

WOAH Collaborative Centre Reports Activities 2025

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CENTRE INFORMATION

*Title of WOAH Collaborating Centre	Animal Welfare Science and Bioethical Analysis; the David Bayvel Consortium comprises:
*Address of WOAH Collaborating Centre	Ministry for Primary Industries
*Tel:	+6448940370
*E-mail address:	WOAH.CC.AW@mpi.govt.nz
Website:	www.mpi.govt.nz
*Name Director of Institute (Responsible Official):	Dr. Carolyn Guy
*Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):	Dr Carolyn Guy, Director of Animal Health & Welfare, Ministry for Primary Industries, New Zealand
*Name of the writer:	Esther Newman

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
Animal welfare (true)	Renewal of the Australian Animal Welfare Strategy Consultancy services to government and non-government organisations	Professor Alan Tilbrook of The University of Queensland is a member of the Strategy Advisory Group and provided strategy development advice for the renewal of the Australian Animal Welfare Strategy. He continues to provide this advice. Caroline Lee is a member of the Animal Welfare Advisory Council and a member of the RSPCA Animal Welfare and Ethics Committee.

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Consideration of WOAH standards in the	Sharing of relevant animal welfare standards of the Terrestrial	Animal Production

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development of Australian Animal Welfare Standards and Guidelines	Animal Health Code.
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3. In exercising your activities, have you identified any regulatory research needs* relevant for WOA?H?

No

4. Did your Collaborating Centre maintain a network with other WOA?H Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOA?H CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WOA?H Animal Welfare Global Forum - WOA?H Collaborating Centres	Paris, France	Asia y el Pacífico	Participation ...

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOA?H Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOA?H CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
AW Global Network of Collaborating Centres	Virtual	Asia and Pacific	to facilitate better collaboration and coordination between the animal welfare collaborating centres, and provide the WOA?H and its Members with increased support.

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOA?H?

Yes

Name of expert	Kind of consultancy	Subject
Lauren Hemsworth	WOA?H-ICFAW joint project	2. The development of e-Modules focused on two Chapters of the WOA?H Terrestrial Animal Health Code addressing animal welfare: • Chapter 7.6 on the killing of animals for disease control purposes: aims to support the implementation of animal welfare measures by the national Veterinary Services on the operations the killing of pigs for disease purposes. • Chapter 7.13 on animal welfare and pig production systems: aims to support the implementation of animal welfare measures by the national Veterinary Services on the operations of breeding, rearing and management of pigs (Sus scrofa) for the production and sale of pigs and pig meat. • The development of the e-Modules for Chapters 7.6 and 7.13 is underway, and expected to be completed in April

2026. For each Chapter, two e-Modules will be developed: one at a central level (e.g., policy maker role) and one at a provincial and district level and border posts (e.g., operations and implementation roles).

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes

Hosted delegates (two veterinarians and two animal welfare inspectors) from Singapore's National Parks Board on a week-long study tour. The purpose of the visit was to better understand New Zealand's animal welfare landscape and system operations, with a particular focus on NZ's approach to animal welfare investigations, the VADE model and how it is used to make enforcement decisions.

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOA, to personnel from WOA Members?

Yes

a) Technical visit : 1

b) Seminars : 2

c) Hands-on training courses: 2

d) Internships (>1 month) : 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
B	Implementing WOA Standards for good animal welfare in the Pacific	Fiji, New Caledonia, Palau, Papua New Guinea, Samoa, Cook Islands, and Tonga.	34
C	Training of Trainers (ToT) Workshop on Chapter 7.6 Humane Killing of Animals for Disease Control Purposes	Vietnam, Laos, Cambodia and Thailand	20
C	Training of Trainers (ToT) Workshop on Chapter 7.13 Animal Welfare in Pig Production Systems	Vietnam, Laos, Cambodia and Thailand	20
B	WOAH Regional Workshop for Animal Welfare Focal Points, -Lauren Hemsworth provided a pre-recorded presentation on behalf of the AWSC/ David Bayvel CC	Japan	50
A	Technical workshops to discuss forensic AW investigation, RNZSPCA role in enforcement, VADE model enforcement, cat population management.	Singapore	4

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOA?

No

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOA that may be useful to Members of WOA

a) Articles published in peer-reviewed journals:

- Alfirevich, S., H. Keshavarzi, V. Sandilands and A. Small (2025). "Behavior of day-old turkey poults following routine treatments, with and without meloxicam administration, changes in a phased manner." *Poultry Science* 104(11): 105707. DOI: 10.1016/j.psj.2025.105707
- Amann, M., Waiblinger, S., Hemsworth, P. H., Lidfors, L., Weißenborn, J., & Lürzel, S. (2025). Tactile stimulation by humans: Do pigs prefer scratching or stroking?. *Applied Animal Behaviour Science*, 106768.
- Babington, S., L. Ding, A. J. Tilbrook, S. K. Maloney, and D. Blache. 2025a. A comparison of normalization methods for the expression of genes associated with oxidative stress in the liver of sheep. *NMC Genomic Data*
- Babington, S., L. Ding, A. J. Tilbrook, S. K. Maloney, E. A. Kho, J. N. Fernandes, and D. Blache. 2025b. Identifying biomarkers of sheep welfare using a metabolic discrepancy model. *Scientific Reports* 15doi: <https://www.nature.com/articles/s41598-025-97993-2>
- Babington, S., A. J. Tilbrook, M. S. K., J. N. Fernandes, T. Crowley, M., L. Ding, A. H. Fox, S. Zhang, E. A. Kho, D. Cozzolino, T. J. Mahony, and D. Blache. 2024. Finding biomarkers of experience in animals. *Journal of Animal Science and Biotechnology* 15doi: <https://jasbsci.biomedcentral.com/articles/10.1186/s40104-023-00989-z>
<https://jasbsci.biomedcentral.com/articles/10.1186/s40104-023-00989-z>
- Beale, D. J., T. V. Nguyen, T. Dyal, J. van de Kamp, A. Bissett, L. Hewitt and A. H. Small (2025). "Use of fecal microbiome to understand the impact of housing conditions on metabolic stress responses in farmed saltwater crocodiles (*Crocodylus porosus*)." *Frontiers in Veterinary Science* 12. DOI: 10.3389/fvets.2025.1496946
- Blache, D., E. A. Kho, A. J. Tilbrook, K. Tomas, K. J. Plush, D. D'Souza, S. K. Maloney, and D. Cozzolino. 2024. Near or mid-infra-red spectroscopy of the prefrontal cortex to identify previous stressful experience in an animal. *Scientific Reports* 14doi: <https://doi.org/10.1038/s41598-024-79171-y>
- Campbell, Bari, Cohen-Barnhouse, & Regmi. Rearing enrichment affects perching behaviour and bone strength in pullets and in free-range hens varying in range use patterns. *Veterinary and Animal Science*, 29, 100461. <https://doi.org/10.1016/j.vas.2025.100461>
- Campbell, Coman, Lee, Schmoelzl, & Rombenso. The shrimp welfare dilemma: A scientific perspective on eyestalk ablation. *Reviews in Aquaculture*, 17, e70082. <https://doi.org/10.1111/raq.70082>
- Campbell & Lee. A review of behavioral testing in decapod shrimp (*Caridea*) and prawns (*Dendrobranchiata*) with applications for welfare assessment in aquaculture. *PeerJ*, 13(2):e18883. doi: 10.7717/peerj.18883
- Chowdhury, P., Hemsworth, P. H., Fisher, A. D., Rice, M., Galea, R. Y., Taylor, P. S., & Stevenson, M. (2025). Risk factors for smothering in three commercial free-range layer poultry farms, Australia 2019 to 2022. *Preventive Veterinary Medicine*, 106568.
- Cobb, M. L., Jiménez, A. G., & Dreschel, N. A. (2025). Beyond Cortisol! Physiological indicators of welfare for dogs: Deficits, misunderstandings and opportunities. *Journal of Applied Animal Welfare Science*, 1-30.
- Farr, Cowled, Rodrigues, Rootes, Campbell, Lee, Stewart & Marini. Circulating microRNA profiles are associated with acute pain and stress in castrated and tail docked lambs. *Veterinary and Animal Science*, 28, 100445. <https://doi.org/10.1016/j.vas.2025.100445>
- Field, L., Hemsworth, L., Jongman, E., McGill, D., & Verdon, M. (2025). Early lactation performance of primiparous dairy heifers reared with differing levels of early-life complexity. *Animal Production Science*, 65(11), AN24333.
- Hemsworth, P. H. & Hemsworth, L. M. (2025). Human–small ruminant relationships. In *Small Ruminant Welfare, Production and Sustainability* (pp. 311-330). Academic Press.
- Hewitt, L and Small, A 2025, An independent animal welfare assessment of mass destruction methods for pigs on-farm, report prepared for the Department of Agriculture, Fisheries and Forestry, Canberra, November. CC BY 4.0.
- Hewitt, L 2025, An independent animal welfare assessment of mass destruction methods for poultry on-farm, report prepared for the Department of Agriculture, Fisheries and Forestry, Canberra, August. CC BY 4.0.
- Jahan, A. A., Dao, H. T., Rana, M. S., Taylor, P. S., Crowley, T. M., & Moss, A. F. (2025). Effects of AM/PM feeding on behaviour, range use and welfare indicators of free-range laying hens. *Animal Production Science*, 65(7).
- Keshavarzi, H., J. McNally, J. Bishop and A. Small "Reducing noise associated with restraint box operation can facilitate animal handling in cattle abattoirs." *New Zealand Veterinary Journal*: 1-9. DOI: 10.1080/00480169.2025.2542370
- Lucas, M. E., L. Hemsworth, K. L. Butler, R. S. Morrison, A. J. Tilbrook, J. N. Marchant, J. L. Rault, R. Y. Galea, and P. H. Hemsworth. 2024a. Early human contact and housing for pigs - part 2: resilience to routine husbandry practices. *Animal* 18:101165. doi: <https://doi.org/10.1016/j.animal.2024.101165>

Lucas, M. E., L. Hemsworth, K. L. Butler, R. S. Morrison, A. J. Tilbrook, J. N. Marchant, J. L. Rault, R. Y. Galea, and P. H. Hemsworth. 2024b. Early human contact and housing for pigs – part 3: ability to cope with the environment. *Animal* 18(6):101166. doi: <https://doi.org/10.1016/j.animal.2024.101166>

Lucas, M. E., L. Hemsworth, K. L. Butler, R. S. Morrison, A. J. Tilbrook, J. N. Marchant, J. L. Rault, R. Y. Galea, and P. H. Hemsworth. 2024c. Early human contact and housing for pigs – part 1: responses to humans, novelty and isolation. *Animal* 18(6):101164. doi: <https://doi.org/10.1016/j.animal.2024.101164>

Lucas, M. E., Wotherspoon, L., & Sofra, A. (2025). This little piggy got cold: door flaps on outdoor farrowing huts improve piglet survival during winter in Australia. *Applied Animal Behaviour Science*, 106795.

Marini, D., T. Kalinowski and A. Small (2025). "Efficacy of a single central injection of lignocaine at the scrotal neck on the behavioural response of lambs to castration." *Veterinary Anaesthesia and Analgesia* 52(1): 83-89. DOI: 10.1016/j.vaa.2024.09.006

Ospina Rios, S.L.; Lee, C.; Andrewartha, S.J.; Verdon, M (2025) The effect of pasture-based dam-rearing on attention bias after disbudding in dairy calves. *Animal Production Science* 65, AN24282. doi:10.1071/AN24282

Small, A., I. Jenson, B. Fiszon, P. L. Neindre, A. Phillips, D. McLean, J. McLean, T. Kalinowski and J. Ralph (2025). "Tissue integrity impacts of application of 160–200 kJ of 915 MHz microwave energy, using the DTS: Diathermic Syncope® system, to the forehead of cattle, and alignment with the requirements of religious slaughter markets." *Veterinary and Animal Science* 29: 100464. DOI: 10.1016/j.vas.2025.100464

Small, A., I. Jenson, A. Phillips, D. McLean, T. Kalinowski and J. Ralph (2025). "Cattle recover completely from unconsciousness induced by controlled application of 150–180 kJ of 915 MHz microwave energy to the forehead." *Veterinary and Animal Science* 29: 100466. DOI: 10.1016/j.vas.2025.100466

Spiliopoulos, O., C. Brown, P. Hilder, A. Tilbrook, and K. Descovich. 2025. *The Path to Resilience: Improving Welfare in Aquaculture Through Physical Exercise and Stressor Predictability Training*. *Reviews in Aquaculture*

Staveley, L. M., Plush, K., Lines, D. S., Hemsworth, L. M., D'Souza, D., & van Barneveld, R. J. (2025). Stockperson attitudes towards Maternity Rings and farrowing crates. *Frontiers in Veterinary Science*, 12, 1579263.

Taylor, P. S., Forder, R., & Morgan, N. (2025). Meat chicken breeder stress: causes, effects, and mitigation strategies. *World's Poultry Science Journal*, 81(1), 35-64.

Tomas, K., J. Savaglia, R. J. E. Hewitt, K. J. Plush, D. N. D'Souza, K. L. Butler, P. H. Hemsworth, and A. J. Tilbrook. 2025. Effects of maternal contact and positive human contact during lactation on pork quality: Positive human contact to piglets during lactation improves pork loin muscle pH. *Meat Science* 219:109650. doi: DOI:10.1016/j.meatsci.2024.109650

Tomas, K., J. Savaglia, K. J. Plush, D. N. D'Souza, K. L. Butler, P. H. Hemsworth, and A. J. Tilbrook. 2024a. Maternal contact and positive human interactions during lactation impact on pig stress resilience post-weaning. *Applied Animal Behaviour Science* 276doi: <https://doi.org/10.1016/j.applanim.2024.106326>

Tomas, K., J. Savaglia, K. J. Plush, D. N. D'Souza, K. L. Butler, P. H. Hemsworth, and A. J. Tilbrook. 2024b. Maternal contact and positive human interactions during lactation impacts piglet performance and behaviour during lactation. *Frontiers in Animal Science* 4doi: <https://doi.org/10.3389/fanim.2023.1289518>

Wu, F., A. Tilbrook, S. K. Maloney, and D. Blache. 2025. The intricate relationship between stress and animal welfare: from historical perspective to new avenues. *Biological Reviews* doi: doi: 10.1111/brv.70057

b) International conferences:

7

WOAH Global Forum, May 2025

34th WOAH Asia Pacific Regional Conference

WOAH Animal Welfare Global Forum, 13-14 November

Global Panel on International Animal Welfare – North American Meat Institute Animal Care and Handling Conference. Denver, CO. 13-14 May 2025.

Campbell, DLM: Australian perspective – Does free-range automatically ensure high animal welfare levels? Pacific Rim Poultry Science Association (PSA) Conference, Macau, 13-16 Oct.

Campbell, DLM: What shrimp and prawn welfare assessments can learn from agriculture. ACIG (Aquaculture Common Issues Groups), 'Welfare of farmed seafood in the UK supply chain'. Online presentation, June 13.

Caroline Lee. An animal welfare assessment framework for virtual fencing. Animal welfare and use of technology Seminar. Animal Welfare Network Aotearoa. Auckland, March 2025

c) National conferences:

3

Campbell et al.: Computer vision in lairage: development and application of automated behavioural assessment of cattle. NAWRDE Forum, Melbourne, June 17.

Campbell et al. Comparison of individual female broodstock prawn behaviours following eyestalk ablation relative to control animals. Australian Prawn Farmers Association Symposium. Brisbane, Aug 6-8.

Alison Small. Diathermic Syncope: updates and progress. NAWRDE Forum, Melbourne, June 17.

d) Other (Provide website address or link to appropriate information):

2

Animal Welfare Solutions Ltd. (2025). Livestock crate design required to improve animal welfare during transport. Ministry for Primary Industries.
<https://www.mpi.govt.nz/dmsdocument/67374/direct>

Campbell, D.L.M. (2025). Cognitive capacities in poultry. J. Simões (ed.), Encyclopedia of Livestock Medicine for Large Animal and Poultry Production.
https://doi.org/10.1007/978-3-031-52133-1_362-1

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

12. Additional comments regarding your report: