



SCIENTIFIC MEETING

MONITORING OF WILDLIFE: FROM INDIVIDUAL BEHAVIOURS TO GLOBAL DISTRIBUTIONS

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The Meeting Rooms, The Zoological Society of London, Regent's Park, London NW1 4RY

Chair: Tom Hart, Postdoctoral Research Assistant, Institute of Zoology, ZSL

The devil in the details: when wild animal behavior matters

Dr Roland Kays, Curator of Mammals, New York State Museum, USA

Nature is complex, with countless interactions between predators and prey, plants and animals, not to mention parasites and disease. Although important, most of these interactions are rare and brief – a mouse only gets preyed upon once in its life. Biologists are increasingly bringing new technologies into the wild, providing glimpses into this complexity. These new high-tech tools are showing us how small differences in the behavior of individual animals can make the difference between life and death, and even have effects that ripple through natural systems. For example, we use tiny radio-collars on mice monitored 24/7 by an automated tracking system to alert us to the death of an animal. We then follow up quickly in the field to find the "scene of the crime" and determine the cause of death. More sophisticated sensors integrated into radio-collars on animals can provide additional details into the behavior and physiology of an individual, including their activity, temperature, heart rate, and even their sleep patterns. In some cases, on-board video cameras can provide glimpses of the "birds-eye-view" of a situation. We have also been developing a less invasive alternative of monitoring animals without capturing and tagging them by randomly placing video camera-traps in the forest. The resulting clips reveal an unbiased view of the animals' life which, with sufficient sample size, reveals a number of surprises. New information technologies have the potential to make this camera trap approach a viable large-scale, long-term monitoring program.

How far are we from tracking small animals globally?

Professor Martin Wikelski – Max Planck Institute for Ornithology, Germany & Princeton University, USA

Tracking individuals with technology: examples from the Antarctic

Dr Iain Staniland, Seal and Penguin Biologist, British Antarctic Survey

Human exploitation and climate change are having an increasing influence on the marine environment, particularly in Polar Regions. Marine ecosystems are difficult to monitor but top predators, that breed on land but feed at sea, can be used as indicator species as they show consistent and measurable responses to changes in their environment.

Technical advancements over the last 30 years have allowed us to follow these predators whilst they are at sea, giving us an insight into this cryptic world. Simple devices, such as radio transmitters and implanted transponders (PIT tags), can log the allocation of time between provisioning young ashore and feeding at sea. Satellite tags and, more recently, GPS technologies help us track animals' at-sea movements, whilst time-depth recorders allow us to measure their diving behaviour. BAS has led the miniaturisation of geo-location devices so that we can track ever-smaller species and follow individuals for a period of years rather than weeks. Digital image recording now even allows the use of animal-borne camera devices to capture a bird's, or seal's, eye view of the underwater world.

Information we gain through these studies is used to advise the conservation efforts of international bodies protecting Antarctic wildlife. Such work has already led to the development of fishery management zones that are based on the foraging areas of vulnerable predators. Perhaps most importantly, the tracking of albatrosses and petrels has identified areas of overlap with long-line fisheries and is helping to target worldwide efforts to reduce the associated mortality of these threatened birds.

Monitoring the fierce and the rare: Counting Tanzania's carnivores

Dr Sarah Durant – Research Fellow, Institute of Zoology, ZSL

Carnivores present particular challenges in monitoring. Secretive, cryptic and often nocturnal, these species are extremely difficult to monitor using traditional techniques, such as aerial census and ground transects. Large carnivores, such as cheetahs, lions and leopards, present even greater difficulties, due to their low densities. However, as the pressures on their habitat increase, it is increasingly important to estimate their numbers and distribution, in order to mitigate the impacts of environmental change and assess the impacts of legislation and management. Here I discuss current approaches to carnivore monitoring used in Tanzania and elsewhere. I focus on two approaches which have proved to be most successful. Firstly, the use of remote cameras to survey carnivores within protected areas. Secondly, the use of point location and photographic sighting data sent in by volunteer data contributors, including amateur naturalists, wildlife professionals and tourists, which can be used across a wider region. I go on to provide examples of the type of information that can be generated by such data, such as establishing distributional range, locating potential dispersal corridors and establishing potential sensitivity of different species to future environmental change. Finally I discuss how these data can be used to improve the conservation of carnivores in Tanzania and beyond.