

# MRes Wildlife Conservation

## Research areas for 2024-25



In the personal statement of your application, please include information on your preferred topic area. This should include what skills you have, and what skills you would hope to gain.

Short-listed candidates will be invited for interview. As a part of the interview process, programme leaders will assess candidate's interests, experience and strengths, with reference to available research projects.

### **Research Bands**

Indicative student research-costs are provided as 3 bands, A, B & C, and provide guidance based on the experience of the programme team. Please note, actual costs will vary, depending on choices made by the student, for example, a number of Band A desk-based projects have the potential to be free. There will be an opportunity to discuss student research-costs at interview.

A = £2,000.00

B = £3,200.00

C = £4,500.00

**Research area:** Marwell estate and South Downs National Park  
**Band A**

### **Background**

The South Downs National Park (SDNP) is the UK's most recently-designated national park and comprises over 600 square miles of chalk grassland, heathland, and woodland across three counties. Chalk downlands are home to an abundance of biodiversity and endangered habitats, and are largely unique to the southern UK. Nonetheless, agriculture and urbanisation has resulted in a relatively heterogenous and fragmented distribution of habitats across SDNP, which makes generalising habitat-specific conservation recommendations difficult across the Park. Moreover, there is a paucity of published ecological data from both within the Park, and from neighbouring sites. As such, there is a need for systematic assessments of biodiversity and connectivity to establish long-term ecosystem viability and identify priority sites for conservation action.

Located inside SDNP and forming the western Park border, Marwell Wildlife owns a mosaic of woodland, grassland, and various 'green areas' that spans the Zoo and neighbouring land to make up the wider Marwell Estate. A mixture of ancient and hazel coppiced woodland, lowland meadow, managed grassland, traversed by woodland rides and footpaths, create a diverse landscape through which wildlife move, either making use of the resources provided by the zoo itself, or avoiding it altogether. These areas are managed for biodiversity and carbon sequestration, while providing outdoor learning opportunities and browse feed to our zoo animals, and access to people from local communities, via network of rights of way, paths and rides. A number of recent changes in land use and practice are supporting native wildlife, diversifying communities and supporting connectivity across the estate. Moreover, Marwell's Woodland Management Plan is due an update, and with accelerating rates of change impacting forests and woodlands, associated with climate, disease and land use, future scenario planning is essential. Management actions have the potential to turn the Marwell estate into important biodiversity reservoirs that support the SDNP as a reserve for wildlife in an increasingly fragmented and disturbed landscape across southern England. There is therefore a need to quantify and evaluate how key wildlife species use the estate and the degree to which connectivity is possible, and can be improved, throughout Marwell and the wider landscape.

### **Possible questions**

- How best can we maintain and collate long-term monitoring data – including species inventories, distribution and density assessments, and remote sensing datasets such as vegetation cover maps – across the Marwell Estate, Eelmoor Marsh, and other sites of biodiversity importance within the SDNP?
- How can we evaluate the efficacy of conservation management interventions at Marwell sites by developing suitable indices of biodiversity to quantitatively measure positive biological change?
- Which methods are appropriate to compare, collate, and standardise monitoring and management results across Marwell sites and the SDNP in order to contextualise the importance of these sites as biodiversity reservoirs within the National Park?
- How can we use geospatial and remote sensing analyses to identify both existing wildlife corridors and suitable routes for future corridors to be implemented? Which ground truthing methods would be appropriate?

### **Research interests**

Field projects based on the Marwell Estate would suit those with skills and interests in any of the following: GIS; species monitoring; remote sensing; connectivity analyses; multi-use landscape conservation; external partner collaborations.

### **Availability**

We anticipate that there will be **two** projects available in the 2025 research season. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Eelmoor Marsh SSSI  
Band A

### **Background**

Eelmoor Marsh, a 79-hectare biological Site of Special Scientific Interest in Hampshire, is part of the Thames Basin Heaths Special Protection Area. The site comprises a rare mosaic of grassland, heathland, woodland, and mire, interspersed with bogs with deep peat and ditches. Home to over 250 species of flowering plants and grasses, as well as insectivorous plants, the site supports a rich invertebrate fauna. Managed by Marwell Wildlife since 1995, Eelmoor Marsh is one of the longest running rewilding projects in the UK. Flagship conservation projects includes introducing Przewalski's horse as a grazing pressure and reintroducing the sand lizard, a rare reptile in the U.K. Rewilding the site is a continuing effort, providing opportunities for impact-led research projects for those with interests in botanical communities, invertebrate ecology, evaluation of conservation intervention, and heathland landscape ecology.

Restoring the site involves a combination of low-level grazing by large herbivores, reversal of drainage works, and extirpation of invasive species including large stands of conifers. Removal of the conifers and smaller shrubs results in the emission of carbon; however, restoration of the lowland wet heath enhances the carbon sequestration and storage of this habitat. One conservation priority is therefore to investigate carbon emissions from vegetation removal and estimate the length of time required to compensate for these emissions from the restored heathland habitat.

### **Possible questions**

- How do management practices influence species diversities and abundances across the SSSI, and how can we evaluate the efficacy of methods used to collect those data?
- How much carbon has been emitted, and is currently being emitted, by the removal of invasive species from Eelmoor Marsh?
- How have carbon sequestration rates changed as the result of invasive species removal?

### **Research interests**

Field projects based at Eelmoor Marsh would suit those with skills and interests in any of the following: GIS; insect, invertebrate, and botanical monitoring; carbon sequestration; ecosystem services. Desk-based research is also possible, owing the relatively large and long-term datasets derived from our work at Eelmoor Marsh.

### **Availability**

We anticipate there will be **two** projects available in the 2025 research season. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Conservation impact of zoological parks  
Band A

### **Background**

The collective power of the global community of zoos and aquariums includes the capacity to reach a global audience of more than 700 million visitors annually. There is evidence zoo-visits increase knowledge on biodiversity, ecology, animal behaviour and physiology (REF). There is anecdotal evidence to suggest zoo visits have 'inspired' or 'sparked' a career in nature or conservation and thus contributed to long-term conservation capacity. However, the extent to or ways in which zoo visits contribute to increasing pro-nature or pro-environmental behaviour is not well understood.

For zoos to claim cause and effect (between zoo visits and pro-environmental behaviour), in a manner that museums or other cultural institutions might do for their collections, more clarity is needed on the contributions and conductivity of zoo infrastructure, its animals and the landscape they are presented in. These mechanisms have further relevance in a world where the drivers (and solutions) behind the biodiversity crises, climate change and the decline of the natural world in general are anthropogenic and where furthermore, the physical as well as spiritual barriers between human and non-human are blurring or, as some argue, have never existed.

Marwell's work with early years (birth-5) includes occasional sessions with visiting groups as well as longitudinal sessions with children 3-5 under our Kids Love Nature programme. Observational, Leuven and likert-scale type data applied in a variety of settings including woodland, play-areas, grassland, zoo-environments but also other kindergarten settings could contribute to our understanding of a possible growing disconnect between young people and the natural world, which may underpin the current environmental and biodiversity crises.

Marwell Wildlife also frequently hosts corporate team building events for companies across the South of England. These teams spend a day doing a variety of tasks that range from habitat restoration in woodlands or meadows across the estate, cutting and packing leaves for animal feed, to constructing and repairing structures for animal care and welfare. During these events, participants also have an opportunity to learn about Marwell's work, the species and ecosystems of the South Downs National Park, and each of their places in the surrounding ecosystems. More evidence is required to assess the ecological and social impacts of these one-off events with respect to conservation efficacy, and evaluate their cumulative impact on the habitats at Marwell.

### **Possible questions**

- What are the societal and behavioural impacts of young learner and corporate events on the individuals taking part, and what messages, if any, might participants take back to their homes, workplaces, and wider surroundings?
- How does the cumulative impact of multiple corporate partner conservation days contribute to habitat restoration?
- How does participating in a conservation team building impact the individual, and how might this vary with age?

### **Research interests**

Field projects based at Marwell Wildlife would suit those with skills and interests in any of the following: social impact; ethnographic research; early education; organisational and socio-economic conservation.

### **Availability**

We anticipate there will be **three** projects available in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Lewa Wildlife Conservancy  
Band C

### **Background**

Lewa Wildlife Conservancy in Isiola, Kenya is a long-term collaborative partner with Marwell Wildlife. An important base for our work to conserve Grevy's Zebra, we have also tackled research topics ranging from lion predation, hyena distribution, large herbivore impacts on vegetation communities and ecosystem services. Lewa's current priorities include mapping landscape hydrology, assessing animal community and plant ecology around swamp and inundated habitats, mapping the distribution of invasive and alien species, quantifying the diversity and distribution of understudied groups, particularly birds, reptiles, and amphibians, and investigating the social-economic impacts of Lewa Education and Community Development Programs.

### **Possible questions**

- Which biotic and abiotic factors are associated with the distribution of invasive species across the Conservancy, and how do these factors influence small-scale and landscape-level conservation interventions adopted by Conservancy practitioners?
- How can quantifying ecosystem services intersect with long-term species monitoring to provide effective habitat quality assessments across the site?
- How have Conservancy outreach programs influenced socioeconomic metrics in neighbouring communities?

### **Research interests**

Field projects at Lewa would suit those with previous field research experience, preferably overseas, including data collection and analyses while based at a remote field station. Suitable interests include: behavioural ecology; botanical monitoring; ecosystem services; conservation education and outreach.

### **Availability**

We anticipate **one** project based at Lewa in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Northern Kenya – Landscape ecology  
Band C

### **Background**

Rainy seasons in Kenya appear to be changing with both the long rains (March – May) and short rains (October – December) becoming shorter in duration, less reliable and, in the worst years, not happening at all. These seasonal shifts will likely lead to increasingly significant hardship for wildlife, livestock, and people. In particular, unpredictable rainfall and extended droughts will result in competition for water and associated resources. Marwell Wildlife has worked with communities in northern Kenya for many years to investigate ways to share resources in times of drought. Water impounding and groundwater recharge have the potential to increase the water available during drought and increase the resilience of plants to drought conditions maintaining both browse and shade further into drought periods. This project will examine the scope for water impounding and groundwater recharge in the semi arid regions of northern Kenya that are home to the Grevy's zebra.

### **Possible questions**

- What are the impacts of drought conditions on plants, wildlife, people, and livestock in northern Kenya?
- How can water be most effectively be supplied to multiple different users in this region?

### **Research interests**

Field projects in Northern Kenya would suit those with previous field research experience, preferably overseas, including data collection and analyses while based at a remote field station. Suitable interests include: wildlife and botanical monitoring; community conservation; climate change modelling; species resilience; GIS and spatial ecology.

### **Availability**

We anticipate there will be **one** project available in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Northern Kenya – Conservation education  
Band C

### **Background**

The Samburu North region of Samburu County and Laisamis region of Marsabit County in northern Kenya support isolated but globally important populations of Grevy's zebra, as well as a diversity of other mammals, birds and herpetofauna. Here, pastoralist communities – like the Samburu and Rendille – have coexisted with wildlife for millennia. However, rapidly changing human and environmental conditions are putting increasing pressure on natural resources, threatening both wildlife and the pastoralist way of life. If long-term, sustainable conservation goals are to be achieved here, indigenous pastoralist communities must be at the forefront of conservation efforts, and supported to act as stewards of their environment who come up with their own culturally relevant solutions to the challenges they face.

Northern Kenya Grevy's Zebra Project (NKGZP) aims to foster wider community participation in wildlife conservation. By using Grevy's zebra as a flagship species, Marwell has initiated a conservation education outreach programme targeting school-going children (starting in 2016), and young livestock herders (starting in 2018), within the Samburu North / Laisamis regions. These represent important target audiences given attitudes towards the environment can start developing at an early age and once formed do not change easily. Moreover, children have a crucial role to play in combatting the degradation of natural resources, can act as message multipliers within their communities and will grow-up to become the leaders and decision-makers of tomorrow.

The ultimate goal of conservation education is to promote behaviour change; empowering people to become responsible stewards of the natural world by providing them with the knowledge, skills, and attitudes necessary to make informed decisions and take actions that support the protection and sustainable use of natural resources. To ensure effective, contextually and culturally relevant conservation education programming, it is, thus, important to have a good understanding of existing knowledge, attitudes and practices of the target audience.

Although some observations have been documented, sample sizes for students were small. No comprehensive baseline data exists concerning knowledge, attitudes and practices towards wildlife, the environment and conservation amongst children within the NKGZP study area. Moreover, an extensive review of existing published literature revealed limited prior research with children from pastoralist communities across Kenya. We therefore seek to assess the current situation, fill existing gaps in knowledge, and inform (and, where relevant, leverage support for) future conservation education programming and associated activities targeting children within the NKGZP study area.

### **Possible questions**

- How can we assess current knowledge, attitudes, experiences and practices concerning wildlife, the environment and conservation amongst school-going children and young livestock herders within the study area?
- To what extent can these data inform our ongoing role in the delivery of conservation education programming within the study area, and how can we best catalyse and support community-led actions involving school-going children and young livestock herders?

### **Research interests**

Desk projects in this area would suit those with skills and interests in any of the following: social impact; community conservation; ethnographic research; education development.

### **Availability**

We anticipate there will be **one** project available in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Northern Kenya – Grevy's zebra ecology  
Band C

### **Background**

Grevy's zebra *Equus grevyi* are Critically Endangered with most of the remaining wild population located in Northern Kenya. Land degradation, competition with livestock, infrastructure development, and climate change have reduced habitat availability and impacted population connectivity for this, and many other wildlife, species in semi-arid areas. Marwell, along with partners, has collected data and evaluated population connectivity for Grevy's zebra in Northern Kenya, but we are yet to understand how this connectivity impacts population viability. Added to this is a proposed infrastructure project in Northern Kenya that will likely impact habitat and create disturbance in areas utilised by Grevy's zebra.

Building on published research and new data, this project will develop population viability analyses models to evaluate the impact of connectivity in relation to infrastructure development. These results will help to Grevy's zebra conservation actions in the region. This project will provide essential analyses to understand the impact and potential mitigation measures on Grevy's zebra conservation in Northern Kenya.

### **Possible questions**

- Which methods allow us to evaluate Grevy's zebra connectivity in relation to new data?
- Will the proposed infrastructure developments in Northern Kenya impact Grevy's zebra connectivity?
- What is the impact of infrastructure development on Grevy's zebra population viability in Northern Kenya?

### **Research interests**

Field projects in Northern Kenya would suit those with previous field research experience, preferably overseas, including data collection and analyses while based at a remote field station. Suitable interests include: behavioural ecology; population biology; landscape ecology and connectivity; conservation education and outreach.

### **Availability**

We anticipate there will be **one** project available in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.



**Research area:** Remote technology  
Band B

### **Background**

Marwell's conservation work in on aridland antelope and gazelles in North Africa and Kazakhstan and Grevy's zebra in Kenya encompasses the health of wildlife, people, the environment, and livestock. The areas we work in are remote and challenging and we are increasingly exploring the role of remote technologies including camera trapping, the use of Uncrewed Aerial Vehicles (UAVs), and auditory devices to gain contemporaneous data on wild animal and livestock health and welfare to help target conservation action. Projects in this research area will evaluate the effectiveness of one or more remote technologies to assess individual body condition and other metrics of equids and antelope.

Marwell has also reintroduced over 2000 individuals of the nationally rare sand lizard *Lacerta agilis* to 28 sites across Southern England over nearly 30 years. To maximise the biodiversity gain of these projects, we need to determine the location of existing sand lizard populations and carry out post-release monitoring to evaluate reintroduction success that can guide future conservation management actions. However, sand lizards are perfectly camouflaged in their native sand dune and lowland heath habitat, making it extremely difficult to locate and evaluate populations, or determine survival rates from reintroduction projects. This project will evaluate different methods and emerging technologies for evaluating presence and population size of cryptic species including sand lizards. It may involve environmental DNA (E-DNA), thermal technologies, and other remote monitoring techniques. This project can be adapted to evaluate populations of native and invasive crayfish in Southern England.

Similarly, at Eelmoor Marsh, Marwell Wildlife works in partnership with the marsh's land owner, QinetiQ, to restore and maintain this fragile ecosystem partly through low intensity grazing by free-ranging Przewalski's horses and Highland cattle that live permanently on site. Marwell is required to visually check their health and welfare, as they would the animals in the zoo collection. However, the distance to Eelmoor Marsh from Marwell, along with dense vegetation and challenging marshland terrain, presents logistical obstacles for regular on-site health and welfare assessments. There is therefore a need to develop novel methods for efficient non-invasive animal health assessments.

These projects will determine the effectiveness and refine methods for evaluating wild animal health and welfare, enabling us to determine appropriate conservation interventions for threatened species.

### **Possible questions**

- How can we both increase the frequency and accuracy, and reduce the cost, time, and environmental impact of animal health assessments, for example, by leveraging remote technology to monitor the welfare of grazing animals at Eelmoor Marsh?
- How can we develop a comprehensive, non-invasive surveillance system that will allow researchers to remotely assess animal behaviour, welfare, vital signs, and body condition, which provide critical insights into animal well-being?
- Which health / welfare indicators can reliably tracked remotely and provide sufficient data to predict animal health? How effective are these indicators in cryptic species?
- How can accelerometers and GPS collars be used to remotely track movement across multiple concurrent axes, and therefore inform models of animal health?

### **Research interests**

Field projects in this area would suit those with skills and interests in any of the following: remote monitoring technology; engineering technology; remote sensing; GIS; animal behaviour and welfare.

### **Availability**

We anticipate there will be **three** projects available in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.

**Research area:** Extinct in the wild  
Band A

### **Background**

Extinct in the wild (EW) species are considered the species at the highest risk of extinction under the International Union for Conservation of Nature Red List. Both extinctions and recoveries are possible fates for EW species, but targeted conservation action is needed if we are to prevent their complete extinction. At the same time, thousands more species are Critically Endangered with declining wild populations, putting them on a trajectory to extinction or to becoming extinct in the wild. This project will build on already published and unpublished research to evaluate the potential to carry out conservation translocations for these species and reverse the decline of wild populations. It will consider the role of assisted colonisation in a world increasingly at risk from climate change and identify taxa or regions that may benefit from targeted conservation action. This project will help stimulate conservation action to where it is most needed and will help build climate change considerations into conservation translocations for highly threatened species.

### **Possible questions**

- How can we evaluate the role of conservation translocations for those species at highest risk of extinction?
- Which methods can be used to assess how climate change models will impact conservation translocations?
- How will climate change influence conservation translocations for highly threatened species?
- Is there hope for species that are the most threatened?

### **Research interests**

Desk projects in this area would suit those with skills and interests in any of the following: conservation policy; climate modelling; species distribution modelling; GIS; behavioural and landscape ecology.

### **Availability**

We anticipate there will be **one** project available in the 2024-25 year. Specific foci can be discussed and agreed, starting at interview.