

Using bio-logging to improve sheep health and performance

Supervisory team:

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Project description:

The UK sheep industry contributes an estimated £465.9M per annum to the UK economy, with over 16 million breeding sheep and an annual production of over 16 million lambs. In contrast to intensive livestock farming such as the dairy industry, sheep can spend long periods of time outdoors with little or no direct contact with the farmer. This extensive form of farming means that it is hard to monitor the health and production (e.g. growth, reproduction) of individuals and the industry faces a major challenge in improving both of these outcomes.

Studies of wild animal populations have clearly demonstrated that the behaviour of individuals and their social interactions have strong impacts on both survival and reproduction. In sheep, however, very little is known about how these behavioural traits are related to health and production, because of the practical difficulties in directly observing a large number of individuals that are spread over a large area.

In partnership with industry, this project will harness the latest in high-tech measurement technology for automatically recording behaviour, using a variety of devices deployed on Poll Dorset sheep in the South West of England. The project will use accelerometers to automatically track behaviour (e.g. grazing, sleeping, walking), GPS devices to determine where the behaviour occurs and proximity tags to record patterns of social contact. This rich dataset will be combined with direct observations of health and production (e.g. growth and pregnancy rates) and analysed using machine learning methods, to classify the behaviour and health of individuals from the on-body sensors. The resulting data will be used to determine the relationships between behaviour, health and production. By working with pedigree flocks the project will identify behaviours that are heritable and thus can be selected for by farmers to improve the health and production of their sheep.

The output of this project will be a sheep behaviour and health database for making evidence-based management recommendations to improve the health and production of the UK sheep flock. By working directly with a group of progressive sheep farmers the project will address some of the biggest challenges facing the UK sheep industry, with clear potential to make substantial improvements to animal health, welfare and production.