], Sina Mews[1], Samira Oelrichs[1], Manuela Schmidt[1], Barbara A. Caspers[1]
[1]Bielefeld University, Bielefeld, Germany
Behavioural studies show that amphibians express individualised behavioural differences, just as many other classes in the animal kingdom. Variation in activity is considered to be important for pillars of animal behaviour such as foraging, anti-predator behaviour, or intra-specific interactions. However, variation in activity patterns of amphibians remained less investigated so far. This study looked closer at the activity of a strictly nocturnal European fire salamander population. Establishing a standardised and non-invasive methodology, we recorded fire salamander abundance at a high temporal resolution and on an individual level. Individuals were distinguished by utilising A.I.-based image identification. We applied statistical methods like capture-mark-recapture models, Markov chains, and spatial analyses to gain insights into the dimensions of behavioural heterogeneity. Individuals differed starkly in timing and duration of their activity, as well as in sedentariness and strength of numbers. While this could partly be explained by differences between females and males and between seasons, the findings suggest that individual dissimilarities play a crucial role, too. A notable result was that one third of individuals were mostly active in the second half of the night. Commonly, observations of nocturnal species, put their focus mainly on early night phases, due to the diurnal daily rhythm of us humans. Consequently, late phenotypes remain unconsidered. Hence, our findings stress the importance of observing the entirety of a night. This study contributed to the growing field of research on individualised behavioural differences in amphibians, which has high relevance for fundamental ethology and for conservation efforts.

Multispecies bat migration

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Migration is a response to seasonal changes in the environment. Bat migration, a relatively common behavior across European species, is a poorly described phenomenon for most species. Recent developments in miniature remote download biologgers is leading to a new age in bat migration research. Communicating through the Sigfox network, ICARUS nanofox tags can transmit sensor data and receive positional estimates across Europe. Recent work found that common noctule spring migration is linked to specific weather conditions, with bats often timing their migrations to surf fronts ahead of incoming storms. Tracking three bat species (*Nyctalus lasiopterus*, *Nyctalus noctula*, and *Nyctalus leisleri*) simultaneously during migration, we find that migration activity is concentrated on specific nights that overlap between species. We explore the environmental conditions associated with these high-activity nights. Understanding common drivers of bat migration is crucial for developing new curtailment strategies for wind energy and reducing collisions with migrating bats.

Eight legs, eight glands, endless possibilities: Rethinking spider silk use

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Spiders use silk in a wide range of behaviours, including prey capture, web construction, reproduction, locomotion, and dispersal. The silk glands differ across various spider lineages in terms of morphology, number, and silk usage patterns. Most species have several silk glands (from 2 to 8 distinct kinds), yet our understanding of how multiple silk glands coordinate during specific behaviours remains limited. To address this gap, our research addresses two key questions: 1) How a single species utilizes its complete multi-silk gland repertoire across various behaviours, and 2) whether patterns of silk gland use are conserved or diverge across spider lineages performing the same behaviour. To investigate this, we combined high-speed videography, laboratory and field behavioural observations, snap-freezing of spiders mid-behaviour, diverse microscopy techniques, and comparative phylogenetic analysis. Our results demonstrate that individual species often deploy multiple silk glands simultaneously during different behaviours, indicating a complex and heterogeneous use of the silk system. Comparative analysis across lineages reveals that, despite certain behaviours evolving convergently multiple times across the spider phylogeny, silk gland usage remains remarkably consistent. Glands typically associated with different behavioural contexts like locomotion, web building, and dispersal, are frequently deployed together. These findings challenge the prevailing "one gland, one behaviour" view of silk biology, suggesting that multi-gland deployment is a widespread strategy. This study provides a new perspective on the relationship between silk gland evolution and behavioural diversification in spiders.

Ontogeny of personality in hand-raised greylag geese

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Consistent individual differences in behaviour, known as personality, can influence a range of fitness outcomes, including survival, pairing success, and reproductive success. However, most personality studies to date have focused only on adult behaviour and so we know surprisingly little about the ontogeny of these behavioural differences. In this study, we systematically measured five major personality traits (boldness, exploration, activity, aggressiveness, and sociability) in 35 hand-raised greylag geese (*Anser anser*), using a combination of observational and experimental approaches. Behavioural measurements began when subjects were one week old and continued across their first two years of development, allowing us to assess the consistency of personality traits through to adulthood. We found that all five personality traits were significantly repeatable at the gosling stage (age 1–4 months), demonstrating that personality differences are present even very early in life. However, the consistency of these differences across ontogenetic stages differed among the five personality traits, which suggests that some behavioural axes are more sensitive than others to shifts in environmental or social context. Future work will investigate how early-life personality differences influence important social behaviours, including social network position and dominance, as well as fitness metrics such as survival and reproductive success.

Springbok mantis females cannibalise males to resist mating young

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Sexual conflict over the timing of mating is expected to drive the evolution of resistance traits in females that help them to avoid costly mating at suboptimal times. Sexual cannibalism—the killing and consuming of potential or realised mating partners—could function as such a trait if it helps females shift the timing of mating toward their sex-specific optimum. Here, we tested this hypothesis using the sexually cannibalistic praying mantis *Miomantis caffra*—a species where young females frequently cannibalise males without mating. We experimentally manipulated female age at mating and found that females enhanced their reproductive success and survival by mating at an older age. However, mating later did not align with male interests, since males attempted to mate with females of all ages, probably to avoid mating opportunity costs. We also found that young females were more aggressive towards males and delayed the timing of mating by cannibalising several males. Together, these results reveal that *M. caffra* experiences sexual conflict over the timing of mating, with males preferring to mate as soon as possible and females preferring to mate later. Our results further suggest that sexual cannibalism in *M. caffra* has evolved as a consequence of this conflict, with females cannibalising males to avoid mating at a suboptimal young age. Our findings provide novel insights into how sexual cannibalism can function as a female resistance trait.

Innate fear of snakes in zebra finches?

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Rapid responses to threats are crucial for survival, raising an important question about animals' response to stimuli: when should they learn what is a threat to them, and when should they evolve to innately recognise a threat at first sight? Studies suggest that genes encode detailed visual templates based on features like colour, pattern, and shape. Indeed, the need for a rapid innate response to a threat may come with costs for many false alarms. High specificity of the visual template may, therefore, be favoured. We investigated the ability of zebra finches – a prey species for snakes in Australia – to innately recognise a specific, complex visual threat. We used wild-type birds derived from first-generation descendants of wild-caught birds. These birds were raised in captivity without snake exposure, allowing us to test innate recognition. We presented them with different snake stimuli and various controls, measuring how long they took to approach food after stimulus placement. We found that the type of stimulus significantly influenced the likelihood that naïve zebra finches would eat. Specifically, the birds were least likely to eat in the presence of a small black snake with brown bands or a large uniform black snake – colours predominant in Australian snakes. Further research is needed to determine the ecological specificity of their visual recognition and whether it is broadly shape-based or relies on specific visual cues. Nonetheless, these initial results provide a foundation for understanding the evolutionary, behavioural, neurological, and genetic mechanisms underlying snake recognition in birds.

Heads and tails of individual differences: The role of environmental complexity in cognitive development of juvenile lobsters

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Experiencing environmental complexity during early life is fundamental for vertebrates' neural development, with profound and often irreversible effects on later behavioural and cognitive outcomes. However, studies on the early stages of invertebrate development are scanty. European lobsters (*Homarus gammarus*) are routinely reared in captivity for release in the context of restocking and stock-enhancement actions. The impoverished captive conditions they experience may have long-term effects on their development, ultimately impairing their performance after release. Here we tested the effects of environmental complexity during early life on learning performance (N = 38) and personality (N = 132) in juvenile lobsters. Lobsters experienced a full environmental enrichment (with both substrate and shelter), a partial environmental enrichment (either substrate or shelter), or bare standard conditions as a control. We assessed their exploration and activity patterns and quantified their learning performance and the possible presence of a speed-accuracy/flexibility trade-off. We found that juvenile lobsters raised in enriched environments were more active compared to lobsters raised in control conditions. They were also faster both in taking decisions and in correcting erroneous ones compared to controls, while decision speed did not predict the accuracy of the decision outcome. Finally, while all lobsters reached the learning criterion, the effects of environmental treatment on learning speed were only detectable in individuals that developed a wild-type morphological phenotype (i.e. asymmetrical claws). Overall, our results indicate a key role of early-life experience of environmental complexity in the development of behavioural and cognitive traits that can drive success in the wild.

The legacy of privilege: Social inheritance reverses sex differences in reproductive inequality in spotted hyenas

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Inequalities in reproductive success among females and males shape natural and sexual selection, as well as genetic diversity. A key mechanism influencing reproductive inequality in humans and other animals is the social inheritance of privilege. Using a 29-year dataset spanning eight generations of spotted hyenas (*Crocuta crocuta*), a species in which social status is maternally inherited, we show that inheritance of privilege associated with high status not only shapes reproductive inequality but can reverse its typical sex bias. As in most polygynous species, reproductive inequality was lower among females than males when estimated on an annual basis. When measured across multiple generations, inequality increased in both sexes but disproportionately so among females. This effect was strong enough to reverse the sex bias in favor of females after a single generation. After only a few generations, most individuals thus descended from female ancestors that held the top-ranking position in their clan. Our study demonstrates the strong impact of the social inheritance of privilege on reproductive inequality by shaping differences between the sexes. We outline how reproductive inequality influences female-female and male-male competition and genetic evolution.

Flexibility of male investment: Plasticity of vibrational courtship in response to nuptial gift quality in a spider

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In nearly every animal system, courtship is a multimodal process involving several signals of several modalities. For example, male nursery web spiders (*Pisaura mirabilis*) perform substrate-borne vibrations while also offering a nuptial gift as they court females. The nuptial gift, a prey item wrapped in silk, is a considerable investment for the male, and vibration is also likely an energetically costly signal. The question then arises as to how male spiders determine their investment into these two expensive mate attraction tactics, which occur simultaneously during courtship. We conducted behavioral experiments where male *P. mirabilis* were provided with nuptial gifts in three treatments—no gift, medium gift, large gift—and recorded their courtship vibrations in repeated trials (once with each nuptial gift treatment). We hypothesized that males with more costly (i.e., larger) gifts would also perform more costly and attractive vibrational signals. We found that males do signal for longer when they have a nuptial gift vs. when they don't, but the duration of signaling is not plastic in response to the weight of the gift. Only pulse interval consistency changes based on gift quality, with intervals becoming more consistent (putatively more attractive) as gifts increase in weight. Our results suggest that male spiders do adjust their investment in vibrational courtship signals at a broad level, though the plasticity is slight, and it seems likely that investment in the nuptial gift ultimately takes precedence.

Biophysical variation shapes oceanic predator communication

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Social information is predicted to be most valuable when pursuing patchy, ephemeral resources. Such resource dynamics emerge from biophysical coupling in the pelagic ocean, suggesting links from physical forcing to resource distribution to consumers' production of social information. We tested these hypothesized links using integrated observations of blue whale communication, distribution of their krill prey, and physical oceanographic forcing in their foraging habitat. Physical forcing modulated both prey availability and predator communication across nested temporal scales. Interannually, stronger upwelling led to greater krill abundance and elevated production of blue whales' foraging-associated calls. At finer scale, episodic upwelling produced denser krill swarms and heightened production of foraging-associated calls. Blue whales' widely propagating calls thus function as reliable social indicators of patch quality in their vast, dynamic pelagic habitat. These findings demonstrate that biophysical coupling in the ocean shapes predator communication and provide insight into the ecological drivers of social information use.

Single-trial place learning without route information in wild rainforest frogs

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It is theorized that at least mammals and birds encode space in a cognitive map and are capable of place learning that allows them to derive, learn, and recall their location without relying on route information or repetitive trial and error. However, an ability to learn new locations in a single trial without route information has never been demonstrated in wild animals. Poison frogs are known for their complex spatial behavior, which involves shuttling tadpoles on their backs to small pools scattered in the rainforest. We combined manipulations of frogs and artificial pools with movement tracking to test the ability of the wild rainforest frog *Allobates femoralis* to learn new sites and navigate without route-based information or immediate reward. Specifically, we taught frogs the locations of artificial pools 20–40 m away from their territory in single learning trials under three different conditions that differed with respect to the availability of route information and reward (i.e., tadpole deposition). Seventeen out of 23 frogs tested learned new sites in a single trial, and with equal success between experimental conditions. Successful frogs in all three conditions moved directly and accurately to the new pool site and could re-find it with a precision of less than 2 m. We clearly demonstrate that frogs can learn new locations in a single trial without route information or immediate reward. Our results provide the first evidence of single-trial place learning without route information in a wild vertebrate, suggesting precise and flexible cognitive mapping in a wild amphibian.

Testing the emergence of alternative coping styles under urbanisation in wood mice (*Apodemus sylvaticus*)

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Human-induced rapid environmental changes like urbanisation strongly affect ecosystems and biodiversity. To cope with these challenges, organisms rely on behavioural and physiological responses to maintain homeostasis and minimise fitness loss. Both responses can integrate into among-individual correlations that form adaptive stress-coping styles (SCS). SCS are based on adaptive trade-offs where, for example, bolder or less docile, i.e. more proactive individuals, should benefit from expressing lower endocrinological responses. However, studies investigating urban-induced changes in SCS are scarce. Here, we aim to depict SCS in wood mice (*Apodemus sylvaticus*) under urbanisation. We tested phenotypic differences in boldness (N = 140), spatial exploration (N = 137), docility (N = 131), and integrated faecal corticosterone metabolite (FCM) levels (N = 71) along an urbanisation gradient in Münster, Germany. Although all traits were repeatable over time, none changed along the urbanisation gradient. We assessed behavioural and SCS syndromes between four urban and two non-urban sites. We found that shyer individuals were more docile in urban populations. However, against the coping-style hypothesis, more docile urban individuals had lower integrated FCM levels. This pattern suggests that more reactive individuals had a lower endocrinological reactivity in the urban habitat. The reversed SCS correlation in the urban populations possibly demonstrates an effect of habituation to human disturbances, reducing stress reactivity. However, the evidence for the recently advocated preactive SCS in urban populations is mixed in our system. Ecological variation among sites or contextual plasticity are likely to camouflage general SCS patterns when the functional relevance of trait combination differs.

Personality in owls

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Consistent inter-individual behavioural differences in response to the same external stimulus, also called personality, can influence animals' survival, life history and fitness. Particularly in keystone species, such as owls, small shifts in the personality demographic of a population can have downward cascade effects across trophic levels. For behavioural traits to be interpreted as personality traits, the differences between individuals need to be consistent across contexts and time. So far, research on owl personality is sparse and most studies have focused on either testing individual consistency across contexts or across time but not both aspects. The aim of this study is to validate different behavioural assays and experiments in owls as consistent markers of personality traits. We present a set of different behavioural tests across two personality traits (boldness and activity) conducted on short-eared owls both in the wild and in captivity. We tested for consistency across contexts, as well as repeatability across time. We used established methods in owl personality research, such as the response to an approaching human, as well as new assessments, such as the use of GPS and accelerometer loggers to measure activity. The insights gained from our study help us to better understand interindividual differences in the behaviour of owls and lays the groundwork for future personality research in this taxon.

When the heat is on: Decreased boldness and the emergence of behavioural syndromes in response to heatwaves

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Behavioural adjustments are among the fastest responses to human-induced rapid environmental changes. Understanding under which conditions behavioural syndromes (i.e. correlations between behaviours) emerge, and how animal personality responds to anthropogenic stressors, is crucial for predicting how animals cope with rapidly-changing environments, informing risk assessments and management strategies. Here, we tested for changes in behavioural correlations under thermal stress and assessed how boldness and activity respond to interactions between climate change and urbanisation. We collected 225 synanthropic arthropods, rough woodlice (*Porcellio scaber*), along a gradient of urbanisation in Münster, Germany. We repeatedly phenotyped boldness- and activity-related behaviour over short (10 days) and longer time periods (37 days), and exposed individuals to an experimental 6-day heatwave of 28 °C (N control = 112; N heatwave = 113). We found that (i) woodlice personality did not vary along the rural-urban gradient, and (ii) a boldness-activity syndrome emerged when individuals were kept for longer periods or were exposed to elevated temperatures, suggesting that behavioural correlations arise under certain constraints or trade-offs. Moreover, (iii) individuals exposed to elevated temperatures responded with decreased boldness, and (iv) this heatwave response was independent of the degree of urbanisation. These results suggest that ground-dwelling arthropods may be less sensitive to larger-scale environmental changes, such as urbanisation, but exhibit plastic behavioural responses to alterations in ambient temperature. The stability of microhabitat conditions might, therefore, be a key factor determining how arthropods cope with human-induced rapid environmental change.

Why do only a few bird species process food by dropping it?

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When foraging birds encounter food items protected by a tough external shell—such as nuts, mussels, or tortoises—some species drop them from a height to crack them open. This technique, which we term 'drop-processing', can also be applied to kill dangerous or wriggly prey or to fragment large pieces of food that are otherwise inedible. Despite its importance for some species, drop-processing is a phylogenetically rare and highly clustered behaviour—but why? Almost all known drop-processers belong to one of three families—Accipitridae (eagles, hawks, and vultures), Laridae (gulls), and Corvidae (crows). Within these families, half of the known drop-processers are part of the same two genera: *Corvus* and *Larus*. In contrast, other genera—such as magpies and jays—seem not to drop-process, despite regularly encountering encased food items. To begin to understand this evolutionary puzzle, we apply a recently developed phylogenetic Bayesian modelling approach to estimate the influence of candidate morphological and ecological traits—body mass, encephalisation, relative wing area, and diet breadth—on the probability that a bird species exhibits drop-processing behaviour. This statistical method, specifically designed for analysing rare behaviours, accounts for possible false negatives by using research effort—in our case, the number of papers published until a species was observed to drop-process—to estimate the probability of undetected drop-processers. Our analysis provides the first empirical insights into the evolutionary drivers explaining the clustered distribution of birds' drop-processing, and highlights avian species that are most likely to be undetected drop-processers.

Limited evidence for a pace-of-life syndrome in three sympatric small rodent species

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The pace-of-life syndrome (POLS) hypothesis predicts that life-history characteristics and suites of behavioral and physiological traits covary among individuals. Specifically, individuals adopting faster life-history strategies are expected to demonstrate elevated metabolic rates, increased risk-taking behaviors, and reduced stress responsiveness, whereas those with slower strategies show the opposite patterns. Here, we investigated covariation between resting metabolic rate (RMR), boldness (measured as latency to emerge from a dark tube), fecal corticosterone metabolites (FCMs), and scaled mass index (SMI), a proxy for body condition, in three small, free-living rodent species: wood mice (*Apodemus sylvaticus*; N = 41), yellow-necked mice (*Apodemus flavicollis*; N = 25), and bank voles (*Myodes glareolus*; N = 22). We trapped animals across seven study sites in Münster, Germany. Using a Bayesian multivariate framework, we analyzed among-individual correlations between pairs of traits. Among-individual correlations between traits were weak. Boldness was weakly positively correlated with RMR, but not with FCMs. RMR was weakly negatively correlated with FCMs, but not with SMI. Overall, the results show mixed support for the POLS hypothesis. Although theory proposes co-evolution of these traits through shared energetic and physiological constraints, the limited evidence in our system suggests that such integration may be context-dependent or obscured by contextual plasticity in natural populations.

Fisheries-like selection causes evolutionary changes in the brain and cognitive behaviours related to catchability in a zebrafish harvest-selection model

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Fish populations are exposed to various selection pressures in the wild. One of the strongest selection-inducing factors is predation. While natural predation is attributed to fish and bird predators found in the environment, human-induced predation is exerted through fishing gears that are used in various commercial and recreational fisheries. Most fishing gears harvest large-sized individuals from fish populations. Increased mortality of larger fish often fosters the evolution of fast life history emphasizing early reproduction at smaller size i.e., higher energy investment into reproduction. This could be traded-off with lowered energy investment into other energy-expensive tissues like the brain, thereby leading to reduced brain size and/or reduced neuronal numbers, and reduced cognitive abilities. We tested this using three experimental evolution-generated selection lines of zebrafish adapted to large, random, and small size-selective harvesting over five consecutive generations. Fish selected for larger size evolved larger brains with bigger cerebellum and telencephalon. Neuronal numbers increased in the telencephalon, which is the seat of learning and memory in fish. Next, we tested hook-avoidance learning and memory, hook-recognition ability, and behavioural adaptability by repeatedly subjecting individuals among the three selection lines to fishing using baited hooks. Zebrafish selected for small size were significantly less vulnerable to hooking and had stronger memory of hook-avoidance response, while zebrafish selected for large size demonstrated significant cognitive ability by learning to recognize a real hook. These results are highly relevant for fisheries management, as changed cognitive potential is likely to have impacts on fish population sustenance.

Perceptual illusions shape social and sexual decision-making in ring doves (*Streptopelia risoria*)

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Visual context can alter how animals perceive mates or competitors, yet the role of perceptual illusions in such decisions remains largely unexplored. We investigated whether the Ebbinghaus illusion influences behavioural responses to male bowing displays in ring doves. This display, typically performed during courtship, is also used in male–male aggressive interactions. Video stimuli of the same bowing male were presented using larger or smaller adjacent doves as contexts, to induce different illusory percepts, to both females and males. Females exposed to the illusory context that is expected to make the male appear larger according to the Ebbinghaus illusion performed significantly more pre-copulatory behaviours. Instead, when the Ebbinghaus illusion should make the male appear smaller, they showed more affiliative interactions, suggesting that perceived size modulates mate evaluation. Males also differentiated between illusory contexts, performing more social and display behaviours when viewing a male that should have appeared larger. By integrating animal communication research with perceptual psychology, this study reveals that naturally occurring visual illusions can bias social decision-making in both inter- and intra-sexual contexts, highlighting a novel pathway through which sensory processing may shape reproductive and competitive strategies.

Domestication or socialization? Following and contact-seeking in dogs and wolves

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Domestication has profoundly influenced dog (*Canis lupus familiaris*) behaviour and cognition, fostering capacities that support cooperative interactions with humans. Compared to wolves (*Canis lupus*), dogs are described as more attached to humans and more likely to seek human contact. However, early social experiences can strongly influence these behaviours. If social environment outweighs domestication effects, hand-reared wolves should behave similarly to hand-reared dogs, while hand-reared dogs with extensive human exposure should resemble hand-reared wolves more than free-ranging dogs. Variation in human treatment across free-ranging dog populations should likewise influence their likelihood of seeking human contact. We tested free-ranging dogs from Morocco (N = 18) and India (N = 12), as well as hand-reared dogs (N = 15) and wolves (N = 13) from the Wolf Science Center (WSC). All individuals participated in a following task across three conditions: interaction with food, interaction through petting, and a baseline condition without food or physical contact. After each interaction, the experimenter walked away, and we recorded whether subjects followed and whether they reinitiated contact. We examine behavioral differences linked to domestication and to social experience by comparing dog populations with distinct human socialization histories to wolves raised under standardized conditions at the WSC. We expect limited differences between groups in the food and baseline conditions, but stronger variation in the petting condition. Higher affiliative responses by dogs in this condition would suggest an effect of domestication, while similar responses by the WSC wolves and WSC dogs would indicate an effect of shared social exposure.

Prosocial behavior in cooperatively breeding common marmosets (*Callithrix jacchus*)

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Prosocial behaviour, meaning any behaviour intended to benefit a conspecific, has been observed in many species but its evolutionary roots are still not fully understood. It has previously been proposed that heightened social tolerance and allomaternal care may facilitate higher levels of proactive prosociality. Therefore, cooperatively breeding species, in which individuals forego their own reproduction in order to assist others in raising their offspring, are expected to demonstrate particularly high levels of proactive prosociality. In this study, we tested a group of cooperatively breeding common marmosets (*Callithrix jacchus*) in a token-based prosocial choice test (PCT). While many studies commonly present animals with two options in a PCT, we utilized a token set-up to present marmosets four possible outcomes at once, i.e., food for self, for other, for both, or for neither, in addition to three forced choice conditions, where individuals were presented with two options at once, i.e., self vs. both, self vs. other, and other vs. none. Contrary to our predictions, common marmosets showed a strong preference to deliver food only to themselves when possible. When marmosets did not have the option to obtain a personal benefit, they chose to deliver food to conspecifics; however, this behaviour persisted even in a non-social control where food was delivered not to a partner but to an empty cage. Together, our results contradict the prediction that cooperatively breeding marmosets show high levels of prosociality when tested in a PCT.

To boldly call where no gerbil has called before: Influences of behavioral traits on communication in the Mongolian gerbil

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Individual variation influences a variety of behaviors, including social interactions and communication. In Mongolian gerbils, for example, drumming behavior shows high variability between individuals, likely linked to their arousal levels. Thus, differences in acoustic signaling may reflect underlying personality traits. To investigate this, we quantified behavioral traits of 24 Mongolian gerbils (*Meriones unguiculatus*) using adapted versions of the open field, novel object, elevated plus maze, and dark-light box tests. Using AnimalTA and The Observer XT, parameters for locomotion, risk-taking, and neophobia were measured and condensed in principal component analyses to obtain boldness, exploration, and activity scores for each animal. Scores were tested for repeatability across contexts, and a range of bold and shy, as well as less or more active, gerbils were identified. To get an acoustic profile of each animal, we used two additional paradigms: When presented with a familiar olfactory cue, gerbils produced an average of six contact calls per minute, with individuals ranging between 0 and 24 calls per minute. In a predator simulation experiment, eight individuals produced drumming, while only five of them emitted alarm calls. Drumming rates varied between 0.18 and 12.83 thumps per minute. Preliminary GLMM results suggest that this strong variation in communication is influenced by an interaction between sex and boldness, potentially linked to different roles of males and females within the colony. Ongoing studies exploring acoustic behavior in encounter experiments aim to offer more insights into the adaptive value of individual variation in social contexts.

Urban refuge or ecological trap? Energy expenditure and space use of African crowned eagles in Durban

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Urban expansion is reshaping ecosystems worldwide, yet a surprising diversity of wildlife persists in cities. Among raptors, urban tolerance is typically restricted to small-bodied, generalist species, making the African crowned eagle (*Stephanoaetus coronatus*), a large, powerful forest specialist, a notable exception. Despite being considered threatened in South Africa and commonly persecuted, crowned eagles achieve higher densities within the Durban Metropolitan Open Space System (DMOSS) than in natural habitats. Durban may function as an urban refuge, offering abundant non-native eucalyptus trees for nesting and an assemblage of city-dwelling prey, including rock hyraxes, hadeda ibises, and vervet monkeys. Still, it remains unclear how these eagles navigate the complex urban-forest mosaic and where they hunt. We combined high-resolution GPS and triaxial accelerometry to quantify habitat selection and energy expenditure across urban areas. Using Resource Selection Functions and Overall Dynamic Body Acceleration as a proxy for energy expenditure, we show that crowned eagles expend substantially more energy in transformed habitats – particularly near DMOSS boundaries and roads – while forests serve as energetic refuges. Elevated energy expenditure may signal hunting activity or behavioural responses to human disturbance. To address remaining knowledge gaps, ongoing analyses track breeding pairs to characterise fine-scale hunting excursions, quantify sex-specific prey capture linked to pronounced sexual size dimorphism, and assess how pair members partition or complement hunting roles when provisioning young. These behavioural and energetic insights provide a basis for predicting the persistence of large apex predators in urbanising landscapes and for refining management strategies that support their long-term viability.

Staying cool? Eye temperature as a biomarker of reactivity along coping styles in small mammals

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Acute stress in animals leads to physiological reactions as an adaptive response to challenges, e.g. changes in body temperature and a release of glucocorticoids. The coping style hypothesis predicts that proactive individuals with more risk-taking behaviour will display a higher acute reactivity of the sympathetic autonomous system and lower hypothalamic-pituitary-adrenal reactivity compared to reactive, shyer individuals. We aimed to both validate the physiological stress response to a behavioural test and capture among-individual variation along the proactive-reactive personality continuum. With high-resolution infrared thermal imaging, we measured sympathetic reactivity as an increase in eye surface region temperature when exposing wild-caught bank voles (*Myodes glareolus*, N = 37) and common voles (*Microtus arvalis*, N = 60) in an open arena (i.e. open-field test). We combined the latency to exit the tube in a dark-light emergence test (i.e. boldness) and activity during the open-field test with measurements of faecal glucocorticoid metabolites (FCMs) after the open-field test and repeated them after a week. Active bank voles had a higher eye temperature increase, and more active, as well as bolder, individuals tended to reach their maximum eye temperature faster than less active and shyer individuals. In bank voles, there was an increase of FCMs after the open-field test compared to the control group. These findings will help to provide an ecologically validated framework for using non-invasive infrared thermography to further examine consistent among-individual differences in rapid physiological changes under stressful or risky situations.

Does personality drive female selectivity in mate choice? Combining observational and experimental evidence on wild house mice

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Personality traits such as exploration, risk-taking, and boldness constitute the first line of response to environmental challenges and are critical in shaping how individuals use space and interact with conspecifics. While it has been established that personality traits affect who and how individuals choose their mates, such effects are often species-specific, and we currently lack evidence of the ecological and evolutionary consequences of such mating decisions. To understand the impact of personality on mate-choice decisions and their ecological consequences, we combine a controlled experiment on wild house mice with long-term data from 14 populations living in semi-natural enclosures. In the controlled experiment, we conducted mate-choice tests with 61 individuals of known behavioural types. We found that explorative females were less selective of their mates, while there was no effect of exploration or risk-taking on mating assortativity. By analysing data from over 1000 females living in 14 semi-natural enclosures, we are assessing whether the mating preferences in the experiment translate to realised mating outcomes. We expect that more explorative females will be less selective and will mate with more males regardless of the males' personality, consequently showing higher rates of multiple paternity. Our approach synthesises experimental and observational evidence to clarify how personality traits affect mating decisions, a crucial social process in humans and non-human animals with important evolutionary consequences.

I give up! Patterns of activity and giving-up density of small mammals in rural and urban communities

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As urban areas expand into natural habitats, animals are increasingly affected by the drivers of urbanisation. To survive under these changing conditions, animals need to adjust their biology and behaviour. Among those that manage to adjust, some species take advantage of new resources and opportunities, while others avoid the resulting disturbances. We analysed activity patterns and feeding behaviour in urban small mammals and their rural conspecifics, combining camera trapping and giving-up density. We recorded four small mammal species and two predatory mammals, observing at least eight behaviour types. *Mus spretus* was the most frequent visitor, occurring similarly in rural and urban sites. Interestingly, this little mouse exhibited different activity patterns depending on location: urban mice had an earlier nocturnal peak activity than rural ones. We expected human activity or light pollution to drive such shifts, but the evidence points to competition avoidance in each landscape, hinting at temporal niche partitioning. In rural areas, *Mus spretus* is highly active when the larger mouse *Apodemus sylvaticus* is already reducing its activity. In urban areas, *Mus spretus* shows peak activity when the activity of the much larger rats (*Rattus* spp.) is minimal. Regarding feeding behaviour, urban animals showed lower giving-up densities than rural animals, with less food remaining in patches. This indicates a lower perception of risk or simply bolder behaviour in urban environments.

Does relationship quality underpin cooperation during breeding in raven pairs?

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Stable social relationships are crucial for cooperation in humans and non-human animals. For instance, a survey from the UK suggests that the quality of the relationship between human parents affects how much the father is involved in caring for the child. However, few studies have yet explored whether cooperation in parental care in birds is affected by relationship quality. This paper focuses on the correlation between parental care behaviour and relationship quality in captive ravens (*Corvus corax*). We observed nest boxes selected from 14 raven breeding pairs to quantify workload allocation in cooperative parental care behaviours, such as feeding chicks, brooding, cleaning nest/chicks, etc. We obtained relationship quality values from a factor analysis using social behaviours like affiliation and aggression between partners measured outside the breeding context. We finally analysed the impact of relationship quality on shared responsibility, chick rearing, or coordination behaviors among the paired individuals, testing the hypothesis that pairs with high quality relationships are better coordinated in raising offspring. Our findings will provide new insights in the study of cooperation behaviour in pair-bonded birds.

Function of song and call duets in the Galápagos yellow warbler

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In over a thousand avian species, pairs coordinate various vocalizations or sonations to duet. Songbirds may use calls (simple, unlearned vocalizations) and songs (complex and learned vocalizations) to form duets with their partners. We recently described female response-driven song duets in the Galápagos yellow warbler (*Setophaga petechia aureola*) in which females also use their "chip" calls in response to the male song to form another type of duet. While its sister species, the northern yellow warbler (*S. aestiva*), also produces these "chip" call duets, they do not have song duets. This begs the question: why did song duets evolve in the Galápagos yellow warblers? We observed 10 pairs for 17 hours, narrated the context of their behavior, and recorded their duets to understand how these duet types differ from one another. More specifically, we tested three different, but non-mutually-exclusive, hypotheses regarding the differential use of each type of duetting: 1) contact maintenance, 2) territory defense, and 3) identity signaling. We will discuss our findings in relation to the evolution of female song, communal signaling, and vocal production learning.

Eat, prey, love: Does prey availability affect female mating behavior and reproductive success in a nuptial gift-giving spider?

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In recent decades, terrestrial insect populations have experienced a global decline, resulting in cascading effects on higher trophic levels. Species that engage in nuptial gift-giving not only depend on insects for nourishment, but face direct reproductive challenges, as mating is tightly linked to prey availability. In this study, we examined the impact of prey availability on the mating behavior and reproductive success of female *Pisaura mirabilis*, a species in which males offer wrapped food items as nuptial gifts to females. We conducted an experimental assessment of five prey-abundance scenarios: no food provisioning, four fruit flies (*Drosophila hydei*), and one, two, or three house flies (*Lucilia ceasar*) per week. After two weeks of differential feeding, females exhibited significant differences in body condition. Each female was then presented with a male offering a freshly wrapped nuptial gift. The feeding regime remained the same after mating. We anticipated variations in mating probability, latency to copulation, copulation duration, and reproductive output. Although both mating probability and mating behavior remained consistent across treatments, reproductive success was markedly affected by prey availability. Females that were starved or received fruit flies failed to produce egg sacs. Conversely, with an increasing number of house flies, females oviposited faster, produced larger clutches, and had a higher number of live offspring. These findings illustrate how prey availability affects spider reproductive success and potentially contributes to long-term alterations in spider population dynamics.

Peripheral OT-like peptide concentration following intranasal OT-administration in male and female ring doves (*Streptopelia risorii*).

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It is well known that oxytocin (OT) plays a major role in regulating social and maternal behaviour in mammals. However, OT-like peptides have existed for more than 600 million years and are found across various taxa. Yet, its function and control mechanisms in non-model species are mostly unknown. Also, in few bird species, OT-like peptides appear to play a role in social behaviour. However, most studies have been conducted by intra-nasal administration of OT. The dual function and the control mechanisms of OT-like peptides within the brain and/or in the periphery are still poorly understood. The blood brain barrier is thought to limit peripheral OT-peptide from entering the brain, but this barrier can be bypassed via intranasal administration. Hence, the physiological effects of such administration on endogenous levels of OT are unclear and validation studies under controlled conditions are still scarce. Here, we investigate the time-doses response of circulating OT-like peptide following intranasal OT administration in the ring dove (*Streptopelia risoria*). The ring dove is an excellent study species, as it is socially monogamous and its social behaviour is well documented in the field of behavioural neuroendocrinology. We quantified circulating OT-like peptides at different time-points following intranasally administration of either saline or OT to female and male ring doves. Our results show sex differences in circulating OT-like peptide and in the responsiveness to OT-administration. The present work provides fundamental information on the effects of non-invasive intranasally administration of OT, which is regularly being used in behavioural studies.

Goats who stare at snakes: Do goats show an attention bias to predator stimuli?

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The assessment of affective states is central to animal welfare research. One promising cognitive approach involves examining an animal's attention to environmental stimuli. This is based on the observation that individuals in negative affective states tend to direct more attention to threatening compared to neutral or positive cues, a phenomenon known as affect-driven attention bias. As an initial step towards developing and validating an affect-driven attention bias test for goats, we previously found that photographs of snakes reliably attract goats' visual attention. To further validate the potential of snake stimuli for an affect-driven attention bias test, we investigated whether goats show an attention bias towards negative stimuli (images of snakes) when these are presented simultaneously with neutral/positive stimuli (images of conspecifics) in a looking-time paradigm. We exposed 27 goats to photographs of two snake species (viper, cobra) and two unfamiliar goats, displayed on the left and right video screens of an experimental apparatus. Each trial presented one stimulus per screen for 10 seconds in a pseudorandomised and counterbalanced order. To assess whether any potential attention bias is repeatable over time, each animal participated in two sessions (each consisting of four stimulus pairings) separated by three to four weeks. At the time of abstract submission, data analysis was still ongoing. We expect our findings to pave the way for future and innovative ways to assess affective states in small ruminants using cognitive parameters.

Behind the mirror: Factors affecting mirror inspection behaviour in greylag geese

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Mirror tests are widely used in behavioural research, but how subjects respond towards a mirror depends on species-specific cognitive processes and individual personality. "Mirror inspection" behaviours—such as looking behind the mirror—could reflect exploration, social assessment, and foraging motivation, yet we lack tests that disentangle these mechanisms in species that do not show mirror self-recognition. Here, we tested which factors best explain mirror inspection in free-ranging greylag geese (*Anser anser*). Across eight days, we presented geese with an obstacle in four conditions: mirror only, food only, mirror + food close (simulating a single food source), and mirror + food distant (simulating a double food source). For each approach, we recorded whether subjects looked behind the obstacle and quantified individual repeatability. Looking-behind behaviour occurred almost exclusively during food trials, with significantly higher likelihood in all food conditions relative to the mirror-only control. Differences among food treatments were minimal, aside from a modest increase in looking-behind when food was close to the mirror, indicating a small added effect of the mirror stimulus. Looking-behind behaviour was weakly but significantly repeatable among individuals, and younger geese were more likely to exhibit this behaviour. These findings show that geese inspect mirrors primarily when motivated by foraging, with a mirror-mediated effect that may reflect social avoidance, as younger geese preferentially "searched" behind the mirror rather than interact near food. The repeatability of this behaviour suggests that mirror inspection may covary with exploration, a possibility that remains to be tested.

Personality neither varies with urbanisation nor predicts microhabitat use in a small mammal

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Animals differ in how they use their environment according to their personality. Urbanisation alters local habitat structure and disturbance regimes, yet it remains unclear whether personality traits mediate how individuals cope with urban environments. We investigated whether boldness and docility in bank voles (*Myodes glareolus*) vary along an urbanisation gradient and predict their use of microhabitat. We live-trapped 113 voles in Münster, Germany, across seven sites (5–80% impervious surface cover) and determined microhabitat structure around traps via the surrounding vegetation cover. Using standardised in situ behavioural tests, we quantified boldness (latency to emerge from a tube) and docility (handling bag inactivity). Latency to emerge, handling bag activity, and vegetation-cover use were repeatable traits. Mixed-effects models revealed no evidence that personality covaried with urbanisation or microhabitat use. These results align with previous studies in Münster, suggesting limited behavioural differentiation between urban and rural small-mammal populations. Although the urban sites in this study were embedded in heavily-sealed landscapes, they were green refuges that may buffer against typical urban selective pressures and act as habitat islands for isolated, long-established populations. While increased boldness may facilitate dispersal into novel habitats, selection for shyer individuals during long-term persistence may result in comparable boldness across the urbanisation gradient. Effects of personality on habitat use may manifest through spatial or temporal movement patterns, not reflected in our measures. Overall, our results suggest that personality–habitat relationships in bank voles may be context-dependent and weak in ecologically buffered urban environments.

Fat fish keep cool: Stress recovery and behavioral flexibility varies with nutrition

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Organisms must adapt to changing environments, and behavioural flexibility plays an important role for individual survival. Stress resilience influences flexibility, as short-term stress may activate cognitive function, while prolonged stress may impair attention and memory. The concept of allostatic load suggests an additional effect of overnutrition, which counteracts with stress recovery and, therefore, potentially reduces flexibility under prolonged stress. We manipulated body condition in a social cichlid (*Neolamprologus pulcher*) and exposed individuals to occasional or frequent predator presentations. We then assessed recovery from a novel stressor and behavioural flexibility in reversal learning tests. Fish in the high nutrition group had higher body mass than in the low nutrition group, yet they were not overnourished. Well-fed fish that were exposed to frequent predators recovered more quickly from stress and exhibited enhanced flexibility. This was not observed in lean fish or those exposed to predators occasionally. We show that stress recovery and behavioural flexibility varied with nutritional state. Stress resilience improves behavioural flexibility, and both are energetically costly. Thus, energy reserves buffer the costs of coping with repeated stressors, while a reduced diet hinders physiological and behavioural adaptation to environmental change.

The social microbiome: Age, pair bonds, and stress physiology shape gut microbial communities in greylag geese

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Social interactions can shape gut microbiome composition through behavioural microbial exchange and modulation of host physiology, yet the relative roles of life-history, environmental, and social factors remain poorly understood in long-lived, free-flying animals. This gap limits our understanding of how social bonds influence health and fitness via the microbiome. The aim of this study was to quantify the effects of age, sex, season, pairing status, and reproductive stage on gut microbiome diversity and composition, and to assess links with stress physiology in a free-ranging, socially complex bird. We collected 178 faecal samples for microbiome profiling (16S rDNA sequencing) and 396 samples for excreted corticosterone metabolite analysis from 46 individually-marked greylag geese (*Anser anser*) across four biologically meaningful periods (season of the year associated with different types of social behaviour). Alpha diversity was best explained by age, peaking in mid-life before declining in older individuals. Beta diversity varied with pairing status, season, and corticosterone levels; paired individuals harboured richer and more similar core microbiomes than unpaired birds, and reproductive stage modulated seasonal shifts in key taxa. Several beneficial genera (e.g. *Ligilactobacillus*, *Liquorolactobacillus*) were negatively correlated with corticosterone, consistent with social buffering effects of pair bonds, while potential pathogens (e.g. *Campylobacter*) increased during chick rearing. Our findings show that ageing, seasonal dynamics, and social bonds jointly structure the gut microbiome in a long-lived bird, with evidence that stable pair bonds promote beneficial microbial communities via both direct microbial exchange and reduced physiological stress.

Problem solving in wild rats in semi-urban environments

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Cognitive ability determines the potential of an animal to respond to changing and novel environments. Urban environments in particular pose significant challenges to many species, given the rapid rate of change and the presence of novel conditions to which animals must adapt. Cognitive flexibility and associated behaviours, such as problem solving and innovation, are thus considered key for success in urban environments. Brown rats (*Rattus norvegicus*) are one of the most ubiquitous urban species in the world and are almost exclusively found in human-dominated habitats. Laboratory studies have demonstrated their cognitive abilities in controlled settings, but innovative problem solving has been rarely tested in wild rat populations in their natural habitat. Here, we explored the problem-solving abilities of a population of brown rats in a typical synanthropic environment, a busy horse livery. We provided rats with a problem-solving battery of food extraction tasks (four puzzles with increasing difficulty for one week each) to measure individual- and population-level problem-solving performance. Using video recordings of rats while solving the puzzles, we were able to characterize problem-solving behaviour in a wild population, latencies to approach the puzzle and probabilities to solve it. We analyse repeated measures of latencies-to-approach for single, recognisable adult individuals. We thus offer evidence of patterns of among-individual variation in innovation in wild synanthropic rodents, which can be leveraged to reduce conflicts and deepen our understanding of adjustments to habitat alterations.

Personality-dependent foraging and conspecific information use in common voles

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Animals must gather information on their environment in order to gain knowledge about resource quality and distribution. Information can be private, based on an individual's own experiences, or can be socially transmitted, i.e. gleaned from conspecifics. Preference for use of private vs. social information can vary between individuals and has been linked to aspects of animal personality. In this study, we tested the effect of conspecific information (odour) on the foraging behaviour of individual common voles. We provided singly-housed common vole females with eight artificial foraging patches surrounded by nesting material containing either no odour, conspecific odour, or heterogenous information (50% of patches had conspecific odour). Using video recordings, we determined the number of visits and time spent per visit to a) bedding surrounding a patch, and b) the foraging patch itself. We combined individual responses with the animal personality traits boldness and exploration. Bolder individuals interacted less with conspecific odour than shyer voles, but the role of exploration on interaction with social Information depended on its distribution in the environment. Regardless of variation in their interaction with conspecific odour surrounding foraging patches and subsequent patch use, there were no personality-dependent differences in the amount of food or type of food consumed. Thus, although we saw evidence for personality-dependent information use during foraging, this had no consequent effect on the resource landscape after foraging.

Cooperation in raven breeding pairs: Effects of relationship quality

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Social relationships play an important role in cooperation. Previous studies in mammals and corvids have shown that individuals prefer to cooperate with familiar individuals. Ravens, as a long-term monogamous species, are highly social and well known for cooperation. So far, no studies have yet been conducted on the effect of relationship quality on cooperative success during the breeding season. In the present study, eight raven breeding pairs were tested in a loose string task with six different conditions (varying in number and distance between pieces of reward) over three different breeding phases. The effect of relationship quality on the proportion of successful trials and on tolerance regarding distance between pieces of reward and reward equity was tested. In addition, the effect of breeding phase on success and on relationship quality was analysed. Significant three-way interactions were found in models with proportion of success in the presence of both partners depending on relationship quality components, reward distance, and reward equity. It was further found that the breeding phase had a significant effect on both relationship quality and cooperative success. These findings are consistent with previous research on non-breeding ravens, according to which social relationships have a positive influence on success of individuals in performance of a cooperative task. Taken together, it has been shown that ravens are cooperative in an experimental problem-solving task during the breeding season and that their tolerance regarding reward distance and equity is depending on their social relationship.

Sound localisation in freely moving common marmosets (*Callithrix jacchus*)

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Perceiving and localising acoustic information is crucial for both humans and non-human animals to navigate their surroundings and react to events and potential dangers in their environment. Although sound localisation cues have been studied in several animal species, research on active sound localisation behaviour is still sparse and was mostly carried out on anaesthetised or restricted individuals. We, therefore, studied freely-moving captive common marmosets (*Callithrix jacchus*), a small New World monkey species, to investigate their active sound localisation abilities. Furthermore, we investigated the influence of prior information (i.e., the location of the previous sound playback) on their localisation accuracy. We tested six (5m/1f) adult individuals by tracking their head orientation in response to playbacks of unfamiliar conspecifics' food calls ("chirp") using DeepLabCut. The setup consisted of 11 loudspeakers positioned in a semi-circle array at approximately the height of the monkeys' heads, with an angular separation of 14° each. I will present our experimental approach, as well as preliminary results.

Pigs in the zone? Towards the study of flow in non-human animals

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Flow, a state of complete absorption in an intrinsically rewarding activity, has been a paragon for research on human flourishing. Given its relevance in human positive psychology, flow may also have the potential to advance research on positive animal welfare. However, doing so requires operational translation, as the methods used in human flow studies (e.g. self-report, surveys) cannot be applied to animals. We propose that translating the concept of flow to animals is an innovative and promising step in the emerging field of positive animal welfare science and beyond. We introduce the concept of flow by outlining the characteristics of situations that induce flow states in humans. Entering a flow state requires striking a balance between the challenge a subject is confronted with and the subject's skills. This is achieved through a series of clear goals, unambiguous feedback on progress, and the ability to adjust the action accordingly. Derived from the characteristics of flow in humans, we propose a framework for studying flow in animals by introducing considerations on how to induce and validate it. For validation, we suggest introducing increasingly attractive distractions, hypothesising that the extent to which these distractions are ignored will indicate the degree to which the individual experiences flow. Our poster will focus on the conceptual framework of studying flow in the animal kingdom. However, since we have recently started to apply this framework to study flow in pigs empirically, we will illustrate the study by presenting our methodological approach and video clips from our experiment.

The fastest of the slow: Testing personality in two snail species, *Cepaea hortensis* and *C. nemoralis*

Kadri Lichtner, Katharina Hirschenhauser
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Personality refers to inherited individual differences that are consistent over time and throughout different contexts. Individual differences are relevant in terms of energetic costs and predation risk and thus for survival during environmental perturbations. We defined a set of experiments that may indicate individually-different exploration types in land snails. As model species, two snail species (*Cepaea hortensis* and *C. nemoralis*) were chosen that are regionally abundant around Linz. We measured individual mean speed, latency to turn after dorsal placement, and latency to move. Individual snail behaviour was measured repeatedly on five different days at similar daytimes. In both species, consistent individual differences were found for the three measures, which remained robust throughout five repeated measurements. Correlations between the behavioural measures point at suites of behaviours, in which low speed is correlated with long latencies and high speed with short latencies. Our results suggest that (i) there are consistent individual types in the studied *Cepaea* species and (ii) the behavioural measures are repeatable indices of slow and fast explorers in snails. Future tests of slow and fast explorer types in *Cepaea* will focus on including varying environmental conditions and survival rates. Finally, we discuss that (iii) the presented set of tests for individual differences in snails is feasible for undergraduate and advanced biology courses, e.g. addressing the differences between evolved traits and responsive states. It allows teaching behaviour in the context of core concepts of biology, i.e. variation, inheritance, and evolution of behaviour.

Investigations on laying hens' escape behaviour in free-range farming

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Free-range systems enable laying hens to perform their full range of natural behaviours, thus improving animals' welfare. Nevertheless, there are also negative aspects associated with this type of husbandry. For instance, the potential access for predators represents a major risk factor for the health and welfare of chickens using the free-range area. The presence of various predators, both terrestrial and aerial, is reflected in the animals' behaviour. Chickens exhibit different escape behaviours depending on the type of predator, which have so far been studied mainly under laboratory conditions. Therefore, this study aims to investigate chickens' behaviour in free-range areas when exposed to different threat types under natural conditions. Video recordings were conducted on a farm utilising mobile housing systems (990 hens, 20 roosters) with access to a free-range area. Video cameras monitored the area close to the mobile house continuously over four months at the times of day when the chickens had access to the free-range. Observations included the place of refuge, duration of the escape behaviour, and the cause of reaction. Furthermore, the number of animals that did not react in accordance with their conspecifics during the escape but remained in the uncovered area was recorded, as well as whether these were roosters or not. In this study, an ethogram of chickens' escape behaviour in the free-range area was developed with predator-specific escape behaviours identified and described. Thus, this study supplements previous findings obtained under laboratory conditions with data from field observations.

Wild raven social learning in relation to seasonal environmental change: a first look

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Climate change and rapid expansion of anthropogenic spaces impose substantial challenges, such as increasing temperature, stochastic weather, and exposure to novel environments, on wild populations. An animal can adjust their behaviour by learning about the environment via asocial learning (AL), own exploration of the environment, or social learning (SL), by using information provided by the behaviour of other actors. The "social learning strategies" (SLS) framework outlines scenarios when an individual should favour SL over AL, such as when AL becomes costly. Several studies have investigated SLSs, but predominantly in laboratory settings and for a limited number of scenarios, such as perceived predation risk. Few studies have investigated SLSs in wild populations, which likely stems from the practical challenges of testing SL, and manipulating costs, in the wild. In this study, we aimed to investigate the "copy when AL is costly" strategy by evaluating the social influence of engagement of wild ravens, *Corvus corax*, in three foraging tasks. In addition, we were interested in how task complexity influences SL. We presented three foraging tasks of varying complexity: simple) food patch choice, medium) cache pilfering, and complex) extractive problem-solving. We predicted that the frequency of ravens observing the tasks being solved would increase as fall turns to winter. We also predicted that observers would be less inclined to engage in more complex tasks. Preliminary results support these predictions and we consider them in relation to individual- and group-level factors influencing the value of information.

The impact of human activity on the feeding landscape of young golden eagles

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Golden eagles in the European Alps face increasing disturbance from human recreational activity. Alpine landscapes provide essential habitat for nesting, foraging, and soaring, yet also attract over 100 million visitors annually. To evaluate eagle responses to human presence, we compare landscape features of areas used for energy gain (feeding) with those of energy expenditure (flight). Using high-resolution movement data from eagles from fledging to three years, we examine how the transition from juvenile scavenging (i.e., fixed at carcasses) to sub-adult hunting (i.e., flexible prey capture) shapes patterns of energy gain. We hypothesise that eagles preferentially feed and rest in areas away from human disturbance, and that this selectivity persists with age despite changing foraging strategies. By linking developmental shifts in foraging with the spatial footprint of recreation, our study highlights how human activity intersects with key life-history stages and provides guidance for conserving golden eagles in shared alpine landscapes.

Predator-induced vocalisations in a free-range flock of chickens

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Bioacoustics is increasingly applied in wildlife conservation and animal welfare, for example, to monitor the health or reproductive status of animals. In addition, vocalisations can be used to activate deterrent systems designed to scare off predators. These applications are particularly relevant in livestock management, especially in free-range husbandry, where welfare benefits are counterbalanced by increased predation risk. However, most research on predator-induced vocalisations was conducted under laboratory conditions, leaving a gap in understanding how livestock respond under natural settings. With chickens increasingly kept in free-range systems and exposed to high predation pressure, understanding their vocal responses could provide the basis for developing bioacoustic solutions to reduce predation. Therefore, this study aims to investigate which vocalisations chickens produce during predator attacks in a free-range environment. Audio and video recordings were conducted over four months in a flock of 990 hens and 20 roosters housed in a mobile housing system with access to a free-range area. Predator presence was determined either through visual sightings in the video recordings or via predator vocalisations in the audio recordings. The corresponding audio segments were then analysed to identify the vocalisations produced by the chickens. Our results contradict previous laboratory studies as (up to now) no alarm calls were observed in the flock during predator presence. Instead, the chickens produced other types of vocalisations not specific to alarm situations. As laboratory studies usually included only one rooster, group composition may have influenced calling behaviour. To explore this, further recordings are planned in flocks with varying group compositions.

Consistent individual variation in sociability across contexts in greylag geese (*Anser anser*)

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Sociability, an individual's tendency to associate with other individuals, is an important behavioral trait that can influence predation risk, foraging efficiency, and reproductive success, yet it remains relatively understudied compared to other personality axes. Network analysis can measure different facets of social behavior, enabling a more nuanced approach to study sociability. In this study, we assessed the repeatability of social behavior in a color-banded population of greylag geese (*Anser anser*), as a first step towards understanding the ecological consequences of variation in sociability and its role in social structures. Over four months, we measured four network metrics (degree, association strength, betweenness, and local clustering coefficient) across two sites that differed in levels of human disturbance. As the geese fly between sites in subgroups of varying sizes, we also examined whether there was a relationship between metric score and subgroup size. We found that degree, strength, and betweenness were repeatable in the geese, but local clustering coefficient was not. Individual rankings of all metrics were consistent across the two sites, but degree and strength were higher at the high-disturbance site on average. This suggests that greylag geese have consistent social phenotypes but adjust their social behavior based on environmental conditions. We found no relationship between metric score and subgroup size, suggesting that individual sociability is not a primary factor influencing subgroup choice.

Urbanization, domestication, and the neural crest: a shared developmental pathway?

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Domestication has long fascinated biologists for its ability to produce predictable shifts in behavior, morphology, and physiology across species. The neural crest domestication syndrome (NCDS) hypothesis offers a unifying developmental explanation, proposing that selection for tameness reduces neural crest cell (NCC) migration and proliferation, leading to the suite of traits observed in domestic animals. Urban environments might mimic environments that have produced domesticates in the past. I, therefore, suggest using an urban–rural gradient framework to track early-stage domestication phenotypes and selection pressures across wild species. Via large scale citizen science image data, we test three species present along a rural-urban gradient across the United States. Raccoons (*Procyon lotor*), North American opossums (*Didelphis virginiana*), and armadillos (*Dasypus novemcinctus*) provide an excellent set of model organisms that all live in rural and urban parts of the United States, offering a unique opportunity to track the emergence of a domestication phenotype across the phylogenetic tree and along the rural–urban continuum.

From trunks to minds: An exploration of first-order intentional gestural communication in African savannah elephants during agonistic interactions

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Language and the capacity for intentional communication are often argued to be uniquely human traits. Intentionality can be categorised into different levels, with first-order intentionality referring to signals produced to elicit a behavioural reaction in a recipient. Great apes and other primates produce a wide range of gestures that meet first-order intentionality criteria (i.e., audience checking, audience directedness, response waiting and persistence). In contrast, less is known about whether non-primate species use gestures in an intentional way. African savannah elephants use visual and tactile signals across various social contexts. Research on semi-captive elephants highlights that when exposed to food, elephant gestures fulfill all criteria of first-order intentionality. However, whether their wild counterparts communicate intentionally remains unknown. The thesis aims to: (a) describe the body acts used by wild elephants in agonistic interactions and (b) assess whether these gestures meet the criteria for first-order intentionality and thus qualify as gestures. Videos of elephants recorded in the Addo Elephant National Park in South Africa were analysed using the video–acoustic coding software ELAN. Out of 39 identified body act types, 29 fulfilled all four criteria of first-order intentionality significantly more than expected by chance. Our results present the first systematic description of first-order intentional gestures in African savannah elephants during agonistic interactions, offering compelling evidence that they exhibit capabilities similar to great apes. These results expand our understanding of elephant communication and provide insights into the convergent evolution of intentionality across species.

Mechanisms and functional organisation of courtship behaviour in a bird of paradise

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Male birds of paradise perform some of the most awe-inspiring visual performances in nature. Yet, we still know strikingly little about these "dances", including their production mechanisms, temporal organisation, and, most importantly, how they influence female mating decisions. In this poster, I present work on a bird of paradise endemic to tropical North Queensland, Australia: Victoria's riflebird (*Ptiloris victoriae*). This species performs elaborate display behaviours, which are afforded by an unusual set of morphological adaptations. The intricate mechanical basis of display not only supports the production of unique non-vocal sounds but also results in a signal trade-off that crosses sensory modalities. Beyond the mechanical intricacies of display, analyses of complete display performances reveal an unexpectedly complex temporal structure, specific features of which predict mating success. These results have important ramifications for our understanding of complex signal evolution, animal rhythm, and comparative aesthetics.

Scroungers, producers, and the perfect family. Sex-specific cooperation and conflict in a subsocial spider

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Australomisidia ergandros, a subsocial crab spider (Thomisidae), presents a remarkable opportunity to study how cooperation, cheating, and sex allocation interact within family groups. This species shows consistent, likely sex-linked differences in foraging strategies: some individuals actively hunt (producers) while others specialize in exploiting their siblings' efforts (scroungers). These behavioural asymmetries raise central evolutionary questions: How do different frequencies of scroungers influence individual and group performance? Do males and females pay different costs of scrounging? And how should mothers optimally allocate sons and daughters when each sex contributes differently to group function? In our first objective, we test predictions derived from negative frequency-dependent selection. We expect groups with many scroungers to perform worse overall, and for fitness costs and benefits of scrounging to differ between males and females. Building on previous observations, we further predict that females are more likely to adopt scrounger strategies than males. To address these hypotheses, we will classify individual spiders collected from the field using established behavioural assays, form experimental groups with controlled scrounger frequencies, and track their foraging interactions over 4–6 weeks. Using automated video tracking and network analyses, we will quantify cooperation, feeding success, growth, survival, and group-level performance. The results will reveal natural frequencies of producer and scrounger phenotypes, clarify sex-specific cooperative strategies, and quantify their fitness consequences. These empirical data will form the basis for theoretical models of optimal cheater frequency and maternal sex allocation, ultimately allowing us to test how individual strategies scale up to family fitness in natural conditions.

Handling of a disbalanced stick tool in the Goffin's cockatoo (*Cacatua goffiniana*)

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Parrots (Psittaciformes) possess unique morphological and behavioral traits that enable flexible and efficient tool use, particularly with stick tools, comparable to that observed in apes. In tool-using species, attending to weight-related cues can enhance foraging efficiency by minimizing the energetic costs of tool manipulation. Previous research has shown that Goffin's cockatoos (*Cacatua goffiniana*) can detect and utilize weight cues, but their sensitivity to unbalanced objects in functional tool contexts remains unexplored. This study investigated how Goffin's cockatoos handled a disbalanced stick tool and the individual techniques they employed to solve a familiar stick-tool box experiment. We conducted a series of experiments with the same general setup but varying degrees of freedom, examining changes in insertion techniques and preferences for handling the stick with the heavier end in their beaks—a strategy that reduces energetic costs. Our findings revealed that, at the group level, Goffin's cockatoos preferred to manipulate the stick with the center of mass closer to their gripping site. Additionally, the birds exhibited highly individualized technique adaptations to solve novel problems. We propose that birds that did not adapt their techniques in this setup might have the capacity to do so under increased task constraints. These results provide the first evidence of Goffin's cockatoos attending to and adapting to unbalanced weight distribution in a functional tool, highlighting their problem-solving flexibility and sensitivity to physical tool properties.

From bold to dominant? Early-life boldness as a predictor for later social dominance in rats

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Dominance relationships are a central component of social life across a variety of gregarious species. While research on the effects of morphological traits on dominance is plentiful, behavioral variation has received less consideration. Growing evidence suggests that boldness – one axis of individual behavioral variation – and social dominance are correlated. However, boldness is often evaluated when hierarchical structures are already in place, limiting conclusions about the directionality of this relationship. This thesis aimed to determine whether early-life boldness predicts later social dominance in fancy rats by assessing boldness levels prior to the formation of dominance hierarchies. Early-life boldness was determined in 60 young rats using the elevated plus maze and the unstable bridge test. Principal component analysis was used to derive an overarching boldness score for each rat, allowing for the classification of each rat as either shy-type or bold-type. The rats were subsequently assigned to novel groups, composed of unfamiliar conspecifics. Dominance was later assessed using a repeated round-robin testing system in the social dominance tube test. Results showed that boldness functioned as a sex-specific predictor of later social dominance. Contrary to expectations, shyer males won a significantly greater proportion of confrontations than bolder males. Conversely, in females, the bold-type individuals tended to emerge as dominant in a larger proportion of confrontations than their shy-type counterparts. These findings show that early-life boldness can be used to predict dominance in later life, but also suggest that the relationship is complex and may be more nuanced than expected.

What do zebrafish want? Understanding zebrafish preferences and exploring the impact of environmental enrichment on the behaviour of zebrafish (*Danio rerio*)

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Zebrafish constitute the second most frequently used vertebrate model in Europe. Adult zebrafish are commonly housed in barren tanks and it is a topical question whether environmental enrichment might represent a means to enhance their welfare. The recent revision of EU directive 2010/63 Annex III/IV states that insufficient data exist to make recommendations on environmental enrichment, with more work being required on this topic. Against this background, this study investigated zebrafish preferences and behavioural responses to varying enrichment regimes, comparing standard housing with four different single- and multi-object enriched environments (N = 5 tanks). Behavioural parameters, including activity levels, agonistic interactions, and spatial preferences were assessed over four days. Furthermore, individuals were subjected to novel tank tests to assess anxiety-like behaviour (N = 20 individuals). The results indicated no significant differences in overall activity or anxiety-related measures across housing conditions. However, a significant reduction in chasing behaviour was observed in one enrichment condition, suggesting a decrease in aggression due to enrichment provision. Moreover, spatial behaviour indicated a preference for enriched compartments. Altogether, these findings suggest that enrichment may improve aspects of zebrafish welfare, including the reduction of agonistic interactions. Additionally, in the absence of standardised welfare tests, the results possibly point to difficulties of assessing enrichment benefits using commonly used indicators (e.g. cortisol). Currently-used methods might not be sufficiently sensitive to allow a quantifiable assessment of zebrafish welfare. Future research should thus assess whether a combination of behavioural tests and measuring physiological indicators allow for a more informative evaluation of zebrafish welfare.

Are you my mate? Vocal individual recognition in wild-derived house mice

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Ultrasonic vocalizations (USVs) are emitted by adult house mice (*Mus musculus*) during courtship and mating and correlate with male copulatory and reproductive success. However, it is unclear what types of information females extract from males' courtship signals. Statistical analyses show that male USVs contain individual signatures, but whether and how USVs mediate individual recognition is an open question. While olfactory cues are known to mediate individual recognition, the role of USVs is unknown. Here, we investigated vocal mate recognition in female wild-derived house mice (*Mus musculus musculus*). We aimed to test whether females recognize their male mate by their USVs or whether odor – either their mate's odor or odor of an unknown male – is necessary to facilitate mate recognition. We bred mice and recorded the USVs of the females' mating partners and collected their scent marks. We then tested the preference of the females in a multimodal playback paradigm. We tested females' responses to playbacks of their mate's USVs compared to those of an unfamiliar male, simultaneously presented either with or without their mate's odor (using either the odor of an unfamiliar male or no odor as controls). As additional controls, we tested whether females show a general attraction to USVs in our assay under the same odor conditions. Thus, we examined females' responses to playback of USVs from an unfamiliar male vs. silence without odor, using the odor of their mate or an unfamiliar male. We will present the results of our analyses, which are in progress.

Tool use in an introduced cockatoo population

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Tanimbar corellas (*Cacatua goffiniana*) possess the cognitive and motor abilities to manufacture and use tools, both in captivity and within the native population on the Tanimbar Islands, Indonesia. Yet, this complex behavior does not appear to be a species-wide phenomenon, but rather a result of individual innovations. An introduced population of Tanimbar corellas can be found in the city of Singapore, where three instances of object-related foraging have already been reported. However, the function of the behaviour and its prevalence in the population remain to be determined. I report our findings on object-related foraging and tool use within the introduced group and discuss the implications regarding the emergence of tool use and the corellas' cognitive flexibility as potential key factor for their survival in a new, urban environment.

Door to the future: Can Norway rats (*Rattus norvegicus*) anticipate the return of their help?

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The theory of reciprocal cooperation proposes that individuals who help others receive help in return and are thus better off than those who never help. So far, animal studies of reciprocity have examined responses to past help rather than on ensuring future repay of help. Here, we tested whether Norway rats consider the past and future when deciding to cooperate. Focal rats were presented with partners that either provided food (cooperator) or not (defector). Subsequently, focal rats could open a door to allow the same partner to return their help by providing food back (repay) or not (no repay). The results show that rats cooperate based on past events: they opened the door faster for cooperators than for defectors. However, we found no evidence that they also take the future into account. Whether partner rats could provide food to focal rats in the near future did not significantly influence their willingness to cooperate. Importantly, rats understood the future condition. Once they opened the door, they moved to the location where food would be given and did so faster when food-sharing was possible in the repay compared to the no repay condition. This suggests that rats primarily base their cooperative decisions on previous partner behaviour rather than on what their partners might do next, even though they are capable of anticipating future events. Past behaviour is less ambiguous because previous help is known, whereas future help is uncertain, which could explain their behaviour. How widespread this pattern is deserves further study.

Sexual dimorphism in body weight and personality of goldfish (*Carassius auratus*)

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Sexual dimorphism describes the differences in morphology and behaviour between males and females and is often caused by sexual selection. A common trait that differs between the sexes is body mass: in many invertebrate, amphibian and fish species, females are heavier than males. Another trait that can differ between the sexes is personality, e.g. males displaying bolder behaviour. In order to investigate sexual dimorphism, a study population needs to be sexed; this can be done based on, for example, gonads, morphological features, behaviour, or hormones. Sometimes, all these different approaches align, but this is not always the case. We are looking at sexual dimorphism in the traits body mass and personality in goldfish. In this species, genetic females can develop into morphological males when subjected to high temperatures in early life stages. We, therefore, sexed our population visually and genetically, based on mating behaviour, mating-associated body parameters, and through PCR targeting the Y-chromosome of male goldfish. Personality was determined through an open field test, with five variables used as indicators for a bold or shy personality. We found different results for visually- and genetically-sexed fish, indicating a possible environmentally-caused sex change in our population.

Do poison frogs use heterospecific calls to discover new breeding sites?

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Neotropical poison frogs transport tadpoles to various small pools in the rainforest. Stable breeding pools are scarce and parents need to travel tens to hundreds of meters to locate suitable sites for tadpole development. Previous studies have shown how poison frogs navigate to known breeding locations, but what sensory mechanisms allow them to discover new pools remains poorly understood. Other frog species are frequently observed performing mating calls at pools used by two species of poison frog, *Allobates femoralis* and *Dendrobates tinctorius*. Therefore, we hypothesize poison frogs use heterospecific calls as a reliable indicator of pool availability, thus facilitating the discovery of new reproductive sites. We tested the heterospecific acoustic attraction hypothesis in the field by broadcasting calls of one terrestrial and one arboreal species at artificial pools combined with video monitoring. We specifically paired *A. femoralis* with *Rhinella castaneotica* in the terrestrial condition and *D. tinctorius* with *Trachycephalus hadroceps* in the arboreal condition. We monitored visits and deposition events at artificial pool sites to assess discovery rate, pool preference, and exploratory behaviours. We found that *A. femoralis* discovered and occupied ground pools with a similar rate between control and playback pools, whereas *D. tinctorius* never occupied arboreal pools. These preliminary results suggest that poison frogs do not rely on heterospecific acoustic information to discover new reproductive sites. Thus, this work highlights the need to investigate the sensory information poison frogs use to discover novel resources, which may have major implications for conservation measures increasing the attraction to natural sites.

To explore or to exploit: Exploration in the context of a limited food source patch

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Exploration, defined as the reaction of an individual to a new situation, is one of the most studied animal personality traits and a key factor in how an individual interacts with the environment in their daily life. This behaviour is often quantified as movement in an unknown environment. However, movement through the environment in the wild serves more functions than exploration alone, the most immediate of which is the gathering of food. However, the study of exploration is often performed either in the absence of food resources or with an ad libitum food supply. The aim of this study was to investigate experimentally whether common voles (*Microtus arvalis*) alter their exploration of novelty when the environment offers a known and exploitable food patch requiring some minimal effort of food extraction. With this design, we made the exploration–exploitation trade-off explicit within a single test. In total, 60 common voles could explore an open field arena containing both a novel object and familiar food-extraction object, either alone or in pairs. When tested in pairs, two food-extraction objects and two novel objects were placed. The results of this experiment are assessed in relation to individual differences in novelty-related behaviour within various test contexts, as part of a larger study. With this research, we aim to contribute to the validation of exploration as a personality trait measurable across contexts, and investigate whether foodless exploration tests hold ecological relevance.

Cooperation and communication interplay in canids

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Cooperation plays a fundamental role in many social species. Communication is necessary to enable action coordination on which cooperation depends. Conversely, the evolutionary pressure to cooperate shapes the development of communicative signals, resulting in an evolutionary interplay between cooperation and communication. Wolves (*Canis lupus*), similarly to our hunter-gatherer ancestors, rely on extensive intraspecific cooperation for collective hunting, territorial defence, and cooperative breeding. Studying cooperation and communication interactions in wolves might, therefore, shed light on the evolutionary mechanisms that contributed to the emergence of human language. In contrast, dogs (*Canis lupus familiaris*), shaped by the domestication process, exhibit altered social interactions with conspecifics. Comparing their cooperative and communicative abilities with those of wolves can thus reveal how different socio-ecologies influenced the evolution of these social skills within a single lineage. In this study, we aim to investigate how wolves and dogs communicate during cooperative tasks. We will test both species using a modified string-pulling paradigm that includes two conditions: individuals must either solve the task alone or work together with a partner. In the partner condition, we will assess whether an individual that detects and approaches the apparatus actively recruits a partner who has not yet noticed the task. Additionally, we will examine whether dyads are more likely to share food after cooperating for a reward compared to when they can obtain the food independently. Our focus is to analyse communicative behaviours occurring during these feeding events and to determine whether such behaviours differ across conditions and between the two species.

Ecological release from predation drives shifts in foraging behavior in the critically endangered medium tree finch

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Predation risk shapes how animals use space and resources, yet the behavioral consequences of predator removal in natural systems remain poorly quantified. Oceanic islands provide powerful contexts for examining such ecological release. We used a 20-year dataset (2005–2025) on the critically endangered medium tree finch (*Camarhynchus pauper*) to test how long-term changes in predation pressure, habitat structure, and restoration efforts on Floreana Island influence foraging behavior within a "landscape of fear" framework. Following the 2023 removal of invasive mammals and management of the native short-eared owl (*Asio flammeus galapagoensis*), we predicted increasing foraging-niche breadth and shifts in foraging height. Across the first-foraging observations, we found pronounced temporal variation in foraging substrate diversity and foraging height, both exhibiting significant quadratic trends over time. Substrate diversity declined to a minimum in 2013 before increasing toward 2025, while foraging height peaked around 2015 and returned to lower strata in recent years. In contrast, foraging technique diversity remained stable across the study period. These patterns correspond to major ecological changes on Floreana, including habitat alteration, fluctuating rainfall, invasive species dynamics, and the onset of predator removal. Our findings indicate that medium tree finches adjust where—but not how—they forage in response to shifting environmental constraints, and that recent increases in substrate diversity and reduced foraging height may signal early behavioral evidence of ecological release. This long-term dataset highlights the value of behavioral metrics as sensitive indicators of ecosystem recovery during island restoration.

Spatial movement patterns of common toads (*Bufo bufo*) in habitats with different anthropogenic impacts

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Habitat destruction and degradation are the main causes driving species extinction. Anthropogenic activity has altered many natural landscapes worldwide, including in Lithuania. Due to this, the decline of many species is observed; however, some species, like the common toad (*Bufo bufo*), have adapted and thrive in altered landscapes, but the factors determining this success are still poorly understood. In this study, we aimed to quantify the differences in spatial behavior of common toads living in two habitats with different anthropogenic impacts: Vilnius University Botanical Garden (high impact) and Aukštagiris Forest (low impact). During a two-month period, 29 individuals were equipped with radio transmitters for movement monitoring. Individuals were tracked from 11 to 16 days, with locations recorded at least once per 24 hours. To assess navigational abilities and site fidelity, we also translocated 14 individuals 200 m from their home range. We found no differences in movement parameters or home ranges between areas of different anthropogenic impact. However, microclimate and microhabitat use differed significantly between locations, suggesting that toads adapt well to these variations. During translocations, only one individual showed homing behavior, while others remained near the release site. This suggests that common toads may possess navigational abilities but display low site fidelity to their summer home ranges.

Partners in exploration: Individual differences in exploration across contexts of sociality

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Exploration is one of the most studied traits in the field of animal personality. The interaction with novel and unknown environments carries ecological and evolutionary relevance, through the gathering of information (e.g. on food abundance and shelter opportunities) or assessing the risk of their surroundings. Therefore, exploration can affect the individual's survival and reproduction. In tests of exploration personality, individuals are usually tested in isolated conditions under controlled environments, such as by using the standardised open-field test. However, for gregarious animals, the mere presence of conspecifics can influence their tendency towards exploration or avoidance, such as through conformity, social facilitation, or social inhibition. Thus, by testing these individuals only in an isolated context, the full scope of their explorative behaviour might not be captured. Therefore, we aimed to test individual differences in exploration in different social contexts. We captured 60 common voles (*Microtus arvalis*) from a wild population in Münster, Germany, and first subjected them to the standardised open-field test in isolation, which was repeated after one week. Thereafter, the voles were subjected once more to the open-field test either in the single (N = 20) or the social, paired (N = 20) condition. To account for potential effects of being tested with and without a social partner, stress levels (faecal corticosterone metabolites) of the individuals were measured after each test (N = 60). Results on the repeatability of exploration and potential effects on faecal corticosterone metabolites in different social contexts will be presented.

Annual Meeting of the Ethologische Gesellschaft

📅 **18–21 February 2026 – Grünau im Almtal**
📍 **Pfarrhof Grünau im Almtal**
Kirchenplatz 3, 4645 Grünau, Austria
🎟️ Registration fee includes all conference events in Grünau im Almtal
🗣️ Conference language: English

Wednesday, 18 February 2026

- **13:00** Registration (Pfarrhof, Grünau im Almtal)
- **14:15** Official Opening
- **14:30** Plenary Talk: *Thomas Bugnyar*
- **15:30** Coffee break
- **16:00** Talks
- **18:15** Conference Dinner (Schobermühle, included in registration)

Thursday, 19 February 2026

- **08:00** Registration & coffee (Pfarrhof)
- **09:00** Talks
- **10:30** Coffee break
- **11:00** Talks
- **12:30** Lunch at JUFA (bus from Pfarrhof)
- **12:45** Vostandstreffen (JUFA seminar room)
- **15:00** Plenary Talk: *Rosemary Grant*
- **16:00** Coffee break & poster session
- **17:30** Talks
- **19:00** Pub Quiz at Pfarrhof with snacks & cocktails
  (optional dinner reservations at Almwirtinnen or Forellenhof, at own cost)

Friday, 20 February 2026

- **08:00** Registration & coffee (Pfarrhof)
- **09:00** Talks
- **10:30** Coffee break
- **11:00** Plenary Talk: *Lars Chittka*
- **12:00** Lunch at JUFA (bus from Pfarrhof)
- **12:30** Annual General Meeting of the Society (JUFA seminar room)
- **14:00** Talks
- **15:45** Coffee break & poster session 2
- **17:30** Wrap-up
- **18:00** Conference Dinner (self-paid; reserve online): *Romantikhotel Almtalhof* (max. 80 participants) or *Almwirtinnen* (max. 40 participants)

Saturday, 21 February 2026 – Excursion Day

- **09:00** Excursion to the historic KLF: visit the greylag geese, walk at Almsee, or alternative tours (ravens, ibises)
- **12:00–14:00** Lunch buffet at the new KLF building (included in registration)
- **14:30** Travel to Vienna (bus to Grünau station)

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etho26_galacogcom.klf@univie.ac.at

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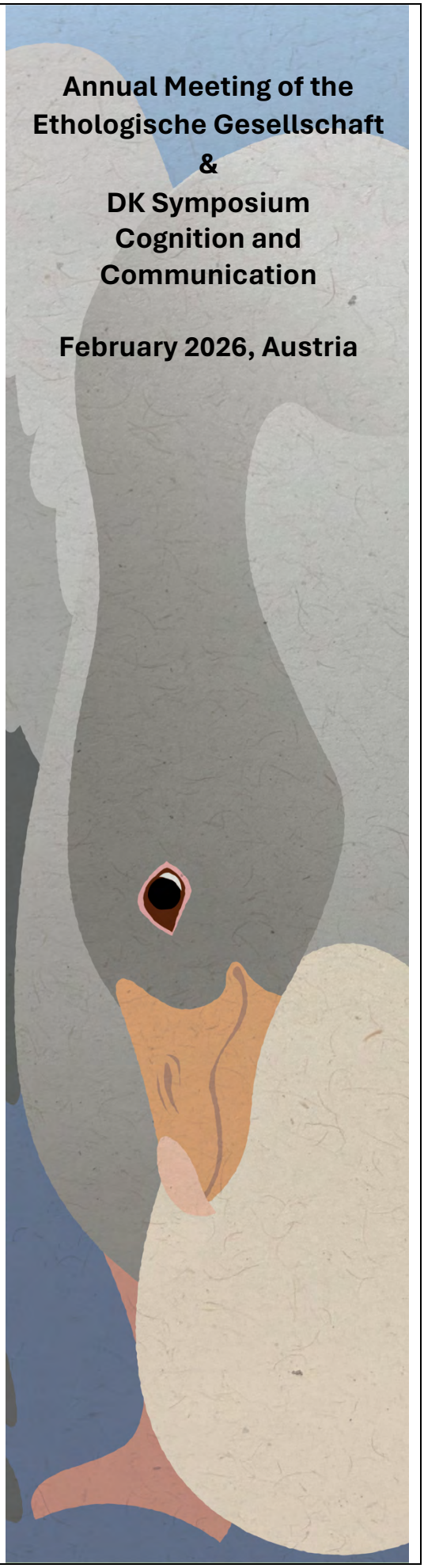

DK Symposium: Cognition and Communication

📅 **23–24 February 2026 – Vienna**
📍 **University Biology Building (UBB), Vienna** – Monday, 23 February
📍 **Natural History Museum, Vienna** – Tuesday, 24 February
🗣️ Conference language: Mostly English (final plenary by Angela Stoeger in German)

Monday, 23 February 2026 – University Biology Building (UBB)

- **09:00** Plenary Lecture: *Carel van Schaik*
- **10:00** Coffee break
- **10:30–12:30** Talks (DK students)
- **12:30–14:00** Lunch
- **14:00** Plenary Lecture: *Rosemary Grant*
- **15:00** Coffee break
- **15:30–17:30** Talks (DK students)
- **17:30–19:00** Wine & poster session

Tuesday, 24 February 2026 – Natural History Museum

- **15:00** Coffee in the Dinosaur Hall
- **16:00** Plenary Talk: *Peter Grant*
- **17:00** Plenary Talk: *Angela Stoeger*
- **18:00** Closing & catered reception (max. 100 participants; online registration required)

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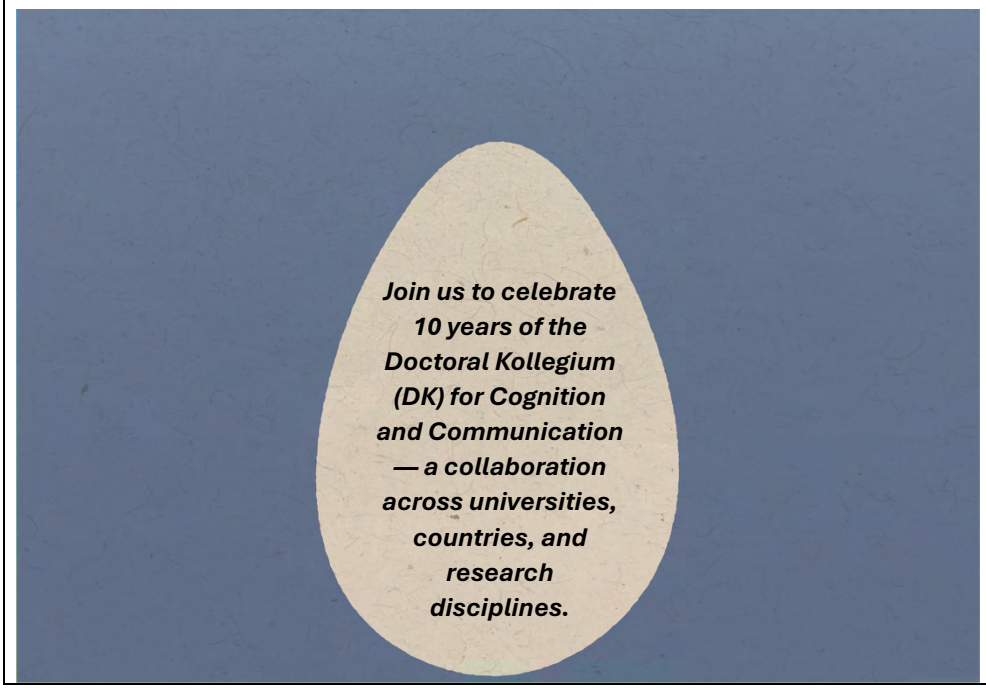

Annual Meeting of the Ethologische Gesellschaft
&
DK Symposium Cognition and Communication

February 2026, Austria