What is Animal Welfare?

Definition

Animal welfare can be a difficult concept to understand because it has no single definition and can mean different things to different people. Welfare generally refers to "the quality of an animal's life as it is experienced by an individual animal"[1]. At any particular time an animal's welfare is influenced by many factors including their genetics (eg. selective breeding effects), previous experience (eg. learning and memory), physiological state (eg. health, nutrition and hunger level, reproductive status) and psychological state (eg. affective state/emotions, behavioural motivations, sensory perception). The three main views (below) are each needed in combination for good animal welfare:

♦ **Physical Wellbeing:** The extent an animal's biological processes can cope with their environment (eg. their physical health)[2]
♦ **Mental Wellbeing:** An animal's emotions and how they feel (eg. fearful, in pain, stressed, happy)[3].
♦ **Natural Living:** The extent to which an animal lives and behaves as it would in the wild. Today's domesticated species have retained the adaptations of their ancestors[4], and so they need an environment which allows them to express their natural behaviour[5]. Whilst not all natural processes are good for welfare, positive natural behaviours should be promoted.

These three views can be combined to reflect an animal's overall wellbeing and quality of life. Animal welfare in its holistic sense, encompasses not only the health and physical wellbeing of the animal, but the animal's psychological wellbeing and the ability to express its own important behaviour (below left). Welfare can be described as high if the animals are fit and healthy, feeling good and free from suffering and have what they need and want. This is reflected in the Five Freedoms[9] (below right).

Welfare is
Quality of Life
which is...

Mental wellbeing

Physical wellbeing — Natural living

animals that are
Fit & Happy

The Five Freedoms

1. Freedom from hunger & thirst
by ready access to fresh water & a diet to maintain full health & vigour
2. Freedom from discomfort
by appropriate environment including shelter & comfortable resting area
3. Freedom from pain, injury or disease
by prevention or rapid diagnosis and treatment
4. Freedom to express normal behaviour
by providing sufficient space, proper facilities & company of the animal's own kind
5. Freedom from fear & distress
by ensuring conditions & care which avoid mental suffering

Meeting these freedoms is essential in order to avoid suffering and poor welfare. However, there is increasing recognition and awareness that it is necessary for animals to experience positive emotions in order to have good welfare and a high quality of life[7,8,9]. Therefore a sixth freedom should also be considered:

6. Freedom to undergo positive experiences - by providing appropriate conditions to experience positive emotions (eg. feeling contented, pleasure, relaxed, excited).

Emotions and Positive welfare

An animal's mental state and emotions are inherently difficult to assess, due to their subjective nature and being experienced by the individual. However, new methods can reveal what an animal is feeling. 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[7,13]; and observable behaviour signals ('body language') can reveal an animals' emotional state[14].

To have good welfare animals need to experience positive emotions (the 'sixth' freedom). Figure 2 is a model of emotions, showing how they fall onto a dimension between high and low arousal and positive and negative feelings. Animals may have poor welfare when experiencing emotions on the left of the circle (eg. fearful, tense, unhappy or bored) and good welfare for emotions on the right (eg. excited, happy, satisfied).

Fearful

Tense

Excited,

Elated

High Arousal
(Very active)

Negative
Feelings

Positive
Feelings

Unhappy,

Discontented

Happy,

Contented

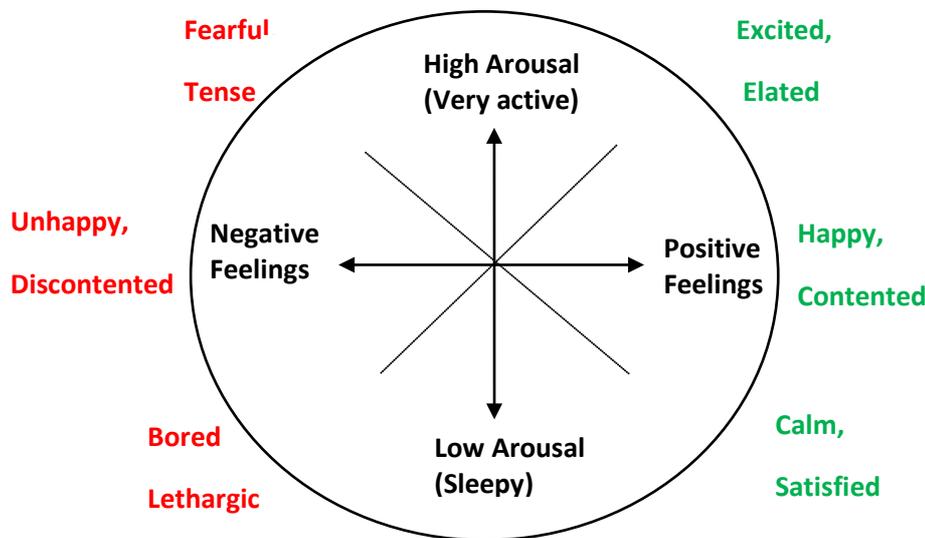Low Arousal
(Sleepy)

Bored

Lethargic

Calm,

Satisfied

Figure 2. A model of emotion, defined by dimensions of activity level and negative to positive feelings. Examples of emotions which fall into each area are shown outside the circle. Adapted from Russell [15], Russel & Caroll [16].

Examples of negative emotions which reduce welfare in animals include **fear** eg. to novel stimuli or through separation from their social group[17], stress, pain[18], **frustration** eg. through thwarting naturally-motivated behaviours[19] or through lack of predictability or control over their environment[20] and boredom eg. through a lack of environmental stimulation [21]. Positive emotions which increase welfare include **pleasure** and **satiation** - such as from satisfying naturally motivated behaviours such as feeding, play, exploration, and social interaction[7]. The absence of positive emotions can indicate an animal is in a negative emotional state[7].

Sentience

Farm animals are sentient beings, which means they have feelings that matter to them[22,] which is now recognised by EU Law (Treaty of Lisbon 2009). Sentient beings are intelligent animals, capable of feeling emotions such as fear and pain, as well as pleasure and happiness. Sentience is also important to welfare because animals' level of awareness and cognitive abilities influence people's attitudes and therefore their treatment of them[23].

Examples of complex abilities which highlight sentience in farm animals include:

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 and an optimistic mental state when given cognitive challenges in their environment[27,28]
- 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]

Cattle:
- Value social contact with other individuals[30] and can remember up to 50-70 others[2]
- As calves, can distinguish different people using their height and face[31]
- Show excitement when they solve a problem, such as opening a gate[32]
- Seem aware of others' emotions e.g. by reducing their feeding if a companion is stressed[33]
- Engage in social play with their mother from a few days old[34]

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]

Welfare and Productivity

Modern production systems can have different impacts on an animal's welfare. A useful conceptual model which explains how animal welfare and productivity (which translates to human benefit) interact is shown in Figure 3.
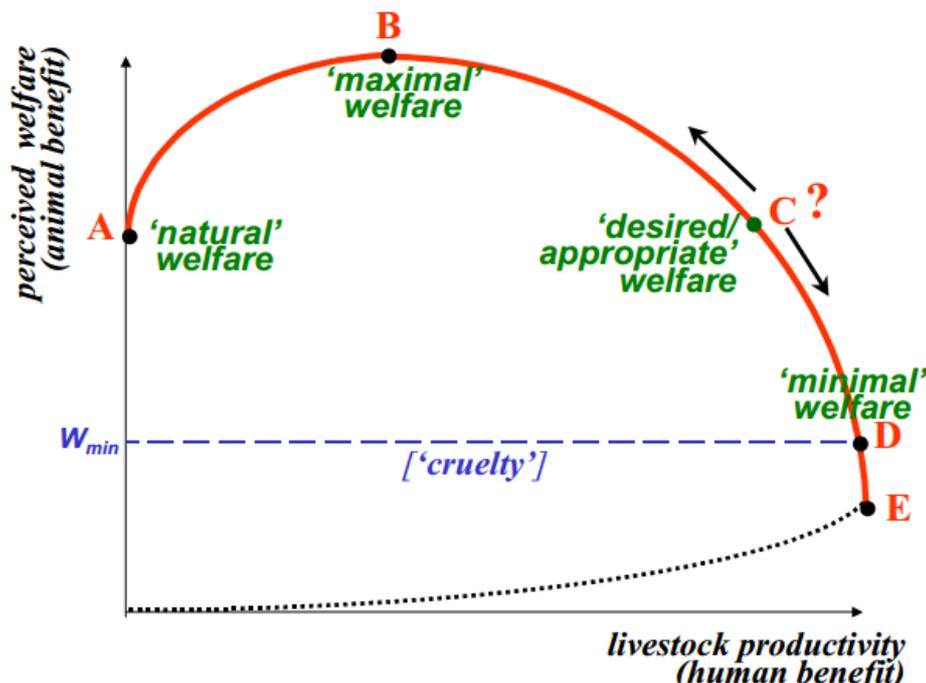

Figure 3. A framework for how animal welfare and productivity interact. From Mcinerney [42].

COMPASSION in world farming — **Food Business**

Point 'A' refers to a reference point of an animals' natural, unmanaged state without human intervention. 'B' refers to an optimal point of maximal welfare, where productivity and welfare have been simultaneously increased through management provisions of food, shelter, disease prevention and protection from predators. 'C' refers to the point beyond this, where attempts to increase productivity have reduced welfare. 'D' is where productivity has been increased to a point of minimal, severely compromised welfare and 'E' is the point where an animal has reached its' physiological limit, it cannot maintain fitness and it's productivity crashes. This model is not quantifiable, for example with milk yield, but is a useful concept that can be applied to any livestock production system[42]. While many animals in intensive systems may exist at point C or D , welfare in production systems should ideally lie between point B and C, nearest to B, achievable through good management, nutrition, veterinary care, housing and kind stockmanship.

People's views of animal welfare are influenced to differing degrees by deep-rooted cultural beliefs[43]. A person with an 'industrial' view values life improved through science and technology and believes animal welfare is achieved through health, biological functioning, productivity of the group and control over nature. In stark contrast, a person with an 'agrarian' view values a traditional life, in harmony with nature and believes animal welfare is achieved through attention to emotions and freedom of the individual. An alternative compromise does exist, of 'professionalism' This belief involves using specialized skills and science to improve practice and setting publically acceptable standards. By this view animal welfare is achieved through specialized animal care. If producers move away from the agrarian view, adopting the professional rather than the industrial approach could simultaneously improve animal welfare and public trust for humane-sustainable agriculture[43].

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