



ACTIVATE
LEARNING

MERRIST WOOD COLLEGE

AND UNIVERSITY CENTRE

Higher Education Research Vol 1



CONTENTS

▶ The Higher Education teaching staff	3
▶ Level 5 Titles and authors	7
▶ Level 6 Abstracts and biographies	15
▶ Kaveh Montazer	16
▶ Chloe Inwards	18
▶ Adam Gibbs	19
▶ Luke Bradfield	20
▶ Amber Manger-Trent	22
▶ Beth Blanks	23
▶ Annabel Stoddart	24
▶ Peter Hewetson	26

The Higher Education Teaching Staff

Jack Merrifield
Curriculum Lead



Jack Merrifield is the Curriculum Lead at Merrist Wood University Centre, where he manages and supports a dedicated team of lecturers. His teaching spans both theory and fieldwork, with subject expertise in animal cognition, genetics, statistics, ecology and conservation.

“As a student, you’re here not just to learn, but to grow, think, try new things and be as creative as you want to be.”

Alongside teaching, Jack is an active researcher with diverse interests in animal cognition, behaviour, ecology, genetics and veterinary science. His research involves study sites across the UK, South Africa and Laos, and focuses on delivering positive and sustainable outcomes for captive exotic animal welfare, preserving wild biodiversity, and improving understanding of ecological interactions between species, particularly African predators and their prey.

Jack has studied to postgraduate level and holds a range of animal-related qualifications from institutions including the University of Exeter, Cardiff University and the University of the West of England. He is passionate about effective leadership and management, and about supporting aspiring scientists to fulfil their academic potential and make meaningful contributions to the animal industry.

James Mackie
Lecturer



James Mackie is a Lecturer at Merrist Wood College with a strong passion for animal care and education. He takes great pride in supporting students as they build confidence and develop practical, hands-on skills in a supportive learning environment.

James holds an FdSc in Environmental Sciences and a Level 5 Diploma in Teaching and Learning, combining industry experience with a thoughtful, student-centred approach to teaching. He teaches across Zoo Management, Animal Behaviour, Welfare and Ethics, and Animal-Human Interactions, and enjoys helping students understand and appreciate the wide range of species they work with. Seeing students’ curiosity grow into genuine passion is one of the most rewarding aspects of James’s role.



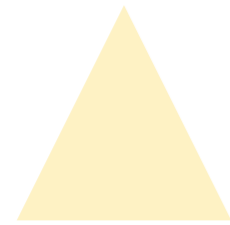
Jennifer Law (Jen) Lecturer

Jennifer Law (Jen) is a specialist in wildlife and conservation, with a particular passion for bees. Her expertise is underpinned by an undergraduate degree in Environmental Science, a master's degree in Ecology and Evolutionary Biology, and approximately ten years' experience working with wildlife conservation charities.

Jen teaches across a range of degree programmes and levels, with a strong focus on embedding essential graduate attributes and personal development alongside core academic skills. Her teaching approach combines theoretical sessions with practical fieldwork, incorporating both traditional methods and cutting-edge technologies.

She has undertaken additional training in accessibility and is committed to ensuring that all teaching sessions and materials are inclusive and accessible to all students.

Jen is the primary tutor for Level 4 students and the module lead for Development of Personal and Professional Skills. A key aspect of her role is supporting undergraduates as they navigate their degree programmes and plan their ongoing career development.



Greg Gatchell Lecturer

Greg developed his passion for conservation while working at the Zoology Museum at Ohio University, alongside completing his bachelor's degree in Wildlife and Conservation. During this time, he worked closely with the museum curator, surveying the university campus for flying squirrels and frog species.

He went on to apply this knowledge through extensive work studying bear behaviour at facilities around the world, before turning his focus to pachyderms. Greg implemented training and enrichment programmes designed to prevent stereotypical behaviours in ex-circus elephants, as well as within breeding herds of African bush elephants and Nile hippopotamus in zoological collections.

Returning to education, Greg completed a Postgraduate Diploma in the Recovery of Endangered Species. This led to roles in leading and managing teams, before he chose to reach a wider audience through teaching. Having previously led practical sessions elsewhere, Greg now teaches modules across all levels of higher education, with a focus on practical animal husbandry, research skills and dissertation supervision.



Catherine McCulloch HE Study Support Tutor

Catherine McCulloch is an Academic Support Teacher at Merrist Wood College and University Centre. She holds a teaching degree from the University of Surrey and a master's degree in Education from Goldsmiths, University of London, alongside a Diploma in Information and Library Management from Liverpool John Moores University. Catherine also holds a Dyslexia qualification from the British Dyslexia Association.

Prior to joining Merrist Wood, Catherine worked as a teacher and higher education lecturer in London, Chester and Christchurch, New Zealand. Her professional experience has given her a strong foundation in supporting diverse learners across a range of educational settings.



Katie Hogan Lecturer

Katie Hogan is a Higher Education Lecturer in Animal Studies, specialising in animal welfare and ethics, animal health, and animal nutrition. She brings over twelve years of experience in the animal industry, having worked in a range of roles including Zoo and Education Manager and Senior Keeper.

Throughout her career, Katie has cared for and managed a wide variety of exotic and domestic species, including camels, capybara, otters, birds of prey, reptiles and primates. This experience has given her extensive practical knowledge of animal husbandry, welfare standards and best practice.

During her time in management, Katie also gained experience in zoo licensing, as well as in developing education and conservation strategies and leading teams. Her academic background includes a Postgraduate Certificate in Conservation and Sustainability Education and a BSc (Hons) in Animal Behaviour and Welfare, equipping her with both strong theoretical knowledge and applied skills.

Katie is passionate about inspiring future professionals to adopt evidence-based practices that promote ethical care and sustainability within the animal sector. Through her teaching, she integrates real-world experience with academic rigour, ensuring students develop a strong understanding of welfare principles and effective management practices.



Tarragon Gatchell Curator of the Animal Centre and Lecturer

Tarragon is the Animal Collection Manager at Merrist Wood College, overseeing both the exotic and domestic animal collections. She holds a BSc (Hons) in Zoology and a Postgraduate Diploma in Recovery of Endangered Species, alongside certificates in Animal Behaviour and Welfare and in Exotic Animal Management and Conservation.

Tarragon has spent her career working with a wide range of animal species across zoos, rescue centres and animal sanctuaries around the world. While she has a particular passion for large carnivores, she broadened her expertise by undertaking research on the endangered Round Island boa for her postgraduate dissertation.

She is committed to maintaining the highest standards of animal welfare and is a strong advocate for positive reinforcement training and environmental enrichment. Much of Tarragon's research has focused on activity budgets, enclosure use and abnormal behaviour, using evidence-led approaches to adapt animal care and improve quality of life.

In 2021, Tarragon transitioned into teaching, combining her dedication to animal welfare with her passion for leading and inspiring others. She currently teaches the Level 4 Breeding Programmes and Husbandry module and the Level 5 Management of Zoological Collections module.



Level 5: Titles and Authors

To what extent is mustard extraction more effective than hand sorting when measuring earthworm abundance and species diversity?

Findlay, C., Gates, M., Utteridge, A., Merrifield, J.
Merrist Wood University Centre, Merrist Wood (Activate Learning), GU3 3PE

Introduction

Earthworms are perhaps the most common soil invertebrate – with their activity having many valuable effects on soil health (Akhila and Entoori, 2022). Despite their importance, there are gaps in research surrounding earthworm abundance, distribution and diversity at large scales (Phillips *et al.*, 2021). In order to improve efficiency, assessments of generalisable sampling methods focused away from agricultural use are required (Pelosi *et al.*, 2020). Our aim is to identify the most effective and accessible earthworm sampling method.

Methodology

- 🐛 2 stages: hand sorting and mustard sampling
- 🐛 Conducted over 2 days with 5 sample points for each method each day, resulting in 60 pits.
- 🐛 25x25x10cm pits, 25g to 750l water for mustard mixture. Used Earthworm Society of Britain's (2025) method.
- 🐛 Adults were collected as wet specimens in 80% ethanol and identified using Natural History Museum lab equipment.



Figure 1: Adult earthworm collected during surveying (Author's own, 2025).



Figure 2: Natural History Museum earthworm identification equipment set up (Author's own, 2025).

Results

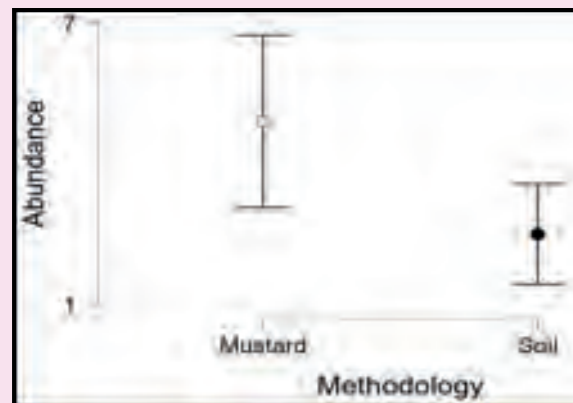


Figure 3: Significant difference in juvenile earthworm abundance when using mustard sampling compared to soil sampling (Mann-Whitney U Test, $U=608.5$, $p=0.017$).

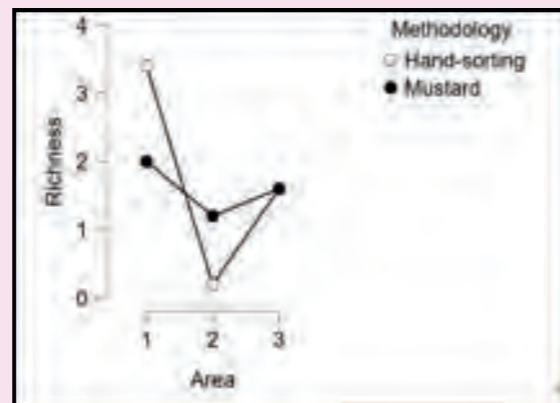


Figure 4: No significant difference in earthworm species diversity when using mustard sampling compared to soil sampling (Kruskal-Wallis test, $F=0.007$, $df=1$, $p=0.932$). Significant difference in earthworm species diversity in different habitat types (Kruskal-Wallis test, $F=11.643$, $df=2$, $p=0.003$).

Discussion and Conclusion

- Abundance:**
- 🐛 Reject null hypothesis as mustard was more successful than hand sorting to get highest biomass
- Species Diversity:**
- 🐛 Accept null hypothesis as neither method was more effective in surveying for richness
 - 🐛 All species found were epigeic (*Dendrobaena attensi*, *Denrobaena octaedra*, *Lumbricus rubellus*, *Lumbricus castaneus*)
 - 🐛 Highest range in leaf litter habitat.
 - 🐛 This may suggest topographic disturbance has the highest impact on these species (Palm, 2013; Chen, 2020).

Application to Industry

- 🐛 Easily replicated for citizen science.
- 🐛 Generalisable and repeatable for the site and habitat.
- 🐛 Affordable and accessible.
- 🐛 Mustard provides instant result and requires less manual labour, however hand sorting requires less equipment and has lower environmental impact.
- 🐛 Further studies required in different habitats.

References:
Chen, Y., Cao, J., He, X., Liu, T., Shao, Y., Zhang, C., Zhou, Q., Li, F., Mao, P., Tao, L., Liu, Z., Lin, Y., Zhou, L., Zhang, W. and Fu, S. (2020). "Plant leaf litter plays a more important role than roots in maintaining earthworm communities in subtropical plantations." *Soil Biology and Biochemistry*, 144, p.107777. Available at: <https://doi.org/10.1016/j.soilbio.2020.107777> (Accessed 6 May 2025).
Earthworm Society of Britain (2025). *Sampling Earthworms*. Available at: <https://www.earthwormsoc.org.uk/>
Pelosi, C., Baudry, E. and Schmidt, O. (2020). "Comparison of the mustard oil and electrical methods for sampling earthworm communities in rural and urban soils." *Urban Ecosystems*. Available at: <https://doi.org/10.1007/s11252-020-01023-0> (Accessed 6 May 2025).
Pelosi, C., Bertrand, M., Capowiez, Y., Bozard, H. and Roger-Estrade, J. (2009). "Earthworm collection from agricultural fields: Comparisons of selected expellants in presence/absence of hand-sorting." *European Journal of Soil Biology*, 45(2), pp.176-183 <https://doi.org/10.1016/j.ejsobi.2008.09.012>
Phillips, H.P.P., Bach, E.M., Bartz, M.L.C., Bennett, J.M., Beignon, R., Briones, M.J.J., Brown, G.G., Ferlian, O., Gongalsky, K.B., Guerra, C.A., King, R.S., Krieb, J.J., Ongias, A., Ramirez, K.S., Russel, D.J., Schwarz, B., Wali, D.H., Bross, U., Decaens, T. and Lavie, P. (2021). "Global data on earthworm abundance, biomass, diversity and corresponding environmental properties." *Scientific Data*, 8(1), 136. Available at: <https://doi.org/10.1038/s41597-021-00912-z> (Accessed 6 May 2025).

Award winner at the Higher Education Inter-College Challenge Conference (2025)



Investigating Earthworm Sampling Methods

Adam Utteridge, Millie Gates and Cameron Findlay

“ I’ll gladly say that Merrist Wood has been the best year of my life. It’s such an inspiring environment to be in. I’d take Merrist Wood over any other university. The experience is so much more personal, and you’re treated so professionally. I’ve really found myself, my confidence, and my interests here. I’m just so excited for the future. ”

- Millie Gates: Wildlife and Conservation student (Level 5)

Cameron Findlay

“Conducting research projects in Level 5 and 6 has shown me a world of opportunities. So many unanswered questions, so little time! (Especially in the invertebrate world!) A surprising skill I’ve picked up is communication, speaking with industry professionals to discuss how best to benefit their fields, learning how to approach and involve the public with science, and also being able to present at a conference to communicate this information to like-minded young scientists (and hearing about the amazing research they’ve conducted too!). Starting my course, I wanted a job away from people, but now I’m realising that’s where the most fulfilling careers are!”

Investigating potential disturbance pigeons cause other wild birds at garden feeding stations

Anya Cullen, Dan Powers, Linden Lindley and Jade Hayler



Do cockroaches (B. Dubia) show a preference for different food presentations?

Gray King and Jack Larbey

Investigating the effect of food presentation for domestic guinea pigs (Cavia porcellus)

Lani Tomlin and Scarlet Little



The effect of anthropogenic-induced vibration on captive reptile welfare

Sophie Jensen, Parker Austin, Amelia Tupper and Angus Tattersdill



Light and spores: How sunlight levels affect the distribution of mushroom diversity in a temperate woodland

Priyasha Jogeeah





Award winner at the Higher Education Inter-College Challenge Conference (2025)

The Activity Budget of Juvenile Siamese Crocodiles (*Crocodylus siamensis*) in a Rehabilitative Setting in Laos.

Charlotte White and Emily Portsmouth

“ Being surrounded by animals was completely immersive.”

- Charlotte White: Animal Behaviour and Welfare student (Level 5)



The Activity Budget of Juvenile Siamese Crocodiles (*Crocodylus siamensis*) in a Rehabilitative Setting

White, C., Portsmouth, E., & Merrifield, J.

Merrist Wood College and University Centre, Worpleston, Guildford, GU3 3PE

Introduction

Siamese crocodiles (*Crocodylus siamensis*) are critically endangered, with less than 1000 left in the wild (IUCN, 2012). This is due to anthropogenic causes such as farming, hunting and habitat fragmentation (Chanpradub, *et al.*, 2023; Teampanpong, *et al.*, 2024).

Hypothesis

Research Question: What is the activity budget of juvenile Siamese crocodiles in a rehabilitative setting?

Null hypothesis: There will not be a significant difference in the activity budget of juvenile Siamese crocodiles during the day compared to during the night.

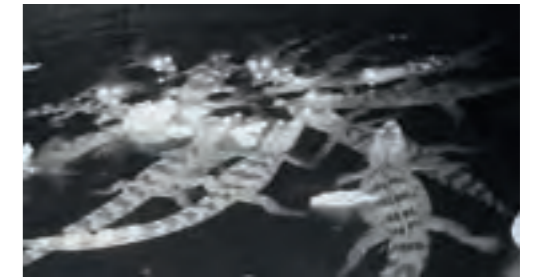


Figure 1: Juvenile siamese crocodiles exhibiting hunting behaviour (Author's own, 2025)



Figure 2: Juvenile siamese crocodiles exhibiting piling behaviour (Authors own, 2025)

Methodology

- Created an ethogram with 6 behavioural categories: locomotion, stationary, social, aggression, vocalisations, and out of sight.
- Each of these had individual behaviours within, for example, 'piling' in social, and 'basking' in stationary.
- 4 camera traps were deployed in the enclosure of Siamese crocodiles in LCTW for 2 weeks, with an overall number of 695 videos.
- Both behaviour and scan sampling were used, as well as a one-zero sampling rule to record the frequency of behaviours.

Subjects and Housing

- 56 juveniles hatched in June-July 2024.
- Get released at 1m long or 2 years old.
- Are fed live feed 3x per week.
- Enclosure size 5mx5m with a pond 2.5mx2.5m.
- Dried foliage and logs around the exterior of enclosure.

Results

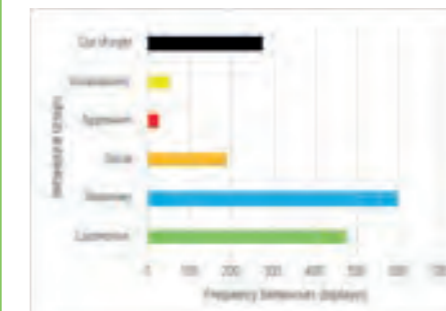


Figure 3: Graph showing the amount of behaviours performed in each category (Kruskal-Wallis Test, $F=1631.24$, $df=7$, $p<.001$)

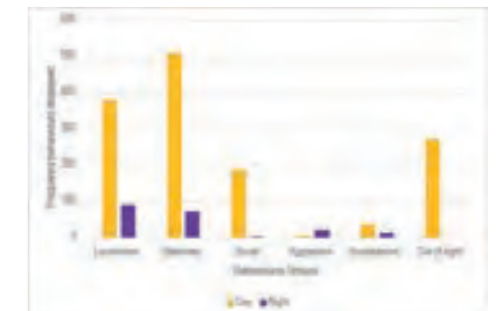


Figure 4: Graph showing the difference in amount of behaviours performed during the day compared to during the night (Mann-Whitney, $U=5.34$, $df=55$, $p<.001$)

Discussion

- There was a significant difference in the frequency of behaviours that occurred during the day. These were mostly stationary behaviours, aligning with them being a low-active ectothermic species (Gray, Brereton & Theodoru, 2024).
- Any daytime locomotion included moving to and from basking spots or the water.
- Human presence included vigilance and running- this was positive as it indicates reduced habituation to humans in release candidates.
- Vocalisations occurred most frequently when fighting, and some initiated and responded to calls during the day, which indicates socialisation or some other interactive behaviour between conspecifics (Whitaker & Sivaraman, 2022).
- Nearly all social behaviour was piling- an indicator of stress due to lack of hides or large density of individuals (Veldsman, 2019).
- Camera traps recorded less nighttime footage, so we cannot confidently say there is less or more activity.
- There was a higher range of behavioural diversity, including locomotion, hunting, and aggression, all taking place in the water. This aligns with them being a nocturnal species.
- Feeding behaviours may align with wider studies involving intraspecific competition of food resources (Brien, *et al.*, 2013).

References

Brien, M.L., Lang, J.W., Webb, G.J., Stevenson, C., and Christian, K.A. (2013) The Good, the Bad, and the Ugly: Agnostic Behaviour in Juvenile Crocodilians, *PLoS One*, 8(12). Available at: <https://doi.org/10.1371/journal.pone.0238593> (Accessed: 20th March 2025); Chanpradub, K., Pattanawibool, A., Saisamorn, A., Bhumpalphen, N., Chamthana, S., Thongpong, C., Quansing, Y., Sukawate, W., and Sukmasuang, R. (2023) Abundance and habitat suitability of Siamese crocodiles (*Crocodylus siamensis*, Schneider 1801) in Phetchaburi River, Kaeng Krachan National Park, Thailand, *Biodiversitas: Journal of Biological Diversity*, 24(8), pp4756-4765. Available at: https://www.researchgate.net/publication/377228271_Abundance_and_habitat_suitability_of_Siamese_crocodiles_Crocodylus_siamensis_Schneider_1801_in_Phetchaburi_River_Kaeng_Krachan_National_Park_Thailand (Accessed: 31st January 2025); Gray, K.L. (2004) Does zoo visitor presence and noise impact the behaviour and enclosure use of zoo-housed Siamese crocodiles? A case study, *Journal of Zoo and Aquarium Research*, 12(3), pp145-153. Available at: <https://www.zoo.org.za/article/view/778/500> (Accessed: 31st January 2025); IUCN Red List (2012) Siamese Crocodile. Available at: <https://www.iucnredlist.org/species/5671/3048087> (Accessed: 24th April 2025); Teampanpong, J., Thungsen, M., Saisamorn, A., and Duengkae, P. (2024) Understanding human dimensions of Siamese Crocodile reintroduction in Kaeng Krachan National Park, Thailand, *Journal of Wildlife and Biodiversity*, 8(4), pp193-219. Available at: <https://www.wildlife-biodiversity.com/index.php/wildlife-biodiversity/view/716/658> (Accessed: 31st March 2025); Veldsman, D.M. (2019) Effects of Stocking Density on Production and Behaviour of Farmed Grower Nile Crocodiles (*Crocodylus niloticus*), MSc. South Africa: University of Pretoria. Available at: <https://www.proquest.com/zoology/1477961679/1-262ae6baf1ba31312c-2025-03-06/docview/627682688?accountid=12345> (Accessed: 20th March 2025); Whitaker, A., and Sivaraman, C. (2022) Behavior of a captive family group of Siamese Crocodiles (*Crocodylus siamensis*) at the Madra Crocodile Bank Trust near Chennai, India, *Reptiles & Amphibians*, 20(1), pp71-75. Available at: https://www.researchgate.net/publication/357705742_Behavior_in_a_captive_family_group_of_Siamese_Crocodiles_Crocodylus_siamensis_at_the_Madra_Crocodile_Bank_Trust_near_Chennai_India (Accessed: 31st January 2025)

“ I discovered
my passion for
education and
conservation here
– something I’d
never considered
before.

- Millie Gates: Wildlife and Conservation student (Level 5)

Level 6

Abstracts and Biographies



Kaveh Montazer

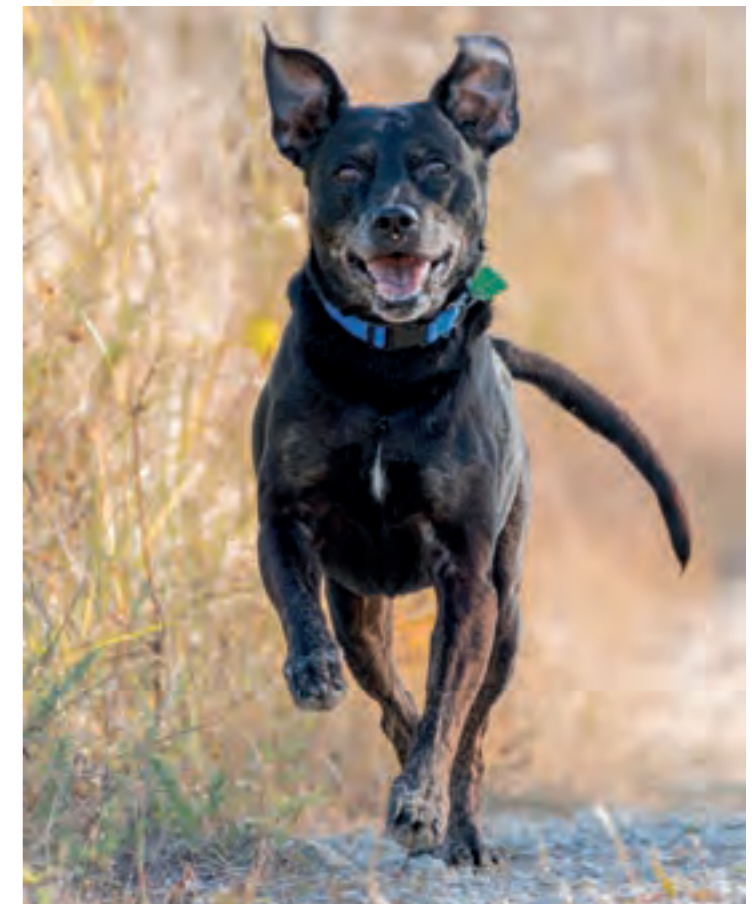
“I am a mature student graduate of the Animal Behaviour and Welfare BSc having changed career paths in my late 30s/ early 40s to delve into my passion for the topic of cognition in animals. This passion commenced in earnest when looking at my companion dog and wondering what he might be thinking and feeling. That initial question sent me down the rabbit hole of animal cognition. Four years later, I have had the pleasure of not only studying the subject at Merrist Wood College but also the freedom to pursue this topic for my dissertation with the help and support of my tutors. I have had access and permission to chase the question as I saw fit which I will always be grateful for.”



This study investigates jealous-type behaviours in n=8 dog subjects at Merrist Wood College University at Worplesdon, United Kingdom. A repeated measures 2 x 2 factor analysis was performed with an object and real-life dog rival vs a stranger and caregiver that both provided praise to each item. Trials were recorded and scored against two sets behaviours, general and specific.

Results demonstrated a clear significant difference in behaviours by subjects between the object and rival conditions regardless of whether the caregiver provided praise or the stranger with 100% of subjects performing neutral behaviours to object conditions. Comparing caregiver and stranger conditions provided mixed results which were less conclusive. However, the effect of 2 behavioural variables, stress signals and environment exploration, produced a significant effect.

In conclusion we reject our null hypothesis, that states there will no difference between the conditions, but are unable to categorically confirm the presence of jealousy states or jealousy-type behaviours in domestic dogs. We suggest that further investigation is warranted and should include physiological metrics as well as some form of attachment theory testing to take place before the jealousy experimental trials.



Abstract

Jealousy is a dog's bark: Do dogs exhibit jealousy-type reactions to caregiver's praise of a rival?

Dog owners ascribe jealousy states to the dogs within their care in surveys across the literature with more than 80% of owners stating their belief in their dog's ability to become jealous. Seven studies to date have attempted to investigate jealousy and jealousy-type behaviours in canines, resulting in mixed outcomes.

Chloe Inwards

Does the UK public believe that captive Dolphins should be used for entertainment purposes?

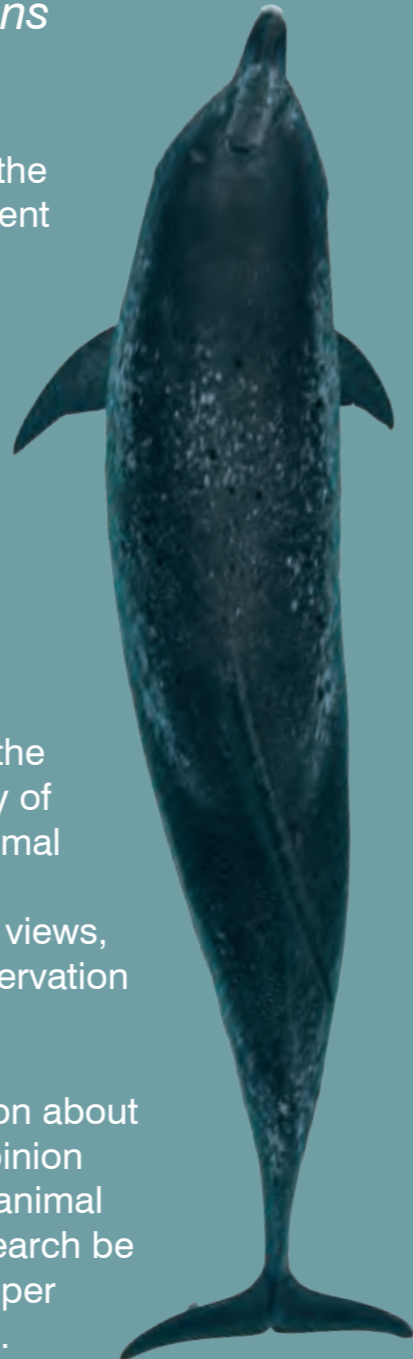
This research explores the public attitudes and opinions in the United Kingdom towards the use of dolphins for entertainment purposes in captivity. The primary aim was to investigate whether there is a significant public disagreement with this practice. A mixed-methods approach was used, combining quantitative and qualitative data collected through an online questionnaire completed by 36 participants.

The research design enabled both the measurement of general attitudes and the exploration of underlying ethical concerns.

Findings suggested that there was a general opposition to the use of dolphins in captive entertainment settings, with many of the participants expressing ethical discomfort regarding animal welfare concerns and the unnatural conditions of captivity. However, a minority of participants reflected more nuanced views, supporting captivity under certain conditions, such as conservation efforts or welfare assurance.

The research highlights the need for greater public education about the realities of dolphin captivity and suggests that public opinion plays an important role in shaping ethical standards within animal entertainment industries. It is recommended that future research be conducted with a larger, more diverse sample to gain a deeper insight into demographic trends and broader societal views.

Key Words: dolphin captivity, animal ethics, public attitudes, entertainment industry



Adam Gibbs

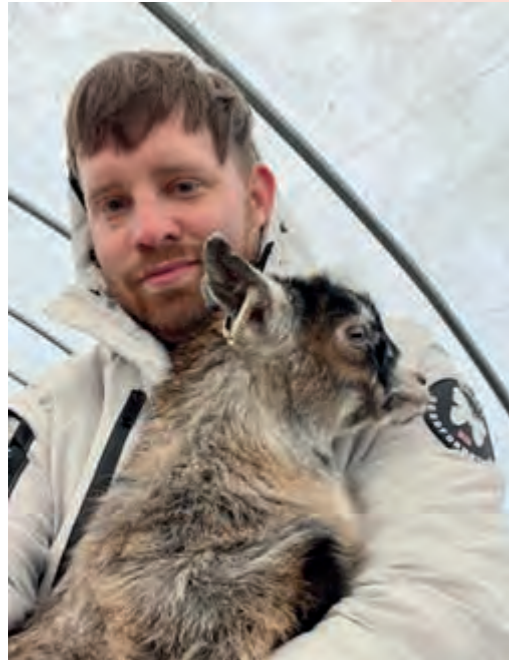
Why Didn't the Bat Cross the Road? Investigating the Impact of Urban Road Infrastructure on Bat Abundance

The United Kingdom is a highly urbanised country, with almost 500,000 kilometres of roads existing in the country since 2022. It is therefore important to understand the impacts that roads are likely to cause on wildlife populations as road networks continue to develop. Roads have already been identified as one of the main pressures on biodiversity through the creation of barrier effects and mortality risks, and the effects they have on wildlife are well documented for vertebrates such as birds, amphibians, and terrestrial mammals. However, there is a surprising lack of research on the impacts roads have on bats, despite their protective status in the UK under legislation such as the 'The Wildlife and Countryside Act 1981'. It is important to conduct research into this topic as bats perform vital ecosystem services such as pollination and insect population control. This study investigated what impacts urban roads have on bat abundance, looking at different frequency levels of traffic as well as various levels of artificial streetlighting.

Three roads were selected in Southeast Berkshire with one classed as busy with artificial streetlighting, one as quiet without artificial streetlighting, and one as quiet with artificial streetlighting. Data was collected by visiting each road site using a bat detector to detect the calls of bats at various distances from each road for 15 minutes at each distance. Jasp statistical software was used to analyse the collected data and a one-way ANOVA test applied to determine the data's significance regarding the effect of traffic frequency and distance from each road. The results concluded that there was no significant difference between abundance of bats and the distance from the road (One-way ANOVA, $F=1.77$, $df=2$, $p=0.19$), and there was no significant difference between type of road and bat abundance (One-way ANOVA, $F=1.56$, $df=2$, $p=0.23$).

These results imply that bats are unaffected by roads, however the results did show that more bats were detected at the furthest distances from each road, and so recommendations for conservation are provided, as well as possible improvements to the methodology for future studies of this nature.

Luke Bradfield



“My dissertation investigated the effect of anthropogenic noise on the vocalisation patterns of common marmosets (*Callithrix jacchus*). It was a challenging yet highly rewarding project that reshaped the way I understand the impact of noise on captive animals. Subsequently, inspiring me to consider pursuing further research at the master’s level.”

Abstract

*Investigating the Impact of Anthropogenic Noise on the Vocal Behaviour of a Captive Common Marmoset (*Callithrix jacchus*)*

Anthropogenic noise is a common feature in captive environments with welfare and communication implications on captive primates. This study aimed to investigate three types of anthropogenic noise: construction, traffic and human speech on the vocal frequency and intensity of a common marmoset (*Callithrix jacchus*). A repeated measures design was used on a single subject at Merrist Wood College and University Centre. The marmoset was exposed to three noise treatments and a control of no added noise. Each treatment was delivered for 20 minutes with a 15-minute gap in between. All vocalisations were recorded via an Audiomoth and analysed using Pratt and Audacity software. A total of 199 vocalisations were captured from 373 data samples. A Friedman test and Durbin-Conover post hoc test were used to analyse the data using Jasp.

The results illustrated statistically significant increases in both vocal frequency and intensity across all noise treatments compared to the control ($p < 0.001$). With human speech eliciting the biggest difference, then construction and finally, traffic noise. Although using pairwise comparisons, no significant difference was found between the three treatments. Suggesting a generalised response to the presence of anthropogenic noise instead of a specific type.

Overall, these findings support the presence of the Lombard effect in marmosets and suggest that anthropogenic noise causes an adaptive response. This study highlights the requirement for zoos and captive environments to consider better management of environmental noise, such as using sound barriers. Despite its limited sample size, this study adds insight into the literature of primate vocal behaviour with implications for improving animal welfare.

Keywords: *Common marmoset, anthropogenic noise, Lombard effect, zoo welfare*

“ BEING PART
OF REAL
EXPERIENCES
WITH ANIMALS
IS WHY WE
DO THIS
COURSE. ”

- Kaveh Montazer: *Animal Behaviour and Welfare BSc student (Level 6)*



Amber Mangar-Trent

*Fur, Facts and Folklore: Elucidating sociodemographic factors influencing public perception of red foxes (*Vulpes vulpes*) in Britain*

Red foxes (*Vulpes vulpes*) are a widespread animal in Britain, dwelling in both urban and rural regions. They're considered by many as a divisive species with associations of 'pest' and 'vermin' which conflicts with many fox enthusiasts who consider them of great ecological importance. Limited research has been undertaken in understanding what causes these split opinions. This study explored the relationship between socio-demographic variables and public perception of red foxes in Britain. It examined how specific sociodemographic groups felt and experienced foxes in their region. Participants included 174 individuals from varied socio-demographic backgrounds. Participant demographic factors of interest included age, gender, ethnicity, education level, region and employment status. Participants filled out a 26- question online survey assessing these demographics against specific fox and wildlife tailored questions.

This data was analysed through Chi-squared tests to identify significance in the data. Results suggested that there is a statistically significant association between specific demographic variables and perception of foxes. With p-values of <0.001 for those considering foxes to be a problem in their area from 5/6 demographic groups. Significant associations were also highlighted between other statements comparing foxes as threats to other species. Demographics have a significant impact on perception of foxes and in turn wildlife in general.

This study highlights the importance of considering these aspects in any future work to mitigate human-wildlife conflict and accommodate public perception. The study concludes that socio-demographics can be used to inform future conservation strategies and community engagement, and public education can be customised to correct misinformation and encourage coexistence based on specific groups values.

Key words: *Red foxes, public perception, socio-demographics*



Beth Blanks

*Zero Bucks Given: What insights can we learn from captive hog deer (*Axis porcinus*) social behaviours to improve their husbandry and welfare?*

This study explored the social behaviours of hog deer (*Axis porcinus*) and the implications of how group size and composition affect their behaviour in captivity. As hog deer are typically solitary, it is important to see how group housing affects their welfare. A group of 18 hog deer housed at Loa Conservation Trust for Wildlife were recorded for two weeks with the use of camera traps. The deer were split into two enclosures, one male side (n=5) and one female side (n=12). Throughout the study, four cameras were placed into both sides of the enclosure to record their social behaviours with the use of an ethogram. A total of 672 videos were eligible for data collection; overall 151 social behaviour frequencies and durations were recorded.

Observations found a significant association between the frequency of social interactions and subgroup sizes ($\chi^2=59.9$, $p<0.02$) and that captive hog deer were more likely to interact when in smaller subgroups of 2-3. It also found a significant association between the frequency of social interactions and subgroup sex ratio of captive hog deer ($\chi^2=115.4$, $p<0.01$). There was a significant difference between the duration of affiliative social interactions and agonistic social interactions, with affiliative interactions lasting longer than agonistic interactions ($U=318.1$, $p<0.01$), ($U=8.5$, $p<0.01$) and ($U=152.5$, $p<0.01$). This study provides further insight into the social behaviour of captive hog deer and how keeping the solitary species in groups affects their welfare.

Key words: *Hog Deer; Social behaviour; Captivity; Group Composition*

Annabel Stoddart

*An investigation into the repercussions of housing Elongated Tortoises (*Indotestudo elongata*), a solitary species in the wild, together in captivity*

For a critically endangered precocial species, such as the elongated tortoise (*Indotestudo elongata*), captive breeding programs are vital for the survival of the species. However, why is breeding success in captivity so low? Is it due to their enclosures design or is it due to something deeper? Tortoises are known as solitary species, however, in captivity they are usually kept in groups.

This study focuses on the behaviours and interactions shown between 11 elongated tortoise individuals housed at the Laos Conservation Trust for Wildlife, in Laos. It was discovered that there is no relationship between male individuals being housed together and negative behaviour (Mann-Whitney U test, $U = 7$, $p > 0.09$), however, the results for the female individuals showed significant evidence that there is a relationship between female individuals being housed together in captivity and negative behaviour ($p < 0.002$).

Overall, the results showed that there was significant overall relationship between keeping elongated tortoises, a solitary species in the wild, together in captivity and the amount of negative behaviour displayed (Mann-Whitney U test, $U = 105.5$, $p < 0.003$).

Key words: *Elongated Tortoises, Indotestudo elongata, sociality, testudine*



“The learning environment is so good here at Merrist Wood. You take what you learn in class and actually use it for practical things.”

- Amber Mangar-Trent: Foundation Degree Zoo Management

Peter Hewetson

Investigating the effectiveness of conservation management prescriptions to promote flower and pollinator diversity in semi-natural grassland restoration on ex-agricultural land.

The type of management prescription used in semi-natural grassland restoration can affect the conservation outcomes, and a better understanding of the ecological effects could help to inform future conservation projects. Consequently, this study aims to analyse the abundance, species richness and diversity of herbaceous flowering plants and invertebrate pollinators, which are derived from two primary prescription types: Existing Grassland, which has been allowed to naturally recolonise; and Wildflower Meadow, which has had wildflower seed mixes applied.

Ecological surveys were undertaken across three selected sites in Surrey during June, July and August 2024, and data were collected from 600 quadrats regarding the presence of flower species, individual flower counts, and pollinator counts within 10 broad groups. The data were non-parametric, and a range of statistical analysis was undertaken using Mann-Witney and Kruskal-Wallis tests, General Linear Mixed Modelling, Spearman's Correlation, and Simpson's, Shannon and Chao diversity indices.

The results indicate that Existing Grassland has significantly greater flower abundance, and Wildflower Meadow has significantly greater flower species richness; but there is not a significant difference in either pollinator abundance or richness. In addition, different seed mixes within the Wildflower Meadows showed a significant difference in pollinator abundance and richness, and this was probably driven by the specific seed mix compositions.

Finally, this study identified those flower species which have a significant positive correlation with both pollinator abundance and richness, and these were generally more abundant in the Wildflower Meadows. This study offers useful insights into the flower-pollinator relationships in these different prescriptions and can assist in selection of future conservation management regimes. The study data can also provide a meaningful baseline for further research on the continued grassland restoration at the selected study sites, which could cover a greater temporal range, and more detailed analysis of pollinators at a species-level along with flower-pollinator assemblages.

Keywords: *Grassland restoration; conservation prescription; flower and pollinator*

“ YOU’RE
SURROUNDED
BY PEOPLE WHO
CARE ABOUT
CONSERVATION
AS MUCH AS
YOU DO. ”

- Cameron Findley: *Animal Behaviour and Welfare BSc student (Level 6)*



HE@activatelearning.ac.uk
activatelearning.ac.uk/higher
he.activatelearning.ac.uk/



**ACTIVATE
LEARNING**

MERRIST WOOD COLLEGE

AND UNIVERSITY CENTRE