

“Humankind’s relationships are profoundly out of step with what we now know of their sensory and emotional lives – we are much more similar to cats, pigs and chickens than we once believed. We wield enormous power over animals and have excluded them from our circle of moral concern throughout history. But the real arbiter of whether or not a being deserves respect and compassion – is sentience – the capacity to feel. All animals – whether free or domesticated – deserve the opportunity to pursue their pleasures. Their capacity for feeling good requires that we behave with more compassion”

Jonathon Balcombe 2011, Happy Animals in Pictures (1)

Introduction

- Sentience refers to having the awareness and cognitive (mental) ability necessary to have affective states (e.g. moods and emotions) (2,3). This means sentient beings do not just detect, observe or react to the things around them involuntarily, but they can also process and feel something in response. Sentient beings have feelings that matter to them (4).
- Animal sentience is the driver for the animal welfare movement and the reason why animal protection laws exist (5). In the most basic sense, if an animal can suffer and experience pain, stress, and discomfort from the surroundings and treatment they receive from humans, this must be prevented.
- In 1999, animals were granted official recognition as sentient beings in the EU, when the Treaty of Amsterdam entered into force. For the first time, a protocol on the protection and welfare of animals was annexed to it, which defined animals as sentient beings. In 2007 that text was transformed via the Lisbon Treaty into Article 13 of the treaty on the functioning of the EU(6).
- This historical change has been followed by similar acts around the world, including France, Quebec (Canada), New Zealand, Colombia, Wallonia (Belgium), and Oregon (USA) among others) (7).
- The World Health Organisation (OIE) also emphasises the importance of animal welfare and the ethical responsibilities around using animals “in recognition of the sentience of animals” in The OIE’s Global Animal Welfare Strategy, adopted by all Member Countries in 2017 (8).
- Due to increasing public awareness and public pressure to focus on animal welfare, some food businesses are also recognising farm animals as sentient beings. For example, in KFC’s 2020 Annual Progress Report on Chicken Welfare it states that “KFC UK & Ireland believe chickens are sentient and that they have the ability to suffer and feel pain” and are publicly committing to improving welfare.
- Welfare science has progressed since the introduction of the renowned Five Freedoms – which focus on meeting animals’ basic needs (e.g. for water, food, shade/shelter, space and disease reduction). Now, it is considered that for animals to have a “good life” they should also experience positive welfare states far beyond the mere avoidance of suffering(9). Farm animals should be given opportunities for excitement, play, comfort, interest, confidence, a sense of control, and overall to take pleasure in their daily lives.
- Sentience, being a subjective internal experience, is not directly measurable. To understand if animals are sentient beings, we must instead observe how they naturally behave in the wild and use research studies to test different aspects of behaviour, cognitive abilities and

physiological responses. This allows us to make robust conclusions about the inner thoughts and feelings of other animals.

- For example, choice preference tests can reveal what an animal needs and wants by showing what an animal is willing to work for (10,11); cognitive bias tests can show whether an animal currently possesses an ‘optimistic’ or ‘pessimistic’ mental state (whether they expect a positive or negative outcome from a neutral scenario) (12); appraisal tests recording animal’s behavioural and physiological reactions to a situation can show the type of emotion experienced (13); and observable behaviour signals (‘body language’ e.g. facial expression) can reveal an animals’ emotional state (14).
- Complex behaviours, such as problem solving, tool use, cooperation, and communication, give us insights into the internal world of other animals and can help us understand the way animals think and perceive the world around them.
- A growing body of evidence reveals what many of us can see for ourselves – animals are sentient, and this includes the ones we farm. As farm animals can feel positive and negative emotions, happiness and fear, and can experience pain, we have a duty of care for their welfare. This is particularly important when we consider the numbers slaughtered every year.
- Globally, approximately 0.8-2.5 trillion fish (0.8-2.3 trillion wild-caught, 51-167 billion farmed) (15), over 3.7 billion mammals, and over 73 billion birds are killed each year for human consumption (16).

Evidence for animal sentience in different species

- There is evidence for various elements of pain perception in all animal groups (Table 1).

Table 1. Summary of studies giving evidence for animal groups meeting the scientific criteria for the ability to feel pain. Adapted from (17). Question marks indicate a current lack of current evidence, without suggesting the criteria will not be met once further research is available.

Criteria	Mammals	Fish	Birds	Decapods	Cephalopods	Reptiles/ Amphibians	Insects
<i>Nociceptors, central nervous system pathways & processing</i>							
<i>Analgesic receptors</i>							?
<i>Physiological responses</i>							?
<i>Learned avoidance</i>							
<i>Change in behaviour</i>							
<i>Protective behaviour</i>							?
<i>Drugs reduce response</i>							
<i>Self-admin of drugs</i>				?	?	?	?
<i>Pain takes priority</i>			?			?	?
<i>Change in behavioural preferences/choices</i>						?	
<i>Pay cost to avoid pain</i>					?	?	?
<i>Trade off pain with other requirements</i>					?	?	?

- **Chickens**
Exert self-control (35) and can show emotional frustration (36) ♦ When in pain, choose to eat a more aversive food that contains analgesia (37) ♦ Use the sun to navigate complex environments and their spatial memory to find food at two weeks old (38) ♦ Can solve

mazes to be allowed access to dust-bathing material (39) or a nest (40) to carry out natural behaviour ♦ Communicate with representational noise signals, suggestive of 'language' (41). For instance, day-old chicks will vocalize they are anxious or depressed by distress calling to their mother hens (18)

- **Fish**

Can introspectively think about information such as the layout of rockpools (19) or social hierarchies (20) ♦ Have a dopamine system and a specialised area in the brain that is similar to the mammalian limbic system (which deals with emotions and memory) (21) ♦ Change how they react to an aversive situation based on context, showing they are flexible and not simply acting on reflex (22) ♦ May have a pessimistic or optimistic mood, which can be influenced by presence or absence of their mate (in some species) (23) ♦ (Some species) have passed tests for self-awareness (24,25) ♦ Detect, feel and remember pain (21)

- **Pigs**

Are capable of using deception (24) and understanding knowledge held by other individuals when searching for food (25) ♦ Can use vocal and olfactory cues to distinguish their home environment by one day-old (26) ♦ Show more play and exploratory behaviour as well as independence and an optimistic mental state when given complex problem-solving tasks (27,28,22) ♦ Can identify faces to distinguish between different people wearing the same clothes (29) ♦ Can understand what a mirror represents and use it to find food (23)

- **Cows**

Value social contact with other individuals (27) and can remember up to 50-70 others (28) ♦ As calves, can distinguish different people using their height and face (29) ♦ Show excitement when they solve a problem, such as opening a gate (30) ♦ Seem aware of others' emotions e.g. by reducing their feeding if a companion is stressed (31) ♦ Engage in social play with their mother from a few days old (32) ♦ Take comfort from social companionship during stressful events (33) ♦ Become (as calves) more optimistic when kept in pairs than when kept alone (34) and more pessimistic (35) after a painful experience (i.e. hot iron disbudding) (35).

- **Sheep and Goats**

Sheep can learn complex mazes and can remember how to navigate the maze for up to 22 weeks (36) ♦ Sheep can identify individual sheep based on their faces - even recognizing individuals at different ages and head orientations (37,38) ♦ They find familiar faces calming when they are stressed by social isolation (39) ♦ Mother ewes are empathetic and pay more attention to their lambs when they are in pain (40) ♦ Goats can still quickly solve a complex food reward task (in less than two minutes) having learnt and not performed the task in 10 months (41) ♦ Goats are also highly social and can perceive another goat's emotional state from just hearing their voice (42) ♦ They can also distinguish between happy and angry human faces and prefer to interact with those showing positive expressions (43)

- **Other Species:**

- **Octopi, Squid & Cuttlefish**

Communicate to each other through a variety of subtle changes in their locomotion, posture, and skin pigmentation and texture (44-47) ♦ Will collect and carry coconut shells over long distances for later assembly into shelters demonstrating a capability for complex tool use (48) ♦ Will coordinate and cooperate with other squids to hunt by simultaneously swarming prey (49)

- **Insects**

Ants teach their nestmates their inexperienced companions the location of good food sources by using tandem-running to guiding them along complex routes (50) ♦ Flies show fear and respond by freezing and fleeing food sources when a threatening stimuli (paddle) suddenly appears (51) ♦ Ants will choose between different tools (e.g. sand grains, mud, and leave fragments) based on the qualities of the liquid food (e.g., honey, sap) to best collect and transport it back to their nests (52,53)

Link to intensive livestock farming

- As farm animals are sentient, the way they are treated, and the quality of their environment will determine the level of enjoyment or suffering they feel. Life always involves a combination of good and bad experiences, but intensive farming means that the balance is consistently and significantly tipped to the negative.
- Intensive farming typically includes barren environments, high stocking densities, disease, reliance on antibiotics, mutilations, fast growing breeds, close confinement (e.g. cages), and increased stress [e.g. due to isolation, boredom, or separation (weaning)].
- Therefore, intensively farmed animals experience negative emotions which reduce their welfare. For example, fear e.g. to novel stimuli or through separation from their social group (54), stress, pain (54), frustration e.g. through thwarting naturally-motivated behaviours (55) or through lack of predictability or control over their environment (56), and boredom from a lack of environmental stimulation (57).
- Intensive farming also deprives animals of opportunities for positive emotions, such as play, exploration, social interaction, and feeding to satiation, and stops them from satisfying naturally motivated behaviours. These positive emotions are important for good welfare (13).
- Despite the recognition of animal sentience in EU legislation, production systems that do not meet their needs and practices that cause pain and distress are still permitted (for example, use of beak trimming, castration, enriched cages, tail docking).
- To truly respect animal sentience, production systems should be designed with the animal's characteristics in mind.
- Fewer animals should be reared overall, and farmed species should be raised in higher welfare, regenerative systems.
- Regenerative systems better protect and respect the sentience of animals leading to less suffering and more opportunities for positive experiences. These systems use breeds better adapted to outdoor living and provide animals with more space, natural social groupings, and greater opportunities to express important behaviours for their positive emotional wellbeing (e.g., natural weaning of a dairy calf).
- Regenerative practices not only lead to better welfare by respecting animal sentience, but holistically these systems support the overarching ethos for healthier people, planet, and animals through e.g., improved soil health, more nutritious animal products, and reducing the negative environmental and health footprint on neighbouring communities.

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Further resources

- <https://www.compassioninfoodbusiness.com/media/5819259/what-is-welfare-full.pdf>
- https://www.ciwf.org.uk/media/7437870/why-fish-welfare-matters_the-evidence-for-fish-sentience_ciwf-2019.pdf