



Joint virtual conference

CUENCA 2021

August 31 to September 2



69th WDA
14th EWDA





Joint virtual conference



CUENCA 2021 —▶
August 31 to September 2

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WELCOME to the Virtual 69th WDA /14th EWDA 2021 Joint Conference.

This is the 2nd time in history that the “mother” International Wildlife Disease Association (WDA) liaises with the European section (EWDA) to organize a joint Conference that provides members and non-members with the opportunity of exchanging science, expertise, mentoring and good conversations on wildlife health unfortunately not as planned with a coffee, beer or wine in hand, but in a unique and new virtual setting and more than ever with the final goal of better Managing Wildlife Diseases for Sustainable Ecosystems.

Although the 69th annual WDA / 14th biennial EWDA Joint Conference had been planned to take place in the beautiful medieval city of Cuenca (Spain) on August 30 - September 3, 2021 it will now be held in a user-friendly online format designed for all of us to get the maximum benefit and insights. Although a Virtual Conference can never fully replace the opportunity to meet friends and colleagues, we have streamlined our Conference to provide a maximum of opportunities for interaction and networking as well as for room for discussion and lots of useful exciting information! The Conference will also advertise parallel activities as the EWDA Wildlife Health Surveillance Network meeting and will try to keep celebrating the traditional Student-Mentor mixer.

In the Anthropocene epoch the impact of human activities is evident even on the Earth's geology. We, humans, have influenced almost every single ecosystem on the planet and nowadays these cannot be understood and protected without taking into consideration the unstoppable influence of humans over the millennia. This Conference seeks to provide the scientific and technical bases for the future strategies to protect and preserve our naturally inherited wildlife richness by 'Managing Wildlife Diseases for Sustainable Ecosystems'. Advances in all aspects of wildlife diseases are within the scope of the topic, and those with a special focus on advances in wildlife disease management are most welcome.

The Conference is hosted by the University of Castilla – La Mancha (UCLM) in a dynamic and user-friendly online format. Leading wildlife disease research institutions in Spain - UCLM, the Autonomous University of Barcelona and the University of Córdoba - joined together in the Organizing Committee.

Despite the fact that You will have to postpone a visit to Spain and lovely Cuenca, there is no doubt that you cannot miss this event. We look forward to welcoming you and encourage you to enrich us with your outstanding scientific results to improve the sustainability of the planet's ecosystems

The Organizing Committee



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INVITED SPEAKERS



'Understanding pathogen transmission in a solitary, secretive carnivore (Puma concolor)'

Prof. Meggan Craft, PhD

Associate Professor, Department of Veterinary Population Medicine (VPM)
College of Veterinary Medicine
University of Minnesota, USA

Prof. Craft is an infectious disease ecologist. The broad aim of her research program is to understand infectious disease dynamics in animal and human populations. She tests hypotheses regarding disease spread and consequent control through parameterizing theoretical disease models with empirical data. She is interested in two fundamental areas: (i) How are pathogens maintained in multi-host ecosystems? (ii) How does heterogeneity in population contact structure affect pathogen dynamics? She is an interdisciplinary researcher working at the intersection of environmental, human, and animal health. Current research projects in the Craft lab focus on modelling swine viruses (e.g. influenza and FMD), "large cat" retroviruses (i.e., pumas and lions), moose metagenomics, bovine tuberculosis in cattle, raccoon rabies, and prairie dog plague.



'Reservoirs Sans Frontières: can ecology help us predict viral spillover risk from bats?'

Dr. Olivier Restif

Cambridge Infectious Diseases
Department of Veterinary Medicine
University of Cambridge, United Kingdom

Dr. Restif is an epidemiologist interested in the use of mathematical models combined with experimental and field-based studies to investigate the dynamics of infectious diseases at all scales, from cells to ecosystems. His research falls into four main subjects: (1) Within-host dynamics of bacterial infections, (2) Evolutionary ecology of immune defences, (3) Microcosm studies of host-pathogen population dynamics, and (4) Model-Guided Fieldwork for Wildlife Infectious Diseases.



'Illegal Wildlife Trade and Emerging Infectious Diseases: Pervasive Impacts to Species, Ecosystems and Human Health'

Prof. A. Alonso Aguirre, DVM, MS, PhD

Chair of the Department of Environmental Science and Policy
George Mason University, Virginia, USA

Dr. A. Alonso Aguirre is Chair and Professor at the Department of Environmental Science and Policy at George Mason University, Fairfax, Virginia, where he heads a program of collaborative research that focuses on the ecology of wildlife disease and the links to human health and conservation of biodiversity. He also chairs the university Institutional Animal Care and Use Committee. He has worked for the past three decades in over 23 countries focusing on integrative research, transdisciplinarity, professional leadership training and capacity building. He served as the Executive Director of the Smithsonian-Mason School of Conservation. Previously he was Senior Vice President at EcoHealth Alliance (formerly known as Wildlife Trust) in New York also holding different appointments at the Consortium for Conservation Medicine, the Center for Environmental Research and Conservation at Columbia University and the Center for Conservation Medicine at Tufts University Cummings School of Veterinary Medicine. His research focuses on the ecology of wildlife diseases, conservation medicine, EcoHealth and One Health.



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'Wildlife through the lens of One Health: An African perspective'



Prof. Anita Michel, BVSc, DVM, PhD

University of Pretoria, South Africa

Prof. Anita Michel qualified as a veterinarian in Germany and obtained her first postgraduate degree from the Ludwig-Maximilians-University in Munich and her PhD from Utrecht University in The Netherlands. For 20 years she worked as a research veterinarian and headed the laboratory for diagnosis and research on mycobacterial diseases at the ARC Onderstepoort Veterinary Institute and joined the Faculty of Veterinary Science of the University of Pretoria in 2009 where she has since been involved in undergraduate and postgraduate teaching and research. Her research focuses mainly on the epidemiology, diagnosis and control of bovine tuberculosis and brucellosis in livestock and wildlife with a particular interest in One Health.



'The Ecology, Economics and Evolution of Emerging Pathogens'

Prof. Andrew P. Dobson

Department of Ecology and Evolutionary Biology
Princeton University, New Jersey, USA

Prof. Dobson's research is concerned with the ecology of infectious diseases and the conservation of endangered and threatened species. He focuses on the population and community ecology of infectious diseases in a variety of endangered and fragile ecosystems: the Serengeti in East Africa, the coastal salt marshes and grasslands of California; the forest fragments of Malaysia and Bangladesh, and the eye's of the finches in the back yards of New England. He also works on the interaction between climate variability and the transmission of malaria and cholera in India and Bangladesh. His conservation work is focused upon the Serengeti region of Tanzania. While a significant emphasis has been upon the control of pathogens that can infect both wildlife and domestic species: rabies, rinderpest, brucellosis. He is also interested in the ecology and economics of land-use change, wildlife-human interactions and ecotourism. diagnosis and control of bovine tuberculosis and brucellosis in livestock and wildlife with a particular interest in One Health.



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COMMITTEES

ORGANIZING COMMITTEE

Francisco Ruiz-Fons, DVM, PhD

Senior Researcher, Wildlife & Vector-Borne Disease Epidemiologist
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

Pelayo Acevedo, DSc, PhD

Senior Researcher, Wildlife Population Ecologist
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

Jorge Ramón López-Olivera, DVM, PhD

Senior Lecturer, Wildlife Disease Epidemiologist and Manager
Wildlife Ecology & Health Group (WE&H) and Servei d'Ecopatologia de Fauna Salvatge (SEFaS)
Facultad de Veterinaria, Universitat Autònoma de Barcelona, Bellaterra, Spain

Isabel G. Fernández de Mera, DSc, PhD

Research Fellow, Vector-Borne Disease Molecular Biologist
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

Vidal Montoro Angulo, DVM, PhD

Senior Lecturer, Animal Production Scientist
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

Ursula Höfle, DVM, PhD

Senior Lecturer, Avian Disease Specialist
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

María A. Risalde, DVM, PhD

Lecturer, Veterinary Immunopathologist
Facultad de Veterinaria, Universidad de Córdoba, Córdoba, Spain

Sandra Díaz Sánchez, DVM, PhD

Post-doctoral Researcher, Wildlife & Vector-Borne Disease Microbiologist
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

SCIENTIFIC COMMITTEE

Prof. Christian Gortázar, DVM, PhD

Head of the Scientific Committee
Instituto de Investigación en Recursos Cinegéticos IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

Prof. Jonna Mazet, BS, DVM, MPVM, PhD

Executive Director, One Health Institute
University of California Davis School of Veterinary Medicine, Davis, CA, USA

Prof. Atle Mysterud, PhD

Centre for Ecological and Evolutionary Synthesis Department of Biosciences University of Oslo (UiO), Oslo, Norway

Ass. Prof. Charles Masembe, BVM, MSc., PhD

Department of Zoology, Entomology and Fisheries Science, College of Natural Sciences, Makerere University Kampala, Uganda

Dr. Dolores Gavier-Widén, DVM, MSc., PhD

Head of Department of Pathology and Wildlife Diseases
National Veterinary Institute (SVA), Uppsala, Sweden

Dr. Sonia M. Hernández, BA, DVM, PhD, DACZM

Warnell School of Forestry & Natural Resources College of Veterinary Medicine, University of Georgia Athens, GA, USA

Prof. Emmanuelle Gilot-Fromont

Equipe Biodémographie Evolutive VetAgro Sup - Campus vétérinaire de Lyon University of Lyon, Marcy L'Etoile, France

Dr. Richard Delahay

National Wildlife Management Centre Animal and Plant Health Agency Gloucestershire, United Kingdom

Prof. Susan Kutz, DVM, PhD

Department of Ecosystem and Public Health Faculty of Veterinary Medicine, University of Calgary Calgary, Alberta, Canada



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COMMITTEES

STUDENT AWARDS COMMITTEE

Tiggy Grillo
SAwC Chair
Wildlife Health Australia

Michelle Verant
SAwC Co-Chair
USA

Justin Brown
USA

Ezequiel Hidalgo
Chile

Terra Kelly
USA

Becki Lawson
UK

Megan Jones
Canada

Fernando Esperon
Spain

Jane Hall
Australia

Laurie Baeten
USA

Anne-Justice Allen
USA

Chelsea Himsworth
USA

Javier Millán
Spain

Lineke Begeman
Netherlands

Jorge Ramón López Olvera
Spain

Alberto Casado Gomez
UK

Heather Fenton
USA

Anja Reckendorf
Germany

Sonia Hernandez
USA

Nancy Boedeker
USA

Dee McAloose
USA

Julie Melotti
USA

Amanda MacDonald
USA

Stuart Patterson
UK



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GENERAL INFORMATION

DATES

August 31 to September 2, 2021

LOCATION

Virtual

ORGANIZES AND CONVENES

Wildlife Disease Association WDA - European Wildlife Disease Association EWDA.

SCIENTIFIC-TECHNICAL SECRETARIAT

Viajes El Corte Inglés, S.A.
Scientific-Medical Congresses
Cuenca2020@viajesece.es

VIRTUAL PLATFORM

The congress will start on Tuesday, August 31 at 9.00 am CEST, but you will be able to access on Monday, from 8:00 pm CEST in order to familiarize yourself with the platform.

The congress platform will give you the possibility to attend the scientific sessions, interact with the participants of the round tables by sending questions to the speakers and moderators, visit the electronic poster area and also the exhibition area, where you will be able to interact with the companies through written chat and/or live video calls.

You will have at your disposal the virtual bag, where you will find the congress program and your certificates and you will also be able to save in it all the information about the stands.

Conference contents will be available for recorded viewing until September 16th at 21:15 CEST.

UTC Summer 2021	Time diff. w/ Cuenca	15	16	17	18	19	20	21	22	23	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14
UTC -8 Anchorage	-10																								
UTC -7 Los Angeles	-9																								
UTC -6 Calgary	-8																								
UTC -5 Chicago	-7																								
UTC -4 New York, Santiago (CH)	-6																								
UTC -3 Buenos Aires	-5																								
UTC +1 London	-1																								
UTC +2 CUENCA, Cairo	0																								
UTC +5.30 Delhi	3:30																								
UTC +8 Beijin, Perth	6																								
UTC +10 Sidney	8																								
UTC +12 Wellington	10																								

■ CEST Morning Live Sessions of the Virtual Conference
■ CEST Evening Live Sessions of the Virtual Conference



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SCHEDULE

All times are in CEST (Central European Summer Time)

TUESDAY AUG. 31st - 69th WDA / 14th EWDA - Joint Virtual Conference			
Time	ROOM 1	Time	ROOM 2
9:00 - 13:00 Morning Sessions			
9:00 - 9:15	President welcome		
9:20 - 11:05	Plenary talk. Dr. Oliver Restif		
10:10 - 11:00	Scientific Session 1. Ecosystem health, global change and diseases	10:10 - 11:00	Scientific Session 2. Emerging and re-emerging wildlife diseases
10:10 - 10:25	S 1.1 (ID139)	10:10 - 10:25	S 2.1 (ID271)
10:25 - 10:40	S 1.2 (ID368)	10:25 - 10:40	S 2.2 (ID284)
10:40 - 10:55	S 1.3 (ID223)	10:40 - 10:55	S 2.3 (ID187)
11:00 - 11:30	Break / Networking / E-posters		
11:30 - 13:00	Scientific Session 3. Ecosystem health, global change and diseases	11:45 - 13:00	Scientific Session 4. Emerging/Neglected diseases
11:30 - 11:45	S 3.1 (ID 331)		
11:45 - 12:00	S 3.2 (ID 235)	11:45 - 12:00	S 4.2 (ID 85)
12:00 - 12:15	S 3.3 (ID 162)	12:00 - 12:15	S 4.3 (ID 143)
12:15 - 12:30	S 3.4 (ID 377)	12:15 - 12:30	S 4.4 (ID 119)
12:30 - 12:45	S 3.5 (ID 362)	12:30 - 12:45	S 4.5 (ID 160)
12:45 - 13:00	S 3.6 (ID267)	12:45 - 13:00	S 4.6 (ID 50)
17:00 - 21:00 Evening Sessions			
17:00 - 17:15	President welcome		
17:20 - 18:05	Plenary talk. Prof. A. Alonso Aguirre		
18:10 - 19:00	Scientific Session 5. Ecosystem health, global change and diseases	18:10 - 19:00	Scientific Session 6. New technological insights into wildlife disease surveillance
18:10 - 18:25	S 5.1 (ID 36)	18:10 - 18:25	S 6.1 (ID 345)
18:25 - 18:40	S 5.2 (ID 156)	18:25 - 18:40	S 6.2 (ID 358)
18:40 - 18:55	S 5.3 (ID 369)	18:40 - 18:55	S 6.3 (ID 332)
19:00 - 19:30	Break / Networking / E-posters		
19:30 - 21:00	Scientific Session 7. Impact of diseases on wildlife conservation	19:30 - 21:00	Scientific Session 8. Infection transmission at the wildlife-livestock-human interface
19:30 - 19:45	S 7.1 (ID 370)	19:30 - 19:45	S 8.1 (ID 339)
19:45 - 20:00	S 7.2 (ID 298)	19:45 - 20:00	S 8.2 (ID 229)
20:00 - 20:15	S 7.3 (ID 276)	20:00 - 20:15	S 8.3 (ID 261)
20:15 - 20:30	S 7.4 (ID 87)	20:15 - 20:30	S 8.4 (ID 206)
20:30 - 20:45	S 7.5 (ID 354)	20:30 - 20:45	S 8.5 (ID 253)
20:45 - 21:00	S 7.6 (ID 289)	20:45 - 21:00	S 8.6 (ID 164)
21:30 - 23:30 Student-Mentor Mixer			



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WEDNESDAY SEPT. 1 - 69th WDA / 14th EWDA - Joint Virtual Conference			
Time	ROOM 1	Time	ROOM 2
9:00 - 13:00 Morning Sessions			
9:00 - 9:45	Plenary talk. Prof. Anita Michel		
9:50 - 11:05	Student Session 1. Integrated monitoring of wildlife populations and disease	9:50 - 11:05	Student Session 2. Wildlife disease control, global change and ecosystem health
9:50 - 10:05	Student Scientific Session 1.1 (ID94)	9:50 - 10:05	Student Scientific Session 2.1 (ID274)
10:05 - 10:20	Student Scientific Session 1.2 (ID88)	10:05 - 10:20	Student Scientific Session 2.2 (ID316)
10:20 - 10:35	Student Scientific Session 1.3 (ID322)	10:20 - 10:35	Student Scientific Session 2.3 (ID131)
10:35 - 10:50	Student Scientific Session 1.4 (ID61)	10:35 - 10:50	Student Scientific Session 2.4 (ID118)
10:35 - 10:50	Student Scientific Session 1.5 (ID236)	10:35 - 10:50	Student Scientific Session 2.5 (ID239)
11:05 - 11:30	Break / Networking / E-posters		
11:30 - 12:00	2020 Student Research Award Presentation		
12:00 - 12:30	2021 Student Research Award Presentation		
12:35 - 13:05	Student Session 3. Emerging and re-emerging wildlife diseases	12:35 - 13:05	Student Session 4. Host-pathogen interactions in wildlife
12:35 - 12:50	Student Scientific Session 3.1 (ID142)	12:35 - 12:50	Student Scientific Session 4.1 (ID67)
12:50 - 13:05	Student Scientific Session 3.2 (ID336)	12:50 - 13:05	Student Scientific Session 4.2 (ID384)
15:00 - 17:00	WDA Business meeting		
17:00 - 21:05 Evening Sessions			
17:00 - 17:45	Plenary talk. Prof. Meggan Craft		
17:50 - 19:00	Student Session 5. Integrated monitoring of wildlife populations and disease & Molecular Epidemiology	17:50 - 19:00	Student Session 6. Wildlife disease dynamics
17:50 - 18:05	Student Scientific Session 5.1 (ID268)	17:50 - 18:05	Student Scientific Session 6.1 (ID181)
18:05 - 18:20	Student Scientific Session 5.2 (ID277)	18:05 - 18:20	Student Scientific Session 6.2 (ID145)
18:20 - 18:35	Student Scientific Session 5.3 (ID182)	18:20 - 18:35	Student Scientific Session 6.3 (ID209)
18:35 - 18:50	Student Scientific Session 5.4 (ID215)	18:35 - 18:50	Student Scientific Session 6.4 (ID193)
18:50 - 19:05	Student Scientific Session 5.5 (ID48)	18:50 - 19:05	Student Scientific Session 6.5 (ID93)
19:05 - 19:30	Break / Networking / E-posters		
19:30 - 20:00	WDA-IAAAM Winner Presentation		
20:05 - 20:50	Student Session 7. Wildlife Disease Dynamics	20:05 - 20:50	Student Session 8. Emerging and re-emerging wildlife diseases
20:05 - 20:20	Student Scientific Session 7.1 (ID202)	20:05 - 20:20	Student Scientific Session 8.1 (ID133)
20:20 - 20:35	Student Scientific Session 7.2 (ID203)	20:20 - 20:35	Student Scientific Session 8.2 (ID152)
20:35 - 20:50	Student Scientific Session 7.3 (ID344)	20:35 - 20:50	Student Scientific Session 8.3 (ID204)



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THURSDAY SEPT. 2 - 69th WDA / 14th EWDA - Joint Virtual Conference			
Time	ROOM 1	Time	ROOM 2
9:00 - 11:00 Morning Sessions			
9:00 - 10:15	Scientific Session 9. Host-pathogen interactions in wildlife	9:00 - 10:15	Scientific Session 10. Integrated monitoring of wildlife populations and disease
9:00 - 9:15	S 9.1 (ID 319)	9:00 - 9:15	S 10.1 (ID 170)
9:15 - 9:30	S 9.2 (ID 337)	9:15 - 9:30	S 10.2 (ID 353)
9:30 - 9:45	S 9.3 (ID 255)	9:30 - 9:45	S 10.3 (ID 64)
9:45 - 10:00	S 9.4 (ID 186)	9:45 - 10:00	S 10.4 (ID 272)
10:00 - 10:15	S 9.5 (ID 74)	10:00 - 10:15	S 10.5 (ID 309)
10:15 - 10:45	Break / Networking / E-posters		
10:45 - 11:30	Plenary talk. Prof. Andrew P. Dobson		
11:30 - 13:00	Scientific Session 11. Infection transmission at the wildlife-livestock-human interface	11:30 - 13:00	Scientific Session 12. Integrated monitoring of wildlife populations and disease
11:30 - 11:45	S 11.1 (ID 183)	11:30 - 11:45	S 12.1 (ID 318)
11:45 - 12:00	S 11.2 (ID 103)	11:45 - 12:00	S 12.2 (ID 320)
12:00 - 12:15	S 11.3 (ID 275)	12:00 - 12:15	S 12.3 (ID 314)
12:15 - 12:30	S 11.4 (ID 127)	12:15 - 12:30	S 12.4 (ID 375)
12:30 - 12:45	S 11.5 (ID 234)	12:30 - 12:45	S 12.5 (ID 361)
12:45 - 13:00	S 11.6 (ID 222)	12:45 - 13:00	S 12.6 (ID 365)
15:00 - 16:30	Awards' Ceremony		
17:00 - 21:15 Evening Sessions			
17:00 - 17:45	Plenary Talk. AAWV Al Franzmann Speaker. Daniel J. O'Brien		
17:50 - 19:05	Scientific Session 13. Wildlife disease control	17:50 - 19:05	Scientific Session 14. Host-pathogen interactions in wildlife
17:50 - 18:05	S 13.1 (ID 256)	17:50 - 18:05	S 14.1 (ID 144)
18:05 - 18:20	S 13.2 (ID 60)	18:05 - 18:20	S 14.2 (ID 376)
18:20 - 18:35	S 13.3 (ID 201)	18:20 - 18:35	S 14.3 (ID 299)
18:35 - 18:50	S 13.4 (ID 111)	18:35 - 18:50	S 14.4 (ID 325)
18:50 - 19:05	S 13.5 (ID 150)	18:50 - 19:05	S 14.5 (ID 211)
19:05 - 19:30	Break / Networking / E-posters		
19:30 - 21:00	Scientific Session 15. Molecular epidemiology of wildlife pathogens	19:30 - 21:00	Scientific Session 16. Mixed thematic areas
19:30 - 19:45	S 15.1 (ID 185)	19:30 - 19:45	S 16.1 (ID 224)
19:45 - 20:00	S 15.2 (ID 265)	19:45 - 20:00	S 16.2 (ID 329)
20:00 - 20:15	S 15.3 (ID 269)	20:00 - 20:15	S 16.3 (ID 287)
20:15 - 20:30	S 15.4 (ID 290)	20:15 - 20:30	S 16.4 (ID 54)
20:30 - 20:45	S 15.5 (ID 191)	20:30 - 20:45	S 16.5 (ID 123)
20:45 - 21:00	S 15.6 (ID 310)		
21:00 - 21:15	Closure		



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PROGRAM

August 31, Tuesday

ROOM 1

09.00 - 13.00 **Morning Sessions**

09.00 - 09.15 **President Welcome**

09.20 - 10.05 **Plenary talk**

Chair: Marie-Pierre Ryser-Degiorgis.

Speaker: Dr. Olivier Restif.

Reservoirs Sans Frontières: can ecology help us predict viral spillover risk from bats?

10.10 - 11.00 Scientific Sessions. **Session 1. Ecosystem health, global change and diseases.**

Chair: Marie-Pierre Ryser-Degiorgis.

10.10 - 10.25 *S1.1 Thinking about transformative changes in wildlife health activities.*

Thijs Kuiken¹, Lineke Begeman¹, Jorge R. Lopez-Olvera², Beatriz Rubio Alonso³, Graham Smith⁴, Ana P. Vale⁵, Barbara R. Vogler⁶

1. Erasmus MC, Rotterdam, The Netherlands, 2. Universitat Autònoma de Barcelona, Barcelona, Spain, 3. Czech University of Life Sciences, Prague, Czech Republic, 4. Animal and Plant Health Agency, York, United Kingdom, 5. Institute of Technology Sligo, Sligo, Ireland, 6. University of Zurich, Zurich, Switzerland

10.25 - 10.40 *S1.2 Can we reduce the risk to ecosystems from conservation translocations through use of disease risk analysis?*

Anthony W Sainsbury

ZSL, London, United Kingdom

10.40 - 10.55 *S1.3 Cavers care deeply about bats – but there are some important gaps in knowledge and biosecurity habits regarding White Nose Syndrome. A survey of delegates to an international caving conference (SPELEO 2017).*

Jasmin Hufschmid¹, Soraya Salleh¹, Keren Cox-Witton²

1. University of Melbourne, Melbourne, Australia 2. Wildlife Health Australia, Mosman, Australia

ROOM 2

10.10 - 11.00 Scientific Sessions. **Session 2. Emerging and re-emerging wildlife diseases.**

Chair: Karin Lemberger

10.10 - 10.25 *S2.1 Ecology of West Caucasian Bat Lyssavirus (WCBV) in a group of Schreibers' bent-winged bats (Miniopterus schreibersii) from Italy and its spillover to a domestic cat*

Stefania Leopardi¹, Dino Scaravelli², Petra Drzewniokova¹, Pamela Priori², Giuseppe Manna³, Andrea Lombardo⁴, Celogero Terregino¹, Paola De Benedictis¹

1. Istituto Zooprofilattico Sperimentale delle Venezie, Padova, Italy, 2. STERNA, Forli, Italy, 3. Istituto Zooprofilattico Sperimentale del Lazio e della Toscana, Roma, Italy, 4. Istituto Zooprofilattico Sperimentale del Lazio e della Toscana, Arezzo, Italy

10.25 - 10.40 *S2.2 Surveillance of West Nile Virus (WNV) in living wild birds from Peloponnese Region in Southern Greece*

Marina Sofia¹, Alexios Giannakopoulos¹, Antonia Touloudi¹, Zoi Athanasakopoulou¹, Dimitris C. Chatzopoulos^{1,2}, Vassiliki Spyrou³, Maria Satra², Dimitrios Galamatis⁴, Vassilis Diamantopoulos⁵, Spyridoula Mpellou⁶, Charalambos Billinis^{1,2}

1. Faculty of Veterinary Science, University of Thessaly, Karditsa, Greece, 2. Faculty of Public and Integrated Health, University of Thessaly, Karditsa, Greece, 3. Faculty of Animal Science, University of Thessaly, Larissa, Greece, 4. Hellenic Agricultural Organization DIMITRA (ELGO DIMITRA), Thessaloniki, Greece, 5. Directorate of Public Health, Prefecture of Peloponnese, Tripoli, Greece, 6. Biofarmoges Eleftheriou LP-Integrated Mosquito Control, Marathon, Greece



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10.40 - 10.55 *S1.3 A Novel Approach to a Novel Pathogen: Student-Powered Surveillance of Batrachochytrium salamandrivorans*

Olga Milenkaya¹, Brittany A. Mosher², Jenifer B. Walke³, Oliver Hyman⁴, Sasha E. Greenspan⁵, Michelle S. Koo⁶, Daniel A. Grear⁷, Michael J. Adams⁸

1. Biology Department, Warren Wilson College, Swannanoa, United States, 2. Rubenstein School of Environment and Natural Resources, University of Vermont, Burlington, United States, 3. Department of Biology, Eastern Washington University, Cheney, United States, 4. Biology Department, James Madison University, Harrisonburg, United States, 5. Department of Biological Sciences, The University of Alabama, Tuscaloosa, United States, 6. Museum of Vertebrate Zoology, University of California, Berkeley, United States, 7. U.S. Geological Survey, National Wildlife Health Center, Madison, United States, 8. U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center, Corvallis, United States

11.00 - 11.30 **Break / networking / e-posters**

ROOM 1

11.30 - 13.00 Scientific Sessions **Session 3. Ecosystem health, global change and diseases.**

Chairs: Andrew Peters & Ursula Höfle

11.30 - 11.45 *S3.1 Effects of heat stress on the response of wild captive birds of prey and owls to handling and immunization against West Nile virus.*

Ursula Höfle¹, Juan Manuel Blanco², Pilar Alberdi³

1. Health and Biotechnology working group, IREC, Ciudad Real, Spain, 2. Aquila Foundation, Lagartera, Spain, 3. IREC, UCLM, Ciudad Real, Spain

11.45 - 12.00 *S3.2 Prevalence of hantavirus in bank voles and humans: the effect of wildlife and environmental factors.*

Yinying Wang¹, Liina Voutilainen², Mahdi Aminikhah³, Heikki Helle⁴, Otso Huitu⁵, Juha Laakkonen⁶, Jukka Niemimaa⁷, Jussi Sane², Tarja Sironen^{8,9}, Olli Vapalahti^{10,11,12}, Heikki Henttonen⁹, Eva Kallio¹⁵

1. Department of Biological and Environmental Science, Jyväskylä, Finland, 2. University of Jyväskylä, Helsinki, Finland, 3. Division of Health Security, Oulu, Finland, 4. Finnish Institute for Health and Welfare, Jyväskylä, Finland, 5. Ecology and Genetics, Helsinki, Finland, 6. University of Oulu, Helsinki, Finland, 7. Department of Biological and Environmental Science, Helsinki, Finland, 8. Terrestrial Population Dynamics, Helsinki, Finland, 9. Department of Veterinary Biosciences, Helsinki, Finland, 10. Natural Resources Institute Finland, Helsinki, Finland, 11. University of Helsinki, Helsinki, Finland, 12. Department of Virology, Helsinki, Finland, 13. Department of Veterinary Biosciences, 14. University of Helsinki, 15. University of Helsinki, Jyväskylä, Finland

12.00 - 12.15 *S3.3 Carriage of antibiotic resistant bacteria in endangered and declining Australian pinniped pups.*

Mariel Fulham¹, Rachael Gray¹, Rebecca McIntosh², Fiona McDougall³, Michelle Power³

1. University of Sydney, Sydney, Australia, 2. Phillip Island Nature Parks, Cowes, Australia, 3. Macquarie University, Sydney, Australia

12.15 - 12.30 *S3.4 Exposure to low salinity waters identified as cause of the 2019 Northern Gulf of Mexico Bottlenose Dolphin Unusual Mortality Event.*

Alissa C. Deming^{1,2}, Debra Moore^{3,4}, Tim Morgan⁴, Mackenzie Russell², Gabriella Vasquez⁵, Lauren Albright⁶, Brittany Baldrice⁷, Blair Mase⁸, Erin Fougères⁹, Kathleen Colegrove¹⁰, Alex Costidis¹¹, Brian Dzwonkowski¹², Steve Dykstra¹², Teri Rowles¹³, Lance Garrison⁸, Jenny Litz³, Deborah Fauquier¹³

1. Conservation Medicine and Science, Pacific Marine Mammal Center, Laguna Beach, United States, 2. Alabama Marine Mammal Stranding Network, Dauphin Island Sea Lab, Dauphin Island, United States, 3. Institute of Marine Mammal Studies, Gulfport, United States, 4. Pathobiology and Population Medicine, Mississippi State University, Mississippi State, United States, 5. Audubon Nature Institute, New Orleans, United States, 6. Gulf World Marine Institute, Inc., Panama City Beach, United States, 7. Emerald Coast Wildlife Refuge, Navarre, United States, 8. Southeast Fisheries Science Center, National Marine Fisheries Service, Miami, United States, 9. Southeast Regional Office, National Marine Fisheries Service, St. Petersburg, United States, 10. Zoological Pathology Program, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Brookfield, United States, 11. Research & Conservation, Stranding Response Program, Virginia Aquarium & Marine Science Center, Virginia Beach, United States, 12. Dauphin Island Sea Lab, Dauphin Island, United States, 13. Office of Protected Resources, National Marine Fisheries Service, Silver Springs, United States

12.30 - 12.45 *S3.5 Demographic trends and skin lesion prevalence of stranded bottlenose dolphins following a freshwater event.*

Jennifer Bloodgood¹, Cristina Díaz Clark¹, Mackenzie Russell¹, Ruth Carmichael¹, Alissa Deming²

1. Dauphin Island Sea Lab, Dauphin Island, United States, 2. Pacific Marine Mammal Center, Laguna Beach, USA



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12.45 - 13.00 *S3.6 Linking zoonotic disease prevalence to human and livestock exposure risk across a gradient of anthropogenic land use in Madagascar.*

Kayla M. Kauffman¹, Jérémy Dubrulle², Fiona Baudino², Victoria Carcauzon², Camille Lebarbenchon², Toky M. Randriamoria³, Tamby N. Ranaivoson³, Jean Yves Rabezara⁴, Courtney Werner¹, Georgia Titcomb⁵, Michelle Pender¹, Julie T. Shapiro⁶, Shai Pilosof⁶, Peter J. Mucha⁷, James Moody⁸, Voahangy Soarimalala³, Steven M. Goodman^{3,9}, Pablo Tortosa², Charles L. Nunn¹

1. Duke University, Durham, United States, 2. UMR Processus Infectieux en Milieu Insulaire Tropical (PIMIT), Sainte-Clotilde, Reunion, 3. Association Vahatra, Antananarivo, Madagascar, 4. Centre Universitaire Régional de la SAVA, Antalaha, Antalaha, Madagascar, 5. University of California Santa Barbara, Santa Barbara, United States, 6. Ben-Gurion University of the Negev, Be'er Sheva, Israel, 7. University of North Carolina at Chapel Hill, Chapel Hill, United States, 8. Duke University, Durham, United States, 9. Field Museum of Natural History, Chicago, United States

ROOM 2

11.45 - 13.00 Scientific Sessions. **Session 4. Emerging/Neglected diseases.**

Chairs: Graham Smith & Dolores Gavier-Widén

11.45 - 12.00 *S4.2 Rabies, Lyssaviruses and 'small mammals': reservoirs, vectors, victims, phantasms, or ...?*

Charles E. Rupprecht¹, Ryan Wallace², Thomas Mueller³

1. LYSSA LLC, Cumming, United States, 2. CDC, Atlanta, United States, 3. Friedrich-Loeffler Institute, Greifswald - Insel Riems, Germany

12.00 - 12.15 *S4.3 Retrospective study on avian paramyxoviruses in wild birds in the United States identifies several putative new species.*

Kelsey T. Young¹, Jazz Q. Stephens¹, Rebecca L. Poulson¹, David E. Stallknecht¹, Kiril M. Dimitrov², Salman L. Butt³, James B. Stanton¹

1. University of Georgia, Athens, United States, 2. Texas A&M University, College Station, United States, 3. University of Agriculture Faisalabad, Faisalabad, Pakistan

12.15 - 12.30 *S4.4 Domestic dogs as bridges for disease between wildlife and indigenous Waiwai in Guyana, South America.*

Marissa Milstein¹, Christopher Shaffer², Philip Suse³, Aron Marawanaru³, Daniel Heinrich⁴, Peter Larsen⁴, Tiffany Wolf⁴

1. University of Minnesota, Saint Paul, United States, 2. Grand Valley State University, Allendale, United States, 3. Masakenari Village, Konashen Indigenous District, Guyana, 4. University of Minnesota, St. Paul, United States

12.30 - 12.45 *S4.5 RT-QuIC detection of CWD prion seeding activity in white-tailed deer muscle tissues.*

Manci Li¹, Marc D. Schwabenlander¹, Gage R. Rowden¹, Jeremy M. Schefers¹, Chris S. Janelle², Michelle Carstensen², Davis Seelig¹, Peter a. Larsen¹

1. University of Minnesota, Saint Paul, United States, 2. Minnesota Department of Natural Resources, Saint Paul, United States

12.45 - 13.00 *S4.6 The implementation gap in managing emerging disease risks in the wildlife trade.*

Craig Stephen^{1,2}, Luís Pedro Carmo³, Damarys De Las Nieves Montano Valle³, Brian Fricker³, Filipe Maximiano Sousac³, Beatriz Vidondoc³

1. School of Population and Public Health, University of British Columbia, Vancouver, Canada, 2. Ross School of Veterinary Medicine, Basseterre, St. Kitts and Nevis, 3. Veterinary Public Health Institute, University of Bern, Bern, Switzerland

ROOM 1

17.00 - 21.00 **Evening Sessions**

17.00 - 17.15 **President Welcome**

17.20 - 18.05 **Plenary talk.**

Chair: Jonna Mazet

Speaker: Prof. A. Alonso Aguirre.

Illegal wildlife trade and emerging infectious diseases: pervasive impacts to species, ecosystems and human health.



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- 18.10 - 19.00** Scientific Sessions. **Session 5. Ecosystem health, global change and diseases.**
Chair: Jonna Mazet
- 18.10 - 18.25** *S5.1 Combined effects of land use practices and weather on the abundance and presence of mosquito-borne disease vectors and mosquito diversity in Eastern Ontario*
Rindra Miarisoa Rakotoarinia¹, David Lapen², Patrick Leighton¹, Nicholas Ogden³, Antoinette Ludwig³
1. Groupe de recherche en épidémiologie des zoonoses et santé publique (GREZOSP), Faculty of veterinary medicine, University of Montreal, St-Hyacinthe, Canada, 2. Eastern Cereal and Oilseed Research Center, Agriculture and AgriFood Canada, Ottawa, Canada, 3. Public Health Sciences division, National Microbiology Laboratory, Public Health Agency of Canada, St-Hyacinthe, Canada
- 18.25 - 18.40** *S5.2 Climate and long term trends in pathogen seroprevalence in polar bears (Ursus maritimus) in the western Canadian Arctic*
Emily Jenkins¹, Nicholas Pilfold², Evan Richardson³, John Ellis¹, Brad Scandrett⁴, Adrián Hernández-Ortiz¹, Kayla Buhler¹, David Mcgeachy⁵, Batol Al-Adhami⁴, Kelly Konecni⁴, Vladislav Lobanov⁴, Megan Owen², Bruce Rideout², Nicholas Lunn⁵
1. Department of Veterinary Microbiology, University of Saskatchewan, Saskatoon, Canada, 2. Institute for Conservation Research, San Diego Zoo Global, Escondido, United States, 3. Wildlife Research Division, Science and Technology Branch, Environment and Climate Change Canada, Winnipeg, Canada, 4. Centre for Food-borne and Animal Parasitology, Canadian Food Inspection Agency, Saskatoon, Canada, 5. Wildlife Research Division, Science and Technology Branch, Environment and Climate Change Canada, Edmonton, Canada
- 18.40 - 18.55** *S5.3 Are introduced rodents involved in disease outbreaks threatening subantarctic wildlife?*
Amandine Gamble¹, Baudouin Des Monstiers², Lorien Boujot², Romain Dedet³, Augustin Clessin⁴, Marine Bely⁴, Romain Garnier⁴, Jérémy Tornos^{4,5}, Hubert Gantelet^{4,5}, Nicolas Keck³, Thierry Bouludier⁴
1. University of California Los Angeles, Los Angeles, United States, 2. Reserve Naturelle Nationale des Terres Australes Françaises, Saint Pierre, Reunion, 3. Laboratoire Départemental Vétérinaire de l'Hérault, Montpellier, France, 4. Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier, France, 5. Ceva-Biovac, Beaucauzé, France

ROOM 2

- 18.10 - 19.00** Scientific Sessions. **Session 6. New technological insights into wildlife disease surveillance.**
Chair: Thijs Kuiken
- 18.10 - 18.25** *S6.1 Population connectivity protects desert bighorn sheep from infectious pneumonia*
Brian Dugovich¹, Brianna Beechler¹, Brian Dolan¹, Rachel Crowhurst¹, Ben Gonzales², Jenny Powers³, Debra Hughson⁴, Regina Vu², Clinton Epps¹, Anna Jolles¹
1. Oregon State University, Corvallis, United States, 2. California Department of Fish and Wildlife, Rancho Cordova, United States, 3. National Park Service, Fort Collins, United States, 4. National Park Service, Barstow, United States
- 18.25 - 18.40** *S6.2 New diagnostic techniques to characterize fetal, placental, and maternal health in bottlenose dolphins following the deepwater horizon oil spill*
Forrest M. Gomez¹, Cynthia R. Smith¹, Kathleen M. Colegrove², Whitney Musser¹, Jennifer M. Meegan¹, Ashley Barratclough¹, Jeanine S. Morey³, Ryan Takeshita⁴, Marina Ivancic^{5,6}, Abraham Cardenas Llerenas⁷, Teri K. Rowles⁸, Veronica Cendejas¹, Eric Zolman³, Lori Schwacke³
1. National Marine Mammal Foundation, San Diego, United States, 2. Zoological Pathology Program, University of Illinois College of Veterinary Medicine, Illinois, United States, 3. National Marine Mammal Foundation, Charleston, United States, 4. National Marine Mammal Foundation, Boulder, United States, 5. Chicago Zoological Society, Brookfield Zoo, Brookfield, United States, 6. ZooRadOne, Plainfield, United States, 7. Dolphin Adventure, Puerto Vallarta, Mexico, 8. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Protected Resources, Silver Spring, United States
- 18.40 - 18.55** *S6.3 Re-evaluating ideal release weight for rehabilitated harbor seal (Phoca vitulina) pups*
Sarah J Teman¹, Denise J Greig^{2,3}, Sarah Wilkin², Joseph K Gaydos¹
1. The SeaDoc Society, Karen C. Drayer Wildlife Health Center – Orcas Island Office, University of California Davis School of Veterinary Medicine, Eastsound, United States, 2. Marine Mammal Health and Stranding Response Program, Office of Protected Resources, National Oceanic and Atmospheric Administration, Silver Spring, United States, 3. California Academy of Sciences, San Francisco, United States



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19.00 - 19.30 Break / networking / e-posters

ROOM 1

19.30 - 21.00 Scientific Sessions. **Session 7. Impact of diseases on wildlife conservation.**

Chairs: Francisco Ruiz-Fons & Isabel G. Fenandez de Mera

19.30 - 19.45 *S7.1 Structured decision-making: a tool for disease risk analysis and management planning in the face of uncertainty*

Katie Beckmann^{1,2}, Peter Cranswick¹, Geoff Hilton¹, Nigel Jarrett¹, Andrew Routh³, Natacha Rasolozaka⁴, Michelle O' Brien¹, Anthony Sainsbury⁵, Ruth Cromie¹, Björn Beckmann⁶, Taiana Costa¹, Daniel Calvo-Carrasco¹, Andrew Bamford¹, Richard Kock⁷, Stefano Canessa⁸, John Ewen⁸

1. Wildfowl & Wetlands Trust, Slimbridge, United Kingdom, 2. Royal (Dick) School of Veterinary Studies, University of Edinburgh, Edinburgh, United Kingdom, 3. Durrell Wildlife Conservation Trust, Jersey, United States, 4. Durrell Wildlife Conservation Trust, Antananarivo, Madagascar, 5. Institute of Zoology, Zoological Society of London, United Kingdom, 6. Centre for Ecology & Hydrology, Edinburgh, United Kingdom, 7. Royal Veterinary College, University of London, London, United Kingdom, 8. Institute of Zoology, Zoological Society of London, London, United Kingdom

19.45 - 20.00 *S7.2 Investigating the risk from disease in a proposed assisted colonization of an extinct in the wild species, the sihek (Guam kingfisher, *Todiramphus cinnamominus*)*

Claudia Carraro¹, Stefano Canessa¹, Suzanne Medina², Anthony Sainsbury¹, Amanda Trask¹, John Ewen¹, Deidre K. Fontenot³, Scott Newland⁴

1. Institute of Zoology, Zoological Society of London, London, United Kingdom, 2. Division of Aquatic and Wildlife Resources, Guam Department of Agriculture, Mangilao, Guam, 3. Disney's Animals, Science and Environment, Lake Buena Vista, Florida, United States, 4. Sedgwick County Zoo, Wichita, United States

20.00 - 20.15 *S7.3 Setting the Terms for Zoonotic Diseases: Effective Communication For Research, Conservation, and Public Policy*

Julie Teresa Shapiro¹, Luis Viquez-R², Stefania Leopardi³, Amanda Vicente-Santos⁴, Ian H. Mendenhall⁵, Winifred F. Frick^{6,7}, Rebekah C. Kading⁸, Rodrigo A. Medellín⁹, Paul Racey¹⁰, Tigga Kingston¹¹

1. Department of Life Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel, 2. Institute of Evolutionary Ecology and Conservation Genomics, University of Ulm, Ulm, Germany, 3. Laboratory of Emerging Viral Zoonoses, Istituto Zooprofilattico Sperimentale delle Venezie, Padova, Italy, 4. Graduate Program in Population Biology, Ecology and Evolution, Emory University, Atlanta, United States, 5. Duke-NUS Medical School, Programme in Emerging Infectious Diseases, Singapore, Singapore, 6. Bat Conservation International, Austin, United States, 7. Department of Ecology and Evolution, University of California Santa Cruz, Santa Cruz, United States, 8. Department of Microbiology, Immunology, and Pathology, Colorado State University, Fort Collins, United States, 9. Institute of Ecology, National Autonomous University of Mexico (UNAM), Mexico City, Mexico, 10. The Centre for Ecology and Conservation, University of Exeter, Exeter, United Kingdom, 11. Department of Biological Sciences, Texas Tech University, Lubbock, United States

20.15 - 20.30 *S7.4 Protect people, protect bats, avoid rabies!*

Mark L. Drew¹, Rita D. Dixon², David MCGowan³, Leslie Tengelsen⁴

1. Wildlife Health Services, PLLC, Boise, United States, 2. Idaho Department of Fish and Game, Boise, United States, 3. Ravenswood Media, Chicago, United States, 4. Idaho Department of Health and Welfare, Boise, United States

20.30 - 20.45 *S7.5 What are the effects of pathogens in pregnancy and body condition of tundra caribou?*

Xavier Fernandez Aguilar¹, Lisa Marie Leclerc², Kugluktuk Angoniatit Association³, Emmanuel Serrano⁴, Niroshan Thantrige-Don⁵, Om Surujballi⁵, Gabriela Mastromonaco⁶, Susan Kutz¹

1. University of Calgary, Calgary, Canada, 2. Department of Environment, Government of Nunavut, Kugluktuk, Canada, 3. Kugluktuk Angoniatit Association, Kugluktuk, Canada, 4. Universitat Autònoma de Barcelona, Bellaterra, Spain, 5. Canadian Food Inspection Agency, Nepean, Canada, 6. Reproductive Physiology, Toronto Zoo, Toronto, Canada

20.45 - 21.00 *S7.6 Host exposure history alters pathogen transmission and virulence in a wild songbird*

Ariel E Leon¹, Arietta E Fleming-Davies², James S Adelman³, Dana M Hawley¹

1. Virginia Tech, Blacksburg, United States, 2. University of San Diego, San Diego, United States, 3. University of Memphis, Memphis, United States

19.30 - 21.00 Scientific Sessions. **Session 8. Infection transmission at the wildlife-livestock-human interface.**

Chairs: Sonia Hernández & Jorge López-Olvera



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- 19.30 - 19.45** **S8.1 Wildlife surveillance at mink farms in the US following SARS-CoV-2 outbreaks**
Susan A Shriner, Thomas J Deliberto
USDA/APHIS/WS National Wildlife Research Center, Fort Collins, United States
- 19.45 - 20.00** **S8.2 Sensitivity of international notification system of wildlife diseases: a case study using WAHIS data on tularemia**
Angela Fanelli¹, Paula Caceres-Soto², François Diaz², Keith Hamilton², Peter Melens², Roberta Morales², Lina Mur², Sophie Muset², Lorenz Nake², Lesa Thompson³, Tiggy Grillo², Chadia Wannous⁴, Paolo Tizzani²
1. University of BARI, Bari, Italy, 2. OIE - World Organisation for Animal Health, Paris, France, 3. OIE - World Organisation for Animal Health - Regional Representation for Asia and the Pacific, Tokyo, Japan, 4. OIE - World Organisation for Animal Health - Regional Office for Africa, Nairobi, Kenya
- 20.00 - 20.15** **S8.3 Assessing the animal and public health hazard of urban wild boars using an Agent-Based Model approach. Infection transmission at the wildlife-livestock-human interface**
Carlos Gonzalez-Crespo¹, Beatriz Martinez-Lopez², Carles Conejero¹, Raquel Castillo-Contreras¹, Emmanuel Serrano¹, Josep Maria Lopez-Martin^{1,3}, Santiago Lavin¹, Jorge Ramon Lopez-Olvera¹
1. Wildlife Ecology & Health group (WE&H) and Servei d'Ecopatologia de Fauna Salvatge (SEFaS), Departament de Medicina i Cirurgia Animals, Universitat Autònoma de Barcelona (UAB), Bellaterra, Spain, 2. Center for Animal Disease Modeling and Surveillance (CADMS), Department of Medicine & Epidemiology, University of California, Davis, United States, 3. Departament d'Agricultura, Ramaderia, Pesca i Alimentació, Serveis Territorials de Barcelona, Generalitat de Catalunya, Barcelona, Spain
- 20.15 - 20.30** **S8.4 Search and find: zoonoses of urban wild boar in Barcelona, Spain**
Raquel Castillo-Contreras¹, Gregorio Mentaberre², Carles Conejero¹, Marta Valldeperes¹, Xavier Fernández Aguilar³, Jordi Serra-Cobo⁴, Richard Birtles⁵, Marta Cerdà-Cuellar⁶, Gustavo Del Real⁷, Abir Monastiri⁴, Marc López-Roig⁴, Andreu Colom-Cadena¹, Jessica L. Hall⁵, Paloma Encinas⁷, Stefania Tampach¹, Santiago Lavin¹, Jorge Ramón López-Olvera¹
1. Universitat Autònoma de Barcelona, Bellaterra - Barcelona, Spain, 2. Universitat de Lleida, Lleida, Spain, 3. University of Calgary, Calgary, Canada, 4. Universitat de Barcelona, Barcelona, Spain, 5. University of Salford, Salford, United Kingdom, 6. Centre de Recerca en Sanitat Animal, Bellaterra - Barcelona, Spain, 7. Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Madrid, Spain
- 20.30 - 20.45** **S8.5 Evaluating interspecific transmission of ticks, fleas and canine vector-borne pathogens between dogs and foxes in a human-dominated landscape**
Aitor Cevidanes^{1,2}, Sophia Di Cataldo³, Claudia ulloa⁴, Irene Sacristán², Nicole Sallaberry⁵, Sebastián Klarian^{6,7}, Fernando Esperón⁸, Javier Millán^{9,10,2}
1. Department of Animal Health, NEIKER-Basque Institute for Agricultural Research and Development, Basque Research and Technology Alliance (BRTA), Derio, Spain, 2. Facultad de Ciencias de la Vida, Universidad Andres Bello, Santiago, Chile, 3. PhD Program in Conservation Medicine, Facultad de Ciencias de la Vida, Universidad Andres Bello, Santiago, Chile, 4. Facultad de Ciencias Veterinarias y Pecuarias, Universidad de Chile, Santiago, Chile, 5. Unidad de Rehabilitación de Fauna Silvestre, Escuela de Medicina Veterinaria, Facultad de Ciencias de la Vida, Universidad Andres Bello, Santiago, Chile, 6. Centro de Investigación Marina Quintay (CIMARQ), Faculty of Life Sciences, Universidad Andres Bello, Viña Del Mar, Chile, 7. Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, United States, 8. Group of Epidemiology and Environmental Health, Animal Health Research Centre (INIA-CISA), Madrid, Spain, 9. Instituto Agroalimentario de Aragón-IA2 (Universidad de Zaragoza-CITA), Zaragoza, Spain, 10. Fundación ARAID, Zaragoza, Spain
- 20.45 - 21.00** **S8.6 Occurrence and significance of psittacosis caused by Chlamydia psittaci in garden birds in Sweden.**
Ellinor Spörndly-Nees¹, Henrik Uhlhorn¹, Tomas Jinnerot², Aleksija Neimanis¹
1. Department of Pathology and Wildlife Diseases, National Veterinary Institute (SVA), Uppsala, Sweden, 2. Department of Microbiology, National Veterinary Institute (SVA), Uppsala, Sweden
- 21.30 - 23.30** **Student-Mentor Mixer**



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PROGRAM

September 1, Wednesday

ROOM 1

09.00 - 13.00 Morning Sessions

09.00 - 09.45 **Plenary talk**

Chair: Tiggy Grillo

Speaker: Prof. Anita Michel

Wildlife through the lens of One Health: An African perspective.

09.50 - 11.05 Student Scientific Sessions. **Student Session 1. Integrated monitoring of wildlife populations and disease.**

Chairs: Lineke Begeman & Gabor Czirjak

09.50 - 10.05 *Ss1.1 A One Health Approach to the Impact of Trace Metal Contamination from Derelict Lead Mines in Wales*

Andrea Isabel Sartorius¹, Scott Young¹, Malcolm Bennett¹, Matthew Johnson¹, Kerstin Baiker¹, Paul Edwards², Lisa Yon¹

1. University of Nottingham, Nottingham, United Kingdom, 2. Natural Resources Wales, Swansea, United Kingdom

10.05 - 10.20 *Ss1.2 The shedding of paramyxovirus RNA in the urine of straw-coloured fruit bats (*Eidolon helvum*)*

Elli Rosa Jolma¹, Louise Gibson¹, Grace Fleischer², Samuel Asumah³, Richard Suu-Ire², Olivier Restif⁴, James L. N. Wood⁴, Andrew A. Cunningham¹

1. Institute of Zoology, Zoological Society of London, London, United Kingdom, 2. School of Veterinary Medicine, College of Basic and Applied Sciences, University of Ghana, Accra, Ghana, 3. Wildlife Division of Forestry Commission, Accra, Ghana, 4. Department of Veterinary Medicine, University of Cambridge, Cambridge, United Kingdom

10.20 - 10.35 *Ss1.3 Patterns of gammaherpesvirus reactivation in genital tract linked to stressors in European badgers (*Meles meles*)*

Ming-Shan Tsai¹, Sarah François¹, Chris Newman¹, David W Macdonald¹, Christina D Buesching²

1. University of Oxford, Oxford, United Kingdom, 2. University of British Columbia, Vancouver, Canada

10.35 - 10.50 *Ss1.4 Fate of Lynx orphans in Switzerland: a retrospective study.*

Stéphanie Borel¹, Andreas Ryser², Anja Molinari-Jobin², Mainity Batista Linhares¹, Iris Marti¹, Francesco Origi¹, Christine Breitenmoser², Marie-Pierre Ryser-Degiorgis¹

1. University of Bern, Vetsuisse Faculty, Department of Infectious Diseases and Pathobiology, Centre for Fish and Wildlife Health, Länggassstrasse 122, 3012 Bern, Switzerland, 2. Foundation KORA Carnivore Ecology and Wildlife Management, Thunstrasse 31, 3074 Muri, Switzerland

10.50 - 11.05 *Ss1.5 Capture and transport of white rhinoceroses (*Ceratotherium simum*) cause shifts in their gut bacterial microbiota composition more towards potential pathogens*

Carolin Frei^{1,2,3}, Friederike Pohlin^{1,3,4}, Leith Meyer^{3,4}, Narciso Martin Quijada², Beate Conrady^{5,6}, Franz-Ferdinand Roch², Cameron Strachan⁷, Markus Hofmeyr^{8,9}, Gabrielle Stalder¹, Stefanie Urimare Wetzels^{2,7}

1. Department of Interdisciplinary Life Sciences, Research Institute of Wildlife Ecology, University of Veterinary Medicine Vienna, Vienna, Austria, 2. Department for Farm Animal and Public Health in Veterinary Medicine, Institute for Food Safety, Food Technology and Veterinary Public Health, University of Veterinary Medicine Vienna, Vienna, Austria, 3. Centre for Veterinary Wildlife Studies, Faculty of Veterinary Science, University of Pretoria, Onderstepoort, South Africa, 4. Department of Paraclinical Sciences, Faculty of Veterinary Science, University of Pretoria, Onderstepoort, South Africa, 5. Department of Veterinary and Animal Sciences, Faculty of Health and Medical Sciences, University of Copenhagen, Frederiksberg C, Denmark, 6. Complexity Science Hub Vienna, Vienna, Austria, 7. FFoQSI - Austrian Competence Centre for Feed and Food Quality, Safety & Innovation, Tulln, Austria, 8. Great Plains Conservation and Rhinos Without Borders, Boseja, Maun, Botswana, 9. Rhino Recovery Fund/ Wildlife Conservation Network and Oak Foundation, London, United Kingdom



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ROOM 2

- 09.50 - 11.05** Student Scientific Sessions. **Student Session 2. Wildlife disease control, global change and ecosystem health.**
Chairs: Stuart Patterson & Miriam Maas
- 09.50 - 10.05** *Ss2.1 Modelling the effect of climate change on spatiotemporal transmission of parasitic disease in Reindeer*
Anna Ciezarek¹, Rebecca K Davidson², Torill Mork², Geir Rune Rauset³, Diana J Williams¹, Hannah Rose Vineer¹
1. University of Liverpool, Liverpool, United Kingdom, 2. Norwegian Veterinary Institute, Tromsø, Norway, 3. Norwegian Institute for Nature Research, Trondheim, Norway
- 10.05 - 10.20** *Ss2.2 Investigating the transmission of gastro-intestinal nematodes between livestock and roe deer using deep-sequencing analyses*
Camille Beaumelle^{1,2}, Hélène Verheyden³, Libby Redman⁴, Jill De Rijke⁴, Florence Veyssièrè⁵, Noémie Bégoc⁵, Slimania Benabed^{1,2}, Bruno Cargnelutti³, Bruno Lourtet³, Marie-Thérèse Poirel^{1,2}, Glenn Yannic⁶, Philippe Jacquet⁵, John S Gilleard⁴, Gilles Bourgoïn^{1,2}
1. Université de Lyon, Université Lyon 1, CNRS, Laboratoire de Biométrie et Biologie Evolutive UMR 5558, Villeurbanne, France, 2. Université de Lyon, VetAgro Sup, Campus Vétérinaire de Lyon, Marcy l'Etoile, France, 3. Université de Toulouse, INRAE, Comportement et Ecologie de la Faune Sauvage, Castanet-Tolosan, France, 4. Comparative Biology and Experimental medicine, Faculty of Veterinary Medicine, Host-Parasites Interactions Program, University of Calgary, Calgary, Canada, 5. Université de Toulouse, UMT Pilotage de la Santé des Ruminants, Ecole Nationale Vétérinaire de Toulouse, Toulouse, France, 6. Université Grenoble Alpes, Université Savoie Mont Blanc, Grenoble, France
- 10.20 - 10.35** *Ss2.3 Toxoplasma gondii infection in the protected Eurasian lynx (Lynx lynx) in Switzerland*
Patrick Scherrer¹, Marie-Pierre Ryser-Degiorgis¹, Stéphanie Borel¹, Caroline F. Frey², Walter U. Basso²
1. University of Bern, Vetsuisse Faculty, Department of Infectious Diseases and Pathobiology, Centre for Fish and Wildlife Health, Länggassstrasse 122, 3001 Bern, Switzerland, 2. University of Bern, Vetsuisse Faculty, Department of Infectious Disease and Pathobiology, Institute for Parasitology, Länggassstrasse 122, 3012 Bern, Switzerland
- 10.35 - 10.50** *Ss2.4 Evaluating the application of a novel serological assay in wild red deer for a tuberculosis surveillance program in Spain*
Elisa Ferreras-Colino¹, María Ángeles Risalde², Inmaculada Moreno³, María De La Cruz Arnal⁴, Ana Balseiro⁵, Mercedes Domínguez³, Daniel Fernández De Luco⁴, Christian Gortázar¹
1. SaBio (Sanidad y Biotecnología) Group. IREC (Instituto de Investigación en Recursos Cinegéticos), Ciudad Real, Spain, 2. Departamento de Anatomía y Anatomía Patológica Comparadas, Facultad de Veterinaria, Universidad de Córdoba, Córdoba, Spain, 3. Unidad de Inmunología Microbiana, Centro Nacional de Microbiología, Instituto de Salud Carlos III, Madrid, Spain, 4. Departamento de Patología Animal, Facultad de Veterinaria, Universidad de Zaragoza (UNIZAR), Zaragoza, Spain, 5. Departamento de Sanidad Animal, Facultad de Veterinaria, Universidad de León. Departamento de Sanidad Animal, Instituto de Ganadería de Montaña (CSIC-Universidad de León), León, Spain
- 10.50 - 11.05** *Ss2.5 Ivermectin plasma concentration in Iberian Ibex (Capra pyrenaica hispanica) following oral administration*
Barbara Moroni¹, José Enrique Granados², Jorge ramón López-Olvera³, Arián Ráez-Bravo³, José espinosa Cerrato⁴, Gregorio Mentaberre⁵, Paulino Fandos⁶, Marco Pazzi⁷, Monica Romagnoli⁷, Giulia Gardini¹, Luca Rossi¹, Marta Valldeperes³, Emmanuel Serrano³, Blanca Ramos², Rosangela Odore¹
1. Department of Veterinary Science, University of Turin, Grugliasco, Italy, Turin, Italy, 2. Espacio Natural Sierra Nevada, Pinos Genil, Granada, Spain, Granada, Spain, 3. Wildlife Ecology & Health group (WE&H) and Serveid'Ecopatologia de Fauna Salvatge (SEFaS), Departament de Medicina i Cirurgia Animals, Universitat Autònoma de Barcelona (UAB), Bellaterra, Barcelona, Spain, Barcelona, Spain, 4. Department of Animal Health-Instituto de Ganadería de Montaña (IGM), ULe-CSIC and Faculty of Veterinary Science, University of León, León, Spain, León, Spain, 5. Serra Hunter fellow, Wildlife Ecology & Health group (WE&H), Departament de Ciència Animal, Escola Tècnica Superior d'Enginyeria Agrària (ETSEA), Universitat de Lleida (UdL), Lleida, Spain, Lleida, Spain, 6. Agencia de Medio Ambiente y Agua, Sevilla, Spain, Sevilla, Spain, 7. Department of Chemistry, University of Turin, Torino, Italy, Turin, Italy
- 11.00 - 11.30** Break / networking / e-posters



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September 1, Wednesday

ROOM 1

11.30 - 12.00 2020 Student Research Recognition Award.

Chair: Tiggy Grillo

Spaker: Elliott Chiu

Feline leukemia virus (felv): an emerging threat to wild felids without protection from endogenous feline leukemia virus (enfelv)

12.00 - 12.30 2021 Student Research Recognition Award.

Chair: Tiggy Grillo

Spaker: Marie Gilbertson

An apathogenic virus predicts transmission dynamics of a pathogen and reveals paradoxes and synergies in pathogen management in the florida panther (*puma concolor coryi*)

12.35 - 13.05 Student Scientific Sessions. **Student Session 3. Emerging and re-emerging wildlife diseases.**

Chair: Lineke Begeman

12.35 - 12.50 *Ss3.1 Epidemiology and molecular characterization of canine bufavirus and cachavirus in grey wolves (*Canis lupus*) of the Northwest Territories*

Kelsi Fry¹, Marta Canuti¹, H. Dean Cluff², Heather Fenton³, Andrew Lang¹

1. Memorial University of Newfoundland, St. Johns, Canada, 2. Government of Northwest Territories, North Slave Region, Canada, 3. Ross University School of Veterinary Medicine, Basseterre, St. Kitts and Nevis

12.50 - 13.05 *Ss3.2 Evaluating black bear (*Ursus americanus*) survival and recovery from sarcoptic mange*

Hannah S. Tiffin¹, Justin D. Brown¹, Mark Ternent², Jennifer M. Mullinax³, Erika T. Machtinger¹

1. Pennsylvania State University, University Park, Pa, United States, 2. Pennsylvania Game Commission, Harrisburg, Pa, United States, 3. University of Maryland, College Park, Md, United States

ROOM 2

12.35 - 13.05 Student Scientific Sessions. **Student Session 4. Host-pathogen interactions in wildlife.**

Chair: Stuart Patterson

12.35 - 12.50 *Ss4.1 Semi-quantitative serology unveils the epidemiology of Myxoma and Rabbit Haemorrhagic Disease viruses in the European rabbit*

Joana Coelho^{1,2}, Henrique Pacheco^{1,2}, Paulo Célio Alves^{2,3}, Nuno Santos²

1. CIISA - Centro de Investigação Interdisciplinar em Sanidade Animal. Faculty of Veterinary Medicine, University of Lisbon, Lisbon, Portugal, 2. CIBIO/InBIO – Research Center in Biodiversity and Genetic Resources, Vairão, Portugal, 3. Dep. Biology Faculty of Sciences. University of Porto, Vairão, Portugal

12.50 - 13.05 *Ss4.2 Pathological changes and viral antigen distribution in tissues of Iberian hare (*Lepus granatensis*) infected with myxoma virus*

Irene Agulló-Ros¹, Ignacio García-bocanegra², Débora Jiménez-Martín², Leonor Camacho-Sillero³, Christian Gortázar⁴, Lorenzo Capucci⁵, David Cano-Terriza², Félix Gómez-Guillamón³, Irene Zorrilla⁶, Antonio Lavazza⁵, Maria A. Risalde^{1,7}

1. Grupo de Investigación en Sanidad Animal y Zoonosis (GISAZ). Departamento de Anatomía y Anatomía Patológica Comparadas, Facultad de Veterinaria, Universidad de Córdoba, Córdoba, Spain, 2. Grupo de Investigación en Sanidad Animal y Zoonosis (GISAZ). Departamento de Sanidad Animal, Universidad de Córdoba, Córdoba, Spain, 3. Programa Vigilancia Epidemiológica Fauna Silvestre (PVE), Consejería Agricultura, Ganadería, Pesca y Desarrollo Sostenible, Junta de Andalucía, Málaga, Spain, 4. Instituto de Investigación en Recursos Cinegéticos (IREC) CSIC-UCLM-JCCM, Ciudad Real, Spain, 5. Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Brescia, Italy, 6. Centro de Análisis y Diagnóstico de la Fauna Silvestre en Andalucía, Agencia de Medio Ambiente y Agua M.P., Junta de Andalucía, Málaga, Spain, 7. Unidad de Enfermedades Infecciosas, Grupo de Virología Clínica y Zoonosis, Instituto Maimónides de Investigación Biomédica de Córdoba (IMIBIC), Hospital Universitario Reina Sofía, Córdoba, Spain.

ROOM 1

15.00 - 17.00 WDA Business Meeting

17.00 - 21.05 Evening Sessions



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September 1, Wednesday

17.00 - 17.45 Plenary talk

Chair: Justin Brown

Speaker: Prof. Meggan Craft

Understanding pathogen transmission in a solitary, secretive carnivore (*Puma concolor*).

17.50 - 19.05 Scientific Sessions. **Student Session 5. Integrated monitoring of wildlife populations and disease & Molecular Epidemiology.**

Chairs: Anne-Justice Allen & Justin Brown

17.50 - 18.05 *Ss5.1 Metagenomic detection of tick-borne pathogens using nanopore adaptive sequencing*

Evan J. Kipp¹, Laramie L. Lindsey¹, Benedict Khoo², Christopher Faulk³, Jonathan D. Oliver², Peter A. Larsen¹

1. Department of Veterinary and Biomedical Sciences, University of Minnesota College of Veterinary Medicine, Saint Paul, United States, 2. Division of Environmental Health Sciences, University of Minnesota School of Public Health, Minneapolis, United States, 3. Department of Animal Sciences, University of Minnesota College of Food, Agricultural, and Natural Resource Sciences, Saint Paul, United States

18.05 - 18.20 *Ss5.2 Using metabarcoding to study effective contact for brainworm transmission between moose and gastropods*

Tyler J. Garwood¹, Seth A. Moore², Nicholas M. Fountain-Jones^{3,1}, Peter A. Larsen¹, Tiffany M. Wolf¹

1. University of Minnesota, St. Paul, United States, 2. Grand Portage Band of Chippewa, Grand Portage, United States, 3. University of Tasmania, Hobart, Australia

18.20 - 18.35 *Ss5.3 Coccidian parasites in harvested Beluga whale (*Delphinapterus leucas*) and Caribou (*Rangifer tarandus*) in the Canadian North*

Adrián Hernández Ortiz¹, Émilie Bouchard^{1,2}, Rajnish Sharma¹, Sonja K Ostertag³, Lisa L Loseto³, Ellen Avarð⁴, Patrick Leighton², Emily J Jenkins¹

1. Department of Veterinary Microbiology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, 2. Faculté de Médecine Vétérinaire, Université de Montréal, Saint-Hyacinthe, Québec, Canada, 3. Fisheries and Oceans Canada, Freshwater Institute, Winnipeg, Manitoba, Canada, 4. Nunavik Research Centre, Kuujuaq, Québec, Canada

18.35 - 18.50 *Ss5.4 Population impacts of domoic acid exposure in Southern Sea otters: an increasing threat in a changing climate.*

Megan E. Moriarty¹, M. Tim Tinker², John L. Largier³, Melissa A. Miller⁴, Christine K. Johnson¹

1. Karen C. Drayer Wildlife Health Center and EpiCenter for Disease Dynamics, One Health Institute, University of California Davis School of Veterinary Medicine, Davis, United States, 2. Department of Ecology and Evolutionary Biology, University of California, Long Marine Lab., Santa Cruz, United States, 3. University of California Davis, Coastal & Marine Sciences Institute, Bodega Bay, United States, 4. Marine Wildlife Veterinary Care and Research Center, California Department of Fish and Wildlife, Santa Cruz, United States

18.50 - 19.05 *Ss5.5 Exploring the use of the erythrocyte sedimentation rate as an inflammatory marker for free ranging wildlife - a case study in African buffalo (*Syncerus caffer*)*

Eberle Elizabeth Yarborough¹, Brianna Beechler¹, Caroline Glidden², Jennifer Johns¹, Courtney Coon^{1,3}, Claire Couch², Danielle Sisson⁴, Anna Jolles^{1,2}

1. Oregon State University, Carlson College of Veterinary Medicine, Corvallis, United States, 2. Oregon State University, Department of Integrative Biology, Corvallis, United States, 3. Felidae Conservation Fund, Mill Valley, United States, 4. The University of Melbourne, Faculty of Veterinary and Agricultural Sciences, Werribee, Australia

ROOM 2

17.50 - 19.05 Student Scientific Sessions. **Student Session 6. Wildlife disease dynamics.**

Chairs: Laurie Baeten & Heather Fenton

17.50 - 18.05 *Ss6.1 Using whole-genome sequencing and a One Health approach to understand the epidemiology of Salmonella and associated antimicrobial resistance at the human, wildlife, environmental, and livestock interface in southern Ontario*

Nadine A. Vogt¹, Benjamin M. Hetman¹, David L. Pearl¹, Richard J. Reid-Smith¹, Adam A. Vogt², E. Jane Parmley¹, Stefanie Kadykalo³, Kim Ziebell⁴, James Robertson⁴, John H. E. Nash⁴, Amrita Bharat⁵, Michael R. Mulvey⁵, Vanessa Allen⁶, Nicole Ricker⁷, Kristin J. Bondo⁷, Samantha E. Allen⁷, Claire M. Jardine⁷



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1. Department of Population Medicine, University of Guelph, Guelph, Canada, 2. Independent researcher, Mississauga, Canada, 3. Centre for Foodborne, Environmental and Zoonotic Infectious Diseases, Public Health Agency of Canada, Guelph, Canada, 4. National Microbiology Laboratory, Public Health Agency of Canada, Guelph, Canada, 5. National Microbiology Laboratory, Public Health Agency of Canada, Winnipeg, Canada, 6. Public Health Ontario, Toronto, Canada, 7. Department of Pathobiology, University of Guelph, Guelph, Canada

18.05 - 18.20 **Ss6.2 Differential response to anthropogenic disturbance by cave-dwelling bats: an eco-immunological approach**

Amanda Vicente-Santos¹, Bernal Rodriguez-Herrera², Eugenia Corrales Aguilar², David J. Civitello¹, Gábor Á. Czirják³, Thomas R. Gillespie¹

1. Emory University, Atlanta, United States, 2. University of Costa Rica, San Jose, Costa Rica, 3. Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany

18.20 - 18.35 **Ss6.3 Evaluating associations between environmental parameters and *Ophidiomyces ophidiicola*, the causative agent of ophidiomycosis (snake fungal disease)**

Michelle Waligora¹, Csaba Varga², Ellen Haynes¹, Matthew Allender^{1,3,4}

1. Wildlife Epidemiology Lab, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Urbana, United States, 2. Department of Pathobiology, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Urbana, United States, 3. Brookfield Zoo, Chicago Zoological Society, Brookfield, United States, 4. Veterinary Diagnostic Laboratory, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Urbana, United States

18.35 - 18.50 **Ss6.4 Opposing mechanisms lead to non-monotonic patterns between competitors and disease: A theoretical investigation with a directly-transmitted zoonosis**

Andreas Eleftheriou, Angela D Luis
University of Montana, Missoula, United States

18.50 - 19.05 **Ss6.5 Experimental susceptibility of North American raccoons (*Procyon lotor*) and striped skunks (*Mephitis mephitis*) to SARS-CoV-2**

Raquel Francisco, Sonia M Hernandez, Daniel G Mead, Kayla G Adcock, Sydney C Burke, Nicole M Nemeth, Michael J Yabsley

University of Georgia, Athens, United States

19.05 - 19.30 **Break / networking / e-posters**

ROOM 1

19.30 - 20.00 **WDA-IAAAM winner Presentation.**

Chair: Julie Melotti

Speaker: Molly Martony

Esophageal measurement of core body temperature in the florida manatee (*trichechus manatus latirostris*)

20.05 - 20.50 **Scientific Sessions. Student Session 7. Wildlife Disease Dynamics.**

Chair: Julie Melotti

19.30 - 19.45 **Ss7.1 Epidemiology of ophidiomycosis in Lake Erie watersnakes (*Nerodia sipedon insularum*)**

Ellen Haynes¹, Kristin Stanford², Kathryn Vivirito¹, Kennymac Durante¹, Allison Wright¹, Csaba Varga³, Matthew C Allender¹

1. Wildlife Epidemiology Lab, University of Illinois College of Veterinary Medicine, Urbana, United States, 2. Franz Theodore Stone Laboratory, Ohio State University, Put-In-Bay, United States, 3. Department of Pathobiology, University of Illinois, Urbana, United States

20.20 - 20.35 **Ss7.2 Causes of bald eagle morbidity and mortality in the Eastern United States from 1989 to 2021**

Aidan M O'Reilly¹, Mark G Ruder², M Kevin Keel³, Heather Fenton⁴, Nicole M Nemeth^{2,5}

1. College of Veterinary Medicine, University of Georgia, Athens, United States, 2. Department of Population Health, Southeastern Cooperative Wildlife Disease Study, University of Georgia, Athens, United States, 3. Department of Pathology, Microbiology and Immunology, School of Veterinary Medicine, University of California-Davis, Davis, United States, 4. School of Veterinary Medicine, Ross University, Basseterre, St. Kitts and Nevis, 5. Department of Pathology, Southeastern Cooperative Wildlife Disease Study, University of Georgia, Athens, United States



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20.35 - 20.50 *Ss7.3 Temporal and spatial patterns in Canine Distemper Virus cases in wildlife diagnosed at the Southeastern Cooperative Wildlife Disease Study (SCWDS), 1975-2019*

Jonathan Wilson¹, Kishana Taylor², Andrew Park^{3,4}, Nicole Nemeth^{1,5}, Michael Yabsley⁵, Heather Fenton⁵, Kevin Keel⁶, Nicole Gottdenker¹

1. Department of Pathology, College of Veterinary Medicine, University of Georgia, Athens, United States, 2. Department of Microbiology and Molecular Genetics, University of California-Davis, Davis, United States, 3. Odum School of Ecology, Center for the Ecology of Infectious Diseases, University of Georgia, Athens, United States, 4. Department of Infectious Diseases, College of Veterinary Medicine, University of Georgia, Athens, United States, 5. Southeastern Cooperative Wildlife Disease Study, University of Georgia, Athens, United States, 6. Department of Pathology, Microbiology and Immunology, School of Veterinary Medicine, University of California-Davis, Davis, United States

ROOM 2

20.05 - 20.50 Scientific Sessions. **Student Session 8. Emerging and re-emerging wildlife diseases.**
Chair: Heather Fenton

20.05 - 20.20 *Ss8.1 Domestic Turkeys as an Experimental Model for Lymphoproliferative Disease Virus in Wild Turkeys*

Chloe Chan Goodwin^{1,2}, Kayla Guinn Adcock², Charbel Elie Gerges², Sydney Burke², Mark Gregory Ruder², Rebecca Lynne Poulson², Nicole Marie Nemeth^{1,2}

1. Department of Pathology, University of Georgia, Athens, United States, 2. Southeastern Cooperative Wildlife Disease Study, Department of Population Health, University of Georgia, Athens, United States

20.20 - 20.35 *Ss8.2 Susceptibility of wild turkeys (*Meleagris gallopavo*) to experimental West Nile virus infection*

Melanie R. Kunkel¹, Daniel G. Mead¹, Mary Jo Casalena², Mitchell Blake³, Mark G. Ruder¹, Nicole M. Nemeth¹

1. Southeastern Cooperative Wildlife Disease Study, Department of Population Health, University of Georgia, Athens, Georgia, United States, 2. Pennsylvania Game Commission, Harrisburg, Pennsylvania, United States, 3. National Wild Turkey Federation, Edgefield, South Carolina, United States

20.35 - 20.50 *Ss8.3 What is Blackhead Disease in Free-Ranging Wild Turkeys (*Meleagris gallopavo*)?: Comparison of *Tetratrichomonas gallinarum*, *Simplicimonas* sp., and *Tritrichomonas* sp. Infections with *Histomonas meleagridis**

Rowan E. Back¹, Michael J. Yabsley², Kayla Buck Garrett², Melanie R. Kunkel², Charlie Bahnson², Rebecca Radisic², Elizabeth Elsmo³, Nicole M. Nemeth²

1. University of Tennessee, Knoxville, United States, 2. University of Georgia, Athens, United States, 3. University of Wisconsin-Madison, Madison, United States



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PROGRAM

September 2, Thursday

ROOM 1

09.00 - 13.00 Morning Session

09.00 - 10.15 Scientific sessions. **Session 9. Host-pathogen interactions in wildlife.**

Chairs: Emmanuelle Gilot-Fromont & Céline Richomme

09.00 - 09.15 *S9.1 A century of co-infection research: a review*

Cristina Garrido-Amaro¹, Roser Velarde¹, Anna E. Jolles², Nicholas M. Fountain-Jones³, Konstans Wells⁴, Alison Peel⁵, Jorge R. López-Olvera¹, Emmanuel Serrano¹

1. Universitat Autònoma de Barcelona, Bellaterra - Barcelona, Spain, 2. Oregon State University, Corvallis - Oregon, United States, 3. University of Tasmania, Hobart - Tasmania, Australia, 4. Swansea University, Swansea, United Kingdom, 5. Griffith University, Queensland, Australia

09.15 - 09.30 *S9.2 Spatial modelling of Hyalomma lusitanicum ticks shape Crimean-Congo haemorrhagic fever virus exposure in Doñana National Park, Spain*

Alfonso Peralbo-Moreno¹, Raúl Cuadrado-Matías¹, Sara Baz-Flores¹, Patricia Barroso¹, Roxana Triguero-Ocaña^{1,2}, Saúl Jiménez-Ruiz^{1,3}, Pelayo Acevedo¹, Francisco Ruiz-Fons¹

1. SaBio Group, Spanish Game & Wildlife Research Institute-IREC (CSIC-UCLM-JCCM), Ciudad Real, Spain, 2. VISAVET Health Surveillance Centre, Universidad Complutense de Madrid, Madrid, Spain, 3. Animal Health and Zoonoses Research Group (GISAZ), Department of Animal Health, University of Cordoba, Córdoba, Spain

09.30 - 09.45 *S9.3 Previous Usutu virus infection induces clinical protection against West Nile virus infection in grey partridges (Perdix perdix)*

Elisa Pérez-Ramírez¹, Francisco Llorente¹, Cristina Cano-Gómez¹, Pilar Aguilera-Sepúlveda¹, Maria Del Carmen Barbero¹, Mathieu Sarasa^{2,3}, Jovita Fernández-Pinero¹, Miguel Ángel Jiménez-Clavero^{1,4}

1. Animal Health Research Center (CISA) INIA-CSIC, Valdeolmos, Spain, 2. BEOPS, Toulouse, France, 3. Fédération Nationale des Chasseurs (FNC), Issy-les-Moulineaux, France, CIBERESP, Madrid, Spain

09.45 - 10.00 *S9.4 Gut microbiota diversity and composition is associated with infection and coinfection status and individual pathogens in wild bank voles (Myodes glareolus)*

Ilze Brila^{1,2}, Anton Lavrinienko², Eugene Tukalenko^{1,2,3}, Eva Riikka Kallio^{2,4}, Tapio Mappes², Phillip Charles Watts²

1. Ecology and Genetics Unit, University of Oulu, Oulu, Finland, 2. Department of Biological and Environmental Science, University of Jyväskylä, Jyväskylä, Finland, 3. National Research Center for Radiation Medicine of the National Academy of Medical Science, Kyiv, Ukraine, 4. School of Resource Wisdom, University of Jyväskylä, Jyväskylä, Finland

10.00 - 10.15 *S9.5 The roles of mammalian predators in the epidemiology of Francisella tularensis in north west Spain*

Francois Mougeot¹, Raquel Escudero², Xavier Lambin³, Fernando Jubete⁴, María Dolores Vidal Roig⁵, Silvia Herrero Cofreces⁴, Rosa Gonzales², Veronica Merino², Isabel Jado², Juan José Luque Larena⁴

1. IREC (CSIC-UCLM-JCCM), Ciudad Real, Spain, 2. ISCIII, Madrid, Spain, 3. University of Aberdeen, Aberdeen, United Kingdom, 4. Universidad de Valladolid, Palencia, Spain, 5. Universidad de Castilla-La Mancha, Medicina, Ciudad Real, Spain

ROOM 2

09.00 - 13.00 Morning Session

09.00 - 10.15 Scientific sessions. **Session 10. Integrated monitoring of wildlife populations and disease.**

Chairs: Becki Lawson & Ignasi Marco

09.00 - 09.15 *S10.1 Mallards on the leash: Why don't they bark for HPAIV intruders?*

Anja Globig, Anne Günther, Timm Harder, Angele Breithaupt, Christian Grund, Klaus Depner, Laura Zani, Frank Busch, Anne Pohlmann, Martin Beer, Thomas C. Mettenleiter

Friedrich-Loeffler-Institut, Greifswald-Insel Riems, Germany

09.15 - 09.30 *S10.2 Descriptive epidemiology and genetic characterisation of Trichomonas gallinae infections in ornithophilous birds of prey from North-Western France (2012-2015)*

Carole Godin¹, Maggy Jouglin², Laurence Malandrin², Philippe Gourlay^{2,3}

1. Oniris, Nantes, France, Metropolitan, 2. BIOEPAR, INRAE, Oniris, Nantes, France, Metropolitan, 3. Wildlife Health Centre, Oniris, Nantes, France, Metropolitan



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- 09.30 - 09.45** *S10.3 Implementing Environmental DNA Detection Method In The Surveillance Of Amphibian Pathogen *Batrachochytrium Salamandrivorans**
David Lastra González¹, Vojtech Baláz², Jirí Vojar¹, Petr Chajma¹
1. Czech University of Life Sciences Prague, Prague, Czech Republic, 2. University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic
- 09.45 - 10.00** *S10.4 Investigation about mortality in a hedgehog's population in Northern Italy*
Tiziana Trogu¹, Sabrina Canziani¹, Sara Salvato¹, Clara Tolini¹, Anna Castelli¹, Silva Rubini¹, Martina Munari¹, Davide Tartari², Lorenzo Borghi², Enrica Sozzi¹, Davide Lelli¹, Antonio Lavazza¹, Ana Moreno¹
1. Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia-Romagna "Bruno Ubertini", Brescia, Italy, 2. League for Birds Protection "Il giardino delle Capinere" (LIPU), Ferrara, Italy
- 10.00 - 10.15** *S10.5 ENETWILD project: towards harmonising mammal integrated monitoring in Europe*
Ezio Ferroglio¹, Pelayo Acevedo², Marco Apollonio³, Jose Antonio Blanco², Francesca Brivio³, Jim Casaer⁴, Guillaume Body⁵, Patrick Jansen⁶, Sonia Illanas², Oliver Keuling⁷, Kamila Plis⁸, Tomasz Podgorsky⁹, Massimo Podgorsky³, Graham Scandura¹⁰, Rachele Smith², Stefania Vada¹, Joaquín Vicente²
1. University of Torino, Torino, Italy, 2. National Institute on Wildlife Research, Ciudad Real, Spain, 3. University of Sassari, Sassari, Italy, 4. Research Institute Nature and Forest - INBO, Brussels, Belgium, 5. Office français de la biodiversité, Paris, France, 6. Wageningen University, Wageningen, The Netherlands, 7. ITAW- University of Hannover, Hannover, Germany, 8. Mammal Research Institute, Białowieża, Poland, 9. Mammal Research Institute and Czech University of Life Sciences, Białowieża, Praha, Poland, 10. National Wildlife Management Centre, Animal and Plant Health Agency, York, United Kingdom
- 10.15 - 10.45** **Break / networking / e-posters**

ROOM 1

- 10.45 - 11.30** **Plenary talk**
Chair: Christian Gortázar
Speaker: Prof. Andrew P. Dobson
The Ecology, Economics and Evolution of Emerging Pathogens.
- 11.30 - 13.00** Scientific sessions. **Session 11. Infection transmission at the wildlife-livestock-human interface.**
Chairs: Ana Balseiro & Christian Gortázar
- 11.30 - 11.45** *S11.1 Investigation on the role of red fox in TB maintenance community – second opus: experimental infection with a virulent field *Mycobacterium bovis* strain*
Céline Richomme¹, Sandrine Lesellier¹, Francisco Javier Salguero², Jacques Laurent Barrat¹, Jean-Marc Boucher¹, Jennifer Reys-Reys³, Sylvie Hénault³, Kristel De Cruz³, Lorraine Michelet³, Konstantin Lyashchenko⁴, Conor O'Halloran⁵, Ana Balseiro⁶, Maria Laura Boschioli³
1. Anses, Malzéville, France, 2. PHE, Salisbury, United Kingdom, 3. Anses, Maisons-Alfort, France, 4. Chembio Diagnostic Systems, New-York, United States, 5. University of Edinburgh, Midlothian, United Kingdom, 6. Universidad de Leon, Leon, Spain
- 11.45 - 12.00** *S11.2 Interaction patterns between wildlife and cattle assessed by camera traps reveal chances for mycobacteria transmission in Atlantic habitats*
Lucía Varela-Castro¹, Iker A. Sevilla¹, Ariane Payne², Emmanuelle Gilot-Fromont³, Marta Barral¹
1. Animal Health Department, NEIKER- Basque Institute for Agricultural Research and Development. Basque Research and Technology Alliance (BRTA), Derio, Spain, 2. Unité Sanitaire de la Faune. OFB/DGDPCE/DRAS, Orléans, France, 3. VetAgro Sup, UMR 5558 LBBE, Université de Lyon, Marcy-L'etoile, France
- 12.00 - 12.15** *S11.3 Spatial epidemiology of animal tuberculosis at the wildlife-livestock interface at national scale*
Cesar Herraiz, Joaquín Vicente, Christian Gortázar, Pelayo Acevedo
Health and Biotechnology Group (SaBio), Institute for Game and Wildlife Research (IREC-CSIC-JCCM), University of Castilla-la Mancha (UCLM), Ciudad Real, Spain



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12.15 - 12.30 *S11.4 Spatial and temporal distribution of Mycobacterium tuberculosis complex infection in Eurasian badger (Meles meles) and cattle in Asturias, Spain*

Cristina Blanco Vázquez¹, Thiago Doria Barral², Beatriz Romero³, Manuel Queipo⁴, Isabel Merediz⁵, Pablo Quirós⁶, José Ángel Armenteros⁶, Ramón Juste⁷, Lucas Domínguez⁸, Mercedes Domínguez⁹, Rosa Casais¹, Ana Balseiro¹⁰

1. Servicio Regional de Investigación y Desarrollo Agroalimentario del Principado de Asturias (SERIDA), Gijón, Spain, 2. Laboratório de Imunologia e Biologia Molecular, Instituto de Ciências da Saúde, Universidade Federal da Bahia, Bahia, Brazil, 3. Centro de Vigilancia Sanitaria Veterinaria VISAVET, Universidad Complutense de Madrid, Madrid, Spain, 4. Servicio de Sanidad y Producción Animal del Principado de Asturias, Oviedo, Spain, 5. Laboratorio Regional de Sanidad Animal del Principado de Asturias, Gijón, Spain, 6. Dirección General del Medio Natural y Planificación Rural del Principado de Asturias, Oviedo, Spain, 7. Animal Health Department, NEIKER-Instituto Vasco de Investigación y Desarrollo Agrario, Derio, Spain, 8. Centro de Vigilancia Sanitaria Veterinaria VISAVET, Universidad Complutense de Madrid; Departamento de Sanidad Animal, Facultad de Veterinaria, Universidad Complutense de Madrid, Madrid, Spain, 9. Unidad de Inmunología Microbiana, Centro Nacional de Microbiología, Instituto de Salud Carlos III, Madrid, Spain, 10. Departamento de Sanidad Animal, Facultad de Veterinaria, Universidad de León; Departamento de Sanidad Animal, Instituto de Ganadería de Montaña (CSIC-Universidad de León), León, Spain

12.30 - 12.45 *S11.5 Stable prevalence of Coxiella burnetii in wildlife after a decade of surveillance in the Basque Country (northern Spain)*

Ion I. Zendoia, Aitor Cevidanes, Patricia Vázquez, Jesús F. Barandika, Ana Hurtado, Marta Barral, Ana L. García-Pérez

NEIKER - Basque Institute for Agricultural Research and Development, Basque Research and Technology Alliance (BRTA), Derio, Spain

12.45 - 13.00 *S11.6 Small mammals are reservoirs for multiple zoonotic pathogens*

Elisabeth Schmidt

University of Leipzig, Institute of Animal Hygiene and Veterinary Public Health, Leipzig, Germany

ROOM 2

11.30 - 13.00 Scientific sessions. **Session 12. Integrated monitoring of wildlife populations and disease.**
Chairs: Gudrun Wibbelt & Erik Ågren

11.30 - 11.45 *S12.1 MAMMALNET project: citizen and open science at the service of mammal population monitoring in Europe*

Graham Smith¹, Pelayo Acevedo², Marco Apollonio³, Daniel Beltran-Alcrudo⁴, Jose Antonio Blanco², Jim Casaer⁵, Ezio Ferroglio⁶, Mark Hovari⁴, Patrick Jansen⁷, Oliver Keuling⁸, Rafal Kowalczyk⁹, Tomasz Podgorski¹⁰, Massimo Scandura³, Joanna Stojak⁹, Rachele Vada², Stefania Zanet⁶, Joaquin Vicente²

1. National Wildlife Management Centre, Animal and Plant Health Agency, York, United Kingdom, 2. National Institute on Wildlife Research, Ciudad Real, Spain, 3. University of Sassari, Sassari, Italy, 4. FAO, Budapest, Hungary, 5. Research Institute of Nature and Forest - INBO, Brussels, Belgium, 6. University of Torino, Torino, Italy, 7. Wageningen University, Wageningen, The Netherlands, 8. Institute for Terrestrial and Aquatic Wildlife Research - University of Veterinary Medicine Hannover, Hannover, Germany, 9. Mammal Research Institute, Białowieża, Poland, 10. Mammal Research Institute and Czech University of Life Sciences, Białowieża, Poland

11.45 - 12.00 *S12.2 Retroviral Infection Affects Reproduction and Survival of Female Wild Turkeys*

Stephanie A Shea¹, Matthew B Gonnerman¹, Erik J Blomberg¹, Kelsey M Sullivan², Pauline L Kamath¹

1. University of Maine, Orono, United States, 2. Maine Department of Inland and Fisheries Wildlife, Bangor, United States



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- 12.00 - 12.15** *S12.3 Health of wild fish exposed to contaminants of emerging concern in freshwater ecosystems utilized by a Minnesota Tribal community*
Jessica R Deere¹, Mark D Jankowski², Alexander Primus¹, Nicholas B.d. Phelps³, Mark Ferrey⁴, Joanna Borucinska⁵, Matteo Convertino⁶, Joseph L Servadio⁷, Yvette Chenux-Ibrahim⁸, E.J. Isaac⁸, Randall S Singer⁹, Dominic A Travis¹, Seth Moore⁸, Tiffany M Wolf¹
1. Department of Veterinary Population Medicine, College of Veterinary Medicine, University of Minnesota, St. Paul, Minnesota, United States, 2. United States Environmental Protection Agency, Seattle, Washington, United States, 3. Department of Fisheries, Wildlife and Conservation Biology, College of Food, Agricultural and Natural Resource Sciences, University of Minnesota, St. Paul, Minnesota, United States, 4. Minnesota Pollution Control Agency, St. Paul, Minnesota, United States, 5. Department of Biology, College of Arts and Sciences, University of Hartford, West Hartford, Connecticut, United States, 6. Institute of Environment and Ecology, Tsinghua Shenzhen International Graduate School, Tsinghua University, Shenzhen, China, 7. Division of Environmental Health Sciences, School of Public Health, University of Minnesota, Minneapolis, Minnesota, United States, 8. Biology and Environment, Grand Portage Band of Lake Superior Chippewa, Grand Portage, Minnesota, United States, 9. Department of Veterinary and Biomedical Sciences, College of Veterinary Medicine, St. Paul, Minnesota, United States
- 12.15 - 12.30** *S12.4 Optimizing risk management strategies for the control of *Philornis downsi* - a threat to birds in the Galápagos Islands*
Irene Bueno¹, Randall S Singer¹, Charles Yoe², Dominic A Travis¹, Rees Parrish¹, Julia B Ponder³
1. University of Minnesota, Saint Paul, United States, 2. Notre Dame of Maryland University, Baltimore, United States, 3. The Raptor Center, University of Minnesota, Saint Paul, United States
- 12.30 - 12.45** *S12.5 Pulmonary health in Barataria Bay dolphins in the 8 years after the deepwater horizon oil spill*
Cynthia R. Smith¹, Teresa K. Rowles², Forrest M. Gomez¹, Ryan Takeshita¹, Jeanine S. Morey¹, Kathleen M. Colegrove³, Eric S. Zolman¹, Brian C. Balmer¹, Todd R. Speakman¹, Jennifer M. Meegan¹, Marina Ivancic^{4,5}, Randall S. Wells⁶, Forrest I. Townsend⁷, Lori H. Schwacke¹
1. National Marine Mammal Foundation, San Diego, United States, 2. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Protected Resources, Silver Spring, United States, 3. Zoological Pathology Program, University of Illinois College of Veterinary Medicine, Brookfield, United States, 4. Chicago Zoological Society, Brookfield Zoo, Brookfield, United States, 5. ZooRadOne, Plainfield, United States, 6. Chicago Zoological Society's Sarasota Dolphin Research Program, Sarasota, United States, 7. Bayside Hospital for Animals, Fort Walton Beach, United States
- 12.45 - 13.00** *S12.6 Cardiac assessments of bottlenose dolphins (*Tursiops truncatus*) in the Northern Gulf of Mexico following exposure to Deepwater Horizon Oil*
Barbara K. Linnehan¹, Forrest M. Gomez¹, Sharon M. Huston², Adonia Hsu², Ryan Takeshita¹, Kathleen M. Colegrove³, Craig A. Harms⁴, Ashley Barratclough¹, Alissa C. Deming⁵, Teri K. Rowles⁶, Whitney B. Musser¹, Eric S. Zolman¹, Randall S. Wells⁷, Eric D. Jensen⁸, Lori H. Schwacke¹, Cynthia R. Smith¹
1. National Marine Mammal Foundation, San Diego, California, United States, 2. San Diego Veterinary Cardiology, San Diego, California, United States, 3. Zoological Pathology Program, University of Illinois at Urbana-Champaign, Brookfield, Illinois, United States, 4. North Carolina State University, Center for Marine Sciences and Technology, Morehead City, North Carolina, United States, 5. Dauphin Island Sea Lab, Dauphin Island, Alabama, United States, 6. National Oceanic and Atmospheric Administration, Office of Protected Resources, Silver Spring, Maryland, United States, 7. Chicago Zoological Society's Sarasota Dolphin Research Program, c/o Mote Marine Laboratory, Sarasota, Florida, United States, 8. U.S. Navy Marine Mammal Program, Naval Information Warfare Center Pacific, San Diego, California, United States

ROOM 1

- 15.00 - 16.30** **Awards' Ceremony**
- 17.00 - 21.15** **Evening Session**
- 17.00 - 17.45** **Plenary talk**
Chair: Joaquín Vicente
AAWV AI Franzmann Speaker: Dr. Daniel J. O'Brien
- 17.50 - 19.05** **The Mother of Invention: New Tools for an Old Foe**
Scientific sessions. **Session 13. Wildlife disease control.**
Chairs: Susan Kutz & Joaquín Vicente



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- 17.50 - 18.05 **S13.1 Robust interaction between predator pressure and disease prevalence during the peak phase of a rodent species with cyclic demography: a large-scale replicated experiment**
Javier Fernandez-De-Simon¹, David González-Barrio², Lara Royo-Hernández¹, Alfonso Paz^{3,4}, David López-Idiaquez^{5,6}, Jesús Martínez-Padilla⁷, Jesús T. García¹, Pedro P. Olea^{8,9}, Francisco Ruiz-Fons¹, Javier Viñuela¹
1. Instituto de Investigación en Recursos Cinegéticos, IREC (CSIC-UCLM-JCCM), Ciudad Real, Spain, 2. Parasitology Reference and Research Laboratory, Spanish National Centre for Microbiology, Health Institute Carlos III, Majadahonda, Madrid, Spain, 3. Grupo de Rehabilitación de la Fauna Autóctona y su Hábitat (GREFA), Majadahonda, Madrid, Spain, 4. Departamento de Ciencias de la Vida UD Ecología, Universidad de Alcalá, Alcalá de Henares, Spain, 5. CEFE-CNRS UMR5175 University of Montpellier, Montpellier, France, 6. Departamento de Biología Vegetal y Ecología, Universidad del País Vasco (UPV/EHU), Leioa, Bizkaia, Spain, 7. Instituto Pirenaico de Ecología (CSIC), Jaca, Huesca, Spain, 8. Terrestrial Ecology Group (TEG), Department of Ecology, Universidad Autónoma de Madrid, Madrid, Spain, 9. Centro de Investigación en Biodiversidad y Cambio Global (CIBC-UAM), Universidad Autónoma de Madrid, Madrid, Spain
- 18.05 - 18.20 **S13.2 Modeling host-pathogen transmission dynamics to support scientific decision making**
Robin Russell¹, Tonie Locke¹, Daniel Walsh¹, John Grider²
1. US Geological Survey, National Wildlife Health Center, Madison, WI, United States, 2. Colorado Cooperative Fish and Wildlife Research Unit, Colorado State University, Fort Collins, CO, United States
- 18.20 - 18.35 **S13.3 Modeling epidemic prevention and detection strategies for introduced pathogens in the Channel Island fox (*Urocyon littoralis*)**
Jessica N. Sanchez^{1,2}, Brian R. Hudgens²
1. One Health Institute, School of Veterinary Medicine, University of California at Davis, Davis, United States, 2. Institute for Wildlife Studies, Arcata, United States
- 18.35 - 18.50 **S13.4 Optimizing risk management strategies for the control of *Philornis downsi* - a threat to birds in the Galápagos Islands**
Irene Bueno¹, Randall S Singer¹, Charles Yoe², Dominic A Travis¹, Rees Parrish¹, Julia B Ponder³
1. University of Minnesota, Saint Paul, United States, 2. Notre Dame of Maryland University, Baltimore, United States, 3. The Raptor Center, University of Minnesota, Saint Paul, United States
- 18.50 - 19.05 **S13.5 Harvest management & chronic wasting disease prevalence trends in western mule deer herds**
Mary M. Conner¹, Mary E. Wood², Anne Hubbs³, Justin Binfet⁴, A. Andrew Holland², Luke R. Meduna⁵, Annette Roug⁶, Jonathan P. Runge², Todd D. Nordeen⁵, Margo J. Pybus³, Michael W. Miller²
1. Utah State University, Logan, United States, 2. Colorado Parks & Wildlife, Fort Collins, United States, 3. Alberta Environment & Parks, Edmonton, Canada, 4. Wyoming Game & Fish Department, Casper, United States, 5. Nebraska Game & Parks Commission, Lincoln, United States, 6. Utah Division of Wildlife Resources, Salt Lake City, United States

ROOM 2

- 17.50 - 19.05 **Scientific sessions. Session 14. Host-pathogen interactions in wildlife.**
Chairs: Tabitha Viner & Gregorio Mentaberre
- 17.50 - 18.05 **S14.1 Bi-seasonal dynamics of a multi-host pathogen: the role of environment in the dynamics of anthrax**
Yen-Hua Huang¹, Kyrre Kausrud², Ayesha Hassim³, Louis Van Schalkwyk⁴, Edgar Dekker⁴, Alexander Buyantuev⁵, Claudine Cloete⁶, Werner Kilian⁶, Henriette Van Heerden³, Wendy Turner⁷
1. Department of Forest and Wildlife Ecology, University of Wisconsin-Madison, Madison, United States, 2. Section for Epidemiology, Norwegian Veterinary Institute, Oslo, Norway, 3. Department of Veterinary Tropical Diseases, University of Pretoria, Pretoria, South Africa, 4. Office of the State Veterinarian, Department of Agriculture, Forestry and Fisheries, Government of South Africa, Skukuza, South Africa, 5. Department of Geography and Planning, University at Albany, State University of New York, Albany, United States, 6. Etosha Ecological Institute, Ministry of Environment, Forestry and Tourism, Okaukuejo, Namibia, 7. U.S. Geological Survey, Wisconsin Cooperative Wildlife Research Unit, Department of Forest and Wildlife Ecology, University of Wisconsin-Madison, Madison, United States
- 18.05 - 18.20 **S14.2 Environmental factors determine the seasonal seropositivity of *Erysipelothrix rhusiopathiae*, an emerging pathogen in caribou**
O. Alejandro Aleuy¹, Michelle anholt², Karin Orsel³, Fabien Mavrot¹, Catherine Gagnon⁴, Kimberlee Beckmen⁵, Steeve Côté⁶, Christine Cuyler⁷, Andrew Dobson⁸, Brett Elkin⁹, Lisa-Marie Leclerc¹⁰, Joëlle Taillon¹¹, Susan Kutz¹



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1. Department of Ecosystem and Public Health, University of Calgary, Calgary, Canada, 2. Office of One Health, University of Calgary, Calgary, Canada, 3. Production Animal Health, University of Calgary, Calgary, Canada, 4. Canada Research Chair on Northern Biodiversity, Centre of Northern Studies and Quebec Center for Biodiversity Science, Quebec, Canada, 5. Division of Wildlife Conservation, Alaska Department of Fish and Game, Fairbanks, United States, 6. Department of Biology, Laval University, Quebec, Canada, 7. Greenland Institute of Natural Resources, Nuuk, Greenland, 8. Department of Ecology and Evolutionary Biology, Princeton University, Princeton, United States, 9. Government of the Northwest Territories, Yellowknife, Canada, 10. Government of Nunavut, Iqaluit, Canada, 11. Wildlife division, Government of Quebec, Quebec, Canada

18.20 - 18.35 *S14.3 Unravelling the pathogenesis of Herpesvirus-Associated Proliferative Skin Disease in Frogs and Toads*

Francesco C Origi¹, Patricia Otten², Petra Lohmann³, Ursula Sattler¹, Thomas Wahli¹, Antonio Lavazza⁴, Veronique Gaschen¹

1. University of Bern, Bern, Switzerland, 2. FASTERIS SA, Geneva, Switzerland, 3. Private Practitioner, Forch, Switzerland, 4. Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Brescia, Italy

18.35 - 18.50 *S14.4 Using Multivariate Analyses to Explore Evolutionary Patterns in Disease Pathology*

Rachel M. Ruden^{1,2}, Amberleigh E. Henschen^{1,3}, Dana M. Hawley⁴, James S. Adelman^{1,3}

1. Iowa State University, Ames, United States, 2. Iowa Department of Natural Resources, Ames, United States, 3. University of Memphis, Memphis, United States, 4. Virginia Polytechnic Institute and State University, Blacksburg, United States

18.50 - 19.05 *S14.5 An outbreak of plasmodium related Disease and mortality in a conservation breeding population of greater sage grouse (Centrocercus urophasianus)*

Sandra R. Black^{1,2}, Douglas P. Whiteside^{1,2}, Adriana R. Pastor¹, Yiran Li¹, Dayna Goldsmith^{1,2}

1. Calgary Zoo Animal Health Centre, Calgary, Canada, 2. University of Calgary Faculty of Veterinary Medicine, Calgary, Canada

19.05 - 19.30 **Break / networking / e-posters**

ROOM 1

19.30 - 21.00 Scientific sessions. **Session 15. Molecular epidemiology of wildlife pathogens.**

Chairs: Sandra Díaz & Pelayo Acevedo

19.30 - 19.45 *S15.1 Syphilis seropositivity and Treponema paraluisleporidarum Strain Diversity in European Brown Hares*

Linda Hisgen^{1,2}, Lena Abel², Erik Ågren³, Alexander Barlow⁴, Marcus Fährndrich⁵, Linda Grillová⁶, Miklós Gyuranecz⁷, Luisa Hallmaier-Wacker², Antonio Lavazza⁸, Simone Lüert², Markéta Nováková⁹, Carlo Pacioni¹⁰, Christian Roos², Egbert Strauß⁵, Tiziana Trogu⁸, Roser Velarde¹¹, Ulrich Voigt⁵, David Šmajš⁹, Sascha Knäuf^{1,2}

1. Institute of International Animal Health / One Health, Friedrich-Loeffler-Institute, Greifswald - Insel Riems, Germany, 2. Deutsches Primatenzentrum GmbH, Leibniz-Institute for Primate Research, Göttingen, Germany, 3. Department of Pathology and Wildlife Diseases, National Veterinary Institute, Uppsala, Sweden, 4. Wildlife Network for Disease Surveillance, Bristol Veterinary School, Bristol, United Kingdom, 5. Institute for Terrestrial and Aquatic Wildlife Research, University of Veterinary Medicine Hannover-Foundation, Hannover, Germany, 6. Parasites and Microbes, Wellcome Sanger Institute, Wellcome Genome Campus, Hinxton, United Kingdom, 7. Veterinary Medical Research Institute, Budapest, Hungary, 8. Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Brescia, Italy, 9. Department of Biology, Masaryk University, Brno, Czech Republic, 10. Department of Environment, Land, Water and Planning, Arthur Rylah Institute for Environmental Research, Heidelberg, Vic, Australia, 11. Wildlife Ecology & Health Group, Department de Medicina i Cirurgia Animals, Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain

19.45 - 20.00 *S15.2 Impact of the genomic architecture of Lagovirus europaeus/GI.2 recombinants in the clinical course of rabbit hemorrhagic disease*

Ana Margarida Lopes^{1,2}, Raquel Machado Marques², Madalena Costa², Luzia Teixeira², Ana Pinto², João Vasco Côrte-Real^{1,3}, Maria João Magalhães¹, Pedro José Esteves^{1,3}, António Costa Silva², Aleksija Neimanis⁴, Dolores Gavier-Widén⁴, Paula Gomes Ferreira², Joana Abrantes^{1,3}

1. CIBIO-UP, Centro de Investigação em Biodiversidade e Recursos Genéticos-Universidade do Porto/InBIO, Laboratório Associado, Vairão, Portugal, 2. Instituto de Ciências Biomédicas Abel Salazar (ICBAS)/Unidade Multidisciplinar de Investigação Biomédica (UMIB), Universidade do Porto, Porto, Portugal, 3. Departamento de Biologia, Faculdade de Ciências da Universidade do Porto, Porto, Portugal, 4. Department of Pathology and Wildlife Diseases, National Veterinary Institute (SVA), Uppsala, Sweden



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20.00 - 20.15 *S15.3 Decreased immunity of wild rabbits against rabbit hemorrhagic disease virus in Azores (2015-2019)*
Ana M. Lopes^{1,2}, João V. Côrte-Real^{1,3}, João Faria^{1,3}, Fabiana Neves¹, Tereza Almeida¹, Tiago M. Rodrigues⁴, Maria J. Magalhães¹, Esther Blanco⁵, Juan Bárcena⁵, Manuel Leitão⁴, Paulo C. Alves^{1,3,6}, Pedro J. Esteves^{1,3}, Pedro Monterroso¹, David Gonçalves^{1,3}

1. Research Network in Biodiversity and Evolutionary Biology (CIBIO-InBIO/UP), Vairão, Portugal, 2. Instituto de Ciências Biomédicas Abel Salazar (ICBAS)/Unidade Multidisciplinar de Investigação Biomédica (UMIB), Universidade do Porto, Porto, Portugal, 3. Departamento de Biologia, Faculdade de Ciências da Universidade do Porto, Porto, Portugal, 4. Direção Regional dos Recursos Florestais, Azores, Portugal, 5. Centro de Investigación en Sanidad Animal (INIA-CISA), Madrid, Spain, 6. Wildlife Biology Program, University of Montana, Montana, United States

20.15 - 20.30 *S15.4 Frequency and molecular diversity of protist enteroparasites in Western chimpanzees (Pan troglodytes verus) from Ivory Coast, Senegal, and Sierra Leone*
Pamela C. Köster¹, Juan M. Lapuente², Laia dotras³, Justinn Renelies-Hamilton⁴, Andrea Pizarro⁵, Manuel Llana⁶, Alejandro Dashti¹, Begoña Bailo¹, Aly Salimo Muadica¹, David González-Barrio¹, Rafael Calero-Bernal⁷, Francisco Ponce-Gordo⁸, Isabel Fuentes¹, David Carmena¹

1. Parasitology Reference and Research Laboratory, Spanish National Centre for Microbiology, Majadahonda, Spain, 2. Animal Ecology and Tropical Biology, Biozentrum, Universität Würzburg, Tierökologie und Tropenbiologie (Zoologie III)/Comoé Chimpanzee Conservation Project (CCCP) Comoé N.P., Kakpin, Ivory Coast, Würzburg, Germany, 3. Jane Goodall Institute Spain and Senegal, Dindéfelo Biological Station, Dindéfelo, Kedougou, Senegal, 4. Section for Ecology and Evolution, Department of Biology, University of Copenhagen, Copenhagen, Denmark, 5. Tacugama Chimpanzee Sanctuary, Freetown, Sierra Leone, 6. Jane Goodall Institute Spain and Senegal, Dindéfelo Biological Station, kedougou, Senegal, 7. SALUVET, Department of Animal Health, Faculty of Veterinary, Complutense University of Madrid, Madrid, Spain, 8. Department of Microbiology and Parasitology, Faculty of Pharmacy, Complutense University of Madrid, Madrid, Spain

20.30 - 20.45 *S15.5 American mink (Neovison vison) as potential reservoir of Leishmania infantum*
Iris Azami- Conesa¹, José Sansano- Maestre², Rafael Alberto Martínez- Díaz³, María Teresa Gómez- Muñoz¹

1. Department of Animal Health, Faculty of Veterinary Sciences, University Complutense of Madrid, Madrid, Spain, 2. Department of Animal Health and Public health, University Catholic of Valencia, Valencia, Spain, 3. Department of Preventive Medicine and Public Health, and Microbiology, Faculty of Medicine, University Autónoma of Madrid, Madrid, Spain

20.45 - 21.00 *S15.6 Clinical babesiosis in a North American river otter (Lontra canadensis) and the prevalence and genetic characterization of this Babesia microti-like species in the eastern United States Molecular epidemiology of wildlife pathogens*

Kayla Buk Garrett^{1,2}, Ashlyn Halseth², James Beasley², Mark G Ruder¹, Mourad Gabriel^{3,4}, Michael J Yabsley^{1,2}

1. Southeastern Cooperative Wildlife Disease Study, University of Georgia College of Veterinary Medicine, Athens, United States, 2. Warnell School of Forestry and Natural Resources, University of Georgia, Athens, United States, 3. Karen C. Drayer Wildlife Health Center, University of California Davis School of Veterinary Medicine, Davis, United States, 4. Integral Ecology Research Center, Blue Lake, United States

ROOM 2

19.30 - 20.45 Scientific sessions. **Session 16. Mixed thematic areas.**
Chairs: Ursula Höfle & María A. Rivalde

19.30 - 19.45 *S16.1 Highly pathogenic avian influenza in the Netherlands, 2020/2021: H5N8 virus expands its host range to barnacle geese*

Valentina Caliendo¹, Jolianne M. Rijks², Erik Kleyheeg³, Roy Slaterus³, Marcel A.h. Spierenburg⁴, Hans Verdaat⁵, Nancy Beerens⁶, Ron A.m. Fouchier¹, Thijs Kuiken¹

1. Erasmus MC, Rotterdam, The Netherlands, 2. Dutch Wildlife Health Center, Utrecht, The Netherlands, 3. SOVON, Utrecht, The Netherlands, 4. NVWA, Utrecht, The Netherlands, 5. Wageningen Marine Research, Den Helder, The Netherlands, 6. Wageningen Bioveterinary Research, Lelystad, The Netherlands

19.45 - 20.00 *S16.2 Unravelling the interface: farm connectivity provided by spotless starling (Sturnus unicolor) movements*

Alberto Sánchez-Cano¹, Cosme López-Calderón², Teresa Cardona Cabrera¹, Andy J. Green², Ursula Höfle¹

1. SaBio Health and Biotechnology Department, Institute for Game and Wildlife Research (IREC), CSIC-UCLM-JCCM, Ciudad Real, Spain, 2. Department of Wetland Ecology, Estación Biológica de Doñana- CSIC, Sevilla, Spain



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- 20.00 - 20.15 *S16.3 Yellow-legged gulls (*Larus michahellis*) and Audouin's gulls (*Larus audouinii*) from Barcelona as a source of *Campylobacter* of public health relevance.*
Alicia Manzanares Pedrosa¹, Teresa Ayats¹, Sara Sabatè², Tomàs Montalvo^{2,3}, Marta Cerdà - Cuéllar¹
1. IRTA, Centre de Recerca en Sanitat Animal (CRESA, IRTA-UAB), Barcelona, Spain, 2. Agència de Salut Pública de Barcelona, Barcelona, Spain, 3. CIBER Epidemiologia y Salud Pública, Madrid, Spain
- 20.15 - 20.30 *S16.4 Physiological effects of azaperone and midazolam on netgun-captured mule deer*
Annette Roug¹, Randy Larsen², Xaela Walden¹, Kent Hersey¹, Brock Mcmillan³, Nigel Caulkett⁴
1. Utah Division of Wildlife, Salt Lake City, United States, 2. Brigham Young University, Provo, United States, 3. Brigham Young University, Provo, United States, 4. University of Calgary, Calgary, Canada
- 20.30 - 20.45 *S16.5 Fibropapillomatosis and chelonid alphaherpesvirus 5 infection in Kemp's ridley sea turtles (*Lepidochelys kempii*)*
Annie Page-Karjian¹, Liam Whitmore^{2,3}, Brian A. Stacy⁴, Justin R. Perrault⁶, Jessica A. Farrell⁷, Hilary Frandsen⁸, Jennifer S. Walker⁹, Donna J. Shaver⁶, Elina Rantonen¹⁰, Craig A. Harms¹¹, Terry M. Norton¹², Charles Innis¹³, Kelsey Yetsko¹², Cody R. Mott¹³, Michael J. Bresette¹⁴, David J. Duffy¹⁵
1. Florida Atlantic University, Fort Pierce, United States, 2. Harbor Branch Oceanographic Institute, Florida, United States, 3. University of Limerick, Limerick, Ireland, 4. University of Florida, St. Augustine, United States, 5. Department of Biological Sciences, 6. Whitney Laboratory for Marine Biosciences, Florida, United States, 7. University of Florida, Gainesville, United States, 8. Loggerhead Marinelife Center, Florida, United States, 9. University of Florida, Juno Beach, United States, 10. Padre Island National Seashore, St. Augustine, United States, 11. National Park Service, Florida, United States, 12. Padre Island National Seashore, Corpus Christi, United States, 13. National Park Service, Texas, United States, 14. Florida Atlantic University, Corpus Christi, United States, 15. Harbor Branch Oceanographic Institute, Texas, United States

ROOM 1

21.00 - 21.15 **Closure**



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STUDENT AWARD E-POSTERS

63 A metatranscriptomic approach to parasitic, viral, and bacterial surveillance in hunter harvested primates in an indigenous reserve in Guyana, South America.

Marissa S. Milstein¹, Laramie L. Lindsey¹, Christopher A. Shaffer², Phillip Suse³, Elisha Marawanaru³, Suzanne Stone¹, Tiffany M. Wolf¹, Peter A. Larsen¹

1. University of Minnesota College of Veterinary Medicine, St. Paul, United States, 2. Department of Anthropology, Grand Valley State University, Allendale, United States, 3. Masakenari Village, Konashen Indigenous District, Region 9, Guyana

232 Alpine ibex hybrids: fairy tale or reality in our mountains?

Barbara Moroni¹, Alice Brambilla², Luca Rossi¹, Pier Giuseppe Meneguz¹, Bruno Bassano³, Paolo Tizzani¹

1. Department of Veterinary Science, University of Turin, Grugliasco, Italy, Turin, Italy, 2. University of Turin, Zurich, Switzerland, 3. Department of Evolutionary Biology and Environmental Studies, Noasca, Italy

190 Anticoagulant rodenticide exposure in raptors from Ontario, Canada.

Grace L Thornton^{1,2}, Brian Stevens^{1,2}, Shannon K French^{1,2}, Leonard J Shirose^{1,2}, Felipe Reggeti³, Nick Schrier³, E. Jane Parmley^{2,4}, Alexandra Reid⁵, Claire M Jardine^{1,2}

1. Department of Pathobiology, University of Guelph, Guelph, Canada 2. Canadian Wildlife Health Cooperative, Guelph, Canada 3. Animal Health Laboratory, University of Guelph, Guelph, Canada 4. Department of Population Medicine, University of Guelph, Guelph, Canada 5. Ontario Ministry of Agriculture, Food, and Rural Affairs, Guelph, Canada

4 Assessing Strain-Specificity In Acquired Resistance Response To Batrachochytrium Dendrobatidis.

K.M. Barnett¹, Taegan McMahon², David Civitello¹

1. Emory University, Atlanta, United States 2. University of Tampa, Tampa, United States

315 California serogroup viruses: Revealing the reservoir potential of cervids in Arctic and Subarctic ecosystems.

Kayla Buhler¹, Antonia Dibernardo², Robbin Lindsay², Michael Drebot², Jane Harms³, Heather Fenton⁴, Javier Fernandez Aguilar⁵, Lisa-Marie Leclerc⁶, Ellen Avard⁷, John Blake⁸, Adrián Hernández Ortiz¹, Patrick Leighton⁹, Emily Jenkins¹

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305 Cross-sectional survey of vector-borne diseases at the wildlife-livestock interface: Bluetongue, Schmallenberg disease and Q fever in Doñana National Park Spain.

Saúl Jiménez-Ruiz^{1,2}, Joaquín Vicente¹, María Ángeles Riscalde³, Pelayo Acevedo¹, Patricia Barroso¹, David Cano-Terriza², David González-Barrio⁴, Ignacio García-Bocanegra²

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157 Description of novel adenoviruses and herpesviruses in Galapagos giant tortoises Chelonoidis sp.

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327 Detection of *Lactococcus garvieae* in feral fish and environmental DNA of four California Lakes .

Taylor Abraham ¹, Zeinab Yazdi ¹, Eric Littman ¹, Khalid Shahin ¹, Taylor Heckman ¹, Eva Quijano Carde ¹, Diem Thu Nguyen ¹, Ruixue Hu ¹, Mark Adkison ², Tresa Veek ², Kavary Mukkatira ², Christine Richey ², Kevin Kwak ², Ian Gardner ³, Timothy J Welch ⁴, Esteban Soto ¹

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120 Establishing the safety, pharmacokinetics, and efficacy of fluralaner as a novel treatment for sarcoptic mange in the bare-nosed wombat *Vombatus ursinus*.

Vicky Wilkinson ¹, Kotaro Takano ², David Nichols ¹, Alynn Martin ¹, Roz Holme ³, David Phalen ⁴, Kate Mounsey ², Michael Charleston ¹, Alexandre Kreiss ⁵, Ruth Pye ⁵, Elizabeth Browne ¹, Christina Næsberg-Nielsen ¹, Shane A. Richards ¹, Scott Carver ¹

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115 Evaluation of contact network between commensal wild birds and domestic poultry around a French duck farm.

Chloé Le Gall-Ladevèze ¹, Pierre Fievet ², Julien Cappelle ³, Claire Guinat ⁴, Jean-Luc Guérin ¹, Guillaume Le Loc'H ¹

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194 First description of *Sarcoptes scabiei* cross-transmission between Iberian ibex *Capra pyrenaica* and wild boar *Sus scrofa*.

Marta Valdeperes ¹, Barbara Moroni ², Luca Rossi ², Roser Velarde ¹, Jorge Ramón López-Olvera ¹, Emmanuel Serrano ¹, Gregorio Mentaberre ³, Santiago Lavín ¹, Anna Rita Molinar Min ², Samer Angelone ², José Enrique Granados ⁴

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247 First known outbreak of *Salmonella* serovar *Choleraesuis* in Swedish wild boar.

Karin M Olofsson ¹, Linda Ernholm ², Caroline Bröjer ¹, Gustav Averhed ¹, Erik Ågren ¹

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228 Flavivirus infection of wild birds in a wildlife-livestock interaction gradient in continental Iberia.

Lai Casades Martí ¹, Rocío Holgado Martín ², Sara Baz Flores ¹, Raúl Cuadrado Matías ¹, Yolanda Fierro ³, Francisco Ruiz Fons ¹

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51 Global conservation implications for health assessment studies in non-captive wildlife.

Sara Kophamel ¹, Björn Illing ¹, Ellen Ariel ¹, Leigh C Ward ², Diana Mendez ¹, Lee F Skerratt ³, Mark Hamann ¹, Morgan Difalco ⁴, Suzanne L Munns ¹

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189 Identification of a novel *neorickettsia* species in kemp's ridley sea turtles with granulomatous renal lesions and development of a quantitative PCR assay.

Brittany Liguori ¹, Brian Stacy ², Linda Archer ¹, April Childress ¹, Donna Shaver ³, James Wellehan ¹

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218 Listeriosis and viral coinfections in multiple wildlife species in the southeastern United States.

Alisia A. W. Weyna ^{1,2}, Kevin Niedringhaus ³, Melanie R. Kunkel ², Heather Fenton ⁴, M. Kevin Keel ⁵, Amy H Webb ⁶, Charlie Bahnson ⁷, Brandon Munk ⁸, Rebecca Radisic ^{1,2}, Nicole M. Nemeth ^{1,2}

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134 Long-term study of ranaviruses drivers, associated with mortality events on *Rana temporaria* in the French National Park of Mercantour.

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130 Microbiome diversity and its relation to the pathogen of different tick species collected in Sarawak, Malaysian Borneo.

Alice Lau ¹, Mohamed Abdallah Mohamed Moustafa ^{2,3}, Yongjin Qiu ⁴, Wessam Mohamed Ahmed Mohamed ^{1,2}, Manabu Onuma ⁵, Nobuyoshi Nakajima ⁵, Ryo Nakao ², Michito Shimozuru ¹, Jayasilan Mohd-Azlan ⁶, Toshio Tsubota ¹

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294 Monitoring of Schmallenberg virus in zoo animals in Spain, 2002-2019.

Déborra Jiménez-Martín ¹, Javier Caballero-Gómez ^{1,2}, Ignacio García-Bocanegra ¹, Nuria Navarro ³, Rafael Guerra ⁴, Cati Gerique ⁵, Eva Martínez-Nevado ⁶, Pilar Soriano ⁷, Sabrina Castro-Scholten ¹, Adrián Beato ¹, David Cano-Terriza ¹

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212 Multi-systemic spirorchidiasis and gastrointestinal parasitism in louisiana red-eared sliders *trachemys scripta elegans*

Rebecca Radisic ^{1,2}, Heather Fenton ³, Jim Lacour ⁴, A. Nikki Anderson ⁴, Kevin Niedringhaus ^{5,1}, Michael J Yabsley ¹, Nicole Nemeth ^{1,2}

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Luca Aroha Schick¹, Lonneke L. Ijsseldijk², Miguel L. Grilo^{1,3}, Jan Lakemeyer¹, Kristina Lehnert¹, Peter Wohlsein⁴, Christa Ewers⁵, Ellen Prenger-Berninghoff⁵, Wolfgang Baumgärtner⁴, Andrea Gröne², Maria J.I. Kik², Ralf Oheim⁶, Julian Stürznickel⁶, Ursula Siebert¹

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216 Seroprevalence of West Nile virus in game bird populations in the United States.

Melanie R. Kunkel¹, Lisa Williams², Mary Jo Casalena², Mitchell Blake³, Samantha E. Allen⁴, Leslie Schreiber⁴, David Moscicki⁵, Christopher Moorman⁵, Daniel G. Mead¹, Mark G. Ruder¹, Nicole M. Nemeth¹

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242 Spillover event of recombinant *Lagovirus europaeus/GI.2* into the Iberian hare *Lepus granatensis* in Spain.

Roser Velarde¹, Joana Abrantes^{2,3}, Ana M. Lopes^{2,4}, Josep Estruch¹, João V. Côrte-Real^{2,3}, Pedro J. Esteves^{2,3}, Ignacio García-Bocanegra⁵, Jordi Ruiz-Olmo⁶, Carlos Rouco^{7,8}

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197 Squirrels *Sciuridae*- neglected reservoirs for emerging zoonotic pathogens.

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122 Synurbization increases zoonotic hepatitis E hazard posed by wild boar.

Marc López-Roig¹, Raquel Castillo-Contreras², Abir Monastiri¹, María Escobar², Gregorio Mentaberre³, Carles Conejero², Marta Valdeperes², Joan Roldan⁴, Jose María López-Martín⁵, Jordi Serra-Cobo¹, Jorge-Ramón López Olivera²

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227 *Usutu and Plasmodium co-infection in Eurasian blackbirds Turdus merula.*

Giuseppe Giglia^{1,2}, Gianfilippo Agliani¹, Bas B. Oude Munnik³, Reina Sikkema³, Famke Schaafsma¹, Alinda Berends¹, Maria Teresa Mandara², Marja Kik^{1,4}, Joeske Ijzer^{1,4}, Jolianne M. Rijks⁴, Marion P. G. Koopmans³, Helene Verheije¹, Andrea Gröne^{1,4}, Chantal B. E. M. Reusken^{3,5}, Judith M. A. Van Den Brand^{1,4}

270 *Validation of a drop-net system to trap wild boar according to the Agreement on International Humane Trapping Standards.*

Carles Conejero¹, Jorge R. López-Olvera¹, Enric Vila², Santi Oms², Jordi Vigué², Enric Ullar², Carlos González-Crespo¹, Arián Ráez-Bravo¹, Raquel Castillo-Contreras¹, Roser Velarde¹, Gregorio Mentaberre^{3,1}

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114 *Wildlife diversity among villages in Chad, Africa with various levels of Dracunculus medinensis Guinea worm infections in domestic dogs: insights into possible reservoirs?*

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307 *Zoo animals as sentinels for Bluetongue virus monitoring in Spain.*

Javier Caballero-Gómez^{1,2}, David Cano-Terriza³, Joan Pujols⁴, Eva Martínez-Nevaldo⁵, María Dolores Carbonell⁶, Rafael Guerra⁷, Jesús Recuero⁸, Pilar Soriano⁹, Noelia De Castro¹⁰, Sabrina Castro-Scholten¹¹, Jesús Barbero¹², Ignacio García-Bocanegra¹³

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Kevin M. Santana-Hernández ¹, Simon L. Priestnall ², Eligia Rodríguez-Ponce ¹
1. Department of Animal Pathology, Faculty of Veterinary Sciences, University of Las Palmas de Gran Canaria, Arucas, Spain 2. Department of Pathobiology and Population Sciences, The Royal Veterinary College, Hatfield, United Kingdom

57 A potential conservation threat to Macaronesian raptors: First documented case of fatal viral hepatitis in a Canary Islands Kestrel *Falco tinnunculus canariensis*.

Kevin M. Santana-Hernández ¹, Simon L. Priestnall ², Alejandro Suárez-Bonnet ², Pablo A. Lupiola-Gómez ³, Eligia Rodríguez-Ponce ¹
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59 A passenger from a long-distance traveler? Story of *Lutztrema attenuatum* Digenea: *Dicrocoeliidae* carried by a blackbird *Turdus merula*.

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62 Prevalence of respiratory disease in Eastern grey squirrels *Sciurus carolinensis* in relation to levels of air pollution found in London UK.

Irene Torres-Blas ^{1,2}, Simon L. Priestnall ¹, Patricia Brekke ²
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Touseef Ahmed ¹, Muhammad Farooq Tahir ², Tigga Kingston ¹
1. Texas Tech University, Lubbock, United States 2. Health Security Partners, Washington, United States

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Laura A B Aguilar ¹, N Kalaivanan ², Sridhar Kanniappan ³, Easwaran Vijayaraghavan ², Gregory B Walth ¹, Andrew S Atuan ¹, Sarah Laws ¹, Govindaraju Sivasubramanian ², Puliyyur S Mohankumar ¹, Joerg Mayer ¹
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Émilie Bouchard ¹, Adrián Hernández-Ortiz ¹, Kayla Buhler ¹, Michaël Bonin ², Heather Fenton ³, Ellen Avard ⁴, Jim Roth ⁵, Chloé Warret Rodrigues ⁵, Matilde Tomaselli ⁶, Carla Pamak ⁷, Audrey Simon ⁸, Patrick Leighton ⁸, Emily Jenkins ¹



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117 Antimicrobial resistant *Moellerella wisconsensis*; a potentially zoonotic pathogen isolated from wild birds in Greece.

Zoi Athanasakopoulou ¹, Marina Sofia ¹, Dimitris C. Chatzopoulos ^{1,2}, Efthymia Petinaki ³, Vassiliki Spyrou ⁴, Charalambos Billinis ^{1,2}

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Joanna Kershaw ^{1,2}, Ailsa Hall ²

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153 Necropsy findings in wildlife vehicle collisions: comparison of mortal lesions in mammals and birds.

Andreia Manuela Garcês ^{1,2,3}, Justina Praga ⁴, Anabela Alves ⁴, Adelina Gama ⁴, Celso Santos ⁴, Filipe Silva ⁴, Isabel Pires ⁴

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173 *Giardia* spp. in wild rodents from a landscape dominated by exotic plantations in Chile.

Natalia Huerta, Maira Riquelme, Javier A. Simonetti, Fernando Fredes, André V. Rubio
University of Chile, Santiago, Chile

177 Tick risk in roe deer fawns: what links with environment and individual characteristics?.

Léa Bariod ^{1,2,3}, Sonia Saïd ³, Clément Calenge ³, Stéphane Chabot ³, Gilles Bourgoïn ^{1,2}

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196 Cross-sectional serological survey of Aujeszky's Disease virus and Classical Swine Fever virus in white-lipped peccary (*Tayassu pecari*) and collared peccary (*Pecari tajacu*) in the Peruvian Amazon.

Maria Fernanda Menajovsky ¹, Johan Espunyes ^{2,3}, Gabriela Ulloa ^{4,5}, Arturo Mamani ⁴, Stephanie Montero ⁴, Winnie Contreras ⁴, Andrés Lescano ⁴, Meddly Santolalla ⁴, Oscar Cabezón ^{2,6}, Pedro Mayor ^{1,7,8}

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217 Effects of Low Salinity Exposure on Bottlenose Dolphins *Tursiops truncatus*.

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231 Screening of vector-borne pathogens in Icelandic arctic foxes, *Vulpes lagopus*

Sándor Hornok¹, Kristin Mühldorfer², Nóra Takács¹, Regina Hofmann-Lehmann³, Marina L. Meli³, Miklós Gyuranecz⁴, Ester R. Unnsteinsdóttir⁵, Alex D. Greenwood², Gábor Árpád Czirják²

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260 Liver parasite *Pseudamphistomum truncatum* infects mainly subadult Baltic ringed seals.

Marja Isomursu¹, Kaarina Kauhala²

1. Finnish Food Authority, Oulu, Finland 2. Natural Resources Institute Finland, Turku, Finland

262 Multi-drug resistant *E. coli* isolated from free-living griffon vultures *Gyps fulvus* and cinereous vulture *Aegypius monachus* from Central Spain.

Bárbara Martín-Maldonado^{1,2}, Fernando González González^{1,3}, Irene López Márquez^{1,3}, Laura Suárez Regalado^{1,3}, Virginia Moraleda Fernández^{1,3}, Natalia Pastor Tiburón^{1,3}, Francisco Javier García-Peña³

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Emerging and re-emerging wildlife diseases

39 Eastern equine encephalitis outbreak in white-tailed deer *Odocoileus virginianus* in Michigan, USA, 2019 to 2020.

Julie R Melotti ¹, Thomas Cooley ¹, Straka Kelly ¹, Kathryn Farinosi ¹, Scott Fitzgerald ², Steven Bolin ²

1. Michigan Department of Natural Resources, Lansing, United States 2. Michigan State University Veterinary Diagnostic Laboratory, Lansing, United States

45 A novel herpesvirus detected in three different species in the order testudines.

John M. Winter ¹, James F.x. Wellehan ², Kathleen Apakupakul ³, Jamie L. Palmer ³, Maris Brenn-White ³, Kali Standorf ⁴, Kristin H. Berry ⁵, April Childress ², Michael M. Garner ⁶, Peter Koplos ⁷, Sharon L. Deem ³

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89 Vector-borne Viruses in Ungulates in southern Ontario, Canada: Distribution and Orbivirus Establishment.

Samantha E Allen ^{1 2 3}, Claire M Jardine ^{2 3}, Stacey L Vigil ⁴, Tara Furukawa-Stoffer ⁵, Nicole Colucci ⁵, Kathleen Hooper-Mcgrevy ⁶, Aruna Ambagala ⁶, Jamie L Rothenburger ^{7 8}, David L Pearl ⁹, Mark G Ruder ⁴, Nicole M Nemeth ⁴

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91 Novel Approaches For Diagnosing Tuberculosis In Wildlife In Resource Poor Countries.

Wynand Johan Goosen ¹, Tanya Jane Kerr ¹, David Cooper ², Peter E Buss ³, Leanie Kleynhans ¹, Robin Warren ¹, Paul Van Helden ¹

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113 Invasion pathways and public health risks of the raccoon and its roundworm *Baylisascaris procyonis* in the Netherlands.

Miriam Maas ¹, Rea Tatem-Dokter ¹, Jolianne M. Rijks ², Cecile Dam-Deisz ¹, Hester Van Bolhuis ³, Mike Heddergott ⁴, Anna Schleimer ⁴

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116 Toxigenic *Corynebacterium ulcerans* emerges from widespread hedgehog *Erinaceus europaeus* disease.

An Martel ¹, Filip Boyen ¹, Jörg Rau ², Tobias Eisenberg ³, Andreas Sing ⁴, Anja Berger ⁴, Koen Chiers ¹, Sarah Van Praet ¹, Serge Verbanck ¹, Muriel Vervaeke ⁵, Frank Pasmans ¹

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137 Feline leukaemia virus in free-ranging Eurasian Lynx lynx lynx – a pathogen to keep an eye on.

Iris Andrea Marti ¹, Simone Roberto Rolando Pisano ¹, Sven Signer ², Christine Breitenmoser-Würsten ², Urs Breitenmoser ², Ole Anders ³, Tomma Lilli Middelhoff ³, Florian Brandes ⁴, Regina Hofmann-Lehmann ⁵, Marina Luisa Meli ⁵, Marie-Pierre Ryser-Degiorgis ¹

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140 Seroprevalence of Crimean-Congo haemorrhagic fever in wild ungulates from north-eastern Spain.

Johan Espunyes ^{1,2}, Oscar Cabezón ^{1,3}, Lola Pailler ⁴, Andrea Dias-Alves ¹, Lourdes Lobato-Bailón ^{1,2}, Ignasi Marco ¹, Maria Puig Ribas ^{1,2}, Sebastian Napp ⁴

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161 Multiple strains of a novel hantavirus in voles in Continental Europe.

Kathrin Jeske ¹, Stephan Drewes ¹, Melanie Hiltbrunner ², Petra Straková ^{3,1}, Guy-Alain Schnidrig ², Linas Balciauskas ⁴, Laima Balciauskiene ⁴, Rasa Petraityte-Burneikiene ⁵, Gerald Heckel ^{2,6}, Rainer G. Ulrich ⁷

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208 Emydomyces testavorans surveillance in multiple free-ranging terrestrial and aquatic chelonian species in Illinois.

Kelcie Fredrickson ¹, Laura Adamovicz ^{1,2}, Karen Terio ³, Alexis Davidson ¹, Michelle Waligora ¹, Kayla Ladez ¹, Samantha Bradley ¹, Matthew Allender ^{1,2,4}

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225 Outbreaks of digital necrobacillosis in wild reindeer in Norway.

Malin Rokseth Reiten, Kjell Handeland, Knut Madslie, Turid Vikøren, Jørn Våge
Norwegian Veterinary Institute, Ås, Norway

226 Serological Investigation of Selected Vector-Borne Viruses in Migratory Free-Living Passerine Birds Captured During Autumn Migration in Slovenia.

Joško Racnik ¹, Tomi Trilar ², Mateja Jelovšek ³, Miša Korva ³, Zoran žlabravec ¹, Brigita Slavec ¹, Olga Zorman Rojs ¹, Tatjana Avšič županc ³

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233 First report of GI.2 in a Cape hare Lepus capensis from Africa.

Faten Ben Chehida ¹, Ana Margarida Lopes ², João Vasco Côrte-Real ², Soufien Sghaier ³, Thameur Ben Hassine ⁴, Lilia Messadi ¹, Joana Abrantes ²



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245 European Brown hare syndrome in Catalonia, Spain: from a single event to epizootic?

Josep Estruch¹, Carlos Rouco^{2,3}, Joana Abrantes^{4,5}, Ana M. Lopes^{4,6}, Tereza Almeida⁴, Lorenzo Capucci⁷, Patrizia Cavadini⁷, Antonio Lavazza⁷, Jorge Ramon López-Olvera¹, Aleksija Neimanis⁸, Jordi Ruiz-Olmo⁹, Roser Velarde¹

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291 RNA in situ hybridization and virus characterization of skunk adenovirus in North American wildlife demonstrates severe multisystemic infections and genetic variation in a broad host range.

Laura A Bourque¹, Ole Nielsen², Mason Jager³, Davor Ojkic⁴, Chantale Provost⁵, Carl Gagnon⁵, Betty Chow-Lockerbie⁶, Hein Snyman⁷, Brian Stevens⁸, David Needle⁹, Shotaro Nakagun¹⁰, Sherri Cox¹¹, Jessica Kohdadad¹², Megan Jones¹

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293 Emydomyces testavorans associated shell disease in an endangered population of Northwestern pond turtles in Washington, USA.

Karen A Terio¹, Katherine Haman², Jennifer Tepavich³, Tori Mcklveen⁴, Lisa Hallock²

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346 Diffuse Large B Cell Lymphoma and a Novel Gammaherpesvirus in Two Northern.

Elephant Seals Margaret Martinez¹, Emily Trumbull¹, Michelle Rivard¹, Emily Whitmer¹, Nicole I. Stacy², Cara Field¹, Linda L. Archer², James F.x. Wellehan Jr.², Salvatore Frasca Jr.³, Pdraig J. Duignan¹

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347 Moose Alces alces with suggested spontaneous Chronic Wasting Disease in Sweden.

Erik Olof Ågren¹, Gustav Averhed¹, Dolores Gavier-Widén¹, Kaisa Sörén², Karolina Wall³, Sylvie L Benestad⁴, Linh Tran⁴, Neele Doose¹, Jørn Våge⁴, Maria Nöremark²

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349 Finding elusive *Echinococcus* tapeworms in Sweden.

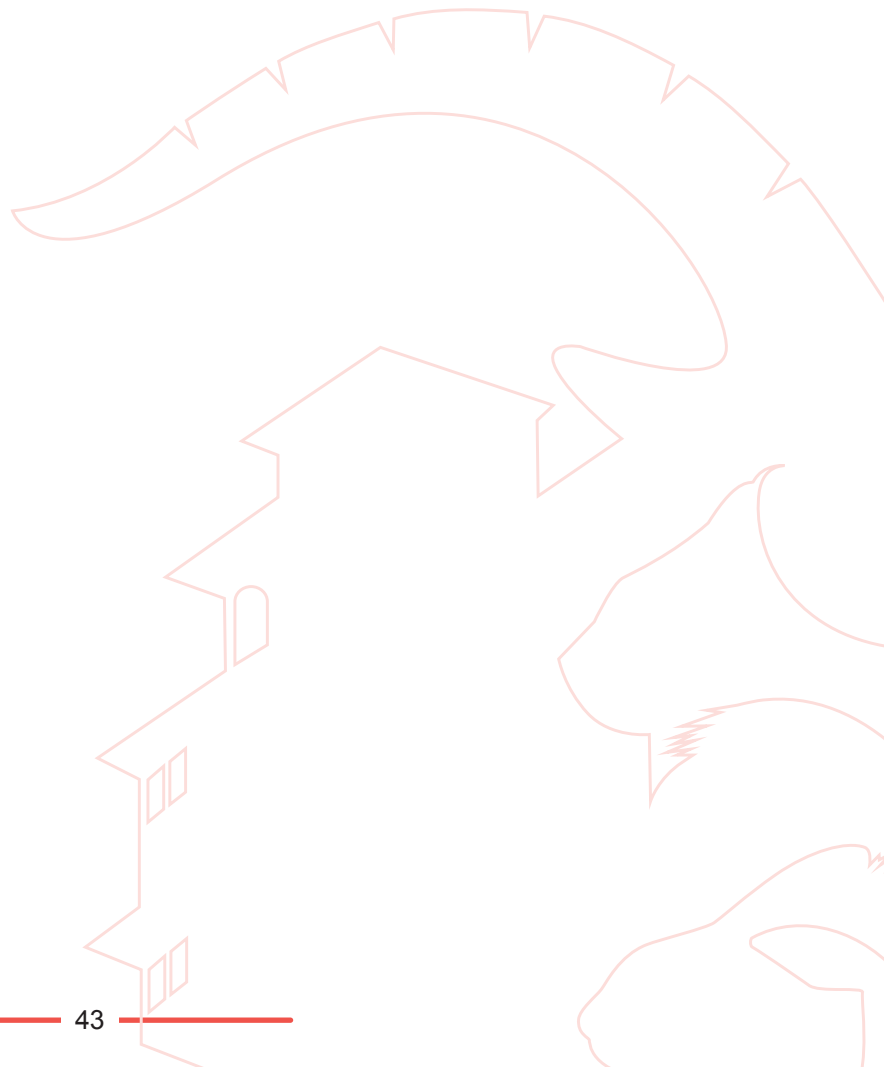
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378 Cytopathic effects of *Trichomonas gallinae* on cell culture after environmental persistence trials.

Kathryn Erin Purple ¹, Richard Gerhold ²

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Host-pathogen interactions in wildlife

4 SaBio Health and Biotechnology Department, Institute for Game and Wildlife Research IREC, CSIC-UCLM-JCCM, Ciudad Real, Spain

69 Genomic Insights Into the Pathogenicity of a Novel Biofilm-Forming *Enterococcus* sp. Bacteria *Enterococcus lacertideformus* Identified in Reptiles.

Jessica Esther Agius¹, David Norton Phalen¹, Karrie Rose², John-Sebastian Eden³

1. University of Sydney, Sydney, Australia 2. Australian Registry of Wildlife Health, Mosman, Australia 3. Taronga Conservation Society Australia, Westmead, Australia

80 Patterns and pathogen infection of deer keds *Diptera: Hippoboscidae* and ticks *Ixodida: Ixodidae* found on white-tailed deer *Odocoileus virginianus* in the eastern United States.

Karen C. Poh¹, Jesse R. Evans¹, Michael J. Skvarla¹, Pia U. Olafson², Graham Hickling³, Jennifer M. Mullinax⁴, Erika T. Machtinger¹

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82 Gastrointestinal parasites prevalence and season dynamics in an endangered brown bear *Ursus arctos* population in Greece: preliminary results.

Antonios Synapalos¹, Stefanos Sgardelis¹, Anastasia Diakou², Dionysios Youlatos³, Giorgos Mertzanis⁴

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83 A preliminary study of endoparasites in live loggerhead sea turtles.

Marina García Piqueras, Jose Sansano Maestre

Catholic University of Valencia San Vicente Martir, Valencia, Spain

108 Unravelling Elephant Herpesvirus Pathogenicity with Transcriptomics.

Jack Johnson¹, Adam Blanchard¹, Arun Zachariah², Rachael Tarlinton¹

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136 Molecular identification of *Sarcocystis wobeseri*-like parasites in a new intermediate host species, the white-tailed sea eagle *Haliaeetus albicilla*.

Tammy Shadbolt¹, Ann Pocknell², Anthony Sainsbury¹, Stephen Egerton-Read³, Damer Blake⁴

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147 The *Salmonella* Dynamics of American White Ibis *Eudocimus albus* Nestlings.

Katherine Fredrica Christie, Julia Silva Seixas, Erin K. Lipp, William Norfolk, Ralph Scott Rozier, Sonia M. Hernandez

University of Georgia, Athens, United States

148 Avian Influenza Virus Dynamics in Urban Nestling and Juvenile American White Ibis *Eudocimus albus*.

Katherine Fredrica Christie, Julia Silva Seixas, Rebecca L. Poulson, Sonia M. Hernandez

University of Georgia, Athens, United States



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163 Tick-borne encephalitis in the Swedish moose *Alces alces*.

Elina Thorsson ¹, Tomas Bergström ², Kristina Nyström ², Peter Norberg ², Anette Roth ², Gustav Averhed ¹
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171 Subcutaneous cysticercosis of *Taenia crassiceps* in red foxes *Vulpes vulpes*.

Saskia Keller ¹, Walter U. Basso ², Diana S. Gliga ², Gaia Moore-Jones ¹, Francesco C. Origi ¹, Caroline F. Frey ², Marie-Pierre Ryser-Degiorgis ¹
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184 Experimental *Mycobacterium microti* infection in bank voles *Myodes glareolus*.

Enric Vidal ¹, Judit Burgaya ¹, Lorraine Michelet ², Claudia Arrieta-Vilegas ¹, Guillermo Cantero ¹, Michelle Di Bari ³, Romolo Nonno ³, Maria Laura Boschiroli ², Bernat Pérez De Val ¹
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195 Effect on Pulmonary Health of White-tailed Deer Under Presence of Lungworm.

Nathan Daniel Wilson, Amy C Dechen Quinn, Madeline A Hilger
SUNY Cobleskill, New York, United States

237 In sickness and in health: plasma proteomics of hibernating European and North American myotis bats.

Gábor Árpád Czirják ¹, Alexander M. Hecht-Höger ¹, Eberhard Krause ², Christian C. Voigt ¹, Beate Braun ¹, Alex D. Greenwood ¹
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240 Prevalence of gastrointestinal parasites in wild carnivore species from Central Spain.

Pablo Matas ¹, David Carmena ², Ana Montoya ³, Marta Mateo ¹
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251 The spatiotemporal dynamics of exposure of wild ungulates to *Flavivirus* shapes the patterns of West Nile virus outbreaks in Spain.

Laia Casades Martí ¹, Raúl Cuadrado Matías ¹, Roxana Triguero Ocaña ^{1,2}, Patricia Barroso ¹, Saúl Jiménez Ruiz ^{1,3}, Pablo Palencia ¹, Eduardo Laguna ¹, Alfonso Peralbo Moreno ¹, Sara Baz Flores ¹, Yolanda Fierro ⁴, Francisco Ruiz Fons ¹
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296 Meta-transcriptomic profiles of rodents at the rodent-agricultural interface.

Laramie L Lindsey, Nusrat A Jahan, Adam Reinschmidt, Evan J Kipp, Bradley J Heins, Suzanne Stone, Peter A Larsen
University of Minnesota, Saint Paul, United States

323 The 'vicious circles' of host condition, infection susceptibility and intensity may be less common than expected.

Cristina Garrido-Amaro ¹, Roser Velarde ¹, Anna E. Jolles ², Jorge R. López-Olvera ¹, Emmanuel Serrano ¹
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330 The spatiotemporal dynamics of Crimean-Congo haemorrhagic fever virus in enzootic Iberian scenarios.

Raúl Cuadrado-Matías ¹, Laia Casades-Martí ¹, Ana Balseiro ², Sara Baz-Flores ¹, Roxana Triguero-Ocaña ^{1,3}, Patricia Barroso ¹, Saúl Jiménez-Ruiz ^{1,4}, Pablo Palencia ¹, Eduardo Laguna ¹, Alfonso Peralbo-Moreno ¹, Francisco Ruiz-Fons ¹

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340 Oral yeasts and lesions in cinereous vulture *Aegypius monachus* nestlings: Risk factors and importance.

Ángela Mercedes Sánchez Arévalo ¹, Úrsula Höfle ¹, Javier De La Puente ², Alberto Sánchez-Cano ³, Teresa Cardona Cabrera ³

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355 Suspected *Brucella*-associated Abortion in a Hawaiian Monk Seal *Neomonachus schauinslandi*.

Cara Lisa Field ¹, Gregg Levine ¹, Megan Mcginnis ¹, Kathleen Colegrove ², Karen Terio ², Andrea Packham ³, Tracey Goldstein ³, Claudia Cedillo ⁴, Michelle Barbieri ⁴

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366 Patterns of *Bartonella* infection in small mammal from intensive farmlands, NW Spain.

Silvia Herrero-Cófreces ^{1,2}, Raquel Escudero ³, François Mougeot ⁴, Nerea Castro ³, Juan José Luque-Larena ^{1,2}

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381 The bird, the parasite, and the virus: Co-infection of free-living red-legged partridges *Alectoris rufa* with *Bagaza* virus and avian malaria.

Teresa Cardona Cabrera ¹, Alberto Sánchez-Cano ¹, María De Los Angeles Risald ², Vidal Montoro-Angulo ¹, Jose Antonio Ortiz ³, Ursula Höfl ⁴

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Impact of diseases on wildlife conservation

7 Locomotor Biomechanics Of Chinese Pangolins *Manis Pentadactyla* With Normal And Amputated Limbs/Tails.

I-Ting Tu ^{1,2}, Peter Bishop ¹, Yu-Mei Chang ¹, Ting-Yu Chen ³, Hsuan-Yi Lo ³, Hsuan-Ya Yu ³, John Hutchinson ¹

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78 Assessment of Urethral Catheterization for Semen Collection and Characterization of Normative Seminal Traits in Wild Ocelots *Leopardus pardalis* and Bobcats *Lynx rufus* in South Texas.

Ashley M Reeves ¹, William F Swanson ², Clayton D Hilton ³, Tyler A Campbell ⁴, Landon Schofield ⁴, Jason V Lombardi ³, Michael E Tewes ³, Debra L Miller ¹

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107 The risk from SARS-CoV-2 to bat species in England.

Sophie M Common ¹, Tammy Shadbolt ¹, Katherine Walsh ², Anthony W Sainsbury ¹

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155 Ricketts-like syndrome in two free-ranging Iberian lynx *Lynx Pardinus* kittens.

Elena Crespo ¹, Fernando Najera ², Amalia García ³, Tomás Castiella ⁴, Rebeca Grande ⁵, Francisco Sanchez ⁶, Manuel Mata ⁶, Javier Cáceres ⁶, Javier Herrera ⁷, Victor Diez ⁸, Marino Lopez ⁹, Rafael Cubero ¹⁰, Antonio Aranda ¹¹

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192 Assessing Deer Carcass Transportation, Processing, and Disposal Habits Among Minnesota Hunters Statewide and Within Disease Management Areas

Kyle Smith ¹, Adam Landon ², David Fulton ¹

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282 Multi-species Clostridial Outbreaks in Neonatal, Juvenile and Adult Greater Sage Grouse *Centrocercus urophasianus* in a Conservation Breeding Program.

Adriana R Pastor ¹, Sandra R Black ^{1,2}, Douglas P Whiteside ^{1,2}, Yiran Li ¹, Dayna A Goldsmith ²

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38 A prevalent cryptic bacterium in the endangered Darwin's fox: genetic diversity, risk factor assessment and effects of infection.

Sophia Di Cataldo ¹, Ezequiel Hidalgo-Hermoso ², Irene Sacristán ¹, Aitor Cevidanes ¹, Constanza Napolitano ³, Claudia Hernández ⁴, Fernando Esperón ⁵, Darío Moreira-Arce ⁶, Javier Cabello ⁷, Javier Millán ⁸

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40 Molecular detection of kobuviruses in domestic and wild animals in Northwestern Italy.

Irene Melegari ¹, Serena Robetto ², Paola Fruci ¹, Cristina Guidetti ², Andrea Palombieri ¹, Emanuele Carella ², Federica Di Profio ¹, Vittorio Sarchese ¹, Fulvio Marsilio ¹, Riccardo Orusa ², Barbara Di Martino

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52 *Toxoplasma gondii* sero-prevalence in wild cervids in Denmark.

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55 North American co-invaders? Serovars of *Salmonella enterica* carried by the invasive California kingsnake *Lampropeltis californiae* in Gran Canaria, Spain.

Kevin M. Santana-Hernández ¹, Eligia Rodríguez-Ponce ¹, Inmaculada Rosario Medina ², Begoña Acosta-Hernández ², Simon L. Priestnall ³, Clara Marin ⁴, Santiago Vega ⁴, Teresa García Beltrán ⁵, Pablo A. Lupiola-Gómez ⁶

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65 Feral cats colonies as carriers of *Salmonella* spp. with impact on Public Health

Inmaculada Rosario ^{1,2}, Maria Isabel Calcines Macías ², Eligia Rodríguez ², Soraya Déniza ^{1,2}, Fernando Real ^{1,2}, Santiago Vega ³, Clara Marin ³, Adassa López ², Esther Licia Diaz ², Begoña Acosta-Hernández ^{1,2}

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79 Detection of a novel *Mycoplasma gallisepticum*-like species in Common Starling *Sturnus vulgaris* around poultry farms in France.

Chloé Le Gall-Ladevèze, Laurent-Xavier Nouvel, Marie Souvestre, Guillaume Croville, Marie-Claude Hygonenq, Jean-Luc Guérin, Guillaume Le Loc'H

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124 Large-scale survey for canine vector-borne parasites in different bioclimatic regions of Chile: first description of *Babesia* in dogs and *Hepatozoon* in foxes.

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141 Are griffon vultures *Gyps fulvus* spreaders of antimicrobial resistant enteropathogens?

Johan Espunyes ^{1,2}, Marta Cerdà-Cuellar ³, Lourdes Migura-García ³, Lucía Illera ¹, Andrea Dias-Alves ¹, Lourdes Lobato-Bailón ^{1,2}, María Puig Ribas ^{1,2}, Teresa Ayats ³, Alicia Manzanares ³, Ignasi Marco ¹

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149 A framework for more consistent reporting of wildlife-livestock contact data.

Sonny A. Bacigalupo ¹, Linda K. Dixon ², Simon Gubbins ², Adam J. Kucharski ³, Julian A. Drewe ¹

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166 Antimicrobial resistance profiles in wild and domestic ruminants: an One Health approach.

Camilla Smoglica ¹, Simone Angelucci ^{1,2}, Anna Rita Festino ¹, Muhammad Farooq ¹, Antonio Antonucci ², Alberto Vergara ¹, Fulvio Marsilio ¹, Cristina Esmeralda Di Francesco ¹

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167 Influenza A virus infection in urban and rural populations of wild boars in Spain.

María Escobar ¹, Paloma Encinas ², José Enrique Granados ³, Gregorio Mentaberre ⁴, Arián Ráez-Bravo ¹, Raquel Castillo-Contreras ¹, Carles Conejero ¹, Jorge R. López-Olvera ¹, Gustavo Del-Real ²

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168 A species independent double-antigen ELISA allowing for CCHFV antibody detection in wildlife.

Loïc Comtet

Innovative Diagnostics, Grabels, France

174 *Mycoplasma ovipneumoniae* in Yukon: surveillance and the domestic-wildlife interface.

Kristenn Magnusson ¹, N. Jane Harms ¹, Michelle Thompson ¹, Maud Henaff ¹, Jesse Walchuk ², Matthew Larsen ², Meghan Larivee ¹, Mary Vanderkop ¹

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220 Health surveillance to improve understanding of wildlife-livestock disease transmission risks and guide decision-making in antelope conservation reintroductions.

Stephanie Brien ¹, Marie Petretto ², Ouled Ahmed Hatem ³, Erhan Yalcindag ¹, Melissa Marr ¹, Mark Bronsvoort ¹, Rob Ogden ¹

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Caroline Bröjer, Henrik Uhlhorn, Siamak Zohari, Malin Grant, Maria Nöremark, Elina Thorsson, Elisabeth Bagge, Gustav Averhed, Helena Eriksson, Karin Olofsson-Sannö, Minerva Löwgren, Pernille Engelsen-Etterlin, Désirée S. Jansson

National Veterinary Institute SVA, Uppsala, Sweden

252 Reduce the Risk of Disease Emergence And Protect wildlife health By Adopting The One Health Approach.

Sophie Muset ¹, Tiggy Grillo ²

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243 Generalized tuberculosis due to Mycobacterium caprae in a blind red fox Vulpes vulpes and its epidemiological context.

Roser Velarde ¹, Enric Vidal ², Josep Estruch ¹, Zoraida Cervera ², Abel Muñoz ², Carlos Solano-Manrique ³, Albert Sanz ⁴, Carles Riera ⁴, Bernat Pérez De Val ²

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258 Antimicrobial resistant Escherichia coli in Bonelli's eagle Aquila fasciata in Spain and France.

Beatriz Sánchez-Ferreiro ^{1,2}, Alicia Aranaz ¹, Bárbara Martín-Maldonado ^{2,3}, Laura Suárez Regalado ^{2,3}, Virginia Moraleda Fernández ^{2,3}, Alicia Carrero Ruiz ^{2,3}, Natalia Pastor Tiburón ^{2,3}, Fernando González González ^{2,3}, Irene López Márquez ^{2,3}

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259 Antimicrobial resistant Salmonella isolated from chelonians admitted to a Wildlife Rescue Center in Central Spain.

Sandra Sevilla-Navarro ^{1,2}, Bárbara Martín-Maldonado ^{3,4}, Natalia Pastor Tiburón ^{3,4}, Irene López Márquez ^{3,4}, Laura Suárez Regalado ^{3,4}, Virginia Moraleda Fernández ^{3,4}, Alicia Carrero Ruiz ^{3,4}, Fernando González González ^{3,4}, Clara Marin Orega ^{1,4}

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288 Detection of African swine fever virus in wild boar in Southeast Asia.

Alice Porco ¹, Emily Denstedt ², Jusun Hwang ³, Alice Latinne ³, Nga Thi Thanh Nguyen ³, Ngoc Thi Bich Pham ³, Hai Kim Lam ³, Sokha Chea ¹, Sreyem Sours ¹, Kongsy Khammavong ², Phonesavanh Milavong ², Sothyra Tum ⁴, San Sorn ⁵, Davun Holl ⁵, Bounlom Douangngeun ⁶, Watthana Theppangna ⁶, Long Van Nguyen ⁷, Phuong Thanh Nguyen ⁸, Quang Tin Vinh Le ⁸, Hung Van Vo ⁸, Hoa Thi Nguyen ⁹, Anh Le Dao ⁹, Amanda Fine ³, Mathieu Pruvot ¹⁰

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292 Integrated control of tuberculosis at the wildlife-livestock interface in outdoor Iberian pig farms in Spain.

Saúl Jiménez-Ruiz ^{1,2}, María Ángeles Riscalde ³, Ignacio García-Bocanegra ², Eduardo Laguna ¹, Débora Jiménez-Martín ², David Cano-Terriza ², Joaquín Vicente ¹, Pelayo Acevedo ¹

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304 Passive and targeted health surveillance of wild boar *Sus scrofa* populations in north-eastern Italy.

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313 Infectious disease surveillance at the wildlife-domestic interface of a partridge farm.

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335 Are wild ungulates in close contact to humans exposed to SARS-CoV-2?

Elisa Ferreras-Colino ¹, Mercedes Domínguez ², María Escobar ³, Marta Valdeperes ³, José Antonio Infantes-Lorenzo ², Inmaculada Moreno ², Christian Gortázar ¹, Jorge R. López-Olvera ³

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338 Spatial representation of the interfaces between wild and domestic ungulates in Spain: potential use for the control of shared diseases.

Carmen Ruiz-Rodríguez ¹, Javier Fernández-López ², Sonia Illianas ¹, Pelayo Acevedo ¹, José Antonio Blanco-Aguilar ¹, Joaquín Vicente ¹

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341 Anaplasma and Piroplasm co-infection in small ruminants from Portugal.

Marta Sánchez-Sánchez ¹, Alberto Moraga-Fernández ¹, Carla Alves ², Vidal Montoro ¹, Miguel A. Habela ³, Rafael Calero-Bernal ⁴, Jesús Félix ¹, Lina Costa ⁵, Luís Manuel Madeira De Carvalho ², José De La Fuente ¹, Isabel G. Fernández De Mera ¹

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343 Use of dynamic network in the wildlife-livestock interface to study endemic and emerging diseases.

Roxana Triguero-Ocaña ¹, Eduardo Laguna ², Saúl Jiménez-Ruiz ^{2,3}, César Herraiz ², Ignacio García-Bocanegra ³, María Ángeles Riscalde ⁴, Vidal Montoro ^{2,5}, Joaquín Vicente ^{2,5}, Pelayo Acevedo ²

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348 Twenty years overview: spatio-temporal analysis of European surveys on zoonotic diseases in the main large game species.

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*350 Global geographic pattern of studies on zoonotic diseases in wild boar *Sus scrofa* and red deer *Cervus elaphus*.*

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*351 Serological and molecular detection of *Anaplasma* species in domestic and wild ruminants from Eastern Spain.*

Maite Masià-Castillo ¹, Iris García-Bacete ², Jose Sansano-Maestre ²

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367 Estimating interactions between livestock and wildlife in the Selva Lacandona, Mexico.

Salvador Romero Castañón ^{1 2}, Francisco Ruiz Fons ¹, Isabel G. Fernandez De Mera ¹

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*3 Adipose tissue estimation in green turtles *Chelonia mydas* using deep learning, diagnostic imaging and bioelectrical impedance analysis.*

Sara Kophamel ¹, Leigh C Ward ², Dmitry A Konovalov ¹, Ellen Ariel ¹, Diana Mendez ¹, Ian Bell ³, Nathan Cassidy ⁴, María T Balastegui Martínez ⁵, Suzanne L Munns ⁶

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*8 Gapeworm *Syngamus Spp.* Infection In A Subset Of Collared Greater Prairie Chickens *Tympanuchus Cupido* In Wisconsin.*

Jacob A Shurba ^{1 2}, Rebecca A Cole ³, Matthew Broadway ⁴, Constance Roderick ⁵, Jason D. Riddle ⁶, Shelli A Dubay ⁷

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42 Usutu virus surveillance in wild birds of Emilia-Romagna Region, North Italy.

Alessandra Lauriano, Annalisa Santi, Paolo Bonilauri, Elena Carra, Gabriele Casadei, Giorgio Galletti, Arianna Rossi, Marco Tamba

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43 A focus on ten years of wildlife surveillance in Emilia-Romagna region Italy.

Arianna Rossi, Annalisa Santi, Gabriele Casadei, Giorgio Galletti, Alessandra Lauriano, Marco Tamba

Istituto zooprofilattico sperimentale della Lombardia e dell'Emilia-Romagna, Brescia, Italy.

66 Estimating the prevalence of a globally-emerged pathogen in a Chilean amphibian assemblage: effects of imperfect pathogen detection and individual pseudoreplication

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70 Size Doesn't Matter, Fit Does: microRNAs as Biomarkers of Immunomodulation .

Anne-Fleur Brand ¹, Marcel Klaassen ², Courtney Alice Waugh ³, Veerle Leontina Bernard Jaspers ¹

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*76 Tracking an invader: Wildlife Surveillance for *Haemaphysalis longicornis* in the Eastern U.S.*

Alec Thompson ¹, Seth White ^{1 2}, Emily Doub ¹, Prisha Sharma ^{1 3}, Kenna Frierson ¹, David Shaw ¹, Stacey Vigil ¹, Mark Ruder ¹

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Julieta Rousseau ^{1,2}, Jorge Costa ², Mónia Nakamura ^{2,3}, Helena Rio-Maior ², Francisco Álvares ², Nuno Santos ², Luís Madeira De Carvalho ¹

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95 Uncovering Tuberculosis in South African Wildlife – What ante-mortem diagnostic tools are out there?

Tanya Jane Kerr, Netanya Bernitz, Leanie Kleynhans, Wynand Johan Goosen, Michele Ann Miller
Stellenbosch University, Cape Town, South Africa

96 Ruminant interferon-gamma release assay IGRA shows potential for detection of *Mycobacterium bovis* infection in antelope species.

Tanya Jane Kerr ¹, Leanie Kleynhans ¹, Peter Buss ², Michele Ann Miller ¹

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104 Long-term determinants of the seroprevalence of the bluetongue virus in deer species in southern Spain.

Patricia Barroso ¹, María A. Risalde ^{2,3}, Ignacio García-Bocanegra ⁴, Pelayo Acevedo ¹, Jose A Barasona ⁵, Pablo Palencia ¹, Francisco Carro ⁶, Saul Jiménez-Ruiz ^{1,3}, Joan Pujols ⁷, Vidal Montoro ^{1,8}, Joaquín Vicente ¹

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105 Long-term determinants of the seroprevalence of the Hepatitis E virus in wild boar *Sus scrofa*.

Patricia Barroso ¹, María A. Risalde ^{2,3}, Ignacio García-Bocanegra ⁴, Pelayo Acevedo ¹, Jose A Barasona ⁵, Javier Caballero-Gómez ^{4,3}, Saúl Jiménez-Ruiz ^{1,4}, Antonio Rivero-Juárez ³, Vidal Montoro ^{1,6}, Joaquín Vicente ^{1,6}

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112 Assessing the Eurasian otter *Lutra lutra* population health in Schleswig-Holstein, Germany – preliminary results from 2015-20

Simon Rohner ¹, Peter Wohlsein ², Ellen Prenger-Berninghoff ³, Christa Ewers ³, Patrick Waindok ⁴, Christina Strube ⁴, Christine Baechlein ⁵, Paul Becher ⁵, Ursula Siebert ¹

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*128 Pathogens of common palm civets *Paradoxurus philippinensis*, Jourdan 1837, domestic cats *Felis catus* L., and domestic dogs *Canis familiaris* L. in Mt. Makiling Forest Reserve, Luzon Island, Philippines.*

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129 A WebGIS to support the epidemiological surveillance of trichinellosis in North-East Italy.

Federica Obber, Graziana Da Rold, Paola Bonato, Matteo Mazzucato, Giulio Marchetti, Massimiano Bassan, Debora Dellamaria, Marco Bregoli, Karin Trevisiol, Denis Vio, Patrizia Danesi, Carlo Vittorio Citterio

Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro - Pd, Italy

*154 Outcomes, mortality causes and pathological findings in European hedgehogs *Erinaceus europaeus*, Linnaeus 1758: a seventeen-year retrospective analysis on the North of Portugal.*

Andreia Manuela Garcês ^{1 2 3}, Vanessa Soeiro ⁴, Sara Lóio ⁴, Roberto Sargo ⁵, Luis Sousa ⁵, Filipe Silva ⁶, Isabel Pires ⁶

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*158 Blood mercury in three populations of endangered whooping crane *Grus americana*.*

Barry Hartup ¹, Paige Smith ², Sarah Warner ³, Elsbeth Mcphee ²

1. International Crane Foundation, Baraboo, United States 2. University of Wisconsin-Oshkosh, Oshkosh, United States 3. US Fish and Wildlife Service, Madison, United States

159 Exploring Epigenetics in Endangered Cetaceans.

Ashley Barratclough ¹, Lori Schwacke ², Forrest Gomez ¹, Ryan Takeshita ³, Ana Tatsch ⁴, Eduardo Secchi ⁴, Pedro Fruet ⁵, Abby McClain ¹, Celeste Parry ¹, Steve Horvath ⁶, Cynthia Smith ¹

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*175 The first three years period of European golden jackal *Canis aureus moreoticus* health surveillance in Italy 2018-2021.*

Marco Bregoli ¹, Stefano Pesaro ², Paola Beraldo ², Gabrita De Zan ¹, Giovanni Binato ¹, Maria Serena Beato ¹, Federica Gobbo ¹, Patrizia Danesi ¹, Paola De Benedictis ¹, Paolo Benedetti ³, Stefano Filacorda ², Federica Obber ¹, Luca Lapini ⁴

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132 External evaluation and improvements of the epidemiological surveillance of amphibians in French National Parks

Loïc Palumbo ^{1 2}, Claude Miaud ², Guillaume Le Loc'H ³, Sylvain Larrat ⁴

1. Ecole Nationale Vétérinaire de Toulouse, Toulouse, France 2. UMR 5175, CEFE, CNRS, Montpellier, France 3. UMR IHAP, ENVT, Toulouse, France 4. Pôle EVAAS, VetAgroSup, Lyon, France



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199 Hematology, plasma biochemistry, and pathogen discovery in Illinois headstarted and wild-reared populations of Blanding's turtles *Emydoidea blandingii* in two northern Illinois counties

Alexis Davidson¹, Michelle Waligora¹, Kayla Ladez¹, Samantha Bradley¹, William Graser², Gary Glowacki³, Laura Adamovicz^{1,4}, Emilie Ospina^{1,4}, Matthew C. Allender^{1,4,5}

1. Wildlife Epidemiology Lab, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Urbana, United States 2. Forest Preserve District of Kane County, Geneva, United States 3. Lake County Forest Preserve, Libertyville, United States 4. Veterinary Diagnostic Lab, College of Veterinary Medicine, University of Illinois Urbana-Champaign, Urbana, United States 5. Brookfield Zoo, Chicago Zoological Society, Brookfield, United States 200 RNA PATHOGEN DETECTION IN FREE-RANGING BLANDING'S TURTLES *Emydoidea blandingii*. Samantha Bradley¹, Laura Adamovicz¹, Kayla Ladez¹, Gary Glowacki², Matthew C Allender¹ 1. Wildlife Epidemiology Laboratory, University of Illinois, Urbana, United States 2. Lake County Forest Preserve District, Libertyville, United States

210 Spatial analysis of hematologic variables and pathogen detection in Blanding's *Emydoidea blandingii* and painted *Chrysemys picta* turtles in Kane County, Illinois.

Michelle Waligora¹, Alexis Davidson¹, William Graser², Laura Adamovicz^{1,3}, Emilie Ospina^{1,3}, Matthew Allender^{1,3,4}

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219 Characterization of Erythrocyte Sedimentation Rate in South American Sea Lions *Otaria byronia* as an Indicator of Inflammation.

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230 Non-invasive investigations of the microbiome and antimicrobial resistance patterns in cetaceans: a one health approach to ecological health in Hong Kong.

Nathalie France Mauroo¹, Hein Min Tun², Frederick Chi-Ching Leung³, Katie Wing In So¹, Mickey Hiu Chin Tsang¹, Yorkie Yu Ki Wong¹, Key Ho Man Cheung¹, Dengwei Zhang², Hogan Kok-Fung Wai²

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241 The cost of synurbization for wild boars in Barcelona, Spain.

Carles Conejero¹, Jorge R. López-Olvera¹, Carlos González-Crespo¹, Raquel Castillo-Contreras¹, Marta Valdeperes¹, Roser Velarde¹, David Risco², Emmanuel Serrano¹, Gregorio Mentaberre^{3,1}

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266 Impact of GI.1 and GI.2 rabbit haemorrhagic disease variants on wild rabbit populations based on Spanish national hunting bag.

Juan Antonio Aguayo-Adán¹, Simone Santoro², Carlos Rouco¹

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301 Are zoo mammals potential sentinels for zoonotic flaviviruses monitoring?

Javier Caballero-Gómez ^{1,2}, David Cano-Terriza ¹, Sylvie Lecollinet ³, María Dolores Carbonell ⁴, Rosa Martínez-Velarde ⁵,
Eva Martínez-Navado ⁶, Daniel García-Párraga ⁷, Steve Lowenski ³, Adrián Beato ¹, Jesús Barbero ¹, Ignacio García-Bocanegra ¹

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306 HPAI H5N1 outbreak investigation in wild birds, Cambodia 2021.

Alice Porco ¹, Sokha Chea ¹, Sreyem Sours ¹, Chamnan Hong ², Savet Eang ³, Sothya Tum ⁴, San Sorn ⁵, Davun Holl ⁵, Erik Karlsson ⁶, Vanneng Sok ⁷, Vanna Chhuon ³, Bunna Um ⁸, Simon Mahood ¹, Sereyrotha Ken ¹, Mathieu Pruvot ⁹, Sarah H. Olson ⁹, Amanda Fine ⁹

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324 Actualization of the feral American mink *Neovison vison* distribution in Europe: a potential risk species for SARS-Cov2.

Rachele Vada ¹, Pelayo Acevedo ¹, Tim Adriaens ², Marco Apollonio ³, Jose Antonio Blanco ¹, Guillaume Body ⁴, Maria Isabel Garcia Fernandez ¹, Ezio Ferroglio ⁵, Patrick Jansen ⁶, Sonia Illanas ¹, Oliver Keuling ⁷, Santiago Palazon ⁸, Kamila Plis ⁹, Tomasz Podgorski Podgorski ⁹⁻¹⁰, Massimo Scandura ³, Graham Smith ¹¹, Koen Van Den Berge ², Stefania Zanet ⁵, Joaquin Vicente ¹, ENETWILD Consortium ¹²

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333 Mercury exposure and risk assessment for Eurasian otters *Lutra lutra* in Denmark.

Miriam Dibbern ¹, Morten Elmeros ¹, Christian Sonne ¹, Rune Dietz ¹, Jens Søndergaard ¹, Anders Michelsen ²

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334 Comparison of trap-bias and health outcomes between two small rodent live-traps in Wisconsin, United States.

Gebbienna M. Bron ^{1,2}, Hannah Fenelon ¹, Susan M. Paskewitz ¹

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356 Modelling density wild boar populations in Europe for wildlife disease control.

Sonia Illanas¹, Javier Fernández-López^{1,2}, José Antonio Blanco-Aguilar¹, Carmen Ruiz¹, Pelayo Acevedo¹, Joaquín Vicente¹

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357 Cause of Death in Florida Farmed White-tailed Deer *Odocoileus virginianus* during 2017–2020 and their use as sentinels to monitor hemorrhagic diseases outbreaks.

An-Chi Cheng^{1,2}, Sydney L. Cottingham^{1,2}, Olivia Goodfriend^{2,3}, Zoe S. White^{2,3}, Kristen N. Wilson^{2,3}, Julia C. Loeb^{2,4,5}, John A. Lednicky^{2,4,5}, Kuttichantran Subramaniam^{2,6}, Heather D. S. Walden^{2,7}, Thomas B. Waltzek^{2,6}, Samantha M. Wisely^{2,3}, Juan M. Campos Krauer^{1,2,3}

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359 Non-Lethal Sampling Techniques in Invertebrates: Practical Replacements and Refinements to Improve Invertebrate Welfare.

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360 Freshness might determine the outcome of wildlife health surveillance based on coprology.

Catarina Fontoura-Gonçalves¹, Érica Portocarrero¹, Josep Estruch¹, Jesús Cardells^{1,2}, Gemma Alfaro Deval^{1,2}, Victor Lizana^{1,2}, Omar López-Garrido¹, Jorge R. López-Olvera¹, Santiago Lavín¹, Barbara Moroni³, Luca Rossi³, Emmanuel Serrano³

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Molecular epidemiology of wildlife pathogens

37 Occurrence of *Chlamydiaceae* in raptors and crows in Switzerland.

Sandro Stalder ¹, Nicole Borel ², Hanna Marti ², Sarah Albini ¹, Barbara Renate Vogler ¹

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58 Subcutaneous mites from an endemic laurel pigeon *Columba junoniae*, an endangered reintroduced species in Gran Canaria, Spain.

Kevin M. Santana-Hernández ¹, Pilar Foronda ², Simon L. Priestnall ³, Natalia Martín-Carrillo ², Jose Pestano-Brito ⁴, Eva Betancor ⁴, Eligia Rodríguez-Ponce ¹

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63 Molecular identification of *Betacoronavirus* in bats from Sardinia Italy: first detection and phylogeny.

Roberta Lecis ¹, Mauro Mucedda ², Alberto Alberti ¹

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84 Protist diversity of *Culex quinquefasciatus* mosquitoes in Grenada.

Maria Eugenia Ramos-Nino ¹, Daniel M Fitzpatrick ¹, Lindsey M Hattaway ¹, Andy N Hsueh ¹, Jaelene D. D Haynes ¹, Scott Tighe ², Korin M eckstrom ², Julie A. A Dragon ², Sonia Cheetham ¹

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99 Characterizing epidemiological and genotypic features of *Mycobacterium bovis* infection in wild dogs *Lycaon pictus*.

Christina Meiring ¹, Roxanne Higgitt ¹, Anzaan Dippenaar ¹, Eduard Roos ¹, Peter Buss ², Jennie Hewlett ^{2,3}, Dave Cooper ⁴, Peter Rogers ⁵, Lin-Mari De Klerk-Lorist ⁶, Louis Van Schalkwyk ⁶, Guy Hausler ¹, Paul Van Helden ¹, Marlo Moller ¹, Rob Warren ¹, Michele Miller ¹

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110 Detection of a novel species of circovirus in a tawny owl *Strix aluco* in Southern Italy.

Laura Grassi ¹, Matteo Legnardi ¹, Giovanni Franzo ¹, Maria Luisa Menandro ¹, Giulia Faustini ¹, Adriano Minichino ², Ludovico Dipineto ², Alessandro Fioretti ², Mattia Cecchinato ¹

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126 First report of Canine circovirus and Canine parvovirus in red foxes of North-Eastern Italy.

Laura Grassi ¹, Maria Luisa Menandro ¹, Federica Obber ², Carlo Citterio ², Giulia Faustini ¹, Michele Drigo ¹, Giovanni Franzo ¹

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138 Limited evidence for detrimental effects of *Leucocytozoon* infections among emperor geese *Anser canagicus* breeding on the Yukon-Kuskokwim Delta, Alaska.

Andrew M Ramey ¹, Raymond M Bucheit ², Brian D Uher-Koch ¹, John A Reed ¹, Maria Andreína Pacheco ³, Ananias A Escalante ³, Joel A Schmutz ¹

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176 Analysis and selection of genes encoding the expression of protective antigens of the African swine fever virus for further development of a vaccine based on adeno-associated virus vector.

Marina Efimova ^{1,2}, Elena Zakirova ³, Vladimir Kuzmin ⁴, Alexander Aimaletdinov ³, Lenar Garipov ¹, Kamil Khaertynov ², Yuri Davidyuk ³, Eduard Shuralev ^{3,2,1}, Albert Rizvanov ³, Rustam Ravilov ¹

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205 Detection of Herpesviruses in Wild Bird Casualties in Slovenia.

Joško Racnik ¹, Zoran Žlabravec ¹, Brigita Slavec ¹, Irena Bahc ¹, Sabina Bolha ¹, Tjaša Sernel ¹, Darja Krelj ¹, Nina Kocar ¹, Maruša škrbec ¹, Zlatko Golob ², Olga Zorman Rojs ¹

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254 Rickettsia aeschlimannii in Hyalomma marginatum and H. rufipes ticks from trans-Saharan migratory passerines in Spain.

Alberto Moraga-Fernández, Marta Sánchez-Sánchez, Francisco Ruiz-Fons, Xabier Cabodevilla, Mario Fernández-Tizón, Isabel García Fernández De Mera

Institute for Game and Wildlife Research, Ciudad Real, Spain

264 Blood microbial 16S rRNA metataxonomic analysis reveals infectious risks carried by wild black and brown bears.

Mohamed Moustafa ¹, Wessam Mohamed ¹, Ayaka Sasaki ¹, Koji Yamazaki ², Shinsuke Koike ³, Junpei Tanaka ⁴, Hiroo Tamatani ⁴, Masami Yamanaka ⁵, Tsuyoshi Ishinazaka ⁵, Mariko Sashika ¹, Michito Shimozuru ¹, Ryo Nakaoa ¹, Toshio Tsubota ¹

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273 Molecular description of gastrointestinal helminths of the Great Bustard Otis tarda in two areas of the Iberian Peninsula.

Paula Bolívar ^{1,2}, Luis Miguel Bautista ², Francisco Ponce ¹, Rafael A. Martínez-Díaz ³, María Teresa Gómez-Muñoz ¹

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279 A preliminary study of viral and bacterial pathogens present in Spanish bats: Identification of new tick-borne pathogen genetic variants.

Marta Sánchez-Sánchez ¹, Alberto Moraga-Fernández ¹, Joaquín Vicente ¹, Xosé Pardavila ², Isabel G. Fernández De Mera ¹

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283 Prevalence and genotyping of enteric protist parasites in wild ungulates in Spain.

David González-Barrio ¹, Miguel Ángel Habela ², Fátima Vioque ¹, Alejandro Dashti ¹, Pamela C. Köster ¹, José Antonio Ortiz ³, Begoña bailo ¹, Carolina Hernández-Castro ¹, Rafael Calero-Bernal ⁴, Guillermo A. Cardona ⁵, David Carmena ¹

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285 Prevalence, molecular diversity, and evidence of zoonotic transmission of enteric protists between captive non-human primates and their caretakers in four Spanish zoos.

Pamela C. Köster ¹, Alejandro Dashti ¹, Begoña Bailo ¹, Sheila Ortega ¹, Eva Martínez-Nevaldo ², Hugo Fernández-Bellon ³, Teresa Abelló ³, Manuel De La Riva-Fraga ⁴, Andrea González ⁵, David González-Barrio ¹, Rafael calero-Bernal ⁶, Francisco Ponce Gordo ⁷, David Carmena ¹

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321 Evaluation of Chlamydiaceae in wild Black-headed Vulture Coragyps atratus.

Mayan Press Goldfreind, Tânia De Freitas Raso

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374 Molecular evidence of piroplasmid infections in Spanish wild ruminants from Valencian Community, Eastern Spain.

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1. Ghent University, Merelbeke, Belgium 2. Agency for Nature and Forests, Brussels, Belgium

109 Adiaspiromycoses in alpine wild rodents from Pyrenees, Catalonia North-Eastern Spain

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Silvia Rondón ¹, Serena Cavallero ¹, Andrés Link ², Manuela De Meo ², Camila González ², Marco Pombi ¹, Stefano D'Amelio ¹

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180 Detection of Atypical Porcine Pestivirus APPV in wild boars in Northern Italy.

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Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia-Romagna Bruno Ubertini, Brescia, Italy

244 Molecular analysis suggests that Namibian cheetahs *Acinonyx jubatus* are definitive hosts of a yet unknown *Besnoitia* species.

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1. Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Greifswald-Insel Riems, Germany 2. Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany

250 *Yersinia pseudotuberculosis* outbreak in Eurasian blackcap *Sylvia atricapilla* in Ebro Delta, Spain.

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281 Wildlife poisoning in Switzerland.

Nicole Diana Wolf ¹, Philippe Berny ², Hermann Ammer ³, Marie-Pierre Ryser-Degiorgis ¹, Iris Andrea Marti ¹

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295 *Edwardsiella tarda* septicemia in an adult striped dolphin *Stenella coeruleoalba*.

Sophie Labrut, Silvia Turci

LABOCEA, Ploufragan, France

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Inmaculada Gallardo-Coll, Jose Sansano-Maestre

Department of Animal Production and Public Health. Universidad Católica de Valencia, Valencia, Spain

380 First description of *Metacuterebra baeri* infesting a critically endangered Ecuadorian White-fronted Capuchin monkey *Cebus albifrons aequatorialis* in Tumbes, Peru.

Fernando Vilchez-Delgado ¹, Xiomara Merino-Merino ¹, Luis Fernando Ramírez-Montano ², Renzo Randy Ojeda-Juárez ³, Maximiliano Espinoza-Román ⁴, Alejandra Duarte-Quiroga ⁵

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303 Susceptibility of anurans, lizards, and fish to infection with *Dracunculus* species larvae and implications for their roles as paratenic hosts.

Erin Box, Michael Yabsley, Kayla Garrett, Alec Thompson, Seth Wyckoff, Christopher Cleveland

University of Georgia, Athens, United States

326 Copepod consumption by amphibians and fish with implications for transmission of *Dracunculus* species.

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308 Surveillance for *Echinococcus* species infections among wild canids in Pennsylvania, USA.

Kayla Buck Garrett ^{1,2}, Justin D Brown ³, Mark G Ruder ¹, Kyle Vanwhy ⁴, Michael J Yabsley ^{1,2}, Christopher A Cleveland ¹

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312 Detection of *Mycobacterium tuberculosis* antibodies in Asian elephants in Sri Lanka.

P.A.U. Sewwandi ¹, M.R.B.N. Bandara ², H.P.R.N.S. Karunaratne ², K.K. Sumanasekara ², E.M.E. Liyanage ², K.M.P. Perera ³, P. Ediriwarne ⁴, Åsa Fahlman ⁵, N.P. Sunilchandra ⁶

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317 Posterior paralysis: An overlooked challenge in big cat conservation.

Elias Rowther B ¹, Arjun C P ², Jacob Alexander ³, Krishna Kiran . ¹, Suriya Sartaj ¹

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Centre for Fish and Wildlife Health, Bern, Switzerland

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Nusrat Annie Jahan ¹, Laramie L. Lindsey ¹, Petet A. Larsen ¹, Evan Kipp ¹, Bradley J. Heins ¹, Amy M. Runck ²

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165 Experimental evaluation of a PIT-tagging method without anesthetic in urodeles.

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221 Developing next-generation sequencing tools for health surveillance at the wildlife-livestock interface.

Stephanie Brien ¹, Melissa Marr ¹, Marie Petretto ², Ouled Ahmed Hatem ³, Erhan Yalcindag ¹, Mark Bronsvort ¹, Rob Ogden ¹

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257 Intraocular pressure reference values in adult Bonelli's eagles *Aquila fasciata*.

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328 Sevoflurane anaesthesia in common kestrel *Falco tinnunculus*.

Eva Rodríguez-Duarte ¹, Casilda Rodríguez ¹, Irene López ², Virginia Moraleda ², Laura Suárez ², Fernando González ²

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342 Method comparison of glucose concentrations obtained via glucometer, Nova analyzer, and plasma chemistry analyzer and performance of three glucometers in cold-stunned Kemp's ridley turtles *Lepidochelys kempii*

Kathryn A. Tuxbury ¹, Deana Edmunds ¹, Justin R. Perrault ², Nicole I. Stacy ³

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41 *Treatment of Batrachochytrium Dendrobatidis in eastern hellbenders cryptobranchus alleganiensis alleganiensis with terbinafine.*

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1. Ohio State University, Columbus, United States 2. The Wilds, Cumberland, United States

44 *Health status of the Alpine ibex in the northwestern Italian Alps.*

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53 *Overview of post-mortem lesions in free-ranging red foxes Vulpes vulpes in northern Belgium in 2018-2020.*

Han Versnaeyen ¹, Nermin Caliskan ¹, Veronique Saey ¹, Sanne Terryn ², Steven Van Gucht ², Muriel Vervaeke ³, Stefan Roels ¹

1. DGZ Flanders, Torhout, Belgium 2. Sciensano, Brussel, Belgium 3. Agentschap Natuur en Bos, Brussel, Belgium

81 *Applicability of ultrasonography in the clinical management of cystic Echinococcosis in captive langurs of the genera Trachypithecus and Pygathrix.*

Szilvia Kalliopi Kalogeropoulou ^{1 2 3}, Alyse Ann Klein ³, Elke Schwiertz ^{4 5}, Phuong Tran Quang ^{3 6}, Michael Meyerhoff ⁵, Bonnie Leslie Raphael ⁷

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Mark L. Drew

Wildlife Health Services, PLLC, Boise, United States

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Rosa Casais ¹, Asier Rodríguez Larrinaga ², Kevin P. Dalton ³, Paula Domínguez Lapido ², Isabel Márquez ¹, Eloy Bécares ⁴, E. Davis Carter ⁵, Matthew J. Gray ⁵, Debra L. Miller ⁵, Ana Balseiro ⁶

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178 Wildlife rabies control and management in Tatarstan Russian Federation.

Danil Mingaleev ¹, Almaz Khisamutdinov ², Iana Shabakaeva ¹, Kamil Khaertynov ³, Eduard Shuralev ^{4 3 1}, Marina Efimova ^{1 3}, Rustam Ravilov ¹

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Karin M Olofsson ¹, Minerva Löwgren ¹, Paulina Hysing ², Norbert Van De Velde ¹, Erik Ågren ¹, Charlotte Axén ²

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300 A case study of wild boar and TB: giving up the reservoir role?

Miriam Lleixà ¹, Enric Vidal ^{2 3}, Bernat Pérez De Val ^{2 3}, Xavier Olivé-Boix ⁴, Josep V. Jovaní ⁵, Albert Sanz Artigas ⁶, Gregorio Mentaberre ^{1 7}

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302 Surveillance of Chronic Wasting Disease in Sweden.

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Eleonora Franzago ¹, Sara Andreatta ¹, Marica toson ¹, Claudia Casarotto ¹, Manuela Dalla Pozza ¹, Rosita Quartesan ¹, Andrea Marsella ¹, Laura Bille ¹, Fabrizio Baldessari ², Ruggero Giovannini ³, Deborah Dellamaria ¹, Anna Toffan ¹

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188 Pathogens of zoonotic and conservation concern in Los Angeles County, California.

Sarah Helman ¹, Amanda Tokuyama ¹, Katherine Prager ¹, Riley Mummah ¹, Hazel Byrne ², Anthony Friscia ³, Jessica Lynch ², James Lloyd-Smith ¹

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207 Beak and feather disease virus detection and load in multiple tissues and blood in a wild parrot population.

Berta Blanch-Làzaro ^{1,2}, Anthony Chamings ^{2,3}, Raoul F. H. Ribot ¹, Mathew L. Berg ¹, Soren Alexandersen ^{2,3,4}, Andy T. D. Bennett ¹

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248 Investigating the sarcoptic mange outbreak in the Iberian ibex population from Ports de Tortosa i Beseit, Spain.

Marta Valldeperes ¹, Gregorio Mentaberre ², Emmanuel Serrano ¹, David Chaparro ³, José Enrique Granados ⁴, Jorge Ramón López-Olvera ¹

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Corinna M Hazelrig, Kayla B Garrett, Corrie J Navis, John C Maerz, Nicole M Nemeth, Michael J Yabsley
University of Georgia, Athens, United States

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Sabrina Castro-Scholten ¹, David Cano-Terriza ¹, Juan A. Aguayo-Adán ², Carlos Rouco-Zufiaurre ², Daniel Vázquez-Calero ³, Sonia Almería ⁴, Leonor Camacho-Sillero ⁵, Débora Jiménez-Martín ¹, Saúl Jiménez-Ruiz ^{1,6}, Félix Gómez-Guillamón ⁵, Jitender P. Dubey ⁷, Ignacio García-Bocanegra ¹

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