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Developing robust welfare indicators for sheep and cattle exported by sea.

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In 2019, 2.2 million cattle and sheep were transported by sea from Australia to feeder and slaughter markets at various destinations in the Middle East and Asia.[1] There is growing societal concern for the welfare of these animals and calls for improved industry transparency. Current animal welfare reporting practices in the Australian livestock export industry rely on the use of basic input measures relating to the environment and resources, and livestock morbidity and mortality.[2] Reports are written in an unstructured format, making them difficult to collate and review on an industry-wide basis. Assessing welfare is further complicated by the management of animals under different environments with seasonal, temporal and contextual variation as animals transit through the supply chain. The welfare indicators research project aims to create a comprehensive protocol for monitoring and recording the welfare of cattle and sheep in the Australian livestock export supply chain using a list of measures that can be tested and recorded on a digital data collection platform. Such a system could potentially lay the foundation for an animal welfare benchmarking system for future use by industry on all voyages and as a component of regulatory oversight or certification purposes.

Animal welfare is a multidimensional concept it, therefore, cannot be evaluated through the use of a single measure or cumulative score.[3,4] For this study, a pen-side assessment technique was developed based on the four principles of the Welfare Quality (WQ) framework,[5] a survey of stakeholders[6] and adapted to include practical techniques for making pen side assessments.[7,8] These measures capture both the health and behaviour of livestock on a daily basis and are designed to be valid (giving meaningful and industry specific results), feasible (easily performed in an industry setting while creating minimal disturbance to livestock), reliable and repeatable. Pen side assessments include input measures regarding livestock class, nutrition, housing and environment, and animal-based outputs based on health, behaviour and demeanour. The welfare assessment protocol takes a whole of supply chain approach, with measures applying to cattle or sheep confined in pens or yards on-farm, in feedlots, during a voyage, in receival feedlots and slaughterhouse trader pens. Target pens were carefully selected to represent livestock lines that are typical of those regularly exported from Australia and include pens from several deck locations on the vessels. To date, data have been collected by three researchers from four shipments of cattle and sheep to the Middle East and four shipments of cattle to South-East Asian destinations.

Preliminary results of behavioural data (ethograms and assessments of animal demeanour) from two sheep voyages show that the protocol depicts changing animal behaviour in response to the environmental factors and resource access encountered during each consignment studied. Three primary behavioural domains were identified using Principal Component (PC) analysis on data from two voyages from Fremantle to the Middle East.

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Sheep predominantly displayed activity and resting behaviour (PC1, 23.4.0% variation), secondarily, they showed responses associated with body heat dissipation (PC2, 17.1% variation), and thirdly, they displayed changes in response to human presence and competition at feeding times (PC3, 9.5% variation).

We investigated the time of day and the frequency of pen assessments required to give an accurate indication of how animals respond to changes in their surrounding environment. Behavioural responses were observed to change at different assessment times on each voyage day, as the voyage days progressed and with pen and deck location on-board. Sheep outputs and management practices were shown to significantly vary between the two voyages. These findings indicate that the protocol is sensitive to environmental fluctuations and that it is optimal to carry out welfare assessments more than once daily, on each voyage day, and for multiple lines of livestock and deck locations.

Further analysis will help to define the measures that are reliable and repeatable, with validity of measures between observers, and between assessments by the same observer, an important factor that needs to be considered.[9]

The welfare indicators assessment protocol described here outlines the development of a platform for producing a welfare performance benchmarking tool rather than to provide a regulatory system or a pass/fail audit. Collection of industry wide data using the standardised framework for recording multiple animal-based welfare measures, and the environmental- and resource-based factors that influence them, can provide information on industry performance. Once established, it also allows comparisons of individual voyages, exporting companies, or marine vessels against an industry standard. Such an animal welfare benchmarking system can identify areas of high performance against areas of high welfare risk. This will allow for better informed and targeted risk mitigation strategies to be adopted on an industry or individual level.[10] In collaboration with the relevant stakeholders, this protocol might be developed into a standardised and robust welfare monitoring tool which can facilitate industry wide comparison through benchmarking of performance, while encouraging ongoing, incremental improvement in welfare outcomes.[10]

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