Wildlife Disease & Contaminant Monitoring & Surveillance Network

WILDCOMS newsletter number 22: Winter 2018 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

Scottish Raptor Health Study

The number crunching involved in developing haematological reference interval values for golden eagle chicks continues for the Raptor Health Scotland Study. To determine reference values that will help us find out if a bird is sick and what is wrong with it, we need to look at a large group of healthy chicks and the variations within the readings of their blood parameters. Doing this with wild individuals is not always straight forward. The clinical examination to discern between healthy and not healthy wild golden eagle chicks happened mostly hanging from a rope whilst taking blood samples from an angry chick. The decision to include or eliminate blood values such as white blood cell count, or cholesterol from unhealthy individuals for what will be the guide for Scottish golden eagle chick reference values, happens whilst staring at a computer. Lately there has been a lot of the latter for Gaby Peniche.

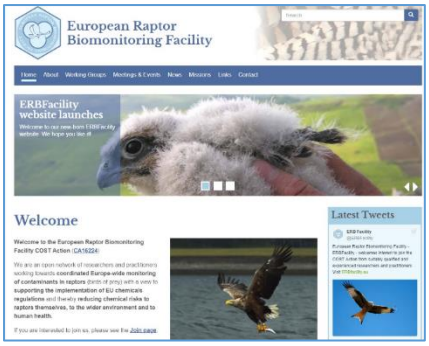
Computer breaks are taken up by post mortem work. Recent findings have helped expand our knowledge about what age wild golden eagles can reach. We received and processed, together with SRUC, what is now considered as the oldest wild golden eagle in the world having reached 33 years of age!: https://www.bbc.co.uk/news/uk-scotland-highlands-islands-45322932.

Watch our Halloween post mortem work special video **and thanks for submitting carcasses. These findings wouldn't exist without you!**

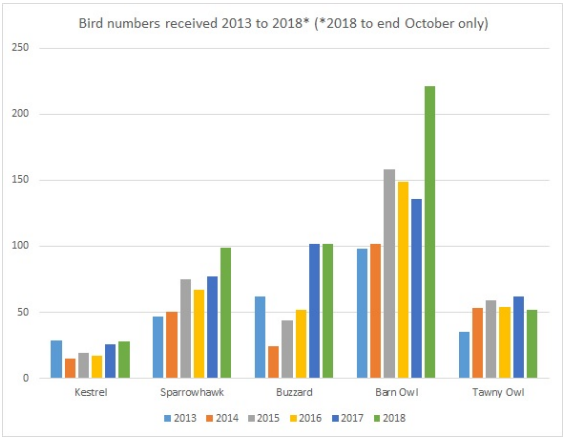
Predatory Bird Monitoring Scheme (PBMS)

Monitoring of anticoagulant rodenticide residues. Richard Shore attended and contributed to the discussions on recent monitoring data at the annual meeting of the government oversight group for the Stewardship Programme for Anticoagulant Rodenticides. This included discussing the work undertaken on monitoring residue levels in barn owls which has recently been reported (Shore, R.F. et al., 2018**),** and the latest data available for residues detected in red kites (see "New report from WILDCOMS partners**"** below). The monitoring results for both barn owls and red kites were recently presented at the annual meeting of the Campaign for Responsible Rodenticide Use.

LIFE APEX project. The PBMS team have also started work on the LIFE APEX project. This 4-year €3m project aims to demonstrate how measurement of chemical residues in apex predators and their prey can be used to inform EU chemicals management. Various WILDCOMS partners are contributing samples for analysis as part of the project. The PBMS team will lead on demonstrating use of raptor chemical monitoring data to assess impact and effectiveness of risk mitigation measures at national and European scales. The website for this project is currently being developed.



LIFE APEX will work closely with the **European Raptor Biomonitoring Facility (ERBF) COST Action**, an open network of researchers and practitioners working towards coordinated Europe-wide monitoring of contaminants in raptors (birds of prey). The aim here is also to support implementation of EU chemicals regulations and thereby reduce chemical risks to raptors themselves, to the wider environment and to human health. The ERFB website is now launched https://erbfacility.eu/



Large numbers of bird carcasses submitted to the PBMS in 2018

2018 has seen the highest receipt of bird submissions to the PBMS since the scheme began in the 1960s, with more than 600 carcasses in total submitted. This is almost double the number we have received in other years. The graph shows submission numbers for five of our core species, and the most marked increase is for barn owls.

New report from WILDCOMS partners: Anticoagulant rodenticides in red kites in Britain 2016.

The latest annual report on the exposure of red kites to second generation anticoagulant rodenticides (SGARs) is now published. It describes the magnitude of liver residues and the extent of associated poisoning in birds that died in 2016. In all 21 out of 22 kites (95%) from England & Wales and 5 of 7 red kites from Scotland had detectable liver residues of at least one SGAR. Seven of the 29 kites were diagnosed as having been poisoned by SGARs. The monitoring of residues in red kites is the outcome of collaboration between several WILDCOMS partners. The report can be downloaded here.

Disease Risk Analysis and Health Surveillance for Interventions (DRAHS)

In the context of health surveillance in hazel dormouse (*Muscardinus avellanarius*) DRAHS pursued further diagnostics on abnormal lung tissue from dormice examined post mortem. Next generation sequencing was performed at APHA on pooled samples of seven dormice with lung abnormalities. They analysed the sequences obtained from the pool of samples against viral reference sequences (around 2700 sequences) from GenBank. The analysis detected sequences (7600 nucleotides in total) matching those of encephalomyocarditis virus (EMCV). The 7600 nucleotide segment closely matches (94%) an EMCV from Germany detected in wood mouse (*Apodemus sylvaticus*). After developing a qPCR that worked for this strain of EMCV, APHA tested the samples individually and three of the seven were positive for EMCV, all from different locations. DRAHS will continue further research to find out how prevalent EMCV is in the dormice examined post mortem, and to evaluate associations with pathological lesions.

Tony Sainsbury attended the Asian Society for Conservation Medicine and Wildlife Disease Association Australasia Joint Meeting, Bali, Indonesia, October 2018, and presented a plenary talk on disease risk analysis for conservation translocations.

The post-release health surveillance report for the red kite reintroduction programme, covering the 2017-18 period has been published (Jaffe et al, 2018). It includes all the individual post-mortem reports of red kites examined at IoZ during this period, as well as a discussion covering avian influenza, shooting, rodenticide poisoning and nematodes.

GB Wildlife Disease Surveillance Partnership

Reports from the GB Wildlife Disease Surveillance Partnership on the monitoring of disease in wildlife are published quarterly by the APHA. The most recent report can be found at: Quarterly GB avian disease surveillance and emerging threats report: July to September 2018. Reports from 2018 and other years: 2018 reports, 2017 reports, 2016 reports, 2015 reports, 2014 reports. Previous reports are available on the 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).

Wildlife Incident Unit (WIU)

The Wildlife Incident Unit (WIU) at Fera Science Ltd, provide the analytical expertise, interpretation and reports on pesticide poisoning incidents for the Wildlife Incident Investigation Scheme (WIIS) in England and Wales.

Historical results for WIIS and those for 2018 can be found on the Health and Safety Executive website here. A 50 Year Review: Wildlife Incident Investigation Scheme and Pesticide Usage Survey data for Seed Treatments and other Solid Formulations is also available here.

Mesocosm facility. The largest Mesocosm facility in Europe was officially opened and launched last month. This most advanced E-Flows mesocosm facility will help introduce safer, fairer and more reliable plant protection products to the market.

The E-flows mesocosm provides a test-bed of 60 realistic streams, each up to two metres wide and ten metres long, each having a continuous matched supply of aged fresh water, and all being independent of each other. This provides a facility that is a realistic, but closely controlled, facsimile of edge-of-field surface waters that can be exposed to plant protection products in a real-world scenario to ensure the safety of our aquatic habitats. Learn more here.

WIIS-Scotland

The results from WIIS-Scotland are published quarterly. The results for incidents from quarter 2 of 2018 have been added to the SASA website and can be viewed here. The next update, for quarter 3 of 2018, will be published by the end of January 2019.

WIIS–Scotland team members, Anna Giela and Claire Senior attended a RSC Analytical Biosciences Group meeting in May 2018. A poster (poster image right) describing our newly developed Quick Easy Cheap Effective Rugged Safe (QuEChERS) method that allows over 150 multi-class chemical contaminants to be analysed in a single extract was presented. The new protocol offers several benefits including significant savings in terms of the time, amount of sample material and solvent required for sample extraction. The much improved turnaround times will be of great benefit to the agencies undertaking the investigative processes wherever poisoning is suspected.

PhD opportunities

- Sustainable vertebrate pest management on farms PhD in Biosciences (funded) Ref: 3299, University of Exeter. http://www.exeter.ac.uk/studying/funding/award/?id=3299
- Quantifying the impact of beaver reintroduction on aquatic ecology PhD in Geography (funded). Ref: 3270. University of Exeter. http://www.exeter.ac.uk/pg-research/money/award/?id=3270
- Cardiff University are currently offering several scholarship schemes for overseas PhD students. Please share, check the details, and get in touch with them if you think you are eligible: note that applications are highly competitive.

Other news

Opportunities under the new NERC funded ChemPop project

Does the discharge of chemicals to the environment harm wildlife populations (ChemPop)?
The ChemPop project (funded under NERC's Emerging Risks of Chemicals in the Environment programme) aims to identify which wildlife populations are doing well, despite current chemical use, and which are not. The assessment

will be based on Britain's vast long-term wildlife population data and will be examined with respect to chemical exposure and other factors. Hundreds of millions of data records have been gathered over the past 40 years and examination of them for response to chemicals has never been done before on this scale.

Prof. Andrew Johnson, an environmental research scientist at CEH, said: We intend to review the vast treasure trove of UK records of wildlife populations, from freshwater invertebrates to sparrowhawks and dolphins, going back decades, to examine whether they have been or are being harmed by chemical exposure. See the press release at: https://nerc.ukri.org/press/releases/2018/30-chemicals/

The PBMS team is involved with this project and will be looking at assessing the impacts of rodenticides on sparrowhawk populations.

The Mammal Society Spring Conference 2019

The 2019 Spring Conference takes place on Friday 29 March 2019 – Sunday 31 March 2019 at the University of Glasgow. The conference will be a forum for mammal experts and enthusiasts to meet in a friendly and relaxed atmosphere, hear the results of new research, look to future work and discuss contemporary issues in conservation. To book a place see https://www.mammal.org.uk/events/the-mammal-societys-65th-spring-conference/.

Recent publications from the WILDCOMS schemes

Donald, H., 2018. Disease Risk Analysis for Water Vole Reintroductions. Restoring Ratty Conference, Northumberland Wildlife Trust, 5th October 2018.

Franklinos et al. 2018. Herpesvirus skin disease in free-living common frogs Rana temporaria in Great Britain. Diseases of Aquatic Organisms 129, 239-244. https://www.int-res.com/abstracts/dao/v129/n3/p239-244/

Hydeskov et al., 2018. Detection and characterisation of multiple herpes viruses in free-living Western European hedgehogs (*Erinaceus europaeus*). Scientific Reports 8, 13942. https://www.nature.com/articles/s41598-018-31900-w

Jaffe et al., 2018. Red kite (*Milvus milvus*) Reintroduction Programme 2017/18 Post-Release Health Surveillance: 1st April 2017–31st March 2018. London, Institute of Zoology.

Lawson et al., 2018. Spatio-temporal dynamics and aetiology of proliferative leg skin lesions in wild British finches. Scientific Reports 8, 14670. https://www.nature.com/articles/s41598-018-32255-y

Morais et al., 2018. Assessing binary mixture effects from genotoxic and endocrine disrupting environmental contaminants using infrared spectroscopy. *ACS Omega* **3** 13399-13412. https://doi.org/10.1021/acsomega.8b01916

Pereira, M.G., et al., [2018 on line]. Temporal and spatial distribution of mercury in gulls eggs from the Iberian Peninsula. Archives of Environmental Contamination and Toxicology https://doi.org/10.1007/s00244-018-0584-0

Sainsbury et al., 2018. Disease Risk Analysis for Conservation Translocations. Proceedings of the Asian Society for Conservation Medicine and Australasian Section Wildlife Disease Association Conference, Bali, Indonesia, October 27th to November 2nd 2018, p23.

Sainsbury et al., 2018. Rationale for methods of disease risk assessment for conservation translocations. Disease Risk Analysis for Conservation Translocations. Proceedings of the Asian Society for Conservation Medicine and Australasian Section Wildlife Disease Association Conference, Bali, Indonesia, October 27th to November 2nd 2018, p56.

Shore et al., 2018. Second generation anticoagulant rodenticide residues in barn owls 2017. CEH contract report to the Campaign for Responsible Rodenticide Use (CRRU) UK, 22 pp. https://pbms.ceh.ac.uk/sites/default/files/stewardship-2017-owls_FINAL.pdf

Walker et al., 2018. Anticoagulant rodenticides in red kites (*Milvus milvus*) in Britain 2016. Centre for Ecology & Hydrology, Lancaster, UK. 16 pp. https://pbms.ceh.ac.uk/sites/default/files/Red_Kite_2016_FINAL.pdf

Zhang et al., 2018. Quantification of pharmaceutical related biological activity in effluents from wastewater treatment plants in UK and Japan. Environmental Science & Technology https://doi.org/10.1021/acs.est.8b03013

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