HSA One-Day Seminar 2024

Humane Slaughter Association

One-Day Seminar:

Animal Welfare During Transport and Slaughter – Hot Topics 2024

Saturday 26 October 2024

Norton House Hotel
Edinburgh
EH28 8LX

Abstract Book

The Humane Slaughter Association (HSA)

The HSA is an international UK-based, independent charity and membership society. We are concerned exclusively with promoting evidence-based humane treatment of all food animals during transport, slaughter, killing for welfare reasons or disease control, and at markets.

We work through research, education, training and promoting technical advances to bring real, practical and lasting improvements in food animal welfare.

The HSA is funded solely by donations and legacies from members and supporters. Please help us to continue to make practical and lasting improvements to animal welfare beyond the farm gate by becoming a member or donating to support our work.

Caring beyond the farm gate

Growing numbers of us are concerned about the welfare of animals that provide us with food and other products. At the HSA, we play a vital role in promoting, developing and advancing animal welfare for the humane transport, slaughter or killing of all livestock animals by:

- funding innovative research projects to actively look for ways to ensure that the welfare of farmed animals is maximised beyond the farm gate;
- promoting practical and evidence-based solutions, offering expert advice and guidance to livestock producers, regulators and consumers, leading to real-world improvements for farmed animals; and
- collaborating with all those seeking to provide practical evidence-based approaches to maximise animal welfare during transport and at the time of killing.

Join the HSA today!

By joining the HSA, you will help us to continue to make practical and lasting improvements to animal welfare beyond the farm gate.

Individual membership is just £15 annually (£5 for students) and we will keep you updated on our activities and how your support is making a difference.

www.hsa.org.uk/support/memberships

Speaker biographies

Andrew Voas
Scottish Government (SEERAD)

Andrew Voas qualified as a veterinary surgeon from Edinburgh University and spent two years in mixed practice in Ayrshire before starting in Government veterinary service. Initially working as a veterinary officer based in Edinburgh and the Scottish Borders, he was involved in control of zoonotic and notifiable animal diseases, as well as meat hygiene, import controls, export certification and farm animal welfare investigations.

Andrew became a veterinary adviser to the Scottish Government in 2001 and pursued his interests in commissioning research and policy development in all aspects of animal welfare, becoming head of the animal welfare policy team. He led the development of the Animals and Wildlife (Penalties, Protections and Powers) (Scotland) Act 2020 and the establishment of the Scottish Animal Welfare Commission. He has also worked closely with the UK Animal Welfare Committee on several of their reports.

Dr Huw Golledge is Chief Executive and Scientific Director of the Humane Slaughter Association and its sister charity, The Universities Federation for Animal Welfare. He is also joint Editor-in-Chief of the journal *Animal Welfare.*

Huw originally studied biology at University College London and then completed a PhD in neuroscience at Newcastle University. During this time, he developed a concern for the welfare of animals used in scientific research and went on to undertake research on humane anaesthesia and killing techniques for laboratory rodents. He was a member of the Home Office Animals in Science Committee from 2013-2016.

Huw is a strong advocate of evidence-based animal welfare and it is this that initially drew him to work for the two charities.

Huw Golledge
Humane Slaughter Association

Speaker biographies

Jess Martin
Newcastle University

Dr Jess Martin is an award-winning translational researcher with over a decade of expertise in animal welfare, focusing on farming and laboratory settings. As the Elizabeth Creak Associate Professor in Animal Welfare and Innovation at Newcastle University, she also Chair the University's Animal Welfare and Ethical Review Body (AWERB), leading initiatives in ethics and welfare policy.

Her research, particularly in controlled atmosphere killing, has positively impacted billions of animals worldwide. She serves as an expert member on various panels, including the EFSA Panel on High expansion foam for killing of pigs and poultry, RCVS Ethics Review Panel and NC3Rs Grant Assessment Panel, and holds leadership roles in global agricultural and poultry science organisations.

Joe Anzuino is a Veterinary Adviser at the Animal and Plant Health Agency (APHA) advising DEFRA and supporting APHA operational and policy development and implementation regulating the welfare of animals at the time of killing at individual level on farms and at scale for control of notifiable disease.

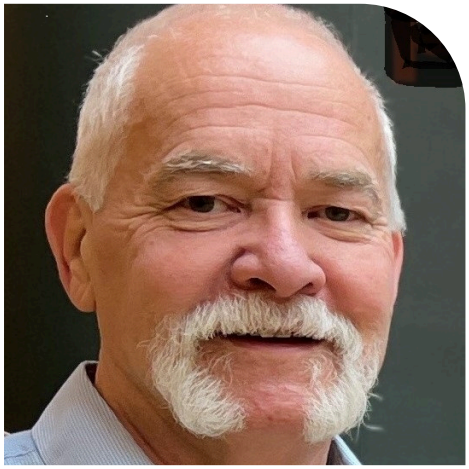
Joe qualified as a veterinary surgeon in Edinburgh in 1991. He has worked in clinical practice and for welfare organisations and non-government organisations in the UK and overseas including Hong Kong, Kenya, Somaliland, Egypt, India, Mongolia and Ethiopia.

After being involved as a Temporary Veterinary Inspector in the FMD outbreak in 2001/2 Joe returned to government veterinary service in 2016 as an APHA field vet before taking the current role in 2021.

Joe has an MSc in Tropical Veterinary Medicine, an RCVS Certificate in Animal Welfare Science, Ethics and Law, and a Post Graduate Certificate in Development Management.

Joe Anzuino
Animal and Plant Health Agency (APHA)

Speaker biographies



Peter Kettlewell
Livetec Systems Ltd

Peter gained an honours degree in Physiology at the University of Manchester in 1977, then after a year driving HGVs he returned to academia and gained a second honours degree in Agricultural Engineering at the National College of Agricultural Engineering in Bedfordshire in 1981.

He then moved to Silsoe Research Institute using his expertise focusing on animal welfare primarily in the field of the transport of livestock. The research has led to a better understanding of the thermal conditions that are experienced by livestock during transport which has helped important changes in policy and regulation, with the welfare of animals during transport being improved through his research. When Silsoe Research Institute was closed, Peter continued his research for a short period with ADAS before then working as a self-employed consultant.

In 2014, Peter took up a lecturing post in agricultural mechanisation at the SRUC in Edinburgh until his “retirement” at the end of 2021. Since then Peter has been working as Senior Research Engineer with Livetec, using his depth of knowledge and experience to address new challenges.

Dr Birte Nielsen is Research Director at the Humane Slaughter Association (HSA) and Universities Federation for Animal Welfare (UFAW). She has carried out research in basic and applied ethology in Denmark, France, and the UK on a variety of species, including pigs, cows, poultry, and rats, publishing more than 70 peer-reviewed articles and two books.

Until last year, Birte chaired the Global Coalition for Animal Welfare (GCAW), and she is an independent expert member of the EU Platform on Animal Welfare, and joint Editor-in-Chief of the Gold Open Access UFAW journal Animal Welfare. She was recently appointed Visiting Professor at the University of Edinburgh, The Royal (Dick) School of Veterinary Studies.

Birte Nielsen
Humane Slaughter Association

Speaker biographies

Simon Turner
Scotland Rural College (SRUC)

Simon Turner is a Professor of Animal Behaviour at SRUC where he studies the causes and consequences of individual differences in behaviour and responses to human handling. He has worked closely with the pig and beef cattle industry in the UK, USA and EU and much of his research has been conducted on commercial farms.

He is particularly interested in understanding how changing the production environment and animal breeding can improve animal behaviour whilst simultaneously increasing animal welfare and profitability. Recently he has studied the response of beef cattle and lambs to ferry transport and the effects of poor body condition on cow and calf welfare.

Dr Ellie Wigham, MA VetMB PhD Dip ECAWBM (AWSEL) PGCAP MRCVS, graduated from Cambridge Vet School in 2015. Following her graduation, she spent a year working as an OV in the New Zealand Red Meat sector. She then returned to the UK to pursue a PhD at the University of Bristol, where she assessed the impact of Animal Welfare training on welfare outcomes in both red and white meat abattoirs.

Since then, Ellie has been a Lecturer in Veterinary Public Health at the University of Glasgow, while also completing her training to become a European Veterinary Specialist in Animal Welfare Science, Ethics, and Law. She is speaking today in her capacity as a member of the Scottish Animal Welfare Commission (SAWC).

Ellie Wigham
University of Glasgow

Fergus Younger
Scottish Agricultural Organisation Society (SAOS))

Fergus Younger is a part-time project manager with the Scottish Agricultural Organisation Society. SAOS is Scotland's expert on farmer co-ops and food industry collaboration, providing a range of specialist information, development and consultancy services https://saos.coop/. Working mainly on Scotland's west coast, Fergus has been responsible for supporting many collaborative initiatives in agriculture, food, forestry and rural business. Fergus has been involved with many initiatives to support small scale abattoirs in Scotland and has recently undertaken a survey of abattoir private kill users and operators. In his spare time Fergus runs his family farm with his wife and three girls, which specialises in direct selling https://shop.oldleckie.co.uk/.

Speaker biographies

Nicola Randall
Harper Adams University

Dr Nicola Randall is a Reader in Agroecology and the founding Director of the Centre for Evidence-Based Agriculture at Harper Adams University. Her research focuses on enhancing sustainable agrifood systems, and crosses the interface between science and decision-making, with an emphasis on evidence synthesis.

Nicola currently Chairs the EU Network for Evidence Synthesis for Agri-food (EU NESA), and co-leads the Collaboration for Environmental Evidence UK centre. Her work has underpinned decision-making for policymakers, industry and advisory groups on topics ranging from environmental management, and livestock welfare to food waste management, and risk assessments.

Linda Wood, Aquaculture and Fisheries Manager at Marks and Spencer, is a passionate global seafood professional with extensive experience across various sectors of the seafood industry. Her roots in veterinary science and biosciences evolved into seafood manufacturing, and she spent 20 years as a technical, development and CSR director with two of the UK's leading seafood companies.

Linda enjoys working in partnership with fisheries and aquaculture supply chains and supporting them to continually strive for improved sustainability, welfare and human rights through collaboration and innovation. Her passion for animal welfare has led to recent collaborations with industry partners to tackle some of the challenges across farmed and now wild species and find creative solutions to some of the biggest challenges.

Linda Wood
Marks & Spencer

UPDATE ON CHICKEN CATCHING, LIVE EXPORTS AND FARMED FISH

Andrew Voas

Scottish Government (SEERAD)

Poultry catching:
A strict interpretation of EU Council Regulation 1/2005 on the welfare of animals during transport means it is an offence to lift animals including birds by the legs for commercial transport, although this was not understood to apply to poultry when it was introduced. Catching and carrying broilers and laying hens by one leg has remained common industry practice, although current EU and GB codes of practice recommend carrying birds upright if possible and by both legs, and carrying no more than 3 birds per hand. The AWC Opinion on the welfare implications of different methods and systems for the catching, collecting, carrying and loading of poultry (publishing.service.gov.uk) recommends the legislation should be amended so that it is legally permitted to lift chickens, and turkeys weighing less than 10 kg, by two legs. It is not yet clear how the discrepancy between current legislation and industry practice will be resolved.

Livestock exports:
Exports of livestock and horses from GB to countries outside the UK for slaughter or fattening are now prohibited, although livestock exports for slaughter ceased several years ago for commercial reasons.

Welfare of farmed fish:
The AWC Update to the 2024 Opinion on the welfare of farmed fish at the time of killing (publishing.service.gov.uk) recommends that protections for farmed fish are included in UK legislation. Work has started to develop guidance and technical specifications for methods of stunning and killing, including latest developments in electrical stunning techniques.

TIME FOR ACTION – CARBON DIOXIDE CAN AND SHOULD BE REPLACED AS A METHOD FOR STUNNING PIGS

Huw Golledge

Humane Slaughter Association

Over 30 years since it was shown that carbon dioxide (CO_2) is strongly aversive to pigs, and that inert gases were less aversive, CO_2 remains the most commonly used method for stunning pigs in the UK and EU. Over those three decades, an overwhelming body of evidence has accumulated demonstrating that exposure to CO_2 causes pain at high concentrations, and anxiety at low concentrations in nearly all mammal species, including pigs. I will summarise this evidence, which unequivocally proves that CO_2 can no longer be considered a method of humane slaughter.

Next, I will summarise what the HSA has done to aid the search for humane alternatives to CO_2. This includes funding a major research project to examine the feasibility of Low Atmospheric Pressure Stunning (LAPS), initially thought to be a promising alternative to CO_2, but later shown to cause welfare issues when used to stun pigs.

Finally, I will argue that, in the absence of LAPS as an alternative, there is a strong case for the rapid adoption of inert gas stunning with argon and that this option appears to be demonstrably more humane, practical to implement, and commercially viable.

WELFARE UNPOPPED: CAN HIGH-EXPANSION NITROGEN FOAM OFFER A VIABLE SOLUTION TO DEPOPULATION?

Jess Martin

Newcastle University

Mass depopulation presents significant ethical challenges, particularly regarding the humane treatment of animals, where standards may fall short compared to routine slaughter. Ensuring preparedness and maintaining a moral responsibility to safeguard both animal and human welfare is crucial. Depopulation methods must be scalable, cost-effective, and reduce the risk of disease transmission. Innovative solutions, such as high expansion nitrogen-filled foam, offer a more humane and efficient approach. Given the increasing likelihood of emergencies such as African Swine Fever, the development of humane and effective depopulation methods is critically important.

THE HEAD TO HEART (H2H) EUTHANIZER (POULTRY KILLING DEVICE) – A REGULATOR'S VIEWPOINT

Joe Anzuino

Animal and Plant Health Agency (APHA)

The humane killing of poultry for health, welfare and management reasons is an important part of husbandry in commercial poultry units. Poultry are also slaughtered on farms on a small scale for local supply and consumption. This requires effective and practical devices that avoid pain, distress and suffering during the killing and associated handling and restraint.

This presentation reviews a portable electric stunning device (Top Equipment, H2H Euthanizer) that uses a 230 V, 50 Hz electric current applied from the head to the cloaca to humanely kill chickens. The operating process of the device is outlined along with the underpinning principle of action.

The Animal and Plant Health Agency (APHA) carries out regulatory duties, monitoring compliance with welfare legislation and supporting good welfare practices.

APHA's approach to assessing new developments of on-farm killing based on reviewing available information and evidence and practical field demonstration is explained using the H2H Euthanazier as an example. This includes observing inputs and outcomes during its field use and assessing compliance with specified legal requirements and good welfare practices.

Further research that would aid welfare evaluation is identified.

The H2H Euthanazier is compared to alternatives on farm stunning methods for poultry currently available identifying possible opportunities and constraints for its use.
The requirement for operators routinely using the H2H Euthanizer to demonstrate their knowledge and competence through the WATOK licence systems in England and Wales is discussed clarifying what can be considered emergency killings and excluded from WATOK licence requirements and other legal provisions.

TEMPERATURE CONTROLLED TRANSPORT OF POULTRY

Peter Kettlewell

Livetec Systems Ltd

The transport of poultry is recognised as a complex process which must recognise the welfare of the birds throughout the entire transport process, legislative requirements, operational logistics whilst ensuring acceptable conditions during transport.

There is the potential for numerous stressors on birds in transit but perhaps the greatest challenge is the range of thermal conditions to which the birds may be exposed from leaving the farm until being unloaded at the destination.

To appreciate how the thermal conditions might affect poultry, there needs to be a full understanding of:

- avian thermoregulation to recognise the pertinent thermal parameters to define acceptable ranges and limits,
- the range of thermal conditions experienced within transport containers and how these develop during a journey,
- how vehicle design and operational procedures might be employed to optimise thermal conditions during transport and reduce the likelihood and severity of thermal stress.

The presentation will address all these aspects by reference to scientific research conducted over an extended period.

UPDATE ON HSA INTERNATIONAL PROJECTS

Birte Nielsen

Reserach Director, Humane Slaughter Association (HSA)

The HSA's mission is to advance and promote the use of humane methods for the transport, slaughter, and killing of farmed animals through research and education. This mission is a global one and, in particular, we aim to promote best practice in countries where standards are typically lower than in the UK and/or EU and where significant change can be implemented based on existing knowledge. We aim to work where the impact could be very large due to large animal populations (such as in China or India), or where it is comparatively easy to make significant improvements due to favourable conditions (e.g. receptive governments, collaboration with local and/or international NGOs). As our grant resources are limited, our international support is focused on and tailored to countries where the need is greatest.

Among the ongoing projects we support is the development of more animal welfare friendly methods for transport of chickens in Lilongwe, Malawi. This project is carried out in collaboration with the Lilongwe Society for the Protection and Care of Animals (LSPCA) and aims to promote the construction and use of bamboo baskets for transporting live chickens to market.

A recent HSA travel award supported Dr Han Hanh, Vietnam National University of Agriculture, to visit Aarhus University, Denmark, to learn about transport and slaughter of pigs and poultry and to apply this knowledge in Vietnam. We also have a program of work to promote humane slaughter in China including development of training resources in Chinese and to train Chinese experts to assess welfare in abattoirs.
Finally, our mentoring partnership frequently supports students from developing countries to carry out their first research project with the support of a mentor.

For more information, see hsa.org.uk/grants and hsa.org.uk/our-work/hsa-mentoring-partnership

LIVESTOCK TRANSPORT BY SEA BETWEEN SCOTTISH ISLANDS AND THE MAINLAND

Simon Turner

Scotland Rural College (SRUC)

Sheep and cattle travel from Orkney and Shetland to Aberdeen by ferry in significant numbers (approximately 25,000 cattle and 140,000 sheep per annum). This trade is integral to the agricultural sustainability of the island communities. The animals are loaded onto specially designed two-tier cassettes, which allow for feed and water to be given, and effluent to be contained.

There is little objective scientific evidence on the animals' experience of these types of journeys. Informal stakeholder interviews indicated widespread satisfaction with the system. Inspection reports of animals on arrival in Aberdeen were collated over 7 years. The number of casualties (animals that died on the journey, needed to be euthanised or receive veterinary intervention on arrival) that could be attributed to the journey with reasonable confidence was very low (23 animals; 0.0008% of animals transported).

No effect of sea conditions on the casualty rate was found. Three journeys of store cattle from Orkney and three journeys of store lambs from Shetland were accompanied (6 cassettes/journey). The sea conditions of these journeys reasonably sampled the variation present during the 2023 peak movement period. High ambient temperature and relative humidity (>25°C and 85% RH) occurred in around half of the cattle cassettes. During the warmest journey, 24% of cattle showed rapid breathing at any moment in time. Only one animal fell during the sailings and involuntary movements caused by vessel motion were infrequent. Drinker use was rare. Recommendations suggested to Scottish Government for continued refinement of the system will be shared.

ABATTOIR PROVISION IN SCOTLAND AND OPPORTUNITIES FOR MOBILE SLAUGHTERHOUSES

Ellie Wigham

University of Glasgow

The Scottish Animal Welfare Commission (SAWC) provides independent advice to Scottish Ministers on the welfare of sentient animals. In 2023 a working group (WG) was established to review the welfare issues concerning number of abattoirs in Scotland and their geographical distribution, slaughter journey times and the viability of mobile slaughterhouses (MSU).

The WG have met with a number of stakeholders including HSA, Scottish Pig Producers, Food Standards Scotland (FSS), Farming for 1.5, SOAS, Scottish Association of Meat Wholesalers and Scottish Crofting Federation. EPIC Scotland and FSS have provided data regarding animal movements to slaughter and numbers of Certificate of Competences issued.

Numerous challenges have been highlighted in discussions, including:

- Slaughter provisions in rural areas
- Support for small/medium abattoirs
- Slaughter provision for porcine, caprine and poultry
- Running private kill services
- Labour recruitment, training and retention
- Haulage from islands and rural areas
- Storage and waste disposal from MSUs

Animal movement data has revealed that a proportion of Scottish livestock are travelling more than 20 hours to slaughter, with over 70% not being killed at their closest suitable abattoir.
Evidence gathering and data collection is ongoing. Once compete the outcomes of this work will be published in a publicly available report. The report will include recommendations to Scottish ministers on how to further protect the welfare of Scottish livestock around the time of slaughter.

SERVICING PRIVATE KILL DEMAND IN SCOTLAND

Fergus Younger

Animal and Plant Health Agency (APHA)

"Private Kill" refers to the smaller volume kills in abattoirs that supply smaller scale butchers, direct selling farms/crofts and for "home" consumption. A recent survey of producers and abattoirs has demonstrated that 40% of producers have challenges with access and availability of abattoir and butchery services. These issues relate to many factors including distance, opening times, and facility priorities. Also that of the 12 facilities in Scotland, many are struggling financially and often find the private kill sector a challenging one to service. These challenges include the viability of small batches, time consuming nature of communications and out of spec animals.

There are no easy solutions to improving a situation that is not unique to Scotland. Building new micro or mobile facilities is very expensive and requires high intervention rates and often a subsidised business plan. Current approaches in Scotland are focussed on working to improve private kill coordination and working with existing providers to attempt to maintain the current fragile network. In recent years the additional challenges of inflation, high livestock prices and staff shortages have exacerbated the situation.

ANIMAL WELFARE IN COMMERCIAL FISHING

Nicola Randall

Harper Adams University

An estimated 0.9 to 2.5 trillion individual wild finfish are captured annually by commercial fisheries and destined for human or animal consumption.

The World Organisation for Animal Health (OIE) and the European Food standards Agency (EFSA) recommend that farmed fish for human consumption should be stunned before killing, and the stunning method should ensure immediate and irreversible loss of consciousness. Most wild-caught fish that are alive when landed die by asphyxiation (in air or ice) or during processing. This suggests that wild-caught fish may experience significant suffering between the time they are captured and death.

We carried out a review of wild caught fish and the potential for more humane stunning methods. Electrical and percussive humane stunning technology has been developed and implemented in the aquaculture sector for a limited number of species, and the benefits for fish welfare and flesh quality scientifically proven. Whilst there are some examples where humane stunning is practiced in wild-capture fisheries, uptake of humane stunning fisheries faces many challenges Furthermore, the benefits of humane stunning have been established in commercial aquaculture settings and controlled laboratory studies for some species only, and not in wild-capture settings. These challenges are exacerbated by a lack of guidelines and legislation regards wild-fish welfare.

Whilst it is unrealistic to expect that humane stunning will be routinely taken up by all wild-capture fisheries and for all species in the foreseeable future, there may be fishing systems, fish species, and geographical areas where routine uptake is more amenable.