



SCIENCE AND
CONSERVATION EVENTS

THE SCIENCE OF SAVING SPECIES



AGENDA

Jim Mackie

Animal Behaviour Management Officer, ZSL
Behaviour Management Aids Species Recovery

Amanda Ferguson

Diet Management Officer, ZSL
Food for Thought... and for Species Recovery

Dr Amanda Trask

Postdoctoral Research Associate, Institute of Zoology, ZSL
Saving the sihek: causes and consequences of female-biased mortalities in ex-situ management of an extinct in the wild species

Dr María Díez León

Senior Lecturer in Animal Welfare, Royal Veterinary College
How behavioural research aids European mink conservation

Chaired by **Lewis Rowden**

Evidence-based Animal Care Manager, ZSL

DATE

Tuesday 23 April 2024

TIME

6pm – 7:30pm

LOCATION

Huxley Lecture Theatre,
ZSL

Free to attend

Registration required

ABSTRACTS

Behaviour Management Aids Species Recovery

Jim Mackie, ZSL

Zoo Animal Behaviour Management is the application of the scientific principles of behaviour change to provide optimal physical and psychological wellbeing to the animal whilst under human care.

These principles can help replicate hunting techniques for animals destined for reintroduction, to modify habitats to encourage nest building and other species-typical behaviours, or they can be applied to reduce undesired behaviours and provide coping skills with animals as part of a captive breeding programme.

This talk will highlight two case studies where zoo learnt behaviour management techniques have aided species recovery in collaborative projects between ZSL and other conservation organisations.

Jim has worked at The Zoological Society of London (ZSL) for 25 years, becoming the organisation's first Animal Behaviour Management Officer in 2013. In this role, Jim is responsible for training, enrichment and behaviour-based husbandry solutions across ZSL's two zoos, London and Whipsnade. Jim currently works within the Evidence-based Animal Care team, who oversee animal welfare, diet management, behaviour management and research. Recently, Jim has been involved in projects alongside colleagues in ZSL's Conservation Programmes and Institute of Zoology, bringing zoo learnt

behaviour management principles and applying them to aid species recovery.

Food for Thought... and for Species Recovery

Amanda Ferguson, ZSL

Nutrition is often overlooked in conservation science which is surprising given the fundamental effect of diet on the disease status, reproduction, and longevity of all animals. This talk will summarise the importance of nutrition as a preventative medicine and the key considerations when designing a feeding programme for animals in human care to promote positive health and welfare.

Conservation programmes for threatened species often involve management strategies that include dietary interventions. Ex-situ breeding, translocation and release programmes, supplementary feeding of wild or reintroduced populations, temporary maintenance of individuals in managed care (e.g. during predator eradication programmes) and even habitat alteration affecting food availability, all involve nutritional manipulation and management. Achieving successful outcomes requires detailed planning and evaluation of the animals diet to ensure healthy individuals are produced which have the best chance of survival and reproduction. The design of a nutritionally balanced diet, offered in an appropriate quantity and delivered in a manner methods to satisfy the animals evolved behavioural and physiological needs, will be outlined.

Three case studies of species recovery programmes in which ZSL is a collaborator will be examined to illustrate how these considerations are incorporated into practice:

the corncrake, mountain chicken frog and hazel dormouse.

Amanda is the Diet Management Officer at ZSL and is responsible for formulating diets for all the animals at London and Whipsnade zoos, from snails to elephants! Alongside clinical nutrition Amanda is interested in food presentation method to encourage species specific natural feeding behaviours and conducts zoo-based nutrition research in these areas. Having worked at ZSL in several roles from keeper to zoo research coordinator, Amanda has a rounded view of how the application of nutrition science can be integrated into practice to improve husbandry and lead to better health, welfare, and conservation outcomes. Amanda is part of ZSL's Evidence-based Animal Care (EAC) Team.

Saving the sihek: causes and consequences of female-biased mortalities in ex-situ management of an extinct in the wild species

Dr Amanda Trask, Institute of Zoology, ZSL

Maintenance and recovery of extinct in the wild species requires a healthy ex-situ (i.e. under human care) population, to act as insurance against total extinction of the species and as a source of individuals for future releases. However, sex-biased mortalities and resultant sex-ratio imbalances can threaten the health and viability of ex-situ populations, by making breeding pair formation difficult and reducing 'effective' population size.

The sihek, or Guam kingfisher, is an extinct in the wild species: it was extirpated from Guam by 1988 due to predation by invasive brown tree snakes and currently exists entirely under human care in breeding institutions in the mainland US and on Guam. First releases of

sihek back to the wild are planned imminently, meaning that ensuring the ex-situ population is healthy to support releases is an imperative.

This talk will consider the potential threats the ex-situ sihek population could face from female-biased mortalities, and will give an overview of results from analyses into the underlying causes of these mortalities. Using necropsy data, we have identified differences in causes of mortality between sex- and age classes in the sihek ex-situ population. We have then carried out analyses using detailed reproduction and body weight data, to uncover how individual's reproductive status and body weight may interact to influence mortality risks. Finally, this talk will discuss implications of our results for management of ex-situ populations of threatened species, and in particular in light of planned upcoming releases of sihek back to the wild.

Amanda is a postdoctoral research associate and Morris Animal Foundation research fellow at the Institute of Zoology, ZSL. Amanda's current research aims to determine health, demographic and genetic threats to the extinct in the wild sihek (Guam kingfisher), to aid species recovery. More broadly, Amanda has research interests in threatened species recovery potential and in wild animal's health and welfare. Amanda completed her PhD at the University of Aberdeen, investigating genetic and demographic threats to the viability of the Scottish red-billed chough population, and continues to be involved with this work.

How behavioural research aids European mink conservation

Dr María Díez León, Royal Veterinary College

Behavioural competency and flexibility is crucial for animals to survive in the wild, yet it can be compromised by the effects of early rearing under human management, thus jeopardising the success of conservation translocation programmes and raising questions about the welfare of the animals involved in these programmes.

This talk reviews current research approaches to improve behavioural competencies in one carnivore species, the critically endangered European mink. The recovery of this mustelid species fully depends on conservation breeding and reintroduction efforts, as the few remaining populations are fragmented and under constant pressure from the introduced American mink. However, a large proportion of captive-born European mink males fail to mate for reasons consistent with environmental and/or management effects on the development of their courtship behaviour. Further, upon reintroduction, mortality can be high, with individuals anecdotally reported to occupy suboptimal environments.

Using experimental approaches that combine methods from behavioural ecology and welfare science, we are testing whether *ex situ* aspects that are most dissimilar to the natural biology of the species, such as weaning time and mode, or the degree of environmental complexity experience from birth, affect the development of adult mating behaviour and navigational skills, and their overall resilience to stressors. We are also assessing whether behaviours directly linked to welfare - such as play behaviour or abnormal repetitive behaviour - influence breeding and reintroduction success, whether directly or indirectly.

This talk will give an overview of these on-going analyses as well as discuss potential implications for the conservation management of this and other carnivore species.

María is a zoologist specialising in animal behaviour and welfare. During her PhD at the University of Guelph, María investigated how housing conditions affect carnivore behaviour and brain function and the potential implications of this for conservation breeding programmes. Her postdoctoral work addressed how cage size affects the welfare of farmed mink. Since starting as Senior Lecturer in Animal Welfare at the Royal Veterinary College, she works on increasing our understanding of behavioural and physiological indicators of animal welfare and investigating how constraints of captivity impact the success of conservation translocations.



EVENT FORMAT

- This event will take place in the Huxley Lecture Theatre and will be filmed and published on our Science and Conservation YouTube channel (zsl.org/IOZYouTube). Please be aware, by attending you consent to being recorded during the Q&A session.
- Seats are allocated on a first-come, first-served basis.
- Before attending, please read our Code of Conduct found [here](#).
- The event will run from 6-7:30pm
- It will consist of short presentations from the speakers, followed by a Q&A and panel sessions.
- To submit a question to a speaker prior to the event, please send it to scientific.events@zsl.org. Please be aware we may not be able to answer all questions.
- There is no charge for this event, but registration is required.



COMING UP...

Something in the water: Managing threats to migratory fish

23 April 2024, 6-7:30pm

In person; Huxley Lecture Theatre, ZSL

Migratory fish such as sturgeon, eel and salmon, are culturally, economically, and ecologically valued across the world, but they are vulnerable to a host of threats.

In this event, the panel will delve into commonalities in the challenges to migratory fish, as highlighted by three case studies; UK native sturgeon, European eel and salmon and sea trout, and how we can implement solutions with benefits to multiple species.

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