Wildlife Disease & Contaminant Monitoring & Surveillance Network

WILDCOMS newsletter number 27: Autumn/Winter 2020 www.wildcoms.org.uk

The WILDCOMS newsletter reports recent newsworthy items and publications from member partners

WILDCOMS Scheme news

Predatory Bird Monitoring Scheme (PBMS)

The team are still mourning the loss of their wonderful boss Professor Richard Shore who died suddenly on Tuesday 28 July 2020, aged 57. He was a much-loved colleague, mentor and friend, who made a huge contribution to pollution and wildlife science worldwide. Image (left) of Richard in 2018, kindly shared by Dr Pierre Mineau.

Lee Walker has taken over as Principal Investigator of the PBMS; here are some 2020 achievements reported in Richards's memory:

Higher exposure to lead in buzzards likely to come from ammunition: Ingestion of lead (Pb) derived from ammunition used in the hunting of game animals is recognised to be a significant potential source of Pb exposure of wild birds, including birds of prey (see Publications: Taggart et al, 2020).

Along with UKCEH colleagues PBMS developed live online reporting of population health indices that inform us about the status of recruitment and survival, physiological stress, and nutritional status in the population. https://pbms.ceh.ac.uk/content/health-indices.

Lee attended the latest European Raptor Biomonitoring Facility (ERBFacility) meeting (online). The ERBFacility is an open network of researchers and practitioners working towards coordinated Europe-wide monitoring of contaminants in raptors (birds of prey) with a view to supporting the implementation of EU chemicals regulations and thereby reducing chemical risks to raptors themselves, to the wider environment and to human health. To learn more see: https://erbfacility.eu/.

Disease risk analysis and health surveillance (DRAHS)

Between March and November 2020 the DRAHS team worked on a number of disease risk analyses (DRA) to assess the risks of conservation translocations: Dr Claudia Carraro on a Guam kingfisher DRA: Georgina Gerard on the reintroduction of Golden coin turtle to Hong Kong and Dr Helen Donald and Dr Sophie Common completed a DRA for the reintroduction of beaver to England. Dr Sophie Common also completed a DRA on the risk of SARS-CoV-2 to bats during conservation fieldwork and Dr Helen Donald began work on a DRA on water vole reintroduction. Dr Tammy Shadbolt completed a DRA on the risk of SARS-CoV-2 to hazel dormice during conservation fieldwork and a DRA on the risk of adenovirus to reintroduced populations of sand lizards.

DRAHS continued disease risk management (DRM) and post-release health surveillance (PRHS) for a number of projects during the summer period. Priority field visits to Norfolk were carried out in June and August to the first pool frog (Pelophylax lessonae) reintroduction site in England because of concerns that the population had declined. Over forty amphibians received detailed veterinary examinations and there were no clinical indications of infectious disease. Swabs were taken from all individuals in order to screen for the fungus Batrachochytrium dendrobatidis, which causes the disease chytridiomycosis, and results are pending. DRAHS carried out PRHS field visits to Sussex in July and August in order to monitor the health of wart-biter crickets (Decticus verrucivorus). Stridulating males were heard at former release sites as well as locations radiating from these sites. Nine wart-biter crickets were successfully caught up for examination and eight appeared to be in good health. One appeared to have abnormal extension of the hindlimbs and the diagnosis in this individual case remains uncertain. In September DRAHS travelled to Lancashire and to Dorset to carry out pre-release health examinations on juvenile sand lizards (Lacerta agilis). Over sixty sand lizards were successfully examined by DRAHS vets. Individuals found to be in less than optimal health were retained for further monitoring at the sites prior to hard release. DRAHS continued disease surveillance for mammals and birds of prey through post-mortem examinations.

(Left) Examination of the heart of a sand lizard with a doppler probe in Dorset pre-release (credit: Nick Moulton). (Right) Photography for identification during health examination of a juvenile sand lizard (© ZSL).

The DRAHS team held biannual meetings with Natural England and key collaborators via Zoom in April and November 2020. Dr Tammy Shadbolt delivered PowerPoint presentations and discussed findings from the last 12 months of DRM PRHS work for all project species.

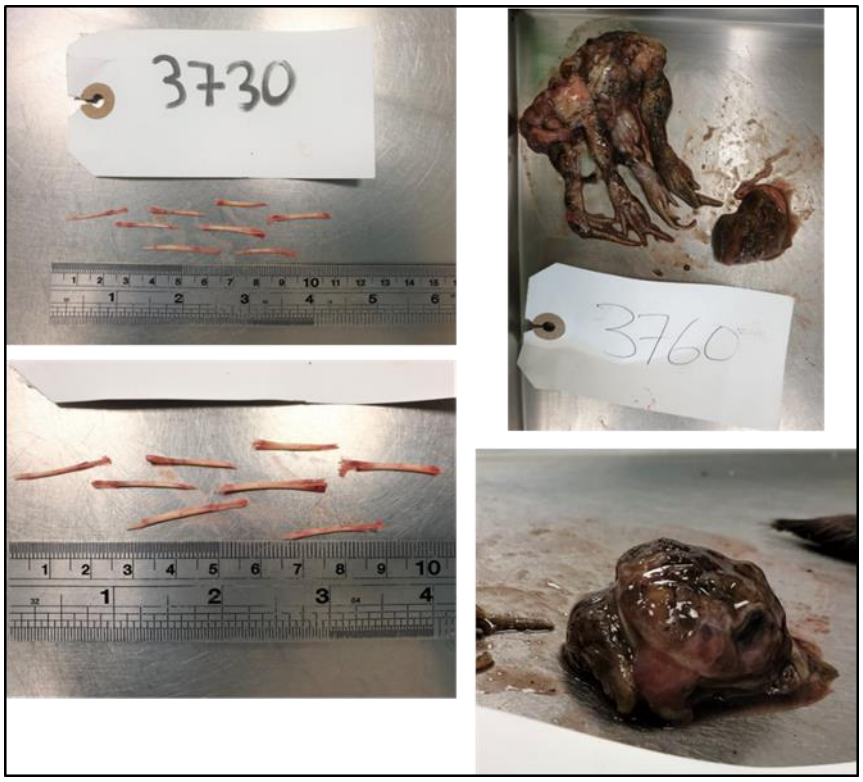
Cardiff University Otter Project (from Emily O'Rourke, Research Student).

News from the lab: closure... and reopening.

When lockdown was first announced back in March 2020, the Cardiff university buildings closed, the way of working changed to being at home and post mortems and taking otter deliveries stopped. The lockdown has led to the largest, and most widespread change in human behaviour in the last century, so what has the 'anthro-pause' meant for otters in the UK and the Otter Project? Immediately, less traffic means fewer RTAs (road traffic accidents), however less traffic also means less reporting and collecting of dead otters, and these factors will be difficult to tease apart. More practically, it meant no placement students this year, so instead the PhD students took on more of the roles to help Liz (project manager) conduct PMs and generally manage the project.

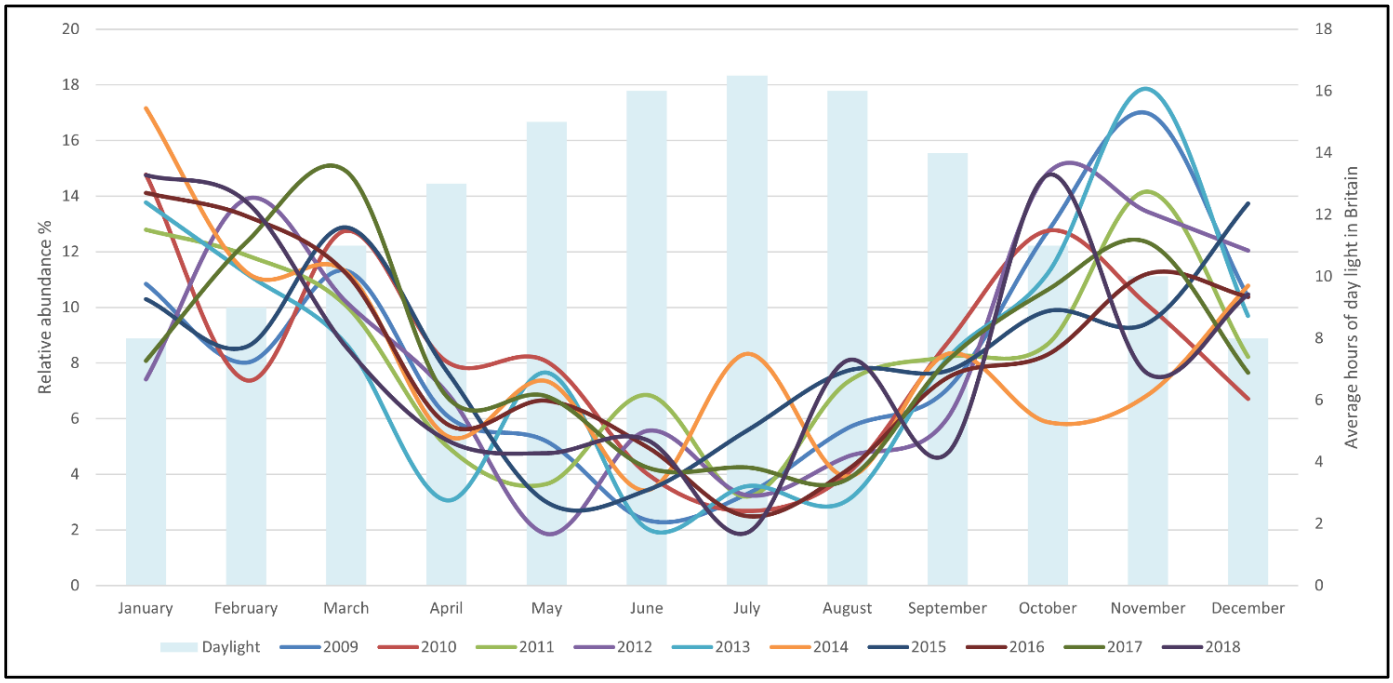
On 23rd September project staff finally got back in the lab to restart otter post mortems (Liz Chadwick (right) and Sarah, a PhD student, on their first day back). Since getting back in the lab, they have had some interesting finds in the stomachs of the otters examined:

Otter 3730 found March 2019 in Somerset, close to the Bristol Channel in an area of coastal streams. The stomach contents included more than 30 small bones (image right), all of similar size and shape. The otter project are not sure what they are, and would love to hear your thoughts!



Otter 3760 found January 2020 in North Wales. This female adult otter had eaten a meal of frogs before she died in an RTA. Her stomach contained frog skin, bones, legs and heads but she was in poor condition, and as shown by the recent diet paper (see publications), otters with a lower body condition are more likely to have prey of lower nutritional value, such as amphibians, in their stomach.

The otter project expects there to be an increase in reports of otters found dead on the roads in the autumn and winter months. The graph below highlights the change in otter deaths across the year (coloured lines represent relative abundance of otters received each month in years 2009-2018), and how this is likely linked to the hours of daylight (blue bars). Otter activity is highest during dawn and dusk, so as day length becomes shorter and the commuter rush hour moves into these hours of twilight, more otters become casualties of RTAs. It is important for everyone driving during twilight hours to be particularly cautious, especially where roads cross rivers via bridges and culverts.



More at https://www.cardiff.ac.uk/otter-project; subscribe to the Cardiff University Otter Project Newsletter.

WIIS-Scotland

The results for incidents from quarters 1, 2 and 3 of 2020 will be added to the SASA website by the end of January 2021.

The WIIS-Scotland team was represented at a virtual workshop of the European Raptor Biomonitoring Facility (ERBF) earlier this month. The workshop was convened to consider quality assurance, standardisation and harmonisation of analytical techniques for anticoagulant rodenticide, lead and mercury analysis. More information about the ERBF can be found here.

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 pesticide use;

2. To enforce the correct use of pesticides, identifying and penalising those who deliberately or recklessly misuse and abuse pesticides.

Quarterly data for WIIS is available here and although this has not been updated for 2020, be assured that the laboratory work to support WIIS in England and Wales has continued throughout the COVID pandemic. This has been achieved with a virtual Natural England presence for many investigations and wider collaboration with the Police, RSPB, Private veterinary practices and courier services to get the samples from the field to the Wildlife Incident Unit at Fera. Unfortunately, many of the cases have involved the illegal use of pesticides, for example see here and here. It is not clear if this is a real increase in illegal activity, or if more cases have been found and reported as more people were likely to be taking their daily exercise in the countryside.

The WIIS relies on members of the public and other interested organisations to find and report suspicious incidents that usually involve the death of one or more animals. There is a Freephone number to report suspicious incidents to WIIS, 0800-321600. Anyone who has information relating to bird of prey persecution should report it to their local police force by calling 101, or to Crimestoppers anonymously on 0800 555111.

Terrestrial monitoring in mammals – filling the data gap

An exciting collaboration to enhance terrestrial monitoring in mammals has been made possible with funding from Defra. This involves partners in WILDCOMS: Fera (for WIIS-England and Wales); the Institute of Zoology (Garden Wildlife Health (GWH) project) and the Animal Plant Health Agency (wildlife disease surveillance). The aim is to screen liver samples from hedgehogs and foxes for pesticides and anticoagulant rodenticides, in order to provide baseline monitoring data and to further compare the findings with available toxicological data from other species, such as predatory birds. It is planned to assess the likely significance and potential impact of any detected pesticide or rodenticide exposure to wild mammal health. We will also explore whether trends in detected levels of exposure indicate that stewardship actions, restrictions on use and other authorisation changes have had an impact. Filling these data gaps might also be of importance from a biodiversity perspective as hedgehog populations in England have declined significantly in recent decades. The causes of these declines are not yet fully understood, but they are likely to be due to a combination of factors. This project aims to provide the data required to examine if one or more of a range of pesticides may be contributing to these observed hedgehog population declines.
This project demonstrates the value of archived material from the GWH project for hedgehogs and of using samples that are collected as part of a disease surveillance programme for Echinococcus multilocularis for foxes. It is also planned to use a novel analytical screening approach that might benefit future routine screening techniques that are used by WIIS-England and Wales.
Hedgehog image provided by WIIS.

GB Wildlife Disease Surveillance Partnership

The latest GB Wildlife Disease Surveillance Partnership quarterly report has been published. Please find below links to the quarterly reports of GB wildlife disease surveillance produced by the GB Wildlife Disease Surveillance Partnership:

- 2020 reports: https://www.gov.uk/government/publications/wildlife-gb-disease-surveillance-and-emerging-threats-reports
- Previous reports: https://webarchive.nationalarchives.gov.uk/20200804170507/https://www.gov.uk/government/publications/wildlife-gb-disease-surveillance-and-emerging-threats-reports-2019

The GB Wildlife Disease Surveillance Partnership is made up of the following organisations:

- Animal and Plant Health Agency (APHA)
- 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)

News from our colleagues in Montana, USA

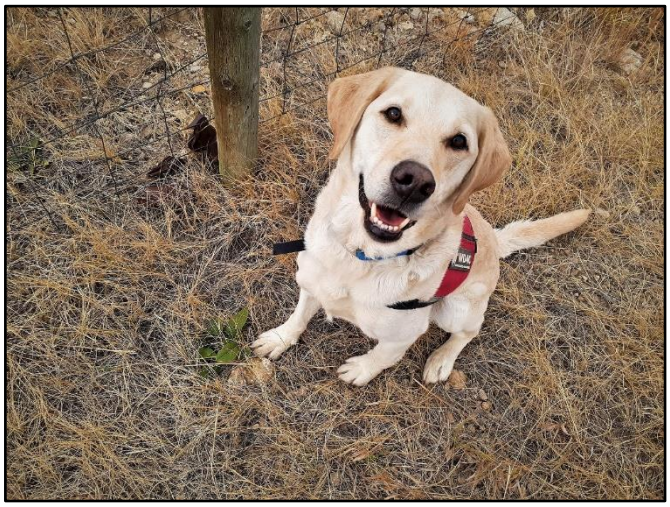
Working Dogs for Conservation (from Dr Ngaio Richards, Forensics & Field Specialist).

Conservation detection dogs assist with monitoring of invasive species, biohazards and diseases.

Partnering with an array of stakeholders, colleagues at Working Dogs for Conservation recently wrapped up another monitoring season for Dyer's woad (Isatis tinctoria) in Montana, USA. For nearly a decade, dog-handler teams have been specially trained and integrated into statewide efforts to counter the spread of this invasive plant, now firmly moving from containment towards eradication. Using dogs has significantly improved the probability of locating and removing woads before they flower or (worse!) go to seed, especially as they become harder to find. Missing even a few small rosettes can severely undermine eradication efforts since a single plant can produce thousands of seeds, potentially viable for decades. This work also comprises a research and development aspect. Noting growth parameters at various locations, the biologist-dog handlers and management partners have designated certain woad patches as emanating from seedbanks, or remnant roots, which helps steer successive monitoring approaches and strategic use of both dog teams and targeted herbicide applications, mindful of native seedbanks and plants.
Detection dogs have also proven more than capable of seeking other types of invasive plants (e.g. spotted knapweed; Centaurea stoebe). Not all targets are readily detectable, but generally speaking, dogs have the capacity to look for multiple compatible targets simultaneously, e.g.: zebra and quagga mussels, scats of carnivores thought to co-occur within a habitat, and both invasive and imperiled species in tandem, e.g., eastern whorled milkweed; Asclepias verticillate and Chinese bush clover; Lespedeza cuneata.

Dog-handler teams have also been enlisted in aquatic contaminants monitoring (flame retardants, pharmaceuticals and heavy metals via analysis of river otter and American mink) and efforts to track disease in the wild (e.g. sarcoptic mange).

Prospective candidate dogs are rigorously vetted for conservation detection work because very few actually possess the entire suite of required characteristics. A large proportion of WD4C dogs have been adopted from shelters, surrendered there by people who understandably found them to be 'too much dog' and unsuitable as a pet. Uniquely qualified, and often whisked from an uncertain future, these dogs conduct their work with utmost exuberance while humbling and delighting their human counterparts in equal measures. **Tobias alerts his handler to the presence of a dyer's woad (between his toes). Credit WD4C** https://wd4c.org/.



Recent publications from the WILDCOMS schemes

Brand et al., 2020. **Biological and anthropogenic predictors of metal concentration in the Eurasian otter, a sentinel of freshwater ecosystems**. Environmental Pollution, Volume 266, Part 3, https://doi.org/10.1016/j.envpol.2020.115280.

Donald et al., 2020. **Disease Risk Analysis for the Conservation Translocation of the Eurasian Beaver (*Castor fiber*) to England**. Zoological Society of London 159pp.

Duff et al., 2020. **Rabbit haemorrhagic disease: a re-emerging threat to lagomorphs**. Veterinary Record 187, 106-107. http://dx.doi.org/10.1136/vr.m3131.

Duff et al., 2020**. Suspected collision trauma deaths in pied wagtails. Veterinary Record 186, 609-610.** http://dx.doi.org/10.1136/vr.m2272.

Everest, et al., 2020. **Maintaining wildlife monitoring during lockdown.** Veterinary Record 187, 408-409, http://dx.doi.org/10.1136/vr.m4110.

Farnell et al., 2020. **Initial Investigations of the Cranial Size and Shape of Adult Eurasian Otters (Lutra lutra) in Great Britain**. J. Imaging 2020, 6(10), 106, https://doi.org/10.3390/jimaging6100106.

Gerard, et al., 2020. **Disease Risk Analysis for the Conservation Translocation of Golden Coin Turtles (*Cuora Trifasciata*) from Kadoorie Farm and Botanical Garden to Release Sites in Hong Kong**. Zoological Society of London 199pp.

Holmes, 2019. **Avian botulism – a recurring paralytic disease of wild UK waterbirds**. Veterinary Record: Journal of the British Veterinary Association, https://doi.org/10.1136/vr.l5417.

McInnes et al., 2020. **Introduced Canadian Eastern Grey Squirrels: squirrelpox virus surveillance and why nothing matters.** Hystrix, the Italian Journal of Mammalogy, 31(2):0. https://doi.org/10.4404/hystrix-00331-2020.

Moorhouse-Gann et al., 2020**. Dietary complexity and hidden costs of prey switching in a generalist top predator**. Ecology and Evolution, Volume 10, Issue 13, https://doi.org/10.1002/ece3.6375.

Taggart et al., 2020. **Concentration and origin of lead (Pb) in liver and bone of Eurasian buzzards (Buteo buteo) in the United Kingdom.** Environmental Pollution, Volume 267, https://doi.org/10.1016/j.envpol.2020.115629.

Shore, et al., 2018. **The relative importance of different trophic pathways for secondary exposure to anticoagulant rodenticides.** Proc. 28th Vertebr. Pest Conf. (D. M. Woods, Ed.) Univ. of Calif., Davis. 2018. Pp. 322-328, https://escholarship.org/uc/item/5gv7t7w1.

Contact us

To see a particular topic in the WILDCOMS newsletter, contact us about WILDCOMS related matters or subscribe/unsubscribe from our mailing list please email wildcoms@ceh.ac.uk or Contact us.

For detailed information about WILDCOMS and the schemes involved, navigate to www.wildcoms.org.uk.

The UKCEH Privacy policy sets out the basis on which any personal data we collect from you, or that you provide to us, will be processed by us.