

Animal welfare in relation to human welfare and sustainability – a review paper

Donald M. Broom

*Department of Veterinary Medicine and St. Catharine's College, University of Cambridge, Cambridge,
United Kingdom*

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ABSTRACT

What should we change in the future? As a consequence of the one health, one welfare and one biology concepts, for most of our decisions we should be less human-centred if we want our species and other species to survive. Humans are less special than many people think. People consider that we have moral obligations to the animals that we use and to the sustainability of systems. A system or procedure is sustainable if it is acceptable now and if its expected future effects are acceptable, in particular in relation to resource availability, the consequences of functioning and morality of action. Consumers may refuse to buy unacceptable products and pressurise retail companies and governments to ensure that they are not sold. Poor welfare of people, poor welfare of other animals, genetic modification, or harmful environmental effects may make systems unsustainable. Most of the public now think of farm and companion animals as sentient beings and have concerns about their welfare. There are many components of sustainability and all should be evaluated and scored. Examples of attempts to do this are life cycle analysis and evaluation of externalities for agricultural or other products. Some topics considered include: straw use; which animals to keep as pets; stray dogs; free-roaming cats; feedlots; silvopastoral systems; free-range cattle; preserving land for hunting; land-sparing or land-sharing; zoos and conservation; and cell-culture of meat.

Key words: one biology; sustainability scoring; farm animal welfare; pet welfare

One biology

Humans are animals, and human biology involves the same range of processes as the biology of sheep, chickens and carp. Almost every biochemical reaction occurs in a wide range of species and humans depend on this in relation to food, interactions with the physical world, and the development of medicines. There is only one biology (TARAZONA et al., 2019). Similarly, there is only

one health and one welfare (MONATH et al., 2010; GARCÍA PINILLOS et al., 2016). Pain, fear, stress, anxiety, wound-healing, immunosuppression, and a range of positive feelings occur in many animal species. These concepts mean exactly the same for humans and all other animals, and what happens to non-human species has various repercussions for the human species. As each species is a little

*Corresponding author:

Donald M. Broom, Department of Veterinary Medicine and St. Catharine's College, University of Cambridge, Maddingley Road, Cambridge CB3 0ES, United Kingdom, Phone: +44 1223 337697, E-mail: dmb16@cam.ac.uk

different from each other species, humans also differ slightly from other species. Humans are not special and, except for the idea of support for our own team rather than other teams, humans are not more important than other species (BROOM and JOHNSON, 2019). One consequence of this is that each human should think less about humans and more about other species when organising life and making decisions. Each living animal has moral value. Morality has evolved in sentient animals (BROOM, 2003; 2006; 2019c), especially those that are social, so perhaps sentient animals have more value but non-sentient animals and other organisms have some value. Most people consider that they have obligations to the other individuals with which they interact. These individuals include non-humans, as well as humans. At one time, when people said 'we' they usually included just their own tribe. Now, 'we' includes not just all humans but all sentient animals. The obligations not to cause harm and to minimise all harm extend to the world environment and to living things. It is not acceptable to pursue your own interests, to promote your business or reputation, to leave decisions to the market, without considering all of the costs. As a consequence of the human actions over the last two centuries, we are currently facing the widespread poor welfare of farm animals, climate change, emerging diseases derived from animal population management, environmental pollution (APPANNAGARI, 2017), deforestation (MOUTINHO, 2012), loss of ecosystems due to mining (SONTER et al., 2018), and loss of biodiversity on cultivated land because of herbicide use, pesticide use, and other agricultural practices (BROOM, 2017; BALMFORD et al., 2018).

Sustainability

Increasing numbers of consumers are now trying to avoid harm to poorer people, the welfare of animals, and the local and world environment. Another way of putting this is that consumers demand that the systems used in all production and other activities be sustainable. They may refuse to buy unacceptable products, and pressurise retail companies and governments to ensure that they are not sold. A system or procedure is sustainable

if it is acceptable now, and if its expected future effects are acceptable, in particular in relation to resource availability, the consequences of its function and the morality of its action. A method of production of food or other products may be considered unsustainable because it involves or results in the poor welfare of people, the poor welfare of other animals, genetic modification, or harmful environmental effects. Animal welfare is a key part of sustainability and product quality, and is given high priority by consumers in Europe and most other parts of the world. According to a Eurobarometer survey (EC, 2016), awareness of animal welfare continues to increase, with 94% of Europeans agreeing on the importance of protecting farm animal welfare. The vast majority of respondents believed that farm animal and companion animal welfare in Europe should be better than it is now. In the last few decades, the public perception of consumption has changed and has generated demands for the creation of laws, codes of practice, and public policies for the improvement of animal welfare in many countries (BROOM, 2010; 2014). Currently, animal welfare has been accepted as a key issue by the FAO and OIE, is a public morality issue accepted by WTO, and is an integral part of the sustainability criteria of animal production systems (BROOM, 2016; 2017).

Taking account of sustainability components

Sustainability has many components, all of which should be considered. Terms used in these analyses include life cycle analysis and the externalities of systems. Life cycle analysis of agricultural or other products takes account of every contributory factor. For this purpose, all inputs, production processes, impacts and where the product goes after sale, including its ultimate disposal, must be taken into account. CIAMBRONE (1997) describes "How to best design or change a product or set of processes to minimize the impact on the environment over the life cycle of the product or process." A similar approach is applied to systems where the production method or intended product might have other effects, or externalities, in the world (BALMFORD et al., 2018). Every externality of a

system should be evaluated, and the value of each balanced. In evaluation of sustainability, it is useful to use scientific information and give scores to each component. A scoring system taking account of all aspects of sustainability has been proposed by BROOM (2021).

Examples: animal welfare and environmental impact components

The balance between the animal welfare and environmental impact components of sustainability is discussed by BROOM (2019a).

Straw use. When straw from cereal production is burned, carbon dioxide is released into the atmosphere with negative consequences for climate change (GADDE et al., 2009). However, if straw is used as bedding or for manipulation by pigs, the welfare of the animals is improved and the greenhouse gas effect is less, so welfare and the environment are improved.

Wild animals used as pets. If wild birds, mammals, reptiles or fish are brought into captivity and kept as pets, their welfare is almost always very poor. When wild birds are caught, transported to the destination country and sold in a shop, 70-90% die before sale (EFSA, 2006). There are similar data for reptiles (WARWICK and STEEDMAN, 2021). Much of the mortality is due to stress-induced disease. Taking wild birds, reptiles and other animals has led to the extinction of some species, and to major population reduction in others. Hence a ban on the sale for use as pets of wild-caught animal is good for welfare and good for conservation (PENG and BROOM, 2021).

Stray dog control. A third example of an action that is good for welfare and for conservation is the removal of stray or feral dogs from natural environments. Stray dogs may have a large negative impact on the populations and welfare of some wild animals, and their welfare is often poor because of disease and malnutrition, so reducing the populations can prevent poor welfare and benefit conservation. Packs of free-ranging dogs were found to be the main cause of animal losses in small-scale farms, and were the main predators of wild camelids in Chile (BONACIC et al., 2016; MONTECINO-LATORRE and SAN MARTÍN,

2019). Neutering feral dogs can reduce but not solve the welfare and conservation problems, in most circumstances, humanely killing the dogs is the best solution.

Allowing cats to roam. Some cats are used to control rodent pests in specific situations, but many roaming cats are free to do so because their owners want to improve their welfare. Cats can be at serious risk of road traffic accidents (ROCHLITZ, 2003; 2004) but roaming improves the welfare of most cats. However, some pet cats torture and kill many wild mammals, birds, reptiles and amphibians (FITZGERALD and TURNER, 2000; WOODS et al., 2003; LOSS et al., 2013). In every country, to allow widespread killing of prey, other than rodent pests, by cats is not justifiable. Cat owners are responsible for that suffering and death. Cats that roam should always be fitted with a bell or other effective device and they should be kept indoors if they continue to kill. Cat welfare is better if the cat can go out wearing a bell than if kept indoors but a balance is needed between the welfare of the cat and the welfare and conservation of wild species (BROOM, 2015; 2022).

Feedlots. Some of the advantages of using feedlots for beef cattle production are that they have high feed conversion efficiency and relatively low labour costs. The amount of land that they require is less than many extensive beef grazing systems and the amount of greenhouse gas and some other pollutants is less *per* unit of product (BALMFORD et al., 2018). These advantages have to be set against the high level of water usage and poor welfare in feedlot systems (BROOM, 2019b). Poor welfare can be caused by heat stress, fighting and mounting, inability to graze, dirty living conditions, and diseases such as acidosis, liver abscesses, respiratory disorders and laminitis.

Semi-intensive silvopastoral systems. Semi-intensive silvopastoral systems utilise pasture plants, shrubs with edible leaves such as the high protein leguminous shrub *Leucaena leucocephala*, together with trees, some of which also have edible leaves (MURGUEITIO et al., 2008; 2015; BROOM et al., 2013; KU-VERA et al., 2013). Some trees have a role in providing shade, whilst those with edible leaves are especially valuable in

times of low rainfall. The highly palatable, high-protein shrub and tree leaves necessitate the use of rotational management where the cattle are moved from paddock to paddock before they damage the plants. In order to achieve the same growth rate as on pasture-only systems, there can be more animals *per* unit area. The welfare of animals kept in these systems is good, biodiversity is high and greenhouse gas production *per* unit of production is quite low because productivity is high.

Free-range livestock. The welfare of cattle kept on extensive grazing systems is generally good, but can be very poor if there is insufficient food, or an inadequate food balance, insufficient checking of animals for injury and disease, or insufficient water. The amount of land used for extensive grazing is high, and greenhouse gas *per* unit of output is also high (DE VRIES and DE BOER, 2010; BROOM, 2019b). However, pasture and other leaves are a resource that cannot be consumed by humans, so use of ruminant animals is a better use of world resources than using animals such as pigs and poultry that are fed grain or soya, most of which could be eaten directly by humans.

Preserving land for hunting. The practice of keeping land so that people can hunt wild animals has resulted in much natural vegetation being preserved in many other countries. This action increases biodiversity, but hunting or fishing almost always causes poor welfare. BATESON and BRADSHAW (1997) studied red deer shot or hunted by dogs. They found that whilst accurate shooting had little adverse effect on deer welfare, hunting with dogs had many adverse effects. Shooting by incompetent people can result in long-lasting injury and pain in the shot animals.

Land-sparing or land-sharing. As discussed above, systems that use a large amount of land spare less land for conservation purposes than those that produce food more efficiently in relation to land use (BALMFORD et al., 2018). However, unless farmed areas are to become even less biodiverse than they are now, a combination of land-sparing and land-sharing is desirable.

Zoos and conservation. While some species adapt well to zoo conditions, the impact of the conditions on many species is that their welfare is poor (BROOM,

2002). However, zoos may encourage people to take an interest in conservation, and captive breeding of endangered animals can sometimes prevent the extinction of rare species. Some animals, such as the European bison, can breed in zoos, but most other animals, for example the rhinoceros, do not breed well in zoos. Hence, captive breeding should be in semi-wild but protected conditions and not in zoos. Policies about captive breeding should take account of the welfare of the animals, as well as their potential for supplementing endangered wild populations.

Cell-culture of meat. Meat can be produced by culturing animal cells obtained without the poor welfare or killing of animals. The overall sustainability of this still needs evaluation but if plant-materials, especially those that are not suitable for human food, can be used as the nutrients for the cells, this methodology has much potential for the future.

Conclusions

A change in human attitudes is important in order for humans and the rest of the living world to be preserved. There is already consumer concern to avoid causing harm when purchasing products. When the sustainability of a system is being evaluated, each of the many components of sustainability should be measured precisely and incorporated in a scoring system, so that consumers can make informed decisions.

Conflicts of Interest

The author declares no conflict of interest.

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SAŽETAK

Što bismo trebali promijeniti u budućnosti? S obzirom na jedno zdravlje, jednu dobrobit i jedan biološki koncept, u većini naših odluka trebali bismo biti manje orijentirani na ljude želimo li da i naša vrsta i druge vrste opstanu. Ljudi su manje posebni nego što to mnogi misle. Smatra se da imamo moralne obveze prema životinjama koje nam koriste i u održivosti sustava. Sustav i postupci održivi su ako su prihvatljivi u ovom trenutku i ako se očekuje da će njihovi rezultati biti prihvatljivi, posebno u pogledu raspoloživosti resursa, posljedica sadašnjeg funkcioniranja i moralnosti postupanja. Potrošači mogu odbiti kupnju neprihvatljivih proizvoda i činiti pritisak na maloprodajne tvrtke i vladu da osiguraju da se oni ne prodaju. Nedostatna dobrobit ljudi i životinja, genetička modifikacija i štetni učinci za okoliš, sustave mogu učiniti neodrživim. Javnost danas farmske životinje i kućne ljubimce većinom smatra svjesnim bićima i brine o njihovoj dobrobiti. Mnogo je komponenti održivosti i sve ih treba procijeniti i vrednovati. Primjeri takvih pokušaja jesu analiza životnih ciklusa i procjena vanjskih učinaka na poljoprivredne i druge proizvode. Neke od tema koje se razmatraju jesu upotreba slame, koje životinje držati kao kućne ljubimce, psi lualice, slobodnoživuće mačke, tovišta, silvopastoralni sustavi, slobodni uzgoj goveda, očuvanje lovnog zemljišta, pošteda zemljišta ili njegovo dijeljenje, zoološki vrtovi i očuvanje te stanične kulture mesa.

Ključne riječi: jedna biologija; vrednovanje održivosti; dobrobit farmskih životinja; dobrobit kućnih ljubimaca
