

Title - 'Counting sheep and other amazing creatures': managing animal surveillance to invigorate intelligent response to animal disease outbreaks



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Keywords: disease outbreak contingency planning, preparedness, surveillance, epidemiology, data intelligence, data curation, digital preservation, data management

Project Summary: Contingency planning for exotic disease outbreaks has been at the top of the agendas for UK & Scottish government policy makers, the livestock industry, and the public, after the animal disease outbreaks in the recent past (e.g. Foot & Mouth Disease in 2001 & 2007). Rapid detection and response to disease incursions is only possible if there are effective & resilient disease surveillance systems with ongoing capacity to detect, assess & disseminate disease intelligence. In Scotland, the responsibility for animal data collection (for surveillance purposes) is borne by a range of local government organisations and industry stakeholders. However, the purposes and procedures for data collection vary and may be fragmented across different domains, and may be hampered by limited resources in remote regions. As both the volume of data, and types of technologies employed change and grow rapidly, the sustainability of surveillance data quality, data retention schedules, and procedures for disease outbreak data and disease surveillance strategies are not completely transparent. This project aims to build forward-looking policies regarding data preservation in emergencies as well as in “peacetime” with the aim of bringing harmonisation to current practices, and to improve learning models of disease spread/control that might mitigate economic consequences of exotic and, in some cases, endemic animal diseases.

Study aim:

The focus of this project is to answer the following key research question:

What intelligent digital preservation measures can support evidential, social and economic value of livestock industry and veterinary surveillance data, which are necessary to inform contingency planning for animal disease outbreaks?

In particular:

- What are the challenges in establishing sound digital curation practices related to such data? What are the current methods of collecting, managing and using such data? Are there standard practices?
- What are the areas of development in this area to build capacity for digital preservation? Are current practices adequate to meet the needs of the stakeholders?
- Are these practices transferable to regions where infrastructure and resources may be limited?

Research activities will include:

- In-depth survey of technologies, data formats, and systems related to animal surveillance.
- Mapping the work and data flow related to surveillance data collection and usage.
- Identifying, assessing & proposing data strategies to mitigate social and economic risks.
- Leading knowledge creation and exchange in surveillance data preservation supporting emergency disease outbreak, particularly in regions with limited resources.
- Visiting relevant stakeholders for training, research development, and engagement: e.g. DEFRA/Animal & Plant Health Agency, local government organisations, and others in the livestock industry.

Project Team:

The PhD researcher will work under the lead supervision of digital preservation researchers at the School of Humanities (Dr. Y Kim), with direction from EPIC (Epidemiology, Population health and Infectious disease Control) researchers at the School of Veterinary Medicine (Dr. L Boden) and SRUC (Dr. Aaron Reeves).

The student will benefit from established relationships with policy makers working in exotic and endemic disease planning in the Scottish Government Animal Health and Welfare Division and will be integrated into the work of EPIC, The Scottish Government's Centre of Expertise on Animal Disease Outbreaks. He/she will visit relevant stakeholders for relevant training, research development and engagement.

The researcher will also be supported by Dr Niels Cadee at the University Research Data Management team, and Dr. Andrew McHugh at the Urban Big Data Centre. This will boost new ways to transfer knowledge to researchers in animal health and related areas, and trigger possibility of applying the results to other scenarios in urban big data.

Person Specification: This studentship is open to candidates of any nationality – UK, EU or International.

Applicants should demonstrate the following:

- Undergraduate degree 2:1/1st, or Master degree merit/distinction in a relevant area (veterinary medicine and life sciences, information management and analysis, or related area).
- Proficiency with one or more of the following areas: epidemiology, veterinary public health, bioinformatics, statistics, ecology, biodiversity, digital preservation, data management, information analysis.
- Ability to work with a wide range of technologies, hardware, operating systems, software, and file/data formats.
- Ability to communicate across disciplines, for example, science and humanities.
- Evidence of previous research experience
- Potential for scholarly achievement: for example, awards, prizes, publications in scholarly journals
- Resilience & problem solving skills, for example, combining abstract thinking and practical application.
- Imagination and willingness to explore areas outside your comfort zone

Desirable:

- Knowledge of, and familiarity with, Scottish Livestock Agriculture, for example, including awareness of disease control programmes and policies
- Experience developing methodologies in digital preservation, digital forensics and/or machine learning.
- Evidence of public engagement

Application Process

In the first instance prospective applicants should contact Dr Yunhyong Kim, yunhyong.kim@glasgow.ac.uk to discuss your eligibility.

The following documentation will be required from applicants if they are invited to submit a full application:

- A statement expressing your particular attributes, achievements and suitability to undertake the proposed project (applicants should pay particular attention to Appendix 1 of the Lord [Kelvin Adam Smith Guidance Notes](#))
- Curriculum vitae
- Degree transcripts in English (Undergraduate and Masters, if relevant)
- 2 references in support of your application. (The references relevant to the application for admission to Glasgow for PhD study may be submitted to this process - they do not need to be tailored to this process.)
- Candidates whose first language is not English must show evidence of appropriate competence in English in the form of a IELTS certificate or similar.

The full application must be sent to Adeline Callander (adeline.callander@glasgow.ac.uk) at the College of Arts Graduate School by **12 noon, Friday 13 January 2017**.