WILDLIFE DISEASE MANAGEMENT IN SPECIES CONSERVATION PROGRAMMES

17 APRIL - 23 JUNE 2017, ONLINE
YOUR INVITATION…

In recent years, species and ecosystems have been threatened by many anthropogenic factors manifested in outbreaks of infectious disease causing local and global declines. This course equips veterinarians and conservation managers with the skills they need to address and solve the challenging disease issues faced by conservation programs today.

Alonso Aguirre, DVM, MS, PhD

This course is designed for biologists and veterinarians with an interest in how disease impacts on wild populations and can help drive species towards extinction. Going online has meant that we can connect this course with people and their real-life work and explore how we can link up the theory and principles with the practice of disease management within conservation projects. We welcome you all and look forward to some vibrant online discussions around this important topic!

JAMIESON COPSEY
HEAD OF LEARNING AND DEVELOPMENT
COURSE OVERVIEW
This 20-hour online course exposes you to the realities of dealing with infectious disease issues within a conservation programme, from managing an outbreak to monitoring pathogens in a population. Addressing a different topic each week we cover the impact of infectious diseases on wildlife, examine how disease operates in small, endangered populations and consider how to prioritise our disease screening efforts. Included is an introduction to facilitation and conflict resolution tools which have become an essential component of any disease manager’s toolkit as they seek to develop consensus over how best to manage disease within a human-dominated landscape.

ONLINE STRUCTURE
The course is delivered in an online environment that provides a dynamic and collaborative learning experience. Learning materials include online recorded lectures, discussion boards, reading lists and individual or group activities. Expert tutors will provide support and you can engage with fellow students in supportive and constructive online networks. The flexible learning environment means you learn at the times and locations that suit you best, making this course suitable for busy professionals who want to update and extend their knowledge of wildlife disease management.

WHO IS IT FOR?
The course is aimed at veterinarians, biologists and conservation managers interested in or concerned with the management of disease and its impact on wild populations. It is also relevant to other professionals or graduate level students who have an interest in this topic and want to broaden their professional development experience.
WHAT IS THE COURSE CONTENT?

During the course you will learn about:

• Disease epidemiology and the characteristics of disease in small populations
• Modelling disease within wild populations
• The role of facilitation within the development of disease management programmes and develop some rational and interpersonal skills to help you interact most effectively with diverse stakeholders
• The core components of effective disease monitoring and surveillance programmes
• How to develop surveillance systems to detect mortalities or other subtler, physiological responses to specific pathogens
• Sampling bias, validity and testing options to pick up the change that we are monitoring for
• The processes involved in implementing a disease risk assessment for a species recovery project (e.g. within a reintroduction project)
• How to develop and critically review a biosecurity programme
• How conflict can be a productive process, generating new information and encouraging understanding of diverse viewpoints
• The main practical approaches to controlling disease in wild populations

COURSE LEARNING OBJECTIVES

By the end of this course you will be able to:

✓ Appreciate the relevance of Conservation Medicine, EcoHealth and One Health approaches
✓ Understand the epidemiology of disease in small populations
✓ Critically assess the potential and limitations of disease modelling to inform conservation interventions
✓ Develop methods of wildlife disease monitoring and surveillance
✓ Understand how to conduct disease risk assessments
✓ Recognise how to institute biosecurity protocols within wild and captive environments
✓ Draw on examples of disease management in conservation programmes (in-situ and ex-situ) to inform your own practice
✓ Understand the role of a facilitator and be equipped with core tools to enable you to deal with conflict and help groups to come to an agreed solution to a problem
COURSE OUTLINE

The course format involves online lectures, case studies, group work, individual reflection and online discussions.

WEEK 1
Conservation Medicine, EcoHealth and One Health and their relevance to species recovery programmes

In this introductory session we will explore the relevance of these evolving disciplines in our understanding of how to manage disease within species recovery programmes.

WEEK 2
Epidemiology of disease in small populations

Epidemiology is of fundamental importance in the management of wildlife disease. During this week we provide a gentle introduction into epidemiology as a discipline and introduce some key definitions and terminology. We discuss important topics such as reservoirs, transmission dynamics and the natural ecology of disease. We consider why infectious disease is of particular concern in small populations and its importance in species conservation programmes.

WEEK 3
Asking the critical questions: strengths and limitations of disease modelling within conservation programmes

In the third week of the course we will consider the use of mathematical models in wildlife disease management. There has been an almost exponential rise in the number of publications involving disease modelling in the last two decades and this trend looks set to continue. Epidemiological models have become important tools for both understanding and predicting wildlife disease and are increasingly being used to drive policy. However, the ecology of wildlife disease is often highly complex making it difficult to model accurately. This week’s materials will provide an introduction to the science behind modelling and the theory that underpins it. We will also have a look at some of the applications for modelling techniques within conservation programmes.

WEEK 4
Facilitation within species recovery programmes

In principle it would seem almost nonsensical to maintain divisions between traditional veterinary medicine and other areas of biological and social science as we seek to find ways to halt the current biodiversity crisis. In practice the process of uniting the disciplines - with their specific terminology, differences in approach and areas of interest - is one which requires a new set of trans-disciplinary skills and understanding. Add into this mix the potent ingredient of individual human personality, culture, beliefs and norms of behaviour and you have the potential for misunderstanding, mistrust and conflict to occur. This week (4) and later on in week 8 we step outside our biological disciplinary focus and instead look at how people work (or don’t work!) with each other and what we can do to create effective teams and group decision-making processes.

The aim over these two sessions is to introduce you to some alternative ways of looking at inter-disciplinary collaborations and inform how you manage meetings between different people with potentially diverging viewpoints. This week we look at the role of the facilitator; a role that you could find yourself in during discussions over disease management or other contentious issues in which there are no easy answers. In week 8 we look specifically at conflict and how you prepare yourself for dealing with it in a constructive manner.

WEEK 5
Wildlife disease monitoring and surveillance

The purpose of this week’s session is to enable you to be able to begin to develop your own disease monitoring and surveillance programme. We consider the core components of effective disease monitoring and surveillance programmes, appreciate the justification for disease surveillance in wildlife and consider the main methods that can be employed. Through a series of case studies, we look at disease monitoring and surveillance programmes, and consider how we develop surveillance systems to detect mortalities or other, subtler physiological responses to specific pathogens. Finally, we reflect on the impact of sampling bias, validity and testing options to pick up the change that we are monitoring for.
WEEK 6
Conducting risk assessments
This week we are going to be discussing the process of disease risk analysis and its relevance and importance to wildlife species conservation programmes. The purpose is to enable you to be able to develop your own disease risk assessment as part of a species recovery project. We look at the core components of the disease risk analysis (DRA) process as they relate to species recovery project, appreciate the tools and methodologies used to undertake a DRA and consider how DRAs may be implemented and reviewed. Again using a range of case studies, we consider the impacts that a DRA may have on a species recovery project.

WEEK 7
Biosecurity within captive and wild settings
During this week we will be looking at the prevention of transmission of infectious agents that might affect a conservation programme. Focusing on captive populations, we will be covering basic biosecurity principles, methods of assessing and prioritising biosecurity risks as well as the different levels of biosecurity and how to decide which one is most indicated for your programme. We will develop a biosecurity facility and protocols and will discuss the practicalities of applying biosecurity in a field situation.

The main learning activity is the design of an isolation facility for amphibians and the protocols to manage it. Based on a scenario presented, and using the sketch for the facility provided, you need to get together and design, draw the plan for the facility.

WEEK 8
Dealing with conflict
In week 4 we introduced you to the role of the facilitator and some of the tools and processes that can be used to help you work your way through a group decision-making exercise together. This week we look specifically at the topic of conflict and how you could or do deal with it. The session is designed to help you reflect on your “default setting” when you feel yourself in a conflict situation (do you give in too easily or push too hard? Are you concerned more about ‘keeping the peace’ or making what you think is the best decision?). It goes on to introduce you to five ways of dealing with conflict, each with their own strengths and weaknesses and therefore appropriateness for different situations.

WEEK 9
Disease management within wild populations
As we are already very well aware, disease of wildlife can have many implications for conservation. In the past, the first reaction of many stakeholders to the discovery of disease in wildlife was often to suggest a cull. However, as our understanding of disease ecology has improved it has become clear that, due to the many complexities of wildlife disease and the practical limitations to implementing them, culling will often not achieve the expected disease control outcome. Many interventions have been based on techniques used in management of disease in domesticated species, but these techniques are not necessarily transferable to wildlife populations. Managing disease in wild hosts is inherently more complex and challenging than in their domesticated counterparts.

Through the presentations and discussion this week we will be examining the techniques available for practical disease management in wildlife, using much of the theory learned earlier in the course. We will start by outlining some general principles of management of disease in wild animals and will then discuss the range of techniques available for disease control and their advantages and limitations.

WEEK 10
Group scenario: Developing your own response to disease
The objective of this last week of the course is to give you the opportunity to reflect on and make use of what you have learnt in the previous weeks. For this we will use a real life scenario where mortality is observed in the critically endangered Mountain chicken frog in the island of Montserrat. Your role is to be the animal health advisor to this project. Individually and collectively, you will need to decide what needs to be done and put them in a timeline (whether the actions need to be immediate, short-term, mid-term or long-term).

As you come up with ideas, the tutors will pick up on key areas that need developing and create discussion threads to elicit discussion. You can also create discussion threads if there is a particular area that you want to discuss with the group.

PLEASE NOTE THAT THE ABOVE COURSE OUTLINE MAY BE SUBJECT TO MINOR CHANGES
**COURSE LEADERS**

**Jamie Copsey**  
**HEAD OF LEARNING AND DEVELOPMENT, DURRELL WILDLIFE CONSERVATION TRUST**  
Based permanently in Mauritius my mission is to direct the growing training programme and oversee the development of Durrell Conservation Training Ltd. I graduated from Glasgow University in 1993 with a BSc (Hons) degree in Zoology and have since completed a Masters in Anthropology at University College, London and a Diploma in Management and Leadership with the Chartered Management Institute. I have field work experience in Mauritius, Seychelles, Trinidad and Madagascar and have worked for more than 20 years in the field of species conservation. I have over 15 years’ experience as a qualified teacher and trainer. In addition to developing and delivering training programmes I am a trained facilitator and help a variety of organisations out with their strategic planning needs. I have published on a range of topics including conservation management and leadership, community conservation, invasive species management, animal nutrition and behaviour and amphibian conservation. In 2017 I plan to have (finally!) published a book through Cambridge University Press on threatened species recovery, drawing heavily on lessons from islands.

**Professor Anna Meredith**  
**PROFESSOR OF ZOOLOGICAL AND CONSERVATION MEDICINE, ROYAL (DICK) SCHOOL OF VETERINARY STUDIES**  
Apart from one year in general practice after graduation, I have spent my entire veterinary career working with exotic species and wildlife. I have been at the R(D)SVS since 1992 and set up and head the Exotic Animal and Wildlife Service. Until 2009 I was also Head Veterinary Surgeon for the Royal Zoological Society of Scotland’s Edinburgh Zoo, and I have over 20 years clinical experience with a wide variety of wild species in both captive and free-ranging situations.

My most recent wildlife research project has been on using carnivores as sentinels for infectious diseases in their prey. I am also involved with ongoing projects on Scottish wild cats, palmate newts, red squirrels, beavers and raptors. I also Chair the UK Government’s Zoos Expert Committee and am a Zoo Inspector, which keeps me up to date with the zoo community. I am passionate about education and teaching, and strongly believe that vets have a key role to play in conservation – hence developing this course!

**Dr Neil Anderson**  
**LECTURER AND PROGRAMME COORDINATOR, CONSERVATION MEDICINE AND ONE HEALTH, ROYAL (DICK) SCHOOL OF VETERINARY STUDIES.**  
I qualified as a veterinarian in 1996 and spent twelve years in private clinical practice. I obtained a PhD in wildlife epidemiology from the Centre for Tropical Veterinary Medicine in 2009 and have field experience working with free-ranging wildlife populations in southern Africa. My research interests centre on the transmission of diseases of the wildlife / livestock / human interface and I have specialist expertise in the ecology of trypanosomiasis in wildlife populations. I am currently employed as Lecturer and Programme Coordinator for the Conservation Medicine and One Health Programmes at the University of Edinburgh. I am also employed as a postdoctoral research officer for the Dynamic Drivers of Disease in Africa Consortium zoonotic disease research projects in Zambia and Zimbabwe.
Dr Javier López  
**VETERINARY MANAGER AT THE ANIMAL HEALTH DEPARTMENT, CHESTER ZOO.**

I graduated from Zaragoza University (Spain) with a degree in Veterinary Medicine in 1992 and later obtained the Master’s degree in Wild Animal Health by the Royal Veterinary college of London and Zoological society of London. I have worked as exotic and wildlife veterinarian in practice and at rehabilitation centres and over 20 years as head of the Veterinary Services for Durrell Wildlife Conservation and then Chester Zoo, one of the largest zoos in Europe. At these two zoos, I have been responsible for the health care of the captive animal collection and for the veterinary aspects of training, (including the development of an ECZM accredited residency) and research. I have also been responsible for the provision of veterinary support to multiple conservation programmes such as the captive breeding and release of Malagasy chelonia (Geochelone yinephora, Erymnochelys madagascariensis, Pyxis planicauda), the rescue programme for the Montserrat mountain chicken frog (Leptodactylus fallax), the Madagascar Pochard (Aythya niroca) and the endangered passerine’s captive breeding centre in Cikananva, Java).

I am currently Veterinary advisor to EAZA’s reptile and amphibian Taxon Advisory Groups as well as for the Mountain chicken frog, Blue Crowned Laughing Thrush, black rhino and Aye-eye TAGs.

Disease risk assessment is a key aspect of many conservation activities, such as here with the release of captive-reared critically endangered rere (*Erymnochelys madagascariensis*) back into Lac Ankomakoma in Madagascar.
COST AND BOOKING INFORMATION

The course fee is £399 (£350 early bird rate - deadline 1 March 2017)

Please note: Students resident in the developing world can access a reduced fee of £70

Bookings can be made via the following link:

www.ed.ac.uk/vet/studying/cpd/courses/online

For further information or to book a place, please contact +44 (0)1534 860037 or email academy@durrell.org

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SAVING SPECIES FROM EXTINCTION