


HSA International Conference: Livestock Welfare during Transport, Marketing & Slaughter

 30 June & 1 July 2022

 Edinburgh, UK

 www.hsa.org.uk/edinburgh22

 #HSA2022



Scientific Programme

Welcome to the UFAW International Conference 2022

We are delighted to welcome you to Edinburgh for the Humane Slaughter Association (HSA)'s International Conference 2022: Livestock Welfare during Transport, Marketing and Slaughter.

Our first major conference in six years will give attendees the opportunity to present their work, and to network and socialise in person, something which we have all undoubtedly missed during the COVID-19 pandemic. For those colleagues who are unable to travel to Edinburgh, we are pleased to be able to livestream the talks and make them available 'on demand' online after the event.

The programme features talks covering the welfare of animals during transport and the pre-slaughter period, the welfare of animals during stunning, slaughter and killing as well as novel developments in these areas. Presentations cover a wide range of species, with two sessions focussing on the welfare of aquatic species at slaughter, including crustaceans and cephalopods. With both decapod crustaceans and cephalopod molluscs having been very recently recognised as sentient in UK law, it is important that we know how to protect their welfare.

We are delighted to be able to share the very latest developments in humane slaughter and transport with colleagues. It is heartening to see so much excellent research dedicated to improving the welfare of food animals 'beyond the farm gate'.

We would like to thank all those who are contributing to the meeting, as speakers, poster presenters and chairs, and the delegates from the 15 countries who are attending. We hope that you have an informative and enjoyable meeting.

We would also like to thank Sam Griffin, Jane Moorman and Tina Langford at the HSA office for working tirelessly behind the scenes to ensure the event runs smoothly.

Finally, please remember to fill in the short, online feedback form after the event and if you have any specific comments, please contact events@hsa.org.uk.

Huw Golledge, Birte Nielsen, Susan Richmond, Charlie Mason and Luisa Dormer
HSA Organising Committee



Scientific Programme:
Talks

Timetable and Speaker Abstracts



Timetable of event

Thursday 30th June

All timings are GMT+1 / UTC+1/ BST

08.00 - 08.50 Registration

08.50 - 09.00 **Welcome and Introduction:** Huw Golledge (*HSA*)

09.00 - 10.35 **Session One: Welfare during stunning, slaughter and killing**

09.00 - 09.35 **Keynote Speaker: Meeting the needs of Consumers in an evolving market**
Will Jackson (*Agriculture and Horticulture Development Board (AHDB), UK*)

09.35 - 09.50 **AI4Animals: Using AI to significantly increase the effectiveness of camera surveillance in slaughterhouses**
Carlos Morales (*Deloitte, Netherlands*)

09.50 - 10.05 **Movements after captive-bolt stunning in cattle in relation to possible animal and process related impact factors**
Karen von Holleben (*BSI Schwarzenbek, Germany*)

10.05 - 10.20 **A systematic review of equid welfare at slaughter: existing evidence and evaluation of animal welfare indicators**
Kate Fletcher (*Royal Veterinary College, UK*)

10.20 - 10.35 **Inter-observer repeatability of indicators of consciousness in broiler chickens after waterbath stunning**
Alexandra Contreras-Jodar (*Institute of Agrifood Research and Technology (IRTA), Catalonia, Spain*)

10.35 - 11.00 **Break**

11.00 - 12.30 **Session Two: Aquaculture Part One**

11.00 - 11.40 **Keynote Speaker: Do crustaceans feel pain, and should they be treated with care at slaughter?**
Bob Elwood (*Queen's University Belfast, UK*)

11.40 - 12.00 **Bringing humane slaughtering to cephalopod molluscs: an integrative approach**
Giovanna Ponte (*Association for Cephalopod Research 'CephRes', Italy*)

12.00 - 12.10 **Welfare of saltwater fish in Hong Kong wet markets**
Desiree Hung (*City University of Hong Kong*)

12.10 - 12.30 **In-water electrical stunning for humane slaughter of farmed fin fish**
Jimmy F Turnbull (*University of Stirling, UK*)

12.30 - 13.30 **Lunch**

MOVEMENTS AFTER CAPTIVE-BOLT STUNNING IN CATTLE IN RELATION TO POSSIBLE ANIMAL AND PROCESS RELATED IMPACT FACTORS

Anika Lücking and Karen von Holleben

bsi Schwarzenbek, Germany
info@bsi-schwarzenbek.de

Since ban of pithing in the EU for slaughter of cattle and small ruminants from 2001 onwards, movements in cattle after captive bolt stunning are more evident. Consequently sticking may be delayed and stunning effect may be questioned (e.g. in the context of video surveillance). Our aim was to describe and categorize movements with regard to what can be expected and potential impact factors, e.g. animal related, incl. reduced stunning effect, and process related, incl. key parameters of the stunners.

In 2020/21 we investigated 2891 cattle (1484 bulls, 909 cows, 498 heifers) mostly Black Holstein (42%), Flecked (19%) and crossbreeds (20%) during routine slaughter in 5 plants (line speed 50-72/h), all except one using close head restraint. 2160 cattle were stunned by pneumatic guns (Jarvis USSS-21; EFA VB315), 731 by cartridge fired (Schermer KS, KR, KL). Av. stun-to-chest-stick time was 45s (38–51s). We documented stunning effect incl. 2nd shots, and examined position and angle of shots by introducing a stick into the skull hole. Movements were recorded by action cams (Apeman®A100) up to at least 4 min. after sticking and analysed during the process intervals “landing”, “hoisting”, “sticking”, “1st”, “2nd”, “3rd” and “4th min. of bleeding”. We defined the following categories:

- Hind leg-Kicking (KHL);
- Twitching (TW): >1 front or hind leg move uncontrolled/asynchronously;
- Body arched to side (BS);
- Body arched ventrally (BV);
- Front leg moves: bending (BFL), lifting (LFL);
- Stretching of unshackled hind leg (SHL).

At landing more cows (49%) and heifers (37%) moved than bulls (19%), predominantly showing KHL and TW (mostly intense = frequency >1/s, >5s long), shackling often being impeded. At hoisting more females (H52%, C45%) moved than bulls (40%), showing mainly moderate KHL and TW, BS, BFL or SHL. At sticking mostly KHL, BV and BFL/LFL were seen in 76% bulls, 77% heifers and 47% cows. During bleeding less cows’(62%) legs moved than heifers’(78%) or bulls’(70%). Most frequently, movements occurred at sticking and min.1 of bleeding, decreasing markedly thereafter, last ones seen in min.8 after sticking. Only 6.6% cattle showed no movements at all. Statistical analysis showed increasing effects on movement frequency/intensity for cows at landing and for Black Holstein during early process intervals and decreasing effects for slaughter weight, Brown Swiss or Flecked.

Regarding key parameters, cattle moved more and more intensely if shot by cartridge driven guns. Bolt extension length (range 8-12cm) had a slightly decreasing effect, whereas bolt velocity possibly increased. No relation between movements and stunning effect was found, but only 10 cattle (0.35%) were judged insufficiently stunned and 9 doubtful, two of the former might have kept or regained consciousness for a few seconds. Possible reasons were deviation >3cm in shooting position or >15° from 90° angle to the forehead or lack of kinetic energy. Although position/angle deviated only rarely, we got indications for a thereby increasing effect on movements. The project is supported by funds of the Federal Ministry of Food and Agriculture (BMEL) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE) under the innovation support programme.

[Back](#)