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ANIMAL WELFARE SCIENCE UPDATE

Issue 94 | July 2026

The aim of the animal welfare science update is to showcase recent animal welfare science publications that are relevant to the work of the RSPCA. The update provides summaries of some of the scientific papers and reports viewed by the RSPCA Australia office in the past quarter.

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RSPCA Australia **Sybil Emslie Animal Law Scholarship 2026** *10th Anniversary*

SYBIL EMSLIE ANIMAL LAW SCHOLARSHIP 2026

For the last 10 years, the Sybil Emslie Animal Law Scholarship has celebrated Sybil Emslie's life-long commitment to the care and protection of animals by encouraging legal scholarship and practice dedicated to advancing animal welfare.

The $2,500 annual scholarship will be awarded to an animal lawyer or law student for contribution to animal law literature, and a commitment to the practice of animal law through active and substantial engagement with animal law and animal protection organisations and initiatives. The Scholarship is administered by RSPCA Australia with funds contributed by Sybil Emslie's family and other donors.

ELIGIBILITY CRITERIA

Applicants must:

1. Be either enrolled in an undergraduate law degree, or enrolled or aspiring to enrol in a higher research degree within an Australian law school, or be a practising lawyer within an Australian jurisdiction.
2. Demonstrate their commitment to the practice of animal law through active and substantial engagement with animal law and animal protection organisations and initiatives.
3. Demonstrate how their research or practising activity will benefit the development and application of animal law and animal protection more broadly.

For more details visit
https://www.rspca.org.au/about/scholarships/

COMPANION ANIMALS

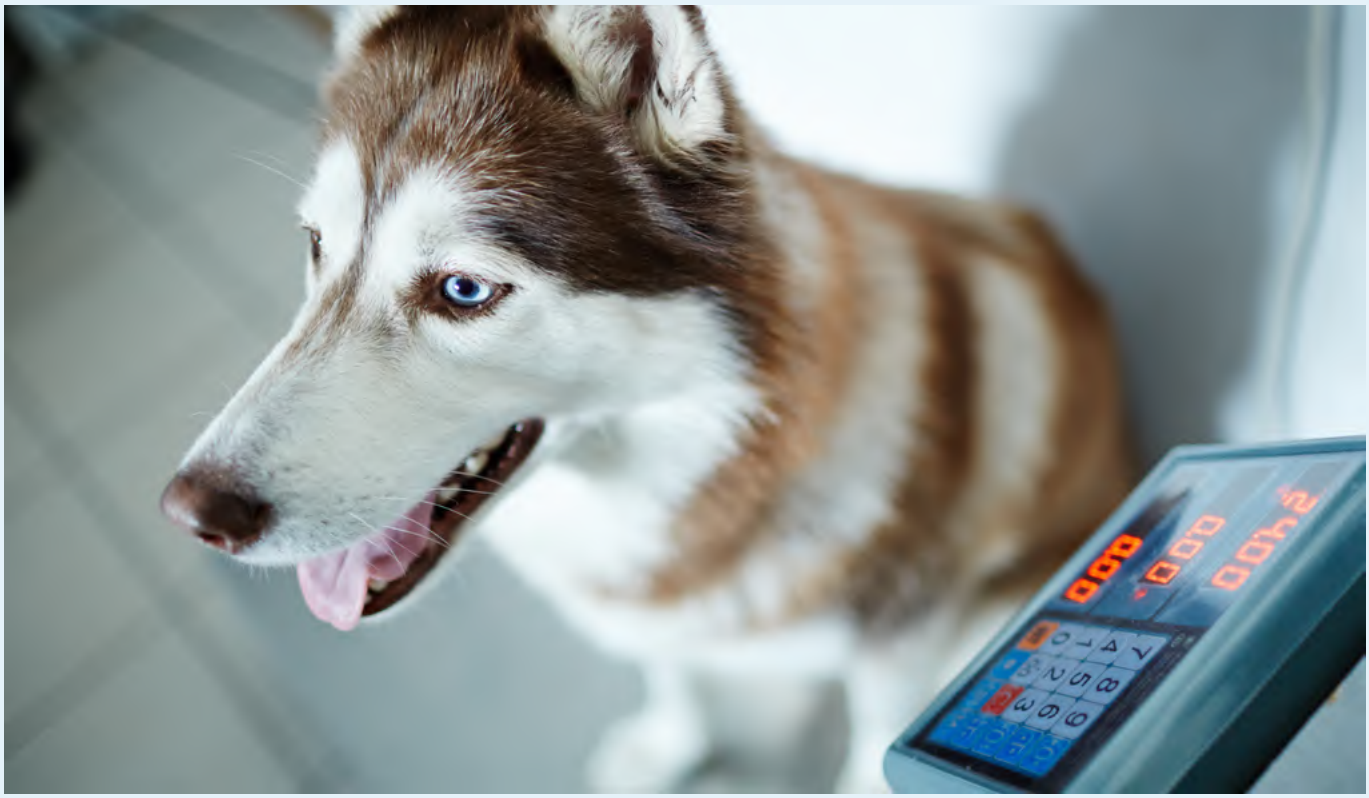
Validating a new quality of life assessment tool for cats in a shelter setting

Animal shelters can be highly stressful environments, especially on arrival. To ensure positive quality of life for animals in their care, shelters require accurate and reliable evaluation tools to assess welfare and stress. Current welfare assessments for cats are limited by their reliance on subjective behavioural metrics, can be inconsistent with other welfare measures, and may lack the ability to detect both positive and negative emotional states. To address this, the American Society for the Prevention of Cruelty to Animals® developed the Psychological Quality of Life (PQOL) assessment tool.

This paper aimed to validate the PQOL as a reliable measure of cat welfare during shelter acclimation. Assessments of 50 cats surrendered to a shelter in Texas were made using the PQOL alongside the Cat Stress Score, an existing, validated assessment tool. Two independent raters assessed cats twice a day, every second day shortly after arrival (normally the second, fourth, and sixth day in the shelter). The completed assessments were analysed for inter-rater reliability (consistency and agreement between the two raters) and intra-rater reliability (consistency within a single rater's scoring over multiple assessments).

Results showed PQOL and Cat Stress Score scores were strongly and positively correlated, indicating agreement between the two tools. While inter-rater reliability and intra-rater reliability were good for both tools, inter-rater reliability was generally slightly stronger for the Cat Stress Score than the overall PQOL score. Intra-rater reliability scores were mostly high for both tools but were affected by observation day. Individual PQOL elements varied widely in their inter-rater and intra-rater reliabilities. These results suggest the overall PQOL score is useful for monitoring welfare in shelter cats, though further research is required to strengthen validity of the measures in different shelter environments and beyond the initial acclimation period. Given the improvement of PQOL intra-rater reliability over time, familiarity with the tool and animals may be an important consideration for use.

Lamon TK, Slater MR, Daigle CL, Meneses XCA, Budke CM (2026) **A comparative analysis of the cat stress score and the novel psychological quality of life assessment tool for cats in a shelter setting**. *Appl Anim Beh Sci 297:106925*



A Five Domains perspective on overweight and obesity in dogs and cats

Animals with too little, or too much body fat have an increased risk of health problems and reduced wellbeing, therefore maintaining a healthy weight is considered a key part of preventative animal health care. Overweight and obesity, determined through body condition scoring, is common in both dogs and cats and has been associated with hormonal imbalances, insulin resistance, inflammation, joint and musculoskeletal pain, as well as higher risks during anaesthesia. Because of this, dogs and cats with these conditions may have reduced quality and length of life. Current veterinary literature primarily characterises overweight and obesity as nutritional disorders to be managed through caloric intake and output. However, this approach has had limited success in reducing weight outside of research settings.

This narrative review aimed to expand concepts around overweight and obesity to consider broader welfare and behavioural implications for intervention approaches. The paper applied the Five Domains model for animal welfare to explore impacts and management strategies, focusing on nutrition, health, environment, behaviour, and mental state. Contributing factors and negative impacts of overweight and obesity were identified across all five domains. Findings suggest reducing weight through diet alone is unlikely to succeed without considering animal and caregiver behaviour and may unintentionally compromise the wellbeing of both.

The authors suggest a range of practical strategies are available to veterinarians to assist owners in understanding and managing their animal's weight. In clinic, these include the recording of body condition at all consultations, allowing time for evaluation and follow up, and taking complete dietary histories including behaviours associated with eating, activity and lifestyle. To support at-home management, veterinarians can provide tailored diet recommendations, allow for treat-feeding within plans, and outline strategies, such as enrichment, to slow eating speeds and reduce begging behaviour. Caregiver expectations should also be managed in regards to food-seeking behaviours and realistic weight changes. Other recommendations included feeding smaller meals more frequently and adjusting strategies for multi-animal households.

Quinn R, Quain A (2026) **Overweight and obesity in dogs and cats: An exploration of animal welfare and behaviour impacts, and recommendations for management in veterinary primary care**. *Animals 16(8):1204*

Exploring homeless children's experiences with companion and other animals

Homelessness is a complex issue that can affect both adults and children, and create significant emotional and social challenges for those who experience it. Companion animals can contribute additional layers to the complexities of navigating homelessness. Companion animals have been associated with both positive and negative outcomes, for example reduced stress and loneliness, decreased access to housing and public transport, and stigma around whether animals are adequately cared for. Research suggests that interactions with companion animals can contribute to children's psychological, social, and physical wellbeing. Companion animals may therefore provide important support for children during periods of homelessness, however, there has been little research, to date, on the experiences and perspectives of younger children.

This paper explored homeless children's experiences with animals through weekly research activities designed to generate conversation. Participants included 24 children aged 5-14 years living in a homeless shelter with a 'no pets' policy. Activities involved discussions about "rainbows" (joys) and "clouds" (hardships), outdoor play, therapy dog visitations, and drawing. Qualitative content analysis was applied to identify relevant themes within children's experiences.

Findings highlighted the importance of animals in the lived experiences of children and how they understand home, family and self. Children described deriving emotional support and comfort from animals not only through interactions, but also memories, dreams and hopes for reunion or future companions. Intertwined conceptualisations of companion animals as family members, part of and constituting 'home', and animals as reflections of themself were demonstrated through children's art and conversations. Children also expressed feelings of grief and loss associated with separation from their companion animals and feelings of distress about being unable to live with, or care for, them. The authors suggest that targeted strategies and policies are needed to reduce barriers to animal companionship in shelters, and for support that addresses the impacts of companion animal separation, loss and grief, which may be overlooked in the face of other losses connected to homelessness.

Tardif-Williams CY, Raby R, Alegria E, Oppong F (2026) Exploring homeless children's experiences with companion and other animals. Anthrozoös 39(3):369-387

Breed-legislated dogs have longer shelter stays and reduced adoption outcomes

Breed-specific legislation (BSL) regulates ownership of dog breeds perceived to pose a risk to public health and safety. However, breed is a poor predictor of dog risk, and research suggests breed-specific bans do not improve public safety. 'Pit bull' dogs are often targeted within BSL, however 'pit bull' is an umbrella term that describes dogs with similar physical traits and visual assessment based on these traits have been shown to be unreliable for breed identification.

BSL policies mean dogs from listed breeds may be at increased risk of euthanasia or longer lengths of stay if surrendered to an animal shelter, even if otherwise medically and behaviourally healthy. Shelters commonly have high populations of mixed-breed dogs and rely on visual assessment for breed identification of animals without a known history. This means BSL policies may disproportionately disadvantage 'pit bull' breeds and other similar dogs based on subjective interpretations of their physical appearance.

A retrospective cohort study was conducted in a 'managed admission' animal shelter located in a region of the USA with BSL. Outcomes and length of stay for 118 'pit bull'-type dogs were compared to 764 dogs of other, non-listed breeds. Retrospective data from all of 2022 were analysed for both live outcomes, such as a return to caregiver or adoption, and other outcomes, including euthanasia.

Results showed that live outcomes were similar between the two groups once the cohorts were matched by weight. Euthanasia rates for aggression were not statistically different between the groups but dogs of non-listed breeds were more likely to be euthanased for health reasons. However, 'pitbull'-type dogs experienced significantly longer stays in the shelter and were less likely to be adopted compared to other, similarly sized, dogs. These findings suggest that dogs targeted by BSL should be considered an at-risk group within shelter populations.

Walker SK, Powell L, Berliner EA (2026) **A retrospective study of canine outcomes and length of stay in a Midwestern shelter subject to breed-specific legislation**. *J Shelt Med Comm Anim Health 5(1):146*

Early post-adoption experiences of dog and cat adopters

In the post-adoption period, it is common for owners to experience challenges as their new companion animal adjusts to their home. Research on these challenges can inform strategies that effectively support owners, strengthen animal welfare and the human-animal bond, and improve adoption outcomes by reducing the number of animals returned to shelters. Previous studies suggest more than half of adopters have at least one behavioural or health concern early in the post-adoption period, however more research on this topic is needed across different participant groups and geographic regions.

A survey was conducted of 22,571 adopters to evaluate early post-adoption outcomes for dogs and cats. Animals were adopted from 112 animal shelters and foster-based rescues located across 40 states within the USA. Questionnaires were electronically distributed to adopters on days one, seven, and thirty after adoption using a shelter-specific platform with built in survey tools that integrates with shelter records and provides support for adopters transitioning animals into new homes. Questions explored general satisfaction levels, specific behaviours, veterinary care, and microchip registration.

Results showed over 60% of adopters had completed microchip registration by the end of week 1 and more than half had attended a first veterinary visit by day 30. While more than 94% of adopters rated their experience positively at all survey timepoints, around 80% of dog adopters and 50% of cat adopters also reported at least one challenge. For dogs, common challenges reported in the day 30 survey included house soiling (32%), play biting (34%), separation distress/ anxiety (24%), and leash pulling (28%). Challenges were more varied for cats but included fear or hiding behaviour (14% on day 30), introduction to existing pets (9%), situation specific anxiety (9%); destructive behaviour (8%) and urinating and/or defecating outside the litter tray (5%). These findings suggest that general satisfaction questions may not help to identify specific issues or welfare concerns but also that post-adoption satisfaction can be robust to challenges that arise during this period. However, as only adopters who retained their animal were included in the study, findings may not fully represent the experiences of adopters, especially those who return their animal.

Slater MR, Weiss E, Levy JK, Greenberg M (2026) **Shelter to home: Surveys of early post-adoption experiences with more than 22,000 dog and cat adopters**. *J Shelt Med Comm Anim Health 5(1):158*

Allogrooming in cats

Allogrooming is a social behaviour where one animal grooms another. This behaviour has been associated with improved hygiene, reduced parasitic load, stress reduction and increased social stability within animal groups. In felines, allogrooming involves licking, orally manipulating or chewing the fur of another cat's head or body. Previous research in cats is polarised between explanations of allogrooming as either a social formation tool or a mechanism for redirected aggression. However, neither hypothesis has been empirically well-established.

A survey and observational study were conducted to investigate the social functions of feline allogrooming. Behaviour was assessed for 53 pairs of healthy, adult cats using opportunistically collected video recorded under a standardised protocol. Video analysis used a 23-behaviour ethogram that had been previously developed and validated. The analysis compared allogrooming with self-grooming in terms of the body regions targeted, and explored how allogrooming related to co-occurring, preceding or subsequent behaviour.

Findings suggest that allogrooming is a dynamic behaviour that serves multiple social functions. Two key contexts were identified in which allogrooming occurs (1) social tension and (2) bonding and affiliation, suggesting that allogrooming may fulfil different functions depending on the social interaction. For cats seeking mutual and long-lasting contact, allogrooming may demonstrate and maintain social bonding. In this context, allogrooming presented with synchronised body postures, was preceded by mutual contact seeking, and was sometimes followed by wrestling and play. During social tension allogrooming may function to resolve or reduce conflict. In this context, cats were commonly observed to show asymmetric body postures (e.g. one cat leaning over the other), displacement behaviours such as lip licking and head shaking, or aggressive behaviours.

These results highlight that broader contextual information is important for understanding the social functions of allogrooming and that allogrooming on its own should not be used to infer that cats are socially bonded.

Van Belle MJR, Moons CPH, Mills DS, Broeckx BJG, Tuyttens FAM, Kmecová NG (2026) **Unravelling feline social dynamics - A video-based observational study on allogrooming in domestic cats**. *Appl Anim Beh Sci301:107038*

Exploring public knowledge of dog law in the UK

Dogs are one of the world's most common pets and rates of dog ownership continue to rise. As dogs commonly go into public spaces, their presence and behaviour can impact not only their caregivers but also other people and animals, including wildlife. Legislation is used to manage and prevent dog-related conflict and provide protection for groups that may be negatively affected. The efficacy of legislation depends on how well it is complied with. Compliance is largely achieved through enforcement and punishment of breaches, and by pre-emptively shaping public behaviour through improved knowledge of legal responsibilities. Recent shifts in societal perceptions regarding the role of companion animals have resulted in dogs being increasingly considered as family members while, sometimes simultaneously, as pests or potential dangers in public spaces. These perceptions may shape community views around dog-related legislation with implications for compliance behaviour.

A nationally representative survey of 1758 United Kingdom (UK) residents was used to examine public knowledge of laws currently in force across the UK, nation-specific laws only in force in one of the four UK nations, and hypothetical laws that were not in force anywhere within the UK. Twenty-two law items were included in total, with ten of these being hypothetical. Participant demographic information was also collected including current and previous dog ownership status.

Participants were asked to identify each law item as true or false. Only two laws were correctly categorised by more than 80% of participants, which was pre-determined as the threshold for adequate public legal knowledge. These two laws were currently in force across the UK and related to the ownership of restricted breeds and fines associated with dog fouling in public. Correct response rates varied widely across the law items and reached as low as 5% for a hypothetical law, derived from German legislation, which stated it is illegal to train animals using significant pain, distress, or harm. Results indicate the UK public has insufficient knowledge of legal responsibilities relating to dogs, which is likely to affect compliance with dog-related laws. Findings also suggest there are existing gaps in public expectations, particularly for younger participants, for how current UK law protects dog welfare.

Weir SA, Kessler SE, Andrews, CP (2026) **Exploring public knowledge of dog law in the UK: Evidence of poor legal knowledge in a nationally representative sample**. *Animals 16(10):1463*

FARMED ANIMALS

Australian public attitudes towards early life killing of surplus dairy calves

In dairy farming systems, calves are generally separated from cows shortly after birth to maximise saleable milk. The majority of females remain as replacements while "surplus" calves are raised for meat, killed at birth, or slaughtered at 5+ days old. Early life killing of surplus calves is widely regarded as unpalatable to the general public and therefore a threat to the dairy industry's social license to operate. To align with public expectations, several countries have made commitments to ending early life killing. However, alternatives such as raising calves within lot feeding systems may be equally unacceptable to the public, creating a complex challenge for dairy farmers.

This study aimed to generate insights into public perceptions of different systems for addressing early life killing. A representative sample of 1000 Australians completed an online survey on their attitudes towards the dairy industry and a given scenario. Participants received information about early killing and then were randomly presented with one of four treatments: (1) (a) presence or (b) absence of an industry commitment to discontinue early life killing; and (2) raising surplus calves to 18 months in either (a) a pasture grazing or (b) a feedlot system.

Participants responded more positively towards scenarios featuring pasture access. No significant difference was observed towards scenarios with an industry commitment to end early life killing compared to those without. Qualitative analysis revealed participant attitudes towards farmers were generally positive. However, participant attitudes towards supermarkets and multinational companies were consistently negative. Responses to questions about raising and killing animals for food revealed a common tension between participants not wishing to harm animals and their desire to consume meat. Findings suggest alternative systems without access to pasture may be unpalatable to the public. The authors suggest industry commitments are unlikely to change public sentiment unless effort is made to align industry practices with public values.

Bolton SE, Sirovica LV, von Keyserlingk MAG (2026) **When is the problem truly "solved"? Australian public attitudes toward future scenarios addressing early life killing of surplus dairy calves**. *J Dairy Sci 109(5):5347-5355*

Odourised straw as olfactory enrichment in pigs shows increased behavioural welfare indicators

An enriched environment that promotes species-typical behaviours and provides mental stimulation is important for animal welfare. Effective enrichment can be challenging in commercial pig production due to costs and practicality. Straw is a cost-effective enrichment commonly used in pig pens that has been shown to be effective at reducing stress behaviours such as tail and ear biting in pigs. However, large amounts of straw may result in clogging of slurry systems. An alternative solution may be to improve the enriching qualities of smaller amounts of straw.

This Swedish study tested whether applying odours to straw could enhance its enriching properties. Clinical welfare scores and videos were taken for 1600 pigs assigned to four treatments or an unfilmed control. In treatment 1, odourised straw was provided in a rack with the odour changing weekly; in treatment 2, odour changed daily on weekdays; in treatment 3, odourless straw was provided in a rack; and in treatment 4, on the floor (empty rack). Control pens had straw on the floor and no rack. Odourised treatments used lavender, aniseed, ginger, thyme, or pine essential oils, while mineral oil was used in the odourless treatment. Videos were analysed for straw-engagement duration, relative interaction with straw versus other pen items, and positive welfare behaviours including play, rubbing and rolling.

Results showed no difference in clinical welfare scores (body soiling, tail and ear damage) between treatments; however, overall low incidence of damaging behaviours in the study population as a whole may have limited the ability to detect treatment-related differences. While odourised straw did not affect clinical welfare scores, it did significantly prolong straw engagement and increase positive behavioural welfare indicators such as locomotor and social play, and rubbing and rolling. These findings suggest odourised straw may be a promising enrichment strategy for enhancing pig welfare in commercial production systems.

Rørvang MV, Stenfelt J, Schild SL, Grut R, Chan CW, Rautiainen HM, Ketner M, Wallenbeck A, Valros A, Nielsen BL (2026) **Olfactory enrichment - effects of odorised straw on exploratory behaviour, straw engagement and play in finishing pigs**. *animal 20(6):101843*

Animal welfare is human economic welfare

Animal welfare has important implications for human economic welfare. The majority of animals in human care are domesticated, and this has significant economic implications. Animal welfare management directly affects productivity, product quality and resource efficiency, and influences costs associated with disease, antibiotic use, and animal replacement. Traditionally, economic calculations associated with animal welfare focused on the cost of caring for animals weighed against the revenue from their use. A common argument has been that improving animal welfare increases costs, because it typically involves changes to buildings, management or infrastructure. However, limited research exists into the true costs and benefits of welfare-centred management practices.

This book chapter explores how animal welfare is defined and measured, synthesising literature from behavioural science and established frameworks such as Welfare Quality® and the Five Domains model. The chapter considers how welfare indicators could be used within economic thinking to inform policies that benefit both animals and the economy through animal-based measures, welfare-adjusted life-year metrics, and welfare footprint approaches. It then demonstrates how animal welfare connects to wider issues including sustainability goals, antimicrobial resistance, zoonotic disease risk, biodiversity and frameworks such as One Health and One Welfare.

Findings demonstrate close connections between animal welfare and human economic welfare, sustainability, and global health. Animals with better welfare are sick less often, need fewer antibiotics, and tend to remain productive for longer, reducing veterinary and treatment costs, increasing lifetime productivity, and lowering animal contributions to antimicrobial resistance. Improving animal welfare also reduces the conditions that give rise to zoonotic disease, supports more sustainable use of resources, and can improve human livelihoods, particularly in communities reliant on working animals. The author concludes that future policies should regard animal welfare not as a constraint, but as a multiplier of long-term value.

Keeling LJ (2026) **Animal welfare is human economic welfare**. *In: Batini N (eds) The Economics of Non-Human Animals: Revaluing Life for a Liveable Planet. Natural Resource Management and Policy, vol 63. Springer Nature, Switzerland, pp 63-73*

Current analgesic practice may not adequately cover pain following disbudding in calves

Disbudding is the removal of a calf's horn bud before it attaches to the skull, preventing the horn development, which may pose safety risks to other animals and handlers. Regardless of the method used, disbudding is painful and typically involves local anaesthetic to prevent pain during, and analgesic to control pain after, the procedure. Previous studies using conditioned place aversion (where animals make associations between an affective experience (e.g. pain) and the environment it was experienced within) show calves prefer locations associated with additional pain control after disbudding, indicating pain relief was at least somewhat effective. However, it is unknown whether analgesic sufficiently covers pain in the hours and days following the procedure.

This UK study examined whether calves still found disbudding aversive when provided with multi-modal pain relief, using conditioned place aversion paradigms across two experiments. In experiment 1, calves were disbudded in their home pen and conditioned in a separate compartment for six hours, so that conditioning only involved post-operative pain. In experiment 2, disbudding and conditioning occurred inside the compartment, meaning conditioning included both procedural pain and post-operative pain. A control treatment exposed calves to a compartment for the same duration without undergoing disbudding. Control sessions occurred either two days before or two days after disbudding.

Calves in both experiments who experienced the control first and disbudding second showed no aversion to the disbudding-associated compartment, suggesting minimal pain in the six hours post disbudding. However, in experiment 2, calves who experienced disbudding first and the control second spent more time in the disbudding compartment, suggesting greater pain two days after the procedure than in the six hours following the procedure. These findings suggest that while local anaesthetic and analgesia may adequately manage pain during and in the six hours following disbudding, calves may experience increased pain once medication wears off. This highlights a need for further research into longer-lasting pain management following hot-iron disbudding.

Ledger EM, Ede T, Mendl M, Lecorps B (2026) **Calves disbudded with local nerve block and analgesic show conditioned place aversion two days later but not in the hours post-disbudding**. *Anim Welf 35:e25*

Onset of nociception and pain perception in chicken embryos

In the global egg industry, an estimated 6.5 billion surplus male chicks are killed annually after hatching (because males don't lay eggs) either through maceration or CO2 exposure. Killing through maceration is conditionally humane while CO2 exposure is known to be aversive to birds. Both methods require prior manual sexing and separation of males from females. In addition to the risk of injury, suffering and distress to day-old chicks, the process is labour-intensive, costly, and increasingly viewed negatively by the public. In-ovo technologies allow for accurate sex determination during incubation as early as Embryo Development Day (ED) 1, enabling male embryos to be killed before the egg hatches. Current commercially applicable technologies can determine sex at ED 11-15 with accuracies above 95%. However, for implementation to be successful, two criteria must be met: the embryos must be killed before nociception and pain perception is possible, and the technologies must be practically implementable in industry.

This paper explores the onset of nociception and pain perception in chicken embryos through a review of current knowledge on the development of nociceptive structures and functions in chickens.

Findings show that while nerve endings and spinal pathways develop early, coordinated nociceptive processing does not emerge until around ED 16. Electro-encephalogram (EEG) studies show no meaningful brain activity before ED 13, with patterns resembling those of hatched chicks emerging around ED 15-17. Behavioural indicators such as limb or beak movements are unreliable, as they often precede higher-brain engagement. Cardiovascular responses may provide more reliable evidence. Significant changes in mean arterial blood pressure and heart rate, following a noxious stimulus, appear from ED 16 and 17 respectively and were reversed by local anaesthetic at ED 18, suggesting responses were nociceptive reactions at this time point, not embryonic movements or autonomic reflexes. Together, findings suggest that nociception in the embryo begins at around ED 16-17. The authors conclude that killing up to ED 16 is likely to avoid nociception while supporting flexibility in timing and widespread implementation of current in-ovo sexing technologies.

Petrik MT, Petrik JJ (2026) **Onset of nociception and pain perception in chicken embryos–a review**. *World's Poultry Sci J. https://doi.org /10.1080/00439339.2026.2643678*

ANIMALS IN SPORT, ENTERTAINMENT, PERFORMANCE, RECREATION AND WORK

Using AI to gain animal welfare insights into racing greyhound welfare in the UK

Oversight of animal welfare in commercial industries depends on access to accurate information. Without data, researchers cannot monitor changes, identify risks, or reliably inform relevant stakeholders. In many industries where animals are used, including farming and sport, animal welfare data is generated and kept within industry systems that are inaccessible to independent researchers. Although many industries nominally disclose information through public registries, practical barriers including dated interfaces, scattered sources and reluctance to share information prevent meaningful independent oversight.

This paper introduces a novel methodology using artificial intelligence (AI). Applying this methodology to a case study of greyhound racing in the United Kingdom, the authors used Claude Cowork agents to retrieve and structure data from fragmented, publicly accessible registries of stud books, dog profiles and race histories to assemble a de-identified population-level dataset.

The resultant dataset included 31,028 greyhounds, 1,267,122 race starts and 666,690 combined adverse and trouble events across a 51-month period. Comparisons to national aggregate data from industry body, the Greyhound Board of Great Britain (GBGB) revealed four welfare-relevant findings not visible in public reporting Including: (1) substantial variations in adverse events between tracks; (2) disparities between race-comment adverse event rates (0.72% of starts) and the GBGB's clinical injury rate (1.15% of runs), indicating many injuries occur without visible in-race signs; (3) unchanged attrition rates despite the GBGB's 2022 'A Good Life for Every Greyhound' welfare strategy, with an underlying fatality rate rise of 30%, and a 24% increase in dogs killed on track; and (4) post-career outcomes that are largely unverifiable in any public record, representing a significant gap in welfare accountability. Together, these findings show how independently assembled, AI-enabled datasets can reveal welfare-relevant trends that curated reporting may obscure and highlight new opportunities for expanding the evidence base available to welfare scientists, regulators, policymakers and the public.

Cobb ML, Coghlan S (2026) **Using AI agents to assemble population-level data for visibility and animal welfare insights: A case study of greyhound racing in the UK**. *Front Anim Sci 7:1868726*

New approach to change human behaviour to improve horse welfare

Worldwide, an estimated 121 million horses rely on people for their health, safety and wellbeing. As our understanding of horse welfare has advanced over the last 40 years, persistent calls have been made for improvement. However, uptake of welfare science into practice has been slow, indicating a disconnect within current approaches. Difficulty implementing change within the horse industry has been described as a "wicked" problem, characterised by issues involving many stakeholders with conflicting values and "solutions". Other industries facing wicked problems have adopted systems-thinking approaches to seek better outcomes.

This paper argues that much of what appears to be individual behaviour within the horse industry is instead the result of system behaviour, expressed through people, and shaped by incentives, norms, infrastructure and inherited assumptions. The Meadows 12 is a systems-thinking framework that identifies 12 levels where intervention is possible within a complex system, ordered from least to most effective. To support effective welfare-focused behaviour change, the paper adapts the Meadows 12 for the horse industry, creating the Horse Welfare 12 (HW12).

The resulting HW12 is a practical tool, adaptable to other animal industries, that enables researchers and funding bodies to identify and categorise past and future research in terms of the level it addresses within the target system, allowing for more effective intervention. The paper provides a detailed adaption of each level to the horse industry, including worked examples to illustrate how system structures such as rules, goals and paradigms shape welfare outcomes, and why surface-level fixes are insufficient for meaningful change. The authors note that most current welfare efforts target changes at level 1 (parameters), while the most effective changes lie in levels 10-12 (goals, paradigms and paradigm-shifting). The authors encourage researchers and policymakers to use the HW12 to design multi-level interventions addressing deeper system drivers rather than surface-level symptoms.

Luke KL, Hockenhull J, Furtado T, Ainley N, Osborne M (2026) **Horse Welfare 12: A human behavior change framework for improving horse welfare**. *J Appl Anim Welf Sci https://doi.org/10.1080/10888705.2026.2676630*

Increasing equine welfare through opportunities for agency

Allowing animals agency to make choices, exert control and engage in meaningful challenges is important for welfare. Research across species shows control and agency are inherently rewarding and consistently associated with positive welfare outcomes, while their absence is associated with increases in stress, immunosuppression and depressive-like states. Considering animals are individuals who may experience welfare differently, even in the same management system, providing choice also helps to accommodate individual preferences and support welfare at an individual level. However, studies on agency and choice in horses are often scattered across disciplines, limiting accessibility for owners and researchers.

This paper summarises research on agency within the management of domestic horses, organised through the behavioural domain of the Five Domains model, and explores opportunities to improve horse welfare through choice, control and challenge.

Persistent welfare challenges are identified, arising from constrained agency including restricted environments and movement, limited foraging variety and inadequate thermoregulatory choice. Additional barriers include social and cultural norms that normalise agency-limiting practices and limited ability of owners to recognise equine pain and interpret behaviours. Opportunities to enhance agency include access to varied pastures, enriched feeding strategies, and stable design that allows horses to control light, space, and social contact. Social agency can be improved through adequate space to avoid conflict and management strategies that support the group cohesion including pair bonding, natural weaning, and peaceful interactions. Within human-horse relationships, agency can be increased through optimising interactions for positive experiences, reward-based training, cooperative care, and using training methods that allow the horse to exercise agency. The paper notes the importance of using animal-based indicators to identify when horses experience good welfare, rather than when they have access to good conditions. The author argues that current "best practice" approaches fail to account for individual differences and preferences and suggests a "best fit" approach.

Goodale L (2026) **Opportunities for agency in domestic horses: Applying the behavioural domain to increase equine welfare**. *Anim Welf 35:e26*

ANIMALS IN RESEARCH AND TEACHING

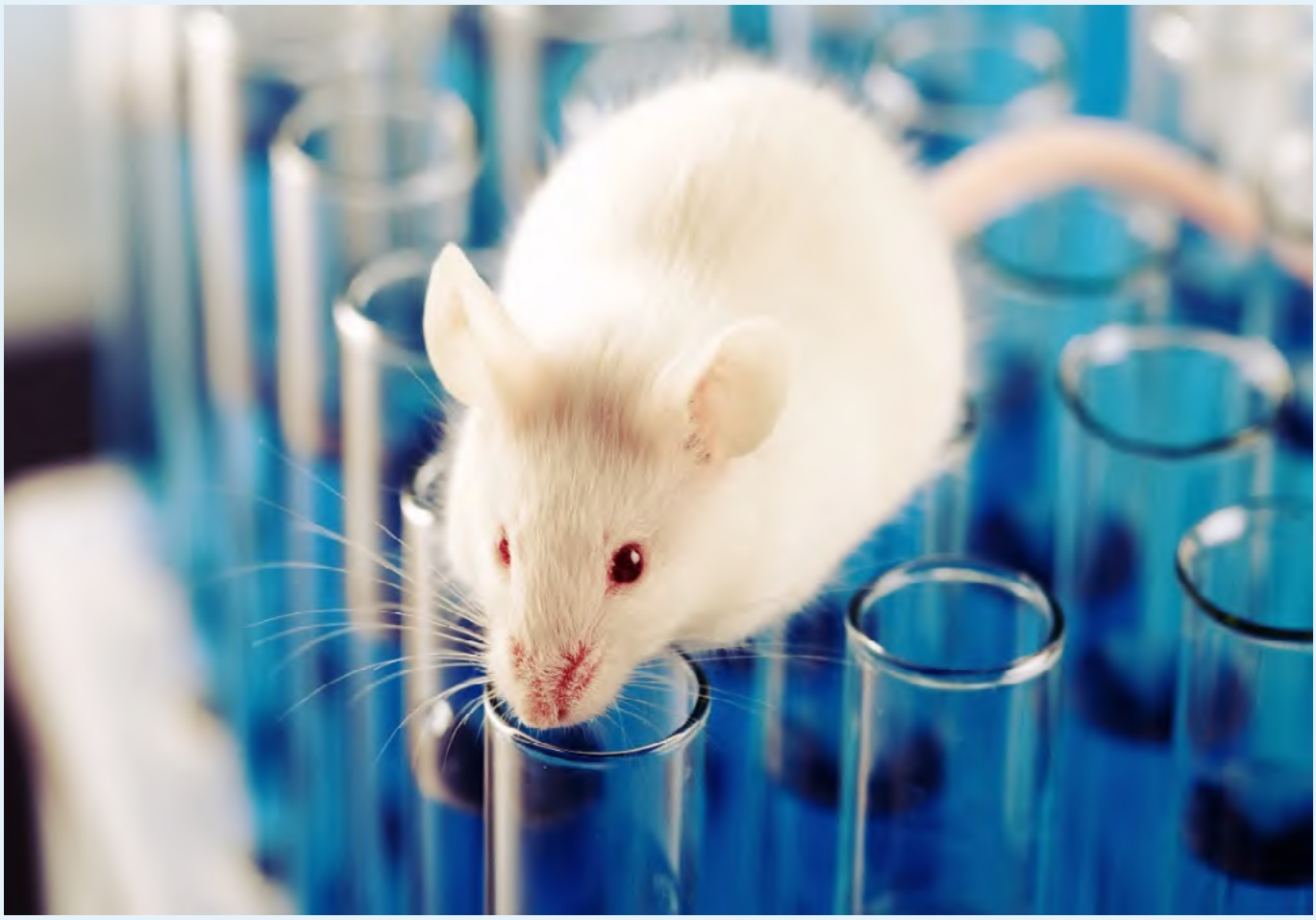
Comparison of training methods on animal welfare outcomes in the research and teaching industry

In the research and teaching industry (RTI), training is an important legal, regulatory and ethical responsibility. Training programs typically focus on technical competencies to improve knowledge-based outcomes for animal welfare. However, this focus overlooks the potential of training as a vehicle to shift attitudes and elicit human behaviour changes to improve human-animal interactions and animal welfare outcomes. Training that targets attitudes has previously been studied within the livestock industry, with research showing reductions in negative handling techniques, increases in low-stress interactions and corresponding decreases in animal stress.

This study explored the impact of including attitude training on participant use of grimace scales (GS). 232 participants in Australia and New Zealand attended either an enhanced training that included training targeting attitudes or a control training that excluded attitude-based training. Three enhanced and five control training sessions were conducted. Pre- and post-training questionnaires were used to evaluate participant's self-reported knowledge and attitudes.

Results showed limited differences between enhanced training and control groups in most knowledge or attitude measures. Statistically significant differences were observed between groups on two measures: likelihood of reporting having received formal GS training after the training session, and likelihood of agreeing to the statement "I am good at identifying pain in animals". However, both groups demonstrated significant post-training increases in positive attitudes towards the importance and usefulness of GS and were significantly more likely to agree with the statement "If I am unsure an animal is in pain, I should always do another recheck and/or offer pain relief" post-training, suggesting that effective formal training in GS may improve attitudes relevant to pain assessment and management practices.

Cohen S, Lomax S, Hemsworth L, Tripovich JS, Slavich E, Brandis KJ, Becker JA (2026) **Comparing training methods to promote better animal welfare outcomes for animals in the research and teaching industry**. *Anim Welf 35:e13*



Moving away from animal testing – redefining the 'gold standard'

For decades, animal testing has been considered the 'gold standard' in determining the safety and efficacy of chemicals of interest. However, this status is increasingly questioned, due to ethical concerns, financial costs, and the poor translatability. Because of variation in how species absorb, metabolise and respond to chemicals, animal studies may show toxicity or therapeutic benefits that are not applicable to humans. Increasingly, calls are being made to modernise the concept of the gold standard and move away from animal testing models.

This paper reviews recent suggestions for updating, or redefining, the traditional gold standard of animal testing, synthesising emerging themes from the Alternative to Laboratory Animals (ATLA) Virtual Special Collection on this topic.

The authors examine how research questions might be reframed for greater human protection and evaluate the expanding landscape of New Approach Methodologies (NAMs) with consideration of how these tools could be integrated within weight-of-evidence and tiered assessment strategies, and the barriers to their adoption.

The authors propose a new gold standard: "a process by which a meaningful answer to a specific, accurately defined question is obtained without using animal testing or animal-derived material". They recommend reframing the goal of safety assessments away from "Can we reproduce what happened in an animal test?" towards "What information do we need to protect humans, and which methods best answer that?"

The paper identifies animal-methods bias as a systemic problem across research and academia and highlight instances where reviewers have actively requested animal data to validate NAM results – an approach the authors argue renders the use of NAMs pointless. Ten recommendations are presented to accelerate NAM adoption including formulating precise research questions, ensuring FAIR (Findable, Accessible, Interoperable, and Reusable) access to data and tools, strengthening training and capacity in NAMs, addressing animal-methods bias, enhancing regulatory engagement, and investing in infrastructure.

Madden JC, Enoch SJ, Paini A, Cronin MTD (2026) **Redefining the gold standard and recommendations to accelerate the adoption of new approach methodologies in support of the Three Rs.** *Alt to Lab Anim 54(2):85-100*

WILD ANIMALS

Improving preparations for natural disaster response to better safeguard welfare and survival of the platypus

Native animal populations are vulnerable to the impacts of human disturbance and extreme conditions. With each disturbance, population capacity to recover decreases, increasing the risk of extinction. Recent catastrophic climate events in Australia have affected millions of animals and highlighted a need for planned and coordinated rescue responses to safeguard species. The platypus is one of Australia's most iconic and biologically significant species. While still widely distributed across Australia, the platypus has an international conservation status of 'Near Threatened' with a projected population decline of up to 30% in coming decades.

This paper explored appropriate rescue response planning to protect the platypus during extreme climate events. Stakeholders and species experts attended a workshop in Victoria and completed a Mentimeter survey before being divided into four groups and given real-world emergency scenarios involving either severe drought, severe flood, a bushfire affecting a drought-affected waterway, or post-fire sedimentation. Each group discussed when intervention should occur, feasible intervention options, required resources and which authorities should be responsible.

Drought was identified by participants as the highest risk to platypus populations, followed by habitats subjected to cumulative events, and where food availability is compromised. Participants recommended that intervention decisions should consider the degree of impact to the habitat, estimated recovery time, populations of genetic importance, local extinction risk, animal welfare and feasibility of action. Possible interventions included rescue and rehabilitation, in-situ habitat support, and translocation to temporary ex-situ care or intra-/inter- catchment translocation. Long-term species monitoring and the establishment of a national framework was recommended to define responsibilities, map at-risk populations and establish science-based triggers for intervention. Additionally, the paper recommends parallel efforts to proactively restore habitats and hydrological connectivity in order to reduce disaster impacts, extinction risks, and limit the need for emergency interventions.

Thomas JL, Serena M, Parrott ML, Bino G, Hawke T, Brunt T, Hladyz S, Connolly JH, Webb B, Baring R, Meagher PJB, Ryan M, Cordell S, Musser A, Olds L, Bloink C, Whinfield J, Williamson R (2026) **Natural disasters and the platypus (*Ornithorhynchus anatinus*): Criteria and protocols to guide emergency response and interventions**. *Aust Mamm 48(1):AM25035*

A scoping review of animal interaction programs and their impact on zoo animal welfare

Animal Interaction Programs (AIPs) are a type of animal-visitor interaction involving planned interactions between visitors and animals for education and entertainment purposes. They may be direct (include physical contact) or indirect, and scripted (the animal is asked to participate) or unscripted. AIPs are popular among visitors and widely offered, approximately 75% of accredited zoos worldwide currently advertise at least one. However, AIPs often expose animals to potentially stressful conditions and physical interactions. Despite this, little is known about how these programs affect animal welfare.

This scoping review synthesised existing welfare-related AIP literature to establish current knowledge, current AIP trends, and identify factors that may influence welfare outcomes. The findings of 49 articles included within the review were then compared to a global review of AIP prevalence in zoos to determine whether current literature sufficiently reflects the species and types of AIPs commonly offered, identify gaps, and explore areas for future research.

Overall, the review found that neutral welfare outcomes were most frequently reported. Positive outcomes were reported most often for ambassador programs, where animals are trained and utilised in specialised education conservation programs, while negative welfare outcomes were most common in petting/handling programs.

The review highlights disparities between the types of programs and the species represented within the literature compared to those offered in zoos, including overrepresentation of direct AIPs and a strong bias towards mammals. The authors note that current research lacks clear and consistent welfare outcomes and rarely examines the individual, environmental or other factors that may influence welfare outcomes. They recommend future research is critically needed to address these gaps and allow for evidence-based evaluation and adjustment of AIPs, to safeguard animal welfare within these programs.

Cooper-Rogers B, Klinger P, Whittaker A, Forder R, Fernandez EJ (2026) **Program animal welfare: A scoping review of animal interaction programs and their impact on zoo-housed animals**. *Appl Anim Behav Sci 297:106919*

Extending wild animal health and welfare beyond human health considerations

The health and welfare of wild animals is often only considered when it has ramifications for human or domestic animal health, with health campaigns typically implemented only when conservation goals or zoonotic risks demand it. Such programs align with One Health paradigms, defined by leading international health organisations, as “an integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals and ecosystems”. However, One Health implementation is often inconsistent with this ethos, sidelining animal health unless it serves human or conservation interests.

This paper reviews existing wild animal intervention programs that have substantially reduced animal suffering despite being motivated by human interests, such as rabies vaccination, medical treatment of gorillas and koalas, and screwworm eradication efforts. The paper discusses the importance of protecting wild animal health beyond human interests.

The paper argues that because animals are sentient beings, capable of being harmed or benefited, they should receive greater moral consideration than they currently receive. Built on this premise, current interventions for wild animal health should be expanded and priorities shifted from serving human interests to protecting animal health and wellbeing. The paper demonstrates how current campaigns could be expanded to include vaccination against diseases that cause the greatest suffering and mortality, treatment of harmful conditions such as sarcoptic mange, and shifting management practices from culling towards nonlethal interventions such as contraception. The paper outlines the need for cross-disciplinary research to advance current knowledge of how ecological factors shape wellbeing and to design effective interventions. The authors argue that the same moral reasons supporting wild animal health interventions apply to other forms of assistance, such as rescue response, aid during extreme weather conditions, and programs to improve wild animal welfare in suburban and urban areas.

Horta O, Murado-Carballo I (2025) **The One Health paradigm and wild animal welfare science**. *Camb Q Healthc Ethics 34(4):597-607*

MISCELLANEOUS

The pain echo chamber of barren environments

Pain is an adaptive response, functioning as an early-warning system that redirects attention and allows animals to detect and minimise damage through protective reflexes and behaviours. However, pain is not an objective reflection of injury severity, but a subjective experience shaped by environmental and individual context. Perceived intensity, duration, and likelihood of pain are influenced by numerous factors. Environmental factors such as housing, and their impacts on the nervous system, can amplify or suppress pain and influence healing and recovery times. Despite this, environmental context has been commonly overlooked in animal welfare and veterinary research on pain. This oversight is particularly concerning for animals in intensive farming systems where barren environments and additional stressors are common and may further amplify pain.

This review examined how environmental and rearing conditions influence pain processing and healing in captive animals, drawing on multiple disciplines including neuroscience and veterinary and animal welfare science. The review covers neurobiological systems through which pain can be modulated, environmental factors that alter pain experience and factors that trigger these mechanisms.

Findings of the review demonstrate that barren, confined environments deactivate multiple internal pain relief systems in animals, while simultaneously activating several neurobiological pathways that amplify pain signals and delay healing, a convergence that the authors term the "Pain Echo Chamber". This describes an environment that fundamentally changes the subjective experience of pain itself, making painful experiences more likely, more intense, and more prolonged than they would be otherwise. The authors highlight the need for animal welfare research and assessment models, certifications, regulatory frameworks, analgesic dosing protocols and laboratory-based pain models to explicitly account for environmental modulation of pain. The findings of this review challenge the acceptability of barren housing systems common in farms, laboratories and other captive settings and suggest a need for housing systems that support higher animal welfare.

Schuck-Paim C, Alonso WJ, Hartcher K, Chiang C, Pereira PA, Veit W, Mendl M, Nicol CJ, Lecorps B (2026) **The pain echo chamber: how barren environments amplify pain in captive animals**. *Front Anim Sci 7:1736142*

Fish welfare in a changing world

Fish are an important part of healthy aquatic environments and play vital roles within human industries and activities. For some, fish provide companionship as pets and offer people connection to nature through public aquariums and recreational diving. Fish play pivotal roles within biomedical research aimed at preventing, treating and alleviating human diseases and other health problems and support the livelihoods, food security and diets of many people across the world. The welfare of fish is central to ethical discussions on their use across research, aquaria, aquaculture and fisheries. Although our understanding of fish welfare has increased over the last 20 years, many factors remain unknown and under-researched.

This review paper explores current theoretical approaches to animal welfare and recent advances in defining and assessing fish welfare. The authors integrate evidence from multiple fields and perspectives to evaluate progress on previously identified knowledge gaps, including fish mental states, behavioural needs, welfare indicators, stressors and species-specific considerations. The review also examines the implications of these developments for research, aquaculture and husbandry, fisheries, aquariums, public perceptions of fish welfare and the welfare of wild fish affected by human activities.

Findings of the review demonstrate substantial advances in understanding of fish neurobiology, cognition and pain perception, contradicting outdated beliefs that fish possess small and relatively simple brains, capable of only basic reflexive behaviours. Current evidence shows that fish brains share a conserved vertebrate organisational blueprint supporting complex emotional processing, spatial and episodic-like memory, and the capacity for pain perception. Improvements have also been made in welfare indicators and operational tools used in aquaculture, fisheries and aquarium settings. However, the authors highlight several remaining gaps, including the need for further work on the mechanisms and consequences of pain in fish; identifying positive affective states; welfare assessment technologies; impact of climate change on fish welfare; improving welfare in wild capture and subsistence fisheries; and improving fish welfare at slaughter. Inconsistencies in legal protections for fish across sectors and regions remain a barrier to progress while educating stakeholders and raising public awareness on improved fish welfare practices also require ongoing effort.

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