Broom, D.M. 2002. Welfare in wildlife management and zoos. In: *Proceedings of the 4th International Congress on the Physiology and Behaviour of Wild and Zoo Animals. Advances in Ethology*, 37, 4-6.

Pre-publication copy

Welfare in wildlife management and zoos

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The study of animal welfare as a scientific discipline has been established for about twenty years although work on various aspects has occurred for much longer. However, it is useful to consider the concept and its relation to other relevant concepts. Scientists generally agree that we can refer to the welfare of animals, including humans but not other organisms or inanimate objects, and also that various measurements can be used as indicators of welfare so welfare varies over a range from very good to very poor (Curtis 1986, Duncan 1987). My definition of welfare, (Broom 1986) is "the state of the individual as regards its attempts to cope with its environment". Hence welfare refers to all of the different coping systems including high-level brain functioning which may involve feelings, other physiological and behavioural systems and systems for dealing with pathogens or injury. Feelings such as pain, fear, anxiety and various forms of pleasure have evolved as part of adaptive mechanisms and hence of coping systems (Broom 1998, 2001). Emergency physiological responses such as those of the hypothalamic-pituitary-adrenal cortex and the sympathetic-adrenal medullary systems, together with many other responses involving hormones or enzymes, can be assessed to provide information about how poor welfare is. Behaviour measures and immune system measures can also indicate how much the individual is having to do in order to cope whilst other measures indicate the extent of failure to cope.

Health refers to body systems which combat pathogens, tissue damage, or physiological disorder and is also a state which varies over a range from good to poor. It is encompassed within the broader term welfare. The term stress is best limited to adverse effects on individuals, rather than equating it to stimulation or to a certain kind of response. Thus stress always means poor welfare. Another important concept is that of needs. We can find out about the needs of animals by studies of behaviour which indicate what is important to animals and by studies of the consequences of depriving animals. Welfare can only be good if the needs of the individual are met.

In the course of human interactions with wild animals, the consequence may be poor welfare in those animals. Where animals are trapped, poisoned, hunted, or shot in order to kill them, the welfare may be only slightly affected before the animal dies, or it may be very poor indeed (Broom 1999). Most people accept that, sometimes, animals have to be killed but find it unacceptable if the method of killing involves prolonged pain and fear, for example in a trap, after poisoning, during hunting or after inept shooting. Similarly, very poor welfare or high levels of mortality in animals caught in the wild in order that they can be sold as pets is unacceptable to most people who think about it (Althaus 1997).

Efforts to conserve wild animals may be associated with improved welfare in the animals or may have a slight or severe contrary effect. Laws which prevent the killing of wild animals or the keeping of wild animals as pets also prevent or reduce the extent of poor welfare in these and other animals which people might otherwise attempt to kill or keep. A law or

policy which minimises the number of stray dogs improves welfare, in that there are fewer diseased and starving stray dogs, but also reduces the impact of such dogs on populations of wild animals on which dogs might prey. On the other hand, the hunting of foxes or deer with hounds and the shooting of pheasant, grouse, deer, wild boar, etc. (Herling et al 1997) leads to poor welfare in the hunted animals but the preservation of areas of countryside which might otherwise be lost. Conflicts between conservation aims and welfare aims also occur in a variety of other circumstances, for example when cats are allowed to roam, when farm animals are kept free ranging, when medicines or pesticides are used to protect farmed animals, when wild animals are "rescued", or in aspects of nature reserve management (Broom 1992). On nature reserves, killing scaring or exclusion of unwanted predators or grazers will usually have consequences for the welfare of those animals. Also, translocation, marking or restriction of animals which are being conserved will affect their welfare.

The welfare of animals in zoos and circuses is a major issue in relation to the question of whether the keeping of each species in any possible conditions, or in specifically defined conditions, is acceptable. When animals are obviously adversely affected by the conditions in zoos and circuses, many members of the public refuse to visit and some campaign against the establishments (Margodt 2000). Close confinement results in poor welfare in most vertebrate animals. Poor welfare when kept in some degree of confinement is much more likely in animals which are not domesticated than in domesticated animals. When wild animals are brought into captivity they show extreme responses, often including immunosuppression and consequent mortality from latent pathogens. Where the needs of animals are not met in zoo conditions they may show behavioural abnormalities such as apathy involving reduced responsiveness, stereotypies, self-mutilation or increased aggression (Kiley-Worthington 1990). In a study of elephants kept in circus winter quarters and often harshly treated, stereotypies occupied much of the waking life of some individuals. For example, one elephant showed stereotypies for 57% of the light period whilst in another, it was 71%. There was variation amongst individuals in the extent to which the stereotypies were interrupted by people in the vicinity, social contact with other elephants, or provision of food (Kirkden and Broom in prep.).

It seems that elephants are one of a group of species whose individuals find all zoo conditions particularly difficult. Others in this group are most bears, active small carnivores, many primates and cetaceans (Jantschke 1997). In addition, many zoos fail to provide for the needs of the animals so that welfare is usually poor in social animals deprived of adequate social contact, grazers unable to graze, excavators unable to excavate, animals which are frightened of humans or conspecifics but unable to hide from them and all animals in barren environments. Locomotion is important to many animals so, as a general principle, all animals should be able to show normal locomotion for at least five seconds. The needs of some small animals and some domesticated animals can be met and their welfare can be good in zoos. However, the needs of many animals are not met in most zoo conditions. The complexity of the environment may be much better for some species if they are stimulated by the kind of human contact and brain usage involved in training. A falcon may benefit from falconry, and a horse or dog may enjoy training. Harsh training techniques, on the other hand, result in very poor welfare.

A conclusion from the rather widespread poor welfare in zoos is, firstly that the welfare of some animals is too poor in zoos to justify keeping them and secondly, that zoos should keep other animals only when the negative aspect of rather poor welfare is adequately counterbalanced by the positive value of zoos. In my opinion, the major value of zoos is in education. People who experience animals in zoos, especially in good conditions, are more likely to care about animals including their conservation. The major impact of zoos on conservation is via education. The direct impact of zoos on conservation in the wild is negligible for most species. In only a few species has the wild population been affected by

zoo breeding. Breeding is better done in specialist places with no public access. A further positive aspect of zoos is that they have therapeutic benefits for people who feel better because of contact with the animals.

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