Wildlife Disease & Contaminant Monitoring & Surveillance Network

WILDCOMS newsletter number 24: Summer 2019 www.wildcoms.org.uk

The WILDCOMS newsletter is produced 3 or 4 times a year and reports recent newsworthy items and publications from member partners

WILDCOMS Scheme news

PhD with Cardiff University Otter Project (CUOP): Environmental and anthropogenic drivers of contaminant influx and recirculation within freshwater systems.

The latest PhD student to join CUOP is Emily O'Rourke. Emily's project will build on studies into contaminant concentrations in the Eurasian otter (*Lutra lutra*). Emily aims to use the otter as a sentinel for freshwater contamination, determining the temporal change of the banned but persistent legacy contaminants PCBs, DDT, dieldrin and HCB, and to better understand the trophic transfer, fate and threat of emerging contaminants, such as oil and water repelling substances (PFASs) and flame retardants (PBDEs). Emily will use the CUOP's archive of otter samples to explore the drivers of temporal and spatial variation across Britain, in order to give the public and policy makers a better understanding of the issues posed by chemicals so that resources can be focused in the right areas for effective control and risk mitigation.

Emily O'Rourke

This PhD is being led by Cardiff University Otter Project with co-supervision from WILDCOMS partner the Predatory Bird Monitoring Scheme (CEH), plus the Environment Agency and The River Restoration Centre.

GB Wildlife Disease Surveillance Partnership

Reports from the GB Wildlife Disease Surveillance Partnership (WDSP) on the monitoring of disease in wildlife are published quarterly by the APHA.

The latest WDSP quarterly report has been published: https://www.gov.uk/government/publications/wildlife-gb-disease-surveillance-and-emerging-threats-reports-2019. Reports from 2014 to 2018: 2018 reports, 2017 reports, 2016 reports, 2015 reports, 2014 reports and previous reports: archived AHVLA web pages on the National Archive website. The Partnership is made up of the following organisations: Animal and Plant Health Agency (APHA) (formerly AHVLA), Scotland's Rural College (SRUC), Institute of Zoology (IoZ), National Wildlife Management Centre of APHA (formerly part of FERA), The Centre for Environment, Fisheries and Aquaculture Science (CEFAS), The Wildfowl and Wetlands Trust (WWT), Natural England (NE), Forestry Commission England (FCE).

APHA – 20 Years of National Wildlife Disease Surveillance

APHA Diseases of Wildlife Scheme (DoWS) presented a conference "20 Years of National Disease Surveillance at APHA" on 5th December 2018 at APHA Weybridge in Surrey. The meeting and scientific presentation celebrated 20 years of the first national wildlife disease surveillance scheme, led by the APHA DoWS. The scheme provides early warnings of threats to human and animal health by systematically collecting, collating and analysing data on disease in wild animal populations and investigating wildlife mortality events through veterinary surveillance activities. See Holmes et al, 2019a.

First report of Dermatophilosis in wild European red squirrels (*Sciurus vulgaris*).
The carcases of two wild red squirrels from Anglesey, North Wales, which had severe skin lesions, were presented to APHA. Post mortem examination, bacteriology and histopathology confirmed the presence of disease due to *Dermatophilus congolensis* with typical gross and pathological lesions. Squirrelpox virus (SQPV) was not detected. The report (Holmes et al., 2019b), the first description of dermatophilosis in European red squirrels, is another important differential diagnosis of skin disease in a nationally declining population.

Predatory Bird Monitoring Scheme (PBMS)
The PBMS recently held its annual stakeholder meeting with external funders (Natural England and The Campaign for Responsible Rodenticide Use) and key collaborator Dr. Liz Chadwick (Cardiff University Otter Project) Discussions included work completed in the last 18 months, potential current and future plans (e.g. on-line real-time health index measurements), highlights of completed work (e.g. findings on rodenticide residues in red kites and barn owls), publications, reporting outcomes and collaborations (e.g. disease screening activities with the GB Wildlife Disease Surveillance Partnership) https://pbms.ceh.ac.uk/.

A progress report on PBMS involvement in European projects to develop a pan-European network for monitoring contaminants across Europe is available (Movali et al., 2019). https://pbms.ceh.ac.uk/content/scientific-papers

A short video has been produced featuring Richard Shore (PBMS principal investigator) highlighting the importance of members of the public to the PBMS and how the PBMS track environmental pollutants: https://bit.ly/2wKCbTK

Wildlife Incident Investigation Scheme (WIIS)
WIIS makes enquiries into the death or illness of wildlife, pets and beneficial invertebrates that may have resulted from pesticide poisoning.
The scheme has two objectives:

1. To provide information to the regulator on hazards to wildlife and companion animals (usually cats and dogs) and beneficial invertebrates (honeybees, bumble bees and earthworms) from pesticides;
2. To enforce the correct use of pesticides, identifying and penalising those who deliberately or recklessly misuse and abuse pesticides.

Cases accepted for further investigation usually fall into one of the following categories:

- Approved use - a pesticide is used in accordance with its conditions of authorisation;
- Misuse – the product has not been used according to the conditions of its authorisation, but often just carelessly or accidently, without the intention of harming animals;
- Abuse – a pesticide has been deliberately used in an illegal manner to poison, or to try to poison animals.

From January to March 2019 there were 81 incidents see: http://www.hse.gov.uk/pesticides/topics/reducing-environmental-impact/wildlife/wiis-quarterly-reports.htm

WIIS-Scotland
The results from WIIS-Scotland are published quarterly. The results for incidents from quarter 1 of 2019 have been added to the SASA website and can be viewed here. The next update, for quarter 2 of 2019, will be published by the end of October 2019.

In the spring newsletter we listed a publication that described an analytical method that enables the simultaneous determination of approximately 160 contaminants, including pesticides, veterinary medicines, anticoagulant rodenticides and pharmaceutical substances by LCMSMS in a range of animal tissues. The method has been routinely deployed by WIIS-Scotland since mid-2018 to samples tested as part of the Scottish Raptor Health Study. In May this year SASA hosted a 3-month post doc researcher from the National Veterinary Research Institute (NVRI), Puławy, Poland who applied the method to a study of more than 100 foxes that had been shot during pest control activities. Liver tissue from the foxes was tested in order to compile a 'chemical contaminant' profile from the animals that had been collected from throughout Scotland. The results have provided additional evidence that non-target animals are being exposed to sub-lethal levels of veterinary medicines, pesticides and anticoagulant rodenticides. Image ©Richard Hastings.

Scottish Raptor Health Study

Wing of a carcass being measured courtesy of Gaby Peniche

September will be a busy month for Gaby Peniche. She is finishing off with the statistical analysis (using R to her delight) to compare differences between male and female chick body measures. At the same time, she is examining data from 176 raptor carcasses of 14 different species to determine if there are patterns of disease, cause of death, presence of toxins and geographic location. In addition to this Gaby will travel to the European Raptor Biomonitoring Facility meeting in Slovenia to help 'build capacity for contaminant sampling and collection of monitoring data for raptors across Europe', and present at a Conservation Science golden eagle meeting in Scotland, for visitors from the National Institute for Environmental Studies in Japan and Kyoto University.https://www.ed.ac.uk/vet/conservation-science/conservation-genetics/projects/golden-eagle

Disease risk analysis and health surveillance (DRAHS)

May 2019: DRAHS vets Tony Sainsbury and Tammy Shadbolt travelled from Belgium to Northamptonshire to assist in the collection and reintroduction of Chequered skipper butterflies into Rockingham Forest in collaboration with staff and volunteers from Butterfly Conservation, Natural England and Back from the Brink. Tony and Tammy delivered a short presentation on the importance of biosecurity during translocations to project personnel in the field. Health examinations were carried out on all the butterflies in Belgium prior to transportation and in the UK prior to release.

Chequered skipper © ZSL

Twenty four butterflies were successfully reintroduced. Volunteers carrying out monitoring during the subsequent flight period reported frequent sightings of both translocated Belgium butterflies, intentionally marked at release for identification purposes, and English Chequered skippers suggesting that individuals translocated in 2018 had successfully bred.

ZSL website blog: https://www.zsl.org/blogs/science/reintroduction-of-the-chequered-skipper-butterfly

Hazel dormouse © ZSL

June 2019: Tammy Shadbolt and Inez Januszczak travelled to Lincolnshire to assist in the successful reintroduction of 11 hazel dormice into local woodland in collaboration with staff and volunteers from the Peoples Trust for Endangered Species, Natural England, Common Dormouse Captive Breeders Group, Nottinghamshire Wildlife Trust and Lincolnshire Dormouse Group. The dormice had been in quarantine at ZSL for 6 weeks during which time all had been monitored closely and received detailed health examinations. The dormice were released into soft release cages set up in the woodland and received supplementary feeding for the first 10 days after the reintroduction. Regular sightings were reported by volunteers monitoring the woodland post release. ZSL website blog: https://www.zsl.org/blogs/science/dormouse-reintroduction-day-2019.

July 2019: Tammy Shadbolt travelled to California, USA to give a poster presentation at the Wildlife Disease Association 68th Annual International Conference. The theme of the conference was 'Fostering resiliency in a time of change' and it was attended by over 400 delegates.

July and August 2019: Tony Sainsbury and Tammy Shadbolt, with assistance from Chris Michaels (Reptiles and Amphibians), worked with Amphibian and Reptile Conservation to support the rearing of pool frog tadpoles at a dedicated head-starting unit in Norfolk. Tony and Tammy provided advice on biosecurity at the unit as well as conducting health examinations on the larvae prior to release and post mortem examinations as required. In late summer one hundred and fifty metamorphs were released into a suitable protected area.

August 2019: Claudia Carraro completed a disease risk analysis and disease risk management and post-release health surveillance protocol for a planned reintroduction of the pine marten for Gloucestershire Wildlife Trust, the Forestry Commission and Vincent Wildlife Trust.

Upcoming conferences

Healthy gardens for people, plants and wildlife symposium

The symposium at ZSL London Zoo on 24th October 2019 will draw upon and disseminate the research of the Garden Wildlife Health (GWH) project and the Wildlife Gardening Forum (WLGF). The goal is to share findings on optimising garden habitat management to safeguard the health of people, plants and wildlife, whilst identifying areas for future research and collaboration.

More at: https://www.zsl.org/science/whats-on/symposium-healthy-gardens-for-people-plants-and-wildlife

British Veterinary Zoological Society (BVZS) conference

The BVZS is holding its third annual conference at the Manchester Conference Centre from 1st to 3rd November 2019. The second day of the conference is 'Wildlife Heath Day' and this year's theme is 'Wildlife Research'. See https://www.bvzs.org/meetings/bvzs-conference-2019 for more information.

Other news

Threats to the worlds vulture and condor populations.

Vultures have an important role as scavengers and in cleaning disease-ridden carcasses in Asia, India, areas of Europe and the U.S.A. The loss of vultures would be disastrous for human health and cost economies millions in waste disposal (BirdLife International https://www.birdlife.org/worldwide/vulture-crisis).

A recent paper (Plaza et al., 2019) found that ~70% of vulture species are threatened by human activity (e.g. accidental or deliberate poisoning by pesticides (such as anticoagulant rodenticides and organophosphorus compounds) lead contamination, veterinary drug intoxication, human persecution, food shortage, trade in parts for medicinal use) and there is no clear information on the effectiveness of mitigation actions such as pesticide bans, control of distribution, changes in formulation, education programmes, and penalties.

A review of 62 scientific articles on lead contamination in wild vulture and condor species (Plaza and Lambertucci, 2019) published between 2001–2018 found that 88% of tissue lead concentrations (blood, liver, kidney, bone) were above threshold levels, but the effects of lead were still not well-recognized in some species and geographical areas. The level of lead in blood considered as being toxic but sublethal to raptors is 0.2 - 0.5 ppm (Fallon et al., 2017, U.S. Fish & Wildlife Service, 1990). Potential sources of lead include lead ammunition (most reported but rarely proved and remains unregulated in many regions of the world), pollution (from fishing and mining for example) and industrial sources.

Fallon et al., 2017. **Guidelines for Evaluation and Treatment of Lead Poisoning of Wild Raptors**. Wildlife Society Bulletin. 41, 2, 205-211. https://doi.org/10.1002/wsb.762

Plaza and Lambertucci**, 2019. What do we know about lead contamination in wild vultures and condors? A review of decades of research.** Science of the Total Environment 654 (2019) 409–417. https://doi.org/10.1016/j.scitotenv.2018.11.099

Plaza et al., 2019 **The perfect threat: Pesticides and vultures.** Science of the Total Environment 687 (2019) 1207-1218. https://doi.org/10.1016/j.scitotenv.2019.06.160

U.S. Fish and Wildlife Service, 1990. **Lead poisoning in waterfowl.** U.S. Fish and Wildlife Service, 1 -15.

Recent publications from the WILDCOMS schemes

Holmes et al., 2019a. **20 years of national wildlife disease surveillance.** Veterinary Record 184, pp. 520-521. http://dx.doi.org/10.1136/vr.l1903

Holmes et al., 2019b. **First report of dermatophilosis in wild European red squirrels (*Sciurus vulgaris*).** Veterinary Record Case Reports 7: e000838. http://vetrecordcasereports.bmj.com/cgi/content/abstract/7/3/e000838

Johnson et al., 2019. **What Works? the Influence of Changing Wastewater Treatment Type, Including Tertiary Granular Activated Charcoal, on Downstream Macroinvertebrate Biodiversity Over Time.** Environmental Toxicology and Chemistry, 38 (8) pp. 1820-1832. https://doi.org/10.1002/etc.4460

Movali, et al., 2019. **Progress on bringing together raptor collections in Europe for contaminant research and monitoring in relation to chemicals regulation**. Environmental Science and Pollution Research, 26 (20), pp. 20132 - 20136. https://doi.org/10.1007/s11356-019-05340-6
Yon, et al., 2019. **Recent changes in infectious diseases in European wildlife.** Journal of Wildlife Diseases, 55(1), pp. 3–43. https://doi.org/10.7589/2017-07-172

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