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## WILDLIFE CONSERVATION ZOOS AND ANIMAL PROTECTION: EXAMINING THE ISSUES

### The Wild and The Tame

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### INTRODUCTION

Nearly all humans in the industrial world, at some time or other in their lives, must yearn for what they believe to be the freedom of life in a wilderness, "When wild in woods the noble savage ran", as Dryden wrote in the 17th century. But the concept of the freedom of a wilderness is as much a myth as the concept of the noble savage, although both are still very much a part of western thought. Today, we all know that there is no place in the world that is truly a wilderness, that is a place capable of sustaining plant and animal life, that has been untouched by anthropogenic influences which have been steadily increasing in impact for at least the past 40,000 years.

The Western belief that the world is divided into the "human" and the "natural" stems from the philosophy, first propounded by the ancient Greeks, notably Aristotle, that all living organisms could be placed in a Scale of Nature or Great Chain of Being with "primeval slime" at its base and "Man" at its summit. This belief, which is imbued in Christianity and in all aspects of western civilization, has led to a great divide with "the wild" on one side and "the tame", that is all the animals and plants that are exploited by humans, on the other.

I should like to argue that human influences on all faunas and all biotopes are now so powerful that there are no longer any grounds for dividing the wild from the tame. And, as the master predator, and for its own survival, the human species must learn to manage the world as one great global ecosystem.

## WHAT IS WILD AND WHAT IS DOMESTIC?

It is difficult to define what is a wild and what is a domestic animals. We usually think of a wild animal as one that is fearful of humans and runs away if it can. But this fear of humans is in itself a behavioral pattern that has been learned from experience of human predation over countless generations. A "wild" animal that has had no contact with humans has no fear of them and is quickly exterminated, like the dodo. On the other hand animals in a wildlife reserve will lose their fear after some generations of protection from human hunting. In one sense it can be said that a domestic animal is just one which has lost its fear of humans and will breed in captivity, but it is also much more than this because the species of domestic animals have evolved by natural and artificial selection in association with human societies.

Domestication is both a biological and a cultural process, which begins when a small number of animals are separated from the wild species and become habituated to humans. If these animals breed they form a founder group, which is changed over successive generations both in response to natural selection under the new regime of the human community and its environment, and by artificial selection for economic, cultural, or aesthetic reasons (Clutton-Brock, 1992a). The relationship between human and animal is transformed from one of mutual trust in which the environment and its resources are shared to total human control and domination (Ingold, 1994).

Once domestication is established new breeds are produced by further reproductive isolation leading to genetic drift, as in the founder populations of new subspecies in the wild. The founders of the new breed contain only a small fraction of the total variation of the parent species, and it becomes a genetically unique population, which continues to evolve under natural and artificial selection.

A determining factor in the evolution by natural selection of domestic species is that of climate. The effects of climatic selection on domestic animals appears to be identical to the well-known correlations in size and body-shape that can be seen in subspecies of wild animals across a geographical cline. This can be seen, for example in breeds of horses, as reflected in the horse breeders' terms, "cold-blooded" for the northern heavily-built horses and "hot-blooded" for the lightly-built Arabs.

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All breeds of horses have originated from one wild species, Equus ferus, which ranged over the whole of Europe and Asia at the end of the Pleistocene, although it is probable that over this vast area there were several subspecies of the wild horse (Clutton-Brock, 1992b).

### IMPROVEMENT AS A BIOLOGICAL CALAMITY

Breeds of domestic animals should be considered as local ecotypes or demes with special adaptations to particular micro-environments. Breeds of domestic livestock that evolved in one biotope are as well adjusted to their environment as the wild species, and it is this perfect adaptation that has been destroyed and continues to be destroyed by the policies of so-called "improvement." The impetus for improvement began in Europe in the 18th century when the industrial revolution made it necessary to increase the quantity and quality of meat and wool for the rapidly expanding urban populations. But the improvers, of course, knew nothing of genetics or evolution and did not realize that by crossbreeding animals from different localities they were destroying populations that had taken thousands of years to evolve. Today we should know better, but the legacy of the improvers has been found very hard to eradicate, as can be seen from the many schemes to improve cattle in Africa. For example the native cattle of southern Ethiopia, the humped Boran, which only needed to drink every three days, in perfect adaptation to their semi-desert environment, have been "improved" by crossing with north European breeds. Similarly, the ancient Mashona breed from Zimbabwe has been "improved" by crossing with Hereford beef cattle. In the short term, this improvement leads to high productivity, but there is a loss of the unique genetic constitution of the breed that has evolved in adaptation to the local environment. Susceptibility to stress and to disease is increased and the need to protect the new, valuable but vulnerable herds led to such misguided policies as the game-eradication schemes of the 1960s, in attempts to control tsetse flies. It has to be realized that anciently-established domestic livestock are as much a part of the biotope as the wildlife and if the balance in their management is upset the whole ecosystem will suffer.

The influence of ancient breeds of domestic livestock is apparent in every part of the world, whether it be the Sahel where herds of camels and goats range, or the landscape of Europe which has been trans-

formed over the last 5000 years by grazing animals. The species of trees allowed to grow in forests has been determined by the feeding of vast herds of pigs put out to pannage, hillsides have been turned to pasture by the grazing of millions of sheep and cattle, and moorlands have been created by overgrazing.

Everywhere, domestic animals have evolved in adaptation to their local environment and its particular wild flora and fauna. It is therefore essential that any conservation or management scheme must consider the role of domestic animals and it is just as important to maintain the local breeds of livestock as it is to preserve the wildlife. It is with this realization that there is a growing number of societies in Europe and America devoted to the conservation of rare breeds of domestic animals.

### **CULTURE IN DOMESTIC ANIMALS**

It is not only the physical adaptations of local breeds of domestic animal that are lost by improvement, it is also the culture, that is the learned behavior of the animals, which is lost. This was shown by Elizabeth Marshall Thomas (1990) in her remarkable account of the lions of the Kalahari desert and their interaction with the Bushmen (!Kung San). In the 1950s these people turned from hunting to herding livestock. Their indigenous cattle had their own culture and understood the danger of lions. When going out to graze, which they did unattended, the cattle always walked in single file, varied their direction, and returned well before sunset. However, when a foreign bull was introduced to the herd their learned behavior was disrupted, ending in a massacre of the cattle by thirty lions. The usual outcome of such an event would be the shooting of all the lions.

Many people deny that there can be culture in animal societies, but this in great part because it is one of those terms, like consciousness, that is so hard to define. In this context I define culture as a way of life imposed over successive generations on society of humans or animals but its elders. Where the society includes both humans and animals then the humans act as elders.

The process of taming a wild animal, whether it is a lion or a wild goat can be seen as changing its own culture. The animal is removed from the environment in which it learns from birth either to hunt or to flee

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on sight from any potential predator, and brought into a protected place where it has to learn a whole new set of social relationships as well as new feeding and reproductive strategies.

A domestic animal is a cultural artifact of human society but it also has its own culture, which can develop, say for a cow, either as part of the society of nomadic pastoralists or as a unit in a factory farm. I should like to argue that domestic animals live in as many different cultural situations as humans and that their learned behavior is just as responsive. In the absence of predators, domestic animals adopt the culture of their human owners and so closely can they fit within it that they seem to have lost all links with their wild progenitors. The more social or gregarious in their natural behavioral patterns are these progenitors the more versatile will be the domesticates, with the dog being the extreme example of an animal with a human culture.

The loss of their own culture can be just as disastrous for domestic animals as it is for wild animals that are set free after being bred in captivity. It is probable that after some generations of breeding in factory farms, pigs or cattle would lose all knowledge about the choice of foodstuffs in an open field. As long ago as 1950, Hediger in his classic book on Wild Animals in Captivity asserted that domestic animals are unnatural in that "they eat only one particular kind of food." But this monophagy is forced upon them and in the long run can only be detrimental, as has been shown by the outbreak of BSE in the U.K.

### **FERAL ANIMALS OR NEW WILD SPECIES?**

Feral animals can be defined as those that live as a self-sustaining population in the wild after a history of domestication. And, whereas the case for the conservation of indigenous breeds of domestic animal is usually clear, the problems are much more complicated with feral animals. For a start it is often very difficult to know whether a so-called species is truly wild or of anciently feral descent. The European mouflon is just such an example. This sheep (Ovis musimon) was to be found living wild only on the mountains of Corsica and Sardinia until the last century when small numbers were removed to parks and mountains in Europe as a game animal. It was generally believed that the mouflon was a relic of wild sheep that were originally widespread throughout Europe. However we now know, from the absence of any

fossil records of sheep throughout Europe, including the Mediterranean islands, that these sheep are not relics of wild sheep, but perhaps just as importantly they are relics of the very earliest domestic sheep that were taken to the islands, probably at least 7,000 years ago (Poplin, 1979). The world record for mouflon horns according to Rowland Ward's Record of Big Game was shot on Sardinia by the Duke of Bedford in 1903. But should the horns of the mouflon be hung as trophies or kept in scientific collections as interesting specimens from very primitive domestic sheep?

Rather the same situation can be seen with the dingo, and other feral dogs like the New Guinea singing dog and the native American dogs, but these canids are in a much worse predicament than the mouflon as they are very close to losing their genetic integrity through interbreeding with European dogs. The dingo is a fascinating relic of the earliest domestic dogs of south east Asia, but it has had a very bad press from the Europeans in Australia, having been treated as vermin by the sheep farmers who have killed vast numbers with the encouragement of government bounties.

It is probable that a very small number of dogs were taken to Australia, by boat, thousands of years ago with immigrant peoples. This must have been before the domestication of the pig which was never taken to Australia as it was to New Guinea and the Pacific Islands in the early prehistoric period. However, it was later than 12,000 years ago, when Tasmania was separated from the Australian continent by the sea breaking through the Bass Straits, as there are no fossil records of dogs on Tasmania. The small founder group of dogs in Australia would soon have begun to breed away from human control, and later generations expanded to spread widely over the continent.

Until the arrival of Europeans in Australia the dingo was part of the ecosystem inhabited by human hunters and their prey. Its extinction would be a great loss because the dingo has not only been a part of the Australian fauna for thousands of years it is also part of the living heritage of Aboriginal culture.

Another canid which is not feral but is in an equally problematic situation from the conservation point of view is the red wolf. Now that DNA analysis has been shown that this canid, at least in its present form, is not a separate, endangered species of wolf but a hybrid be-

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tween the grey wolf and the coyote (as many have always believed), should the strenuous efforts spent on its conservation be continued (Paradiso & Nowak, 1971; Wayne & Jenks, 1991)? I believe that they should and that the red wolf can be considered to be a "new" species that has evolved as a result of anthropogenic interference.

The latest example of "natural" hybridization to be discovered is the offspring of the mating between a blue whale and a fin whale, which is presumed to have occurred because the blue whale was unable to find a mate (media reports in the U.K. 3 March 1994).

Another species which may be called "new" is Przewalski's horse. The 700 or so "wild" horses living today have a distinct, uniform appearance, which differs considerably from that of their thirteen ancestors which were brought to Europe at the end of the last century. These were a "motley lot" and included at least one feral horse (Mohr, 1971; Clutton-Brock, 1992b). The effects of breeding the horses over the past 90 years have produced incipient characteristics of domestication. The cranial capacity has been reduced, the crowns of the teeth have become less hypsodont and the muzzle narrower. The main and tail are fuller and white marks sometimes appear on the forehead. The age at which the horses become sexually mature has been lowered from five to two years.

The Przewalski horse, like the Arabian oryx and other highly endangered species that survive only because they have been bred in captivity, is valued for its "wildness", yet many individuals are perfectly tame. This is an example of the anomaly in human thought which has been with us for thousands of years, since the time of the ancient Assyrian kings who kept lions in cages, only so that they could be let out to be shot with arrows. The modern justification, of course, is that we are not only saving a species from extinction but also, by reintroducing it to the wild we are preserving its habitat.

## CONCLUSIONS

I fully support the breeding of endangered species in captivity and in all reintroduction schemes. All that I would like to argue is that we should try not to divide the world into the wild and the tame but to think of it as one community of life. For at least the past 10,000 years

the faunal compositions of whole continents have been molded by human activity. Ungulates have been hunted to extinction and the killing of carnivores in their millions must have had a great impact on their behavior and on predator-prey relationships. For example, I believe that human persecution has transformed the wolf from a diurnal to a nocturnal hunter. A huge diversity of species has been moved around the world and the grazing of domestic livestock has altered environments everywhere.

Is the wild giant ox, or aurochs (*Bos primigenius*), extinct or is it one of the most common and widespread large animals in the world? In terms of genetic constitution every domestic cow must carry a considerable proportion of the genes of its progenitor, the aurochs. Efforts to "reconstitute" the aurochs by crossbreeding various unimproved breeds of cattle by the Heck brothers in Germany before the war, were moderately successful in terms of external appearance (Zeuner, 1963: 205). However, it is doubtful whether the full genetic complement of the wild ox could ever be recreated because of the genetic drift that occurs whenever a new breed is developed.

Reducing the numbers of breeds by crossbreeding and improvement for greater, short term productivity will reduce the genetic diversity of the species to dangerously low levels. This could be catastrophic when the wild progenitor is extinct, as with cattle. It is therefore imperative to urge that the farm park, which aims to conserve rare or declining breeds of domestic animals, is as valuable as the wildlife park. Both the wild and the tame need strategies for conservation and both are necessary for the survival of ecosystems, especially those in fragile environments where the indigenous livestock have lived in balance with the wildlife for upwards of 5,000 years.

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## CLUTTON-BROCK DISCUSSION

Serpell: I agree with a very large number of the points made, particularly the notion that people tend to denigrate or downgrade domestic animals. This is obvious with ecologists, particularly ecologists that study wildlife. We also see this in concern for the welfare of animals. If we saw rhinos and tigers being kept the way we routinely keep farm animals there would be a national outcry, but we seem to be happy to accept this for domestic animals. Clutton-Brock makes the point that we tend to perceive domestic animals as in some way corrupted by human hands and less worthy of concern.

She goes on to make a plea for many of our rarer and more ancient breed domestic animals, proposing that we stop thinking about the wild/domestic dispute and instead try to think of it as a continuum, giving all animals an equal share in our concern. I agree that we should preserve locally adapted domestic genotypes. I accept her point that the well-intentioned but clumsy western attempts to improve on what exists already in third world countries are more productive in a short-term sense but very damaging in the long-run sense.

I depart from Clutton-Brock on the idea of wild and tame as a continuum. There is a distinction, and it is a distinction based on degrees of human control or coercion. The question then remains whether there is any morally relevant difference or distinction between wild and domestic animals. This in turn raises the question as to whether we should devote resources and energy to conserving domestic breeds. Having built up this argument she then contradicts it by saying that domestic animals are artifacts of human endeavor. If they are then we cannot use the same yardstick to measure their value. Some of the value of wild animals is a product of their wildness. So then we have to ask what is the value of the domestic animal? I want to get away from its potential value as genetic stock, that it has an anthropocentric value to us because we might be able to use it in some way for the economy, and think instead about the intrinsic value of the animal

Lacy: It is not unclear to me what domestic is, and neither is the clarification between domesticity and wildness. Domesticity comes about because we artificially breed to produce traits that are of benefit to us, thereby interfering with evolution. It is true that domestic breeds

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evolved in and with their own environment, but only in a trivial sense, for the environment they evolved in is highly modified. We created an artificial environment for them in which to evolve. We control their evolution so that they develop traits that benefit human economy. So they are, in a sense, corrupted by human hands. They carry over traits from the wild, and if released they can recover some of that wildness and evolve again, adapted to their needs rather than our needs.

Domestic animals not only have small brains, they also have slow reaction times, poor assimilation efficiencies of nutrients, are subordinate in encounters with wild animals and are disease prone. Clutton-Brock suggested that the preservation of domestic breeds is important or essential for their environment, and again I see it only in a highly modified way. The environment for domestic livestock might be an extremely artificial rather than wild environment that has low biodiversity and very low welfare for a great many other organisms. It is a way of keeping human-created and modified environments the way that we want them, as far from wild as we can get.

Perhaps there is nowhere that is truly wild anymore, that all animals are influenced by humans, but there is still a difference between animals evolving to their needs as opposed to our needs. It is important to protect history for cultural or economic reasons, even humane reasons. It seems counterproductive to protect them from the biodiversity of conservation, for maintaining some of the sense of wildness or natural functions of the ecosystem.

Clutton-Brock: I dispute some of what you say. For example, cattle in Africa have been there for five thousand years and have evolved through natural selection. They have become immune to tse-tse, for example. Throughout Africa there have been large numbers of breeds of cattle that have literally evolved with the environment and with the wildlife. I would contend that the ecosystem does, to a certain extent, depend on the maintenance and grazing of this domestic cattle. I am simply trying to point out that domestic animals should not be ignored when we are trying to preserve the ecosystems.

(?): Some of this depends on the animal we are talking about. You seem to be chiefly talking about food and laboratory life. When I was contemplating this problem I thought of dogs. The dog is a species that has been used as a food animal, although not originally domesti-

cated for that function. A lot of the changes to the dog, while they have been beneficial to human beings, have also been beneficial to the dog in the context of its partnership with humans. We cannot say it is simply a domestic animal. To me it is still a unique species and is living in a partnership with humans, mutually dependent on humans. Yet when faced with the unfortunate decision to conserve Pekinese or wolves, my mind would go to the wolf. However, I have to recognize that the Pekinese is a unique creation.

Hutchins: Domestic animals were essentially not totally domesticated for the benefit of people. In Covenant of the Wild the author argues strongly that domestication was originally a symbiotic relationship between humans and animals, almost a mutual coming together, especially in regards to the dog. It was not a “taking of prisoners” and a manipulation of their genes for human benefit but it ended up as mutually beneficial in many cases. Certainly manipulation took place in many cases later, but this is a misconception that has led us to a number of ethical positions that we may have to rethink.

Pacelle: Hutchins, are you arguing that we have some kind of moral obligation to preserve all of the creations of domestic rearing such as turkeys in factory farms that cannot even breed among themselves and whose health problems begin from birth?

Hutchins: What I am talking about concentrates on animals that have been around for thousands of years. I see that as being different in some extent to the type of manipulation we have done to farm animals over the last fifty years. The animals that Clutton-Brock describes have been evolving on their own, not just selected for people, by people. I see an important difference between the two.

Pokras: I do not think we have any moral obligation to perpetuate most domestic breeds. I would not feel that the world was losing something substantial and meaningful if these breeds passed from existence, as long as the individual animals were well-treated up until their natural death.

Jamieson: What this kind of exchange indicates is how unclear we are about what it is we value. I have heard three different conceptions in this discussion. One, we value variety. Two, history is valued, the connection of domestic breeds to our past and our cultural of evolu-

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tion. Third, wildness. All these things are really distinct values and they lead in different directions.

When the Spanish arrived in the new world there was a debate among the Jesuits about the status of the native people. One view was that they were animals, making it acceptable to use them as draft labor. The other view was that they were congenitally human and ought to be converted. There was a very serious theological dispute about how they should be treated. This raises the notion that familiarity and knowledge are very important for the understanding of the capabilities and compatibility, and therefore value of these animals. This does not mean you have to know each particular animal in order to value it.

Grandy: I wanted to shift the focus of the debate to something Clutton-Brock mentioned earlier regarding the relevance of red deer and elk and what role the king played in the situation we face today with respect to attempts to promote the consumptive use of wildlife in developed countries. Things have changed overwhelmingly and that model cannot be applied. We have control of trade, methods of killing that are far more effective and far more destructive than ones we saw in the king's time, much less authority in the sense of government ability to control what is happening. We have seen in third world countries that wherever these well-meaning attempts to promote consumptive utilization sustainably have been failures.

Rowan: I would like to close the day's discussion at this point, but I would like to sum up a few points that have been raised today. There is a human need to classify, a necessity to classify animals as domestic, wild, tame, etc. We try to push things into neat little boxes in which they refuse to go.

In terms of the Steven's comment regarding the ascetic elements of breeding, there is an interesting comparison between Japan, America and Germany. The Japanese attitude toward wildlife is ascetic, not moralistic, humanitarian or ecologicistic. The American attitude is more humanitarian, more moralistic and ecologicistic. Germans are very moralistic, very humanitarian and very ecologicistic. There are these differences in attitudes in terms of what one values, which brings me to the next issue that came up constantly throughout the day, one which we never actually confronted directly but was talked around quite a bit; the issue of value, valuing the wild, the domestic and the

tame.

Another issue underlying today's discussion was human agency. Some of us have much less regard of human agency than others in this room. There is a conflict that combines some of the basic ideas we have here. If one does not trust human agency then new knowledge is useless because one does not trust humanity to use it in a wise manner.