



Humane Slaughter Association Annual Report 2019–2020

Caring beyond the farm gate



www.hsa.org.uk

The Humane Slaughter Association, established in 1911, is an independent charity that works through scientific and technical advances, education and training, towards achieving the highest world-wide standards in food animal welfare during transport, marketing and slaughter.

This report highlights the work undertaken by the charity during the last year, which has been possible due to the continued commitment of its members and donors who have supported the charity through subscriptions, donations and legacies. This support is the very heart and life-blood of the charity and enables us to continue to deliver initiatives which have made a difference to millions of animals – for which we thank you.

The HSA's vision is simple – to improve the welfare of food animals between the farm gate and slaughter around the world. It seeks to do this by:

- Providing technical information and advice on all aspects of animal handling, transport and slaughter.
- Providing training in humane methods of handling and slaughter of livestock.
- Producing educational and technical publications.
- Giving independent advice to governments, other welfare organisations and the food industry.
- Making regular visits to markets and slaughterhouses.
- Providing funding for research projects.
- The development and application of scientific advances.
- Providing grants towards the improvement of animal welfare during transport, marketing and slaughter.

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Welcome to the 2019–20 Annual Report for the HSA

As Chairman, I am always keen to point to the HSA's achievements. This year is no different. We have seen a major milestone for the charity with the announcement of its largest ever programme of research – an award of £1.93 million for research and development to improve the welfare of fish, crustaceans and cephalopods at slaughter, an area of work which has sadly been neglected. This work has the potential to provide crucial, practical knowledge which should allow these animals to be slaughtered humanely. Funding this work has been made possible by the generosity of an anonymous benefactor, to whom we are deeply grateful. You can read more about the work that your donations and support has helped fund throughout this report.

The year has also been one of change and opportunity. In December 2019 we said farewell to our Chief Executive and Scientific Director Dr Robert Hubrecht OBE, who retired after five years of leadership. The Council was delighted to welcome Dr Huw Golledge to the role. Huw has been a member of the Senior Management Team at the HSA since September 2014, when he joined as the Senior Scientific Programme Manager and you can read his first Chief Executive's welcome on page 4.

The HSA has gained an international reputation for being a knowledgeable and practical organisation and, in this capacity, has provided advice to industry and government bodies over the past twelve months, including important input into the All-Party Parliamentary Group for Animal Welfare (APGAW) report entitled *The Future for Small Abattoirs in the UK*. You can read more about our consultation work on pages 14 and 15.

As I write this, the HSA is dealing with the impact of Covid-19 on the activities of the charity. The effects on all types of organisations are profound and likely to be lasting. For example, many of the welfare assessments, training and education work carried out by HSA staff, as well as planned visits in the UK and overseas, are currently in abeyance. However, the HSA is resilient and I am confident that we will continue to work to the benefit of animals despite the inevitable and necessary constraints.

As always, we remain indebted to you, our members and supporters, whose steadfast backing has enabled the work summarised in this report to take place. In these uncertain times, we need your continued support more than ever in order to be able to continue to make a difference. Thank you for placing your confidence and trust in us to continue caring beyond the farm gate.

Alick Simmons BVMS MSc MRCVS
Chairman of Trustees



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Photo credit: H Golledge/HSA

“...if we are to maintain our activities, and indeed to expand them, we will need the continued support of our members and supporters.”

It is a pleasure to write my first introduction to the HSA's annual report. I have taken charge of an organisation at an exciting yet challenging time when it is doing vital work to improve the welfare of millions of animals around the world but, like most others, also faces significant issues as a result of the Covid-19 pandemic.

The first thing I would like to do is pay tribute to my predecessor as CEO, Dr Robert Hubrecht, who led the organisation from 2014. Robert's expertise and diplomacy steered the HSA through many difficult issues which were tackled during his tenure; he will be missed by all at the HSA and many others in the animal welfare community.

In this report for the 2019–20 financial year, you will see a summary of the crucial work we do in providing advice and supporting fundamental scientific research, all with the aim of improving the welfare of food animals 'beyond the farm gate'.

At the end of the 2019–20 year, like all charities, our activities began to be seriously affected by the coronavirus pandemic. We face significant challenges over the coming years, both financial and practical. The immediate effects have already been felt of course; our staff have been working from home since March and we have been unable to attend face-to-face meetings or to undertake our normal programme of welfare visits. I'm sure you will not be surprised to learn that a planned programme of visits to China to liaise with colleagues in the Chinese livestock sector is also on hold for the foreseeable future. However, our staff have worked tirelessly to perform a large part of their work virtually and I would like to use this opportunity to thank them for their adaptability and dedication. As I speak, they are working on providing advice and guidance virtually to those that may need it, as well as exploring ways to deliver training and education remotely, as far afield as China. The rapid uptake of remote working

offers us an unprecedented opportunity to spread our message and I look forward to seeing the results of this over the coming years.

I am particularly excited to see how we can share our knowledge wherever it may be needed. For instance, thanks to your generous response to our Spring Appeal, we are developing guidance on emergency killing for disease control which will be tailored for use in China and translated into Chinese. China has suffered two recent disease outbreaks - African Swine Fever in pigs and Avian Influenza in chickens - which pose significant animal welfare challenges when large numbers of animals must be culled to prevent the spread of these diseases. Once Chinese translations are complete, we will begin work on translations to a number of other languages, which will enable us to offer support to other countries which may benefit from our guidance.

In this report you will also see our ongoing support for fundamental scientific research into more humane treatment of animals undergoing slaughter, including our largest ever research funding into development of slaughter techniques for aquatic species including fish, crustaceans and cephalopods.

Unlike many charities, our financial prudence over the preceding years leaves us well placed to weather the storm, but **if we are to maintain our activities, and indeed expand them, we will need the continued support of our members and supporters.** Please do consider supporting the work we do in any way you can.

Huw Golledge BSc PhD
Chief Executive & Scientific Director

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Training activities, lectures and other initiatives

The HSA offers independent training and advice on animal welfare matters during transport, marketing and at slaughter. The charity is also internationally recognised for its livestock expertise and produces various publications in print, on-line and in video format. HSA technical staff have provided training courses, lectures and talks at a variety of events over the last year. These have included:

- Providing training courses in the use of firearms, captive-bolt and electrical stunning equipment for: the City of London Corporation, IHP Ltd, Covance, Hampshire Countryside Service and the Pirbright Institute.
- Giving eight animal welfare lectures to students at the Universities of Cambridge (Veterinary Science), Newcastle (various), Edinburgh (MSc), Stirling (MSc) and Harper Adams (various).
- Presenting the results of the 2017/18 livestock market survey at the Association of Meat Inspectors (AMI) Seminar, the Veterinary Public Health Association (VPHA) Autumn Conference, the Winterbotham Darby Animal Welfare Day and the Harper Forum.
- Providing advice on the principles of assessing and protecting animal welfare at the time of slaughter and killing to scientists, NGOs, auditors, government vets and industry in The Netherlands, Portugal, Spain, Japan, Hong Kong, Russia and the USA.
- Carrying out animal welfare assessments have been undertaken for: Hy-Line UK Ltd, Dovecote Park Ltd, H G Blake Ltd and Randall Parker Foods Ltd.



Photo credit: HSA



Photo credit: Alexas_FotoPhotoboy

Animal Welfare Advice for Small-Scale and/or Seasonal Processors on the Electrical Stunning and Bleeding of Poultry

In November 2019, as a result of numerous enquiries from existing and prospective producers, the HSA produced guidance aimed at small-scale and/or seasonal poultry producers and processors. Small-scale and seasonal slaughter is subject to animal welfare legislative requirements in a similar way to large-scale, commercial poultry producers and processors. However, in relation to welfare at the time of slaughter, the application of certain requirements, such as licensing, is dependent on the nature and scale of the operation. Small-scale and seasonal slaughter is also subject to additional regulations to those relating to animal welfare at slaughter. These include registration with the environmental health department of the relevant local authority, to ensure compliance with animal health, animal by-product licensing and collection and disposal requirements.

Technical Note No 27, which is in the latest in the series of HSA technical notes, highlights and explains the particular requirements applicable to producers and processors in the UK, but may also be useful to producers elsewhere. It can be downloaded using the following link: www.hsa.org.uk/tn27

Code of Practice for the Disposal of Chicks in Hatcheries

The third edition of this HSA publication was updated last year and is now accessible as a downloadable PDF document on the HSA website using the following link: www.hsa.org.uk/chickcode. The code of practice was revised to bring it into line with current slaughter legislation. It is widely used as a reference by writers of standards, hatchery managers and auditors.

On-line guide to be translated into Chinese

Earlier this year the HSA's Spring Appeal was announced, asking for help to fund the translation of the HSA's on-line guide *On-Farm Killing for Disease Control Purposes*. This document was originally written in English, although the principles of humane killing and biosecurity are universal. China is currently experiencing outbreaks of African Swine Fever virus and Avian Influenza. In situations such as this is, it is imperative that animals are handled well, and killed humanely, on-farm to maintain good welfare standards whilst controlling the spread of disease. The HSA technical staff are working to ensure the document provides relevant and accurate information for Chinese stakeholders. The Chinese version of the on-line guide *On-Farm Killing for Disease Control Purposes* will be available to download free of charge from the Publications section of our website (see www.hsa.org.uk), in due course. We are very grateful for the generous donations of members and supporters which have made this possible.

More Russian translations

In March 2020 the HSA received an enquiry from a representative of an EU-funded project (*Support for Further Sustainable Agriculture and Rural Development in Turkmenistan, SARD III*, in co-operation with the *Ministry of Agriculture and Environment Protection of Turkmenistan*), which resulted in the generous translation into Russian of five HSA publications, to add to the HSA's existing Russian poultry Technical Information Poster. The translated HSA On-line Guides on *Humane Handling of Livestock*, *Transport of Livestock*, *Electrical Stunning of Red Meat Animals*, *Practical Slaughter of Poultry*, and *Emergency Slaughter* will be used to offer guidance to farmers, vets, and slaughterhouse staff on slaughter procedures, including the available methods and equipment for humanely stunning animals. These translations will also be available to download from the HSA website. The HSA thanks SARD III for its generous assistance in producing these translations.

Animal Welfare at Slaughter – Hot Topics 2019

The HSA held its fourth successive seminar for the meat and livestock industry on 9th October 2019 at Jurys Inn, East Midlands Airport. This event covered a number of subjects currently relevant to animal welfare between the farm gate and slaughter. Ten speakers from industry, research and the legislature covered topics including seasonal poultry slaughter, CCTV update, low atmospheric pressure stunning, measuring captive-bolt velocity during use and a novel method for the enhanced neck-dislocation of poultry. Following the presentation of papers, the panel of speakers then took part in a lively hour-long discussion forum. Once again this was a very well-received and successful event: the final attendance being nearly 140 delegates. A high spot in the proceedings was the presentation, by CEO Robert Hubrecht, of the 2019 Humane Slaughter Award to Dr Dorothy McKeegan of the University of Glasgow for her ground-breaking research into the welfare impacts of controlled atmosphere stunning (CAS) and her outstanding and sustained contribution to protecting animal welfare at slaughter or killing (see page 14).

Guidance on the humane killing of neonates

Following the publication of three papers resulting from the research carried out by the University of Bristol with assistance from the HSA, new guidance on the humane killing of neonate lambs, goats and piglets is now available on the HSA website. The guidance comprises a technical leaflet with links to video footage showing the correct application of non-penetrating, captive-bolt equipment for this difficult, but essential, part of animal husbandry. This guidance can be downloaded free of charge at www.hsa.org.uk/neonates.

English Winter Fair

In November 2019 the HSA exhibited at the English Winter Fair, which took place at the Bingley Hall, Stafford. Since the ending of the Royal Smithfield Show, this event is now the premier winter livestock show in England, complementing the Scottish and Welsh Winter Fairs. A steady stream of visitors made its way to the HSA stand, mainly to present the staff with specific questions relating to slaughter. Of particular interest was the HSA's new guidance for seasonal poultry producers and processors. In total, the HSA stand received over 60 visitors during the event. This year's event was cancelled due to the ongoing Covid-19 crisis. The next English Winter Fair is planned for 20th & 21st November 2021.

Planned shows and exhibitions

Covid-19 has led to the cancellation and postponement of many agricultural events, including the Pig and Poultry Fair at which the HSA has been a regular exhibitor since 1988, the Welsh Spring Festival, Royal Welsh Winter Fair and National Sheep Association (NSA) Sheep Event. At present, staff are investigating other virtual events that the HSA can contribute to or attend.

The Scottish Smallholders' Festival on the 24th October 2020, originally due to be held at Forfar market, is now a virtual event and the HSA plans to deliver a presentation and attend the event on-line.

The Pig and Poultry Fair has been rescheduled to the 25th & 26th May 2021 at the National Agricultural and Exhibition Centre, Stoneleigh. Attendance at shows and agricultural events is an important part of the HSA's outreach work and we look forward to receiving visitors to the stand and reconnecting face-to-face with members of the agricultural community in the future.

Exhibitions and events 2019/20

HSA Technical Staff have attended the following events over the last twelve months:

2019

The Association of Meat Inspectors Seminar*, 14th & 15th September
 Veterinary Public Health Association (VPHA) Autumn Meeting* 11th & 12th October
 Association of Independent Meat Suppliers Conference, 26th October
 AFCP Forum, 5th November
 World Horse Welfare Conference, 13th November
 English Winter Fair, 16th & 17th November
 Halal CPD Seminar, 20th November
 East of England Winter Stock Fair, 29th November
 Annual UFAW and HSA Student Scholars' Meeting, 11th December
 BVA Reception, 11th December

2020

Livestock Auctioneers' Association AGM and Dinner, 2nd March
 Winterbotham Darby Research Forum* 5th & 6th March
 UFAW Conference *Recent Advances in Animal Welfare Science VII*, Virtual, 30th June & 1st July
 Wales Government Veterinary Network* 18th, 19th & 20th August (virtual)

*denotes speaker

The HSA is a leading source of support and funding for essential research and other scientific activities aimed at improving the welfare of animals at the time of killing, as well as during transport and marketing. Since the HSA was founded in 1911, scientific and technological developments have resulted in huge improvements in methods for slaughter and killing and, over the decades, improved and scientifically-evaluated methods (many stimulated and supported by the HSA) have been developed for cattle, sheep, pigs, poultry and other species. These advances are continuing and the charity funds essential research and other projects through grants, Research Training Scholarships and the Student/Trainee Scholarship scheme.



Photo credit: Mathias Zamer, Pixabay

A major project which we jointly supported with Defra has recently been completed. Dr Dorothy McKeegan of Glasgow University alongside colleagues from Edinburgh University, Scotland's Rural College and industrial partners, examined whether Low Atmospheric Pressure Stunning (LAPS) might be a more humane alternative to the use of high concentration carbon dioxide (CO₂) which is commonly used to stun pigs and acknowledged to be aversive to them. LAPS stuns animals by gradually reducing the air pressure in a chamber. The final report of the project will be released later in the year and will inform the debate about whether there is a more humane, practical alternative for pig stunning than current methods.

We also offer small grant funding for innovative research projects. In 2019–20 we awarded funding for two research projects:

Drs Michael Toscano and Thom Gent (Universities of Bern and Zurich, Switzerland) are investigating the aversiveness of LAPS for chickens in an attempt to confirm the method is less aversive than the use of CO₂ to stun chickens. Although some evidence already suggests LAPS is more humane than CO₂, independent verification of this research is important to confirm and extend the original findings. In particular, this study aims to closely examine whether chickens experience the desire to escape the LAPS chamber before they lose consciousness, a key indicator of whether they experience negative emotions during the procedure.

We also provided support for Dr Troy Gibson of the Royal Veterinary College to perform early proof-of-concept tests for a novel method for electrical stunning of poultry, which could potentially offer significant welfare advantages over existing waterbath-based methods.

Both grants demonstrate our commitment to supporting fundamental research which has the possibility to develop or validate more humane ways of stunning animals. Your support allows us to continue this crucial work which we hope will eventually lead to developments with the potential to improve the welfare of many millions of animals.

HSA Travel Awards

HSA Travel Awards allow researchers to undertake research or study overseas. In March 2019, we supported Dr Claire White of University of Bristol to travel to New Zealand to examine a system which allows the production of meat which is Halal-compliant, whilst also being humanely stunned prior to slaughter. Many Muslims and Islamic authorities accept that meat which comes from animals stunned prior to slaughter is Halal, if it can be shown the initial stun would not have killed the animal. The animals are then killed prior to regaining consciousness. This means that in terms of animal welfare there is no difference between stunned Halal meat and conventionally-slaughtered meat.

In New Zealand a very limited number of animals are allowed to show the first signs of recovery, following stunning, to provide reassurance that the stunning method is 'recoverable' and thus, Halal-compliant. Following her visit, Claire has been exploring the possibility of implementing such a method in the UK, where it could potentially lead to a reduction in the number of animals slaughtered without prior stunning.

A stakeholder team, including Lord Trees, the National Farmers Union, the Food Standards Agency and Agriculture and Horticulture Development Board representatives, working together with Dr White, has continued to make progress towards implementation of the protocol in the UK. Dr White has also been engaging with Halal certification bodies, Muslim scholars and industry representatives to facilitate technical and theological discussions about available stunning and slaughter methods.

Special Travel Award 2017 - Update

In March 2017, the HSA was pleased to announce a travel award to Ellie Wigham, a PhD student at the University of Bristol, for her project *Analysis of the use of CCTV data to monitor and improve slaughter plant welfare in the US – what can we learn from our American friends?* Through the Special Travel Award, Ellie travelled to the USA to explore the use of Remote Video Auditing (RVA) and CCTV in improving animal welfare at slaughter. She visited the headquarters of Arrowsight Ltd, an RVA company which independently audits CCTV footage from over 125 North American slaughter plants, and a large beef processing facility which uses Arrowsight's services as well as running its own, sophisticated internal CCTV auditing operation.

The main conclusions of the project are that RVA has some advantages over internal CCTV monitoring; it offers a valuable 'check-the-checker' service, removes any bias associated with internal auditing, and technology allows for audits to be conducted in a shorter period of time than if using live footage. Arrowsight provides a reporting service that allows welfare data to be collected and trended, and for information between sister plants to be compared. It should be noted, however, that internal staff have a more intimate understanding of individual plant layout and standard operating procedures which may allow for subtle changes in operator behaviour to be recognised.

Alongside providing the UK and wider European industry with information regarding the use of RVA, Dr Wigham is preparing to use the knowledge gained during these visits to develop industry guidance on the use of CCTV data to implement welfare improvement in slaughter plants. Following the completion of her PhD, Dr Wigham is now a lecturer at the School of Veterinary Medicine, University of Glasgow.

£1.93 million awarded to improve aquatic animal welfare

Worldwide, billions of finfish, crustaceans and cephalopods are slaughtered every year, many by methods likely to be inhumane. Yet scientific evidence indicates these animals might be able to suffer, and some countries' legislation protects them. In March 2020, the HSA awarded over £1.9 million to three consortia that will develop methods intended to humanely stun aquatic species on an industrial scale. They will also assess the methods' effects on meat quality and their commercial viability. The consortia involve scientists, equipment manufacturers and supermarkets, and the funds will support a PhD studentship, postdoctoral scholarships and research fellowships.

£721,580 Humane stunning of finfish: demonstrate, validate and facilitate market uptake. Ace Aquatec Ltd is collaborating with Silsoe Livestock Systems Ltd, Steve Wotton Ltd, the Universities of Bristol and Stirling and the Institute of Agrifood Research and Technology, Catalonia (IRTA). Their three-year project aims to implement in-water electrical stunning in aquaculture, where the humane qualities of current killing methods could be improved. The team will focus on inducing immediate unconsciousness in Nile tilapia, *Pangasius*, gilthead sea bream, yellowtail and possibly carp, and will attempt to record brain activity after stunning (these data are lacking for some species) using non-invasive methods. A novel type of electrical stunning, SPUC (single pulse ultra-high current), will also be considered for further improving fish welfare at slaughter.

£500,000 Stunning and killing the commercial species of crabs and lobsters. Dr Bjørn Roth at Nofima AS in Norway is collaborating with the Institute of Marine Research and Optimar AS, on a four-year project for electrically stunning decapod crustaceans of the northern Atlantic. The welfare impact of the method will be assessed using electrical impedance, physiology, behaviour and neurology, to evaluate post-stunning responsiveness, loss of consciousness and death. The findings will enable development of a series of different slaughter systems. The team aims to induce immediate unconsciousness in snow, red king and edible crab, Norway and European lobster, and possibly American lobster. Potentially, the equipment could be used in processing plants and onboard fishing vessels.

£710,082 Bringing humane slaughtering to cephalopod molluscs: an integrative approach. Dr Giovanna Ponte at the Association for Cephalopod Research in Italy is collaborating with 12 institutions (in Italy, UK, Norway, Denmark, Portugal, Austria, Germany and Mexico) over five years. They will determine neurological, behavioural and physiological differences between alert, unconscious or dead animals, and will design and assess the humane qualities and efficiency of electrical and mechanical stunning methods. They will study common cuttlefish, common squid, little squid, common octopus and Mexican four-eyed octopus. This work may also advance the humane euthanasia of cephalopods in aquaria and in laboratories.



Photo credit: Edmundaphoto, Pixabay

Update on the HSA 2015 Research Training Scholars

In 2015 the HSA awarded two scholarships to support work leading to a PhD and practical improvements at slaughter.

Carlos Rebelo (Royal Veterinary College) is finishing the last chapters of his thesis on electrical stunning of turkeys. He evaluated existing small-scale equipment and made refinements to optimise stunning.

In 2019 Awal Fuseini (University of Bristol) submitted his thesis on the development and practical implementation of Single Pulse Ultra-High Current (SPUC) stunning for humane and Halal-compliant slaughter of cattle.

Cutting the necks of conscious vertebrate animals is likely to cause severe pain. So, in many countries, legislation requires farmed animals to be humanely stunned prior to bleeding, except for animals intended as food for persons of certain religions. Many Muslims regard some potentially-reversible stunning methods, particularly pre-slaughter application of electricity to the head only, as compatible with Halal “on condition that it does not kill the animal before the ritual cut is made”, Awal wrote in his thesis. He noted: “global demand for meat slaughtered in strict compliance with religious beliefs is very large and ... projected to grow.” However, “there is currently no suitable head-only electrical stunning system for Halal beef within the EU.” To address this, Awal furthered research into a novel type of electrical stunning, SPUC.

SPUC induces opening of pores in brain cell membranes, which is thought to cause immediate loss of consciousness. Compared to conventional electrical stunning, SPUC may improve welfare by increasing the duration of unconsciousness (reducing the risk of recovery) and reducing convulsions (allowing safer, quicker bleeding and perhaps higher-quality meat). Awal applied electric fields to cadaver heads and brain cells *in-vitro*, to estimate the optimum electrical parameters. Then the project team designed and tested electronics in a prototype stunner, to verify its capability of restraining cattle and delivering the intended currents. Adjustments (to increase conductivity, focus current flow, and improve circuit protection) took time, partly due to custom-made components. Awal had to submit his thesis before the completion of some objectives, which aim to determine the electrical operating range of a SPUC stunner. The entire team plans to complete this work soon.

Awal’s thesis also reported stakeholders’ perceptions. In the UK, 95% of Islamic scholars (“the main decision makers with regard to the approval or rejection of stunning”) and 53% of Halal consumers surveyed would eat meat from pre-slaughter-stunned animals if the stun did not cause death. If this SPUC stunner is demonstrated to induce only unconsciousness, it might be approved by Halal certification bodies, reducing the number of cattle slaughtered without stunning. During his PhD Awal published six papers related to Halal slaughter of cattle, plus another five on Halal production.

SPUC could also improve welfare during stunning for secular consumption, eg fresh-water trout (see page 11).

Funding to investigate the potential for stunning of wild-caught fish

In November 2019, as part of its ongoing support to encourage the development and adoption of humane slaughter methods for fish, the HSA announced further grant funding of up to £200,000 to investigate the potential for improving the welfare at slaughter of fish caught in the wild. Billions of fish are caught for food in the wild every year and very few are humanely stunned.

An award of £166,000 has now been made to Dr Nicola Randall, Director of the Centre for Evidence-Based Agriculture at Harper Adams University, Newport, Shropshire, to carry out a global systematic review into humane capture and slaughter of fish caught on a commercial scale in the wild for food. Dr Randall and her team will collate and analyse existing information and data across a broad spectrum: from methods of capture and killing to location and number of fish caught. The results, together with expert evaluation, will be used to inform a feasibility analysis of which fishing system, species of fish, geographical fishing area, etc is most likely to be suitable to the adoption of commercially-viable stunning of wild-caught fish. The research will also consider the sustainability of such methods (economic, environmental, ethical and social considerations including practicality).



Photo credit: Alexas, FotoFest

A more humane alternative to manual neck dislocation?

The ultimate goal of schemes such as the Research Training Scholarships (RTS) is to make real-world improvements in animal welfare and to support early-career scientists interested in humane slaughter. A case in point is the 2011 scholarship which was awarded to Dr Jess Martin of the University of Edinburgh.

Working at SRUC and the University of Glasgow during her HSA-funded PhD, Jess examined various methods of mechanical neck dislocation for poultry species, using various behavioural and physiological techniques to confirm which were most humane. Her work has now led to the development of a commercially available device – the Livetec Nex®, for dislocating the necks of poultry. Introduced in July 2019, the device is claimed to offer a higher welfare alternative to manual cervical dislocation. The Nex has now been certified as compliant with Red Tractor standards and was recently awarded New Product of the Year by Poultry Business Magazine. The device is also endorsed by at least one major UK supermarket, which encourages its use throughout its poultry supply chain. Further research is needed to fully understand the welfare benefits of the device across all poultry species, but it is a promising and welcome potential improvement to the welfare of large numbers of birds.

Since completing her PhD Jess has gone on to become a Senior Lecturer in Physiology and Animal Welfare at the University of Edinburgh and has worked on a number of projects related to humane killing of animals, including a large project on the use of Low Atmospheric Pressure Stunning (LAPS) for pigs which was jointly funded by the HSA and Defra – see page 9.

Jess says: “The Humane Slaughter Association has been a constant support to both me and my research in trying to improve the welfare of animals at the time of on-farm killing and slaughter. This is a challenging but highly important area to work in and I could not be more grateful to the HSA, not only for their support of me, but also for their overall ongoing efforts to investigate and provide guidelines on high welfare methods to protect farm animals at such a crucial stage of their production lives.”

2018 Travel Award - Update

In October 2018 Dr Troy Gibson of the Royal Veterinary College received an award to facilitate exchange visits and scientific collaboration between the UK and Brazil to study the humane stunning of donkeys as well as on-farm killing for non-viable piglets.

Brazilian PhD student Filipe Dalla Costa has been working alongside Troy as part of the project and, last year, they came to the HSA to present an update on the progress of the projects. Since then, a further scientific paper has been published entitled *Evaluation of Blunt Force Trauma for Culling Neonatal Piglets On-Farm*. On pig farms, non-viable neonatal piglets are culled to alleviate or prevent suffering or negative welfare outcomes. The study concluded that blunt force trauma applied in this study was sufficiently effective to induce extensive brain damage resulting in irreversible insensibility in neonate piglets of less than 1.17 kg, but recommended that blunt force trauma should not be promoted over more reliable and repeatable cull methods such as captive-bolt devices.

In December 2019, Dr Gibson travelled to Brazil with MRes student Alicia Godsell-Ryan to work with Embrapa Swine and Poultry on a poultry stunning/slaughter laboratory-based project. They conducted research in stunned and non-stunned chicken and duck Halal slaughter plants, and collected EEG/behavioural/carcass damage data from pigs during electrical stunning in a commercial abattoir. Papers are currently being written on these studies and a final trip to Brazil is planned once Covid-19 restrictions are lifted.

Recognition for Glasgow scientist Dr Dorothy McKeegan

The 2019 Humane Slaughter Award was presented to Dr Dorothy McKeegan from the University of Glasgow for her ground-breaking research into the welfare impacts of Controlled Atmosphere Stunning (CAS) and her outstanding and sustained contribution to protecting animal welfare at slaughter or killing.

Dr McKeegan has had an exceptional career and pioneered the first comprehensive research into the welfare impacts of CAS. Her findings had a substantial and international influence on poultry welfare, directly informing the choice of permitted gas mixtures for the slaughter of poultry in the EU. Most recently, Dr McKeegan was invited to lead an international research team carrying out ground-breaking welfare assessment of Low Atmospheric Pressure Stunning (LAPS) in poultry and was instrumental in producing an application to the European Commission to allow the use of LAPS in poultry, which was added to the EU Directive 2018/723 (amendment to 1099/2009) in May 2018. This was the first new stunning method to successfully navigate the EFSA guidelines and approval process since its inception in 2010.

As well as her extensive research career, Dr McKeegan has been at the forefront of educating future generations in animal welfare and ethics, both in under- and post-graduate study, including the HSA's first RTS scholar Jess Martin. Professor Malcolm Mitchell, one of the people who nominated Dr McKeegan for the award, said: *"She is an inspirational scientist, in a demanding area of welfare research, motivating and training the next generation of scientists to work in this challenging field."*

When asked about her hopes for the future in terms of animal welfare improvements, Dr McKeegan said: *"My work aims to improve welfare conditions at slaughter. Poultry are especially challenging given the very large numbers of birds involved and their low individual value, but we have a responsibility to protect their welfare. I hope we can continue to make progress towards the goal of a good death for all farmed animals."*

HSA input to BVA and APGAW reports

As reported last year, the HSA has played a major part in discussions which will lead to the British Veterinary Association (BVA) publishing its position on the welfare of animals at the time of slaughter. Unfortunately, this publication has been delayed by the fallout from Covid-19. However, the All-Party Parliamentary Group for Animal Welfare (APGAW) did manage to publish its report entitled *The Future for Small Abattoirs in the UK*, to which the HSA also made important contributions. Among the report's findings were:

- Small abattoirs contribute to the public goods of animal welfare and environmental benefits.
- They benefit animal welfare with shorter journeys and provide provenance to enhance consumer choice.
- An important contribution of small abattoirs to animal welfare is their role in emergency slaughter for injured or ill livestock.
- An indirect benefit to animal welfare of mobile/pop-up slaughter facilities could be to reduce the risk of illegal slaughter of animals on-farm, or in unlicensed establishments.



Further details can be found using the following link: apgaw.org/2020/06/07/apgaw-publishes-report-on-small-abattoirs/

Mobile abattoir initiative

In January 2020, the HSA's Technical Director was invited to meet with the two principal directors of a project to build and operate a mobile, or pop-up, abattoir based in the Cotswolds. The HSA was heavily involved in a previous initiative to establish a similar operation in the 1990s. The driving force behind this project is Lady Jane Parker, who runs Fir Farm Ltd near Stow-on-the-Wold. Fir Farm produces extensively reared, exclusively grass-fed beef and lamb from British native breeds. The HSA has provided advice on potential handling and lairage systems to be used in conjunction with the abattoir and a letter of support highlighting the animal welfare advantages concomitant with shorter journeys and smaller throughputs.

Consultations

The HSA is one of the NGOs regularly asked by Government and other organisations, including industry, to scrutinize and comment on various subjects; the main ones being new legislation, proposed changes to existing legislation and welfare at slaughter standards. Responding to these consultations is some of the most important work undertaken by the HSA, albeit low-profile compared to other efforts. It gives the HSA opportunities to reach, inform and influence decision-makers which, in turn, may result in real improvements to animal welfare between the farm gate and slaughter. During the last twelve months the HSA has submitted written responses to the following consultations:

- Scottish Government *Guidance on the Welfare of Pigs*.
- The APGAW enquiry and report on small abattoirs.
- Evaluation of the *EU Strategy for the Protection and Welfare of Animals 2012-2015*.
- Defra's review of the *Welfare of Animals at the Time of Killing (England) Regulations 2015*.
- OIE Terrestrial Animal Health Standard Commission – chapters on welfare at slaughter.

ADMINISTRATION AND FINANCE

Finance and Accounts

The summarised accounts set out overleaf have been extracted from the full accounts of the Humane Slaughter Association and have been prepared in accordance with the Charities Act 2011, which were approved by the Trustees and signed on its behalf on 22nd July 2020.

In July 2017 the HSA were successful in being awarded two generous grants from the American organisation Open Philanthropy.

A third grant of £200,000, received in March 2019 will be used to fund a scoping exercise looking at the complexities in the development of more humane methods of killing wild-caught fish. A further £230,915 was received to support the administration and technical staffing of the charity.

These substantial grants have been treated as a designated fund, and can be seen clearly in the summarised accounts.

The full accounts have been audited and the auditors' opinion was without qualification. The accounts will be filed with the Charity Commission after the Annual General Meeting on 21st September 2020.

Full accounts, and the audit report can be obtained from the Charity Secretary, The Old School, Brewhouse Hill, Wheathampstead, Herts AL4 8AN.

Independent Auditors' Statement to the Trustees of the HSA

We have examined the summarised financial statements that comprise the summary statement of financial activities and summary balance sheet.

Respective Responsibilities of the Trustees and Auditors You are responsible as the Trustees for the preparation of the summarised financial statements. We have agreed to report to you our opinion on the summarised financial statements' consistency with the financial statements, on which we reported to you on 22nd July 2020.

Basis of Opinion We have carried out the procedures we consider necessary to ascertain whether the summarised financial statements are consistent with the full financial statements from which they have been prepared.

Opinion In our opinion the summarised financial statements are consistent with the full financial statements for the year ended 31st March 2020.



22nd July 2020

S Munday FCA (Senior Statutory Auditor)

for and on behalf of UHY Hacker Young (East Limited) is eligible for appointment as auditor by virtue of its eligibility for appointment as auditor of a company under section 1212 of the Companies Act 2006

HSA Summary of Financial Activity Year Ended 31st March 2020

	Unrestricted Funds	Designated Funds	Total	Total
	2019/2020	2019/2020	2019/2020	2018/19
	£	£	£	£
Incoming Resources				
Voluntary Income	148,865	-	148,865	224,786
Charitable Activities	27,148	-	27,148	453,042
Investment Income	129,415	18,551	147,966	145,576
Total Incoming Resources	305,428	18,551	323,979	823,404
Resources Expended				
Costs of Generating Funds	53,740	-	53,740	54,883
Charitable Activities	242,247	1,931,663	2,173,910	255,377
Other Resources Expended	78,992	20,244	99,236	83,098
Total Resources Expended	374,979	1,951,907	2,326,886	393,358
Net Operational incoming/(outgoing) resources for the year	(69,551)	(1,933,356)	(2,002,907)	430,046
Other Recognised Gains & Losses:				
Net Gain on Property Revaluation	27,498	-	27,498	-
Net Realised Gain on Investments	97,115	-	97,115	269,803
Unrealised Gains (losses) on investments	(641,489)	-	(641,489)	(68,274)
Net Movement in Funds	(586,427)	(1,933,356)	(2,519,783)	631,575
Balance Brought Forward	5,149,649	2,772,359	7,922,008	7,290,433
Balances Carried Forward	4,563,222	839,003	5,402,225	7,922,008

The summarised accounts were approved by the Trustees and signed on their behalf on the 22nd July 2020.



A G Simmons BVMS MSc MRCVS
Chairman

The summarised accounts set out here have been extracted from the full accounts and have been prepared in accordance with the Charities Act 2011

HSA Balance Sheet as at 31st March 2020

	Unrestricted Funds	Designated Funds	Total	Total
	2019/2020	2019/2020	2019/2020	2018/19
	£	£	£	£
Fixed Assets				
Tangible Fixed Assets	209,819	-	209,819	182,648
Investments	4,037,407	-	4,037,407	4,606,221
	4,247,226	-	4,247,226	4,788,869
Current Assets				
Debtors	61,738	-	61,738	57,800
Term deposits at bank	388,824	2,770,666	3,159,490	3,232,137
Cash at Bank and in Hand	10,787	-	10,787	13,414
	461,349	2,770,666	3,232,015	3,303,351
Current Liabilities				
Creditors: Amounts Falling Due within One Year	(145,353)	(482,916)	(628,269)	(170,212)
Net Current Assets	315,996	2,287,750	2,603,746	3,133,139
Creditors: Amounts Falling Due after more than One Year	-	(1,448,747)	(1,448,747)	-
Net Assets	4,563,222	839,003	5,402,225	7,922,008
Funds				
Unrestricted	4,563,222	-	4,563,222	5,149,649
Designated	-	839,003	839,003	2,772,359
	4,563,222	839,003	5,402,225	7,922,008



C L McCann BSc ACA
Hon Treasurer

Annual General Meeting 2019

The AGM was held at the Old School, Brewhouse Hill, Wheathampstead on 16th October 2019. As in previous years this was held in conjunction with the Annual General Meeting of the Universities Federation for Animal Welfare (UFAW). The members of UFAW Council also act as Trustees for the HSA. Joint meetings are held to save time and money.

The meeting agreed the Minutes of the AGM of 2018 and resolved to receive the Accounts and Auditor's Report for the year ended 31st March 2019. Questions on the Report of the year's work were answered by the officials present and the meeting resolved that the Report and Accounts be received.

It was resolved that UHY Hacker Young (East) Ltd, Registered Auditors, be appointed as auditors to HSA and their remuneration should be fixed by Council.

Professor R Bennett, and Dr B North, stood down under the rules regarding rotation, both offered themselves for re-election, and were re-elected. Following the resignation of Ms C Reid, Dr A Enticknap, a new candidate was proposed, Dr Enticknap's nomination had the full support of Council, and she was duly elected.

Notice of Annual General Meeting 2020

The Annual General Meeting of the Humane Slaughter Association will be held at 12.30pm on Monday 21st September 2020. This meeting will be held as a video conference, in line with Covid-19 restrictions, and in line with the Corporate Insolvency and Governance Act 2020. The formal notice and agenda have been sent to all members and are available from the Secretary at the registered office.

Vice-Presidents

Professor R S Anderson BVMS PhD MRCVS
 Professor P M Biggs CBE DSc DVM FRCPath FSB FRS FRCVS
 L Brown MBE BVSc BA PhD FSB MBA FRCVS
 Professor P H Holmes OBE BVMS PhD FRCVS FRSE
 B R Howard BVMS PhD MRCVS
 Professor J E T Jones PhD MRCVS FRCPath
 J H Pratt BVM&S DVSM FRCVS
 G D Sales BSc PhD AKC MSB DipTCDHE

Trustees

Chairman

A G Simmons BVMS MSc MRCVS ^{1 2 3}

Vice-Chairman

M Radford OBE LLB ¹

Honorary Treasurer

C McCann BSc ACA ^{1 3}

S Abeyesinghe BSc MSc PhD
 Professor R M Bennett BSc MSc PhD ^{1 2}
 J Downes BVSc MRCVS
 A Enticknap PhD ² (from 16.10.2019)
 Professor A Nolan OBE MVB DipECVA DipECVPT DVA MRCVS
 B North MBA MSc PhD ¹
 A Olsson MSc PhD ³
 D Pritchard BSc BVetMed MPH MRCVS ²
 C Reid (to 16.10.2019)
 D R Sargan MA PhD ^{2 3}

Staff

Chief Executive & Scientific Director
 Robert Hubrecht (to 31.12.2019)
 Huw Golledge BSc PhD (from 01.01.2020)

Charity Secretary

Jane Moorman

Technical Director

Charles Mason HND MInstM CF ARAgS

Senior Scientific Programme Manager

Huw Golledge (to 31.12.2019)

Technical Officers

Jade Spence BSc (Hons) MSc AMRSB
 Susan Richmond BSc MSc PhD

Fundraising/Communications Manager

Tracey Woods MCIPR

Office staff

Samantha Griffin
 Wendy L Goodwin
 Tina Langford

¹ Member of the Finance Panel

² Member of the Fundraising Panel

³ Member of the Grant Panel

If you no longer wish to receive information about the charity's activities or support our work, then please contact the HSA office. (Members should be aware that notification of future Annual General Meetings is provided in the Annual Report).

LEGAL AND ADMINISTRATIVE INFORMATION

Registered Auditors

UHY Hacker Young (East) Ltd, PO Box 501, The Nexus Building, Broadway, Letchworth Garden City, Hertfordshire, SG6 9BL

Bankers

HSBC Bank plc, 31 Chequer Street, St Albans, Herts, AL1 4YN

Solicitors

Withers LLP, 16 Old Bailey, London, EC4M 7EG

Wilsons, Summerlock Approach, Salisbury, Wiltshire, SP2 7RJ

Investment Advisers

Smith & Williamson Investment Managers, 25 Moorgate, London, EC2V 5NS

Offices

The Old School, Brewhouse Hill, Wheathampstead, Herts, AL4 8AN

Tel+44(0)1582 831919

Fax +44(0)1582 831414

Email info@hsa.org.uk

www.hsa.org.uk



Humane Slaughter Association

The Old School, Brewhouse Hill, Wheathampstead, Herts. AL4 8AN, United Kingdom

Tel: +44(0)1582 831919 • Fax: +44(0)1582 831414

Email: info@hsa.org.uk • www.hsa.org.uk

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