PRESERVING INDIVIDUALS VERSUS CONSERVING POPULATIONS: IS THERE A CONFLICT?

Donald G. Lindburg
Zoological Society of San Diego
San Diego, California

INTRODUCTION

It is relatively easy to achieve agreement that conserving biodiversity is a worthy sentiment, but vast differences in priorities emerge when there are competing interests and values.

Summarized briefly, animal liberation/animal rights' valuation of the individual above its zoological taxon or associates in a community is an extension of ethical theory to animals, using the criterion of sentience rather than rationality for ascribing to the individual the right to an existence free of human-imposed pain and suffering. Humans are not entitled to inflict pain for any purpose, according to this view, including the utilization of animals for food or clothing, for scientific and medical experimentation, for recreation, or even for the animals' own survival as a zoological entity. Insofar as they have written on the subject, the major articulators of animal rights philosophy have espoused essentially a hands-off policy with regard to preservation of animal life in the wild state. Singer (1975), for example, sees most human attempts at manipulating ecosystems as causing more harm than good (i.e., an increase in suffering), and advocates that we refrain from further meddling in their lives. Regan (1983), in an oft quoted statement, holds that "the rights view does not recognize the moral rights of species to anything, including survival" (p. 359), and recommends that with regard to wild animals, including the highly endangered, the correct policy is to "let them be!" (p. 361). If we respect the rights of the individual, it is held, it should be apparent that the species will in turn benefit.

Environmental ethicists, on the other hand, view the individual as transitory, appearing on the stage of life for but a short time as the carrier of but a small portion of its taxon's genome, essential however

to the continuity of its kind over the vast expanse of time. Although finding the concerns expressed for individual welfare commendable, environmental philosophers hold that individuals "do not endure long enough in terms of preservationist time scales for any efforts at this level to be of much consequence" (Hargrove, 1989, p. 128). In addition, since a species cannot experience pain or pleasure, an ethic based on individual rights does not entitle it to moral consideration. Absence of any entitlement for plants has been cited as another shortcoming of rights philosophy. As summarized by Norton (1986, p. 275), "Attribution of rights to other species (than humans) are, at best, useful as an expression of moral concern and commitment or as a forensic device. But they provide no theoretically defensible basis for species preservation."

Zoos are philosophically more closely aligned with environmentalist than with rights advocates in that they attach higher value to aggregates such as taxa or ecosystems than to individual animals. Captive breeding efforts seek justification on the basis of a need for intervention to forestall extinctions (Hutchins and Wemmer, 1991), and this requirement is held to be ample reason for the frequent violations of individual interests, such as euthanatizing unneeded individuals (Lacy, 1991). Just as disease and predation act as agents for maintaining the viability of wild populations, zoo managers have embraced the role of selecting agent in the captive sector, determining on the basis of genetic representation, health, age, and various other criteria who shall live and who shall die.,

Despite the view that adherents of these conflicting value systems have little prospect of living happily ever after, it is imperative that dialogue continue if for no other reason than to find common starting points for debate. Perhaps the words of Hargrove (1992) can serve as a guiding principle, namely that "The resolution of the controversy is not simply a matter of finding a winning argument, but of finding a position that all those concerned about the environment can understand, feel comfortable with, and apply in their professional work and their daily lives" (pp. xxii-xxiii).

Before raising some examples of how these conflicting values come to bear on the activities of zoos, I would like to emphasize that zoos are but a small, perhaps even minuscule example, by comparison, of a very broad spectrum of cases in which the same issues are in evidence.

Two examples come readily to mind, namely restoration ecology and the practice of sustainable utilization.

Restoration ecology is the attempt to restore to their former pristine state habitats that have been decimated by human activity. It takes many forms, from replanting of timbered slopes to the cleansing of polluted rivers. Germane to this discussion is the introduction by humans of alien species that have, over time, resulted in major modification of original habitats, in particular the near extinction of endemic wildlife. An example is the French subarctic island of Kerguelen, to which domestic cattle and cats, the brown rat and several other alien species were introduced by seal hunters and whalers during the 19th and early 20th centuries.

These introductions resulted in significant modification of plant communities and in the near extinction of native fauna such as the burrowing petrel. To restore the ecology of Kerguelen and other islands in the area, various campaigns for eradication of alien species were introduced in the 1950s and 1960s, including the shooting of thousands of feral cats and introduction of fleas carrying the myxomatosis virus to eliminate rabbits (Chapuis et al., 1994). Any number of examples closer to home, in which shooting, poisoning, or biological agents have been used to exterminate alien animals could be cited (see, for example, Atkinson, 1989).

Sustainable utilization, embraced by major conservation organizations such as AWF, WWF, and IUCN, cannot fairly be depicted as a program designed to look after the interests of individual animals. Quite the contrary, it is an approach which endorses culling at levels that prevent the habitat from being overwhelmed on the one hand, but which insures that wild populations will remain viable on the other. In the case of the African elephant, a number of countries in the southern part of the continent had painstakingly evolved programs for harvesting elephants, using funds derived therefrom to protect wildlife generally. The total ban on trading in elephant ivory is held by these countries to be disastrous for future conservation efforts. The ban on ivory trading was ostensibly to save elephants from being extirpated by poachers. Yet, many have argued that in fact its rationale eventually shifted to emotional appeals based on the "right" of elephants to exist. Advocacy on the grounds of saving individuals generated the fear that, ultimately, any other position on the part of

conservation organizations would result in disastrous losses in membership and in revenue. This position was adopted despite continuing espousal and implementation of the sustainable utilization doctrine in other cases. The journalist Raymond Bonner in his book "At the Hands of Man" (1993) portrays the people living at ground zero, so to speak, as having their crops destroyed, their lives increasingly endangered, and their rights violated from a burgeoning elephant population. Bonner's essay presents several examples of local efforts to find accommodation between wildlife and poverty stricken tribals, all based on a system of population regulation (of animals only) through cropping.

This case illustrates how animal rights philosophy, as articulated by Regan (1983), for example, can join in supporting efforts to end poaching, not because elephant extinction is morally indefensible, but because of concerns about their suffering at the hands of the poacher.

ZOOS AS CONSERVATION ENTITIES VS. ZOOS AS INHUMANE KEEPERS OF WILDLIFE

Ascription to the view that pain is evil leads to behavior that would minimize its occurrence, and would do so wherever the potential for experiencing pain is found. As summed up by Callicott (1980), moral agents should therefore, among other things, "cease to eat the flesh of animals, to hunt them, to wear fur and leather clothing and bone ornaments and other articles made from the bodies of animals, to eat eggs and drink milk, if the animal producers of these commodities are retained under inhumane circumstances, and to **patronize zoos (as sources of psychological if not physical torment of animals**)" (p. 317, emphasis added). Clearly, zoos are viewed by many as facilities that deny animals their freedom, subject them to spatially restricted and sterile living environments, expose them to invasive physical manipulations, and often result in the loss of species-typical behaviors. According to Fox (1986), scientific director for the Humane Society of the U.S., zoos are places to visit if you want to see unhealthy, neurotic animals, many of which are disabled by learned helplessness, and which are mere caricatures of wild conspecifics. They give visitors the wrong message, namely, that abnormal behavior is the norm, and that domination of animals is a cultural ideal. Like others who find captivity for wild animals distasteful, Fox advocates reliance on films as a better way for urban-living humans to experience wild animals. Given

that it is sometimes associated with violence, it is not known whether he would advocate that humans should experience sex in the same way.

To these may be added the notion that elevation of humans to the role of primary agent of selection results in an inevitable domestication process which, given enough generations, may leave scant resemblance between the captive animal and its wild counterpart.

In reality, however, the lines between captive and wild have become somewhat blurred in recent years, particularly in the case of wildlife "imprisoned" in sanctuaries and reserves. Here, too, freedom of movement may be limited to small and frequently overcrowded ranges (e.g., Amboseli National park), and the growth of ecotourism insures a daily invasion of visitor-laden vehicles that disrupts their solitude, checks their movements, and sometimes interferes with their pursuit of food. These are environments in which the unchecked growth of lion populations results in an imbalance leading to the demise of a subordinate carnivore, the cheetah. In the Aberdares of northern Kenya, the beautiful bongo antelope is near extirpation for the same reason. Some would hold that arguments against zoos that are based on the evils of captivity are somewhat less convincing in light of these realities.

It has also been suggested that the harshness of captivity is mollified by the fact that the majority of zoo-living animals are now captive born, meaning that they have been accustomed since birth to the restricted environments of captivity, and therefore respond quite differently in terms of flight/fight responses or tolerance of potentially unpleasant stimulation than an individual that began its life in the wild. Unless specially prepared, captive born individuals, may, furthermore, be ill equipped for survival in a natural milieu, underscoring the naivete of those who would like to open the cage doors and set them free. Attempts at reintroduction of captive born cheetahs to wild habitat in southern Africa, for example, have been notable failures, in large part because they had not learned to recognize lions as predators, and were killed.

Inaccurate notions about wild and captive animals may be a symptom of generations of living in urban environments, far removed from anything more than transient and superficial contact with the world of nature. Nature is often portrayed as edenic and friendly, when in

reality it entails a continuous struggle with predators, disease, starvation, drought, and the extremes of climate. We may wonder if much thought is given, despite the easy access to televised episodes of this struggle, to the fact that a gazelle must be constantly on the alert for predators, may be forced to flee at top speed to escape being the lion's next victim, may have its dependent young slaughtered before its eyes, and must conceal any physical weakness, including pain, to avoid being targeted for the next kill. In a reversal of the conventional wisdom, Sagoff is quoted (Callicott, 1986) as stating that if one truly cares about animal pain and suffering, the best thing for wild animals would be to remove them to the protective confines of zoos!

The value of captive breeding and the fate of wild animals that are maintained in zoos for this purpse probably lies somewhere between the caricatures provided by their partisans on the one hand, and their detractors on the other. Although a handful of species survive today only in zoos, zoos' ability to take endangered species a step or two back from the brink of extinction is probably overstated, and their success in fostering values favorable to preservation of wild forms is not easily measured. On the other hand, much of the criticism of zoos appears to rest on outdated notions of what they are like, and on emotional rather than factual characterizations of captive living environments.

THE APPLICATION OF INVASIVE METHODS TO THE CARE AND PROPAGATION OF CAPTIVE WILDLIFE

It would be inaccurate to suggest that, despite improved health, nutritionally superior diets, absence of predation, protection from the excesses of heat and cold, and increased longevity, the zoo environment is therefore an environment free of stress. In fact, some of the activities of zoos espoused in the name of captive propagation have been condemned as "a moral atrocity" (Varner and Monroe, 1991). Among the practices mentioned by Varner and Monroe are euthanization of genetic surplus, embryo transfers between species, injections to superovulate females, and double-clutching. They conclude that, "From a sentient perspective, even if a species is going extinct in the wild so that captive breeding is the only possible way to preserve it, it is still difficult or impossible to justify captive breeding the remaining individuals" (p. 28). Others concerned with animal welfare hold that captive breeding cannot possibly be good when viewed from the

perspective of the individual animal (Regan, 1983), and that extinction is preferable to an existence only in a captive situation (Jamieson, 1985; Fox, 1986). How meritorious are these claims? And, insofar as they inflict suffering on the individual that is being manipulated, does not the end justify the means which, in this case, is the increased prospect of species survival?

Animals in both wild and captive locales develop cancer and diabetes, contract infectious diseases, become parasite infested, and suffer from wounds inflicted by their conspecifics. In zoological gardens, not a day goes by but that hundreds of ailing individuals receive treatment designed to cure their illnesses and in many cases save their lives. What could be more noble? Yet, given human propensities for becoming immunized to suffering, do not the assertions of Varner and Monroe merit examination?

Consider that a young chimpanzee, unlike its human counterpart, cannot be made to understand that the pain of its medical experience if for its own good. It will be captured, anesthetized, and wake up in a recovery area that is strange and far removed from its familiar surrounds. The struggles of a wild animal succumbing to and recovering from anesthesia cannot be passed off as of no consequence. The individual does suffer, witness the fact that it quickly learns to react to the sudden appearance of extra personnel and the sight of capture paraphernalia with unmistakable signs of fear and avoidance. And the effects of separation from cagemates and kin, leading to greatly heightened agitation and eventual depression, are commonly seen during hospital stays, especially in the highly social primates.

Quarantine is, by definition, isolation in a sterile, easily sanitized (therefore, hard and cold) environment for a minimum period of 30 days, during which it receives the minimum treatment necessary to sustain life (e.g., food, shelter, and temperature control). The quarantine experience is as frequent as the act of transferring animals between institutions or countries.

The practice of animal medicine has been largely immune to outside scrutiny from the standpoint of pain and suffering, since intervention is widely accepted as an obvious necessity and because the practitioners are themselves regarded as the highest authority. Quarantine cannot be abolished if we are to have captive animals, but one might

argue that steps could be taken to soften the impact of this experience. The immobilization of ill or wounded individuals is a necessary form of intervention, but perhaps this highly stressful act should be undertaken only as needed to restore health, not as a routine search for potentially harmful pathogens. Hospitals are anthropomorphic in design in that those needing treatment, however minor, are funneled in from all corners of the institution, and held in a strange and odious environment as long as treatment and surveillance of recovery is deemed necessary. Is sufficient thought given to the possibility that some forms of health care may be taken to the animal, so that it is treated in a familiar environment, or to reducing hospital retention time that is dictated by convenience to staff rather than the animal under treatment? Recognition should be given to the fact that the hospital experience for a wild animal can never be pleasant, only more or less tolerable.

A second category of stressful experiences that have been brought into question arise from the practice of what has come to be known as "assisted reproduction." Semen collection via rectal probe electrical stimulation, or the scrutiny of female organs via laparoscopy, or the flushing out of embryos for cryopreservation or in vitro fertilization, are all carried out under anesthesia. These are the acts of front-line news stories, the application of human ingenuity to the development of new techniques of propagation in a world where natural processes are often compromised. As in health care, these acts of immobilization are stressful, and are carried out without the comprehension or cooperation of the animal whose representation in future generations is at issue. Although there is no public score keeping, those on the inside will acknowledge that an individual "used" in assisted reproduction may be subjected to dozens upon dozens of such procedures. Are those who react with concern about the quantity of stress and distress visited upon the animal in these programs merely emotionally misguided, or is there a question of ethics that needs to be examined?

Before leaving this subject, it is necessary to point out that the same or similar procedures are increasingly common in the study and management of wild populations. Individuals of a given species, for example, are darted with anesthetic projectiles to enable the procurement of tissue samples for laboratory analysis or to collect biometric data that is applied to their long term management. Some conservationists envision a time when gametes rather than whole animals will be trans-

ferred between fragmented wild populations in the interest of maximizing genetic diversity. Relevant here, also, is what some would characterize as the ultimate indignity, namely the removal of their horns with chain saws to immunize wild living rhinos to poaching. Such actions unquestionably bring into conflict those who value the species' long-term survival with those concerned about the discomfort attending the use of invasive procedures.

If the morality that guides human interaction with wild animals is the minimizing of pain and suffering, it is quite obvious that in both captive and natural milieus much must be left to fate. This would seemingly be a scenario that will result in the demise of a very large number of wild forms. If, on the other hand, the long tern view of providing continuity between generations is a practical if not moral imperative, then tolerance of some measure of suffering and sacrificing of individuals must be accommodated.

THE FATE OF CAPTIVE ANIMALS THAT ARE NOT ESSENTIAL TO CONSERVATION (IE., THE SURPLUS PROBLEM)

There is unanimity among zoo professionals on the point that captive breeding programs unavoidably generate a population that becomes surplus to their conservation endeavors. The notion that individuals become surplus needs emphasis in order to counter the notion that surplus animals result only from unnecessary and wanton breeding, and that the problem would go away if zoos merely practiced restraint (see Grandy, 1989, as an example of this position). Because the size of the captive population for a given species is the minimum deemed necessary to preserve acceptable levels of genetic diversity, the rules governing small-population propagation come into effect. That is, special care must be given to the number of founders at the outset, and to the genetic representation of given individuals in the captive gene pool subsequently. Put simply, to maintain the steady state in population size, dictated by the captive space available to the species, a point is reached where each member of the population is allowed to breed only to the level of replacing itself in the next generation, usually from two to three offspring per parent. Consequently, in the case of an animal for which 10 to 15 offspring is a lifetime norm, its genetic quota may be reached while it is still relatively young and expected to survive, let us say, for another 15 to 20 years. To be free from the burden of long-term care and feeding, the view held by a majority of zoo

professional is that these surplus individuals should be euthanized in order to free up resources for the future propagation of their own or other species (Lacy, 1991). Individual interests, in other words, may be sacrificed to the greater good of perpetuating the taxon to which one belongs. Interestingly enough, at present zoos use an hierarchically ordered approach in dealing with this problem, such that surplus gorillas will be readily euthanized, but surplus zorillas will not. This position rests not on a carefully reasoned set of values, but on a pragmatic approach to what public sentiment will allow.

We have elsewhere attempted to deal with both ethical and pragmatic aspects of this problem (Lindburg, 1991; Lindburg and Lindburg, 1995), and will only summarize a few of our main points here. We have taken the position that an hierarchical approach is unworkable precisely because it rests on a sliding scale of valuation, and that at least at the present time there are appealing alternatives to euthanasia such as the construction of retirement facilities, alternative benign uses of surplus individuals, and conversion of scarce space in zoos from species not in need of captive propagation to those that are. Implied in this approach is the belief that zoos may ultimately have to act against the interests of individuals, but that a reordering of priorities and development of new initiatives have the potential of accommodating both individual and species interests.

To these earlier discussions may be added the prospect of manipulating generation times in steady-state populations, such that genetic contributions are spread over the lifetime of individuals rather than being concentrated in the early years of life. The process of producing replacement offspring is, in other words, slowed down in relation to the projected average life span for a given taxon. While morally more acceptable, this scenario entails a bit of a gamble that animal "x" will not contract a fatal illness before it has its opportunity to reproduce in the later stages of reproductive life. And for species such as the highly social primates whose young are dependent on age-mates for socialization, this approach would produce the equivalent of human youngsters growing up in a world of adults only.

To conclude this point, we reiterate our statement from the Atlanta Conference (Lindburg and Lindburg, 1995) that accommodation between the often competing need to respect the welfare of individuals and to preserve species derive from the realization that "humans stand

apart from the rest of the biological world in terms of conscience and moral responsibility. As Rolston has put it, Humans are in the world ethically as nothing else is (1989, p. 238, original italics). It follows that in exercising our judgements we must act honestly and responsibly, and in the present case this means that we must pursue the unrealized options that are available to zoos in dealing with healthy surplus animals."

CONCLUSION

It cannot be denied that, left to themselves, many species will disappear from our planet in the decades ahead, or that the vast majority of these extinctions will be due to human activity - so aptly described by Rolston (1985) as "super killing by a super killer." Nor can we deny that if this trend is to be slowed, human intervention is required. Wherever they go, humans have a degrading impact on the natural world. Being a culture-bearing creature means, among other things, having a unique capacity for modifying the environment, usually at the expense of natural processes and natural systems. Who can doubt, for instance, that the role of natural selection is lessened because it operates in a world increasingly shaped by human decisions as to what shall be? Having arrived at a point where the impact of humankind on the natural world is so pervasive, we cannot but acknowledge that we are henceforth deeply involved in determining the future of this planet, for good or bad. Playing god is something we have been doing from the first appearance of culturally patterned behavior. Now, the question is, given this capability, what kind of world we will settle for, not what kind of world we want.

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LINDBURG DISCUSSION

Pacelle: I take issue with a number of points in Lindburg's paper. I found the early part of his work to be a manifesto for intervention with respect to ecosystems, captive breeding programs, etc. as well as what we should do with individual animals in zoos. I agree that there should be intervention, but the questions are when and how.

I would like to make a point about conservation, biodiversity and environmental advocacy. It seems that, with the exception of captive breeding and important international research work the zoo community is not really at the forefront of the conservation movement. When I think of the major domestic environmental issues in this country I do not see the zoo community there. The zoo community has an international bias but is not strongly involved in national conservation, just as the animal protection, welfare and rights community has historically not done much about habitat.

There are three other issues I would like to touch on. Lindburg brought up the phrase "restoration ecology," and spoke about the eradication of exotics in particular areas where they are having a detrimental impact on the global ecological community. When we have questions regarding exotic animal management it is not an all or nothing game. More and more we are taking each of these cases on an individual basis. There is not a categorical opposition to control exotics. One example is the pig situation in Hawaii. The state is engaged in a campaign to eradicate pigs through the use of neck snares. There are very compelling reasons to eradicate pigs from that ecosystem; they have been brought there in the last few centuries and are having a negative impact on the landscape. PETA does not oppose this killing of pigs. They object to the use of neck snares and urge the use of a more humane way of eradication. Another example is the mountain goat population in Olympic National Park. There is controversy as to whether the goats are native to the peninsula. There is not a scintilla of evidence that mountain goats are a peril to any native plant species in the national park, yet there is this great push to eliminate them from the environment. We need to look at the justification. Just because they are exotic does not mean we should eliminate them through inhumane methods, which at this time is the only way that mountain goats could be eliminated.

Lindburg embraces the principle of sustainable utilization of wildlife. The zoo community's focus on population leads to this idea of sustainable utilization, which I feel is a tremendously detrimental impact on the welfare of individual animals. One could make the argument that whaling can be done sustainably and that whales can be killed in a manner that is regulated and will not peril the existence of certain whale species. I find the idea of killing whales entirely repugnant, even if some economic benefit could be derived from the activity. Questions about wildlife management have to involve this critical question of ethics and the treatment of individual animals, not just sustaining the population for future generations. The state of Alaska is killing wolves to create a giant game farm. This may not imperil the wolf population, but what does it say about the "wild?" What does it say about allowing ecosystems to function and predator/prey relationships to exist? This is a perfect example of sustainable utilization.

Baker: I do not look at this as individual versus population, for we cannot preserve populations without preserving individuals. I look at it as conflicts that are better defined as conflicts between individuals. A weighing of individual interests is necessary for a solution.

Many of us view animals in captivity as ambassadors for their species. It is not in their best interest to be in captivity, but in the best interest of a number of other animals in the wild.

Another conflict is where actions are in the best interest of future individuals. We look at what goes on with animal behavior and we see they place a great deal of importance on the continuation of their species. For example, there is a small Australian carnivore called antichinus, one of the few mammals that breeds once and then dies. If you prevent the male from breeding they live much longer. Yet they choose to breed and die rather than live longer. They display a strong desire to preserve the species.

The real issue is not what rights animals have, but what value they have. I would hate to see an argument that rights are dependent on cognitive ability. A number of things are worthy of value, including biodiversity and invertebrates.

Lindburg: The paper was not meant as a blanket endorsement of sustainable utilization. We must remember that the world today is not

as it used to be. Many of the natural checks and balances that would limit a population are no longer in effect. We have created this situation. One of the major examples of the dilemma we face with surplus animals in zoos is that of the orangutans. It has been decided to manage the eighty-eight hybrid species to extinction. The cost to keep these animals as we do now for the remainder of their normal lives comes to approximately three and a half million dollars. I hope there would be less expensive alternatives, for example warm climate retirement communities could be built at much less cost.

Pacelle: I appreciate your qualification on the sustainable utilization issue. You seem to define it in the text as a response to the overpopulation of animals. I think more and more it is defined by country and state as a means to generate income from the use of wildlife, whether or not they are an abundant population. The state fish and game agencies treat deer and other species as if they are a crop to be harvested every year and that we should derive certain recreational or economic benefits from them.

Robinson: I would argue that zoological parks have been unprecedented in their allocation of resources for the conservation endeavor. Zoos have a unique capability to address certain kinds of conservation problems and they tend to do those rather well. They tend to come out of a technological, scientific, problem-solving orientation. Increasingly in the conservation field implementation of conservation projects is being taken over by zoo-based conservation organizations.

de Boer: Zoos are one of the few institutions focused on the global perspective of conservation. It would be fine if more action was taken on local conservation issues but the global situation is extremely important. Apart from the zoo world, there is no comparable network, nothing that like the zoo network can so efficiently teach people in Europe to be interested in rain forests in Brazil, or that North Americans should work to save the forests in the East of Europe.

Robinson: Zoo conservation efforts have tended to be very divorced from collections. There has been an interesting debate within the zoological community whether or not to focus on domestic conservation issues. For the most part the argument frequently is that, in the United States, there are a lot more resources going into domestic conservation than international conservation.

Jamieson: When we breed animals and endangered species and then kill them we violate a trust with the animal and with the public. The cost of that radically outweighs any relatively minor concerns about whether a small amount of money could be best spent in one way or another.

Hutchins: Regarding what Pacelle said about mountain goats, I spent five years studying those animals. I do not buy the evidence that they were there before 1920. A lot of times there is reaching from the animals protection community to find evidence to support their point of view. The goats are not threatening all the plant species in the park. However, the environment has definitely been influenced by the introduction of this species. We should be looking at more humane ways to control them but I consider introduced species to be one of the top two or three ecological problems we have in the world today.

Pacelle also stated that zoos are not major players in conservation. I would turn that around and say that animal protection groups are not major players in conservation. I would like to see a more responsible approach to conservation by the animal protection community. We would like to work together with them on these things. The AZA is very active in conservation.

Clifton: Roadside zoos are often run by people who were once employed by a zoo or circus but were let go as new legislation arose. Many of these people have the "old" mentality regarding animals and their care. A lot of them have no alternatives to make a living and have opened their own operations.

We need to educate the public about what a credible zoo is and sensitize them about what is bad about roadside zoos. It is possible to pull roadside zoo operators back into the network. Have these people take care of some of the surplus animals now living in zoos, set up terms and contracts with them and follow through on inspections. Provide a stipend for the care and feeding of the animals. Such a program would still allow the operators to make a living while giving us control over the roadside zoo situation.

Grandy: I find the discussion of exotic species to be a huge issue. It extends far beyond wildlife in every dimension. The United States is full of exotic flora and fauna. I overheard a discussion earlier regard-

ing "good" animal surplus versus "bad" surplus. Good surplus came out of carefully engineered captive breeding programs while bad surplus is animals produced as a result of sloppy management, sloppy animal husbandry. There is a huge difference between the two. We ought to do everything in our power to prevent the production of bad surplus.

Pokras: I would like to put myself forward as an advocate for selective euthanasia. It is a very sad and sobering thing and one wonders what decision is appropriate. For example, a bird gets hurt but can be saved through surgery. However, it will not be able to fly again. What should we do? A lot of this depends on the quality of the facility where we can put this creature. If I could find nice homes that would provide care and nutrition I would feel great. I end up killing about one thousand animals per year. On the large scale I feel okay about doing that, for it is in the interest of the animal's well-being to kill it. To keep it alive and put it in a less than adequate facility would be inhumane. As we get better with our medical and surgical techniques we may not have to euthanize as frequently, but we still will not be able to save them all. Death needs to be discussed openly and the value of death education acknowledged. I really think it is sometimes more humane to give an animal the quiet and comfort and finality of death than to put it someplace we know to be less than optimal.